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THE EFFICIENCY OF AZERBAIJAN BANKING SYSTEM

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ABSTRACT

Master Thesis

The Efficiency of Azerbaijan Banking System

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The objective of this paper is to analyze the efficiency performance of Azerbaijan banking system between 2002 and 2007, a period characterized by high economic growth and tight control by National Bank. Overall, pure technical and scale efficiency of Azerbaijan commercial banks are measured with the use of Data Envelopment Analysis. In empirical results over the study period overall and pure technical efficiency scores show a great variation, which means banks have scale problems. Overall efficiency decreases over the study period. The main reasons are reforms of National Bank, regulations, new banking law of 2004 and high economic growth. It can be thought that in the short run these structural changes would have negative effects on efficiency, but in the long run efficiency would improve. Efficiency of state banks was slightly above private banks, except 2004 and 2006. It is also found that state banks are managed better than private counterparts. Results show that banks have problem of converting deposits into loans and collecting interest income from borrowers.

Key Words: Commercial Banks, Bank efficiency, Data Envelopment Analysis, Azerbaijan Banking System

ÖZET

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Emil İBRAHİMOV

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Bu çalışmanın amacı 2002-2007 dönemleri arasında Azerbaycan bankacılık sisteminin etkinliğini ölçmektir. Bu dönem yüksek ekonomik büyüme ve bankacılık sectorünün Merkez Bankası tarafından sıkı kontrol edilmesi gibi karakterize edilebilir. Azerbaycan ticari bankalarının toplam, teknik ve ölçek etkinliği Veri Zarflama Analizi yöntemi kullanılarak ölçülmüştür. Analiz sonuçlarına göre araştırma döneminde toplam ve teknik etkinlik skorlarında büyük farklılıklar görülmektedir. Bu durum bankalarda ölçek sorunu ile ilişkilendirilebilir. Araştırma döneminde yıllara göre toplam etkinlik azalmaktadır. Bunun en önemli nedenleri arasında Merkez Bankasının reformları, yapılan düzenlemeler, 2004 yılı Bankalar Kanunu ve ekonominin büyüme hızının yüksekliği gösterilebilir. Bu yapısal değişimin bankaların uyum aşamasında kısa dönemde etkinlik üzerinde olumsuz etki yarattığı, ancak uzun dönemde etkinliğin arttırılabileceği düşünülebilir. Devlet bankalarının araştırma döneminde, 2004 ve 2006 yılları haric, özel bankalara göre daha etkin olduğu görülmektedir. Araştırma sonuçları ayrıca devlet bankalarının özel bankalardan daha iyi yönetildiğini göstermektedir. Yine araştırma bulgularına göre bankalarda mevduatın kredilere çevrilmesi ve borçlulardan faiz gelirlerinin toplanması sorununun yaşandığı görülmektedir.

Anahtar Kelimeler: Ticari Bankalar, Banka Etkinliği, Veri Zarflama Analizi, Azerbaycan Banka Sistemi

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ABBREVIATIONS

ABM	Automated Banking Machine
ADB	Asian Development Bank
ALM	Asset-Liability Management
APR	Annual Percentage Rate
ATM	Automated Teller Machine
AZIPS	Real Time Gross Settlement System
AZN	New Azerbaijan Manat
BCSS	Bulk Clearing and Settlement System
BIS	Bank for International Settlements
BTC	Baku Tbilisi Ceyhan
CCRS	Centralized Credit Registry System
CD	Certificate of Deposit
CIS	Commonwealth of Independent State
CRS	Constant Return to Scale
DEA	Data Envelopment Analysis
DMU	Decision Making Unit
DRTS	Decreasing Return to Scale
EBRD	European Bank for Reconstruction and Development
EU	European Union
FDIC	Federal Deposit Insurance Corporation
GDP	Gross Domestic Product
IBA	International Bank of Azerbaijan
IMF	International Monetary Fund
IRTS	Increasing Return to Scale
KfW	German Development Bank
NBA	National Bank of Azerbaijan
NPL	Non-Performing Loans
PCA	Partnership and Cooperation Agreement
ROA	Return on Asset
ROE	Return on Equity

SOE	State Owned Enterprise
SLC	Standby Letter of Credit
SME	Small and Medium Enterprises
TSSR	Transcaucasus Soviet Socialist Republic
USSR	Union of Soviet Socialist Republics
VRS	Variable Return to Scale
WB	World Bank

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INTRODUCTION

During the last three decades the nature of financial institutions, especially of banks have changed significantly. Taking deposits and making loans is not only or even the main activity of the modern bank. Globalization, deregulation of financial institutions and financial innovation strengthened competition faced by banks. These changes have created new opportunities and risks for banks and new challenges for supervisors and regulators.

Now modern banks offer a variety of services such as payment, investment, pension, insurance e-banking and other services. Trading in financial markets and income generating through services fees are major source of a bank's profitability. Financial innovation led to creation of variety of "off-balance sheet" financial instruments, which in turn increased volatility within a whole banking system.

Internationalization and deregulation have increased the possibilities for contagion, as evidenced by the spread of financial crises from Thailand to the rest of Southeast Asia, to East Asia, Eastern Europe, and South America in the late 1990s, and by their effect on banking systems in the rest of the world. The evolution of banking systems and markets has also raised important macro prudential concerns and monetary policy issues (Greuning and Bratanovic, 2003:3)

As the part of global community these changes inevitably effects to financial system of Azerbaijan. A series of financial reforms carried out to establish modern financial system in the country. The first stage of reforms began in early 1990s with formation of legislative base of financial system. Because of low capital requirements, liberal terms of licensing and weak regulation, number of banks increased rapidly in this period. After 2000 the second stage of reforms started. Since 2000, key performance indicators of banking system have improved significantly due to financial sector reform in coordination with the World Bank and the IMF and strong growth in the economy. Four state banks consolidated into two, licenses of weak banks drew back. Thus number of banks reduced to forties. With reforms legal framework of banking system improved, the regulatory, supervisory functions of National Bank enhanced.

Despite recent progress, financial system is low capitalized and highly concentrated. State banks remain the main players in banking system and together they control half of the assets of the sector. But their share have declined in recent years and expected to be privatized in the near future.

In the light of recent developments, it is important to analysis country's banking system. These analyses are very important from managerial and regulatory perspective.

The purpose of this thesis is to investigate efficiency of banking in Azerbaijan, to see the effects of recent developments, financial reforms on whole banking system. Study analysis efficiency of commercial banks between 2002 and 2007, a period characterized by high economic growth in the country. In this period, National Bank tightened its control over the commercial banks and put into practice Basel principles for effective banking supervision. Under the Banking System Development Strategy for 2002-2005, Centralized Credit Registry System and online interbank payment system created in the country.

Efficiency of commercial banks was measured by using two models – CCR and BCC models of Data Envelopment Analysis. The suggested model in this analysis offers an empirical reference set for comparing the inefficient banks with the efficient ones. DEA estimates the relative efficiency for each year and determines the feasible targets for improvements for each bank. Average efficiency scores are being used in this study in order to analyze the whole banking system.

The paper is structured as the following. The Chapter 1 gives information about banking, its historical development, regulation of banks, and different services provided by banks. The Chapter 2 reviews changing nature of banking in Azerbaijan. This chapter gives detailed information about current state of banking in the country. The Chapter 3 devoted to efficiency analysis of banking in Azerbaijan using DEA method.

CHAPTER 1

THE ROLE OF BANKS IN FINANCIAL SYSTEM

The financial system is complex in structure and function throughout the world. It includes many different types of institutions: banks, insurance companies, mutual funds, stock, and bond markets and so on- all of which are regulated by government (Mishkin, 2004:169). A developed financial system is one that has a secure and efficient payment system, security markets and financial intermediaries that arrange financing, and derivative markets and financial institutions that provide access to risk management instruments.

Banks are the most visible financial intermediaries in the economy. Traditional banking practice - based on the receipt of deposits and the granting of loans - is today only one part of a typical bank's business, and is often its least profitable. The modern bank is a multifaceted financial institution, staffed by multi-skilled personnel, conducting multitask operations. Banks have had to evolve in the face of increased competition both from within the banking sector and without, from the non-bank financial sector. In response to competition, banks have had to restructure, diversify, improve efficiency and absorb greater risk (Matthews and Thompson, 2005:1).

Because banking plays such a major role in channeling funds to borrowers with productive investment opportunities, this financial activity is important in ensuring that financial system and the economy run smoothly and efficiently and because of their role, banks are among the most heavily regulated of financial institutions.

This chapter discusses the role of banks in financial system, history of banks, modern banking services, risk management in banking, off balance sheet activities and finally regulation of banks.

1.1 AN OVERVIEW OF FINANCIAL SYSTEM

The financial system can be thought of as being composed of the myriad markets and institutions through which funds flow between lenders and borrowers. The institutions that facilitate the flow of funds also have the important responsibility of developing financial instruments and techniques that appeal to savers, and that therefore provide incentives to save. The institutions simultaneously have to develop instruments and products with features that suit the needs of borrowers. The financial system is also important in providing the framework and markets through which government affects the flow of funds. The government's influence is exerted through laws and regulations relating to the operations of the financial institutions that which participate in the financial system and through its influence on ability to affect the general level of interest rates.

The financial system is thus a vitally important and integral part of the overall economy. By encouraging savings, and through the allocation of savings to borrowers, the financial system plays an important role in the investment process, which is a major determinant of the economy's growth and future productive capacity. It is important also in providing the framework for the implementation of the government's interest rate and regulatory policies.[1]

The financial system channels funds from savers to borrowers and makes it possible for both to achieve their objectives. When financial system works efficiently, it increases the health of the economy: Borrowers obtain funds for consumption and investment, and savers are rewarded by earning extra funds that they might not have otherwise (Hubbard, 2002:35).

1.1.1 Functions of Financial Markets

The financial system provides channels to transfer funds from individuals and groups who have saved money to individuals and groups who want to borrow money. Savers are suppliers of funds, providing funds to borrowers in return for promises of repayment of even more funds in the future. Borrowers are demanders of

[1] www.paragraph.com.au/pdf/books/fininst-text.pdf (04.07.2008)

funds for consumer durables, houses, or business plant and equipment, promising to repay borrowed funds based on their expectation of having higher incomes in the future. Theses promises are financial liabilities for the borrower. Conversely, the promises, or IOUs, are financial assets for savers (Hubbard, 2002:36).

The movement of funds through the financial system can be direct or indirect. In *direct finance*, borrowers borrow funds directly from lenders in financial markets by selling them securities (also called financial instruments), such as stocks and bonds. The second route is called *indirect finance*, because it involves a financial intermediary that stands between the lender-savers and the borrower-spenders and helps transfer funds from one to the other. A financial intermediary does this by borrowing funds from the lender-savers and then using these funds to make loans to borrower-spenders (Mishkin and Eakins, 2003:21).

In addition to matching individuals who have excess funds with who need them, the financial system provides three key services for savers and borrowers. These services are *risk sharing, liquidity and information*. Financial markets and financial intermediaries provide these services in different ways, making various financial assets and financial liabilities more attractive to individual savers and borrowers. Many financial decisions made by savers and borrowers are shaped by the availability of these services (Hubbard, 2002:38).

Financial intermediaries can help reduce the exposure of investors to risk; that is, uncertainty about the returns investors will earn on assets. Financial intermediaries do this through the process known as *risk sharing*: they create and sell assets with risk characteristics that people are comfortable with, and the intermediaries then use the funds they acquire by selling these assets to purchase other assets that may have far more risk. Financial intermediaries also promote risk sharing by helping individuals to diversify and thereby lower the amount of risk to which they are exposed (Mishkin, 2004:31-32).

The second service that the financial system offers savers and borrowers is *liquidity*, which is the ease with which an asset can be exchanged for money to purchase other assets or exchanged for goods or services. Savers view the liquidity of financial assets as benefit. One measure of the efficiency of the financial system is

the extent to which it can transform illiquid assets into the liquid claims that savers want (Hubbard, 2002:39).

A third service of the financial system is the collection and communication of *information*, or facts about borrowers and expectation about returns on financial assets. In this way, the financial system allocates funds efficiently because it reduces the cost of information in matching savers with borrowers. A problem that exists in most transaction is asymmetric information. The basic rationale underlying the asymmetry of information argument is that the borrower is likely to have more information about the project that is the subject of a loan than the lender can take advantage of this information (Hubbard, 2002:40; Matthews and Thompson, 2005:41). Lack of information creates problems in the financial system on two fronts: before the transaction is entered into and after.

Adverse selection is the problem created by asymmetric information before the transaction occurs. Adverse selection in financial markets occurs when the potential borrowers who are the most likely to produce an undesirable (adverse) outcome - the bad credit risks - are the ones who most actively seek out a loan and are thus most likely to be selected.

Moral hazard (or hidden action) is the problem created by asymmetric information after the transaction occurs. Moral hazard in financial markets is the risk (hazard) that the borrower might engage in activities that are undesirable from the lender's point of view, because they make it less likely that the loan will be paid back (Casu et al., 2006:11).

1.1.2 Financial Intermediaries

Economic well-being is inextricably tied to the health of the financial intermediaries that make up the financial system. Financial intermediaries are the businesses whose assets and liabilities are primarily financial instruments. Various sorts of banks, brokerage firms, investment companies, insurance companies, and pension funds all fall into this category. Financial intermediaries are involved in both direct finance - in which borrowers sell securities directly to lenders in the financial markets - and indirect finance, in which a third party stands between those who

provide funds and those who use them. Intermediaries investigate the financial condition of the individuals and firms who want financing to figure out which have the best investment opportunities. As providers of indirect finance, banks want to make loans only to the highest-quality borrowers. When they do their job correctly, financial intermediaries increase investment and economic growth at the same time that they reduce investment risk and economic volatility (Cecchetti, 2008).

The principal financial intermediaries fall into three categories: (a) *depository institutions* - commercial banks, savings and loan associations, mutual savings banks, and credit unions; (b) *contractual savings institutions* - life insurance companies, fire and casualty insurance companies, and pension funds; and (c) *investment intermediaries* - finance companies, mutual funds, and money market mutual funds (Kidwell et al. 2008:16).

What all financial intermediaries have in common is that they acquire funds by issuing their own liabilities to the public (savings deposits, savings and loan shares) and then turn around and use this money to buy primary securities (stocks, bonds, mortgages) for themselves.

Financial intermediaries are in a better position than individuals to bear and spread the risks of primary securities ownership. Because of their large size, intermediaries can diversify their portfolios and minimize the risk involved in holding any one security. They are experts in evaluating borrower credit characteristics. They employ skilled portfolio managers and take advantage of administrative economies in large-scale buying and selling (Ritter and Silber, 1991:39).

Commercial banks are the largest and most diversified intermediaries on the basis of range of assets held and liabilities issued. Because of their vital role in the nation's monetary system and the effect they have on the economic well-being of the communities in which they are located, commercial banks are among the most highly regulated of all financial institutions. Although commercial banks are the largest financial intermediaries, their market share of the financial-services marketplace is falling significantly. The industry is also consolidating rapidly with substantially fewer, but much larger, banks and other financial firms. Moreover, banking and the financial-services industry are rapidly globalizing and experiencing intense

competition in marketplace after marketplace around the planet, not just between banks, but also with security dealers, insurance companies, credit unions, finance companies, and thousands of other financial-service competitors. These financial heavyweights are all converging toward each other, offering parallel services and slugging it out for the public's attention (Kidwell et al. 2008:17; Rose and Hudgins, 2008:4).

The distinctions between banks and other depository financial institutions and between depository and nondepository financial institutions have become blurred during the last two decades. The distinctions between investment banks and commercial banks have diminished as the latter have responded to competition from the capital market by increasing loan sales, providing financial guarantees, and directly placing securities for customers. The distinctions between depository and nondepository institutions have also become blurred as the latter have increasingly offered products and services that compete with those of commercial banks. Consequently, individuals are increasingly turning to mutual funds rather than bank deposits for transactions and investment purposes (Greenbaum and Thakor, 2007:51).

In the 21st century, banks remain a central component of well-developed financial markets, though some banks have expanded their activities beyond the traditional core functions. The banking sector normally consists of specialist banks operating in niche markets, and generalist banks offering a wide range of banking and other financial products, such as deposit accounts, loan products, real estate services, stockbroking and life insurance. For example, ‘‘private bankers’’ accept deposits from high net worth individuals and invest in a broad range of financial assets. Modern investment banks have a relatively small deposit base but deal in the equity, bond and syndicated loan markets. Universal banks, even the restricted form, offer virtually every financial service, from core banking to insurance (Heffernan, 2005:41).

1.2 THE BUSINESS OF BANKING – WHAT DO BANKS DO?

A bank is a financial intermediary that offers loans and deposits, and payment services. Nowadays banks also offer a wide range of additional services, but it is these functions that constitute banks' distinguishing features (Casu et al., 2006:4).

Banking is a business; that is, a market need by providing a service and earn a profit by charging customers for that service. Banks earn profits by acquiring funds at a cost from savers and lending those funds to borrowers, adding value by providing risk-sharing, liquidity, and information services. Like any business, banks act to maximize their profits. The difference between the return that a bank earns from lending and the cost of obtaining the funds to lend – spread – is the bank's profit (Hubbard, 2002:312).

To understand the business of banking, what do they do, it is important to look through history of banking, evolution of banking industry and innovations, what kind of services they offer, and management of banking activities.

1.2.1 History of banking

Banks - the oldest and most familiar of all financial institutions—have changed greatly since their origins centuries ago, evolving from moneychangers and money issuers to become the most important gatherers and dispensers of financial information in the economy. Linguistics (the science of language) and etymology (the study of word origins) tell us that the French word "banque" and the Italian "banca" were used centuries ago to refer to a "bench" or "money changer's table" (Rose and Hudgins, 2008:7).

Banking in one form or another is as old as civilization itself. The earliest banks go back to biblical days, about 4,000 years ago. It is also known from early records that the ancient civilizations of Rome, Greece, Babylon, China and Egypt all made use of banks. Sumerians and Babylonians provided the first banking services. "Market" founded by Sumerians was the first banking foundation known in the history. Laws of Babylonian King has codes about such activities of the "market" as the control of lending services, the collection of credits on due date and commission.

The literate men of the community were priests, and consequently they, with their ability to keep records, were the first bankers. As communities grew and prospered and began to trade with other communities, so the need for banking increased (Klein and Lambert, 1987:1; Kurt, 2004:9).

Very gradually, the business of banking was withdrawn from the hands of the priests and became part of normal trade and commerce. Indeed, one of the most successful periods for banks was in Italy during the eleventh and twelfth centuries, particularly in the states of Venice, Lombardy and Genoa; there banking prospered and grew to a considerable degree (Klein and Lambert, 1987:2).

The development of overland trade routes and improvements in navigation in the 15th, 16th, and 17th centuries gradually shifted the center of world commerce from the Mediterranean toward Europe and the British Isles. During this period, the seeds of the Industrial Revolution, which demanded a well developed financial system, were planted. The adoption of mass production required an expansion in global trade to absorb industrial output, which in turn required new methods for making payments and obtaining credit. Banks that could deliver on these needs grew rapidly, led by such institutions as the Medici Bank in Italy and the Hochstetter Bank in Germany.

Despite banking's long history and success, tough financial service competitors have emerged over the past century or two, mostly from Europe, to challenge bankers at every turn. Among the oldest were life insurance companies—the first American company was chartered in Philadelphia in 1759. The 19th century ushered in a rash of new financial competitors, led by savings banks in Scotland in 1810. These institutions offered small savings deposits to individuals at a time when most commercial banks largely ignored this market segment. Credit unions were first chartered in Germany during the same era, providing savings accounts and low-cost credit to industrial workers. Mutual funds-one of banking's most successful competitors- appeared in Belgium in 1822. A closely related institution—the money market fund-surfaced in the 1970s to offer professional cash management services to households and institutions. These aggressive competitors attracted a huge volume of deposits away from banks and ultimately helped to bring about government deregulation of the banking industry. Finally, hedge funds appeared to offer investors

a less regulated, more risky alternative to mutual funds. They grew explosively into the new century (Rose and Hudgins, 2008:7).

1.2.2 Modern Banking

The main function of banks is to collect funds (deposits) from units in surplus and lend funds (loans) to units in deficit. Deposits typically have the characteristics of being small-size, low-risk and high-liquidity. Loans are of larger-size, higher-risk and illiquid. Banks bridge the gap between the needs of lenders and borrowers by performing a transformation function (Casu et al., 2006:7):

- Size transformation- Banks collect funds from savers in the form of small-size deposits and repackage them into larger size loans. Banks perform this size transformation function exploiting economies of scale associated with the lending/borrowing function, because they have access to a larger number of depositors than any individual borrower.
- Maturity transformation- Banks transform funds lent for a short period of time into medium- and long-term loans. Banks are said to be 'borrowing short and lending long' and in this process they are said to 'mismatch' their assets and liabilities. This mismatch can create problems in terms of liquidity risk, which is the risk of not having enough liquid funds to meet one's liabilities.
- Risk transformation- Banks are able to minimise the risk of individual loans by diversifying their investments, pooling risks, screening and monitoring borrowers and holding capital and reserves as a buffer for unexpected losses

Banking Services: Modern banks offer a wide range of financial services, including (Casu et al., 2006:26):

- Payment services
- Deposit and lending services
- Investment, pensions and insurance services
- E-banking

Payment services: An important service offered by banks is that they offer facilities that enable customers to make payments. A payment system can be defined as any organized arrangement for transferring value between its participants. Banks play a major role in the provision of payment services.

For personal customers the main types of payments are made by writing cheques from their current accounts (known as 'checking accounts' in the United States) or via debit or credit card payments. Payments services can be either paper-based or electronic and an efficient payments system forms the basis of a well-functioning financial system.

Deposit and lending services: In addition to payment services personal banking includes the offer of a broad range of deposit and lending services. These are summarized as follows:

- Current or checking accounts that typically pay no (or low) rates of interest and are used mainly for payments.
- Time or savings deposits that involve depositing funds for a set period of time for a pre-determined or variable rate of interest. Banks offer an extensive range of such savings products, from standard fixed term and fixed deposit rate to variable term with variable rates. Typically deposits that can be withdrawn on demand pay lower rates than those deposited in the bank for a set period.
- Consumer loans and mortgages are commonly offered by banks to their retail customers. Consumer loans can be unsecured or secured on property and interest rates are mainly variable (but can be fixed). In addition bank's of course offer an extensive array of mortgage products for the purchase of property.

Investment, pensions and insurance services: Investment products offered to retail customers include various securities-related products including mutual funds (known as unit trusts in the UK), investment in company stocks and various other securities-related products (such as savings bonds).

Pensions and insurance services are nowadays widely offered by many banks. Pension services provide retirement income (in the form of annuities) to those

contributing to pension plans. Contributions paid into the pension fund are invested in long-term investments with the individual making contributions receiving a pension on retirement.

E-banking: A number of innovative financial products have been developed in recent years, taking advantage of rapid technological progress and financial market development. Transactions made using these innovative products are accounting for an increasing proportion of the volume and value of domestic and cross-border retail payments. Mainly, we can refer to two categories of payment products:

- E-money includes reloadable electronic money instruments in the form of stored value cards and electronic tokens stored in computer memory.
- Remote payments are payment instruments that allow (remote) access to a customer's account.

1.2.3 Types of the Banks

In practice there are exists different types of banks. Lavrushina (2008) classifies the following types of banks.

By pattern of ownership banks can be state, joint-stock, co-operative, private (owned by one person) and mixed. The state form of ownership mostly relates to central banks.

By legal form of organization banks can be divided into open joint-stock companies or limited companies with limited liability. In Russia most of the commercial banks are limited companies. In Azerbaijan only open joint-stock companies allowed by law.

By the functional assignment banks can be emissary, depositary or commercial. Emissary bank is central bank of the country. They don't perform services to individual clients. Depositary banks are specialized on the accumulation of the savings of population. Commercial banks perform all banking services allowed by law.

By the character of operations banks divided into universal and specialized banks. Universal banks offer the full range of banking services, together with non-

banking financial services, under one legal entity. Financial activities normally include the following (Heffernan, 2005:19).

- Intermediation and liquidity via deposits and loans; a byproduct is the payments system.
- Trading of financial instruments (e.g., bond, equity, currency) and associated derivatives.
- Proprietary trading, that is, trading on behalf of the bank itself, using its own trading book.
- Stockbroking.
- Corporate advisory services, including mergers and acquisitions.
- Investment management.
- Insurance.

Specialized banks offer only certain type of services. These banks operate in mortgage sector, in different fields of industry such as agriculture, construction and etc.

By the geographic market banks can be regional, interregional, national, and international.

By the scale of operation banks divided into small, moderate, big banks, consortium banks and interbank associations. A consortium is an association of two or more banks with the objective of participating in a common activity or pooling their resources for achieving a common goal. Banks establish consortium to protect themselves form default. Interbank association is the merger of two or more banks, in order to finance huge projects (Bagirov, 2003).

1.2.4 Financial Innovation and the Evolution of the Banking Industry

To understand how the banking industry has evolved over time, we must first understand the process of financial innovation, which has transformed the entire financial system. Like other industries, the financial industry is in business to earn profits by selling its products.

Financial innovation, like innovation elsewhere in business, is an ongoing process whereby private parties experiment to try to differentiate their product and services, responding to both sudden and gradual changes in the economy. Financial innovation can be defined as the act of creating and then popularizing new financial instruments as well as new financial technologies, institutions and markets. Specifically, one can distinguish (Casu et al., 2006:39):

- ***Financial system/institutional innovations.*** Such innovations can affect the financial sector as a whole; they relate to business structures, to the establishment of new types of financial intermediaries, or to changes in the legal and supervisory framework.
- ***Process innovations.*** These include the introduction of new business processes leading to increased efficiency, market expansion, etc.
- ***Product innovations.*** Such innovations include the introduction of new credit, deposit, insurance, leasing, hire purchase, derivatives and other financial products. Product innovations are introduced to respond better to changes in market demand or to improve efficiency.

Starting in the 1960s, individuals and financial institutions operating in financial markets were confronted with drastic changes in the economic environment: Inflation and interest rates climbed sharply and became harder to predict, a situation that changed demand conditions in financial markets. The rapid advance in computer technology changed supply conditions. In addition, financial regulations became more burdensome. Financial institutions found that many of the old ways of doing business were no longer profitable; the financial services and products they had been offering to the public were not selling. Many financial intermediaries found that they were no longer able to acquire funds with their traditional financial instruments, and without these funds they would soon be out of business. To survive in the new economic environment, financial institutions had to research and develop new products and services that would meet customer needs and prove profitable, a process referred to as *financial engineering*. In their case, necessity was the mother of innovation (Mishkin and Eakins, 2003:424).

Mishkin (2004:233-239) suggests that there are three basic types of financial innovation: responses to changes in demand conditions, responses to changes in supply conditions, and avoidance of regulations.

Response to Changes in Demand Condition: Interest Rate Volatility

One would expect the increase in interest-rate risk to increase the demand for financial products and services that could reduce that risk. This change in the economic environment would thus stimulate a search for profitable innovations by financial institutions that meet this new demand and would spur the creation of new financial instruments that help lower interest-rate risk. Two examples of financial innovations that appeared in the 1970s confirm this prediction: the development of adjustable-rate mortgages and financial derivations.

Adjustable-Rate Mortgages: Like other investors, financial institutions find that lending is more attractive if interest-rate risk is lower. To reduce interest-rate risk, in 1975 savings and loans in California began to issue adjustable-rate mortgages; that is, mortgage loans on which the interest rate changes when a market interest rate (usually the Treasury bill rate) changes. Initially, an adjustable-rate mortgage might have a 5% interest rate. In six months, this interest rate might increase or decrease by the amount of the increase or decrease in, say, the six-month Treasury bill rate, and the mortgage payment would change. Because adjustable-rate mortgages allow mortgage-issuing institutions to earn higher interest rates on mortgages when rates rise, profits are kept higher during these periods.

This attractive feature of adjustable-rate mortgages has encouraged mortgage issuing institutions to issue adjustable-rate mortgages with lower initial interest rates than on conventional fixed-rate mortgages, making them popular with many households. However, because the mortgage payment on a variable-rate mortgage can increase, many households continue to prefer fixed-rate mortgages. Hence both types of mortgages are widespread

Financial Derivatives are instruments that have payoffs that are linked to previously issued securities and are extremely useful risk reduction tools. Financial derivatives are so effective in reducing risk because they enable financial institutions to hedge; that is, engage in a financial transaction that reduces or eliminates risk. Hedging risk involves engaging in a financial transaction that offsets a long position

by taking an additional short position, or offsets a short position by taking an additional long position.

