**Doctoral Dissertation** 

The effects of corporate governance on economic growth through financial sector development: An empirical study in case of Uzbekistan.

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Doctoral Program in Economics Graduate School of Economics Ritsumeikan University

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## Doctoral Dissertation Reviewed by Ritsumeikan University

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#### Abstract

Nowadays, corporate governance issues have become the most popular and highly debated research topics in the global financial market due to the worldwide financial crises. According to Babic (2003), corporate governance is recognized as a modern driver for economic growth. In emerging countries like Uzbekistan, banking sector and stock market are integral parts of the financial sector, so their well-being is an imperative constituent for domestic economy. The expansion of both banking sector and stock market significantly affects economic development (Beck T., Levine R., 2004). Uzbekistan has also brought more attention for the corporate governance issues in banking sector by accepting necessary financial reforms and corporate governance policies; however, most banks have not yet had an effective corporate governance practice. Unfortunately, there is a lack of related academic research in the area of corporate governance - economic growth linkage from financial sector perspectives in Uzbekistan. Therefore, we intend to study the effect of corporate governance on economic growth through the development of banking sector and stock market in case of Uzbekistan over the period of 2003-2018. To carry out our investigation, we employ four different models and econometric techniques to measure corporate governance mechanisms impact on economic growth through financial sector development.

The main findings of this study are fourfold. Initially, there is a significant space for improving the overall performance of the banking sector through privatization of the biggest state-owned banks as well as decreasing share of government in other banks with a state ownership by implementing good corporate governance practice in financial sector of Uzbekistan. Secondly, we find that corporate governance itself is not enough for increasing the soundness of banking sector, stock market development is also considered as a key driver for improving on the soundness of banking sector in Uzbekistan. Thirdly, investor protection is recognized as an effective corporate governance mechanism whereas government mechanism on corporate governance is not confirmed as an effective tool to encourage lower of cost equity capital in financial sector. In addition, the expansion of stock market is not at certain level where can reduce the cost of equity capital in banking sector of Uzbekistan. The last not least, banking sector has a substitution effect while stock market has a complementary impact on economic growth in short run and in long run. In addition, in long run banking sector and stock market have asymmetric effects on economic growth, on average, ceteris paribus. To sum up, it can be concluded that corporate governance is very crucial towards further economic growth through financial sector development in Uzbekistan.

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### List of abbreviations

AAB- Asia Alliance Bank **BIS-** Bank of International Settlements CAPM- Capital Asset Price Model CBU- The Central Bank of the Republic of Uzbekistan CG-Corporate Governance CSR- Corporate Social Responsibility **GDP-** Gross Domestic Product GMS- The General Meeting of Shareholders IFB –Invest Finance Bank MB- The Management Board NBU- The National Bank of Uzbekistan OCED- Organization for Economic Cooperation and Development **OFB-** Orient Finance Bank QQB- Qishloq Qurilish Bank RBS - The Royal Bank of Scotland SB- The Supervisory Board SQB – Sanoat Qurilish Bank **TRSE-Tashkent Republican Stock Exchange** UZKDB- Korean Development Bank Uzbekistan UZS- Uzbek Soum (Uzbek currency) **UK-** United Kingdom **US-** United States VAR- Vector Autoregression Model

VECM - Vector Error Correction Model

#### Chapter 1. Introduction

#### 1.1 Background

Nowadays, corporate governance issues have become the most popular and highly debated research topics in the global financial market due to the worldwide financial crises. According to Babic (2003), corporate governance is recognized as a modern driver for economic growth. In emerging countries like Uzbekistan, banking sector and stock market are integral parts of the financial sector, so their well-being is an imperative constituent for domestic economy. The expansion of both banking sector and stock market significantly affects economic development (Beck T., Levine R., 2004). It is a fact that stock market is not yet well developed, so that banking industry plays a predominant role in corporate finance in Uzbekistan (Mizuno M., 2009). Therefore, the whole economy is significantly affected by a slightly changes in the performance and stability of the banking sector in Uzbekistan. An economy with a sound banking system is better able to withstand negative shocks and contribute to the stability of the financial sector (Athanasoglou P.P et al., 2008). Over the last two decades the corporate governance of banks has become a significant determinant of economic growth since banking sector is the backbone of the economy. More importantly, the corporate governance of banking sector has a specific characteristics and complexities due to banking sector is greater opaqueness, more leveraged with higher information asymmetries and greater government regulation than other non-financial sectors (Levine R., 2004). For this reason, well-organized banking sector with good corporate governance practices is very crucial for economic development in a country. Conversely, the corporate governance of banking sector failures has always resulted in massive problems in any economy. More importantly, there have been several changes in corporate governance framework because of the consequences of the worldwide financial crises. Since 2000, Uzbekistan has also brought more attention for the corporate governance issues in banking sector by accepting necessary financial reforms and corporate governance policies; however, most banks have not yet had an effective corporate governance practice. In the one hand, if banks have effective corporate governance practice, they can efficiently mobilize and allocate their capital, and this lowers the cost of capital to their investors, boosts capital formation, and stimulates economic growth. In other hands, poor corporate governance of banks resonances throughout the economy with negative ramifications for its economic development. In addition, most financial studies have recognized many channels by which corporate governance impact on the growth and development of the countries, such as lower cost of capital, better access to finance, better firm performance, reducing risks of financial distress and financial crises (Claessens S., 2006). Therefore, more specific studies must be done in the area of exploring the effective corporate governance mechanisms as well as finding possible channels by which corporate governance impacts on the development of the economy.

#### 1.2 Motivation of the research

The main motivation for this doctoral research emerged from the following important issues which have been discussed and studied globally in finance.

Firstly, the systematic importance of financial sector in economic development since banking sector and stock market are integral parts of financial sector and the backbone of the economy in Uzbekistan. The importance of the financial sector in economic development has long been at the centre of policy debate since the early influential paper by Schumpeter J. (1911). Although no unequivocal conclusion has been reached, the majority of academicians and researchers argue that the financial sector plays an essential role in economic growth (for example, Goldsmith R. (1969); McKinnon R. (1973); Shaw E. (1973); King R. and Levine R. (1993a, 1993b); Demirgüç-Kunt A. and Levine R. (1996, 2008); Rajan R. & Zingales L. (1998, 2001) and Levine R. (1997, 2005)).

Secondly, the corporate governance of banking sector differs from that of the non-financial sectors since banking sector is opaque and highly leveraged sector along with higher information asymmetries as well as facing greater government regulation in the economy (Levine R., 2004). These attributes of banking sector weaken corporate governance mechanisms, as a result, there is an agency problem between the principal (bank owners) and the agent (bank manager). Consequently, it could be a reason for an adverse change in the performance of banking sector as well as of economy as a whole.

Thirdly, due to the worldwide the financial crises, the corporate governance of banks in the world countries were enormously changed in terms of the structure of bank ownership, including privatization and mergers and acquisitions (Berger et al. 2005). Meanwhile, Uzbekistan's financial system has also experienced through tremendous changes in this financial recession as well as accepting necessary financial reforms and corporate governance policies; however, most banks have not yet had an effective corporate governance practice. Moreover, declared privatisation programmes on the financial system have not yet achieved any remarkable success. The banking system in Uzbekistan is still dominated by the banks with high degree of government ownership and marked by a lack of openness and competition among banks. The last not least, the corporate governance has been recognized as a modern determinant of economic growth in finance literature (Babic, 2003). Recently, many

academicians and researcher have interested in exploring of the effects of corporate governance mechanisms on economic growth in the context of developing and developed countries. But unfortunately, there is a lack of related academic research, especially empirical study on the effects of corporate governance on economic growth through financial sector development in case of Uzbekistan. Hence, this doctoral study in conjunction with fulfilling the gap in the literature by examining corporate governance-economic growth linkage through financial sector development in the context of developing country, particularly in Uzbekistan.

#### 1.3 Research objectives

The objective of this doctoral research is to study the relationship between corporate governance mechanisms and economic growth through banking sector development and stock markets development as integral parts of financial development. For this purpose, a theoretical framework for these relationships is built on using past theory, literature and gaps in the literature. The following Figure 1.1 describes these relationships stated in the constructed framework:

**Figure 1.1.** A theoretical framework for the effect of corporate governance on economic growth through financial sector development in Uzbekistan



Source: Author's composition based on reviewed theories and relevant studies

The research empirically discusses how good corporate governance mechanisms as a system that significantly influence to financial sector development, mainly banking sector performance and soundness as well as stock market development and consequently to economic growth. In particular, it discusses how ownership structure and control (external and internal), legal protection (investor protection) influence to financial sector development and subsequent economic growth. It further discusses the causal relationship between banking sector development and economic growth as well as stock market development and economic growth in Uzbekistan. Then the study deeper explores the complementary and the substitution roles of banking sector and stock market on the development of Uzbekistan economy. Moreover, in this research we also aimed at studying the structure of good corporate governance models based on foreign experiences from developed countries, including US, UK, Japan and Germany. The overall, this doctoral study focuses on exploring effective corporate governance mechanisms in banking sector as well as finding important channels by which corporate governance positively impacts on the development of the economy in case of Uzbekistan.

#### 1.4 Research questions

The current research deals with an empirical assessment of the relationship between corporate governance mechanisms and economic growth through financial sector development in case of Uzbekistan for the period 2003-2018. To achieve our goals, a number of questions have to be firstly addressed.

The principle question of this research is to investigate **the importance of corporate governance in financial sector on economic growth from Uzbekistan's perspective**. In order to deeply explore this research question, it has been divided into several sub-questions based on the theoretical background stated in the section for research objectives. These subquestions are as follows:

- to ensure that good corporate governance mechanisms have impact on banking sector performance improvements.
- to confirm whether corporate governance mechanisms worsen or enhance banking sector soundness and stock market development;
- to ensure that stock market's corporate governance services effect on banking sector performance;
- **4** to define that banking sector's financial services effect on stock market development;
- to determine whether corporate governance mechanisms boost economic growth through financial sector development in Uzbekistan.

#### 1.5 Research hypotheses

To empirically test corporate governance-economic growth relationship through financial sector development, I am going to formulate several hypotheses using the theoretical framework of this research that investigate the following linkages:

*H*<sub>1</sub>: *Corporate governance effects on banking sector performance;* 

*H*<sub>2</sub>: Corporate governance effects on banking sector soundness;

*H<sub>3</sub>: Corporate governance impacts on stock markets development;* 

- H4: There is a casual impact between banking sector development and economic growth
- H<sub>5</sub>: There is a casual impact between stock market development and economic growth
- *H*<sub>6</sub>: *There is the complementarity or the substitutability between banking sector and stock market in financial sector.*

#### 1.6 Research contribution

In this doctoral study, research contribution has conceptual, empirical and methodological natures. Therefore, the main contribution of the research is threefold. Initially, the study brings together concepts of corporate governance, financial sector and economic growth in order to shed new light on corporate governance-economic growth linkage through financial sector development. Unfortunately, there is not still a clear theoretical foundation for corporate governance framework in banking sector in existing literature since corporate governance concept is used a narrow and a boarder scale. In this regard, we develop our corporate governance framework based on reviewed studies, theories and corporate governance mechanisms by borrowing new conceptual ideas from other academic fields as well as foreign experiences from developed countries. As a consequence, the results of the current research contribute not only to financial sector but also to other non-financial sectors, which will be used to formulate the hypotheses under investigation. Similarly, implications for further research can be distinguished by non-financial sectors as well.

Secondly, as for empirical contribution of the research, it is tested a theoretical linkage between corporate governance and economic growth through the development of financial sector, namely banking sector and stock market that has not previously been tested in empirical studies. The last not least, there are two types of methodological contribution in this study. The first one is that this study uses a bundle of approach for corporate governance variables which allows to capture any possible interaction effects among corporate governance mechanisms (Aguilera R. et al., 2012; Fiss P., 2007) to resolve any measurement errors as well as reducing substantial risks of correlated omitted variables bias when one single variable is used in the model (Larcker D. et al., 2007).

Second one belongs to extension of the CAMP methodology based on a backward-looking approach and a forward-looking approach to measure the cost of equity capital for unlisted banks and listed banks together. This new methodology can be used in other researches to measure cost of equity capital of financial and non-financial companies in case market data for stock prices is not available.

#### 1.7 Outline of the Chapters

**Chapter 1** provides information on the background and motivation of this research, research objectives and questions studied in this research as well as research hypotheses assumed and tested in our analysis and research contribution from this doctoral study.

**Chapter 2** devotes the interrelationship among corporate governance, financial sector and economic growth of Uzbekistan. Therefore, this chapter is divided into three parts. First part is related to a brief overview of the financial sector of Uzbekistan comprised of a two-tier banking system and its development, discussing the importance of stock market in banking sector development as well as the role of financial sector in economic development of Uzbekistan. Second part is concerning an evolution of corporate governance in financial sector with respect to the fundamental development of corporate governance, including defining a concept of corporate governance and agency theory, shareholder vs stakeholder theory from bank perspective. And third part is concerned about broadly discussion for the structure of corporate governance as well as for foreign experiences on corporate governance from developed countries. More precisely, there is information on the assessment of the structures between outsider (dispersed ownership) model for market-oriented economy in US and UK and insider (concentrated ownership) model for bank-oriented economy in Japan and Germany. Some of the advantages and disadvantages of these popular models in the globe are also considered in this chapter.

**Chapter 3** dedicates a discussion of reviewed existing theoretical and empirical literature regarding exploring the interrelationship among corporate governance, banking sector performance and soundness and economic growth as well as surveying the linkages among corporate governance, stock market development and economic growth in developing and developed countries. This chapter also started with examining the literature relating to corporate governance issues in Uzbekistan.

**Chapter 4** contains collection of the data and sources for this study, approaches for selection of the variables as well as description of the selected variables for each model used in the research. Moreover, there is information of research methodology and four econometric

models used to be tested research hypotheses under our investigation, such as Trans-log Cost and Profit Function, Log Z score model for measuring banking sector soundness, CAPM model for measuring the cost of equity capital for listed and unlisted banks and Economic growth model for the relationship between corporate governance and economic growth through financial sector development. Mostly, panel data analysis is utilized, with bank-level annual data drawn from 2003 to 2018. In the last model, time series analysis is only used to investigate the effect of corporate governance on economic growth in the sampled period for 2003-2018.

**Chapter 5** introduces a preliminary analysis of the data and an empirical analysis on four econometric models used in this research. The preliminary analysis consists of information on the descriptive statistics of each variable and correlation matrix between the variables examined in this section. This chapter presents a brief explanation of regression results from Trans-log Cost and Profit Function (Model 1.1 and Model 1.2), Log Z score model (Model 2) and CAMP model (Model 3) which are estimated using either the fixed effects or the random effects model, following results from Hausman's test and Breusch-Pagan's test. In addition, a time-series regression result from Economic growth model with estimation VAR and VECM econometric techniques (Model 4.1 and Model 4.2) are also shown and a brief discussion as to whether or not the main results support past theory and the findings in literature takes place in this chapter.

**Chapter 6** provides a detailed discussion of the findings. There is a discussion of whether or not these findings support each of the hypotheses presented in the section of research hypotheses. The new and unique discoveries obtained from this PhD research are presented in this chapter. There is also information about the limitations of this study and proposed directions for further research.

**Chapter 7** provides a conclusion based on main findings from this doctoral research. In addition, policy implications are presented in this chapter. The main findings obtained in this research will be relevant to policymakers, regulatory authorities, domestic and foreign investors as well as the financial experts and new researchers who need to obtain information about the corporate governance practices in financial sector and its effects on economic growth in Uzbekistan.

#### 1.8 Conclusion

This Chapter presents the background of this research, followed by motivation of the research, research objectives and questions studied in this research as well as research hypotheses tested in carrying out our investigation on this research. There are also important contributions of the

research from this study on corporate governance-economic growth nexus for developing countries. This chapter highlights that the importance of corporate governance of financial sector in accelerating economic growth in an economy by examining the interrelationship among the concept of corporate governance, financial sector and economic growth in Uzbekistan over the period of 2003-2018. To the best of our knowledge, there is still a gap between previous studies on the effect of corporate governance on economic growth through the development of financial sector, namely banking sector and stock market development not only in the context of Uzbekistan, but also in case of developed and developing countries. The chapter concludes by providing an outline of the content to be found in the later chapter of this study.

# Chapter 2. Corporate governance: financial sector and economic growth

This chapter provides background information on main integral parts of financial sector of Uzbekistan, such as banking sector and stock market and their systematic importance of economic development. In addition to this, corporate governance and its fundamental and legal development processes are broadly discussed locally and internationally in terms of existing theories, models and mechanisms of the corporate governance. Theories, models and mechanisms relating to corporate governance are included here, as they provide a solid foundation for understanding corporate governance issue and its importance in financial and economic development of a country. The final section provides a summary of the chapter and defines the similarities and differences between corporate governance model in Uzbekistan and those in selected developed countries, Japan, Germany, USA and UK in this research.

#### 2.1 A brief overview of the financial sector of Uzbekistan

This sub-chapter deals with a brief overview of banking system and its development stages after independence of Uzbekistan, which has started since 1991. In sequence, an importance of stock market in the development of banking sector of Uzbekistan will be discussed in this sub-chapter. Likewise, crucial roles of financial sectors, mainly of banking sector and stock market are focus on accelerating financial sector development, consequently boosting economic growth and development in an economy.