Responses to Changes in Supply Condition: Information Technologies

The most important source of the changes in supply conditions that stimulate financial innovation has been the improvement in computer and telecommunications technology. This technology, called information technology, has had two effects. First, it has lowered the cost of processing financial transactions, making it profitable for financial institutions to create new financial products and services for the public. Second, it has made it easier for investors to acquire information, thereby making it easier for firms to issue securities. The rapid developments in information technology have resulted in many new financial products and services, such as bank credit and debit cards, electronic banking, junk bonds, commercial paper market, securitization.

Bank Credit and Debit Cards: Credit card is a plastic card which allows to borrow money and to buy goods without paying for them immediately. Consumers have benefited because credit cards are more widely accepted than checks to pay for purchases and they allow consumers to take loans more easily. The success of bank credit cards has led these institutions to come up with a new financial innovation, debit cards. Debit cards often look just like credit cards and can be used to make purchases in an identical fashion. However, in contrast to credit cards, which extend the purchaser a loan that does not have to be paid off immediately, a debit card purchase is immediately deducted from the card holder's bank account.

Electronic Banking: The wonders of modern computer technology have also enabled banks to lower the cost of bank transactions by having the customer interact with an electronic banking (e-banking) facility rather than with a human being. One important form of an e-banking facility is the automated teller machine (ATM), an electronic machine that allows customers to get cash, make deposits, transfer funds from one account to another, and check balances.

With the drop in the cost of telecommunications, banks have developed another financial innovation, *home banking*. It is now cost-effective for banks to set up an electronic banking facility in which the bank's customer is linked up with the bank's computer to carry out transactions by using either a telephone or a personal

computer. With the decline in the price of personal computers and their increasing presence in the home, we have seen a further innovation in the home banking area, the appearance of a new type of banking institution, the *virtual bank*, a bank that has no physical location but rather exists only in cyberspace.

The success of ATMs and home banking has led to another innovation, the automated banking machine (ABM), which combines in one location an ATM, an Internet connection to the bank's web site, and a telephone link to customer service.

Avoidance of Existing Regulations

Because the financial industry is more heavily regulated than other industries, government regulation is a much greater spur to innovation in this industry. Government regulation leads to financial innovation by creating incentives for firms to skirt regulations that restrict their ability to earn profits. The economic analysis of innovation suggests that when the economic environment changes such that regulatory constraints are so burdensome that large profits can be made by avoiding them, innovation are more likely to occur.

Two sets of regulations have seriously restricted the ability of banks to make profits: reserve requirements that force banks to keep a certain fraction of their deposits as reserves and restrictions on the interest rates that can be paid on deposits. The desire to avoid restrictions on interest payments and the tax effect of reserve requirements led to two important financial innovations: money market mutual funds and sweep accounts.

Money Market Mutual Funds are mutual funds which invest only in money markets. These funds invest in short term (one day to one year) debt obligations such as Treasury bills, certificates of deposit, and commercial paper.[2] Investors are able to write checks up to the amount held as shares in the money market fund. Although money market fund shares effectively function as checking account deposits that earn interest, they are not legally deposits and so are not subject to reserve requirements or prohibitions on interest payments. For this reason, they can pay higher interest rates than deposits at banks.

Sweep Accounts: Another innovation that enables banks to avoid the "tax" from reserve requirements is the sweep account. In this arrangement, any balances

[2] http://www.investorwords.com/5922/money_market_mutual_fund.html (23.07.2008)

above a certain amount in a corporation's checking account at the end of a business day are "swept out" of the account and invested in overnight securities that pay the corporation interest. Because the "swept out" funds are no longer classified as checkable deposits, they are not subject to reserve requirements and thus are not "taxed." They also have the advantage that they allow banks in effect to pay interest on these corporate checking accounts, which otherwise is not allowed under existing regulations.

The three forces of financial instability, regulation and technology put pressure on banks to innovate. Innovation also creates a demand for new financial products which feed back into the banking system through customer reaction and demand. The influence of the three factors and the feedback from customer demand for financial services is shown in Figure1.

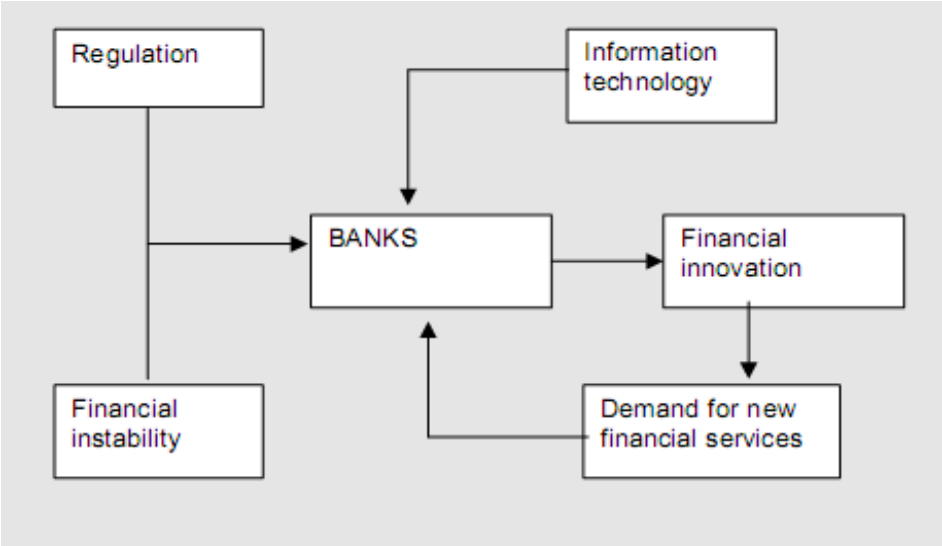


Figure 1. The Process of Financial Innovation

Source: Matthews and Thompson, 2005

Decline of Traditional Banking: For many centuries banks were way out in front of other financial-service institutions in supplying savings and investment services, payment and risk protection services, liquidity, and loans. They dominated the financial system of decades past. But this is no longer as true today. Banking's financial market share generally has fallen as other financial institutions have moved in to fight for the same turf. In the United States of a century ago, for example, banks

accounted for more than two-thirds of the assets of all financial-service providers. However, that share has fallen to only about one-fifth of the assets of the U.S. financial marketplace (Rose and Hudgins, 2008:8).

Clearly, the traditional financial intermediation role of banking is no longer as important in financial system. However, the decline in the market share of banks in total lending and total financial intermediary assets does not necessarily indicate that the banking industry is in decline. There is no evidence of a declining trend in bank profitability. However, overall bank profitability is not a good indicator of the profitability of traditional banking, because it includes an increasing amount of income from nontraditional off-balance-sheet activities. Noninterest income derived from off-balance-sheet activities, as a share of total banking income, increased substantially today. Given that the overall profitability of banks has not risen, the increase in income from off-balance-sheet activities implies that the profitability of traditional banking business has declined. This decline in profitability then explains why banks have been reducing their traditional business.

Financial innovation and deregulation are occurring worldwide and have created attractive alternatives for both depositors and borrowers. In Japan, for example, deregulation has opened a wide array of new financial instruments to the public, causing a disintermediation process. In European countries, innovations have steadily eroded the barriers that have traditionally protected banks from competition.

In other countries, banks have also faced increased competition from the expansion of securities markets. Both financial deregulation and fundamental economic forces in other countries have improved the availability of information in securities markets, making it easier and less costly for firms to finance their activities by issuing securities rather than going to banks. Further, even in countries where securities markets have not grown, banks have still lost loan business because their best corporate customers have had increasing access to foreign and offshore capital markets (Mishkin, 2004:242-243).

1.2.5 General Principals of Bank Management and Banking Risks

Mishkin and Eakins (2003:408) mention that bank manager have four primary concerns. The first is to make sure that the bank has enough ready cash to pay its depositors when there are deposit outflows, that is, when deposits are lost because depositors make withdrawals and demand payment. To keep enough cash on hand, the bank must engage in liquidity management, the acquisition of sufficiently liquid assets to meet the bank's obligations to depositors. Second, the bank manager must pursue an acceptably low level of risk by acquiring assets that have a low rate of default and by diversifying asset holdings (asset management). The third concern is to acquire funds at low cost (liability management). Finally, the manager must decide the amount of capital the bank should maintain and then acquire the needed capital (capital adequacy management).

Liquidity management and the role of reserves: Banks always hold excess reserves, because depositors can make withdrawals and demand payment. When a deposit outflow occurs, holding excess reserves allows the bank to escape the costs of (1) borrowing from other banks or corporations, (2) selling securities, (3) borrowing from the Central Bank, or (4) calling in or selling off loans. Excess reserves are insurance against the costs associated with deposit outflows. The higher the costs associated with deposit outflows, the more excess reserves banks will want to hold.

Asset management: To maximize its profits, a bank must simultaneously seek the highest returns possible on loans and securities, reduce risk, and make adequate provisions for liquidity by holding liquid assets. Banks try to accomplish these three goals in four basic ways.

First, banks try to find borrowers who will pay high interest rates and are unlikely to default on their loans. They seek out loan business by advertising their borrowing rates and by approaching corporations directly to solicit loans. It is up to the bank's loan officer to decide if potential borrowers are good credit risks who will make interest and principal payments on time (i.e., engage in screening to reduce the adverse selection problem).

Second, banks try to purchase securities with high returns and low risk. Third, in managing their assets, banks must attempt to lower risk by diversifying. They accomplish this by purchasing many different types of assets (short- and long-term, Treasury, and municipal bonds) and approving many types of loans to a number of customers.

Finally, the bank must manage the liquidity of its assets so that it can satisfy its reserve requirements without bearing huge costs. This means that it will hold liquid securities even if they earn a somewhat lower return than other assets.

Liability Management: Banks no longer needed to depend on checkable deposits as the primary source of bank funds and as a result no longer treated their sources of funds (liabilities) as given. Instead, they aggressively set target goals for their asset growth and tried to acquire funds (by issuing liabilities) as they were needed.

Starting in the 1960s large banks began to explore ways in which the liabilities on their balance sheets could provide them with reserves and liquidity. This led to an expansion of overnight loan markets, such as the federal funds market, and the development of new financial instruments such as negotiable CDs (first developed in 1961), which enabled money center banks to acquire funds quickly.

According to the liability management view, an individual commercial bank may acquire reserves from several different sources by creating additional liabilities against itself. The liability areas that have some potential for management include (Ranlett, 1969):

- Issuance of time certificates of deposit.
- Purchase or borrowing of Central Bank Funds
- Borrowing from Central Bank
- Eurodollars

Because of the increased importance of liability management, most banks now manage both sides of the balance sheet together in a so-called asset–liability management (ALM) committee. Asset-liability management comprises strategic planning and implementation and control processes that affect the volume, mix, maturity, interest rate sensitivity, quality, and liquidity of a bank's assets and

liabilities. The primary of asset-liability management is to produce a high-quality, stable, large, and growing flow of net interest income. This goal is accomplished by achieving the optimum combination and level of assets, liabilities, and financial risk (Greuning and Bratanovic, 2003:61).

The emphasis on liability management explains some of the important changes over the past three decades in the composition of banks' balance sheets. While negotiable CDs and bank borrowings have greatly increased in importance as a source of bank funds in recent years, checkable deposits have decreased in importance. Newfound flexibility in liability management and the search for higher profits have also stimulated banks to increase the proportion of their assets held in loans, which earn higher income.

Capital Adequacy Management: Banks have to make decisions about the amount of capital they need to hold for three reasons. First, bank capital helps prevents bank failure, a situation in which the bank cannot satisfy its obligations to pay its depositors and other creditors and so goes out of business. Second, the amount of capital affects returns for the owners (equity holders) of the bank. And third, a minimum amount of bank capital (bank capital requirements) is required by regulatory authorities (Mishkin, 2004:213).

Banking Risks and Its Management

The business of banking involves risk. Banks make profit by taking risk and managing risk. The traditional focus of risk management in banks has typically arisen out of its main business of intermediation - the process of making loans and taking in deposits. These are risks relating to the management of the balance sheet of the bank and are identifiable as credit risk, liquidity risk and interest rate risk.

The advance of off-balance-sheet activity of the bank has given rise to other types of risk relating to its trading and income-generating activity. Banks have increasingly become involved in the trading of securities, derivatives and currencies. These activities give rise to position or market risk. This is the risk caused by a change in the market price of the security or derivative the bank has taken a position in (Matthews and Thompson, 2005:183).

Managing Liquidity Risk: In their dealings with savers, banks face liquidity risk, or the possibility that depositors may collectively decide to withdraw more funds than the bank has immediately on hand. Such withdrawals would force the bank to liquidate relatively illiquid loans and probably receive less than the full value of those loans.

The challenge to banks in managing liquidity risk in their dealings with savers is to reduce risk exposure without sacrificing too much profitability. For example, a bank can easily minimize liquidity risk exposure by holding substantial reserves. However, such a strategy reduces profitability because the bank earns no interest on cash held as reserves. Banks are required to maintain reserves with the Central Bank. Even in the absence of this regulation, exposure to liquidity risk would lead banks to hold reserves, though probably not in the form of non-interest-bearing deposits with the Central Bank. Hence, banks use other strategies to reduce liquidity risk, such as asset management and liability management practices.

Managing Credit Risk: Banks profit from the spread between the interest rate they charge to borrowers and the interest rate they pay to depositors. To ensure reasonable profits, banks attempt to make loans that will be fully repaid with interest. As with lending in financial markets, the banks is concerned about credit risk- that is, the risk that borrowers might default on their loans. Banks can reduce their exposure to credit risk on individual loans by investing in information gathering and monitoring. One basic management principle for banks is that diversification reduces the overall credit risk of the bank's portfolio. To manage credit risk of individual loans, banks use credit-risk analysis to examine borrowers and determine the appropriate interest rate to charge. In addition, bankers must cope with adverse selection and moral hazard in managing credit risks of individual loans. Banks use screening techniques, collateral requirements, credit rationing, monitoring, and restrictive covenants and develop long-term relationship with borrowers to help reduce costs of both adverse selection and moral hazard.

Managing Interest Rate Risk: Banks experience interest rate risk if change in market interest rates cause bank profits to fluctuate. A rise in the market interest rate lowers the present value of the outstanding amount of a loan even if there is little risk that the loan will not be paid off under the terms of the loan agreement. Banks

are particularly affected by interest rate risk when they raise funds primarily through short-term deposits to finance loans or the purchase of securities with longer maturities.

To manage interest rate risk, banks begin by evaluating the vulnerability of their portfolios to the risk of fluctuations in market interest rates. One measure is the duration of a bank asset or liability, which is the responsiveness (of the percentage change in) the asset's or liability's market value to a percentage change in the market interest rate. On the liability side, checkable deposits have a short duration, whereas long-term certificates of deposits have a long duration. On the assets side, loans to other banks in the federal funds market have a short duration, whereas commercial loans and marketable securities have a long duration.

To assess the bank's exposure to interest rate risk, its managers calculate an average duration for bank assets and average duration for bank liabilities. The difference between the two, known as the duration gap, measures the banks vulnerability to fluctuations interest rates. Bank managers use the information contained in the duration gap to guide their strategies. Reducing the size of the duration gap helps banks to minimize interest rate risk.

To affect duration gap banks uses asset and liability management. Also banks may issue floating-rate debt, or they may hedge by using interest rate swaps and financial futures and options to reduce the duration gap (Hubbard, 2002:323-331).

Off-Balance-Sheet Activities: Although asset and liability management has traditionally been the major concern of banks, in the more competitive environment of recent years banks have been aggressively seeking out profits by engaging in off-balance-sheet activities. Off-balance-sheet activities involve trading financial instruments and generating income from fees and loan sales, activities that affect bank profits but do not appear on bank balance sheets (Mishkin and Eakins, 2003:417).

The factors that have fostered the growth of off-balance-sheet operations have different natures. Some are related to the banks' desire to increase their fee income and to decrease their leverage; others are aimed at escaping regulation and taxes. Still, the very development of these services shows that firms have a demand

for more sophisticated, custom-made financial engineering (Freixas and Rochet, 1997:6).

To generate fee income by reducing transaction costs, banks provide customized services to customers, such as servicing securities backed by mortgages (by collecting interest and principal payments from borrowers, then paying them to lenders, less a fee) and making foreign-exchange trades for customers. In addition, banks earn fees from trading in the multitrillion-dollar markets for financial futures and options and interest rate swaps. Finally, banks earn income from providing customized "private banking" services to high-net-worth household.

When banks engage in off-balance-sheet lending, they do not hold as assets the loans they make. This category of arrangements includes three important innovations by banks: 1) standby letter of credit, 2) loan commitments, and 3) loan sale. These off-balance-sheet activities increase the default risk faced by the bank even when no loan is on the bank's books.

A standby letter of credit (SLC) backs a customer's obligation to a third party. If a customer does not meet its obligation, the bank will. The third party may require that the customer obtain SLC to complete a business transaction. Growth in SLC issues has been phenomenal since the 1980s.

In a loan commitment, a bank agrees to provide a borrower with a stated amount of funds during some specified period of time. Borrowers then have the option of deciding when or if they want to take the loan. The bank charges a fee for offering the commitment (Hubbard, 2002:335; Madura, 1992: 431).

A loan sale, also called a secondary loan participation, involves a contract that sells all or part of the cash stream from a specific loan and thereby removes the loan from the bank' s balance sheet. Banks earn profits by selling loans for an amount slightly greater than the amount of the original loan. Because the high interest rate on these loans makes them attractive, institutions are willing to buy them, even though the higher price means that they earn a slightly lower interest rate than the original interest rate on the loan, usually on the order of 0.15 percentage point (Mishkin, 2004:223).

Large banks sell loans primarily to domestic and foreign banks and non-bank financial institutions. Originally, they sold only short term, high quality loans with

low information-gathering and monitoring costs. Increasingly, however, banks are selling lesser - quality and longer-term loans (Hubbard, 2002).

1.3 BANK REGULATION

The financial system is among the most heavily regulated sectors. The government regulates financial markets for two main reasons: to increase the information available to investors and to ensure the soundness of the financial system. Regulations include requiring disclosure of information to the public, restrictions on who can set up a financial intermediary, restrictions on what assets financial intermediaries can hold, the provision of deposit insurance, reserve requirements, and the setting of maximum interest rates that can be paid on checking accounts and savings deposits (Mishkin and Eakins, 2003:29).

Regulation affects the ability of financial markets and institutions to provide risk-sharing, liquidity, and information services. Restrictions on the type of instruments that can be traded in markets affect liquidity. Regulations limiting the ability of financial institutions to hold certain type of assets or to operate in various geographic locations affect risk sharing and the potential for diversification. Policymakers should consider the effects of regulation on the financial system's ability to provide risk-sharing opportunities, liquidity, and information. Stringent limits placed on these activities in domestic markets create opportunities for international competition (Hubbard, 2002:54).

There are a number of arguments against regulation. These concentrate on four failings of regulation. Regulation creates *moral hazard*. That is, it causes people to behave in a counter productive way. Regulation results in *agency capture*. In other words, producers often dominate the regulatory process since the activities of regulators are much more important to each of the relatively small number of producers than to each of the much larger number of consumers. Regulation creates *compliance costs* (the costs of adhering to the regulations) for producers. The need to comply with regulations increases the *costs of entry into and exit* from markets (Howells and Bain, 2007).

Banks are among the most heavily regulated of financial institutions. Unfortunately, the regulatory process may not always work very well, as evidenced by recent crises in the banking system in many countries throughout the world.

There are many cases where central banks or other financial regulators have intervened to rescue a bank or banks to protect the rest of the banking system. The banking system is particularly vulnerable to contagion effects, when lack of confidence associated with one poorly performing bank spreads to other, healthy banks. It arises because customers know that once a run on a bank begins, liquidated bank assets will decline in value very quickly, so they will want to withdraw their deposits before a run. Thus, even healthy banks may be subject to a bank run. If most banks are affected, the financial system may well collapse.

Thus, bank failures can create substantial negative externalities or social costs, in addition to the obvious private costs of failure. So in most countries, to minimize the chance of governments having to rescue a bank or banks, the national banking systems are singled out for special regulation, known as prudential regulation, which is typically more comprehensive than regulation of other sectors of the economy, even other parts of the financial sector. The prudential regulation of banks is concerned with minimizing the social costs of bank failure (which lead to the collapse of the financial system) but at the same time, ensuring that banks do not take advantage of the fact they are singled out for special regulation, and possibly protection (Heffernan, 2005:176).

A variety of tools was created by regulators to prevent potential problems that may arise and to ensure a healthy banking system.

Government Safety Net-Deposit Insurance: Uncertainty about the health of the banking system in general can lead to runs on banks both good and bad, and the failure of one bank can hasten the failure of others. If nothing is done to restore the public's confidence, a bank panic can ensue. A government safety net for depositors can short-circuit runs on banks and bank panics, and by providing protection for the depositor, it can overcome reluctance to put funds in the banking system. One form of the safety net is deposit insurance, a guarantee such as that provided by the Federal Deposit Insurance Corporation (FDIC) in the United States, by the Deposits Insurance Fund in Azerbaijan.

Deposit insurance is not the only way in which governments provide a safety net for depositors. In other countries, governments have often stood ready to provide support to domestic banks when they face runs even in the absence of explicit deposit insurance. This support is sometimes provided by lending from the central bank to troubled institutions and is often referred to as the "lender of last resort" role of the central bank. In other cases, funds are provided directly by the government to troubled institutions, or these institutions are taken over by the government and the government then guarantees that depositors will receive their money in full. However, in recent years, government deposit insurance has been growing in popularity and has spread to many countries throughout the world.

Restrictions on Asset Holdings and Bank Capital Requirement: Bank regulations that restrict banks from holding risky assets such as common stock are a direct means of making banks avoid too much risk. Bank regulations also promote diversification, which reduces risk by limiting the amount of loans in particular categories or to individual borrowers. Requirements that banks have sufficient bank capital are another way to change the bank's incentives to take on less risk. When a bank is forced to hold a large amount of equity capital, the bank has more to lose if it fails and is thus more likely to pursue less risky activities.

Bank supervision: Chartering and Examination. Overseeing who operates banks and how they are operated, referred to as bank supervision or more generally as prudential supervision, is an important method for reducing adverse selection and moral hazard in the banking business. Because banks can be used by crooks or overambitious entrepreneurs to engage in highly speculative activities, such undesirable people would be eager to run a bank. Chartering banks is one method for preventing this adverse selection problem; through chartering, proposals for new banks are screened to prevent undesirable people from controlling them.

Regular on-site bank examinations, which allow regulators to monitor whether the bank is complying with capital requirements and restrictions on asset holdings, also function to limit moral hazard. Bank examiners give banks a so-called CAMELS rating (the acronym is based on the six areas assessed: capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risk). With this information about a bank's activities, regulators can enforce regulations by

taking such formal actions as cease and desist orders to alter the bank's behavior or even close a bank if its CAMELS rating is sufficiently low.

Assessment of Risk Management: Traditionally, on-site bank examinations have focused primarily on assessment of the quality of the bank's balance sheet at a point in time and whether it complies with capital requirements and restrictions on asset holdings. Although the traditional focus is important for reducing excessive risk taking by banks, it is no longer felt to be adequate in today's world, in which financial innovation has produced new markets and instruments that make it easy for banks and their employees to make huge bets easily and quickly. In this new financial environment, a bank that is quite healthy at a particular point in time can be driven into insolvency extremely rapidly from trading losses.

This change in the financial environment for banking institutions has resulted in a major shift in thinking about the bank supervisory process throughout the world. Bank examiners are now placing far greater emphasis on evaluating the soundness of a bank's management processes with regard to controlling risk.

Now bank examiners give a separate risk management rating from 1 to 5 that feeds into the overall management rating as part of the CAMELS system. Four elements of sound risk management are assessed to come up with the risk management rating: (1) The quality of oversight provided by the board of directors and senior management, (2) the adequacy of policies and limits for all activities that present significant risks, (3) the quality of the risk measurement and monitoring systems, and (4) the adequacy of internal controls to prevent fraud or unauthorized activities on the part of employees.

Disclosure Requirements: To ensure that there is better information for depositors and the marketplace, regulators can require that banks adhere to certain standard accounting principles and disclose a wide range of information that helps the market assess the quality of a bank's portfolio and the amount of the bank's exposure to risk. More public information about the risks incurred by banks and the quality of their portfolio can better enable stockholders, creditors, and depositors to evaluate and monitor banks and so act as a deterrent to excessive risk taking.

Consumer Protection: The existence of asymmetric information also suggests that consumers may not have enough information to protect themselves

fully. Consumer protection regulation requires banks to provide information to consumers about the cost of borrowing including a standardized interest rate (called the annual percentage rate, or APR) and the total finance charges on the loan. Also there are legislations to reduce discrimination (based on race, gender, marital status, age, or national origin) in credit markets.

Restriction on Competition: Increased competition can also increase moral hazard incentives for banks to take on more risk. Declining profitability as a result of increased competition could tip the incentives of bankers toward assuming greater risk in an effort to maintain former profit levels. Thus governments in many countries have instituted regulations to protect banks from competition. Although restricting competition propped up the health of banks, restrictions on competition also had serious disadvantages: They led to higher charges to consumers and decreased the efficiency of banking institutions, which did not have to compete as hard. Thus, although the existence of asymmetric information provided a rationale for anticompetitive regulations, it did not mean that they would be beneficial. Indeed, in recent years, the impulse of governments in industrialized countries to restrict competition has been waning. Electronic banking has raised a new set of concerns for regulators to deal with (Mishkin, 2004:260-269).

1.3.1 International Regulation and Basel Committee

Particular problems in bank regulation occur when banks are engaged in international banking and thus can readily shift their business from one country to another. Bank regulators closely examine the domestic operations of banks in their country, but they often do not have the knowledge or ability to keep a close watch on bank operations in other countries, either by domestic banks' foreign affiliates or by foreign banks with domestic branches. In addition, when a bank operates in many countries, it is not always clear which national regulatory authority should have primary responsibility for keeping the bank from engaging in overly risky activities (Mishkin and Eakins, 2003:505).

A number of arguments favour global coordination of prudential regulations.

First, policy makers, bank management and regulators recognise that problems with the global institutions and markets could undermine the stability of the international financial system, and therefore the environment in which all banks operate.

Second, if a branch or subsidiary of a bank is located in another country, there is the question of which supervisory authority should have jurisdiction over the branch. Effective international coordination will only be achieved if there is good communication between the supervisory authorities.

Third, if all multinational banks are required to meet the same global regulations, compliance costs will be similar. Hence a global approach to regulation can help to level the competitive playing field for banks with international operations (Heffernan, 2005:179).

To encourage prudent management of the risks associated with this unique balance sheet structure, regulatory authorities have in most countries introduced certain capital adequacy requirements. In the late1980s, the Basel Committee on Banking Supervision took the lead to develop a risk-based capital adequacy standard that would lead to international convergence of supervisory regulations governing the capital adequacy of internationally active banks. The dual objectives for the new framework were to strengthen the soundness and stability of the international banking system and, by ensuring a high degree of consistency in the framework's application, to diminish the sources of competitive inequality among international banks (Greuning and Bratanovic, 2003:103).

Under the Basel Committee's 1988 proposals assets are divided into five groups or classes, each with its own risk-weighting, lower weights being given to less risky assets. Thus, cash has a weight of 0, loans to the discount market are weighted at 0.1, local authority bonds 0.2, mortgage loans 0.5, while commercial loans have the full weight of 1. The method of assessment, broadly speaking, is to multiply the market value of each asset by its risk factor and then to aggregate the risk-adjusted value. This is then compared with the bank's capital base.

Capital, in turn, has a two-tier classification. Tier I or core capital consists essentially of shareholders' equity, disclosed reserves and the current year's retained profits, which are readily available to cushion losses –these must be verified by the

bank's auditors. Tier II or supplementary capital comprises funds available but not fully owned or controlled by the institution such as 'general' provisions that the bank had set aside against unidentified future losses and medium or long-term subordinated debt issued by the bank (Howells and Bain, 2005:40). Tier II capital cannot be greater than 50 per cent of total Tier I and Tier II capital for the purposes of calculating the risk–asset ratio.

The Basel Committee proposed a lower limit of 8 per cent for the ratio of total capital to risk-adjusted assets (4 per cent for core capital), though national bank supervisors had some discretion in applying this to different types of banks and countries were free to impose a higher minimum requirement on their own banks (Howells and Bain, 2007:392).

The Accord was continuously amended to take into account new risks that emerged from financial innovation. The initial Basel proposals were concerned with credit risk – the risk that the bank's counterparty might not pay on the due date. Later Basel proposals were concerned with market risk – the risk that movements in the prices of financial instruments lead to loss. This had not been treated at all in the 1988 Accord. In April 1993 the Basel Committee published proposals for minimum capital requirements to cover banks' exposure to market fluctuations. Derivatives were to be converted into positions in the relevant underlying asset and become subject to capital requirements designed to capture specific and general market risk. In 1996 the Accord was amended to require banks to allocate capital to cover risk of losses from movements in market prices. (Howells and Bain, 2005:533; Matthews and Thompson, 2005:172).

While the original targets of the Accord were international banks, the capital adequacy standard has been adopted and implemented in more than 100 countries and now forms an integral part of any risk-based bank supervisory approach.

The Accord of 1988, while hailed as a laudable attempt to provide transparent and common minimum regulatory standards in international banking, was criticized on a number of counts (Greenbaum and Thakor, 2007:462; Matthews and Thompson, 2005:171-172):

- The risk classes can be manipulated

- The Basel I capital requirements assume that banking risk is substantially the same in different countries
- Differences in taxes and accounting rules meant that measurement of capital varied widely across countries.
- The Accord concentrated on credit risk alone. Other types of risk, such as interest rate risk, liquidity risk, currency risk and operating risk, were ignored.
- The Accord did not recognize that, although different banks have different financial operations, they are all expected to conform to the same risk capital asset ratio.
- Since the capital ratios are prescribed on a book-value basis, they fail to adjust for changing return volatilities and the relationship between book and market values of bank equity.

1.3.2 Basel II

The limitations inherent in the framework designed by the Basel Committee in 1988 and the biases originating from regulatory arbitrage operations led the supervisory authorities to start a review of such framework in 1999. This framework is known as the second Basel Accord or, as it is more commonly known, Basel II. Basel II is designed to be more flexible and risk sensitive than its predecessor and hence provides more complex measurement techniques. It affects all banks and other financial organizations, including bankers, insurers, custodians, fund managers, and brokers.

The new Basel II Accord provides a set of standards that are set to modify the way that banks are capitalized. The new framework is set to improve the trustworthiness of the financial organizations by aligning capital adequacy assessment more closely with the fundamental risks in such organizations. Moreover, it also provides motivation for financial organizations to enhance their risk measurement and management capabilities. Therefore it augments market discipline (Akkizidis and Bouchereau, 2005:95).

The stated purpose of Basel II is to allow banks to retain the key features of Basel I, but to provide incentives to adopt new innovations in risk management, thereby strengthening the stability of the financial system. This objective is to be achieved by three reinforcing pillars (Matthews and Thompson, 2005:172):

Pillar I. Minimum Capital Requirements

Pillar II. Supervisory Review Process

Pillar III. Market Discipline

Pillar I. The objective of Pillar I is to revise the 1988 Accord's capital ratios by aligning minimum capital requirements more closely to each bank's actual risk profile. The new minimum capital requirement framework encompasses three areas of risk: (1) credit risk (included in the 1988 Accord), (2) the market risk of trading activities (introduced in the 1996 Market Risk Amendment), and (3) operational risk (new). One of the greatest innovations of Basel II is that for each of these risk components, it provides a range of approaches such as standardized approach, internal-ratings-based (IRB) approach, basic indicator approach (Table 1).

Table 1. Alternative Approaches for the Different Risk Categories

Market Risk	Credit Risk	Operational Risk
Choice of approaches to measure market risk (unchanged): • Standardized approach • Internal models approach	Choice of approaches to measure credit risk: • Standardized approach (a modified version of the existing approach) • Foundation IRB approach • Advanced IRB approach	Choice of approaches to measure operational risk: • Basic indicator approach • Standardized approach • Advanced measurement approach

Source: Galatti, R. (2003). 'Risk Management and Capital Adequacy'

Under the standardized approach, risk weights are based on available external credit ratings, for example, those from rating agencies such as Standard & Poor's and Moody's. This option is really designed for banks engaged in less complex forms of

lending and credit underwriting. More sophisticated banks will be allowed to use one of two IRB approaches to credit risk. Under an IRB approach, banks are allowed to rely partly on their own assessment of their borrowers' credit risk to determine their minimum capital requirement, provided that they can satisfy the regulators on a number of topics such as the quality of the internal credit data available to them, the processes they use to set and validate the parameters used in the calculation, and the soundness of various control procedures.

Pillar II. Pillar II concerns the supervisory approach to bank capital management. The objective is to ensure that banks follow rigorous procedures, measure their risk exposures correctly, and have enough capital to cover their risks. This pillar allows regulators to scrutinize bank practices that look like attempts at regulatory arbitrage. Pillar II is also the route for supervisors to make sure that banks have considered risks that are not explicitly covered under Pillar I (Crouhy et al., 2006:71-72).

Pillar III. The aim of Pillar III, enhanced disclosure — market discipline, is to help financial organizations conduct business in a safe, sound, and efficient manner. Furthermore, it aims to complement the minimum capital requirements (Pillar I) and the supervisory review process (Pillar II). The Basel Committee seeks to encourage market discipline by a set of disclosure requirements that will allow market participants to assess key pieces of information on the scope of application, capital, risk exposures, risk assessment processes, and hence the capital adequacy of the organization. Frequent public disclosure of relevant information by banks can lead to enhanced market discipline and, therefore, more effective risk management (Akkizidis and Bouchereau, 2005:114).

CHAPTER 2

BANKING SYSTEM OF AZERBAIJAN

Azerbaijan became independent in 1991, following the collapse of the former Soviet Union, of which it was part since 1920. After independence, the country faced a period of long political and economic turmoil, also as a consequence of the war with Armenia for the control of the Nagorno Kharabakh region. The political scene was normalized when Mr. Heydar Aliyev became President of the country in 1993. In 1995, Azerbaijan started a stabilization program in cooperation with the IMF, which succeeded in reducing the main macroeconomic imbalances and in stabilizing the economy.

The transition to a market economy, following the separation from the Soviet Union, posed enormous problems to Azerbaijan. During the Soviet era most of industrial exports and about a quarter of agricultural exports were directed to other Soviet Republics, but when the Union collapsed, with the dramatic economic crisis that followed, these markets became suddenly foreclosed. Furthermore, after independence, the government engaged in very loose monetary and fiscal policies that resulted in a budget deficit, hyperinflation and a depletion of foreign reserves. The country went through a deep socio-economic crisis (ADB, 2003).

Over the past eleven years, the Azerbaijani Government has done much to improve the business climate in Azerbaijan. Due to a far-sighted vision of the country's future, Azerbaijan has seen huge inflows of foreign investment in the oil and gas sector. While this sector will continue to be important, the Government recognizes that the development of the non-energy sector is crucial to Azerbaijan's future and the prosperity of its people. Further implementation of the government's current policy direction and continued reform of ills inherited from the Soviet period (as well as others of more recent vintage) will enable a stable and prosperous Azerbaijan to become the indispensable regional financial and support hub for the East-West trade route, the Caspian Basin and Central Asia.[3]

[3] http://www.amchamaz.org/news.html?id=349 (28.07.2008)

Rapid macroeconomic growth positively affected financial sector. Growth of real money incomes of population, development of trust in bank system, improving the legal bases of protection of interests of creditors and depositors were the criteria characterizing rapid growth of deposits of population. The legal and regulatory framework for the banking sector has improved with the implementation of the new Banking Law and National Bank of Azerbaijan (NBA) Act.

Share of banks' asset is increasing rapidly, but its share in GDP was 21 per cent in 2006, which means banking system have great potential for further development. As a state regulatory in the field of regulation of the banking system, NBA achieved stability in the field of organization of effective bank control system, promotion and application of reforms.[4]

This chapter discusses historical development of financial system and banking in Azerbaijan, recent macroeconomic achievements and current state of banking, foreign bank participation in financial system of the country and the role of NBA as a central bank of Azerbaijan.

2.1 HISTORICAL DEVELOPMENT OF FINANCIAL SYSTEM AND BANKING IN AZERBAIJAN

2.1.1 Banking during Russian Empire and Azerbaijan Democratic Republic

Annexation of Azerbaijan to Russian Empire coincided with the latter entering capitalism. Thus National Bank of the Russian Empire was established in 1860 and a year later was opened its Baku branch. Basic aims of the branch were to increase commodity turnover and accelerate development of credit system. Baku branch of the National Bank accomplished transactions on registration of promissory notes, issue of mortgage credits and other transactions. During that time alongside with coins state treasury notes, called ruble was widely used within the empire.

[4] Azerbaijan Investment Company, http://www.aic.az/download/pdf/Business.pdf (28.08.2008)

Already at the end of the XIX century, in comparison with other regions of the Caucasus, Azerbaijan had the most developed credit-banking system peculiar for capitalist formation. At the early XX century, Azerbaijan credit system included about 200 credit organizations. Among them were 28 branches of commercial credit banks, 7 mortgage banks, 8 mutual credit societies, 5 banking agencies, 135 small banking agencies and great number of saving banks. During this period in Azerbaijan was observed merger of bank and industrial (oil industry) capital. For example, in 1917, 15 Russian and foreign banks participated in oil projects which was put into life by Nobel brothers.[5]

Increasing demand for credits accelerated development of financial institutions in Azerbaijan. Financial system developed in two directions:

a) Opening branches of commercial banks and establishing mutual credit societies and banks
b) Opening branches of State Bank and Treasury

Main customers of banks in Baku were owners of oil industry and other organizations. Customers of banks in other cities of Azerbaijan were entrepreneurs of industries like silk, cotton, wine and alcohol (Ibrahimov and Kerimov, 1997).

With the objectives of meeting increased demand in banknotes in the sphere of commodity exchange, from January 1918, paper money, which were called Baku bons were put to circulation by Baku City Municipality and Baku Council.

On May 28, 1918, Azerbaijan declared its independence and established the first democratic republic in the Moslem world- Azerbaijan Peoples' Republic. Initially alongside with Russian money and Baku bon Transcaucasia bons were also widely used in this independent Republic. At the same time Baku branch of the former State Bank of Russia also continued its activity. Already on March 7, 1919, it was approved to establish the State Bank (central bank) of the Azerbaijan Republic by the decision of the Government of the Azerbaijan Republic and Ministry of Finance was charged with working out its Charter. September 16, of the said year, the Charter of the State Bank of Azerbaijan, which was prepared by the credit department of the Ministry of Finance, was approved by the Parliament of the Azerbaijan Republic. September 30, 1919 was the inauguration and operation of the

[5] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=120&lng=en (01.08.2008)

State Bank of Azerbaijan. November 9, 1919 was opened Ganja Branch of the State Bank. Later branches of the State Bank established in other districts as well.

Major objectives of the State Bank of Azerbaijan were to simplify money turnover, assist trade, industry and agriculture, as well as strengthen the monetary system. Authorized (main) capital stock of the State Bank was 50 million rubles.

Emission authorization of bank notes belonged to the State Bank. In general, banknotes in an amount of 2 billion 345 million rubles were emitted in Azerbaijan during the Democratic Republic. To provide convertibility of national currency, the Government established exchange rate of Baku bon with other currencies (Table 2.)

Table 2. Exchange Rates as of June 1919

1000 rubles of "Kerenka"	1850 bon (rubles)
500 rubles of Romanovka	1600 bon
100 rubles of Romanovka	350 bon
1 English pound	310-315 bon
1 US Dollar	280 bon
1 French frank	8-10 bon
1 Italian lira	7 bon
1 Iran tuman	125-130 bon
1 Turkish golden lira	390 bon
1 Russian gold piece (tchervonets)	420 bon

Source: Ibarhimov Z. and Kerimov A., 1997, 'Monetary System of Azerbaijan'

State Bank of Azerbaijan, which was the bank of banks controlled over the credit organization operating in the country. In general, money-credit system during the Democratic Republic developed to great extent. Alongside with banking organizations other credit institutions also operated in the country. Thus, effective December 1, 1919 saving banks began to operate in Azerbaijan. Annual interest rate as per population savings was 3.6%.[6]

[6] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=120&lng=en (01.08.2008)

2.1.2 Banking during Soviet Period

As a result of occupation of Azerbaijan by Bolshevik Russia on April 28, 1920, existing financial-credit system of the country was destroyed, although state independence was formally retained (with the name of Azerbaijan Soviet Socialist Republic). In 31 May 1920, the State Bank of Azerbaijan was renamed to Azerbaijan Peoples` Bank. With the decision of Revolutionary Committee of Azerbaijan dated June 9, 1920, all banks and other credit organizations were nationalized and associated with the Peoples' Bank. Thus, bank business was past to exclusive monopoly of the state. With the decision of the Revolutionary Committee, dated August 2, 1920, all debts of all nationalized credit organizations, including State Bank of Azerbaijan, which was formed before April 28, 1920, were liquidated.

Basic function of the Azerbaijan Peoples' Bank was to emit paper money (rubles). Peoples` Bank, which was the part of the Finance Commissariat financed the public economy and was engaged in budgetary estimate. Application of non-monetary operations between state enterprises and agencies at the time of pursue of military communism, put an end to credit transactions of the Peoples` Bank. Role of the Peoples' Bank as a settlement center was reduced to minimum, because as per the state budget all transactions are carried out according to budget and their incomes were allocated to the budget accounts. Thus, essence of the Peoples' Bank was completely changed. Alongside with the financial bodies, it was changed to a body serving budget transactions. It was natural that operation of two parallel structures was inexpedient. At the same time, existence of an organization named Peoples` Bank was opposed to the dream on non-monetary economy, which Bolsheviks wished to build then. Therefore with the decision of the Revolutionary Committee of Azerbaijan, dated August 14, 1920, as there was no need "in the state credit agency in its previous meaning" and it was abolished, Central Budget Department began execute all bank transactions.[7]

However, at the end of 1920 the Bolsheviks were obliged to pursue a new economic policy. In this view, it was necessary to restore the activity of the central bank. The Statute of the State Bank passed on October 13, 1921. The bank had the

[7] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=120&lng=en (01.08.2008)

right to extend loans to industrial and commercial enterprises based on different forms of ownership, farms and self-employed handicraftsmen "only if they were solvent and their financing was economically justified". The State Bank was a part of the People's Commissariat of Finance, directly accountable to the People's Commissar (Minister) of Finance.[8] With the decision of the Board of the Peoples Commissariat of Azerbaijan, dated October 16, 1921, branch of the State Bank was established.

On March 12, 1922 Federative Union of the Transcaucasus Soviet Socialist Republics (TSSR), which included Azerbaijan, Georgia and Armenia, was established. On December 30, 1922, TSSR was included in the Union of the Soviet Socialist Republics. With the decree of the Board of Union of the TSSR dated January 10, 1923, the Transcaucasus moved to a single monetary system and thus was terminated emission activity of the State Bank of Azerbaijan. With the decree of the Council of the Peoples` Commissariat of Azerbaijan, dated July 3, 1923, the State Bank of Azerbaijan was named the State Agricultural Bank of Azerbaijan and its functions of a central bank were terminated.[9]

In 1926, there were 8 banks in Baku: Gosbank (State bank of Russia), Prombank (Trade and Industrial Bank), Vneshtorgbank (Foreign Trade Bank), Vneshkombank (Union Trade Bank), Elektrobank, two local banks- Bakgorbank (Baku City Bank) and Azselbank (Azerbaijan Agriculture Bank), and Mutual Credit Funds (Memmedli, 1998).

As the banking system was re-organized in February 1928, most short-term credit operations began to be concentrated in the State Bank. It also took control of many branches of joint-stock banks, which began to play an auxiliary role in crediting the economy.

In May 1932, the functions of the State Bank and long-term investment banks (Prombank, Selkhozbank, Vsekobank and Tsekombank) were delineated. As a result of the credit reform the State Bank lost the last elements of a commercial bank and became a typical Soviet State bank whose main functions were to extend planned

[8] The Central Bank of Russia, http://www.cbr.ru/eng/today/history/print.asp?file=gosbank.htm (01.08.2008)

[9] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=120&lng=en (01.08.2008)

loans to the economy, manage money circulation and settlements, do the cash budgeting and effect international settlements. The structure of the credit system that was established at that time would remain in place for 55 years practically unchanged.

In July 1987 as a result of the reorganization of the credit system new specialized banks were founded (Vneshekonombank, Promstroibank, Zhilsotsbank and Sberbank) and the State Bank began to perform the functions of the country's main bank. It was assigned the task of elaborating the consolidated credit plan and planning the distribution of funds and credit investments among all banks.

In September 1988 the Statute of the State Bank of the USSR was approved, declaring the State Bank the country's main bank and the only issuing centre and organizer of credit and settlement relations in the economy.

In March 1989, the transfer of the specialized banks to full cost-accounting and self-financing required the State Bank to provide them with target figures on the volume of credit resources, the amount of household savings taken on deposit, and the volume of foreign-currency receipts and payments on banking operations.[10]

The uniqueness of the Soviet banking system lies, rather, in the complete integration of monetary processes within the system of central planning, and in the credit and foreign exchange monopoly of the State Bank, which has broad powers of control over the performance of the entire state-owned segment of the economy (Garvy, G. 1977).

In Soviet times, there was a single bank – State Bank. Finance for companies was arranged through finance departments of industry ministries, and the individuals in those departments tended to be industry specialist first, finance specialists second. This meant that when the transition to a market economy started, there were only a tiny number of people in the whole of the Soviet Union who had been exposed to market banking practices. Even to this day, the banking sector lacks qualified and experienced staff to handle such tasks as lending to retail customers (mortgages, consumer loans), lending to small and medium enterprises, project finance, etc. In more developed economies, where banks have been operating for decades, even

[10] The Central Bank of Russia, http://www.cbr.ru/eng/today/history/print.asp?file=gosbank.htm (01.08.2008)

centuries, the labor market for the financial sector contains specialists with decades of experience – people who have been through the ups and downs of business cycles, and who have seen banking crises around the world. A lack of experience, the relative youth of very senior officials in commercial banks, uneven development of certain parts of the banking sector are all reflections of this common shared history.[11]

2.1.3 Financial Development after Independence

Economic development existed in country since period of independence till now can be divided in two main stages. First period was economic chaos or regress covering 1991-1995. Second is period of macroeconomic stability and dynamic economic development lasting since 1996.[12]

After restoration of independence in 1991, Azerbaijan has gone through a period of sharp economic decline (1991-1995), during which approximately 58% of the domestic product was lost. A long lasting military conflict with neighbor Armenia over Nagorno-Karabakh, succession of weak and short lived governments, loss of traditional markets etc. all added up to the severity of the economic crisis of the period (Ministry of Economic Development, 2006:3).

Real GDP fell by about 20% per year during the period 1992-94; the decline continued in 1995, but at a lower rate of 13.2% (Figure 2). SOEs (state owned enterprises) in the industrial and construction sectors – representing 25% and 4% of GDP, respectively - recorded the highest declines in output. The decline in agricultural output - a sector that accounts for 30% of GDP - has been less than that of industry, mainly due to successful cotton harvests in 1994 and 1995 (World Bank, 1997).

[11] http://www.rusrating.ru/en/news/story/our_opinion/2007-02-22-00 (03.08.2008)

[12] http://www.azerbaijan.az/_Economy/_GeneralInfo/_generalInfo_e.html (05.08.2008)

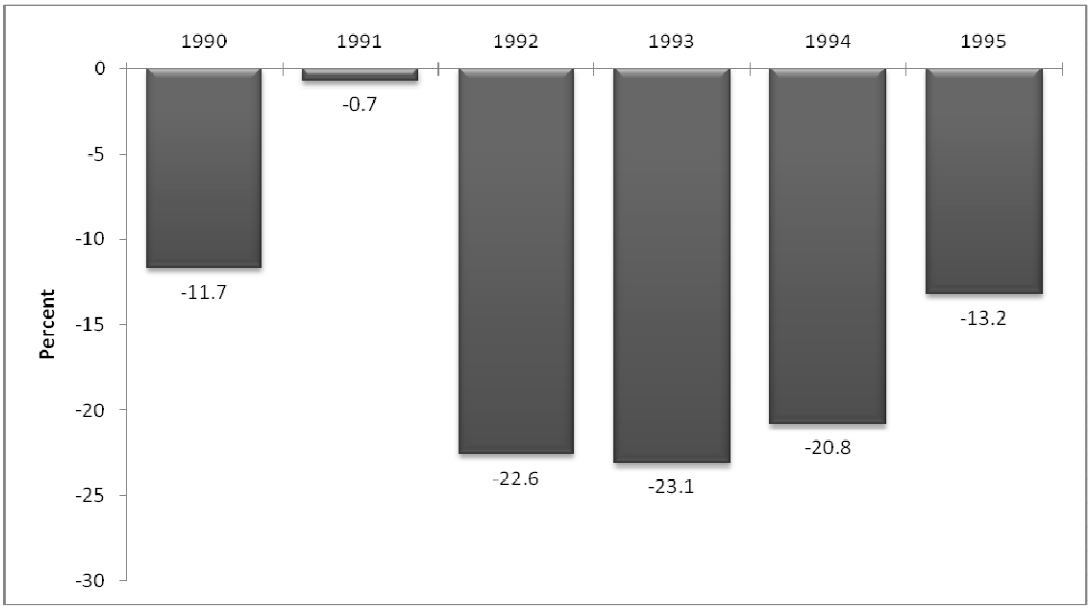


Figure 2: Real GDP Growth in Percent from Previous Year

Source: World Bank Report No.15422-AZ, Azerbaijan Financial Sector Review, 1997

The legal basis for establishment of banking system of independent Azerbaijan Republic, including National Bank were formed a short while before independence. Thus Article 14 of the "Constitution Act on Basis of Economic Independence" of Azerbaijan Republic, dated May 25, 1991, which was called Banking system and money turnover, included these issues as a whole. This article alongside with determination of legal bases of independent banking system and turnover of national monetary unit of Azerbaijan, also established the status and authorities of the National Bank of Azerbaijan. Thus, the National Bank was declared a supreme emission agency, which carries out state policy in the sphere of credit, money turnover, settlements and currency relations, regulates activity of banking system as a whole and fulfills duties of reserve bank. Thus in February 1992, the National Bank of the Azerbaijan Republic was established on the basis of the State Bank, Industrial-construction Bank, Agro-Industrial Bank of the former USSR.

As early as August 7, 1992, alongside with the Law of the Azerbaijan Republic on Banks and Banking Activity in the Azerbaijan Republic, was adopted the Law on the National Bank of Azerbaijan. August 15 of the same year equally with ruble national currency of the Azerbaijan Republic manat was issued. December 1, 1992 Resolution on Approval of the Charter of the National Bank of the

Azerbaijan Republic was passed by the Parliament of the Azerbaijan Republic. Such legislative acts, which were critical for banking activity laid the foundation of national bank law and facilitated adaptation of banking activity to a new social-economic conditions. The aforesaid legislative acts determined the National Bank as the supreme state bank, which has exclusive rights of banknotes issue and fulfills the function of reserve system. At the same time, the National Bank was granted regulatory and controlling authorities over the banking system.[13]

The licensing process has been very liberal particularly in 1993 and 1994, resulting in a dramatic increase in the number of banks during the past three years. Fifty-four banks were licensed in 1993 and another 55 banks were approved in 1994 (Table 3).However, only four licenses were given out in 1995. There was no discrimination against banks that are majority or wholly owned by foreign investors, branches of foreign banks are also allowed to open. The lack of rigor in the process of examining applications for a banking license has resulted in the establishment of many weak banks. Part of the problem rose from the Law on Banking Activities. It was not very clear on the criteria for entry and did not put the burden of proof on the applicants. Compounding the problem was the lack of skills in the NBA to assess banking applications.

Table 3. Bank Entries and Exits 1993-1995

	1993	1994	1995
Beginning Balance	125	171	211
Entries	54	55	4
Exits:			
Bankruptcies	0	0	0
Licenses Withdrawn	3	10	28
Mergers	5	4	7
Voluntary	0	1	0
Ending Balance	171	211	180

Source: World Bank Report No.15422-AZ, Azerbaijan Financial Sector Review, 1997

[13] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=120&lng=en (01.08.2008)

As of end-1995, there were 180 banks, of which four were state owned, 10 were majority owned by SOEs, and the rest were controlled by private investors. The state owned banks - the Agroprom Bank, the Prominvest Bank, the Savings Bank, and the International Bank - accounted for 80% of total banking assets, 83% of total outstanding loans, 82% of deposits, 67% of branches, and 70% of employment in the banking industry as of end-1995 (Tables 4). The Savings Bank accounted for 63% of total household deposits, and the Agroprom Bank for another 23%. While all licensed banks were free to enter any authorized activity, the state owned banks specialized in certain sectors (industry, agriculture, and agro-processing) and services (savings depository and international transactions). The state owned banks lend mainly to SOEs while the private banks generally focused on private sector clients.

Table 4. Measures of Concentration in Banking as of October1, 1995 (in percent)

	Assets	Loans	Deposits	Paid-in Capital	Branches	Employment
Four State Owned Banks	80.2	83.1	82.2	23.4	67.0	69.9
Top 20 Non-state Banks	10.2	6.7	11.4	41.5	7.0	6.9
Rest of the Banks	9.6	10.2	11.4	35.1	26.0	23.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: World Bank Report No.15422-AZ Azerbaijan Financial Sector Review, 1997

Total outstanding loans of the banking system to enterprises and households have been declining in real terms from 1992 to 1995- outstanding loans to enterprises and households adjusted for inflation as of end- 1995 were about 20% of corresponding loans at end-1992. In 1995, there was a real increase of 15% in loans to enterprises and households. However, about 25% of the 1995 loans were in the form of capitalized interest - adjusting for capitalized interest, there was a real decline of 16% in loans to enterprises and households in 1995 (Table 5).

Table 5. Share of Banks in Outstanding Credit to Enterprises and Households

	1992	1993	1994	1995	1995 adjusted
Prominvest Bank	54.3%	42.4%	19.5%	24.1%	16.9%
Agroprom Bank	33.1%	23.1%	26.7%	41.2%	36.5%
Savings Bank	2.0%	2.5%	2.1%	2.3%	3.5%
International Bank	10.6%	17.4%	33.7%	17.3%	22.9%
Other Banks	10.6%	17.4%	18.0%	15.0%	20.2%
Total	100%	100%	100%	100%	100%
Real Credit Index (1992=100)	100	37.5	16.9	19.5	14.5

Note: 1995 adjusted figures do not take into account overdue (capitalized) interest
Source: World Bank Report No.15422-AZ, Azerbaijan Financial Sector Review, 1997

Deposits - both manat and foreign currency - as a percent of GDP has been declining, from 20.0% in 1992 to 8.9% at in 1995. On the other hand, manat currency held outside the banking system as a percent of manat deposits has been increasing, from 40.9% at end-1992 to 169.6% at end-1995, despite the positive interest rates on deposits through most of 1995 (Table 6) (World Bank, 1997).

Table 6. Currency and Deposits- End of Period Stocks (In Billion Manat)

	1992	1993	1994	1995
Manat Deposits	6.6	30.4	154.9	355.2
Foreign Currency Deposits	0.0	12.8	617.0	342
Manat Currency Outside Banks	2.7	43.2	276.1	602.4
Manat Currency Outside Banks to Manat Deposits	40.9%	142.1%	178.2%	169.6%

Source: World Bank Report No.15422-AZ, Azerbaijan Financial Sector Review, 1997

From January 1 1994, manat was declared the only means of payment of the country. Paragraph II of the Article 19 of the first Constitution of independent Azerbaijan Republic, which was adopted in a referendum, held on November 12, 1995 endorsed once again that the right of issue of banknotes and withdrawal from circulation belongs only to the National Bank. At the same time, this paragraph stipulates that the National Bank is in the exclusive ownership of state. Adoption of

the new constitution foretokened beginning of a qualitatively new stage in building of the constitutional state in Azerbaijan. That is why innovations in the sphere of banking legislation were as necessary as in other spheres.