## 2.1.1 A two-tier banking system and its development stages after independence of Uzbekistan

Since 1991, Uzbekistan is one of only fifteen countries among the former Soviet Union countries that has selected own economic model from transition economy to market economy, in which the main target of economic reforms focusing on the interest of the people and a chosen socially-oriented market economy. In addition, from the beginning of independence year, Uzbekistan have paid higher attention for financial sector and its development, mainly banking sector as a locomotive of the economy. It is noteworthy to mention that one of the main steps of the development stages in banking sector in Uzbekistan had started by establishing a two-tier banking system<sup>1</sup> which was built and based upon important new laws and banking reforms since 1995. This new banking system has formulated based on a first tier – the Central Bank of the Republic of Uzbekistan wielding control over second tier-a variety of commercial banks. By analyzing financial reforming process in the Uzbekistan economy,

<sup>&</sup>lt;sup>1</sup>In Appendix I, a two-tier banking system framework of Uzbekistan is given in Figure 2.1

we can distinguish four major development stages in financial sector of Uzbekistan. **In the first stage**, two main normative documents were produced as a part of the financial sector reforms in Uzbekistan which took place over the period 1991 to 1997, including Laws on "The Central Bank of Uzbekistan" and "The bank and bank's activities" were accepted for the purpose of distributing their objectives and functions in the banking system of Uzbekistan. **The second stage**, which extended over the period 1998 to 2001, starting from a policy of comprehensive liberalization was accepted by Uzbekistan government. The main priorities for this policy included reduction in state intervention through privatization of state-owned banks, the strengthening of legal protection for these banks from such an intervention and the liberalization of foreign banks entry in the country.

**The third stage**, which covered the period from 2002 until 2017, several effective financial reforms and corporate governance policies have been also progressed in this stage. One of the main policies, the government pursued in 2002 - a tight monetary policy- in order to stabilize Uzbek currency as well as supporting domestic and foreign companies by reducing the inflation rate in the economy.

The fourth stage, which started in 2017, involves a large-scale liberalization of its exchange rate policy as an initial phase in the banking sector. Based on this policy, the new exchange rate policy was to establish the national currency rate against foreign currencies with the sole use of market mechanisms. In addition, this period is called as new era of banking sector deals with sector restructuring in terms of the transformation and end privatization process of commercial banks with a state ownership, improving the legal framework, implementing new standards of the Basel III on banking supervision, international financial reporting standards and etc. More importantly, according to newly accepted decree of the President of the Republic of Uzbekistan "On the strategy of reforming the banking system of the Republic of Uzbekistan for 2020-2025" which defines the need of financial reforms on improving the efficiency of the banking system and creating equal competitive conditions in the financial market as well as improving corporate governance and attracting managers with international practical experience in banking system. Of course, the CBU plays an essential role for carrying out of those objectives in this new era of banking system of Uzbekistan.

#### ↓ A role of the Central Bank of Uzbekistan

The main aim of the Central Bank of Uzbekistan is to maintain stability of the national currency, Uzbek Soum (UZS) locally and internationally. Over past period, CBU has accepted many effective financial reforms and policies in order to achieve long term stabilization of Uzbek currency against main foreign currencies. Indeed, this is usually not easy task for new country with new banking system. Currently, the index of the real exchange rate of the Uzbek Soum has been stabilizing since 2017 in terms of mainly supporting exporters by bank financing to making goods and services produced in Uzbekistan cheaper as compared to those of main trading partner in foreign countries (See. Figure 2.2).

The major objectives of CBU comprise of the following tasks:

- implementation of the monetary, credit and foreign exchange policy of the country;
- introduction of an effective payment system in Uzbekistan;



- licensing and regulation of banking and non-banking financial organization activities;
- regulating of the cash services of the public budget jointly with the Ministry of Finance of Uzbekistan;
- managing government gold and currency reserves and etc.

In banking system of Uzbekistan, one of the most important policies is considered as **monetary policy**. Therefore, it is aimed at briefly discussing of this policy. There are three monetary policy instruments of which the first one is refinancing rate (intertest rate) that equated to 15 percent in 2019. There are macro and micro purposes from using this fixed rate. For the macro purpose, the CBU usually regulate and keep at targeted level of inflation in the economy by means of this rate. For the micro purpose, all commercial banks use this fixed rate as an important instrument to establish lending and deposit rates in their activities.

Second monetary instrument is that reserve requirement has been started to apply since 1992. At present, this monetary instrument has been applied for bank deposits in both national and foreign currency at 4% and 14% respectively. This required reserve ratio is used influencing the country's borrowing and interest rates by changing the amount of funds available for banks to make loans with. However, the CBU is not usually pay some interest on these reserved deposits that had slightly negative effect on the profitability of banks. In most foreign countries, the Central banks rarely increase the reserve requirements because it would cause immediate

<sup>&</sup>lt;sup>2</sup> Source: CBU report for 2019

liquidity problems for banks with low excess reserves; they generally prefer to use open market operations (buying and selling government-issued bonds) to implement their monetary policy.

In Uzbekistan, open market operations are as **a third monetary instrument** that is widely used in developed countries to influence monetary aggregates. However, at early stage of monetary police this instrument has not been effectively utilized as the same as above mentioned two monetary policies due to low level of stock market and undeveloped corporate governance practices in banking sector. Nowadays, this policy instrument has largely used in practice to improve capitalization level of banks through equity financing in Tashkent Republican Stock Exchange (TRSE).

#### 🖊 The commercial banks in Uzbekistan

Nowadays, the commercial banks of Uzbekistan can be divided into four categories in terms of ownership structure<sup>3</sup>:

- public banks
- ✤ joint stock banks with both government and shareholder ownership
- private banks with private ownership.
- foreign banks with foreign ownership.

In Uzbekistan, there are **31** licensed four types banks, including **2** public banks, **15** joint stock banks of which **11** banks with government ownership, **4** foreign banks and **10** private banks with their **883** city and regional branches, more than **1115** service offices and mini-banks, **1384** self-services offices operating throughout all cities and regions (**see. Table 2.1** and **Figure 2.1 in Appendix I**). Nowadays, all commercial banks have taken major steps towards improving their performance and financial soundness by implementing modern information technology systems, which provide for decreasing their operating costs and improving their organizational structure, while they have been enlarging their scopes for retail and wholesale banking services by implementing foreign experiences and corporate governance practices in their activities.

As in most developing countries<sup>4</sup>, cause for more serious concern in the banking system of Uzbekistan is the prolonged market dominance of government ownership that exists with its high share in both public and joint stock banks. Over the period for 2003-2018, on average, about 67 % of



<sup>&</sup>lt;sup>3</sup>The structure of bank ownership is shown more detail in Figure 2.1 of Appendix1.

<sup>&</sup>lt;sup>4</sup> Barth et al. (2001) and La Porta et al. (2002) reported in their empirical researches, almost 50 percent of the assets of the largest banks in developing countries were still under state control.

the total banking assets and equity capital in banking system have been controlled by government (see. Figure 2.3). In other words, government share is concentrated in 2 public banks and 11 banks with a state ownership.

#### 2.1.2 The importance of stock market in banking sector development

It is argued that banking sector is an index of financial stability as well as plays a key role for accelerating of financial development that leads to economic development in any bankdominated economy. Moreover, banking sector and stock market are considered as main integral parts of the financial market where the transfers and allocations of the funds and resources take place. In other words, most of the financing sources, including bank financing and equity financing used by companies comes from both banking sector and stock market respectively. In recent studies, it is stated that the complementarity and the substitutability between the banking sector and stock market in financial sector. Due to both systems intermediate savings and funds to investments, they can be seen as either substitutes or complements to each other in financial market (Naceur et al., 2007).

Recently, Tashkent Republican Stock Exchange (TRSE) has also undergone affectionate transformation, the efforts taken by the policymakers have successfully helped in achieving confidence of domestic as well as of foreign investors for financial market of Uzbekistan. It is known, the stock market is considered as a marketplace where mostly listed banks can attract more domestic and foreign capital for financing of long-term investment projects in an

economy. At present, the banking sector is more actively participating in stock market than the other branches of the economy in Uzbekistan (see. Figure 2.4).

Since Uzbekistan's economy is the bank-dominated economy, its development highly relies on the



contribution of banking sector which is derived from listed banks at TRSE and unlisted banks in financial sector of Uzbekistan<sup>5</sup>.

According to this Figure 2.5, share of listed banks in GDP has been dramatically increasing since over the period 2003-2018 whereas proportion of unlisted banks has been declining in the volume of GDP in Uzbekistan.

<sup>&</sup>lt;sup>5</sup> More detailed information for listed and unlisted banks is given within Table 2.1 and Table 2.2 of Appendix I respectively.



It can be supposed that higher contribution of listed banks (Table 2.5) than unlisted banks in GDP mostly depends on pivotal role and essential corporate governance services of TRSE in banking sector of Uzbekistan. In addition, investment activities of listed banks in TRSE are



becoming one of the major operating activities of banks do and return from stocks and other securities is also considered as one of the important sources of banking sector earnings.

As can be seen in this Figure 2.6, there was not a significant difference between the profit of unlisted and listed banks from 2003 to 2010 except for the rest of our sampled period. More specifically, unlisted banks have higher proportion of profit than that of country partners in the period from 2013 to 2017.



Source: Author's composition based on research datasets.

More remarkably, listed banks have left behind in the earned profit coming in 2018. As you can see, there is a rocket increase in profit of both banks within the period of 2017. It can be assumed that accepted liberalization policy on currency exchange rate in 2017 has significantly impact on the performance of banks.

More importantly, the role of stock market is very crucial for banking sector development in two ways, including improving capitalization of listed banks and providing effective corporate governance services.

From capitalization perspective, we can see that listed banks in TRSE is more capitalized than unlisted banks of banking sector in Uzbekistan (see. Figure 2.7).

<sup>&</sup>lt;sup>6</sup> Source: Author's composition based on research datasets.

In addition, the development of stock market is to accelerate implementing corporate governance services into the banking system based on the modern and the traditional roles of stock market in the financial system (OECD, 2004). Nowadays, there is still lower level of implementation of corporate



governance practice into the banking system because of unfinished bridge between banking sector and stock market in Uzbekistan. To improve the role of unlisted banks and the quality of corporate governance in this sector, unlisted banks should be also included to the official listing of TRSE in Uzbekistan. Overall, the role of stock market is seen as key elements of banking sector development as well as it is a crucial toward further financial development of the country.

#### 2.1.3 The role of financial sector in economic development of Uzbekistan

Uzbekistan is the third largest country among in the Central Asia covers an area of 447.4 thousand square kilometers. Moreover, Uzbekistan is the most populous country in this region, with a population of more than 33 million people, nearly half the Central Asian region's population. From the first day of independence, Uzbekistan selected its own way of development. The Uzbek Model of transition to a socially oriented market economy based on five key principles developed by the first President of Uzbekistan. They are as follows:

- **4** The priority of economics over politics;
- **4** The state is the main reformer;
- **4** The rule of law in all areas of life of the society;
- Strong social policy;
- **4** Step-by-step transition to market relations.

Nowadays, using this model Uzbekistan continues to implement ambitious economic and financial reforms focused on a sustainable transformation to a market economy to ensuring more inclusive economic growth which leads to economic development of the country.

<sup>&</sup>lt;sup>7</sup> Source: Author's composition based on research datasets.

Generally, a surge in investment and a pickup consumption boosted GDP growth in an economy. In the one side, Uzbekistan is rich in abundant and varied natural resources that ensure to inflow foreign capital to the country. In fact, Uzbekistan has received relatively higher amount of foreign investments targeting these reserves. According to data from CBU report for 2019, total debt of government reached to 24.4% of GDP in 2019 (see. Figure 2.8).

In the other sides, Uzbekistan has phenomenally enjoyed higher economic growth over the period of 2003 through 2018, even though the worldwide financial crises in 2008 (see. Figure 2.9). As we know, several countries, even developed countries faced on massive problems due to 2008's financial crises in the globe. Certainly, here





is a natural question for us, what are main reasons for this good success in Uzbekistan's economy during this long period? Indeed, it mainly depends on financial sector background, its performance and soundness as well as the role of financial sector in domestic economy.

In emerging countries like Uzbekistan, banking sector and stock market are integral parts of the financial sector, so their well-being is an imperative constituent for domestic economy.

On the one hand, Uzbekistan's banking sector plays an important role in the development of the economy due to the





capital is channeled from savers to investors in terms of bank financing. On the other hands, stock market has been recently developing non-monotonic ways as well as becoming a major driver in the financial development in terms of equity financing. The expansion of both banking sector and stock market significantly affects economic growth (Beck T., Levine R., 2004). Nowadays, stock market is not yet well developed, banks play a predominant role in corporate finance in Uzbekistan (M. Mizuno, 2009). It is a fact that a share of stock market (in orange color)

<sup>&</sup>lt;sup>8</sup> Source: Author calculation based on macroeconomic data from the official website of World Bank Data, the State Committee of the Republic of Uzbekistan on Statistics, the Central Bank of the Republic of Uzbekistan.

in the financial market is still small size, so that capital accumulation almost leads to an increase in share of bank financing in the economy (see. Figure 2.10).

From this chart outcomes, the banking sector (in blue color) in Uzbekistan is also the backbone of the economy, playing an essential role in the development of economy. It is true, but how does banking sector effect to GDP growth?. Generally, the banking sector influences the GDP in four different ways in terms of bank financing.



Figure 2.10<sup>9</sup> Banking sector vs stock market in Uzbekistan

Initially, the salary banks pay to their employees transform into consumption. Secondly, the lending banks give to private sector transform into both investments and consumption. Thirdly, the lending they give to public sector transform to government spending. The last not least, the financing support banks give new and strategic exporters to increase export share in the volume of GDP. Thus, the banking sector helps in enhancing the four factors creating the GDP structure, such as consumption, investments, government spending and net export. From this point of view, we can confidenly say that the banking sector is systematically and strategically important for Uzbekistan's economy. Moreover, as a financial intermediary, banks convert savings to investments in an economy. Of course, saving and investment are both equally important in the process of economic development of the country. In the other sides, according to Keynes's parodox of thrift concept, if many individuals decide to increase their private saving rates, it can lead to a fall in general consumption and a drop in aggregate demand, consequently lower output. Therefore, a rapid rise in saving growth rates may harm economic growth and be damaging to the overall economy. For this reason, banking sector regulate surplus and deficit of funds in economy by means of interest rate. The interest rate can usually determine how much conumers and investors are willing to save and invest. According to the law of supply and demand, increased demand for bank lending pushes interest rates up, while an increased supply of bank lending pushes rates lower. Thus, banking sector play a pivotal role in promoting investments in various small and large scale business both within and outside the country.

<sup>&</sup>lt;sup>9</sup> Source: According to research datasets, author's composition based on influential paper by Levine R. and Zervos S. (1998).

Figure 2.11<sup>10</sup> Saving growth rates versus investment growth rates in Uzbekistan

As can be seen in Figure 2.11, the accumulated domestic savings have not been fully converted to investment in Uzbekistan for the period from 2003 to 2013. Starting in 2014, banks can fully manage their savings as investment puposes, while they are able to increase a share of



foreign capital in the potrfolio of domestic investemt of the country. In turn, stock market in Uzbekistan are also considred as effecective and efficient channel of savings mobilization as well as creating a market environment where domestic and foreign investor are inclined and comportable to give up control of their savings. Thus, strengthening financial sectors has been one of the central issues facing developing economies, particularly in Uzbekistan. This is because sound financial systems serve as an important channel for achieving economic growth through the mobilization of financial savings, putting them to productive use and transforming various risks.

If we look at the contribution of banking sector to GDP in Uzbekistan, it is confirmed once more that banking sector is systematically important for domestic economy. It can be also seen in Figure 2.12, the contribution of banking sector to GDP is relatively higher rate in the range of around 30% to 55% for the period 2003-2018. Thus,



the whole economy is significantly affected by a slightly changes in the performance and stability of the banking sector in Uzbekistan. For this reason, well-organized banking sector with good corporate governance practices is very crucial for the development and growth of the economy in Uzbekistan. In addition, strong financial system can hedge the economy from any financial crisis and financial distress whenever it may arise in the world financial market.

<sup>&</sup>lt;sup>10</sup>Source: Author composition by using data of the World Bank and IMF

<sup>&</sup>lt;sup>11</sup> Source: Author's composition based on research datasets

#### 2.2 The development of corporate governance in financial sector

In this section, we focus on studying theoretical foundation of corporate governance based on evolution of corporate governance concept and fundamental theories based on the assessment of previous studies in finance and economics.

#### 2.2.1 The fundamental development of corporate governance: concept and theory

During the last two decades, most of the researchers and academicians interested in studying the phenomenon of corporate governance in the world countries especially after the worldwide financial crises had arisen. More interestingly, it is the fact that the notion of corporate governance is early used in finance. According to Becht M., Bolton P. and Röell A. (2002) the corporate governance concept itself is older and was already used in finance literature at the beginning of the 20th century. In the other sides, it is also claimed that corporate governance is a relatively new concept (Cadbury 1992; OECD 1999, 2004). Over the last decade, the concept has evolved to address the rise of corporate social responsibility (CSR) and the more active participation of both shareholders and stakeholders in corporate decision making. As a result, the concept of corporate governance varies widely in financial sector. It is also very important noted that the concept of corporate governance is also relatively new idea for the banking system of Uzbekistan. More exactly, in 2000 the term "corporate governance" was initially used in the documents of the Central Bank of the Republic of Uzbekistan which established the norms and standards of effective corporate governance practices in the banking system. In the next section, we will discuss to have some understanding the underlying definition of corporate governance from the bank perspectives.