The Laws on the National Bank of the Azerbaijan Republic dated June 10, 1996 and Banks and banking activity in the Azerbaijan Republic dated June 14 were adopted in a revised form. New bank laws promoted the banking system of the republic to approach progressive world banking experience and establishment of reliable credit organizations. Thus, the corresponding Law on the National Bank stipulates means and methods of pursue of the state monetary-credit policy, which is one of its major functions. This envisages market transactions, interference to currency market, restriction of bank transactions and other measures.[14]

Regular growth of demand of private banks to minimal capital by National Bank and propaganda of consolidation process strengthened capital base of private bank system, ensured enlargement of bank system.[15] Number of banks decreased since 1996, because of license withdrawn and mergers (Table 7).

Table 7. Quantity Changes in the Banking Sector

Year	1996	1997	1998	1999	2000	2001	2002	2003	From 2004 to mid-2007
Total number of banks:	136	99	79	70	59	53	46	46	44
State	4	4	4	4	3	2	2	2	2
Private	132	95	75	66	56	51	44	44	42

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

In 1999, the government embarked on a program of reform of bank system in coordination with the World Bank and the IMF. Key elements of the strategy included restructuring and privatizing the remaining state-owned banks; consolidating and rationalizing privately-owned banks; enhancing the regulatory,

[14] National Bank of Azerbaijan http://www.nba.az/default.aspx?go=120&lng=en (01.08.2008)

[15] http://www.azerbaijan.az/_Economy/_BankSystem/_bankSystem_e.html (05.08.2008)

supervisory and banking capacity of the National Bank of Azerbaijan (NBA); improving the legal framework; and developing the institutional and technical infrastructure to support a healthy, efficient, and competitive banking system, including accounting, payment systems, and auditing.

In 2001 a Real Time Gross Settlement System, AZIPS, the immediate settlement of payments between banks (within 30 to 60 seconds) went live (Ministry of Economic Development, 2006:12).

Since 2002, important stage of restructuring of bank system started to be carried out. Taking into consideration entry of big oil revenues in the country, as a logical result of successful oil strategy, and in this base, as the banks were ready to an effective transfer of their financial resources to the strategic goals, development strategy was made for 2002-2005.

Major goals of strategy are effective and safe transformation of oil revenues to non-oil sector, to increase chances of access of population and regions to bank services and in this base to develop financial mediation function of bank system for poverty reduction, strengthen durability and reliability of bank system, ensure free and healthy competition atmosphere in bank services market.

To get strategic targets determined for 2002-2005, certain duties have been set such as improvement and adaptation to international standards of legislation base of banking, increasing reliability and health of bank system, enlarging possibilities of access to bank services, lifting the level of transparency in bank system and strengthening the market discipline, organizing an effective bank control.[16]

In 2004, the National Bank completed the process of creating the Centralized Credit Registry System (CCRS) under the Banking System Development Strategy for 2002-2005. All banks are enabled to use the system on-line. A regulatory and methodology framework has been developed to ensure reliable operation of the system. The system conducted the registration of individual and corporate borrowers and provided the banks with the centralized information about the borrowers via online (NBA, Annual Report, 2004)

A legislative basis for banking activity was advanced in 2004 when the third generation law on Banks and Law on the National Bank of Azerbaijan were passed.

[16] http://www.azerbaijan.az/_Economy/_BankSystem/_bankSystem_e.html (05.08.2008)

With their adoption, implementation of Azerbaijani banking laws pertinent to the European Union Directives on Banking Activity and banking supervision standards of the Basel Committee has been finalized. The National Bank of Azerbaijan has maintained its 2004 policy on the capitalization and consolidation of commercial banks, deciding to increase the requirement for the minimum regulatory capital of the banks to USD 5 million by January 1, 2006. With the adoption of the new banking laws, a legal basis has been established for corporate governance of banks, in line with international standards.

Centralized Credit Register and "Milli Kart" (National Card) Processing Center of the National Bank in operation since the beginning of 2005 are important tools for diversifying and enhancing the quality of banking services and expanding access to them. At the moment, there are 21 banks with foreign participation. The deposit and savings base is growing very rapidly. The Securities Committee (state regulator) and the Baku Stock Exchange were also established (Ministry of Economic Development, 2006:12).

2.2 CURRENT STATE OF BANKING IN AZERBAIJAN

2.2.1 Recent Macroeconomic Developments

During early years of independence (1991-1995), Azerbaijan lost 58% of its domestic product. A comprehensive and successful stabilization program launched in the second half of the 1990s has resulted in strong economic recovery of Azerbaijan. Since 1996, economy of Azerbaijan has been growing more than 13% on average every year.

Azerbaijan's responsible fiscal and monetary management, accompanied by favorable global economic trends have significantly improved the country's macroeconomic situation.

The economy has fundamentally changed since the increase in oil production and opening of the Baku Tbilisi Ceyhan (BTC) pipeline. While the average economic growth was around 10 per cent during 2002-2005, the real GDP grew at more than 34 per cent in 2006 and reached 25.4 per cent in 2007, making Azerbaijan

the fastest growing economy in the world (Table 8). The dramatic growth has resulted in a more than two fold increase in GDP per capita over the last three years. Increased oil production and exports together with high prices, created an economic structure that is more than ever focused on oil. Currently the oil sector accounts for about 54 per cent of GDP and three quarters of industry. The non-oil sector also grew by about 12 per cent on average in the past two years partly reflecting spill over effects from oil and gas, especially in the machinery, chemical industry, construction, and telecommunication sectors (Figure 3) (EBRD, 2007). However, its contribution to GDP has fallen over the past few years as the oil sector has grown. The non-oil sector was 47% of nominal GDP in 2006, down from 58% in 2005 and 61% in 2004. Rising oil prices and export volumes have contributed to Azerbaijan's significantly strengthened external position (ADB, 2007a).

Table 8. Main Macroeconomic Indicators

	2001-2003	2004	2005	2006	2007
GDP growth	10.6	10.2	26.4	34.5	25.4
Oil GDP growth	2.8	3	66.3	63.1	52.6
Non-oil GDP growth	12.5	13.6	8.3	8.1	11.3
Non-Oil Exp (% of Non-Oil GDP)	6.7	6.9	12	10.4	10
Non-Oil Imp (% of Non-Oil GDP)	38	36.7	37.8	38.8	43.9
FDI (% of GDP)	17.8	27.1	3.5	-6.4	-17.4
CPI Inflation	2.7	10.4	5.4	11.4	16.7
Govt. expenditure (% of non-oil GDP)	40.5	41	40.5	62.4	74
Overall fiscal balance (% of non-oil GDP)	-0.7	0.8	4.6	0.2	-
Current account balance (% of GDP)	-13.7	-29.8	1.3	18.7	26.8
Poverty rate (%)	42.2	28.5	24	-	-

Source: World Bank, CPIA 2007: Country Worksheet Azerbaijan

Based on the current information on proven oil reserves, it is expected that oil production will increase from 0.3 million barrels per day in 2005 to about 1.1 million

barrels per day by 2009 and will start to decline sharply thereafter. Despite its temporary nature, the oil boom presents a unique financial opportunity to lay the foundations for sustainable non-oil output growth and poverty reduction. During the initial stage of the oil boom (2005–07), the government of Azerbaijan opted for exceptionally large expenditure increases aimed at improving infrastructure and raising incomes. Total government expenditure increased by a cumulative 160 percent in nominal terms from 2005 to 2007 or from 41 percent of non-oil GDP to 74 percent (Koeda and Kramarenko, 2008:3).

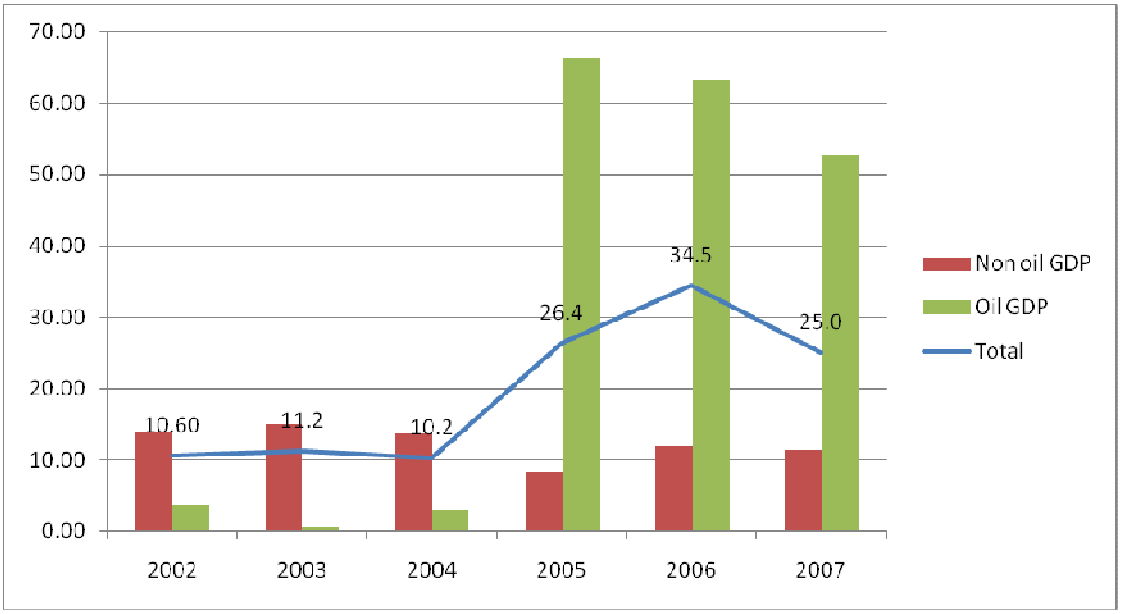


Figure 3. GDP Growth by Sector

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

At the end of 1995, the privatization of state property in Azerbaijan started with the adoption of the "State Program of Privatization of State Property in the Azerbaijan Republic, 1995-1998". The private business that was practically non-existent in mid 90-s now accounts for more than 81% of the domestic output. At the beginning of 2007, the country had 74,354 registered legal entities, of which 80.6% were private enterprises and 4,161 entities were foreign legal entities.

In recent years, investment in hydrocarbons, most of it from foreign companies, has been the predominant driver in fast-growing total investment, which in turn has been the main stimulus to rapidly expanding GDP. In 2006, growth in

total investment was 15% (ADB, Development Outlook, 2007) and 17% in 2007. It's less than average growth rate of 34% (from 2000 to 2006).

The year of 2006 is characterized with a dramatic growth of investments in the non-oil sector. Thus, investments in the non-oil sector rose increased by 57.8%, while its relation to the non-oil GDP amounted to 32.9% by having increased by 10.3% relative to the previous year. 44.7% of the total investments were made in the non-oil sector in 2006, which is 15.7% more than the previous year's rate (NBA, Annual Report, 2006).

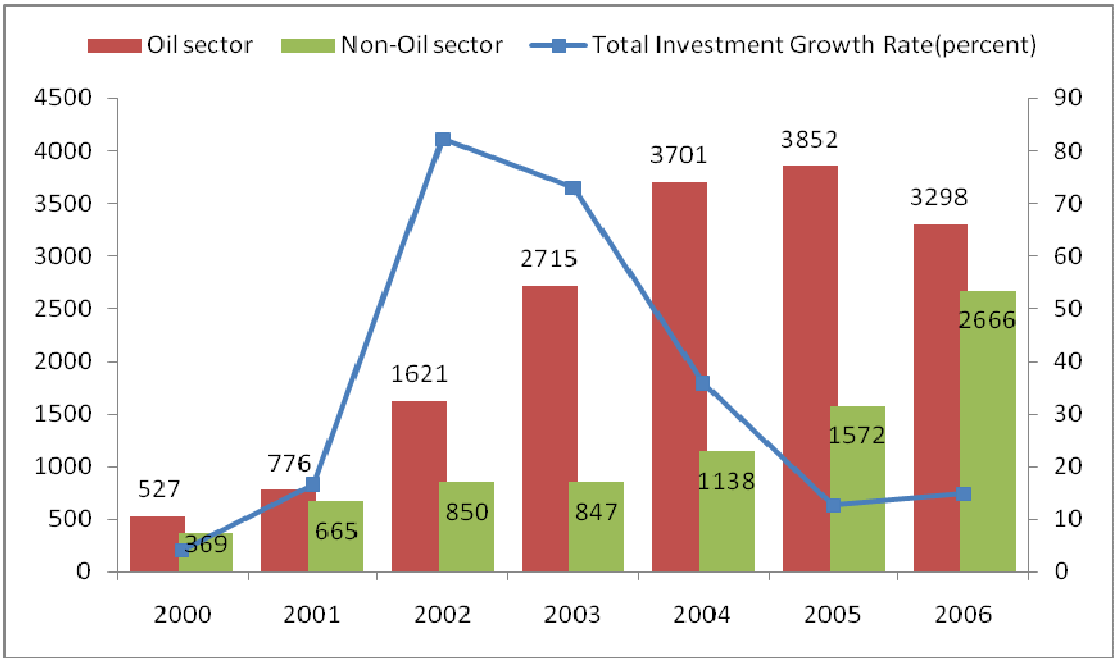


Figure 4. Investments in Oil and Non-Oil Sector (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Foreign direct investment, particularly by international oil and gas companies, has been the main driver of heady investment in the past decade. However, it declined by 28.9% or about $1.3 billion in 2007, with the completion of several significant oil and gas exploration projects (Figure 5). A further decline in foreign direct investment is expected over the next 5 years. In 2007, domestic investment (mainly public) balanced the decline in foreign investment, to account for over 53% of the total (ADB, Development Outlook, 2008).

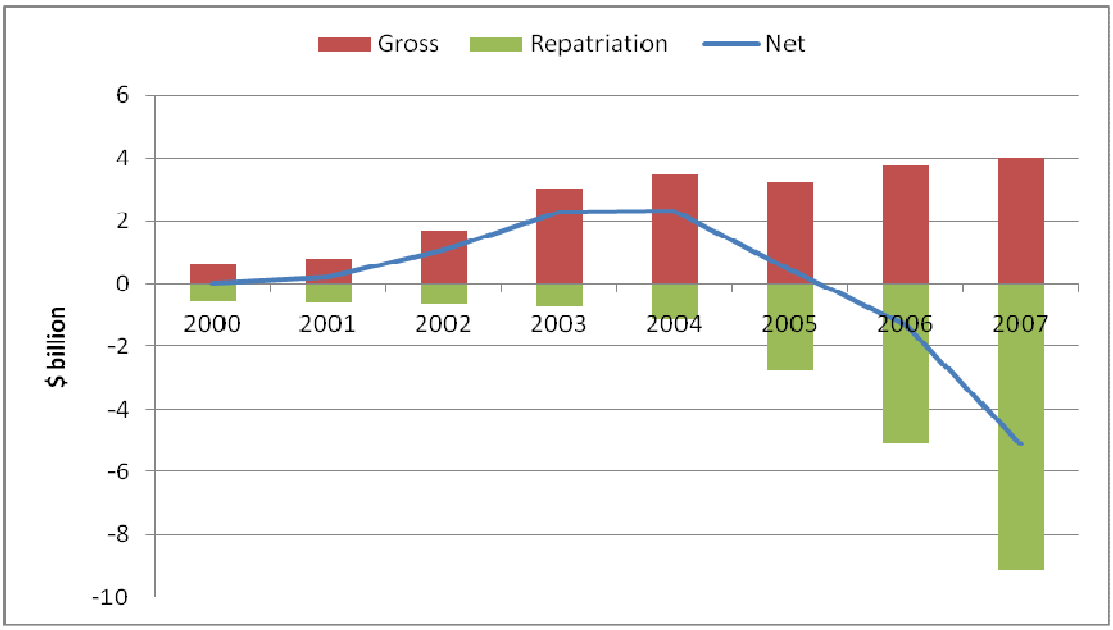


Figure 5. Foreign Direct Investment

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Currently, foreign direct investment is equivalent to 60 percent of the GDP, which puts Azerbaijan in one of the leading positions among CIS (Commonwealth of Independent States), Baltic and Eastern European countries. The country is now ready to penetrate international capital markets and start negotiations with potential investors for the issuance of Eurobonds. The issuance of these instruments is expected to strengthen the development of the non-oil sector, and help improve the business environment and development of regions and rural areas (World Bank, 2006).

The increases in global oil prices and in the export volume of hydrocarbons resulted in a current account surplus estimated at $8.0 billion, equivalent to 27% of GDP in 2007 (Figure 6).

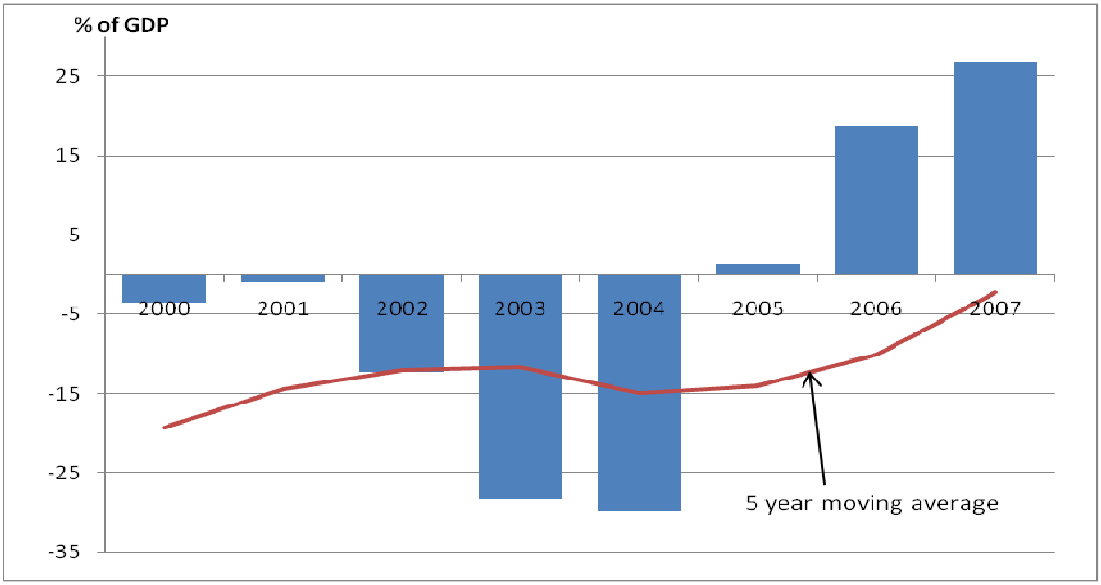


Figure 6. Current Account Balance

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

2.2.2 Banking Sector

Even though it is now commonly acknowledged that development of a sound banking system is crucial for the success of transition economies, different countries choose specific strategies to this end and have different achievements. The EBRD devised a system of scoring to measure the progress and reflect reform and development of the banking sector. These scores range from 1 to 4+, one being the lowest(Konstandina, 2007:35).

According to this system, Azerbaijan scored above average among CIS countries, but below Non-CIS average and total average (Table 9). The performance of the banking sector is not favorable. In 2005 and 2006, score of Azerbaijan was equal to CIS average, while the average for non-CIS and total average have never been achieved.

The top performers – Hungary, Croatia and Estonia – already had the high score of 4 by 2004. The differential success in financial sector transformation in transition economies seems fundamentally determined by patterns of bank privatization and foreign presence in the industry (Konstandina, 2007:38). Banking system of Azerbaijan still dominated by two state owned banks-International Bank of Azerbaijan and Kapital Bank and bank privatization was not complete. There is also

a limit in foreign participation in banking system and foreign banks are still not major players.

Table 9. EBRD's Index of Banking Sector Reforms by Year for Transition Economies, 1995-2005

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Armenia	2.0	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.7	2.7
Azerbaijan	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**
Belarus	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.7	1.7	1.7	1.7	1.7
Georgia	2.0	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.7	2.7	2.7
Kazakhstan	2.0	2.0	2.3	2.3	2.3	2.3	2.7	2.7	3.0	3.0	3.0	3.0
Kyrgyz Rep	2.0	2.0	2.7	2.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Moldova	2.0	2.0	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Russia	2.0	2.0	2.3	2.0	1.7	1.7	1.7	2.0	2.0	2.0	2.3	2.7
Tajikistan	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.7	1.7	2.0	2.0	2.3
Turkmenistan	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Ukraine	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.3	2.3	2.7	3.0
Uzbekistan	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
CIS average	**1.8**	**1.7**	**1.9**	**1.9**	**1.8**	**1.8**	**1.9**	**2.1**	**2.1**	**2.2**	**2.3**	**2.3**
Non-CIS average	**2.5**	**2.5**	**2.7**	**2.7**	**2.8**	**2.9**	**3.0**	**3.2**	**3.2**	**3.3**	**3.4**	**3.4**
Average	**2.2**	**2.2**	**2.3**	**2.4**	**2.4**	**2.4**	**2.5**	**2.7**	**2.7**	**2.8**	**2.9**	**2.9**

Source: EBRD Transition reports 2006, 2007

Key performance indicators for the Azeri banking system have improved significantly since 2000, mainly due to strong growth in the economy and financial sector reform. However, it is still considered one of the weakest banking systems among the sovereigns rated by Fitch Ratings. Despite recent progress, the financial system remains small and highly concentrated. At the beginning of 2007, the banking system consisted of 44 commercial banks (46 banks at the beginning of 2008) operating under license of the NBA, with total statutory capital of $693 million (ADB, 2007a).

Number of banks increased rapidly in early years of independence to 211 in 1994. Causes of such increase were low capital requirements, very liberal terms for entering the system, and application of soft regulation instruments to regulate the banking activity. With implementation of prudent banking reforms banks have already fallen from 211 to 46. Banking legislature has amended 3 times in less than 15 years. These successive waves of reforms have resulted in a modern and effective regulatory framework and a competitive banking sector.

Table 10. General Information about Banks

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1. Number of credit organizations having a banking license	92	176	158	116	93	104	114	129	138	142
-Number of banks:	79	70	59	53	46	46	44	44	44	46
-State banks	4	4	3	2	2	2	2	2	2	2
-Private banks:	75	66	56	51	44	44	42	42	42	44
Number of banks with foreign caital	12	13	16	16	15	17	15	18	20	21
Banks with share of foreign capital from 50% to 100%	4	5	5	5	4	4	5	5	5	6
Banks with share of foreign capital less than 50%	6	6	9	9	9	11	9	11	13	13
Branches of foreign banks	2	2	2	2	2	2	1	2	2	2
2. License obtained	0	0	2	0	1	0	1	3	0	2
3. License withdrawn	20	9	13	6	8	0	3	3	0	0
4. Number of bank branches	250	250	195	191	220	305	350	374	420	485
State banks	179	179	132	122	124	125	127	126	125	125
Private banks	71	71	63	69	96	180	223	248	295	360
5. Number of banks with local branches	34	31	26	27	31	36	38	38	41	41
6. Numbe of bank devisioins	0	0	0	0	0	0	1	24	69	94
7. Number of bank units operating abroad	2	2	2	2	3	4	3	4	4	5
Affiliated banks	0	0	0	0	1	1	1	1	1	2
Branches	1	1	1	1	1	1	1	1	1	1
Representations	1	1	1	1	1	2	1	2	2	2

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Azerbaijan does not have any geographical limitations on branch banking but instead limits such activities according to available shareholders' capital. Number of banks branches increased from 250 in 1998 to 485 in 2007. During these years number of state bank branches decreased from 179 to 125 and private bank branches increased from 71 to 360. At the end of 2007, 41 banks of 46 had branches. Number of bank divisions reached 94 in 2007.

The Azeri banking sector is almost fully privatized. State banks are expected to be privatized in the near future. The private banks of the country are still relatively small, with total assets of $30 million–$80 million and equity of about $10 million for a typical top tier private bank. Individuals or private business groups generally own the leading private banks, with state-owned enterprises holding small stakes- if any. In recent years, a top tier of about 10 private banks has emerged, representing half of the total bank capital in the country. The remaining banks are small players with low levels of total assets. The banking sector is expected to consolidate in the medium term, especially since the NBA is increasing the minimum required capital. Major international banks do not have substantial operations in Azerbaijan, mainly because of the small size of the domestic market and certain legal restrictions (ADB, 2007a).

While the country's largest and state-owned bank, the International Bank of Azerbaijan (IBA) accounted for 51% of the total bank assets as of the end of 2005, this indicator went down to 47% by the end of 2006, share of loans decreased from 50% to 44% and the share of individual deposits reduced from 40% to 31% (Figure 7). Banks included in the group of top 14 banks in terms of asset (excluding IBA) managed to strengthen their market positions by showing the highest development rates. Thus, the share of this group of banks in the system's total assets rose from 33% as of 01.01.2006 to 37.5% as of the end of the year (growth during the year of 90.6%), share of individual deposits from 49% to 58% (growth of 104%) and share of total loans from 29% to 37% (growth of 110%) (NBA, Annual Report, 2006).

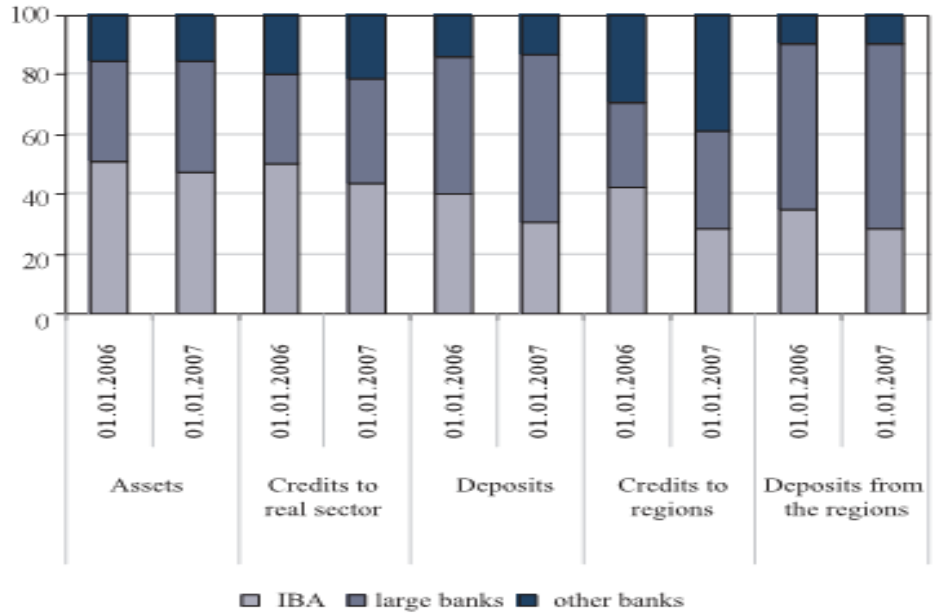


Figure 7. Sectoral Break-Down of Banking Services Market (in percentage)

Source: National Bank of Azerbaijan, Annual Report 2006

The depth of bank intermediation activity is low. The provision of financial services to households and the private sector is very limited. Only an estimated 10% of the population has bank accounts, reflecting low confidence in the banking sector. Financial services have been provided mainly to the oil, construction, and trade sectors, leaving retail clients and SMEs notably underserved.

2.2.2.1 Asset of Banking System

The banking system's assets, the pillar of the Azerbaijan financial system, represented only 21% of GDP in 2006 (Figure 8), significantly below the ratios for the Russian Federation (53%) and Kazakhstan (91%) and more than 100% in the USA (ADB, 2007a). This reflects the relatively small contribution that banking is still making to financing economic growth. In cooperation with the World Bank, the government is planning to develop financial services at post offices, extending access to banking across Azerbaijan. The low ratio also points to the sector's growth potential (BusinessWeek, Nov.2007).