#### 2.2.1.1 Defining corporate governance concept from bank perspective

There is no single definition which can be applicable for the underlying definition of corporate governance due to corporate governance is used in both a border and a narrow scale. The definitions of corporate governance can be explained by falling them into two main categories (S. Claessens, 2003). The first category of corporate governance definition is mainly related to a group of behavioral patterns. Particularly, it related to the actual behavior of banks, in terms of such measures as performance, efficiency, soundness, capital structure, and treatment of shareholders and stakeholders of banks. The second category of corporate governance definition is particularly concerned with the legal framework. More specifically, it is more about normative framework according to which banks are operating. It is stated in most financial literature that the first category of the definition related to corporate governance is the most logic applicable for studies of single countries or banks within a country. In the other

hands, the second type of definition is the more logical for comparative studies in which investigate how differences in the normative framework affect the behavioral patterns of banks, investors, and others. According to the survey of OECD (1999): "corporate governance is the system by which business corporations are directed and controlled in any economy". In accordance with Japan's Corporate Governance Code (2018) states: "corporate governance means a structure for transparent, fair, timely and decisive decision-making by companies, with due attention to the needs and perspectives of shareholders and also customers, employees and local communities". Moreover, it is argued that corporate governance in banking sector involves a set of relationships between a bank's management, its board, its shareholders and other stakeholders (BIS, 2006). In our academic paper, a good corporate governance in banking system can be broadly defined as an advanced instrument by which banking system is effectively directed, managed, monitored and controlled for future long-term development (Atamuratov U., Izawa H., 2020). In the light of the definition of corporate governance, Uzbek academicians and scientists also added their shares to the development of corporate governance in economics. For example, Khamidulin M. (2007) defines: "the corporate governance is a conscious, direct participation of corporation's owner in ensuring by them the regular real influence on determination, formulation and making of strategically important decisions aimed at capital accumulation for corporation, most effective use of capital with the purpose of making profits and equitable distribution of an income earned between the parties of the corporate relations". Another researcher Suyunov D. (2008) describes: "the corporate governance is a complex of the effective standards which protect the rights of the entities in the form of corporate property and the actions made for goal achievement of the enterprise on the basis of clear governance principles". Indeed, the corporate governance in banking sector arises a set of mechanisms designed to protect the interests of all shareholders and stakeholders by controlling and monitoring managerial behavior. In accordance with La Porta R. et al. (2000), corporate governance directly impacts on the decision-making process of top-level managers. In addition, Shleifer A. and Vishny R. (1997) documented that corporate governance supports companies to ensure the safety of the return on their investment. As for some other definition by Calder A. (2008) states corporate governance term as being "holy trinity" which includes the rights of shareholders, transparency, and accountability of board of directors. Additionally, the definition of corporate governance from a broader perspective reveals that it is regarded as the bundle of mechanisms which separated the ownership from the management (S.Claessens, 2006). The review of the relevant literature displays that importance of corporate governance can become even more crucial when there is a separation of ownership and

management in today's modern banking industries. That is to say, the concept of corporate governance can occur in banking sector by putting the balance between the ownership and control as well as the equality among the interests of shareholders and other stakeholders of the banks. It is also documented that a theoretical basis of corporate governance is linked to agency theory. Therefore, let's turn our discussion into agency theory from bank perspectives.

#### 2.2.1.2 Agency theory

In most studies, authors trace a root of agency theory back to the field of economics and finance (Davis et al., 1997). According to Jensen M. and Meckling W. (1976), agency theory is linked to a conflict of interest between principal and agent. Basically, an agency problem in banking system happens when there is imperfect alignment of interest between the principal (bank owner) and the agent (bank manager). So, the agency problem in banking sector is based on the assumption that objectives of bank owners and bank managers are contradictory. If there is a conflict of interest between bank owner and bank manager, the wealth and welfare of the shareholders and other stakeholders of banks are not maximized. Since the managers have control over decision making process, they tend to engage in the activities that increase the conflict of interest and may destroy the wealth of owners. The separation of ownership and control makes it difficult for bank owners to oversee the activities of managers giving rise to corporate governance problems. Indeed, when ownership is separate from control information asymmetry further takes place. The existence of information asymmetry in banking sector results in adverse selection and moral hazard problems leading to agency cost problems. There are different types of agency problem, namely equity agency cost and debt agency cost problem arise when there is conflict of interest between that parties. More specifically, equity agency cost problems usually happen between owners and managers whereas debt agency cost problems arise in between manger and shareholders. In this regard, some theorist suggests increase in conflict of interest between owner and manager when ownership is widely dispersed (Jensen M. and Meckling W., 1976). In according with Shleifer A. and Vishny R. (1997) argued that when ownership concentration increases to a certain level where an owner can effectively control a company, the type of agency problems shifts away from the manager-shareholder conflicts to the owner-shareholder ones. Of course, the initial stage of corporate governance development focused on solving the agency problem, enhancing transparency as well as ensuring value to shareholders and stakeholders. In this situation, effective corporate governance mechanisms could minimize a conflict of interest between owner and manager resulting from the separation of ownership and control. In recent, finance literatures have confirmed several mechanisms in the models of corporate governance that assist in solving those problems (Jensen M. and Meckling W., 1976; Fama E. and Jensen M., 1983). The effectiveness of corporate governance mechanisms combined with investor protection permits the company to reduce agency problem which in turn increases their profitability and ultimately decreases the cost of equity capital (La Porta R., Lopez-de-Silanes F., Shleifer A. and Vishny R., 2000). Moreover, there is a consensus on the classification of corporate governance mechanisms to two categories: internal and external mechanisms which will be broadly discussed in the chapter of literature review. It theoretically makes a sense, that is, a background of any mechanism is closely associated with some theory. Indeed, abovementioned external and internal mechanism is also related to finance theories, such as shareholder theory and stakeholder theory respectively. In next section, we therefore discuss two important theories concerning the interests and values of shareholders and of stakeholders.

#### 2.2.1.3 Shareholder vs stakeholder theories

There are two theories which can be used to explain the corporate governance issues in finance and economics. The first theory is known as the shareholder theory. Let's discuss this theory from bank perspective. Shareholder theory states the role of the shareholder as bank owner or principal and the role of bank manager as an agent, being similar to agency theory. According to the shareholder theory, the objective of the bank is to maximize shareholder wealth as well as protecting the shareholders' interest. The criteria by which performance is judged in this model is simply taken as the market value (i.e. shareholder value) of the bank. According to Block S. and Hirt G. (2000) and Brealey R. and Myres S. (2002) states that shareholder wealth maximization should be the overall goal of every corporate manager in a shareholder theory.

In addition, maximization of shareholder's wealth guarantees that shareholders are sufficiently compensated for the probability of uncertainties. Shareholder wealth includes dividends and importantly capital appreciation of the investors' capital. As abovementioned in agency theory, the underlying problem of corporate governance in this theory stems from relationship between bank owner and manager arising from the separation of bank ownership and management. Consequently, this separation is a reason for the bank's behavior to diverge from the profitmaximizing strategy. This happens because the interests and objectives of the bank owner and the managers differ when there is a separation of ownership and control. Since the managers are not the owners of the bank, they do not bear the full expenses or earn the full incomes of their actions. Therefore, although bank owners are interested in maximizing shareholder value, managers may have other objectives such as maximizing their wages, growth in market share, or joining in some investment projects and so on. As you can see, this theory is almost the same as in agency theory we have already learned in above section. According to the shareholder

model, therefore, corporate governance is primarily concerned with finding mechanisms to align the interests of managers with those of bank shareholders and investors with ensuring the flow of domestic and foreign capital to banks and that shareholder get expected earnings on their investment. However, shareholders are not the only ones who make investments in the bank. The competitiveness and success of a bank is the result of corporate teamwork that embodies contributions from a range of different members including investors, employees, creditors, customers and others. Corporate governance and financial performance of banks will be affected by the relationships among these various stakeholders in the banks. According to this line of argument, any assessment of the strengths, weaknesses, and economic implications of different corporate governance needs a well-organized framework which includes the incentives and disincentives faced by all stakeholders as well. Let's turn into the second theory underlying corporate governance is the stakeholder theory, which can be used to explain the relationship between corporate manager and stakeholders. In general, stakeholders consist of the group of people who can internally and externally influence on the operations of the bank (BIS, 2006).

According to the stakeholder model, the bank is responsible for a wider proportion of stakeholders other than shareholders. In general, the stakeholder theory addresses morals and values in managing any company. In defining stakeholder theory, Clarkson M. (1994) states that a company is a system of stockholders operating within specific branches of economy that provides the necessary legal and market infrastructure for the its activities. The other financial purpose of the bank is to make wealth or value for its stakeholders by converting their stocks into financial services. It is also suggested that the main purpose of managers should be oriented to maximizing the total wealth of a company (Blair M., 1995). What matters is the impact that the various stakeholders can have on the corporate governance of bank and its financial performance. As above mentioned in shareholder theory, the final success of any company is a corporate value for a range of various participations, including investors, employees, creditors, and suppliers. Therefore, it is in the interest of the shareholders to take account of other stakeholders as well as promoting the development of long-term relations and strong confidence amongst various stakeholders (Mayer C., 1996). Moreover, according to the stakeholder theory, corporate governance is primarily concerned with how effective different governance systems are in promoting long term investment and obligation amongst the various stakeholders. According to Kester W. (1992) states that the main problem of corporate governance is to establish specialized systems of incentives, protections, and dispute resolution processes that will encourage the continuity of business relationships that are efficient in the

occurrence of self-centered opportunism. Furthermore, Blair (1995) argues that corporate governance should be regarded as the complex of institutional measures for balancing the relationships among all stakeholders that contribute specific assets of the company.

# 2.3 Corporate governance in Uzbekistan and foreign experiences from developed countries.

#### 2.3.1 The structure of corporate governance in Uzbekistan

This section deals with discussion of the structure of corporate governance, including the legal framework for and the model of corporate governance in Uzbekistan. In addition to this, we analyze popular models of corporate governance from developed economies, such as concentrated (insider) model from Japan and Germany and dispersed (outsider) model from US and UK.

#### 2.3.1.1 A legal framework of corporate governance in Uzbekistan

In most literature on corporate governance, it has been argued that corporate governance framework is not a standard style (not a "one size fits all") and thus it would be different mode country by country (Wan Y. and Idris A., 2012). Therefore, more suitable model or style of corporate governance is designed nationally by its institutional and legal development and regulatory framework of the economy along with the history and the culture of the nations. Therefore, the framework will differ country by country, since it owes much to history and culture and it involves both rules and institutions. Its effectiveness depends on its coherence and on the degree of reliance which can be placed on its constituent parts. The governance framework also changes shapes and natures, and develops over time (Claessens S., 2006). Nowadays, the global principles of corporate governance are mainly referred to as the OECD Principles of Corporate Governance. The OECD Principles help policy makers evaluate and improve the legal, regulatory and institutional framework for corporate governance, with a view to supporting economic efficiency, sustainable growth and financial stability (OECD, 2015). Based on these OCED Principles, Uzbekistan have also created own corporate governance framework as well as updating through new international standards. More precisely, there are enough legal, regulatory and institutional framework for corporate governance which includes all aspects of legislation, regulation, self-regulatory arrangements, voluntary commitments and business practice. The history of the framework of corporate governance in Uzbekistan can be traced back to the number of legislations. These legislations include mainly Civil Code of the Republic of Uzbekistan (1995), Law on Joint-Stock Companies and Protection of Shareholders' Rights (2014), Law on Limited and Additional Liability

Companies (2001), Law on Business Partnerships (2001), Law on Bankruptcy (2003), Law on Securities Market (2015), Law on Accounting (2016), Law on Auditing Activity (2000) and Law on Competition (2012). These legislations state official steps need to be taken for establishing companies, identify the mechanism of governing and functioning of companies and the mechanism of interaction between shareholders and stakeholders. They also outline the principal rights of shareholders, determine stock market players and provide measures for domestic and foreign investor protection, and thus establish the legal framework for corporate governance in Uzbekistan (Ashurov Z., 2015a). In addition, under present conditions, national legislation has a significant influence on the formation of corporate governance. It outlines the legal status of a company, procedure for the formation of its management structure, rights and responsibilities of corporate governance participants (Valijonov A., 2015). More importantly, the legislative and regulatory elements of the corporate governance framework are enhanced by soft law based on the "comply and explain" principle such as the Corporate Governance Code of Uzbekistan approved in 2016 by the Commission for Enhancement of Performance of Joint-Stock Companies and Improvement of Corporate Governance System. Nowadays, the corporate governance framework of the companies is formulated based on the principles of corporate governance as well as improving in accordance with these legislations and taking into consideration the international standards and practices.

In order to improve the efficiency of the companies and to create favorable conditions for investment environment, a wide range of new regulations have been adopting in Uzbekistan. For example, Decree by the President of the Republic of Uzbekistan in 2015 is focused on the measures to improve the modern corporate governance principles and standards for the activities of joint stock companies. The creation of favorable environments for domestic and foreign investors and increasing focus on attraction of foreign direct investment and decreasing outflow domestic investment in Uzbekistan is considered as one of the crucial corporate governance issues that are continuously discussed and supported in government level. Therefore, it is important to consider number of regulations and essential legislations adopted by the Uzbekistan government in order to achieve and establish effective corporate governance model.

#### 2.3.1.2 The model of corporate governance in Uzbekistan

The Uzbek model is characterized by a high level of ownership by government, intuitional investors and minority stakeholders. In this part of the research, we broadly discuss Uzbek corporate governance model based on five important elements of corporate governance model,

such as key players, share ownership pattern, composition of board directors, regulatory framework and disclosure requirements.

#### ♦ Key players in the Uzbek model

The key players in Uzbek model include institutional investors, stock markets, and other intermediaries as well as government inclusion in the framework of corporate governance. Of these, government and intuitional investors are major players. Similar to Japanese model, in Uzbek model, government actively participate in corporate governance process in the company's activities. According to the regulations on professional standards of activity of institutional investors in the securities market (2008), the institutional investors in Uzbekistan are the investment funds, insurance companies and commercial banks.

#### ♦ Share ownership pattern in the Uzbek Model

As above mentioned, the ownership structure of the company in Uzbekistan includes government ownership, joint stock company with a state ownership, foreign ownership and private ownership. However, there is still a substantial proportion of government share in all branches of domestic economy. For example, a considerable amount of government share has remained in 11 largest commercial banks out of 31 banks in Uzbekistan. In addition, there is 2 fully stated owned banks operates in banking sector. Bank financing is more important source of finance for Uzbek companies rather than equity financing through stock market. The percentage of foreign ownership of Uzbek company is very small, but accepted foreign entry policy encourages increasing foreign capital share in the ownership structure of the companies.

#### ♦ Composition of the board of directors in the Uzbek Model

In Uzbekistan, the companies have a two-tier board structure as same as in both Germany and Japan. There are the supervisory board (SB) and the management board (MB) in structure of board (Ashurov Z., 2014). In Uzbek model, the activity of the SB is regulated by the Law on Joint-Stock Companies and Protection of Shareholders' Rights and the Standard Regulations on Supervisory Boards of the Joint-Stock Company enacted by the Governmental Resolution in 2003. Every company in Uzbekistan, regardless of ownership types, should have a SB as a governing body of the company. The SB, being as a corporate governance body, acts as a nexus between owners (principal) and managers (agent). It provides a strategic management of the company, quality control of management performance as well as takes the ad hoc measures in cases when managers cease coping with operational management. As it is common even in the world corporate governance practice, in Uzbekistan the members of the SB are elected by the General Meeting of Shareholders (GMS) for one-year period, and besides, persons to the SB

may be re-elected for an unlimited number of times. Only the owners of the common share have rights to elect the board members. The chairman of the SB may be re-elected by a majority of votes of the total number of board members. The GMS in company and is compulsorily held annually. Its function includes giving opportunity to owners to obtain from the other management bodies the detailed and reliable information about a policy pursued by the company, about the prospective achievements and strategy, to participate in discussions and making decisions on the more crucial objectives of the company's activity. The GMS is usually led by the chairman or panel of general meeting which is approved by the general voting of the shareholders attending this meeting. There often elected a chairman of the SB as a chairman of the GMS.

According to the Uzbek legislation, the size of SB is determined by the Articles of Association and Internal Regulations on Supervisory Board or by the decision of the GMS. For the company with a number of shareholders of more than 500, according to the Law, it is required minimum seven board members while minimum nine board members in case of more than 1000 shareholders in the company. The second tier of corporate governance in Uzbek company is the MB to manage a daily activity of the company, except for issues relating to the exclusive competence of the GMS or the SB. The MB is mainly responsible for implementation of goals, long -term strategies and policy of the company, is obliged to improve management efficiency in the company activity as well as ensuring the interest and value of the shareholders to obtain expected return or dividends for further promote development of the company. According to Uzbek legislation, the MB may be in the form of a single executive body which is usually called Director, or in the form of a corporate management body which is generally referred to as the MB. Moreover, by decision of the GMS, the credentials of the MB may be transferred to a commercial organization (or proxy manager) on the basis of contract. With every member of MB there made a one-year contract which, on behalf of the company, is signed by the Chairman of SB or by the person authorized by the SB. By the decision of the GMS, that agreement is subject to renewal or termination every year.

#### ♦ Regulatory framework in the Uzbek Model

In Uzbekistan, as above already discussed in the section of legal framework for corporate governance, there are a wide range of regulatory laws and corporate governance code define relationships among key players in the model. There are several authorities to manage corporate governance issues in Uzbekistan. For example, the Commission for Enhancement of Performance of Joint-Stock Companies and Improvement of Corporate Governance System act
as an authority responsible for promotion of introduction of the international policies and standards of corporate governance in the activity of companies. This commission is tasked with the following goals: objective assessment of the optimal level of state intervention in the economy; analysis of foreign and domestic legislation governing the activity of the companies; carrying out a systematic survey of the company's activity and corporate governance; implementation of international norms and standards of effective corporate governance (Konovalova E., 2015). In addition, TRSE is the only stock exchange in the country which approves rules and regulations for exchange trading and stock listing and supports effective corporate governance. Moreover, Center for Coordination and Development of Securities Market serve as a regulator of securities market in Uzbekistan while The Central Bank of Uzbekistan is also responsible for regulating and implementing corporate governance practice into banking sector of Uzbekistan.

#### ♦ Disclosure requirements in the Uzbek Model

In Uzbekistan, disclosure requirements for companies has not been a stringent until the 2008's financial crises. Currently, disclosure requirement is one of the important elements of the corporate governance framework should ensure that timely and accurate disclosure is made on all material matters regarding the corporation, including the financial situation, performance, ownership, and governance of the company. More specifically, the companies should disclose their information on the Single Portal of Corporate Information (www.openinfo.uz) which has been recently launched in Uzbekistan. This portal has been created on the basis of the website of the Center for Coordination and Development of Securities Market in conjunction with the Center for Development and Introduction of Computer and Information Technologies, and it hosts financial statements of the companies; emission prospectuses, information about the distributed shares, size of share capital and other information for potential investors; changes in the regulatory framework on corporate governance and securities market and other related information (UzReport Information Agency, 2016). Additionally, the Corporate Governance Code of Uzbekistan also determines the recommendations on providing transparency and discloses of the companies. According to Corporate Governance Code, Uzbek company should periodically disclose its activity in terms of quarterly, semi-annually and annually reports. For example, the annuals reports of the company comprises information about company's full and abbreviated names, location, bank account details, statistical and tax identification numbers, financial statement, board composition of any changes in SB and MB, revision commission,

international independent auditor's reports and basic data about issued securities for the activity of the company.

## 2.3.2 The models of corporate governance from developed economies

In finance literature, it is documented that the stakeholder view as an insider control model of corporate governance is more suitable to the features of Japanese and Germany corporate governance model with emphasizing the stakeholder's values and interests; and the shareholder view as an outsider control model of corporate governance is associated with the Anglo-Saxon model of corporate governance with emphasizing the shareholder's values and interests (Aoki M. and Hyung-Ki K., 1995). The chapter also introduces each model based on five essential elements of corporate governance model, such as key players, share ownership pattern, composition of board directors, regulatory framework and disclosure requirements.

### 2.3.2.1 Corporate governance model in market-oriented economy: US and UK

### **4** The Anglo-Saxon Model

The Anglo-Saxon model is the most dispersed in terms individual ownership share whereas the role of institutional investors is considered as a secondary in the companies. This model is oriented toward the stock market, while Japanese and German models focus on the banking and credit markets. Therefore, equity financing is a common method of attracting capital for companies in the United Kingdom (UK) and the United States (US). Nowadays, the US is the largest capital market in the world while the London Stock Exchange is the third largest stock exchange in terms of market capitalization after the New York Stock Exchange and Tokyo Stock Exchange.

## ♦ Key players in the Anglo-Saxon model

The key players in the Anglo-Saxon model include management, directors, shareholders, government agencies, stock exchanges, self-regulatory organizations and consulting companies which guidance shareholders on corporate governance issues. Of these, the three major players are management, directors and shareholders. In this model, it assumes that the separation of ownership and control in most publicly held companies. As referred above, the cost of this separation of ownership and control is defined as "agency costs". The interests of shareholders and management may not always meet in corporate governance process. So, the model attempt to solve this conflict in several ways. For instance, it is recommended that the election of board of directors by shareholders and it is required those directors act as fiduciaries for shareholders' interests by supervising management on behalf of shareholders.

#### ♦ Share ownership pattern in the Anglo-Saxon Model

In past period, there has been a marked shift of stock ownership from individual shareholders to institutional shareholders in both countries. The increase in ownership by institutions has resulted in their increasing influence. In turn, this has encouraged regulatory changes designed to support their interests and interaction in the development of corporate governance.

### ♦ Composition of the board of directors in the Anglo-Saxon Model

The Anglo-Saxon model consists of both insiders and outsiders of the board of directors in most companies. An insider board is as a person who is either employed by the company (an executive, manager or employee) or who has significant personal or business relationships with corporate management. In the other hands, an outsider board is a person or some institution which has no direct relationship with the company or corporate management. Moreover, a synonym for insider board is considered as an executive director while a synonym for outsider is called non-executive director or independent director. In this model, the same person has served as both chairman of the board of directors and chief executive officer of the company. As a disadvantage of the model, it is noted that outside directors often faced informational problem regarding inside operations of company rather than insider directors, so that their ability is limited to provide effective control. Therefore, board composition remains important concerns of shareholders in this model.

#### ♦ Regulatory framework in the Anglo-Saxon Model

In this model, a broad variety of laws and regulatory codes define relationships among management, directors and shareholders. In the US, the Securities and Exchange Commission is a federal agency that regulates the security market and establishes disclosure requirements for companies as well as the relationships between companies and shareholders and among shareholders. Moreover, regulation laws on pension funds also have a significant impact on corporate governance process. In the other hands, the regulatory framework of corporate governance in the UK is established by the Securities and Investment Board, which regulates the activities of securities market. However, it is not a state agency like the US the Securities and Exchange Commission. In the literature, there is a critique that a self-regulation in the UK is not as adequate and effective as in the US even though the framework for corporate governance is well-developed. As mentioned above, stock market plays a central role in the Anglo-Saxon model by establishing listing, disclosure and other requirements.

#### ♦ Disclosure requirements in the Anglo-Saxon Model

There are the most comprehensive disclosure requirements for the companies in this model, especially the US corporations are required entirely disclose a broad range of essential

information concerning their financial and non-financial activities. The following information should include in either in the annual report or in the proxy statement for the agenda of the annual general meeting, such as corporate financial data (quarterly basis in the US), a breakdown of the capital structure; extensive background information on each nominee to the board of directors (including name, occupation, relationship with the company and share ownership), the total compensation and the five highest compensation paid to executive officers, all shareholders holding above five percent of total share capital, information on proposed mergers and acquisitions, proposed revisions to the articles of association, and names of individuals and/or companies proposed as auditors. In the UK, disclosure requirements are almost same with those of the US. However, the companies for the UK are generally required semi-annual reporting and less data in most categories, including financial statistics and the information provided on nominees related to ownership structure of the company.

#### 2.3.2.2 Corporate governance model in bank-oriented economy: Japan and Germany

#### **4** The Japanese Model

The Japanese model is characterized by long-term relations between banks and companies in Japan. A considerable share of company's capital is related to banks and other financial institutions. Since the share of banks and other institutions are very high in the companies, they also work closely with the management of the company. In this model, along with the shareholders, the interest of creditors is equally recognized. A framework of corporate governance model in Japan was crafted by the systems of "zaibatsu" (monopoly) and "keiretsu" (partnership network). Before starting the keiretsu system, the initial design of corporate governance in Japan was the zaibatsu, which referred to small, family-owned businesses that ultimately changed into large and monopolistic holding companies. In the other hands, keiretsu system refers to an union of cross-shareholding companies led by a Japanese bank that offers a wide range of financial services while it is also an industrial partnership network among manufacturers, suppliers, and distributors that work cooperatively to increase efficiency and reduce costs of the company. More importantly, insiders and their partners are the major shareholders in most Japanese corporations. Thus, they play a major role in individual corporations and in the system as a whole. Conversely, the interests of outside shareholders are marginal. The percentage of foreign ownership of Japanese stocks is very small, however it may become an important factor in making the model more responsive to outside shareholders. It is argued that a disadvantage of the keiretsu system is the easy access to capital, which can lead a company to take on too much debt and invest in risky projects.

#### ♦ Key players in the Japanese Model

The Japanese system of corporate governance is many-sided, centering mostly around both a main bank system and keiretsu system. In this model, the four key players usually participate in corporate governance issues, namely main bank (a major inside shareholder), associated network group or keiretsu (a major inside shareholder), management and the government.

# $\diamond$ Share ownership pattern in the Japanese Model

In Japan, equity market plays a significant role since financial institutions and corporations firmly hold ownership of the equity market. As referred above, banks are key shareholders and develop strong and long-term relationships with companies, so a substantial part of share ownership owned by banking sector and other financial institutions. This is the main difference between the Japanese model and the Anglo-Saxon model, that is, such relationships are prohibited by antitrust legislation in the US. Instead of main financing by banks, US and UK companies borrow financing and other services from a wide range of sources, including the well-developed capital markets.

# ♦ Composition of the board of directors in the Japanese Model

The board of directors of Japanese companies is consists completely of insiders, including executive managers and the heads of major department of the company and its central managerial staffs. More interestingly, the composition of the board of directors is conditional upon the financial performance of the company. If a performance of a company falls over an extended period, then the main bank and members of the keiretsu may remove that director and appoint their own candidate to the board of company. Another common practice in Japan is that the appointment of retiring government officials to the structure of corporate boards, for example, the Ministry of Finance may appoint a retiring official to a bank's board. In addition, there is the relationship between the share ownership structure and the composition of boards. In contrast with the Anglo-Saxon model, representatives of outside shareholders seldom sit on Japanese boards. Japanese company's boards are generally larger than boards in the UK, the US and Germany while the average Japanese boards consists of 50 members.

### ♦ Regulatory framework in the Japanese Model

The regulatory framework in Japan was designed on the US model by US occupation forces after the Second World War. Despite numerous revisions, the core of Japan's securities laws remains very similar to US laws. In 1971, in response to the first wave of foreign investment in Japan, new laws were enacted to improve corporate disclosure and transparency. The main regulatory authorities are called the Securities Bureau of the Ministry of Finance and the

Securities Exchange Surveillance Committee, established under the collaboration of the Securities Bureau in 1992.

### ♦ Disclosure requirements in the Japanese Model

In Japan, disclosure requirements for the companies are relatively stringent, but not as much stringent as in the Anglo-Saxon Model. All companies are required to disclose a wide range of information in the annual report and proxy statement for the annual general meeting, including a semi-annual financial data on the companies, information on the capital structure, background materials on each nominee to the board of directors (including name, occupation, relationship with the companies, and share ownership), information on compensation, namely the maximum amount of compensation payable to all executive officers and the board of directors, information on top ten largest shareholders, information on proposed mergers and acquisitions, proposed revisions to the articles of association and names of individuals and/or companies proposed as auditors.

#### 🖊 The German Model

The German corporate governance model varies significantly from both the Anglo-Saxon and the Japanese model, although some of its elements resemble the Japanese model. In this model, banks hold long-term relationship with the companies as in Japan, bank representatives are elected to German boards. However, this representation is constant, unlike the situation in Japan where bank representatives were elected to a corporate board only in the periods of financial recession. And, the three largest universal banks in Germany play a key role in some parts of the country whereas public-sector banks are also main shareholders in most companies.

### ♦ Key players in the German Model

In this model, banks and corporate shareholders are considered as the key players. Similar to the Japanese model above discussed, bank usually plays a multifunctional role as shareholder, lender, issuer of both equity and debt, depository and voting agent at the annual general meetings.

### ♦ Share ownership pattern in the German Model

German banks have a central role in corporate governance process for the companies while banks are the dominant shareholders in ownership structure of the companies. Likewise, companies are also shareholders, sometimes holding long-term stakes in other corporations, even where there is no industrial or commercial relationship between them. Most companies have traditionally preferred bank financing over equity financing. As a result, German stock market capitalization is small in relation to the size of the economy. It is not surprising, therefore, that the corporate governance structure is geared towards preserving relationships between the key players, notably banks and corporations. In the one hand, this is somewhat similar, but not parallel, to the Japanese model, in the other hands this is different from the Anglo-Saxon model where neither banks nor companies are dominant institutional investors.

#### ♦ Composition of the board of directors in German Model

In the Germany model, there are a two-tier board structure consisting of a MB ("Vorstand") and a SB ("Aufsichtsrat"). The two boards are completely dissimilar; no one may serve simultaneously on MB and SB of the companies. The MB is responsible for daily management of the company. It is composed solely of insiders or executive managers. And, the SB contains no insiders, but it is composed of employee and shareholder representatives. The SB is responsible for appointing and dismissing the MB, approving major management decisions and advising the management board. The SB usually meets once a month. The size of the SB is strictly set by legislation and cannot be changed by shareholders. In Germany, the Industrial Democracy Act and the Law on Employee Co-determination usually regulate the size and determine the composition of the SB. The mandatory inclusion of labor representatives on larger SB differs the German model from both the Anglo-Saxon and Japanese models. Moreover, in small companies (with less than 500 employees), shareholders elect the entire SB. In medium-size companies (defined by assets and number of employees) employees elect one-third of a nine-member SB. In larger corporations, employees elect one-half of a 20-member SB. This is another key difference between the German model and the other two models.

### ♦ Regulatory framework in the German Model

It is known, Germany has a strong federal tradition, so both federal and state law impact on corporate governance of a company. The federal regulation framework contains the following laws and acts, such as the Stock Corporation Law, the Stock Exchange Law and the Commercial Law, the Law on Employee Co-determination as well as the Industrial Democracy Act in Germany. A federal regulatory agency for the securities industry was established in 1995. In turn, this agency fills a former void in the German regulatory environment for corporate governance process.

#### ♦ Disclosure requirements in the German Model

Disclosure requirements in Germany model are almost same as in Japanese model, that is, relatively stringent, but not as much stringent as in the Anglo-Saxon model. All companies are required to disclose a broad range of information in the annual report and proxy statement for the annual general meeting. The following information should include, such as corporate financial data (required on a semi-annual basis), data on the capital structure, limited information on each supervisory board nominee (including name, hometown and

occupation/affiliation), information for compensation of the MB and SB, any substantial shareholder holding more than five percent of total share capital, information on proposed mergers and acquisitions, proposed revisions to the articles of association, and names of individuals and/or companies proposed as auditors. However, no disclosure of share ownership of members of the SB in Germany differs from the other models. Another important difference is permission for the companies to accumulate considerable reserves. As a result, these reserves enable German companies to understate their value. Until 1995, German companies were required to disclose shareholders holding more than 25 percent of the total share capital. From 1995, this percentage was lowered to 5 percent, bringing Germany in line with international standards on corporate governance.

### 2.4. Conclusion

In this chapter, we have studied the structure of financial sector of Uzbekistan, mainly banking sector and stock market as well as their contribution to economic development. Likewise, we pay more attention unlisted and listed banks performance in the economy in order to take into consideration stock market effect in banking sector of Uzbekistan. From the second parts of this chapter, we have obtained enough knowledge about evolution of the concept of corporate governance and relevant fundamental theories to corporate governance, agency theory, shareholder and stakeholder theories from bank perspectives. In the final part of this chapter, we have discussed the structure of corporate governance of Uzbekistan, including legal framework for and Uzbek model for corporate governance. In addition to this, we have studied the difference between outsider model (US, UK) and insider model (Japan and Germany). Indeed, each model has some advantage and disadvantage sides. More importantly, these countries have well-developed and well-functioning financial system with a gigantic financial potential that have been ensuring high economic growth in the counties as well as they have been contributing enormous proportion to the gross product in the world over the long period.

# Chapter 3. Literature review

# 3.1 Prior corporate governance studies to Uzbekistan

Due to the importance of corporate governance in any economy, both the national and the international literature comprise a variety of studies on corporate governance issues: conceptual, empirical, normative etc. Nevertheless, the Uzbek literature survey on the topic of corporate governance is less developed in comparison to the international ones, especially in the area of corporate governance in financial sector. The result of reviewed literatures shows that only a few studies have looked at only conceptual and normative aspects of corporate governance in

Uzbekistan. Unfortunately, no authors study the effects of corporate governance on economic growth through financial sector in the context of Uzbekistan so far.

An initial study on corporate governance was conducted by Broadman H. (1999), on the topic "Competition, corporate governance and regulation in Central Asia: Uzbekistan's structural reform challenges". This paper reveals that there is a little separation between government and business, ill-defined corporate governance framework, weak discipline on firm performance. Besides that, there are some policy suggestions on strengthening incentives and institutions for corporate governance and implementing foreign practice on effective corporate governance in Uzbekistan. Another early work was done by Akimov A. (2001) dedicates partially a legal framework of the capital market and the role of corporate governance mechanisms on the development of financial system in Uzbekistan.

Moreover, Uzbek researchers also tried to touch upon some characteristics of corporate governance in case of Uzbekistan. For instance, Vohidov M. (2004) exposed that the corporate governance development in Uzbekistan has a positive impact on the effective capital distribution and the development of the financial markets, the acceleration inflow of the foreign investments to the country. According to Kurtbedinov E. (2009), his research devotes the regulation of corporate governance in Uzbekistan and compared it with the practices of other transition countries. Additionally, Ashurov Z. (2010, 2015, 2017) tried broadly discuss in his works related to the evaluation of corporate governance issues, corporate governance mechanisms and principles, existence conceptual problems on the development of corporate governance as well as the influence of corporate governance development on stock market performance in Uzbekistan. Likewise, Rasulov N., Amonboyev M. (2016) in their paper, focus on the concept of corporate governance and its application in case of Uzbekistan. In addition to this, they study the existence theories related to corporate governance issues as well as foreign experiences on the application of corporate governance principles of developed countries including Germany, US and UK. Besides, they also argue that a good corporate governance in banks plays a significant role in strength and continuous stability of the economy which result in the matter of general public interest in each country. Indeed, most authors and researchers tend to agree that there is a strong and a positive relationship between corporate governance and economic growth. However, there are still not enough theoretical and empirical studies into the relationship between corporate governance and economic growth, particularly in Uzbekistan. In addition, the framework of corporate governance in banking sector as well as exploring effective corporate governance mechanisms and their possible effects on economic growth and development have not yet been studied in case of Uzbekistan.