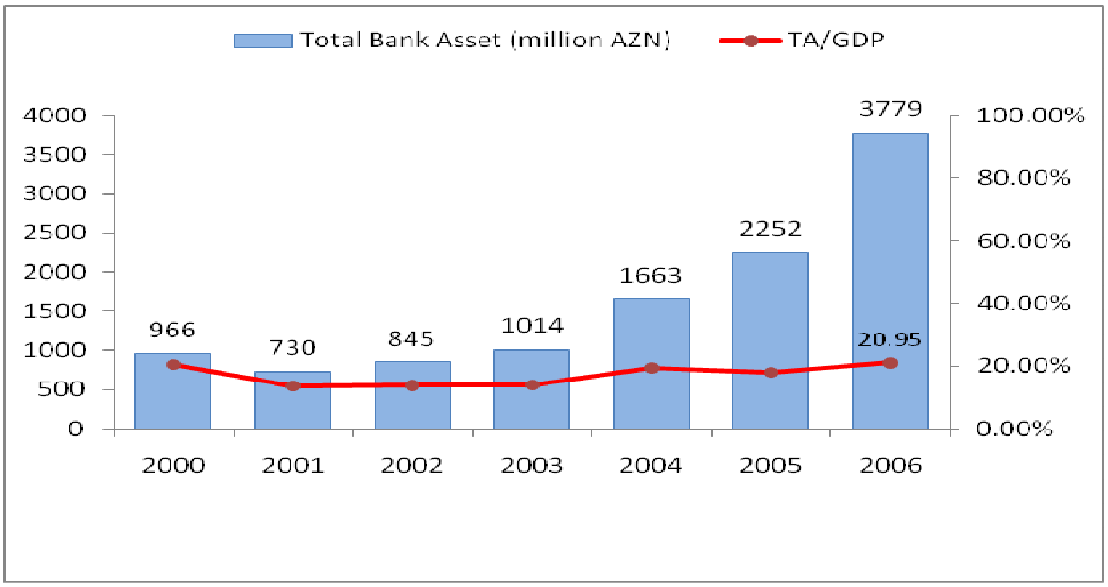


Figure 8. Total Asset and Its Share in GDP

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Share of state in total banks asset is high in Azerbaijan. Only one state owned bank accounted half of the banks' asset in 2006. Although the share of state decreased from 58.3% in 2001 to 42.4% in 2007, it is still one of the highest indicators among CIS countries. Only Georgia and Armenia do not have state banks in banking sector (Table 11).

Table 11. Share of State in Total Bank Asset

Country	2001	2002	2003	2004	2005	2006	2007
Armenia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Azerbaijan	**58.3**	**62**	**55.3**	**56.1**	**55.2**	**51.0**	**42.4**
Belarus	53.2	61.9	61.6	70.2	75.2	79.0	76.5
Georgia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kazakhstan	3.5	5.2	5.1	3.7	3.1	2.0	0.2
Kyrgyz Rep	16.6	9.7	7.2	4.1	4.8	3.4	8.7
Moldova	10.2	13.4	15.5	17.6	19.3	15.3	9.5
Russia	-	-	-	-	-	-	-
Tajikistan	4.8	4.5	6.1	12.2	9.7	7.6	7.2
Turkmenistan	96.5	95.7	96.1	96.6	96.3	94.8	97.3
Ukraine	11.8	12	9.8	8.0	9.4	8.9	8.0
Uzbekistan	80.4	73.7	70.0	67.6	-	-	-

Source: EBRD, Transition Report 2006, 2007

At the end of 2006, the volume of assets grew by almost 67.8% and totaled $4,344 million (3779 million AZN). The most significant element in the structure of bank assets are loans issued to customers, which totaled $2,537 million (58.4% of total assets). State-owned IBA holds half of the country's banking assets (Figure9). According to EBRD estimates the 30 smallest banks hold less than 20% of banking assets.

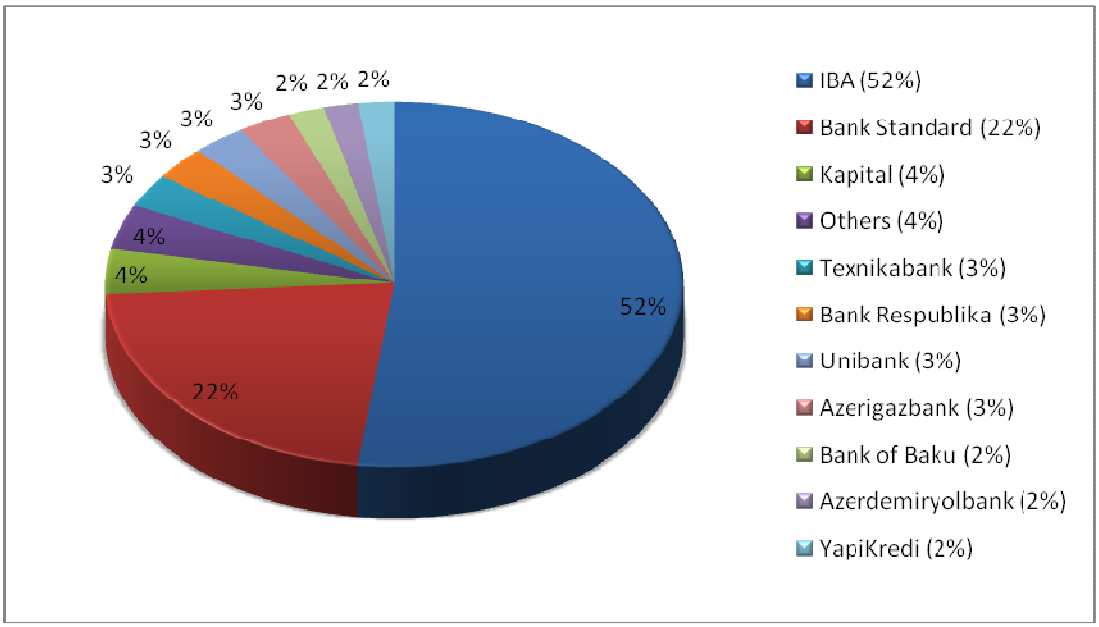


Figure 9. Share of Banks' Assets (as of 1 January 2007)

Source: Asian Development Bank, 2007a

Azerbaijan's commercial banks have used the rapidly growing deposit base to expand their loan portfolios, an important and positive development given the marginal financial intermediation role that they have played in the economy. As of December 2006, consolidated lending by banks was AZN2.36 billion, an increase of 64% from the previous year. In 2007, consolidated lending by banks reached AZN4.68 billion. Despite the large increase in the deposit base, it is still too small to meet the growing demand for financial services, especially from SMEs (ADB, 2007a).

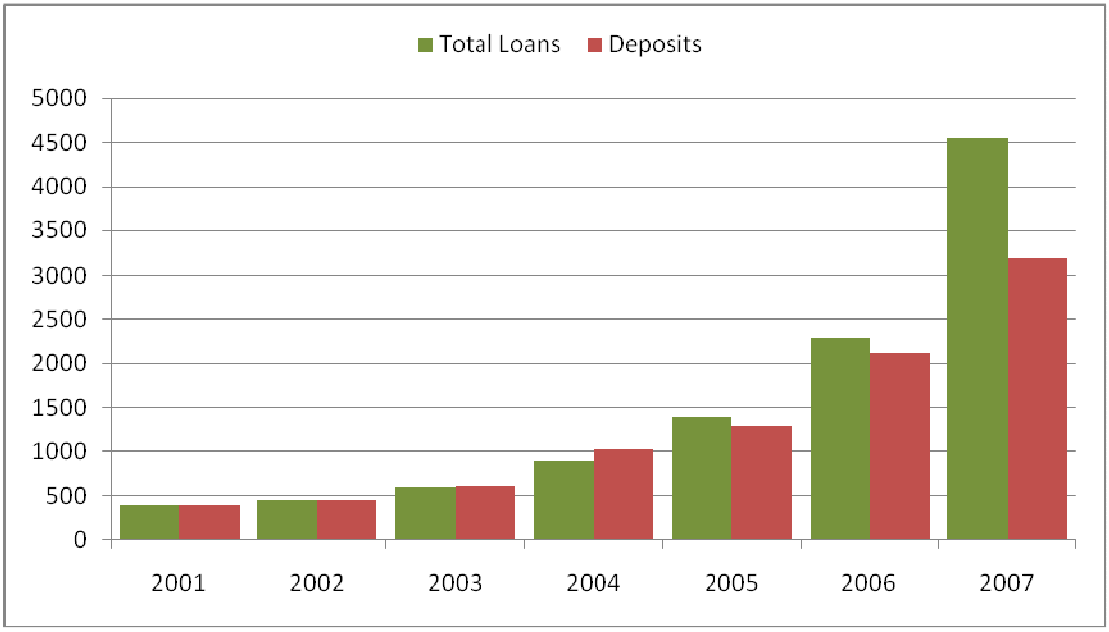


Figure 10. Total Loans and Deposits (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Since 2005, loans and deposits in manat have increased sharply. Currency structure of loans and deposits changed in 2006 in favor of manat. From 2001 to 2005, 35% of total loans were in national currency and 65% in foreign currency, and 18% of total deposits were in national currency and 82% in foreign currency. In 2007, currency structure of loans was 54% in mantas and 46% in foreign currencies, and of deposits was 53% in manats and 47% in foreign currencies (Figure 11 and 12). This was mainly because of the appreciation of the local currency against the US dollar.

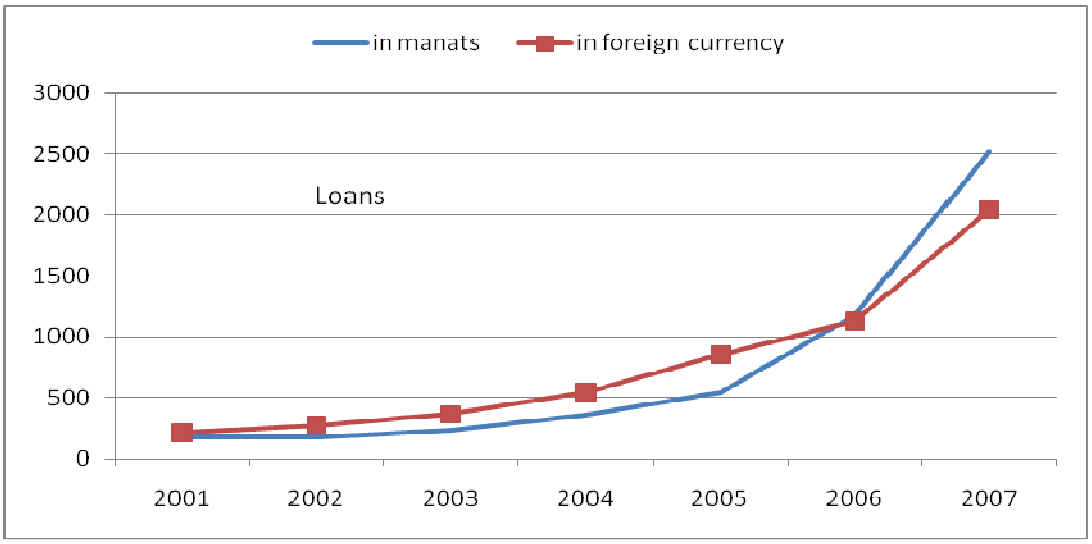


Figure 11.Loans by Currencies (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

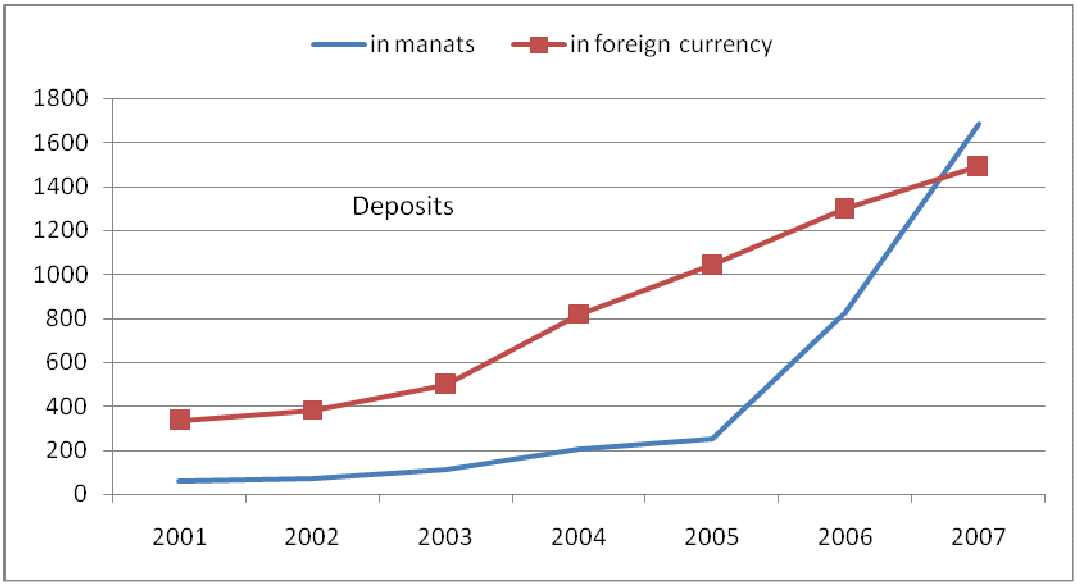


Figure 12. Deposits by Currencies (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

International Bank of Azerbaijan (IBA) accounts almost half of total bank lending. Most private banks focus exclusively on lending to the private sector, primarily individual entrepreneurs and SMEs. Because of their small size and customer focus, these banks provide mainly small and micro loans, and typically do not serve the oil and gas sector.

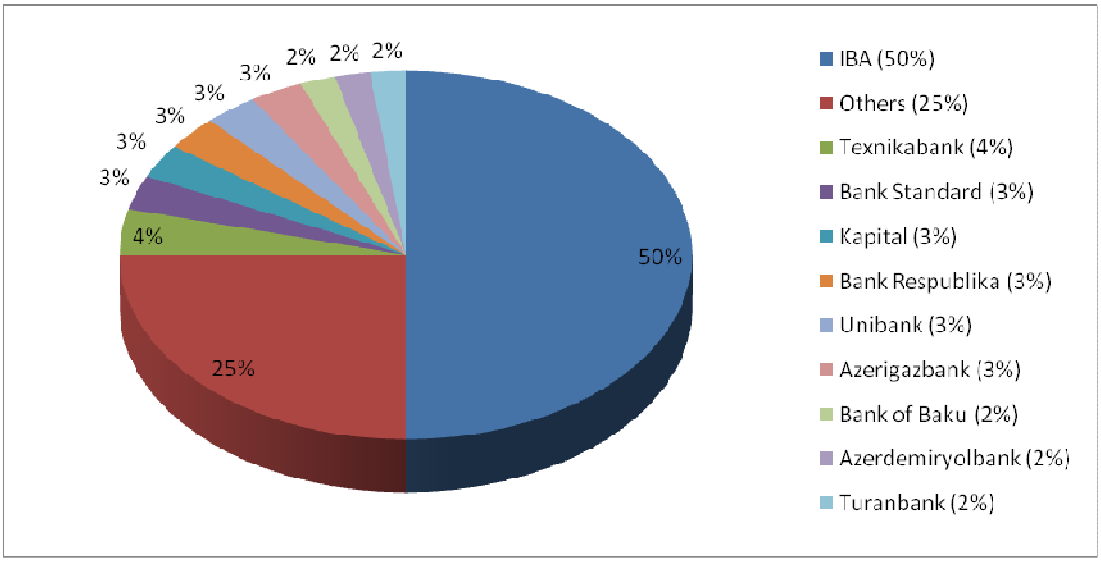


Figure 13. Share of Banks' Loans (as of 1 January 2007)

Source: Asian Development Bank, 2007a

Recent macroeconomic achievements and financial stability in the country increased loans to economy and caused to the change of maturity structure of loans. In 2007 total loans were 4681.8 million AZN, or 98% more than previous year. In 2006, long-term loans were more than short-term loans for the first time and in 2007, it was 65% of total loans.

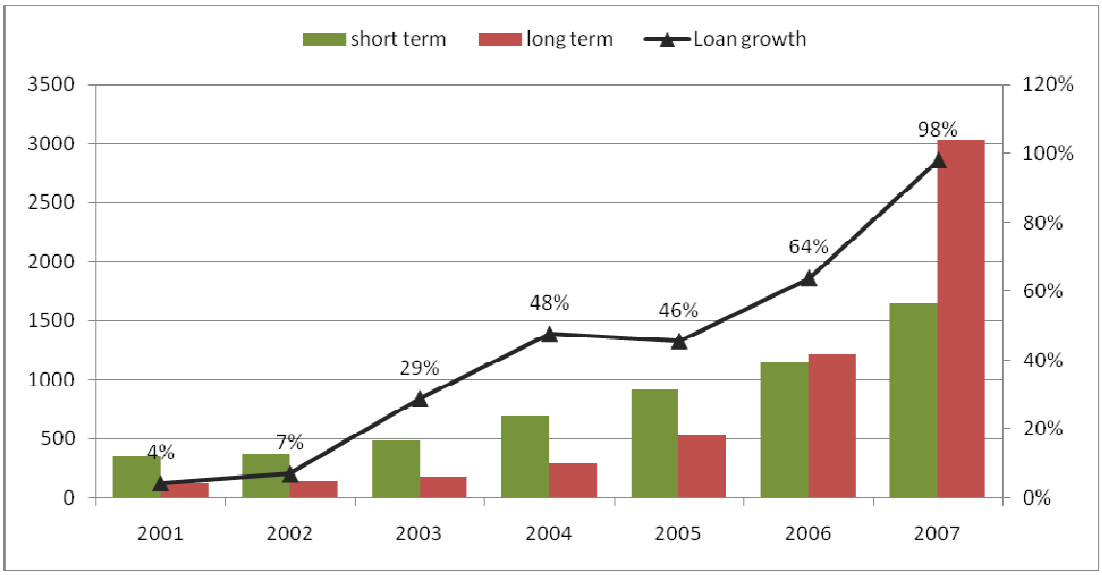
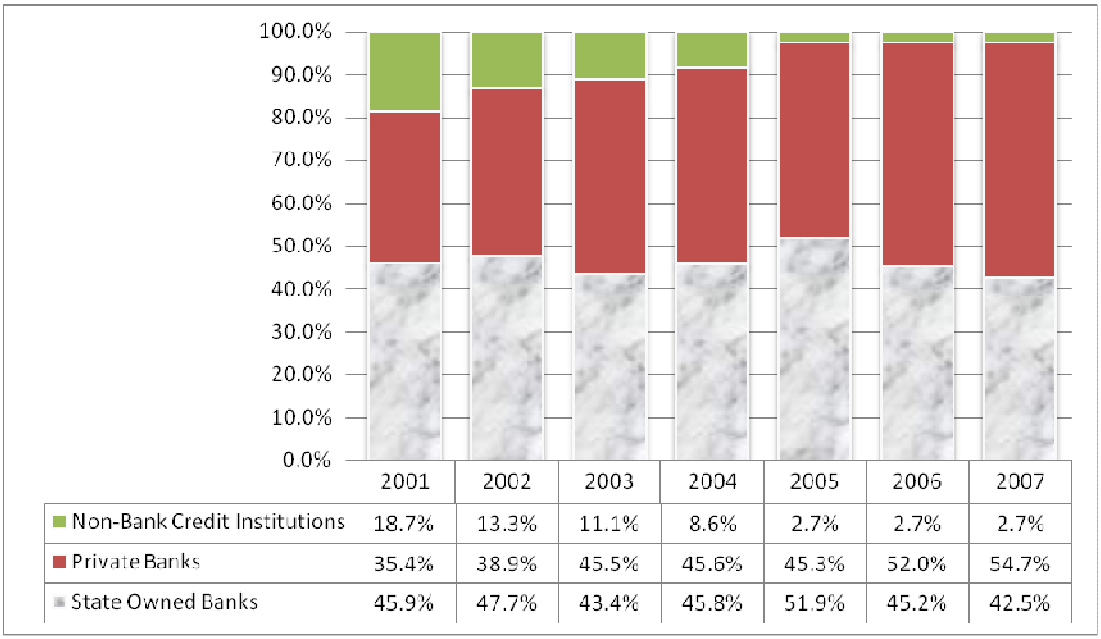


Figure 14. Maturity Structure of Loans (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Share of private banks in lending to economy have increased significantly since 2001, accounting for 54.7% of total loans. At the same time share of state banks and specially share of non-bank credit organizations decreased during these years.



	2001	2002	2003	2004	2005	2006	2007
Non-Bank Credit Institutions	18.7%	13.3%	11.1%	8.6%	2.7%	2.7%	2.7%
Private Banks	35.4%	38.9%	45.5%	45.6%	45.3%	52.0%	54.7%
State Owned Banks	45.9%	47.7%	43.4%	45.8%	51.9%	45.2%	42.5%

Figure 15. Loans to Economy by Types of Credit Organizations

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

In National Statistic data the share of non-performing loans (NPLs) and the level of capital at risk are moderate. According to National Statistics, the share of NPLs in 2006 was considerably low at 3.33%, compared to 4.73% in the previous year. However, the European Bank for Reconstruction and Development's (EBRD) Transition Report 2006 noted that the level of NPLs in the entire banking system should have been 14.9% in 2005, 0.4% higher than 2004 (ADB, 2007b). Two institutions statistics state different percents for NLPs. One data shows moderate NLPs, the other declares the highest percentages of NLPs. To make comment on NLPs of Azerbaijan banking sector will lead to confusing results. That ratio is an important indicator for health banking system.

According to EBRD estimates, Azerbaijan has the highest percentages of non-performing loans among CIS (Table 12). In 2007 NPLs was 8.1 per cent of loans.

Table 12. Comparative Statistics of Non-performing Loans in CIS (Percentage of Loans)

Country	2001	2002	2003	2004	2005	2006	2007
Armenia	6.8	4.9	4.9	2.1	2.1	2.6	2.5
Azerbaijan	**20.5**	**19.7**	**14.6**	**14.5**	**14.9**	**12**	**8.1**
Belarus	11.9	10.2	5.8	4.7	3.4	2.9	2.0
Georgia	11.3	7.9	7.5	6.2	3.8	2.5	2.6
Kazakhstan	2.1	4.1	3.9	4.2	3.3	2.4	2.7
Kyrgyz Rep	13.8	17.6	11.2	6.1	7.7	6.2	3.5
Moldova	10.4	7.6	6.4	6.9	5.3	4.4	3.7
Russia	7.5	6.4	5.6	3.6	2.8	2.4	2.0
Tajikistan	12.5	84.2	73.6	18.7	13.8	11.4	4.9
Turkmenistan	0.3	0.3	0.5	0.4	0.3	0.2	0.2
Ukraine	6.3	4.5	3.4	3.2	2.2	1.7	1.3
Uzbekistan	-	8.5	10.9	9.3	8.9	3.0	2.8

Source: EBRD, Transition Report 2007, 2008

2.2.2.2 Liabilities of the Banking System

The most significant component of banking sector liabilities are deposits issued to corporate and individual customers, which totaled $2,253 million (64.23% of total liabilities). Banking sector deposits have grown rapidly but remain low and do not commensurate with Azerbaijan's level of development. NBA reported that deposits rose by 64% in 2006 to AZN 2.13 billion, by 50% in 2007 to AZN 3.13 billion, an estimated 13% of GDP.

Appreciation of manat against US dollar changed structure of deposits. Thus, the years of 2006 and 2007 are characterized with the increased trust of legal entities and individuals to the banking sector, which helped increase the resource base of banks. Time deposits increased rapidly in 2007 and reached AZN1 973.8 million, 62% of total deposits (Figure16). In addition, currency structure of deposits changed in favor of manat in 2007 (Figure 12). In 2001, 15% of total deposits were in national currency. This figure reached 53% in 2007.

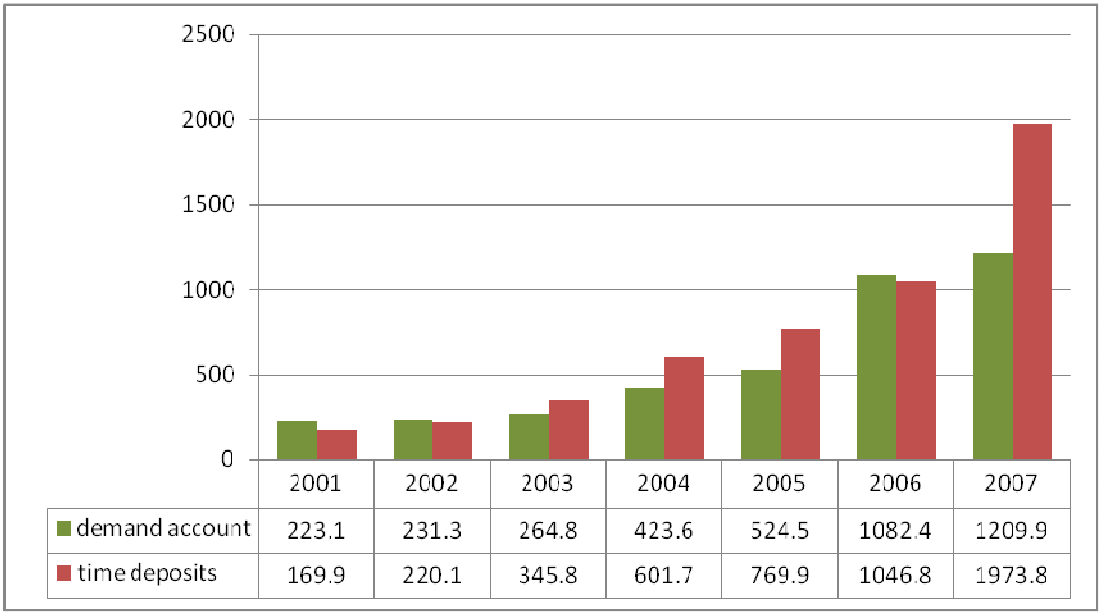


Figure 16. Structure of deposits (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Deposits from households accounted 46.1% of total deposits in 2007 compared with 29.8% in 2001 (Table 13). This was result of increased confidence of individuals to the banking sector. However, households preferred to keep their accounts in foreign currencies compared with manat. Only in 2007 manat deposits were 46% of total household deposits. In previous years until 2006, it was less than 11%.

Table 13. Deposits from Households (million AZN)

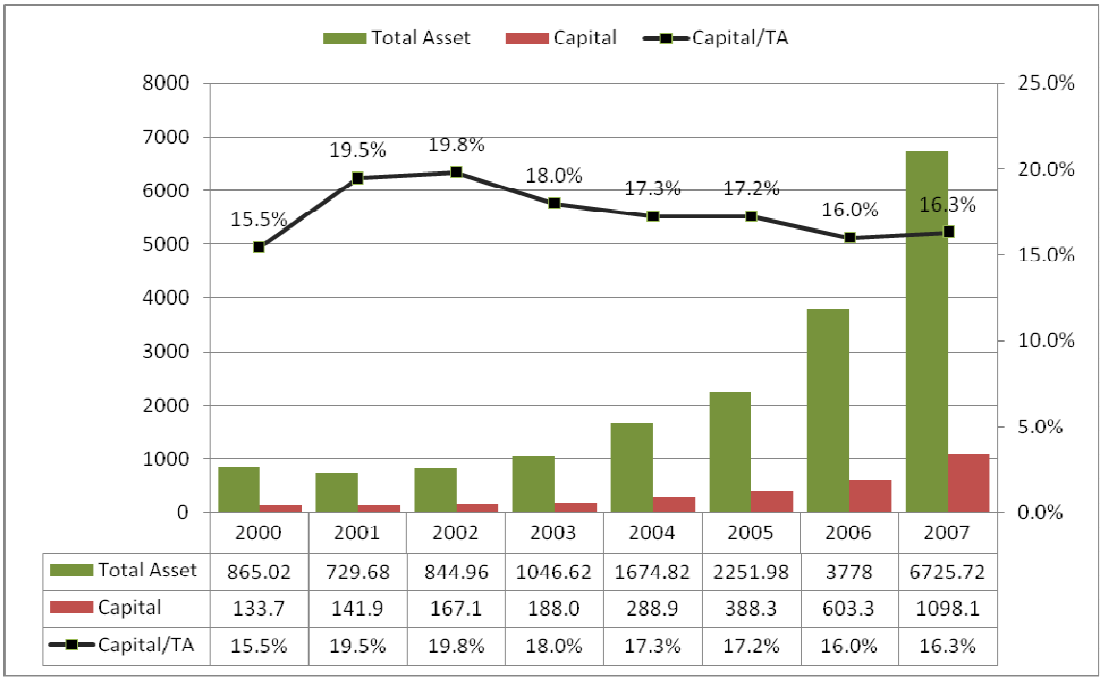
		2001	2002	2003	2004	2005	2006	2007
Total deposits		393	451.4	610.6	1025.3	1294.4	2129.2	3183.7
Form household		117.1	153.4	251.9	403.2	494.5	819.5	1468.4
% in total deposits		29.8	34	41.3	39.3	38.2	38.5	46.1
In manat	Demand account	1.9	3.5	7.7	16	27.8	79.9	209.1
	Time deposits	10.2	10	11.2	14.2	28.1	170.4	467.3
In foreig	Demand account	33.7	27.3	40.3	61	82	98.1	127.3
	Time deposits	71.3	112.6	192.7	312	356.6	471.1	664.7

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Despite the large increase in the deposit base, it is still too small to meet the growing demand for financial services, especially from SMEs. Only an estimated 10% of the population has bank accounts, reflecting low confidence in the banking sector (ADB, 2007b).