# 3.2 Corporate governance, banking sector performance and economic growth

During the last two decades the research area in finance literature is primarily focus on the area of corporate governance in financial sector over the world. In this section, we are therefore going to assess selected important literatures and studies in order to clarify the fact that the importance of the corporate governance in financial sector in which focusing on banking sector and stock market due to both sectors are integral parts of the financial sector in Uzbekistan. In addition, we will discuss selected previous studies in relation to theoretical foundation and empirical evidence for the interrelationship among the concepts of corporate governance, financial sector development and economic growth.

### 3.2.1 Ownership structure effect on banking sector performance

Most of the researchers and academicians have interested in studying the phenomenon of corporate governance in banking sector over the world. Furthermore, during the last two decades bank governance in the world countries was enormously changed, mainly due to bank ownership structure was also reformed within privatization process, restructuring as well as of mergers and acquisitions (Berger A. et al. 2005). Thus, corporate governance becomes one of the most important research topics in the international financial system, since corporate governance of banks will directly and indirectly influence on the performance of banking sector (Binh D. and Giang H., 2012). Therefore, in this section, we intend to assess the findings of prior and recent studies for obtaining clear solution for the effect of ownership structure on banking sector performance and soundness in the context of developing and developed countries. More importantly, we pay higher attention the effect of government ownership due to banking sector is almost under government control with significant state share in its capital structure in Uzbekistan.

The assessment of pervious works shows there are a lot of discussions regarding the effect of government banks to the overall banking sector's performance based on the "development" and "political" theories of government participation in the banking system.

Initially, "development" theory focuses on the prerequisite of financial development for economic growth. Based on this theory, government financing of industrialization in Russia showed a great success in economy. Additionally, government ownership of firms is a key performance driver in the strategic economic sectors (Gerschenkron A.,1962). In addition, government ownership of banks explicitly advocates, in which government would develop certain strategic industries through both direct ownership and control over finance (Lewis W., 1950). In contrast, "political" theory focuses on government ownership and government control

of finance through banking sector and other organizations that causing of destroying resource allocation, softens budget constraints and lowers economic efficiency (Kornai J., 1979; Shleifer A. and Vishny R., 1994). It is also argued that when the existence of government intervention in financial markets, government banks are less efficient due to the accepted policy by government politicians is focused more likely to the interests of their supporters (La Porta R. et al., 2002).

In this line of empirical research, it is determined the fact that ownership is strongly correlated with performance in developing countries, however, one is not associated with performance in industrial countries (Micco A. et al., 2004). In some cases, the ownership structure of bank affects the level of controlling of an effort manager to improve on the performance of the banks (Li M. and Simerly R.,1998). In addition, Vincent O. and Gemuchu B. (2013) studied the effect of ownership structure on bank performance in the case of Kenya. The findings showed that the role of bank ownership on the financial performance of the commercial bank is insignificant. Thus, it can be concluded that the financial performance of the Belgian banking system, Tulkens H. (1993) also concluded that the public bank's branches are relatively more efficient that those of private banks. In another case, the efficiencies of state-owned companies, especially in the banking sector, are commonly found in many developing countries (La Porta et al. 2002).

In the research on the German banking system, Altinbus Y., et al. (2001) concluded that government owned German savings bank was more efficient than their respective private counterparts. Moreover, some studies revealed that state-owned banks were more efficient than their private partners (Gardener E., et al., 2011; Ray S. and Das A., 2010). Similarly, in the case of the Middle East and North Africa region, the government banks were more efficient in terms of cost efficiency as opposed to that of private banks (Kapur K. and Gualu A., 2012). More interestingly, privatizing of the state-owned banks in Argentina pushed significantly increase in the performance of banking sector (Berger A. et al., 2005). In context of Turkey banking system, government banks found less cost efficient than private banks (Isik I. and Hassan M., 2002). However, Unal S. et al. (2007) reported 5 years later that government banks in Turkey are as cost efficient as private commercial banks as well as ownership structure has insignificant influence on bank performance. Furthermore, the advantages of foreign banks entry to the domestic market are associated with better resources allocation and higher productivity and efficiency (Walter I. and Gray H.,1983; Levine R., 1996), whereas the potential cost to domestic banks and the government (Stigliz J.,1993).

#### 3.2.2 Corporate governance mechanisms effect on banking sector soundness

Recent finance literatures have confirmed several mechanisms in the models of corporate governance that assist in solving corporate governance problems (Jensen M. and Meckling W., 1976; Fama E. and Jensen M., 1983). Moreover, there is a consensus on the classification of corporate governance mechanisms to two categories: internal and external mechanisms. According to valuable works by Denis D. and McConnell J., (2003) and Farinha J. (2003), they also used a dual classification of corporate governance mechanisms, as an internal and an external governance mechanism for solving of corporate governance problems. In theoretical part of this section, we also focus on internal and external corporate governance mechanisms and their roles in improving banking sector soundness that promotes financial sector development.

### + Prior studies to external mechanisms of corporate governance.

Initially, *the threat of takeover* is broadly studied as an external mechanism of corporate governance in the paper works by Jensen M and Meckling W. (1976) and Fama E. and Jensen M. (1983). However, the form of hostile takeovers has been rarely using in most of Europe countries. The results of the paper by Franks J. and Mayer C. (2001) confirm this fact that there are a relatively high level of ownership concentration and a small number of listed banks and companies in most European stock markets as compared to the US and UK.

Another important external mechanism is *the legal environment* that can also significantly impact on corporate governance of banking sector. Indeed, any form of legislation directly affects the efficiency and the cost of funds or more monitoring devices. In some countries, the role of the legal environment can be somewhat more subtle. For example, in the UK as legal mechanism, crucial recommendations are directed to improve corporate governance practices at the level of board of directors (the Cadbury Reports, 1992). Moreover, the recommendations are derived from these reports which have been adopted by the London Stock Exchange in the form of an official requirement for listed banks and other companies, although the rules and instructions formulated by these committees have not been made directly mandatory.

The other important area of the legal environment is that concerned with *the protection of investors*. According to La Porta R., Lopez-de-Silanes F., Shleifer A. and Vishny R. (1997) determine that the existence and efficiency of legal rules for protecting investors are a major determinant of the development of local stock markets. To sum up, some other aspects of legal environment may also lead to importance of corporate governance in the financial market.

### *Frior studies to internal mechanisms of corporate governance.*

In most recent literature, *the board of directors* is considered as important internal mechanism, plays an essential role in corporate governance and is responsible for monitoring and advising managers on behalf of shareholders of banks. Specifically, the board of directors can be regarded as the instrument by which shareholders may affect the behaviour of managers, consequently aligning the bank's interests with shareholders' value. Likewise, the monitoring role requires board of directors to control management for harmful behaviour, in the other sides, the advising role refers to helping bank management make good decisions. In accordance with Fama E. and Jensen M. (1983) describe the responsibilities of the board of directors as being both the endorsement of management decisions and the monitoring of management performance. This means that the possibility of managerial collusion may be decreased by the presence of outside directors, who may therefore be regarded as another important instrument of corporate monitoring (Fama E., 1980).

In addition, *large shareholders and institutional investors* can be also used as internal mechanisms in banking sector to manage equity agency problems as their increased shareholdings can give them a stronger incentive to oversee managerial performance (Shleifer A. and Vishny R., 1986). This potentially helps to avoid the free rider-problem connected with dispersion of ownership in the structure of bank capital. Another potential benefit relates to the potential challenge that large shareholders offer to outside raiders, thus increasing the takeover premium (Burkart M., 1995). In the other sides, Shivdasani A. (1993) reveals that the existence of large blockholders significantly increases the probability that a company will be taken over. Similarly, in other paper by Shleifer A. and Vishny R. (1997) documented that large shareholders may have incentives to pursue their own interests at the expense of other outside shareholders in the company.

In addition to these internal mechanisms, *debt policy* is widely used as internal mechanism to resolve internal corporate governance problem. More specifically, this mechanism was rationalised by Jensen M. and Meckling W. (1976) as a tool for reducing agency problems in several ways. One is that using more debt reduces total equity financing and the need for external equity to be issued in the first place by the initial owner-manager, consequently weakening the scope of the manager-shareholder conflict. In other words, the issue of debt instrument instead of equity one tends to increase the level of managerial ownership and thus a better alignment of interests between managers and shareholders. Moreover, debt financing is used as a bonding commitment by the manager to pay out cash-flows to debtholders thus supporting to resolve the free cash-flow problem (Jensen M., 1986). On the other sides, debt

financing frequently gives a tax advantage as companies receive tax deductions from interest payments made to debtholders. However, Miller M. (1977) develops an equilibrium model for the relationship between debt and tax. The result of his analysis shows that there is no optimal debt-to-equity ratio related with the potential tax benefits of interest on debt as well as the value of each company is independent from its capital structure. In according with Myers S. and Majluf S., (1984) and Harris M. and Raviv A. (1991) argued that debt financing may reduce the potential agency cost arising from information asymmetry problems result in equity financing.

In this section, we also decided to highlight some research works for measuring of banking sector soundness. At present, there are various approaches which may be helpful to analyse banking sector soundness such as capital adequacy ratio, profitability, liquidity or hybrid model like CAMELS framework, stress testing tool and so on. From the perspective of banking sector soundness, among varying measures, the Z- score is widely used and considered as a good proxy for measuring stability and soundness of banking sector in most recent empirical studies as well as it is one of the most popular indicators used by the World Bank in their Global Financial Development Database to measure financial institutions soundness in the world countries. In its general form, the Z-score is initially used in some researcher works related to Hannan T. and Hanweck G. (1988) and Boyd J., et al. (1993) and were firstly only used for cross-sectional studies. In the latest paper, Lepetit L. and Strobel F. (2015) highlighted an essential interpretation of measurement for probability of insolvency risk based on the Z-score. Starting with work by Boyd J. et al. (2006), the Z-score is now also frequently being implemented as a time-varying measure in panel studies in the financial studies. Čihák M. and Hesse H. (2010) also used the Z-score for analysis bank soundness and stability. In addition to this, Lepetit L. and Strobel F. (2013) discuss several methods used in measuring of timevarying Z-scores in the financial literature so far.

There are numerous empirical studies with mixed results for the relationship among corporate governance mechanism and bank soundness and performance in case of developed and developing countries. For example, according to research work of Tomar S. and Bino A. (2012) identifies that corporate governance improves on long-term shareholder value through accountability of managers and enhancing firm performance. Furthermore, Shahchera M. and Jouzdani N. (2011), showed a significant and positive relationship between bank soundness and regulation banking for selected countries in the world. In addition, Mwega F. (2010) found improvements in corporate governance in Kenyan banking institutions to better performance. Also, Kim P. and Rasiah D. (2010) in their study concluded that there was a positive and

significant association between the corporate governance and bank performance in Malaysia. According to research work by Jain A. and Thomson D. (2008), they study some corporate governance variables in relation to the National Australia Bank's performance. The empirical evidence suggests that National Australia Bank's poor performance was consistent with a lack of accountability, poor corporate governance and board dysfunction in the banking system of Australia. The other empirical studies, Koetter M. and Porath D. (2007) reveal that more efficient banks have lower risk and better soundness than less efficient banks in case of Germany banking industries. Similarly, Williams J. (2004) shows that unsound banks suffer from high levels of inefficiency in case of European savings banks for the period of 1990-1998.

# 3.2.3 The banking sector's effect on economic growth

During the last two decades, the performance of the financial system, especially the banking system has been one of the major issues in the new monetary and financial sectors globally since banking sector serves a pivotal role in an economy. However, the importance of the financial system in economic development has long been at the center of policy debate in most financial literature since the influential paper by Schumpeter J. (1911) argued that development of the financial sector is crucial for economic growth in terms of providing enough funds and technological improvements. Subsequently, Goldsmith R. (1969); McKinnon R. (1973); Shaw E. (1973); King R. and Levine R. (1993a, 1993b); Beck T. et al. (2000); Demirgüç-Kunt A. and Levine R. (1996, 2008); Rajan R. & Zingales L. (1998, 2001) and Levine R. (1997, 2005)) supported this idea in their valuable papers.

In the other sides, Gurley J. and Shaw E. (1955), refuting this view that the role of financial sector is overreached by the economists, highlighted the importance of finance for economic growth. Likewise, on the nexus between finance and growth, Patrick H. (1966) forwarded two important hypotheses, such as the supply leading hypothesis and the demand following hypothesis. According to Patrick's view is that in beginning stage of economic development, the financial system promotes economic growth whereas the growth itself create demand for financial service when the country is at the advanced level of economic development.

Even though no sound conclusion has been reached, most authors seem to agree that the financial system plays an essential role in economic growth. In addition, the study of the performance of the banking sector is concerned with the following for several reasons due to the fact that banking itself has recently gained a lot of popularity in both domestic and global economies. From corporate governance perspectives, the banking system is also a key driver to provide macroeconomic and financial stability of the country (Andres P. and Vallelado E.,

2008) as well as achieving a strong confidence in front of foreign investors, customers and depositors, that consequently lead to economic growth. According to Babic (2003), corporate governance is recognized as a modern driver for economic growth. Furthermore, most financial studies have recognized many channels by which corporate governance mechanisms impact on the development of the countries, such as lower cost of equity capital, better access to finance, better firm performance, reducing risks of financial distress and financial crises (Claessens S., 2006). Besides, an economy with a sound banking system is better able to response to any negative shocks and conduce to the stability of the financial sector (Athanasoglou P. et al., 2008). Recently, the corporate governance of banks has become a significant determinant of economic growth due to banking sector is the backbone of the economy. More importantly, the corporate governance of banking sector has a specific characteristics and complexities due to banking sector is greater opaqueness, more leveraged with higher information asymmetries and greater government regulation than other non-financial sectors (Levine R., 2004). For this reason, well-organized banking sector with good corporate governance practices is very crucial for economic development in a country. Conversely, the corporate governance of banking sector failures has always resulted in massive problems in any economy. On the other hands, Daily C. and Dalton D. (1992) confirmed that the probability of insolvency is related to poor corporate governance features. The poor corporate governance may contribute to financial system failures and the entirety of the payment system may be thrown into jeopardy. In many cases, bank insolvencies can result in systematic economic and financial crises in any economy. Therefore, the relationship between financial sector development and economic growth has long been discussed in order to come up with clear solution for this nexus in most economic and finance literature.

In turn, a broad range of literatures has attempted to explore empirical evidence of the relationship between financial sector development and economic growth. Those research studies could be divided into three groups, such as time series, cross-sectional and panel data analysis studies. Those empirical evidence shows that it is still equivocal, as early studies confirm the existence of a positive relationship, while most of the recent studied suggest a nonlinear linkage between them. Initially, Goldsmith R. (1969) showed a positive correlation between financial development and GDP per capita using an annual data for 35 countries over the period of 1860-1963. Later on, King and Levine (1993a) also found that financial development is strongly associated with real per capita GDP growth using a data-set for 80 countries over the period of 1960–1989. They also concluded the effect of financial sector on economic growth depends on the level of financial development thus varying among countries.

A similar outcome is also supported by Rajan R. and Zingales L. (1998), who reported that financial markets can provide important financial services for accelerating of economic growth. An influential cross-country study on financial development and economic growth by Beck T. et al. (2000) in which using GMM technique in the model and documented that there is an economically large space and statistically positive linkage between financial development and economic growth. Similarly, using the same GMM technique of data analysis, Levine et al. (2000) found that the exogenous variables of financial development is positively linked to economic growth. They also suggested that cross-country differences in legal aspects of financial system help account for variances in financial sector development.

In addition, the finance-growth causalities have been widely investigated in later studies on finance and growth. A pioneer work by Christopoulos D. and Tsionas E. (2004) examined longrun relationship between financial depth and economic growth, using panel unit root and panel cointegration techniques for datasets from 10 developing countries. Consequently, they showed that there is a long-run relationship between financial development and economic growth in sampled developing countries. More interestingly, authors determined that there exists a unidirectional long-run causality between financial development and economic growth and that runs from finance to growth. The other inspiring work by Ghirmay T. (2004) analyzed the causal relationship between financial development and economic growth for 13 sub-Saharan African countries. Using Johannsen's cointegration test, author determined a cointegrating relationship between financial development and economic growth. In addition to the causality, the outcomes of study are very sensitive to the context of single country. Moreover, Hassan M. et al. (2011) studied on the finance-growth nexus in case of low and middle-income countries. Their empirical evidence shows a positive relationship between financial development and economic growth in selected countries. The results confirm a two-way causality relationship between finance and growth for most of the countries whereas one-way causality from growth to finance for the poorest countries. Likewise, these findings were supported by Bojanic A. (2012), Uddin G. et al. (2013), Jedidia K. et al. (2014), and Samargandi N.et al. (2014) in their paper with time-series analysis.

There is another pool of studies that have raised the issue of threshold or non-linearity on the finance-growth relationship. This view claimed that the level of financial development is essential for economic growth up to a certain threshold. Once the development of financial sector reaches that threshold, further development of finance leads to declining economic growth. According to Law S. and Singh N. (2014), using the data from 87 developed and developing countries, reported that too much finance is not beneficial for economic growth.

Another important paper by Samargandi N. et al. (2015), using threshold effect, examined the relationship between financial sector development and economic growth for 52 middle-income countries in the years 1980-2008. They concluded that there is an inverted U-shaped relationship between financial development and economic growth in the long run. In this line of the studies, Arcand et al. (2015) and Rousseau P. and Wachtel P. (2011) revealed negative effect of financial development on economic growth. According to Arcand et al. (2015), there is a negative effect when finance to the private sector reaches at optimal level.

# 3.3 Corporate governance, stock market development and economic growth

In this section we study existing literature relating to the role of stock market in economic growth in terms of corporate governance issues and its importance in banking sector development as well.

# 3.3.1 Investor protection and stock market development

Investor protection is another corporate governance mechanism that helps to solve corporate governance problems in financial sector. It is recognized in the studies by La Porta R. et al., (1997, 1998) that when investor rights are well protected legally in any business activity, investors are willing to finance firms. They provide evidence that legal rules protecting investors and their qualitative enforcement leads to the stock markets expansion through lowering the expected rates of return for the external capital, raising investors' confidence and thereby willingness to provide funds. Therefore, it is argued that extend to which the laws protect investor rights and the extent to which laws are enforced in a country are important indicators in assessing the degree of corporate governance practice in this country. If the law and its enforcement are advanced, then investors confidently buy shares in stock market, even small stakes, which results to the widely dispersed ownership and consequently leads stock markets development. In contrast, when there is an inadequate legal and business environment to protect outside investors, external finance does not work well. In this regard, investor protection may significantly affect to stock market development.

As referred above, strong investor protection is required to develop well-functioning stock market that are necessary for strong economic growth. At the same time, academics provide evidence that legal environment also affects to the expansion of stock market. Their empirical analysis shows that companies in the countries with English-origin legal system earn returns on investment higher than their cost of capital, while companies in countries with civil law systems earn on average returns in investment below than their cost of capital. Therefore, the authors conclude that strong legal institutions protecting shareholders improves investment performance leads to stock market development.

When the legal system is week and not able to protect minority investors, then investors try to become large share block owners leading to the ownership concentration. For example, Shleifer A. and Vishny R. (1997) and La Porta R. et al. (1999) argue that ownership concentration is an effective response to the week legal protection and provide evidence that the differences in the legal systems create the differences in ownership structures, which in its turn differentiate corporate governance practices around the world. The reason is that, if the shareholder protection is poor, then investors will have willingness to buy a large stake, because only in this way investors are able to defend themselves from expropriation of managers. Academics show significant differences among ownership concentration across countries. As we discussed in the US and UK model, where investors are highly protected, ownership is widely dispersed, and in contrast in the remaining part of the world in fact either states or families control and manage most companies.

However, Franks J. et al. (2003) argue that not investor protection, but mergers and acquisitions based on informal relations between board of directors and shareholders influenced to the ownership dispersion in the UK in the first half of the 20th century. To support this idea, these authors provide evidence that in spite of the fact that the investor protection was week in the first half of the last century, the ownership was highly dispersed in the UK and the dispersion rate did not change, even though there was introduced significant improvements in the investor protection only increased turnover of the equity stakes, which resulted higher board turnover.

### 3.3.2 The role of stock markets in providing corporate governance services

In modern economy, the role of stock market is very crucial for providing corporate governance services not only in banking sector, but also other branches of the economy. It is known, banking sector and stock market are considered as main integral parts of the financial market where the transfers and allocations of the funds and resources take place. In other words, most of the financing sources, including bank financing and equity financing used by companies comes from both banking sector and stock market respectively. In recent studies, it is argued that the complementarity and the substitutability between the banking sector and stock market. Due to both systems intermediate savings and funds to investments, they can be seen as either substitutes or complements to each other in financial market (Naceur B. et al., 2007). In addition, investment activities of banks in the stock market are one of the major operating

activities of banks do and return from stocks and other securities is also considered as one of the important sources of banking sector earnings resulting in improving the profitability and the capitalization of banking sector. Therefore, the role of stock market is seen as key elements of financial sector as well as it is a crucial toward further financial development of the countries derived from well-organized banking sector with effective corporate governance practice.

Moreover, the role of stock market in corporate governance has widely been discussed in a Survey of Corporate Governance in OECD Countries in which identified corporate governance codes and recommendations, guidelines and requirements for the development of good corporate governance practices (OECD, 2004). Generally, this Survey focuses the roles of stock market on the development of effective corporate governance practices in the listed companies that would promote transparency, disclosure, integrity and accountability principles in their activities. Since the announcement of the OECD Principles of Corporate Governance, stock market has frequently enlarged its regulatory (issuing rules) and monitoring (the compliance with legislation) roles to hold a broader palette of corporate governance concerns together with the standard-setting role, including the issuance of listing, ongoing disclosure, maintenance and de-listing requirements. Therefore, stock market thanks to these modern and traditional roles serve as a bridge between banking sector development and the application of corporate governance practice for the banking system. When banks and stock market powerfully collaborate and jointly operate in their activities based on domestic and foreign standards, there will be accomplished a good corporate governance practice in banking sector that boosts to financial sector development.

## 3.3.3 The stock market's effect on economic growth

There have been numerous studies undertaken examining the effect of stock market on economic growth in most case of developed counties. Nowadays, there exists ample literature on economic growth and its determinants. Among the determinants of economic growth, stock market development is also increasingly becoming an important factor to impact upon it. According the existence theories in economics, it is suggested that stock markets are undeveloped and very small in their magnitude at the initial stages of economic development of any country. For this reason, during these periods, stock markets are primarily dominated by banking sector and other similar types of financial institutions. Honestly speaking, there is almost no role of stock markets as well as their size is very small in the economy. When financial sector expands with capital accumulation, the number of sophisticated financial services also increases, as do the level of complexity of financial operations and the inflow of

resources and funds ensuing to the stock market. And then, stock markets start developing both in terms of the number of listed firms and market capitalization. In addition to this, the economy also continues to grow, equity markets develop further as well as the banking sector. Besides that, researchers argue the common view that the stock markets appear to develop in a nonmonotonic behaviour. In economies where stock markets are quite small, so that capital accumulation seems to be followed by a relative increase the proportion of banking sector in financial sector. In the other hands, in economies where the stock markets have reached a reasonable size, further development of the market causes an increase in the equity financing. In other words, evidence shows that the equity/debt ratio first decreases and then this ratio increases with further development of the stock market in the economy (Levine R. and Zervos S., 1998). Thus, the expansion of financial sector, especially both stock market and banking sector significantly affects economic growth (Beck T., Levine R., 2004). However, most authors argue that the previous studies on economic growth did not adequately explore the relationship between stock markets and economic growth since it is primarily focused on the steady-state level of capital per productivity, but not on the rate of growth, that is, in fact, endorsed to exogenous technical progress. The growing interest of recent literature in the link between stock market and economic growth stems from the insights of endogenous growth models, in which growth is self-sustaining and influenced by initial conditions. In this framework, the stock market is shown not only to have level effects but also rate effects. In addition, the role of stock market in improving information asymmetry has been argued by Stiglitz J. (1985). It is stated that stock markets reveal information through rapid price changes creating a free rider problem that decreases the incentives of investor to initiate costly search. There are also some doubts related to influence of stock market liquidity that may prevent economic growth. More specifically, it may decrease saving rates through income and substitution effects. In the other hands, stock market liquidity encourages the thoughtlessness of investors negatively affecting corporate governance and thereby reducing economic growth. An initial empirical study on the relationship between stock markets development and economic growth by Levine R. and Zervos S. (1998) investigated whether stock market measures such as liquidity, size, volatility and international integration were correlated with economic growth rate, capital accumulation, productivity improvements and private savings rate. This study found that stock market liquidity indicator positively and significantly associated with the macroeconomic growth variables, while the variable for stock market liquidity is only robustly connected with the growth. Further expanding the financial development literature Tadesse S. (2004) explores the issue of exactly what mechanisms of the financial system affects to the economic growth. For this purpose, the author distinguishes two functions of stock markets – capital allocation and corporate governance facilitation services through information production and monitoring. His empirical analysis provides evidence that capital allocation functions more impacts on technological change component of production and governance function affects to productivity growth through efficiency improvements. Using stock market size as its allocation function measure and market turnover as corporate governance measure, the author concludes that both allocation and governance functions significantly affects to economic growth, while corporate governance dominates allocation in its impact on productivity. Moreover, Rajan R. and Zingales L. (1998) argued that financial development supports long-term economic growth through reducing the cost of equity capital of external finance for financially dependent companies and helping them in expanding their business network in the economy.

# **3.4 Conclusion**

In this chapter, we have reviewed pervious and recent studies and theories in order to explore possible relationship the concept of corporate governance, financial sector development (mainly banking sector and stock market) and economic growth. If so, we seek answer our questions whether or not there are strong relationship among those targeted variables in selected literature survey. Moreover, we would intend to develop our corporate governance framework in financial sector based on the findings and insights from these studies and important theories. The assessment of pervious works shows there are a lot of discussions regarding the effects of banking sector and stock market on economic growth, however there have not been yet paid higher attention for the nexus between corporate governance and economic growth through financial sector development in case of both developing and developed countries. Unfortunately, the specific research of the corporate governance impact on economic growth through banking sector development and stock market development has not yet received the well-worth attention in case of Uzbekistan. Therefore, this study in conjunction with fulfilling the gap in the literature covers comprehensive empirical assessment with respect to corporate governance-economic growth linkage through financial sector development in the context of Uzbekistan.

# Chapter 4. Research design and methodology

# 4.1 Data collection and sources

With respect to data collection, qualitative data are the primary choice. Data collection is based on triangulation, where primary and secondary sources, in some case interviews are often combined in general. In this doctoral research, primary and secondary bank-level data for 31 Uzbekistan's commercial banks, including 20 listed banks in TRSE and 11 unlisted banks over the period 2003-2018, have been used for our analysis. For primary datasets we used independent auditor's reports of banks and annual financial reports of banks, in the other hands, for secondary datasets we employed two important external sources, www.bank.uz and www.uzse.uz websites for the Financial Market and Republican Stock Exchange Tashkent in Uzbekistan respectively. More importantly, we have extended our datasets until 2018 as well as previous datasets have been enhanced by collecting all omitted data in our earlier papers. Moreover, macroeconomic datasets, including GDP growth rate, inflation rate, interest rate, saving and investment growth rates have been obtained from the official websites of World Bank Data, the State Committee of the Republic of Uzbekistan on Statistics, the Central Bank of the Republic of Uzbekistan.

## 4.2 Selection method for variables used in the research

In recent, numerous "rating the ratings" papers have challenged the problem with selection of the variables in different ways. However, two common points can be distinguished. Firstly, existing ratings journals are criticized for using too many corporate governance variables rather than focusing on more important ones (Bebchuck L., et al. 2009). Secondly, all recent reviews draw attention to the difficulty of deciding which variables to include in the model and how to evaluate them. Moreover, it is also argued that most rating journals either randomly sum up many dimensions into one indicator variable (Daines R., et al. 2010) or use sophisticated but completely opaque methodologies. Indeed, there is a lack of theoretical justification of the composition of variables and the weighting of different variables. From the literature review above, it emerges that using simpler measures of corporate governance has become the main solution to the problems associated with measuring bank level of corporate governance. However, according to Larcker D., et al. (2007), such an approach is problematic for two reasons. Firstly, single measures create some risk of measurement errors. Secondly, the focus on one single or a limited number of variables to capture the complex construct of corporate governance creates some substantial risks of correlated omitted variables bias. In this section, I argue that the use of simpler measures is not desirable for abovementioned theoretical reasons either. Indeed, using a limited number of measures for corporate governance may eliminate any possible interaction effect among corporate governance mechanisms. So far, adopting a bundles approach perspective, recent studies have not yet been paid seriously attention for evolving in the direction of taking such interaction effects (Aguilera R. et al., 2012; Fiss P.,

2007). Therefore, instead of simpler measures of bank level corporate governance, we should develop more sophisticated composite measures of bank-level corporate governance. For this purpose, our bundles approach for corporate governance variables can be formulated in four central claims, such as the configurational claim, the equifinality claim, the contingency claim and the degrees of implementation claim that improve corporate governance measures in the models (Schnyder G., 2012).

### 4.2.1 The selected variables for Trans-log Cost and Trans-log Profit function

In recent banking literature, most authors argue that there is no consensus as to the selection of the inputs and outputs. It is mentioned that "... the lack of a consensus in the literature on the theory of banking leaves the definition of output an unsettled issue. Hence, it is obvious that a precise definition of bank output is not possible at the present" (Aly et al.,1990). In general, the literature on banking efficiency has considered three approaches including production, intermediation and modern approaches in considering what constitutes a bank's output and inputs (Freixas X. and Rochet J. ,1997). In selection process we use the intermediation approach for our purposes in the following reasons:

- First, it is suggested that the intermediation approach is the best for assessing the performance of the banking sector as a whole. (Berger A. and Humphrey D., 1997);
- Second, the financial institutions normally employ labour, physical capital and deposits as their inputs to produce earning assets (Sealey C. and Lindley J., 1977);
- Third, the banks with the function of financial intermediary channel funds from depositors to borrowers.

Generally, the study considers one output and three inputs and other controlling performance and dummy variables (see. Table 4.1 in Appendix II). According to output and input classifications based on intermediation approach, the output includes loans (Haslem J. et.al,1999) while the output variable takes the value in billions of UZS. The inputs include labor, fixed capital and deposit. The input price will include expenses on wages and salaries per employee (unit price of labour), expenses on land, buildings, and equipment per UZS of assets (unit price of physical or fixed capital), and expenses on interest per UZS of deposits (unit price of financial capital). Moreover, these proxies for input's prices on banking sector are computed as follows: the price of labour is computed using the total personnel expenses to total assets, the price of physical capital takes the ratio of other operating and administrative expenses to total fixed asset, and the price of financial capital is computed by dividing the total interest expenses with total deposits (Claessens S. and Laeven L., 2004).

#### 4.2.2 The selected variables for Log Z score model

In this part of research, we are going to explain briefly selected variables and their descriptions for our second model. For this purpose, we follow a research work by Lepetit L. and Strobel F. (2015), the natural logarithm of Z-score is used as a dependent variable to measure of the soundness of banking sector in Uzbekistan. In theoretical literatures, there are many approaches for calculation of the Z-score, so we follow Hesse and Cihak's approach (2007) for calculating the Z-score in which use standard deviation estimates of return of assets that are calculated over the full sample within sampled years and combine these with the same period of values for capital-asset ratio and return of assets ratio. In this study, using the quiet life hypothesis and the efficient structure hypothesis we can explain the relationship between external corporate governance and banking sector soundness in terms of the rules and requirements by regulatory authorities, mainly the CBU and TRSE in Uzbekistan.

According to the quiet life hypothesis developed by Hicks J. (1935) argues that in highly concentrated markets, there is less pressure to compete, which results in reduced efforts by managers to operate efficiently. Thus, increased market concentration weakens market competition, and this affects productive efficiency. This also directly linked to the soundness of the market. Similarly, the efficient structure hypothesis developed by Demesetz H. (1973) argues that efficient banks will increase in market share and size at the expense of the inefficient banks, leading to a higher market concentration. Consequently, higher concentration of the banking sector leads to low levels of competition in banking sector. From these hypotheses perspectives, as an external corporate governance variable, we use bank asset concentration in the banking sector since this ratio represents a good proxy for an external corporate governance of banking sector. On the other hands, using the competition efficiency hypothesis we show the relationship between internal corporate governance and banking sector soundness in terms of timely screening and monitoring consumers by board of directors and managers. According to the competition efficiency hypothesis, it is argued that increases in competition precipitate increases in profit efficiency since board of banks and managers are forced to engage in proper screening and monitoring of borrowers resulting in lower levels of non-performing loans (Williams J., 2004; Schaeck K. and Cihak M., 2013). From the viewpoint of this hypothesis, as an internal corporate governance variable, we use a percentage of provisions for nonperforming loans in total loans of the banks as a good proxy into the models. In addition to these, our control and explanatory variables are divided into three groups, such as the variables for corporate governance of banks, the effect of stock market and banking sector indicators.

All the selected variables and their descriptions are given more detailed in the table (see. Table 4.2 in Appendix II).

### 4.2.3 The selected variables for CAMP model

#### **4** Dependent variable

**Beta coefficient (BETA)** in CAPM approach is chosen as a dependent variable as a good proxy for measuring the cost of equity capital of banks. It is known, beta is a measure of systematic risk of each bank asset in relation to the financial market. In other words, beta is a factor that measures the sensitivity of a bank's asset portfolio to movements in the overall banking sector. For listed banks, the beta can be calculated on the basis of stock market observations, whereas this is not possible for unlisted banks. In finance literature, an accurate estimation of the cost of capital for unlisted banks is still ambiguous. For this reason, based on combining of the backward-looking and the forward-looking approaches in a familiar Sharpe-Lintner CAPM equation, we develop our new method where ROE for each bank as cost of equity capital and the overall ROE for banking sector as market return and risk-free rate is comprised of interest rate (refinancing rate) and inflation rate in Uzbekistan. By this new method, the beta coefficient can be calculated based on bank-level data for the listed and unlisted banks together in Uzbekistan for the years 2003-2018.

# **4** Corporate governance variables.

In this paper, we choose some bundle of corporate governance mechanisms, including ownership structure, control (external and internal) and investor protection are as key determinants of corporate governance for banking sector in Uzbekistan.