2.2.2.3 Capital of the Banking System

Capital of the banking sector increased on average 56% every year in last 4 years. In 2000, capital of banks was AZN133.7million. With gradual increases in minimal capital requirements, capital of banking system reached AZN1098.1million, 8.2 times more than in 2000. During 200-2007 share of capital in Total Asset remained between 15% and 20%. In 2007, ratio of capital to total asset was 16.3% (Figure 17).



	2000	2001	2002	2003	2004	2005	2006	2007
Total Asset	865.02	729.68	844.96	1046.62	1674.82	2251.98	3778	6725.72
Capital	133.7	141.9	167.1	188.0	288.9	388.3	603.3	1098.1
Capital/TA	15.5%	19.5%	19.8%	18.0%	17.3%	17.2%	16.0%	16.3%

Figure 17. Capital of the Banking Sector (million AZN

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Number of banks with aggregate capital more than AZN10million increased from four banks in 2004 to 39 banks in 2007. At the same time number of banks with

aggregate capital, less than AZN3.5million decreased from 19 banks in 2004 to zero in 2006.

Table 14. Grouping of Banks by Volume of Aggregate Capital

Year	up to 3.5 million AZN		form 3.5 to 5 million AZN		from 5 to 10 million AZN		over 10 million AZN	
	number of banks	as a share of gross banking capital, %	number of banks	as a share of gross banking capital, %	number of banks	as a share of gross banking capital, %	number of banks	as a share of gross banking capital, %
2004	19	24.5	10	17.2	10	27.7	4	30.6
2005	2	1.8	9	12.3	23	41.2	8	44.7
2006	0	0	3	2.4	29	45.6	11	52
2007	0	0	1	0.5	5	4.4	39	95.1

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

2.2.2.4 Profitability of Sector

The share of interest income in total income was less than 50% in 2003. During the following years, this share increased and reached more than 70% in 2007. Interest income in 2007 was AZN 547.33 million and non-interest income was AZN 209.11 million (Figure 18). The growth of loans to the real sector while the quality of loans did not deteriorate caused interest income generated to grow during these years.

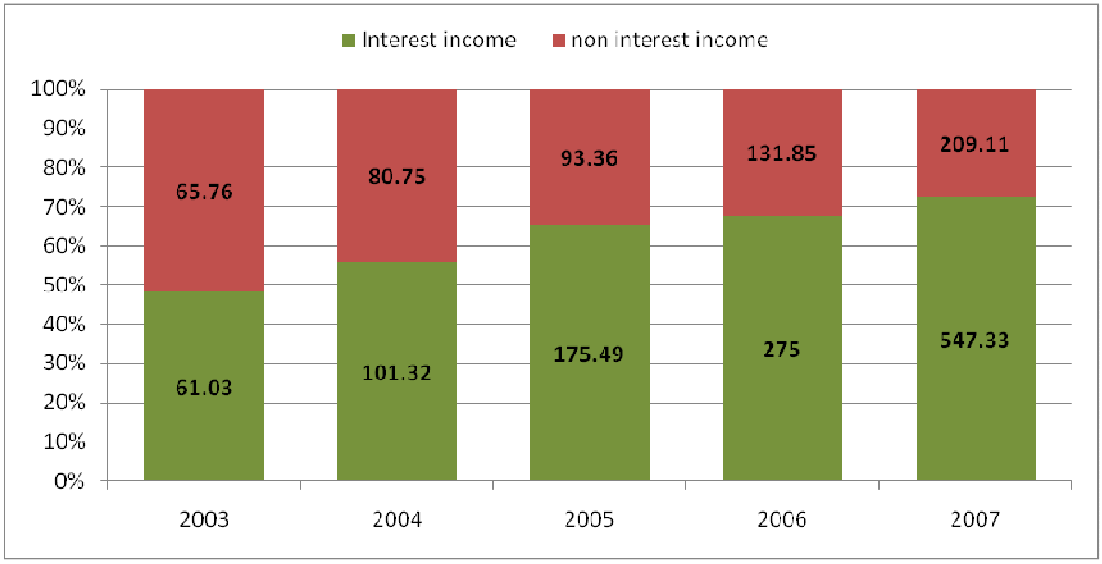


Figure 18. Banks Income and Expenses (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

During 2003-2007 net interest profit of banking sector increased form AZN 35.2 million to AZN 309.8 million. However, net non-interest profit decreased from AZN10 million profits in 2003 to AZN 28.8 million losses in 2007. Profit before taxes was AZN 172.1 million in 2007.

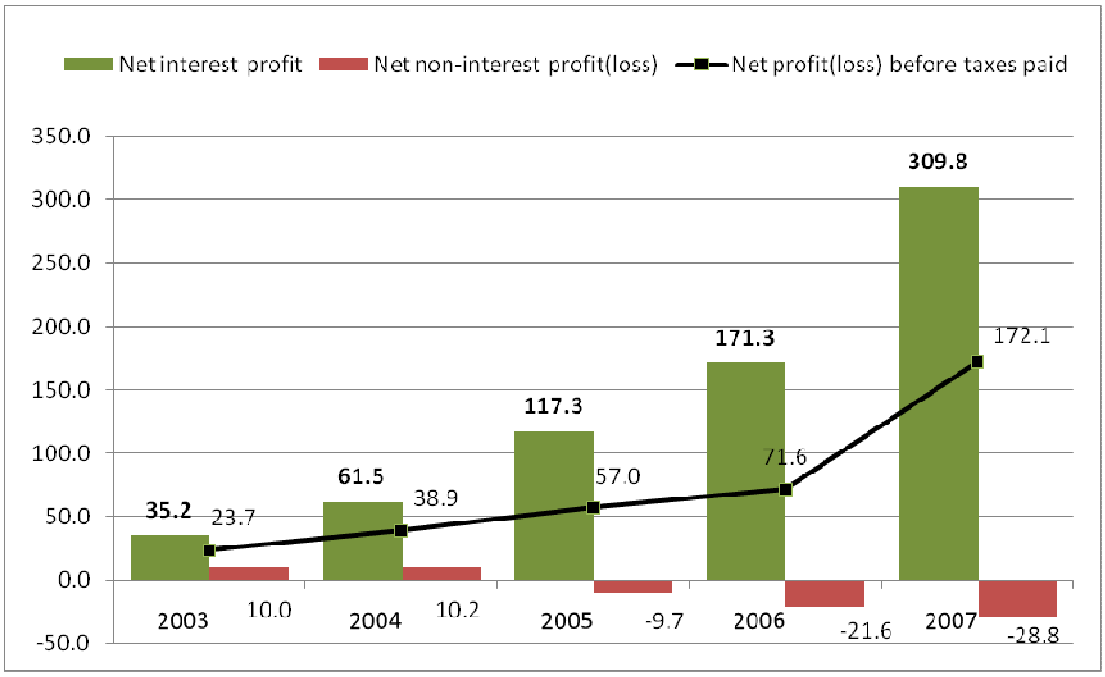


Figure 19. Net Interest and Non-Interest Profit (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Net income of the sector also increased significantly. Net income of banking system increased from AZN 18.60 million in 2003 to AZN 129.12 million in 2007. Number of profitable banks was 40 in 2007, more than from previous years. Non-profitable banks decreased form 11 to 5 during 2003-2007 (Table15).

Table 15. Financial Results of Banking Activity after Taxes (million AZN)

Year, quarter	2003	2004	2005	2006				2007			
				I	II	III	IV	I	II	III	IV
Number of banks with profit	33	28	36	37	37	29	30	35	36	38	40
Net profit of banks (on profit bearing banks)	20.5	38.9	45.0	17.3	35.0	53.6	62.1	33.1	76.6	110.4	132.8
Number of loss-making banks	11	14	6	6	6	14	13	8	7	5	5*
Net loss of banks (on loss making banks	1.93	7.87	2.35	0.88	1.61	16.38	13.00	9.53	6.65	4.24	3.65
Total Net profit of banking system	18.6	31.0	42.7	16.4	33.4	37.2	49.1	23.6	60.9	106.1	129.1

* 2 new banks opened at the end of the year
Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Profitability ratios of top 10 banks were high from their sector average. While return on asset (ROA) of the sector did not changed during 2003-2007, this indicator for Top 10 banks decreased from 3.5% to 2.6%. Return on equity (ROE) was very high for Top 10 comparing with sector average. Share of loans in total asset was nearly the same for sector and Top 10 banks in 2003, but from 2004 this ratio changed in favor of sector average. In addition, the share of capital in total asset was less than sector average for Top 10 banks, which shows that Top 10 banks could attract more deposits during these years (Table 16).

Table 16. Financial Ratios of Banking System

		2003	2004	2005	2006	2007
ROA	Sector	1.8%	1.9%	1.9%	1.3%	1.9%
	Top 10	3.5%	3.1%	3.3%	2.7%	2.6%
ROE	Sector	9.9%	10.7%	11.0%	8.1%	11.8%
	Top 10	19.8%	21.4%	20.6%	20.3%	20.0%
Loans/TA	Sector	56.9%	54.0%	62.2%	60.8%	67.7%
	Top 10	56.5%	52.5%	55.6%	59.2%	60.9%
Capital/TA	Sector	18.0%	17.2%	17.2%	16.0%	16.3%
	Top 10	18.5%	14.5%	15.9%	13.6%	10.8%

Source: National Bank of Azerbaijan and Annual Reports of Top10 Banks

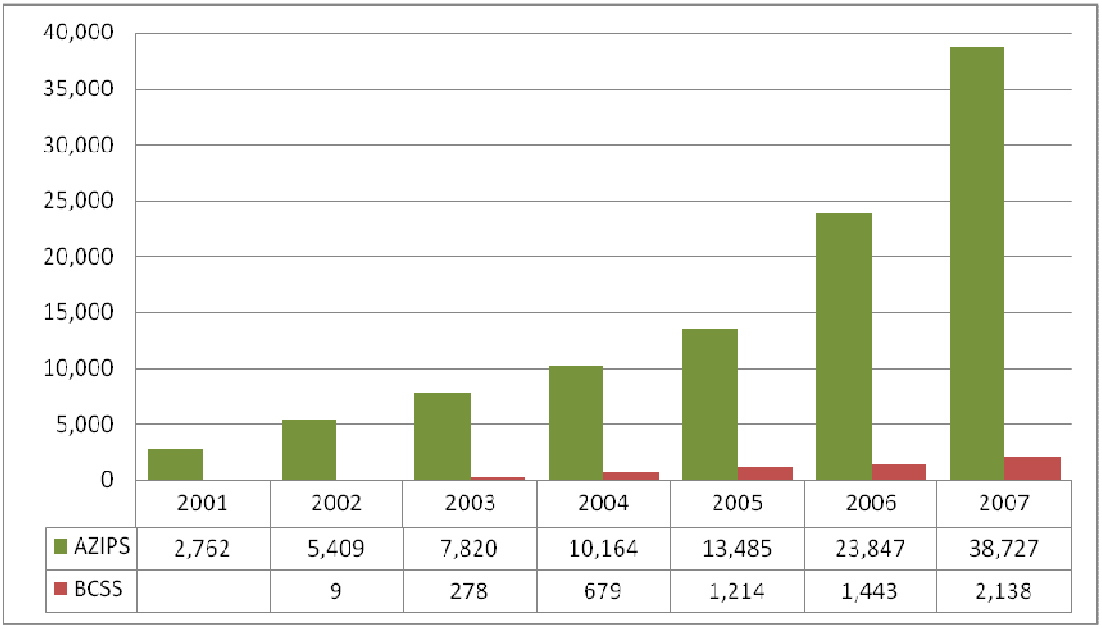
2.2.2.5 Payment Systems

The stability and development of payment systems is regarded as one of the main tasks of the NBA along with ensuring price stability and the stability and development of the banking system. In 2001, the Real Time Interbank National Payment System (AZIPS) was created based on National Payment System structure. As a result of use of AZIPS system, it was possible to realize on-line interbank transactions, considerable increase of money circulation intensity, and quick control over liquidation by banks. In 2002, second element of National Payment System, Retail Payment System (BCSS- Bulk Clearing and Settlement System) was created.[17]

According to the legislation, all interbank transactions in national currency have to be settled through either AZIPS or BCSS. Settlements in manat by means of correspondent accounts opened in banks are prohibited (World Bank, 2006).

Amount of transaction increased significantly since introduction of AZIPS and BCSS systems. In 2007, amount of payments in AZIPS was AZN 38 billion or 62% more than from previous year. Payments in BCSS system were AZN 2.1 billion in 2007, 48% more than from previous year (Figure20).

[17] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=857&lng=en, (14.08.2008)



	2001	2002	2003	2004	2005	2006	2007
AZIPS	2,762	5,409	7,820	10,164	13,485	23,847	38,727
BCSS		9	278	679	1,214	1,443	2,138

Figure 20. Amount of Transactions (million AZN)

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Payments with plastic cards are low but growing at a fast pace, particularly in recent years. The majority of cards (85 percent) in circulation are debit cards, and in general cards are used for cash withdrawals from ATMs and much less so as payment instruments at point of sale (POS) terminals. The are two main payment card operators in the country: AzeriCard, owned by the International Bank of Azerbaijan and which is by far the major player in the marketplace, and MilliKart, a recent venture sponsored by the NBA (World Bank, 2006).

In 2007, number of cards in circulation was 2787 thousands. Amount of transactions with debit cards was AZN9168 million, 98% of which was via ATMs. Transactions with credit cards accounted AZN467 million, 74% of which was via ATMs (Table 17).

Table 17. Transaction with Debit and Credit Cards

Year		2006				2007			
Quarter		I	II	III	IV	I	II	III	IV
Number of cards, thousands		1013	1290	1424	1542	1625	1770	2538	2787
Transactions with debit cards million AZN		3294	4369	4884	5805	5658	6529	7438	9168
of which	via ATM's	3225	4263	4794	5714	5564	6423	7295	8942
	via Pos-terminals	69	106	90	92	94	106	143	226
Transactions with credit cards million AZN		110	144	171	233	209	284	327	467
of which	via ATM's	71	96	111	153	128	190	213	345
	via Pos-terminals	39	48	60	80	81	94	114	122

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

Number of ATMs and Pos-terminals are increasing rapidly. There is a great difference in distribution of ATM and Pos terminals among Baku and regions. At the end of the 2007, 62% of ATMs and 92% of Pos-terminals was in Baku (Table 18).

Table 18. Number of ATMs and Pos-terminals

Year, quarter		2005	2006	2007			
				I	II	III	IV
ATM		873	1080	1105	1161	1237	1317
of which	Baku	598	655	677	725	768	820
	Regions	275	425	428	436	469	497
Pos-terminals		987	2070	2234	3119	4262	5309
of which	Baku	902	1719	1852	2728	3844	4871
	Regions	85	351	382	391	418	438

Source: National Bank of Azerbaijan, Statistical Bulletin, March 2008

2.3 FOREIGN BANKS IN AZERBAIJAN

An essential element of Azerbaijan's overall reform package for banks included an open door policy toward foreign investment in the sector. Legislation in

place until the beginning of 1997 provided preferential tax treatment to banks in which 30 percent or more was owned by foreign capital. While local banks have been subject to a 45 percent income tax, banks with foreign participation were taxed at a 35 percent rate. Although this "introductory special" has since expired, it serves as a good illustration of the range of measures undertaken by the NBA to provide incentives for foreign banks to enter the Azerbaijan market. The invitation was taken by a number of foreign banks, including a subsidiary of the HSBC (stopped operation in 2002), Bank Melli Iran branches, and subsidiaries of Russian banks such as Most Bank and Rossiysky Credit, a representative office of Dresdner Bank and branches of several prominent Turkish banks.[18]

Since 1995, Ziraat Bank (Turkey) has been operating in Azerbaijan. It is a main shareholder (50%) of Azer-Turk Bank. Another Turkish bank that operates in Azerbaijan is YapiKredi Bank (previous KochBank), established in 1999. In 2008 Turkish subsidiary of Citibank got license to open branch in country.

Nikoil Bank (Russia) has been participating in Azerbaijan banking sector since 1994. At the end of 2008, another Russian bank, VTB (second biggest bank in Russia) entered Azerbaijan market with the buying of AF-Bank. In addition, representatives of Parex Bank (Latvia) and Commerzbank (Germany) operate in Azerbaijan.

In 2002, Micro Finance Bank of Azerbaijan (now Access Bank) was established with the capital of international institutions such as IFC (International Financial Corporation), KfW (German Development Bank), and EBRD. The bank's primary purpose is to provide legal entities and individuals with small and micro loans. EBRD and KfW also have shares in capital of UniBank, one of he biggest private bank in Azerbaijan.

The government welcomes foreign investments as a way to further develop competition and introduce advanced banking technologies. Foreign banks are encouraged to participate in the privatization of state banks and set up new ventures. Foreign banks may operate representative offices, branches, joint ventures, and wholly owned subsidiaries in Azerbaijan, although representative offices cannot obtain a banking license. Foreign participation is limited by the NBA's current

[18] http://ourworld.compuserve.com/HOMEPAGES/USAZERB/424.htm (17.08.2008)

regulation that restricts the total amount of foreign participation in the banking sector to 50 percent.[19]

At the end of 2007, there were 21 banks with foreign capital, of which 6 banks were with foreign capital from 50% to 100%. The banking sectors in most of the European transition economies are much more open to foreign participation, which evidently together with significant capital inflow brings modern technologies and much needed expertise, as well as competitive pressure on local banks. As of 2004, foreign banks in Czech Republic, Hungary and Poland controlled 96, 83 and 68 percent of total banking assets, respectively. This indeed helped to build independent strong banks (Konstandina, 2007:38; BIS Quarterly Review, 2005:72). Share of foreign banks in total asset is one of the lowest in Azerbaijan among CIS. In 2007, it was 7.5 %, which is far below comparing Georgia, Kyrgyz Republic and Armenia (Table19).

Table 19. Share of Foreign Banks in Total Asset in CIS (in percent)[*]

Country	2001	2002	2003	2004	2005	2006	2007
Armenia	57.6	54.2	51.8	56.7	48.7	45.8	49.0
Azerbaijan	**4.6**	**4.1**	**5.2**	**5.8**	**6.6**	**6.1**	**7.5**
Belarus	7.5	8.1	20.4	20	16.2	14.7	19.7
Georgia	15.3	12.2	34.9	58.1	75.9	86.9	90.6
Kazakhstan	17.3	34.3	56.9	5.5	7.3	5.4	38.5
Kyrgyz Rep	32.7	50.4	61.2	70.1	73.6	71.5	58.7
Moldova	34.9	36.7	35.2	33.6	19.6	22.9	24.8
Russia	8.8	8.1	7.4	7.6	8.3	12.1	17.2
Tajikistan	70.3	1.8	3.6	6.2	8.9	6.5	6.6
Turkmenistan	1.3	1.7	1.6	1.0	1.0	1.0	1.1
Ukraine	12.1	12.3	12.1	12.1	21.3	35	39.4
Uzbekistan	2.4	3.2	4.3	4.4	-	-	-

[*] Statistic includes only banks that foreign ownership range between 50% and 100%
Source: EBRD, Transition Report 2007, 2008

Foreign individuals and foreign entities, which are not banks, may set up, operate, and acquire shares in bank in Azerbaijan. Azerbaijani law does not define

[19] http://www.azerinvest.com/eng/invopp.php?pg=sectors_finance (17.08.2008)

the term "bank with foreign participation" so this term should be broadly construed to embrace virtually all banks with foreign capital, regardless of the extent of foreign ownership.

Banks with foreign participation are subject to the same restrictions as domestic banks, as well as certain additional restrictions. For example, general managers and their deputies of banks with foreign participation (or their branches) must be citizens of the Republic of Azerbaijan[20]

The following laws and legislative documents regulate the establishment and operation of foreign banks in Azerbaijan: Law on Protection of Foreign Investments, Law on Banks and Banking Activity, Law on Currency Regulation, Rules on Licensing and Organization of Activity of Lending Organizations issued by the NBA. [21]

Advantages and Disadvantages of Foreign Bank Entry: There are number of factors that could explain the motivations for the entry of a bank into a foreign market. Two main factors are the follow-the-client behavior and the search for profitable opportunities in the host country. Indeed, a number of foreign banks are believed to enter foreign markets to serve multinational firms that are headquartered in the banks' home market. These foreign banks are of two types. First are those who limit their activities to services of their multinational clients, and offer little or no service to other multinational corporations or local customers in the country. They have therefore little effect on the domestic economy. Second are those who have entered emerging markets to follow major multinational corporations with which they have global relationships, and then extend their services to other multinationals and large domestic corporations.

Other foreign banks, who may face a mature or an intensely competitive domestic banking and financial services sector, have chosen to expand abroad to look for growth and profit opportunities. They may choose to go to two types of foreign markets: those of large size and with comparatively high rates of growth, and those

[20] Azerbaijan Investment Company, http://www.aic.az/download/pdf/Business.pdf (20.08.2008)

[21] http://ourworld.compuserve.com/HOMEPAGES/USAZERB/424.htm (17.08.2008)

which are not intensely competitive and of low entry barriers irrespective of market size or relative growth. Risk management, regulation, exchange rate movements, and cultural connections are also miscellaneous factors that motive the entry of foreign banks (Thi and Vencappa, 2008:6)

Citibank and Commerzbank have representative offices but the banking system is at too early a stage of development to support larger foreign activities. The main focus of Commerzbank is German corporate clients with business in Azerbaijan. Similar services are offered by the National Bank of Pakistan and Turkey's Yapi Kredi Bank for businesses from their home markets operating in Azerbaijan; and Russia's Nikoil is the only foreign bank to enter the local retail market successfully so far. Both HSBC and Dresdner attempted to offer wider services in the domestic market, but without success. Dresdner failed to generate enough business, and HSBC appeared to fall victim to a concerted lobbying campaign by local banks when it started offering loans at interest rates about 5% lower than the domestic players (The Banker, 2008).

There are a number of benefits and costs of foreign bank entry in a country. Government should consider these factors before opening their financial markets to foreign banks.

An important feature associated with foreign bank entry is that it introduces new banking technology and financial innovations. Foreign banks will help improve the quality, pricing, and availability of financial services, both directly as providers of these services and indirectly through increased competition. In addition, foreign banks are often seen as improving the allocation of credit since they have more sophisticated systems for evaluating and pricing of risks. They are also more experienced in the use of derivative products. Also the likely improvement of human capital due to foreign bank presence will be beneficial, because the skills required for the banking business were scarce during the first years of transition. Entry of foreign banks may reduce the market power of domestic banks, which was important as at the beginning of transition the creation of a two-tier banking system produced an oligopolistic market structure. It is widely believed that allowing foreign bank entry as part of a liberalization process will enhance the efficiency of the banking system. Foreign bank presence may also lead to improvements in bank regulation and

supervision, since these banks may demand improved systems of regulation and supervision from the regulatory authorities in the recipient countries. This may contribute to improving the quality of banking operations of domestic banks (Naaborg, 2007:5)

There are also several considerations of why foreign banks' entry may have an adverse influence on the banking sector in transition. If domestic banks are relatively inefficient, they may respond to increased competition by undertaking higher-risk activities to earn returns, or they will be forced into bankruptcy. With more advanced services and products, foreign banks attract the most profitable portion of domestic markets. Thus, riskier sectors will be served by domestic banks. With increased foreign bank presence, access to credit may be impaired for some sectors of the economy. Foreign banks may increase financial instability by pulling out of host countries or by contagion from problems in the home country. Since foreign banks have different priorities and business focus, their lending pattern tends to ignore domestic priorities (Bayraktar and Wang, 2004: 4).

2.4 NATIONAL BANK OF AZERBAIJAN

In early 1992, former Soviet banks were incorporated into the National Bank of Azerbaijan; the 1992 Law on Banks and Banking Activity and the Law on the National Bank established the NBA as the top level of the new system and commercial banks (state and private) on the second level. For the first time the National Bank was declared an independent financial institution with a mission focused on monetary and financial policy. Under the Soviets, the Central Bank had functioned as the personal treasurer of the executive. In a comparison of the Azerbaijani structures and those in the United States, the NBA exercises most of the authority of the Office of the Comptroller of the Currency and the Federal Reserve Board. The NBA is empowered to charter banks and other credit organizations. There is no analogue to savings and loan associations in Azerbaijan; therefore, the NBA is the only state agency, which exercises supervision and regulation over lending institutions. In addition, the NBA serves as the exclusive clearinghouse for

all accounts in local currency in banks. The NBA also underwrites Treasury bonds issued by the State and submits results from the auction to the Ministry of Finance.[22]

The Law on the National Bank of Azerbaijan determines the legal status of the National Bank of Azerbaijan Republic, its purposes, functions, responsibilities, including administration and organizational structure, and regulates the relations between the central bank, other state authorities and other legal entities. Objectives, functions and powers of the National Bank are determined by the 'Constitution of Azerbaijan Republic' and the Law on the National Bank'. National Bank has an independent balance sheet, authorized capital and other property as defined by legislation.

The principal goal of the National Bank's activity is to ensure stability of the national currency. The purpose of the National Bank's activity shall also be to ensure the development and strengthening of the banking and payment systems. Profit making shall not be the main goal of the National Bank.

In order to achieve its goals the National Bank shall:

- determine and implement monetary policy;
- organize cash circulation, put into, and withdraw banknotes from circulation;
- determine and announce the official exchange rate of manat;
- implement foreign currency regulation and control;
- maintain and manage the gold and foreign currency reserves in its charge;
- manage the drawing up of the reporting balance of payments and participate in the drawing-up of the projected balance of payments of the country;
- license, regulate and supervise banking activities of banks in accordance with the law of Azerbaijan Republic on "Banks", the Law on the National Bank and other normative legal acts adopted pursuant thereto;
- determine, coordinate and regulate activities of payment systems

NBA is one of the independent central banks in the world. Its independence ensured by the Constitution and laws of the Republic of Azerbaijan and no state authority or self-administration body, physical person or legal entity may directly or

[22] http://ourworld.compuserve.com/HOMEPAGES/USAZERB/424.htm (17.08.2008)

indirectly by any reason, illegally influence or interfere with its activities. NBA only reports to the President of the Republic of Azerbaijan (Law on the NBA).

All lending organizations are accountable only to the NBA. Furthermore, the law requires financial institutions to undertake an annual audit conducted by independent auditors, another important innovation. The NBA also has comprehensive regulatory authority patterned after the model of the Bank for International Settlements (BIS). The NBA as a goal in forming a strong and sound financial industry has also adopted the Basel standards on prudential ratios prescribed by BIS.[23]

As a state regulator in the field of regulation of the banking system, NBA achieved stability in the field of organization of effective bank control system, promotion and application of reforms. During the last 5 years, the following progresses have been achieved.[24]

- Legislative base of banking activity has been improved and it fully meets international standards. Advanced international experience and new banking legislature meeting requirements of Basel Committee came into force. This fact is very important for protection of interests of depositors, creditors and investors, along with forming new legal base meeting international standards for banking activity.
- Rapid growth rate in the banking sector goes on. Rapid growth of assets and credits is observed. These growth rates exceed growth rate of gross domestic product (GDP).
- Healthy competition environment among banks as well as financial sustainability of banks has been strengthened. Regular increase and consolidation of capital of banks contributed to enlargement and stability of the banking activity and at the same time offered an opportunity to mitigate risks.
- Trust in the banking system increases. Stable development in the banking system as well as increase of the population's incomes played a significant

[23] http://ourworld.compuserve.com/HOMEPAGES/USAZERB/424.htm (17.08.2008)

[24] Azerbaijan Investment Company, http://www.aic.az/download/pdf/Business.pdf (20.08.2008)

role in the increase of population's means trusted to banking system, especially, long-term means.