*Ownership structure (OWN)* is the most cited determinant of corporate governance (La Porta R. et al., 2000; Ramaswamy K., et al., 2002; Dwivedi N. and Jain A., 2005). According to their studies, ownership structure plays an energetic role in the success or failure of any company. In this study, it defines as a percentage of government ownership in the charter capital of banks. The stylized fact that the banking sector in Uzbekistan is a highly concentrated sector with government ownership in equity capital of banks. In 2018, a share of government ownership was about 67 percent in banking sector of Uzbekistan. Therefore, this variable explains an effectiveness of corporate governance of government banks when there is a negative sign with dependent variable. Otherwise, corporate governance mechanism of non-stated banks can be an effective to solve agency problem for lowering cost of equity capital in banking sector. According to Piot C. & Missonier-Piera F. (2009), they suggested a considerable decrease in the cost of equity capital in a company in terms of institutional ownership. Likewise, block

holder ownership reduces the cost of financing by managing risks and increasing the confidence of investors (Hail L. and Leuz C., 2006). However, some theorist suggests increase in conflict of interest between principal and agent when ownership is widely dispersed (Jensen M. and Meckling W., 1976). Moreover, Shleifer A. and Vishny R. (1997) argued that when ownership concentration increases to a certain level where an owner can effectively control a company, the type of agency problems changes from the manager-shareholder conflicts to the owner-shareholder ones.

As above already discussed in section for reviewed theoretical literature, internal and external corporate governance mechanisms are also central for effectively managing, controlling and regulating of banking sector. According to Cremers M. and Nair V. (2005) suggest that internal and external governance mechanisms are strong complements as well as corporate governance mechanisms are strong rin case internal corporate governance also works. For this reason, we intend to observe the effects of internal and external governance mechanisms on cost of equity capital in banking sector of Uzbekistan.

*Internal corporate governance (ICG)* is measured as a proportion of total created provisions of loans over total amount of bank's credit portfolio. From the bank perspective, it is theoretically assumed that a good internal corporate governance resulting from timely screening and efficiently monitoring and controlling of the borrowers by board of directors and managers suggesting lower levels of non-performing loans and consequently leads to better performance of the banks. In some related paper, Denis D. (2001) argues that a monitoring and an incentive mechanism are used to overcome the agency problem. This study explores how internal monitoring mechanism helps to alleviate the agency conflict and lowers the cost of equity capital. Similarly, Jensen M. and Meckling W. (1976) documented that monitoring is helpful in reducing conflicts between investors and board of directors. Additionally, Bebchuk L. and Weisbah M. (2010) stated that boards of directors are more informed about internal business environment as compared to the shareholders. Hence, their existence improves investors trust and reduces the cost of equity capital in a company.

*External corporate governance (ECG)* is calculated as a share of each bank asset in the total asset of the banks in a given year. According to the Efficiency Structure Hypotheses by Demesetz H. (1973), it is suggested that a higher concentration policy by regulatory authorities (i.e the CBU and TRSE in Uzbekistan), weakens banking sector competition and this affects banking sector efficiency, consequently may increase the cost of equity capital in banking sector.

*Investor protection (IP)* variable is another corporate governance mechanism in finance. It is recognized in the studies by La Porta R., et al., (1997, 1998) that when investor rights are well protected legally in any business activity, investors are willing to finance firms. In contrast, when there is an inadequate legal and business environment to protect outside investors, external finance channel does not work well. Thus, the better investment climate for investors the higher external finance in banking sector. From this economic view, we use a natural logarithm of total debts as a good proxy for investor protection in banking sector.

#### *Uther controlling variables*

To check robustness of our regression results, we will decide to add bank-specific variables to the model, such as Bank size, Capital to Risk Weighted Asset Ratio (Basel III), and Debt to Equity leverage (D/E), since the significant impact on cost of equity capital had found in previous studies.

*Bank size* (Banksize) is applied to control the size effect of banks on the cost of equity capital. To choose size proxy following Berk J. (1995), we also use a natural logarithm of total equity of banks. It is predicted by Berk J. (1995), there was a negative association between size and the expected returns. It is also reported from the result that the larger firms would face with lower risk and thus seemed to expect for the lower capital cost.

*Capital to Risk Weighted Asset Ratio ( Basel III)* is a regulatory requirement ratio, expressed as a percentage of a bank's risk weighted credit exposures to determine the adequacy of their capital keeping in view their risk exposures as well as providing the banks with a cushion to absorb losses in financial downturn. According to BASEL III accord, total regulatory ratio is required to be at minimum 8 %, subject to new capital buffers. In addition, with combined buffers, this ratio should be kept at minimum 10,5%. For example, the famous theorem of Modigliani-Miller (1958) maintained that an increase in the cost of capital caused by a higher proportion of equity will, under some assumptions, be offset by a reduction in the cost of equity capital by investors. Subsequently, this effect offsets the additional cost of a higher proportion of expensive equity capital, so that the overall cost of capital remains unchanged. In literature, many recent studies are consistent with the Modigliani-Miller (MM) theorem. In addition, some authors pointed out that this new regulatory framework is a key determinant of the cost of equity capital in banking sector. However, some empirical evidence concerning the impact of regulation on a bank's cost of equity is still ambiguous due to there is a wide range of regulations on banking sector (Levine R., 2004).

*Debt to Equity ratio*(D/E) is known as a financial leverage to measure of the ability of bank equity to cover all outstanding debts in the event of financial downturn. So, investors usually

prefer low debt-to-equity ratios because their interests are better protected in that recession period in banking sector. Thus, banks with high debt-to-equity ratios could not be able to attract additional capital from investors. Hence, it is supposed that this ratio is positively associated with cost of equity capital in banking sector. It is also supported by Modigliani and Miller (1958) that the cost of equity capital raises with the firm's financial leverage. Likewise, Gray P. et al. (2009), revealed that the firm with a high leverage ratio will have a high cost of equity capital. Moreover, Yang J. and Tsatsaronis K., (2012) analyzed the impact of financial leverage on banks' stock return in the Euro area, US, UK, and Japan over the period of 1989-2011. The finding from this paper is that banks with higher leverage ratio face a higher cost of equity capital, which suggests that higher capital ratios are related to lower funding costs.

*Listing dummy (Listing)* assumes that listed banks are more capital efficient than unlisted banks in Uzbekistan. As banks with listing status are subject to better corporate governance systems, we expect that the relationship between listed and unlisted banks of corporate governance mechanism and the cost of equity capital should be different across banking industry. Therefore, this industry effects are captured by using listing dummy variable, that is, if bank enters to the listing in TRSE at a certain year, value is equal to 1, otherwise 0. According to Tu T., Khanh P., Quyen P. (2014), reveal that the banks with listing status have better corporate governance practice.

*Policy dummy (Policy)* shows the effect of currency exchange rate liberalization policy on cost of equity capital in banking sector, introduced by the Central Bank of the Republic of Uzbekistan in 2017. It is supposed that this monetary policy should also impact on cost of equity capital in banking sector of Uzbekistan.

## 4.2.4 The selected variables for Economic growth model

*Economic growth rate* (GDP) – is the most important indicator of economic development in a country. Annual GDP growth rate is used as a dependent variable in economic growth model. Theoretically speaking, when the GDP growth rate is positive, the economy is expanding and growing. Conversely, this rate turns negative, then the country's economy is in a recession situation.

*Financial sector development (FSD)* - mainly consists of banking sector development and stock market development in Uzbekistan. A good measurement of financial development is crucial to assess the development of the financial sector and understand the impact of financial development on economic growth. A substantial body of empirical work done so far is usually based on standard quantitative indicators for a long time series for a broad range of countries.

More extensively, there are four sets of proxy variables<sup>12</sup> are used for characterizing a wellfunctioning banking system: financial depth (bank assets to GDP), access (bank size), efficiency (ROE and ROA), and stability (Z-score) while there are more appropriate variables for good proxies on stock market development, such as stock market capitalization to GDP, equity to debt ratio in financial sector ( Levine R. and Zervos S. , 1998). Here, we decided to use financial depth (bank assets to GDP) for banking sector development (BSD) and equity to debt ratio for measuring of stock market development (SMD).

# 4.3 Methodology

In this doctoral research, we employed four different models to clarify the effect of corporate governance on economic growth through financial sector development, focusing on banking sector and stock market development. These are: Trans-log Cost and Profit Function (Model 1.1 and Model 1.2) for banking sector performance, Log Z score model (Model 2) for banking sector soundness and CAMP model (Model 3) for cost of equity capital which are estimated using either the fixed effects or the random effects model, following results from Hausman's test and Breusch-Pagan's test. In addition, a time-series regression result from Economic growth model with estimation VAR (short-term effect) and VECM (long-term effect) econometric techniques (Model 4.1 and Model 4.2) are also shown and a brief discussion on the result takes place in this chapter. Using objectives of each model and its specification will be broadly discussed in the following sub-sections.

### 4.3.1 Trans-log Cost and Trans-log Profit function

In this research paper, using efficiency concepts, namely cost and profit efficiency, we evaluate the performance of the banking sector in Uzbekistan. For this purpose, following **Hunter and Timme's (1986) methodology**, we developed our **Standard Trans-log Cost and Profit Function** for estimating the performance of banking sector for the period 2003-2017. In assessing cost efficiency, cost (TC) trans-log functions with 1 output- loan (Q) and 3 inputs, including fixed capital, labour and deposit (P<sub>i</sub>) are formulated the following specification (Model 1.1):

$$\ln TC = \alpha_0 + \sum_{i=1}^{3} \alpha_1 \ln P_i + \frac{1}{2} \sum_{i=1}^{3} \sum_{j=1}^{3} \alpha_{ij} \ln P_i \ln P_j + \beta_1 \ln Q + \sum_{i=1}^{3} \beta_2 \ln P_i \ln Q + \frac{1}{2} \beta_3 \ln^2 Q + \gamma_k \ln X_k$$

In assessing profit efficiency, profit ( $\pi_i$ ) trans-log functions with 1 output-loan (Q) and 3 inputs, including fixed capital, labour and deposit (P<sub>i</sub>) are formulated the following specification (**Model 1.2**):

<sup>&</sup>lt;sup>12</sup> The World Bank's Global Financial Development Database

$$\ln \pi = \mu_0 + \sum_{i=1}^3 \mu_1 \ln P_i + \frac{1}{2} \sum_{i=1}^3 \sum_{j=1}^3 \mu_{ij} \ln P_i \ln P_j + \lambda_1 \ln Q + \sum_{i=1}^3 \lambda_2 \ln P_i \ln Q + \frac{1}{2} \lambda_3 \ln^2 Q + \varphi_k \ln X_k$$

These models can give a general idea about what factors have influenced on banking sector performance as well as enabling us to make definitive statements about the cost and profit efficiency in the banking industry.

### 4.3.2 Log Z score model for banking sector soundness

In order to evaluate the effect of corporate governance of banking sector to the soundness of banking system of Uzbekistan through stock market development, we use a multiple regression model with panel data for 29 banks of Uzbekistan over the period of 2003 to 2017. To create our model, the natural logarithm of the Z-score is used as a dependent variable due to it has a meaningful probabilistic interpretation interval  $(-\infty; +\infty)$  as well as it is considered as an unproblematic insolvency risk measure to use in standard regression analysis (Lepetit L. and Strobel F., 2015). The natural logarithm of the Z-score initially measure the rate of banking sector soundness, that is, the probability of banking sector going insolvent when the value of assets becomes lower than the value of debts. Hence, a higher (lower) value for the ln-Z score imply a lower (higher) probability of insolvency risk in banking sector. To carry out our investigation, we employ the following model specifications:

# $lnZ(x_{ij}) = f(X_{1ij}, X_{2ij}, X_{3ij}) + e_{ij}$ (Model 2)

where, i-time period and j-banking sectors,  $\ln Z(x_{ij})$  scores – the rate of banking sector soundness,  $X_{1ij}$ - first group variables for corporate governance mechanisms,  $X_{2ij}$ - second group variables for stock market effect,  $X_{3ij}$ - third group variables for banking sector indicators,  $e_{ij}$  - error term.

### 4.3.3 CAPM model on cost of equity capital for both listed and unlisted banks

To assess the impact of corporate governance on cost of equity capital in banking industry we develop our third model based on the Capital Asset Pricing Model (CAPM) model as above discussed in the section of literature review. In finance theory, the CAPM is an equilibrium model that takes into consideration the systematic risk as the unsystematic risk can be diversified. So, this model provides a methodology for translating those risks into estimates of expected return of equity capital. Moreover, modern academic finance is built on the proposition that financial markets are basically rational. This is the first model of market rationality so that it is a widely used to estimate the cost of equity capital for a bank in recent financial studies. Let's turn into our model construction based on this rational market theory. In the specification of the models, we use a familiar Sharpe-Lintner CAPM equation in order

to calculate cost of equity capital in banking sector. The formula for banking sector is as follows:

$$E(R_{ij}) = R_f + \beta_{ij} \left[ (E(R_i) - R_f) \right]$$

where, E(Rij) is the expected return (cost of equity capital) during i-time period for j-bank,  $E(R_i)$  is the expected market return for banking sector portfolio,  $R_f$  is a fixed yield on the risk-free asset of banking sector in a given year,  $\beta_{ij}$  is a factor that measures the sensitivity of a bank's asset portfolio to movements in banking sector in a given year.

From the bank perspectives,  $R_f$  and  $E(R_i)$  are a constant for all banks whereas  $\beta_{ij}$  factor differs across the banks. Moreover, we theoretically assume that stock market impact on the corporate governance in banking sector while cost of equity capital is simultaneously affected by the corporate governance of banking sector. The value of beta changes over time so that the expected return might also differ over time and across banking sector as well. According to beta value, there are the following postulations in finance literature: (1) the beta value can be less than zero, meaning either that stock owner or investor is losing money while the market as a whole is gaining (more likely) or that the stock owner (investor) is gaining while the market as a whole is losing money (less likely). A beta value of less than 1 means that the stock return is less volatile than the market return, while a beta value greater than 1 means the stock return is more volatile than the market one. Moreover, a beta value of 1 indicates that the stock return tends to move with the market return. Therefore, in regression analysis we use some empirical condition in which will be omitted all cases for a beta value of 1 in our investigation pattern. Because there is not the effect of stock market on the corporate governance of banks if a value of beta is equal to 1. This paper will use the two-stage procedure for our analysis. In the first stage, Sharpe-Lintner CAPM equation is used statistically calculate  $\beta_{ij}$  coefficients for each bank in the analysed year. In the second stage, we develop our model based on  $\beta_{ij}$  is a good proxy- as a dependent variable – to estimate cost of equity capital in banking sector by adding corporate governance factors in addition to other controlling bank-specific variables that affect cost of equity capital in banking sector of Uzbekistan. In this regard, our model specification is as follows:

$$\beta_{ij} = f(X_{ij}, Y_{ij}) + u_{ij} \pmod{3}$$

where,  $X_{ij}$ - first group variables for corporate governance mechanisms,  $Y_{ij}$ - second group variables for other controlling variables,  $u_{ij}$  – unobserved factors in the financial market.

#### 4.3.4 Economic growth model

As we know, in neo-classical growth models, the long-run rate of growth is exogenously determined by either assuming a savings rate (the Harrod-Domar model) or a rate of technical

progress (Solow model). However, the savings rate and rate of technological progress remain unexplained. If we compare the two models with each other, it is easy to understand that in the former the steady-state growth rate is determined endogenously. In addition, endogenous growth theory suggests that government and private sector policies can have an effect on longterm growth. Therefore, we develop our economic growth model under the concept of endogenous growth theory as well as following the ideas by Himmelberg C., et. al (1999) and Palia D. (2001) documented the endogenous nature of corporate governance, mainly ownership structure. From this perspectives, corporate governance is endogenously determined as technological advancement factor in the model. Let's look at the economic growth model under assumption of endogeneity nature of corporate governance in financial sector below:

# $\mathbf{Y}_i = \mathbf{A} (\mathbf{BSD}_i, \mathbf{SMD}_i) + \mathbf{u}_i$

where,  $Y_i$ - economic growth rate, A -corporate governance as technological advancement and innovation in financial sector,  $BSD_{ij}$ - banking sector development variable,  $SMD_{ij}$  -stock market development variable,  $u_i$  – standard error term.

According to the results from Stationarity test in I(1) and Johansen cointegration test with (p) lags on the above specified time series model, the variables are cointegrated, so that we construct a short run VAR regression model and a long run VECM model to assess the effects of corporate governance on economic growth through financial sector development in our analysis. Both model specification is as follow:

### **VAR model specification (Model 4.1):**

$$GDP_{t} = a + \sum_{i=1}^{k} \alpha_{i} GDP_{t-i} + \sum_{j=1}^{k} \beta_{j} BSD_{t-j} + \sum_{m=1}^{k} \gamma_{m} SMD_{t-m} + u_{1t}$$
  

$$BSD_{t} = b + \sum_{i=1}^{k} \alpha_{i} GDP_{t-i} + \sum_{j=1}^{k} \beta_{j} BSD_{t-j} + \sum_{m=1}^{k} \gamma_{m} SMD_{t-m} + u_{2t}$$
  

$$SMD_{t} = c + \sum_{i=1}^{k} \alpha_{i} GDP_{t-i} + \sum_{j=1}^{k} \beta_{j} BSD_{t-j} + \sum_{m=1}^{k} \gamma_{m} SMD_{t-m} + u_{3t}$$

where, k- the optimal lag length; a, b, c- intercepts;  $\alpha_i$ ,  $\beta_j$ ,  $\gamma_m$  - short term dynamic coefficients of the model's adjustment long run equilibrium;  $u_{it}$  -residuals

**VECM model specification (Model 4.2):** 

$$\Delta GDP_t = a + \sum_{i=1}^{k-1} \alpha_i \Delta GDP_{t-i} + \sum_{j=1}^{k-1} \beta_j \Delta BSD_{t-j} + \sum_{m=1}^{k-1} \gamma_m \Delta SMD_{t-m} + \lambda_1 ECT_{t-1} + u_{1t}$$

$$\Delta BSD_t = a + \sum_{i=1}^{k-1} \alpha_i \Delta GDP_{t-i} + \sum_{j=1}^{k-1} \beta_j \Delta BSD_{t-j} + \sum_{m=1}^{k-1} \gamma_m \Delta SMD_{t-m} + \lambda_2 ECT_{t-1} + u_{2t}$$

$$\Delta SMD_t = a + \sum_{i=1}^{k-1} \alpha_i \Delta GDP_{t-i} + \sum_{j=1}^{k-1} \beta_j \Delta BSD_{t-j} + \sum_{m=1}^{k-1} \gamma_m \Delta SMD_{t-m} + \lambda_3 ECT_{t-1} + u_{3t}$$

where, k-1 the optimal lag length is reduced by 1; a, b, c- intercepts;  $\alpha_i$ ,  $\beta_j$ ,  $\gamma_m$  - short term dynamic coefficients of the model's adjustment long run equilibrium;  $\lambda$ -speed of adjustment parameters with a negative sign  $ECT_{t-1}$ -the error correction term is the lagged value of the residuals obtained from the cointegrating regression of the dependent variable on the regressors cointegrating long-run information derived from the long run cointegrating relationship.  $u_{it}$  - residuals

# **4.4 Conclusion**

This chapter devotes collection of the data and sources for this study, approaches for selection of the variables as well as description of the selected variables for each model used in the research. Moreover, there are information of research methodology and the specification of developed and extended models.