- Regional network of banks enlarges; opportunities of access to banking services increased.
- With the purpose of increase to transparency in the banking activity and strengthening market discipline, extra emphasis is placed on application of corporate governance standards and transition to International Financial Accounting Standards.
- Inflow of foreign capital into the banking system has started, cooperation between banks and international financial organizations intensified, as well as opportunities of access of the country's banking system to international financial system and financial market developed.
- Banking Infrastructure has been developed and adapted to international requirements.

In the supervision area, the NBA has implemented CAMEL system and uniform bank grading system. The supervisory practices continue to improve. The NBA has also modernized its functional systems, including off-site surveillance system, risk management and reporting systems. In order to bring the supervision process to the best international practice the "red flags" and "stress test" systems has been introduced within off-site supervision. Gradually, the stress-tests system is utilized during on site inspections. A new NBA financial management and ledger system is being procured. The NBA continues to receive significant foreign technical assistance to build its institutional capacity.

To improve the management structure and procedure in banking sector the NBA has prepared the Corporate Governance standards based on the international standards and recommended to utilize these standards in banks` activity. International financial reporting has been mandated (via the introduction of International Financial Reporting Standards) for banks and best-practice manuals for internal controls, audits and for IT systems have been disseminated to encourage banks' to improve their systems and practices (World Bank, 2007).

The Management Board of the NBA establishes standard prudential requirements and reserve fund requirements.

Senior management of all banks (the chairman of the board and his/her deputies, the chief accountant, the head and chief accountant of branches) are subject to certain compulsory standards and are certified by the NBA, which certifies all persons authorized to sign documents in the name of a bank and its branches. Banks are restricted from engaging directly in insurance, commercial and manufacturing activities.[25]

National Bank's International Relations: The strategic goal of the NBA, among others, is to improve its banking system in accordance with the European directives and Basle principles and to integrate banking system towards European Union (EU). The NBA highly appreciates close cooperation with the Central Banks and Financial Institutions of the European countries as well as attaches high importance to expansion of such collaboration. In this regard, the NBA pays special attention to its international relations and on participation in the international conferences and seminars organized by the central banks and financial organizations.

The main directions of the international cooperation of the NBA are European Integration, cooperation with international financial institutions and cooperation with foreign central banks and institutions.

European Integration: Azerbaijan defines European integration as a strategic mission as a democratically developing country seeking to promote market economy and being a part of Europe. In this regard, integration of Azerbaijan's banking system to Europe is a top priority for the NBA.

The Partnership and Cooperation Agreement (PCA) signed between Azerbaijan and EU in 1996 determines the legal basis for EU's and Azerbaijan's relations and establishes new opportunities for Azerbaijan's relations with EU. Presidential Decree of June 1, 2005 established the European Integration State Committee of the Republic of Azerbaijan along the lines of Azerbaijan's accession to the EU Neighborhood Policy and development of the Azerbaijani Action Plan, and such Action Plan for cooperation with the EU was adopted on 14 November 2006.

[25] Azerbaijan Investment Company, http://www.aic.az/download/pdf/Business.pdf (20.08.2008)

Cooperation with International Financial Institutions: The Republic of Azerbaijan continues its cooperation with the International Monetary Fund (IMF), the World Bank (WB), the European Bank for Reconstruction and Development (EBRD), the Asian Development Bank (ADB), Bank for International Settlements (BIS).

The high priority issues include the identification of the priority areas of cooperation with the WB in the upcoming years and discussion of the new draft Country Partnership Strategy 2007-2010. In addition to coordination the country's cooperation with the WB, the NBA is also the Bank's principal counterpart in a range of the financial sector projects, such as the Financial Sector Technical Assistance, Financial Services Development Project. Besides, NBA is engaged in preparation of new Financial Sector Modernization Project.

EBRD continues to promote active cooperation with an aim to reinforce Azerbaijan's financial sector. Bank's Management Board approved the Azerbaijan Country Strategy on May 17, 2005. The strategy envisages development of cooperation in the following core areas:

- Non-oil sector development
- Financial sector
- Infrastructure
- Natural resources

As of today, the EBRD has outstanding financing commitments in 58 projects. It has a share in equities of three banks – Unibank, Microfinance Bank and Azerdemiryolbank. ADB's intensive cooperation with the NBA continues. In recent years, consultations were held with ADB regarding support to commercial banks in the following areas:

- Implementation of the trade financing facilitation program (together with EBRD);
- Equity investments and granting term loans;
- Additional technical assistance

Cooperation is under way with Germany's Development Bank (KfW) regarding development of the Individual Deposit Insurance Fund and other issues.

Moreover, the KfW made an equity investment in several commercial banks in Azerbaijan.[26]

[26] National Bank of Azerbaijan, http://www.nba.az/default.aspx?go=155&lng=en (15.08.08)

CHAPTER 3

EFFICIENCY OF BANKS IN AZERBAIJAN: A DATA ENVELOPMENT ANALYSIS APPROACH

Banking system plays an important role in financial system of Azerbaijan. It has undergone dramatic changes over the past 17 years. Since 2000, banking system have improved significantly mainly due to strong growth in the economy and financial sector reform. Growth of demand to minimal capital by NBA and consolidation strengthened capital base of private banking system. So the aim of NBA is to improve efficiency and productivity of the banking system via legal and economic means. Thus, it is important for banks' managements, authorities in NBA, government and other financial institutions to measure efficiency of banks.

This chapter explores the efficiency of the Azerbaijan Banking system with the use of a Data Envelopment Analysis technique for the period 2002-2007. The suggested model in this analysis offers an empirical reference set for comparing the inefficient banks with the efficient ones. The model estimates the relative efficiency for each year and determines the feasible targets for improvement for each bank. This study applies classical DEA model which is offered by Charnes et al. (1978), called the CCR model and BCC model offered by Banker et al. (1984).

The organization of this chapter is as follows. Section 3.1 illustrates the methodologies used for efficiency analysis. Section 3.2 reviews the existing literature in the areas of efficiency of banks from transition context. Section 3.3 outlines the conceptual framework and the methodology used. Section 3.4 discusses variable selection and data. Section 3.5 investigates efficiency of banking system under the assumptions of constant return to scale and variable return to scale and determines sources of inefficiency.

3.1 EFFICIENCY ISSUES IN BANKING

Managers and practitioners are interested in how internal changes may affect the efficiency with which banks transform resources into various financial services.

Inefficiency implies that resources are wasted, that is, that firms are producing less than the feasible level of output from the resources employed, or are using relatively costly combinations of resources to produce a particular mix of products or services. Thus, a goal of policymakers, as well as stockholders and managers, is to devise policies that improve the efficiency of commercial banks.

In the literature, there are two distinct definitions for efficiency. First, the Extended Pareto Koopmans definition states that full (100%) efficiency is attained by any decision making unit (DMU) if and only if none of its inputs or outputs can be improved without worsening some of its other inputs or outputs. In most management or social science applications, the theoretically possible levels of efficiency are not known. The preceding definition is therefore replaced by emphasizing its uses with only the information that is empirically available.

The second definition describes the relative efficiency concept. A DMU is to be rated as fully (100%) efficient on the basis of available evidence, if and only if the performances of other DMUs does not show that some of its inputs or outputs can be improved without worsening some of its other inputs or outputs (Marcochi, 2006:4) .

Saha and Ravisankar (2000:189) showed a variety of reasons to study bank efficiency. Firstly, a measure of (relative) efficiency provides a good indicator of the success or otherwise of a bank in a competitive market; in fact, it also reflects the potentiality for failure of a banking institution. Studies reveal that banks which operate efficiently have a better chance of sustaining their business in the future also (Berger and Humphrey, 1992; Barr et al. 1994; Wheelock and Whilson, 1995). Moreover, efficiency indices could also be used to evaluate the impact of changes in regulation and in market conditions on the performance of banks (Berg et al.1992; Humphrey and Pulley, 1997). Further, the mechanism will also help a bank in identifying the areas of inefficiency and formulating suitable strategies to improve its relative position in the market. It can also provide a framework to the regulators to assess the health of individual banks and to work out appropriate interventions to prevent systemic failures.

In recent years, there is a trend towards measuring bank performance using one of the frontier analysis methods. In frontier analysis, the institutions that perform better relative to a particular standard are separated from those that perform poorly.

Such separation is done either by applying a non-parametric or parametric frontier analysis to firms within the financial services industry (Sathye, 2003:664).

The main efficiency approaches that appear in the literature are three parametric approaches: Stochastic Frontier Approach, Distribution-Free Frontier Approach, Thick Frontier Approach, and one non-parametric approach: Data Envelopment Analysis (Al-Hmoud, 2002:23). These methods differ according to the type of measures they produce; the data they require; and the assumptions they make regarding the structure of the production technology and the economic behavior of decision makers. Some methods only require data on quantities of inputs and outputs while other methods also require price data and various behavioral assumptions, such as cost minimization, profit maximization, etc (Coelli et.al. 2005).

Berger and Humphrey (1997:8) mentions that, there is no any agreement among researchers regarding which method produces better efficiency measures of financial institutions. It is not possible to determine which of the two major approaches dominates the other since the true level of efficiency is unknown.

The main differences between the efficiency approaches could be presented in the following points (Al-Hmoud, 2002:24):

- The parametric approaches were initially designed to measure economic efficiency while the nonparametric approach was initially designed to measure technical efficiency. Technical efficiency requires the firm to produce the maximum outputs from a given set of inputs or the minimum inputs for a certain level of outputs. Economic efficiency requires the firm to choose its inputs/outputs combinations that will maximize profit based on the prevailing market prices. The economic theory suggests that economic efficiency implies technical efficiency; however, technical efficiency does not imply economic efficiency.
- The shapes of the efficient frontier imposed by the four approaches are different. As it is evident from the classification of these approaches, the parametric approaches impose more structure to the frontier versus less structure by the non-parametric approach. The structure imposed by the parametric approaches could be thought of as an advantage and a disadvantage over the non-parametric approach. An advantage because they

allow for an error term to exist in the cost function and a disadvantage because they force a specific functional form on the efficient frontier.

- The parametric approaches differ in the way they separate the unobserved random error from the unobserved inefficiency factor. To make this distinction, they impose different assumptions on the distributions of the error term and the inefficiency factor.

3.2 BANK EFFICIENCY IN TRANSITION ECONOMIES: A BRIEF SURVEY OF LITERATURE

Transition economies offer a unique opportunity to study the impact of various policy changes on efficiency. When an economy changes its course from a planned economy and moves towards a market economy, allocation of resources is greatly affected by frequent changes in regulation, competition from abroad, foreign direct investment, restructuring and privatizations, etc. If the economy quickly develops institutions that are conducive to proper functioning of the market economy, the path towards the market economy is likely to be smooth and fast converging (Asaftei & Kumbhakar, 2007).

In spite of the large amount of empirical literature devoted to banking efficiency on all continents, there are only a few studies, which measure banking efficiency in transition economies. A likely reason for this deficit may be the relative lack of banking data in these countries, with long periods of data missing (Weill, 2003).

These studies cover Ukraine (Mertens and Urga, 2001), Poland (Nikiel and Opiela, 2002), Croatia (Jemric and Vujcic, 2002), Hungary (Hasan and Morton, 2003), Czech Republic (Matousek and Taci, 2004) and Romania (Asaftei and Kumbhakar, 2007). Grigorian and Manole (2002) study seventeen countries in transition[27], and Fries and Taci (2005) study fifteen Eastern European countries, while Weill's (2003) study covers two countries- Czech Republic and Poland.

[27] Six countries form CIS (Armenia, Belarus, Kazakhstan, Moldova, Russian Federation, Ukraine)

Mertens and Urga (2001) use stochastic frontier approach to analysis Ukrainian commercial banks. They find that small banks operate more efficiently in terms of cost but less efficiently in terms of profit. Also large banks show significant diseconomies of scale while mall ones show significant scale economies.

Niiel and Opiela (2002) study 43 Polish banks operating from 1997 to 2000. They used distribution-free approach in their analysis and found that banks with foreign and business customers are most efficient.

Jemric and Vujcic (2002) analyze banks efficiency in Croatia between 1995 and 2000 by using the DEA. They find that foreign-owned banks are on average most efficient and new banks are more efficient than old banks. Analysis the source of inefficiency suggests that the most significant cause of inefficiency among state owned and old banks is the number of employees and fixed assets.

Hasan and Morton (2003) study Hungarian commercial banks from 1993 to 1998. By using stochastic frontier approach they find that banks with foreign involvement are less inefficient than their domestic counterparts.

Matousek and Taci (2004) examine Czech banking system in the 1990s by applying the distribution-free approach. The results indicate that the efficiency of the Czech banking sector increases during the analyzed period and foreign banks were on average more efficient than the other banks. Privatization of state-owned commercial banks and more liberal policy towards foreign banks in the early years of transition enhanced the efficiency in the banking system.

Romanian banking system for the period of 1996-2002 was analyzed by Asaftei and Kumbhakar (2007). They employ stochastic frontier approach. Results indicate that, for all types of banks, the cost of technical inefficiency decreases in the years following tightening of regulation. Consistent with other studies on transition economies, foreign banks and foreign representatives offices are the most efficient followed by private domestic and state-owned banks.

Grigorian and Manole (2002) study seventeen countries in transition by applying DEA method. They observed that bank cost efficiency is significantly and positively correlated with GDP per capita and weakly and positively associated with a measure of progress in institutional reform. Also foreign ownership enhanced

commercial bank efficiency and consolidation is likely to improve efficiency of bank operations.

Weill (2003) conducts a comparative analysis of the performance of foreign-owned and domestic-owned banks operating in the Czech Republic and Poland. He applies the stochastic frontier approach to measure efficiency scores and finds that on average foreign banks are more efficient than domestic banks.

Fries and Taci (2005) study fifteen Eastern European countries over the years 1994-2001 by using the stochastic frontier approach. They find that private banks are most efficient than state-owned banks, but there are differences among private banks. Privatized banks with majority foreign ownership are the most efficient and those with domestic ownership are the least.

Although Azerbaijan is one of the transition countries, efficiency of banking system of this country has not studied yet. Analyzing efficiency of Azerbaijan's banks will have special importance in the case of policy implemented by NBA to develop banking system in the country.

3.3 METHODOLOGY

The data envelopment analysis (DEA) was developed by Charnes, Cooper and Rhodes (1978) (hereafter CCR) based on the concept of technical efficiency of Farrel (1957). Since then, thousands of articles have been written by researches and DEA was applied to evaluate performance of many fields ranging from banking to education.[28] Different models of DEA emerged over the past three decade. Zhu (2002) and Cook et al. (2008) provides the various models of DEA in their papers which used in literature.

In recent years application of DEA in banking increased significantly. The first application in banking begins with work of Sherman and Gold (1985), who studied efficiency of branches of US savings bank. Then Rangan et al. (1988) moved application of DEA from branches to banking institutions. Paradi et al. (2004) defines different groups of DEA studies such as, country-wide bank analysis, branch

[28] See Tavares (2002) and Emrouznejad et al. (2008) for bibliography of DEA

analysis, cross national bank analysis, bank merger efficiencies and branch deployment strategies. Many of these studies focused on US banking while others researches studied Denmark, Finland, India, Italy, Norway, Spain and other countries.

Cooper et al. (2004) defines DEA as "a relatively new 'data oriented' approach for evaluating the performance of a set of peer entities called Decision Making Units (DMUs) which convert multiple inputs into multiple outputs.

DEA is a nonparametric method that uses liner programming techniques to measure relative technical efficiency of different DMUs operating and performing in the same or similar tasks. The technique's main advantage is that it can deal with the case of multiple inputs and outputs as well as factors, which are not controlled by individual management (Halkos and Salamouris 2001:2).

DEA calculates the relative efficiency scores of various DMUs in the particular sample. The DMUs could be banks or branches of banks. The DEA measure compares each of the banks/branches in that sample with the best practice in the sample (Sathye, 2003:665). The efficiency frontier formed by connecting these best practice observations would yield a convex production possibility set. The DMUs falling inside the frontier are termed inefficient, and their performance would be measured vis-à-vis the frontier DMUs (Grigorian and Manole, 2005:5).

The analysis under DEA is concerned with understanding how each DMU is performing relative to others, the causes of inefficiency, and how a DMU can improve its performance to become efficient. In that sense, DEA calculates the relative efficiency of each unit in relation to all other units by using the actual observed values for the inputs and outputs of each DMU (Sufian and Majid, 2007:267). For each inefficient unit, DEA identifies an efficiency reference set. This is the set of relatively efficient units to which the inefficient one has been most directly compared in calculating its efficiency rating. This comparison makes it possible to determine the amount of excess resources used by each inefficient unit as well as the amount of excess capacity to increase service outputs in these units without utilizing additional resources (Ozkan-Gunay and Tektas, 2006:422).

The efficiency of each DMU is obtained as a maximum of a ratio of weighted outputs to weighted inputs. This denotes that the more the output produced from

given inputs, the more efficient is the production. The weights for the ratio are determined by a restriction that the similar ratios for every DMU have to be less than or equal to unity. This definition of efficiency measure allows multiple outputs and inputs without requiring pre-assigned weights. Multiple inputs and outputs are reduced to single ‘‘virtual’’ input and single ‘‘virtual’’ output by optimal weights. The efficiency measure is then a function of multipliers of the ‘‘virtual’’ input-output combination (Sufian, 2007a:179). DEA chooses those weights that would maximize the efficiency score in relation to other banks. In general, a bank will have higher weights on those inputs that it uses least and on those outputs that it produces most (Saha and Ravisankar, 2000:191).

There are various models of DEA, but most frequently used ones are the CCR model and BCC model (after Banker, Charnes and Cooper, 1984).

The CCR model introduced by Charnes et al. (1978) presupposes that there is no significant relationship between the scale of operation and efficiency by assuming constant return to scale (CRS) and it delivers the overall technical efficiency. CRS implies a proportionate rise in outputs when inputs are increased. It allows comparison between small and large banks implying that small banks may be scaled up a multiplicity of times in order to be comparable to large banks (Bergendahl, 1998:241). The CRS assumption is only justifiable when all DMUs are operating at an optimal scale. Thus, if one makes the CRS assumption when not all DMUs are operating at the optimal scale, the computed measures of technical efficiency will be contaminated with scale efficiencies (Sufian, 2007a:179). Factors that may cause banks not operate at an optimal scale include imperfect competition, leverage concerns, certain prudential requirements, etc (Grigorian and Manole, 2002:8). If this is the case then it would be useful to apply BCC model to the analysis. The model assumes variable return to scale (VRS) which implies a disproportionate rise or fall in outputs when inputs are increased. BCC model gives pure technical efficiency scores. Comparison of CCR and BCC scores allows investigate source of inefficiency weather it is the cause of inefficient operation or a scale problem. The scale efficiency is calculated by using the CCR to BCC ratio. If scale efficiency is equal to one, then DMU operates at the most efficient scale size. If it is less than

unity, this means there is scale inefficiency for DMU (Cooper et al. 2007; Denizer et al, 2007)

According to Avkiran (1999a:211) it is sensible to run DEA under CRS and VRS assumption and compare the efficiency scores. If the majority of the DMUs emerge with different scores under the two assumptions, then it is safe to assume VRS. In other case it can be worked under CRS without being concerned about scale inefficiency.

The mathematical formulation of CCR model would be as follow:

$$\max e^0 = \frac{\sum_{j=1}^{J} u_j^0 y_j^0}{\sum_{i=1}^{I} v_i^0 x_i^0} \qquad (1)$$

Subject to

$$\frac{\sum_{j=1}^{J} u_j^0 y_j^n}{\sum_{i=1}^{I} v_i^0 x_i^n} \le 1; \qquad \text{n} = 1\ldots N,$$

$$v_i^0, u_j^0 \ge 0; \qquad \text{i} = 1\ldots\text{I; j} = 1\ldots\text{J}$$

where y_j^n; x_i^n are positive known outputs and inputs of the nth DMU and v_i^0, u_j^0 are the variable weights to be determined by solving problem (1). The DMU being measured is indicated by the index 0, which is refereed to as the base DMU. The maximum of the objective function e^0 given by problem (1) is the DEA efficiency score assigned to DMU^0. Since every DMU can be DMU^0, this optimization problem is well-defined for every DMU. If the efficiency score $e^0 = 1, \text{DMU}^0$, satisfies the necessary condition to be DEA efficient; otherwise it is DEA inefficient.

It is difficult to solve problem (1) as stated, because the objective function is non-linear and fractional. Charnes et al., however, transformed the above non-linear programming problem into a linear one as follows:

$$\max h^0 = \sum_{j=1}^{J} u_j^0 y_j^0 \qquad (2)$$

Subject to

$$\sum_{i=1}^{I} v_i^0 x_i^0 = 1, \qquad \sum_{j=1}^{j} u_j^0 y_j^n - \sum_{i=1}^{I} v_i^o x_i^n \le 0;$$

$n = 1 \ldots N,\ v_i^o \ge \varepsilon, u_j^0 \ge \varepsilon,\ I = 1 \ldots I,\ j = 1 \ldots J.$

The variables defined in problem (2) are the same as those defined in problem (1). An arbitrarily small positive number, ε is introduced in problem (2) to ensure that all of the known inputs and outputs have positive weight values and that the optimal objective function of the dual problem to problem (2) is not affected by the values assigned to the dual slack variables in computing the DEA efficiency score for each DMU. The condition $h^0 = 1$ ensures that the base DMU^0 is DEA efficient; otherwise it is DEA inefficient, with respect to all other DMUs in the test. A complete DEA model involves the solution of N such problems, each for a base DMU, yielding N different (v_i^n, u_j^n) weight sets. In each program, the constraints are held constant while the ratio to be maximized is changed (Sathye, 2003:666).

Banker et al. (1984) extended CCR model to account for variable return to scale when not all firms are operating at an optima scale. This is done by adding additional constraint to the CCR model:

$$\sum_{j=1}^{J} \lambda_j^0 = 1$$

Two different approaches can be applied to the DEA methodology for analysis of efficiency: input-oriented or output-oriented. The first defines the frontier by seeing the maximum possible proportional reduction in input usage with output levels held constant for each category. For the output-oriented approach, the DEA method seeks the maximum proportional increase in output production, while input levels are held fixed. The two measures provide the same technical efficiency scores when a CRS model is applied but are different under the VRS approach (Marcochi, 2006:30). Sanjeev (2006) mentions that outputs of the banks may be driven by the market factors (beyond the control of banks) whereas the banks may have a better control over the inputs. So this study applies input orientation.

DEA requires the following conditions to be met in order produce meaningful results (Ho, 2004:22):

1. The DMUs must operate in the same cultural environment.
2. The model must contain suitable inputs and outputs.
3. Each DMU must have a complete set of accurate data for all variables in the model.
4. There must be a minimum number of units to study in order to maintain sufficient degrees of freedom. A general rule to determine the minimum number of DMUs (n) is:

$$n \geq \max \{m \times s, 3(m + s)\}$$

where n= minimum number of DMUs
m= number of inputs
s= number of outputs

In other words, sample size has to be at least three times large than the sum of number of inputs and outputs (Avkiran, 1999a:208).

Zhang and Bartels (1998:187) mentions that the overall technical efficiency of any DMU will tend to decrease as the number of firms included in the DEA application increases. That is because, as the sample size increases, he chance of encountering firms close to the true production frontier increases, and therefore the frontier constructed by DEA approaches the true frontier asymptotically as the number of firms in an industry increases.

Advantages and Disadvantages of DEA: The DEA offers some advantages compared to other approaches, but also has some limitations that have to be considered when using it for efficiency analysis. The following useful features of DEA can be listed:

In contrast to parametric approaches DEA doesn't require a preconceived structure or specific functional form to be imposed on the data in identifying and determining the efficient frontier, error, and efficiency structures of the DMUs. Therefore, DEA preferred when there are multiple outputs that are produced with multiple inputs or the standard input-output relation is not known or defined. DEA provides basic benchmarking information that includes (1) an efficiency score for each DMU, hence allowing ranking amongst the DMUs in the sample, (2) an

efficiency reference set with peer DMUs, (3) a target for inefficient DMU, and (4) information detailing by how much inputs can be decreased or outputs can be increased to improve performance. DEA allows researchers to choose any kind of inputs and outputs in accordance with a managerial focus and it works with variables of different units without the need for standardization. Also DEA is less data demanding as it works fine with small sample size (Avkiran, 1999a; Gregoriou and Zhu, 2005; Ozkan-Gunay and Tektas, 2006; Sufian, 2007b; Sufian and Majid, 2007).

The ability of the DEA to identify possible peers or role models as well as simple efficiency scores gives it an edge over other methods. As an efficient frontier technique, DEA identifies the inefficiency in a particular DMU by comparing it to similar DMUs regarded as efficient, rather than trying to associate a DMUs performance with statistical averages that may not be applicable to that DMU (Sathye, 2003:665) (Figure 21).

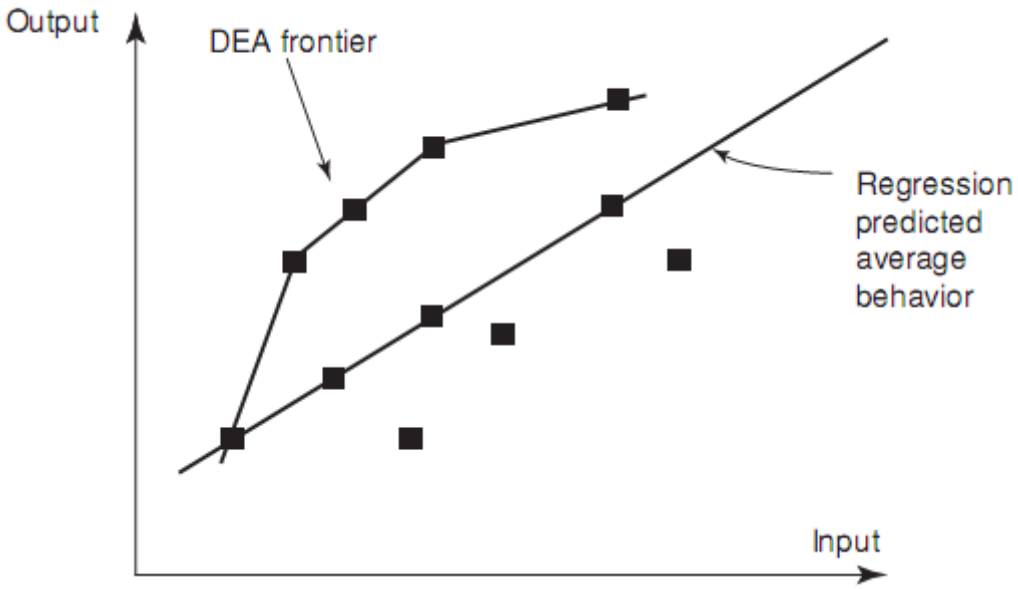


Figure 21. DEA and Regression

Source: Gregoriou and Zhu, 2005, 'Evaluating Hedge Fund and CTA Performance: Data Envelopment Approach'

The features of DEA that makes it powerful can also create problems. There are limitations that must be considered when choosing DEA as a research method (Avkiran, 1999a; Hababou, 2000; Ho, 2004; Sufian, 2007a).

- The main drawback of DEA is that it assumes date to be free of measurement error. All deviations form the frontier are assumed to be due to inefficiency. Errors in measurement and noise can misrepresent real relative efficiency.
- DEA measures relative efficiency of DMUs in the sample. There is a possibility that highly efficient unit not to be included to the study, so units in this study will appear relatively more efficient than they really are.
- DEA requires a minimum number of units in order to guarantee the necessary degrees of freedom in the model. Analysis containing less than minimum number of units will yield higher efficiency scores and more units on the frontier, and hence give a more favorable picture than is the case.
- Since DEA is a non-parametric technique, statistical hypothesis tests are difficult, and are the focus of ongoing research.

3.4 VARIABLE SELECTION AND DATA

The selection of appropriate inputs and outputs is the most important step in using DEA to measure the relative efficiency of any type of firm. This is partially true for banks because there is a long standing debate among researchers over the appropriate inputs and outputs for banks (Yue, 1992:35). Choice of variables significantly affects the results. There are, however, certain limitations on variable selection due to the reliability of the data. For example, the variables may present different information, although they carry the same label, or the same information may be reported under different labels. This variation stems from the lack of reporting standards in banking industry. On the other hand, the use of unnecessary variables clutters the analysis and makes it difficult to interpret. Another important complication in bank efficiency studies that affects the variable selection and hence the results is the definition of a bank's function. (Denizer et al. 2007:179).

In literature there are two main approaches to the activities of banks: the production and intermediation approaches (Sealey and Lindley, 1977). Under production approach bank is defined as a producer of services for account holders, that is, they perform transactions on deposit accounts and process documents such as loans. Hence, according to this approach, the number of accounts or its related

transactions is the best measure for output, while the number of employees and physical capital is considered as inputs (Sufian, 2007b:110). A prominent criticism of this approach is that it does not take into account the interest costs, which comprise a major proportion of expenses in most countries (Sanjeev, 2006:18).

The intermediation approach on the other hand regards banks as intermediaries in raising funds in the form of deposits and other funds, and lending funds in the form of loans and other assets to generate earnings. In this approach the funds raised and the expenses incurred are treated as inputs (interest expenses, labor, capital, and deposits), whereas the funds loaned and income generated are regarded as outputs (loans, interest income) (Avkiran, 2006:285; Yue, 1992:35).

As Berger and Humphrey (1997:31) mention neither of these two approaches is perfect because neither fully captures the dual roles of financial institutions as (i) providing transactions/document processing services and (ii) being financial intermediaries that transfer funds from savers to investors. It would be best to employ both approaches, but usually data are not available to implement such a research. They also indicate some advantages of both approaches. The production approach may be better for evaluating branch efficiency, because branches primarily process customer documents for the institution as a whole and branch managers typically have little influence over bank funding and investment decisions. The intermediation approach may be more appropriate for evaluating entire financial institutions because this approach is inclusive of interest expenses, which (depending on the phase of the interest rate cycle) often accounts for one-half to two-thirds of total costs. As well, the intermediation approach may be superior for evaluating the importance of frontier efficiency to the profitability of the financial institution, since minimization of total costs, not just production costs, is needed to maximize profits.

In literature there is another approach called user-cost approach (Hancock, 1985). This approach determines whether a financial product is an input or an output on the basis of its net contribution to bank revenue. If the return on a financial product is greater than its opportunity cost, the financial instruments is considered an output, otherwise it is considered an input. The main drawback of this approach is that there are some difficulties in measuring financial revenues and marginal opportunity costs that make the user cost approach to distinguishing outputs from

inputs subject to significant measurement error and sensitive to changes in the data over time (Berger and Humphrey, 1992:248; Pastor et al. 1997:401).

In the majority of studies, the basic concept is the use of accounting data to measure the efficiency. Market data also began to be used in analysis (Oliveira and Tabak, 2005)

Taking into account the advantages and disadvantages of each method, the intermediation approach was employed using accounting data taken form financial statements of banks. Table 20 summarizes various outputs and inputs used in some studies, which followed intermediation approach.

Table 20. Inputs and Outputs Used in Literature

Author (date)	Inputs	Variables
Al-Jarrah (2007)	Deposits, labor, physical capital	Loans, all other earning assets, off-balance sheet items
Avkiran (1999b)	Stuff numbers, deposits, interest expenses, non-interest expenses	Net loans, net interest income, non-interest income
Noulas (2001)	Interest expenses, non-interest expenses	Interest income, non-interest income
Sufian (2007a)	Total deposits, labor, fixed assets	Total loans, income
Tsionas et al. (2003)	Labor, capital, total deposits	Loans and advances, investments, liquid assets
Yue (1992)	Interest expenses, non-interest expenses, transaction deposits, non-transaction deposits	Interest income, non-interest income, total loans

Considering inputs and outputs used in previous researches and data availability, this study uses the following variables:

Inputs

1. *Total Deposits*- include current and term deposits accounts of state, legal and individual customers
2. *Interest Expense*- contains interest on deposits, interest on non-deposits funds and other interest expenses.

Outputs

1. *Total Loans*- includes loans granted to state, legal and individual customers.
2. *Interest income*- includes interest on loans, interest on securities, interest on deposits in banks and on interbank funds sold.

The empirical investigation has been carried out using annual data form the Balance Sheet Accounts and Income Statements of commercial banks operating in Azerbaijan for the period of 2002-2007. Data are not available for all banks. Thus, 11 banks are included in the sample in 2002, 17 banks in 2003, 20 banks in 2004, 22 banks in 2005, 35 banks in 2006 and 36 banks in 2007.

3.5 EMPRICAL RESULTS

Efficiency results are derived by using CCR and BCC models of DEA for a period of 2002-2007. Total efficiency score (CCR model), pure technical efficiency scores (BCC model) and scale efficiency scores (CCR/BCC) were calculated for each bank, and average efficiency scores used for analysis purposes (see Appendix A). Although averaging the scores may cause loss of information (Denizer et al. 2007:181), it would be useful to study the whole banking system with average efficiency scores rather than with the scores of individual banking. Table 21 demonstrates the summary statistics of efficiency measures. The results suggest that Azerbaijan banks have exhibited the highest average overall efficiency score of 76.8% in year 2002, declined to 23.3% in 2006 and had a sharp improvement in 2007 reaching 72.4%. High overall efficiency in 2002 probably is the result of number of banks in the sample. The sample consists of 11 banks out of 46. The worst year over the study period is 2006 with its 23.3% efficiency score. This means that average

bank could have produced the same level of output by only using 23.3% of the amount of inputs it used. It shows excess use of resources in banking system.

Table 21. Summary Statistics

CCR	2002	2003	2004	2005	2006	2007	All Years
Number of DMUs	11	17	20	22	34	35	139
Number of efficient DMUs	3	1	2	3	2	6	17
Average Efficiency:	0.768	0.440	0.583	0.412	0.233	0.724	0.527
State banks	0.781	0.441	0.371	0.429	0.068	0.799	0.481
Private banks	0.766	0.440	0.606	0.411	0.243	0.720	0.531
Standard deviation	0.197	0.192	0.193	0.275	0.227	0.193	0.213
Min	0.522	0.205	0.339	0.151	0.065	0.383	0.278
Max	1.000	1.000	1.000	1.000	1.000	1.000	1.000
BCC							
Number of efficient DMUs	6	11	10	8	12	13	60
Average Efficiency:	0.897	0.877	0.886	0.811	0.802	0.827	0.850
State banks	1.000	1.000	0.809	0.996	0.971	0.856	0.939
Private banks	0.874	0.860	0.895	0.793	0.791	0.827	0.840
Standard deviation	0.172	0.210	0.159	0.218	0.205	0.169	0.189
Min	0.531	0.275	0.545	0.341	0.285	0.385	0.394
Max	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Overall efficiencies of state banks (IBA and Kapital Bank) were slightly above of the private banks over the study period, except 2004 and 2006. It was 37.07% in 2004 and 6.75% in 2006 (60.61% and 24.29% of the private banks respectively).

Pure technical efficiency was high, on average 85% during these years. Form 2002 to 2004 banks had pure technical efficiency scores above 87%, but declined slightly following years (overall efficiency has the same decline trend but it is sharper then pure technical efficiency). Mean pure technical efficiency score of state banks was 93.9% for the period of 2002-2007, which is higher than the private banks' score of 84%. This means that state banks are managed better than private banks. In 2002 and 2003 the score of two state banks was 100%, declined to 80.94% in 2004 (lowest over the study period), improved during 2005 and 2006 and was

above 97%, and again declined to 85.6% in 2007. Private banks were below state banks over these periods except 2004.

Inefficiency can be result of inefficient operation and disadvantageous conditions under which banks operate. In order to investigate source of inefficiency it is important to compare overall (CCR) and pure technical efficiency (BCC) scores. Figure 22 displays very important results. There are great differences between CCR and BCC scores. A comparison of the results shows that there are scale problems (disadvantageous condition) and it had a significant impact on downward efficiency trend. Therefore it would be useful to investigate scale efficiency of banking system.

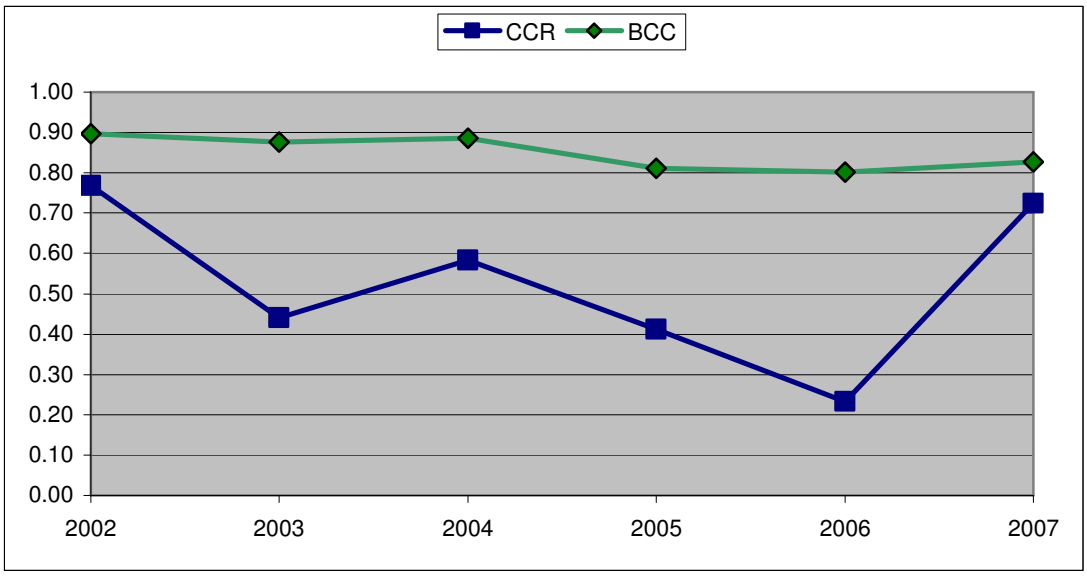


Figure 22. Average Overall and Pure Technical Efficiency Score

Figure 23 shows the result of scale efficiency (CCR/BCC). If scale efficiency is high, then the system has a lower scale problem. The scores ranged from 30.8% to 87.7% over the study period. This means that because of scale problem banking system suffered from 70% to 12% efficiency loss. Thus the major source of overall inefficiency is scale rather than pure technical. And also comparison of state and private banks reveal that state banks have more scale problems than private banks. Prudential requirements, banking reforms of NBA, high economic growth because of oil revenues and adoption of new banking law in 2004 are the main reasons of scale inefficiency. Especially banking law of 2004 and high oil revenues of following years created scale problems for the banks.

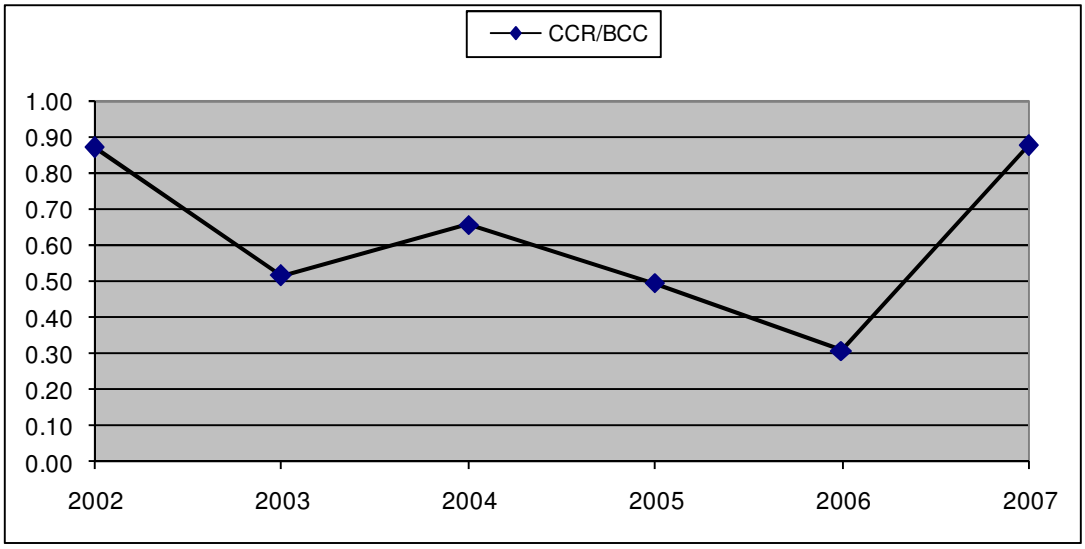


Figure 23. Average Scale Efficiency

Besides scale problems Azerbaijan banking system also has inefficient operation, i.e. pure technical inefficiency problems. These can be cause of excess use of resources, output shortfalls or some combination of the two. Figure 24 shows the source of inefficiency after moving scale effect.

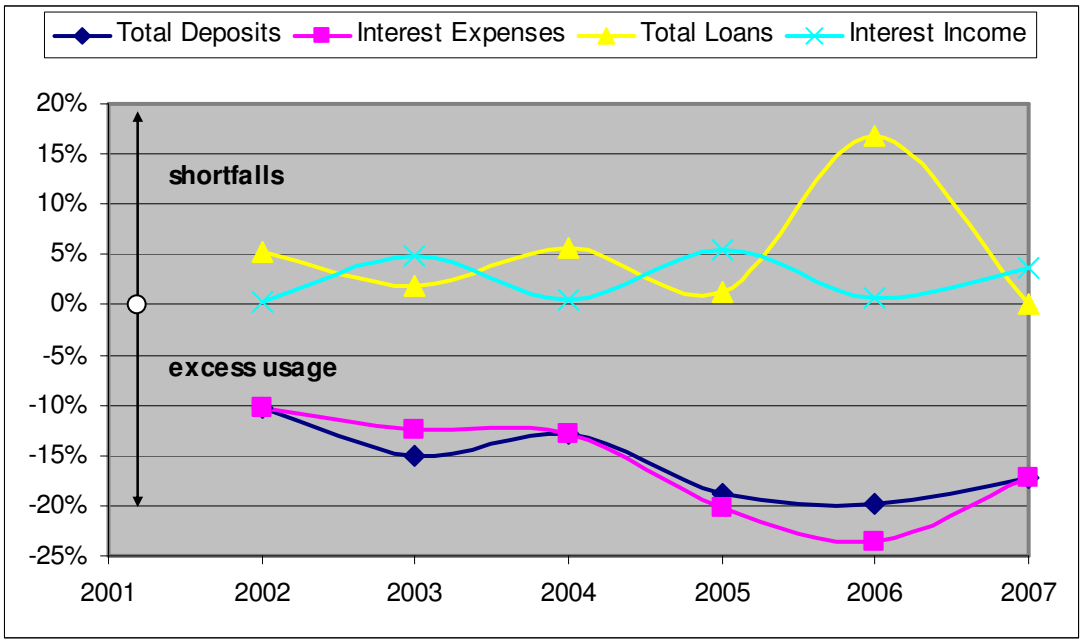


Figure 24. Source of Inefficiency

Figure 24 reveal that banks have used excess amount of resources (deposits and interest expenses) and have output shortfalls (loans and interest income) throughout the analysis period. Banks have a problem of transforming deposits into loans, the basic function of commercial banks. There are high interest expenditures because of excess usage of deposits. At the same time banks could not collect interest income when loans increased (they move in opposite direction). This result is consistent with EBRD's report on Non Performing Loans in Azerbaijan.

Excess usage of resources is the main reason of downward trend in pure technical efficiency. It increased form 10% in 2002 to 16% in 2007 for both inputs. It means average bank used more inputs to create outputs in 2007 compared to 2002 and average bank could have produced the same level of output with 16% least input. At the same time output shortfalls ranged between 0% and 5% throughout these years. The worst year over these years is 2006. Excess usage of deposits and interest expense was almost 20% and 24% respectively. In the same year loans has the highest shortfall of 17%. These factors make 2006 the least efficient year over the study period.

Decomposition of overall efficiency into pure technical efficiency and scale efficiency also helps to determine returns to scale. Table 22 summarizes these results:

Table 22. Returns to Scale

	2002	2003	2004	2005	2006	2007
No. of IRTS	0	0	0	0	0	4
No. of CRTS	6	2	2	4	2	24
No. of DRTS	5	15	18	18	32	7
Total	11	17	20	22	34	35

Table shows number of banks operating at increasing, constant and decreasing returns to scale. CRTS means that an increase in inputs will lead to a proportionate increase in outputs. Twenty four banks operated at CRTS in 2007. IRTS means that increase in inputs will lead to more than a proportional increase in outputs. Number of banks operating at IRTS is only 4 over the study period and this experienced in 2007. According to Sufian (2007b) efficient banks should absorb the banks that experience IRTS, in order to exploit cost advantages. Implication of DRTS is that

increase in inputs will only result in a smaller increase in outputs. Most of the banks operated at DRTS between 2003 and 2006. Thus high scale inefficiency in this period wad due to DRTS.

These findings are very important form managerial and regulatory perspective. It allows managers to see the areas that need improvements and prepare required policy and also determine the target bank if expansion with acquisition is needed. Regulators can use this information to regulate banking system effectively and monitor the results of reforms.

3.6 CONCLUSION

The aim of this paper is to analyze bank efficiency in Azerbaijan. For analysis purposes DEA, one of the most used efficiency method applied. One of the main advantages of DEA is that it does not require specific functional form. Thus, it is preferred when there are multiple inputs and outputs. Two models of DEA, CCR and BCC are most frequently used models. This paper applies both of them to measure efficiency and find source of inefficiency.

Study covers commercial banks operating in Azerbaijan during the period of 2002- 2007. Over the analysis period overall efficiency declines, but improves in 2007. However, pure technical efficiency scores were high, which shows that there were scale problems in banking sector. Prudential requirements, banking reforms, high economic growth and banking law of 2004 negatively affected efficiency scores of banks.

Another finding of this paper is that state banks are managed better than the private banks and state banks were more efficient than their private counterparts, except in 2004 and 2006.

Analysis of pure technical efficiency scores reveal that banks have a problem of transforming deposits into loans. Source of inefficiency comes from excess use of resources. Also banks could not collect interest income, which in turn confirms EBRD's report on NPLs in Azerbaijan.

CONCLUSION AND SUGGESTION FOR FURTHER RESEARCH

The main aim of the study is to investigate efficiency of Azerbaijan banking. Before analysis general information were given about banking, its historical development, services provided by them and regulation of banks in Chapter 1. Then subject continued with Azerbaijan banking sector in Chapter 2.

Banks are one of the oldest institutions that evolved from simplest form to its complex modern form. Nowadays banks perform any king of intermediary services such as accepting deposits, lending, brokerage, investment, and other services. Banks are biggest institutions in financial system. That is why governments pay especial attentions to their tight control.

Banking in Azerbaijan has its own peculiarities, its development path. First banking institutions in Azerbaijan appeared in the second half of nineteen's century. In Soviet period there were only state banks serving for directives of government. After independence Azerbaijan started to transform its economy from planned to market economy. Economic transformation began with reforming of banking system, which continues to develop and modernize at the present moment. Commercial banks have become central part of financial system. Banking system is very young and it accounts less than 20% of the economy, which shows development potential of the system. It is highly concentrated and dominated by the two state banks, but they are expected to be privatized in the near future.

In early years of independence because of the lack of effective regulation and proper law in licensing, number of commercial banks rapidly increased. In 1995 there were more than 200 banks. But gradually with effective control, promotion and application of reforms NBA attained stability in the banking system. And high economic growth of recent years significantly affected all areas of economy, especially banking system. Thus form this context measurement of efficiency of system is very important. It allows seeing the effects of reforms, prudential requirements and economic factors on banks.

This study used DEA technique to measure efficiency of commercial banks covering period of 2002-2007. Findings are important from managerial and regulatory perspective. Over the study period, average efficiency of commercial

banks decreases and improves sharply in 2007. The least efficiency year was 2006. Investigation of efficiency scores revealed that there are scale problems in banking and this is high especially in state banks. Reforms of NBA, adoption of new banking law in 2004 and high oil revenues created disadvantages condition to commercial banks and it affected efficiency scores.

Also analysis of pure technical efficiency scores showed that Azerbaijan banks have problem of transferring deposits to loans. Excess use of resources and output shortfalls are the source of pure technical inefficiency. In addition, banks have a problem of collecting interest income. Another important finding is that state banks managed better than private banks.

This study has a number of limitations that may constrain the generalization of the results and calls for future researches.

First, the present study did not include all banks, because of data availability. As DEA is data sensitive, excluding most of the banks will distort efficiency scores. It is important to use all banks in analysis to have sufficient results and see the state of banking in the country.

Second, period of study plays significant role in analysis. Study of one or two years is not enough to investigate the effects of reforms and regulation on efficiency scores. More years must be included, especially 1990th. Also, world financial crisis in 2008 would have inevitable effect on Azerbaijan banking sector. To study the period before and after crisis would be very important.

Third, different DEA techniques can be used in analysis. Using intermediation and production approaches and comparison of their results would be useful. In addition, application of DEA with other parametric approaches would be interesting.

Fourth suggestion is the analysis of Azerbaijan, Armenia and Georgia together. Share of foreign banks in Armenia and Georgia is very high. Comparison of these two countries with Azerbaijan will help to see the effects of foreign banks in banking sector.

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APPENDIX A

Table1. Overall, Pure Technical and Scale Efficiency Scores (in percent)

	All banks				State banks				Private banks			
	Mean	St.Dev	Min.	Max.	Mean	St.Dev	Min.	Max.	Mean	St.Dev	Min.	Max.
2002												
Over.Tech.	76.83	19.69	52.25	100.00	78.09	30.99	56.17	100.00	76.56	19.08	52.25	100.00
Pure Tech.	89.70	17.24	53.08	100.00	100.00	0.00	100.00	100.00	87.41	18.41	53.08	100.00
Scale	85.87	13.87	64.38	100.00	78.09	30.99	56.17	100.00	89.04	17.65	52.25	100.00
2003												
Over.Tech.	44.03	19.15	20.52	100.00	44.12	17.24	31.94	56.32	44.02	19.95	20.52	100.00
Pure Tech.	87.66	21.03	27.50	100.00	100.00	0.00	100.00	100.00	86.01	21.93	27.5	100.00
Scale	50.43	16.59	35.31	100.00	44.13	17.24	31.94	56.32	52.53	19.62	20.52	100.00
2004												
Over.Tech.	58.26	19.27	33.91	100.00	37.07	4.47	33.91	40.24	60.61	18.85	34.57	100.00
Pure Tech.	88.62	15.94	54.48	100.00	80.94	26.95	61.88	100.00	89.47	15.28	54.48	100.00
Scale	64.92	13.90	51.28	100.00	47.52	10.30	40.24	54.80	67.61	15.47	37.10	100.00
2005												
Over.Tech.	41.23	27.55	15.12	100.00	42.94	1.71	41.73	44.15	41.06	28.95	15.12	100.00
Pure Tech.	81.13	21.80	34.07	100.00	99.56	0.62	99.11	100.00	79.29	22.05	34.07	100.00
Scale	48.65	23.16	31.72	100.00	43.13	1.99	41.73	44.54	50.03	24.94	17.82	100.00
2006												
Over.Tech.	23.26	22.66	6.48	100.00	6.75	0.04	6.48	7.01	24.29	22.97	6.82	100.00
Pure Tech.	80.18	20.48	28.53	100.00	97.07	4.14	94.14	100.00	79.13	20.65	28.53	100.00
Scale	26.70	20.90	12.75	100.00	6.96	0.68	6.48	7.45	32.24	26.10	7.11	100.00
2007												
Over.Tech.	72.40	19.24	38.32	100.00	79.85	28.50	59.69	100.00	71.95	1914	38.32	100.00
Pure Tech.	82.73	16.94	38.50	100.00	85.56	20.37	71.19	100.00	82.65	17.07	38.50	100.00
Scale	86.94	8.67	73.98	100.00	91.92	11.42	83.84	100.00	87.36	13.23	51.91	100.00

Table2.Efficiency Scores of Individual Banks

	2002		2003		2004		2005		2006		2007	
Banks	CCR	BCC	CCR	BCC	CCR	BCC	CCR	BCC	CCR	BCC	CCR	BCC
AGB	0.53	0.53	0.28	0.62	0.40	0.57	0.21	0.57	0.09	0.77	0.61	0.73
AmrahBank	-	-	0.59	1.00	0.67	0.90	0.21	0.44	0.16	0.72	0.57	0.66
ASB	-	-	-	-	-	-	-	-	0.27	1.00	0.98	1.00
AtaBank	0.85	0.87	0.54	1.00	0.55	0.78	0.25	0.62	0.08	0.59	0.50	0.63
AtlantBank	-	-	-	-	-	-	-	-	1.00	1.00	-	-
AtraBank	-	-	-	-	-	-	-	-	0.24	0.74	0.70	0.70
Azerbaijan Credit Bank	-	-	-	-	-	-	-	-	1.00	1.00	-	-
AzerDemiryolBank	-	-	-	-	-	-	-	-	0.14	0.90	0.55	0.74
AzerNagliyatBank	-	-	-	-	-	-	-	-	0.20	0.61	0.57	0.58
Azer-Turk Bank	-	-	-	-	1.00	1.00	1.00	1.00	0.15	1.00	0.69	0.85
Bank Melli Iran	-	-	-	-	-	-	-	-	0.26	1.00	1.00	1.00
Bank of Azerbaijan	-	-	0.42	0.65	0.66	1.00	0.40	1.00	0.22	1.00	-	-
Bank of Baku	1.00	1.00	0.38	1.00	0.61	1.00	0.35	0.90	0.13	1.00	0.62	0.81
Bank Standard	-	-	0.21	1.00	0.37	1.00	0.18	1.00	0.07	0.92	0.52	1.00
Birlik Bank	-	-	-	-	-	-	-	-	-	-	0.88	1.00
CredoBank	-	-	-	-	-	-	-	-	0.23	0.29	1.00	1.00
DebutBank	-	-	0.61	1.00	0.59	1.00	0.31	0.72	-	-	1.00	1.00
Dekabank	-	-	-	-	-	-	-	-	0.29	0.51	0.93	1.00
Gandja Bank	-	-	-	-	-	-	-	-	0.67	1.00	1.00	1.00
Gunay Bank	0.52	1.00	-	-	0.35	0.54	0.15	0.34	0.20	0.68	0.65	0.65
IBA	0.56	1.00	0.32	1.00	0.40	1.00	0.42	1.00	0.06	1.00	1.00	1.00
Kapital Bank	1.00	1.00	0.56	1.00	0.34	0.62	0.44	0.99	0.07	0.94	0.60	0.71
MFBA	-	-	-	-	-	-	1.00	1.00	-	-	1.00	1.00
Muganbank	-	-	0.49	1.00	0.85	1.00	0.42	0.80	0.13	0.61	0.61	0.73
NBCBank	-	-	1.00	1.00	1.00	1.00	1.00	1.00	0.35	0.48	0.94	0.95
Nikoil	-	-	-	-	-	-	-	-	0.12	0.77	0.60	0.77
Parabank	0.59	0.59	0.27	0.64	0.54	0.93	0.23	0.50	0.22	0.82	0.38	0.39
Rabitabank	0.67	1.00	0.39	0.81	0.45	0.70	0.25	0.58	0.12	0.63	0.51	0.59
Respublika Bank	0.88	0.89	0.44	1.00	0.64	1.00	0.27	1.00	0.13	1.00	0.55	0.71
Royal Bank of Baku	-	-	-	-	-	-	-	-	0.19	0.38	0.51	0.56
TDB	-	-	-	-	-	-	-	-	0.17	0.58	1.00	1.00
Texnikabank	-	-	0.47	1.00	0.54	0.88	0.30	0.84	0.07	0.80	0.66	0.79
TuranBank	0.85	0.98	0.30	0.90	0.48	1.00	0.31	0.88	0.19	0.80	0.80	0.94
UniBank	-	-	-	-	0.65	1.00	0.25	1.00	0.11	1.00	0.57	1.00
United Credit Bank	-	-	-	-	-	-	-	-	0.35	0.80	0.84	0.85
Xalq Bank	-	-	-	-	-	-	0.82	1.00	-	-	0.74	0.81
Yapi Credi Bank	-	-	-	-	-	-	-	-	0.07	1.00	0.59	1.00
Zaminbank	1.00	1.00	0.23	0.27	0.56	0.79	0.29	0.68	0.15	0.92	0.69	0.81
Average	**0.77**	**0.90**	**0.44**	**0.88**	**0.58**	**0.89**	**0.41**	**0.81**	**0.23**	**0.80**	**0.72**	**0.83**