In this research, mostly primary data is used to improve the quality of empirical result and the values of this doctoral research. For this purpose, all datasets are collected based on the financial statements of each bank over the period of 2003-2018. Of course, the financial statements of some banks were not available case, we used secondary sources, but not much.

This chapter presents a brief explanation of selection of the variables and model specification, such as the specifications of Trans-log Cost and Profit Function (Model 1.1 and Model 1.2), Log Z score model (Model 2), CAMP model (Model 3) and Economic growth model with estimation VAR and VECM econometric techniques (Model 4.1 and Model 4.2).

For selection of the variables, we choose a bundle of approach for corporate governance variables which allows to capture any possible interaction effects among corporate governance mechanisms (Aguilera et al. 2012; Fiss 2007) to eliminate any measurement errors as well as reducing potential problems relating to very substantial risks of correlated omitted variables bias when one single variable is used in the model (Larcker et al., 2007).

Moreover, we develop new methodical approach which cannot be used in previous empirical studies the literature. In this direction, we extend the CAMP methodology based on a

backward-looking approach and a forward-looking approach to measure the cost of equity capital for unlisted banks and listed banks together. This method helps to evaluate cost of equity capital of financial and non-financial companies in case market data for stock prices is not available.

# Chapter 5. Empirical and preliminary analysis

As discussed in introduction chapter, this empirical investigation is particularly for corporate governance issues in banking sector of Uzbekistan. There are 20 listed in TRSE and 11 unlisted banks in the banking sector of Uzbekistan. The sample period is of 16 years starting from 2003 to 2018 while the sample size is of 31 banks in banking sector. In addition, a panel data modelling is used to estimate our first three models, has many advantages over cross-sectional and time-series data, including smoothing multicollinearity problem, generating additional degrees of freedom and improving the efficiency of econometric estimates, reduces the problems arising from omitted variables and dealing with model misspecifications and measures effects that are not detectable in cross-section and time-series data (Baltagi B., 2005; Hsiao C., 2006). In the last model, we employ time series regression method in order to measure the short-term effect and the long-term effect of corporate governance on economic growth through financial sector development. In this paper, our analysis consists of two sections. Sub-section 6.1 presents the analysis of descriptive statistics and the correlation matrix among selected variables, while the empirical results are shown in sub-section 4.2.

# 5.1 Preliminary analysis

## 5.1.1 Descriptive statistics

We focus a descriptive analysis on studying overall feature of banking sector and the difference between listed and unlisted banks in terms of the cost of equity capital and corporate governance variables. So, our analysis is divided into two parts in this sub-section. First, we are going to analyze the feature of all banks consist of listed and unlisted banks. And, the second part deals with a descriptive analysis for listed and unlisted banks separately.

Table 5.1 presents the descriptive statistics of all banks with data for the cost of equity capital, corporate governance and other controlling variables. The total number of observations is 414. The finding reveals that BETA has a mean value of 0.55 with a maximum value of 22.58 and a minimum value of -33.42. The variation among 31 bank-year observation is 4.10. This reveals that BETA is instable in banking sector. The mean value of OWN is 0.23 with maximum of 1, while the variation of OWN is high among banks as standard deviation is 37.45%.

This indicates relatively higher ownership concentration in banking sector of Uzbekistan. ECG is having a mean score of 0.39 with maximum of 0.65 and minimum of 0.0002 whereas ICG has a mean value of 0.02; however, the maximum value is 0.55. Another corporate governance variable of IP has the average value of 5.43 while maximum value is 10.85 and minimum level is equal to -1.71. In summary, the descriptive statistics shows that the cost of equity capital and corporate governance mechanisms vary across banking sector of Uzbekistan.

Table 5.1. Descriptive statistics for all banks

Variable	Obs	Mean	Std. Dev.	Min	Max
BETA	414	.5468911	4.098801	-33.42113	22.5822
OWN	414	.2348681	.3744968	0	1
ECG	414	.0386473	.0761809	.0001859	.6519196
ICG	414	.0195782	.0467284	0	.547619
IP	414	5.43176	2.257412	-1.714798	10.84512
BANKSIZE	414	3.882836	1.830579	-2.040221	8.500303
BASEL3	414	9.309479	50.44726	0	410.4
DE	414	6.419137	4.220907	.0356436	25.82219
LISTING	414	.5120773	.5004589	0	1
POLICY	414	.1352657	.342421	0	1

. summarize BETA OWN ECG ICG IP BANKSIZE BASEL3 DE LISTING POLICY

where, BETA = cost of equity capital, OWN = ownership, ECG = external corporate governance, ICG = internal corporate governance, IP = investor protection, BANKSIZE = bank size, BASEL3= capital regulation requirement, DE = debt to equity ratio (financial leverage), LISTING= listing dummy, POLICY = policy dummy.

Table 5.2 shows the descriptive statistics for 20 listed banks only. So, the total number of observations is 285. The finding reveals that BETA has a mean value of 0.80 with a maximum value of 22.58 and a minimum value of -17.82. The variation among 20 listed bank-year observation is 3.65. This reveals that BETA coefficient is also instable among listed banks. The mean value of OWN is 0.22 with maximum of 1, while the variation of OWN is moderately high as standard deviation is 34.28%. This also indicates the high ownership concentration among listed banks in Uzbekistan. ECG is having a mean score of 0.03 with maximum of 0.16 and minimum of almost zero whereas ICG has a mean value of 0.02; however, the maximum value is 0.22. Furthermore, investor protection variable, IP has the average value of 5.59 while maximum value is 10.23 and minimum level is -1.71.
Table 5.2.	. Descriptive	statistics	for	listed	banks
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Variable	Obs	Mean	Std. Dev.	Min	Max
BETA	285	.801383	3.653668	-17.81533	22.5822
OWN	285	. 223633	.3428418	0	1
ECG	285	.0307465	.0377495	.0001859	.1551807
ICG	285	.0151262	.023119	0	.2211055
IP	285	5.597202	2.12311	-1.714798	10.2336
BANKSIZE	285	3.850689	1.850615	-2.040221	8.07199
BASEL3	285	.3320204	.255303	0	1.73064
DE	285	7.013674	4.000127	.0356436	20.32455
LISTING	285	.7438596	.4372681	0	1
POLICY	285	.1333333	.3405326	0	1

. summarize BETA OWN ECG ICG IP BANKSIZE BASEL3 DE LISTING POLICY, separator(10)

where, BETA = cost of equity capital, OWN = ownership, ECG = external corporate governance, ICG = internal corporate governance, IP = investor protection, BANKSIZE = bank size, BASEL3= capital regulation requirement, DE = debt to equity ratio (financial leverage), LISTING= listing dummy, POLICY = policy dummy.

Table 5.3 illustrates the descriptive statistics for 11 unlisted banks only. So, the total number of observations is 129. As you can see from this table that BETA has a mean value of -0.02 with a maximum value of 14.48 and a minimum value of -33.42. The variation among 11 unlisted bank-year observation is 4.91. This confirms that BETA is volatile and instable for unlisted banks. The mean value of OWN is 0.26 with maximum of 1, while the variation of OWN is high level as standard deviation is 43.68%. This also indicates that the high ownership concentration exists among unlisted banks in Uzbekistan. ECG is having a mean score of 0.06 with maximum of 0.65 and minimum of almost zero whereas ICG has a mean value of 0.03; however, the maximum value is 0.55. Another corporate governance variable, IP has the average value of 5.07 while maximum value is 10.85 and minimum level is -0.36.

Table 5.3. Descriptive statistics for unlisted banks

Variable	Obs	Mean	Std. Dev.	Min	Max
BETA	129	0153586	4.911746	-33.42113	14.47856
OWN	129	.2596899	. 4368333	0	1
ECG	129	.0561028	.1229538	.000298	.6519196
ICG	129	.0294141	.0756161	0	.547619
IP	129	5.066249	2.499092	3566749	10.84512
BANKSIZE	129	3.953859	1.790578	5447272	8.500303
BASEL3	129	29.1434	87.38027	.1068161	410.4
DE	129	5.105624	4.410954	.1156627	25.82219
LISTING	129	0	0	0	0
POLICY	129	.1395349	.3478547	0	1

. summarize BETA OWN ECG ICG IP BANKSIZE BASEL3 DE LISTING POLICY, separator(10)

where, BETA = cost of equity capital, OWN = ownership, ECG = external corporate governance, ICG = internal corporate governance, IP = investor protection, BANKSIZE = bank size, BASEL3= capital regulation requirement, DE = debt to equity ratio (financial leverage), LISTING= listing dummy, POLICY = policy dummy.

Based on comparing the results of descriptive statistics of Table 5.2 with Table5.3, it is determined that beta coefficient for unlisted banks seems more volatile than that of listed banks in the analyzed period. This concludes that the corporate governance mechanism of unlisted banks is differently from that of listed banks even though corporate governance policies and legal environment are the same within the country.

#### 5.1.2 Correlation matrix between the variables

Table 5.4 describes Pearson correlation matrix among dependent and independent variables. The matrix shows that there is almost no significantly high correlation between any two variables because absolute values of all correlation coefficients are almost well below of 0.75, except the correlation coefficient between BANKSIZE and IP variables with value of 0.91. According to Hinkle D., Wiersma W., & Jurs S. (1998), as Pearson correlation coefficient is not over than 0.75; thus, it can be considered that the study variables have the relationship in the acceptable level without multicollinearity problem.

Table 5.4. Pearson correlation matrix between the variables

<sup>.</sup> correlate BETA OWN ECG ICG IP BANKSIZE BASEL3 DE LISTING POLICY (obs=414)

	BETA	OWN	ECG	ICG	IP	BANKSIZE	BASEL3	DE	LISTING	POLICY
BETA	1.0000									
OWN	0.2576	1.0000								
ECG	0.0438	0.5778	1.0000							
ICG	0.0538	-0.1079	-0.0786	1.0000						
IP	-0.0398	0.5300	0.5019	-0.2794	1.0000					
BANKSIZE	0.0334	0.5897	0.4968	-0.2189	0.9126	1.0000				
BASEL3	0.1125	-0.1123	-0.0663	-0.0257	-0.1144	-0.0131	1.0000			
DE	-0.0986	0.0645	0.2041	-0.1548	0.5397	0.2236	-0.0495	1.0000		
LISTING	0.0860	0.0287	-0.0514	-0.1533	0.4031	0.3399	-0.1835	0.2303	1.0000	
POLICY	0.0763	0.1438	-0.0152	-0.0662	0.3281	0.4393	-0.0029	-0.0840	0.1317	1.0000

where, BETA = cost of equity capital, OWN = ownership, ECG = external corporate governance, ICG = internal corporate governance, IP = investor protection, BANKSIZE = bank size, BASEL3= capital regulation requirement, DE = debt to equity ratio (financial leverage), LISTING= listing dummy, POLICY = policy dummy.

## 5.2 Empirical analysis

This section provides explanation of the main results with reference to our four model. The first model, Trans-log Cost and Trans-log Profit function was carried out as part of the initial analysis to provide indication of the variables that are significant determinants of banking sector performance in Uzbekistan.

The second model, Log Z score model was carried as part of second analysis to provide indication of the variables that are key determinants of banking sector soundness in Uzbekistan. The third model, the CAPM model was carried as part of third analysis to provide expected sign of the targeted variables that are important role of lowering cost of equity capital in financial sector of Uzbekistan.

The fourth model, the Economic growth model was carried as part of fourth analysis to provide expected sign of the targeted variables that are important determinants of economic growth in Uzbekistan.

#### 5.2.1 Empirical results for Trans-log Cost and Trans-log Profit function

According to Table 5.5 and Table 5.6 in Appendix II, we will analyze the findings of the empirical results on Trans-log Cost Function (Model 1.1) and Trans-log Profit function (Model 1.2). As you can see in both models, OWN variable is very significant even controlling for other variables. It means that this variable should be totally confirmed as a key determinant on the performance of the banking sector in Uzbekistan for the analyzed period. Our result is consistent with the findings of A.Micco et al. (2004).

In the trans-log cost function, state-owned banks are more cost efficient than the other types of banks. On the other hand, state-owned banks are low profit efficient than the other country partners (joint stock, private and foreign owned banks) for the sampled period. Thus, state owned banks focus their efforts on managing costs more effectively, while the profits are only secondary. In contrast, a primary goal of other types of banks is to have high profits whereas cost efficient management is secondary. These are interesting findings, because the cost efficiency of the state-owned banks is consistent with the "development" theory (A. Gerschenkron, 1962), and the profit inefficiency of the state-owned banks is more likely connected with the "political" theory (La Porta et al., 2002).

The dummy variable (D1) for the listed banks showed a very interesting pattern for identifying the difference between listed and unlisted banks as well as the possible effect of privatization to the improvement of the performance of banking sector in Uzbekistan. However, dummy variable (D1) for listed banks, is statistically insignificant in cost function, contrary to profit

function with significant inverse sign. It means that there is not a quite difference between the listed and unlisted banks. There is some possible rational explanation that the bank-oriented an economy where managers of banks act in the best interest of employee rather than that of shareholders, because they may not be effectively monitored and controlled by shareholders. Managers may seem to spend lavishly even though they are seeking only profit (H. Izawa and Y. Tsutsui, 1998). Another reason, this field of banking sector is still underdeveloped due to not implementing good corporate governance practices in the banking sector, but overall results shows that privatization itself is not enough in enhancing the overall performance of the listed banks, but also the Central Bank of Uzbekistan have to implement a good corporate governance practice together with privatization of two the biggest state-owned banks in the banking sector of Uzbekistan.

In addition, D2 variable is statistically significant at the 1% level in the cost and profit function. It means the structure of ownership does matter before the 2008 financial crisis, since our control dummy variable (D2) has an expected sign in cost and profit function. This result confirmed that state-owned banks' strategy focuses on cost minimization and profit maximization behaviors before the financial crisis.

#### 5.2.2 Empirical results for Log Z score model for banking sector soundness

The empirical results can be explained and summarized in the random effect model (see. Table 5.7 in Appendix II). The result of the model presented in the Table 5.7 indicates that among first group variables on corporate governance, including internal corporate governance (ICG) and external corporate governance (ECG) are negatively related with the ln Z- score, but statistically insignificant. It means that there is no direct effect to soundness of banking sector in terms of internal and external corporate governance mechanisms by bank management and implemented rules and policies by regulatory authority do not work very well in short run in Uzbekistan. In the cases of long run, one-year lag variables for internal corporate governance (ICG\_Lag) and external corporate governance (ECG\_Lag) are negatively and positively correlated with the ln Z- score respectively, but these variables are also confirmed statistically insignificant at any confidence interval. It is theoretically supposed that the effect of corporate governance should be accelerated within stock market development based on stock market rules, disciplines and guidelines for listed banks in Uzbekistan.

Therefore, we need to study a joint effect of corporate governance of banking sector along with stock market to the soundness of banking system Uzbekistan. According to the results for

second group variables of stock market effect, including interaction term for banks' investment activity in stock market (IT1) and interaction term for external corporate governance and stock market (IT3) are strongly associated with the ln Z-score at the 1% confidence level, besides these variables have positive and negative sign respectively. In addition, interaction term for internal corporate governance and stock market (IT2) has also negative sign, but statistically insignificant. This confirms that there are only jointly negative effects of external corporate governance along with stock market on the soundness of banking system Uzbekistan. This finding is consistent with the quiet life hypothesis developed by Hicks (1935), suggest that more concentrated banking system by regulatory authorities may result in decreasing of banking sector soundness.

The main reason is that privatization process of banks and listing process have remained as unfinished bridge between the banking sector and stock market. More obviously, it can be confirmed that internal corporate governance does not directly and jointly work in the banking system due to board of directors and managers' behaviour look like "quiet life", because they have not paid more attention for transparency, disclosure and accountability issues as key pillars of corporate governance of the banks. Likewise, the bank-based economy as in Japanese banking system has "de facto dispersion of bank ownership" where bank managers act in the best interest of stakeholders rather than that of shareholders, because they may not be effectively monitored and controlled by shareholders (H.Izawa and Y.Tsutsui, 1998).

The results of third group variables related to banking sector indicators show that on the one hand, bank age (BA) is positively associated with the ln Z-score at the 5% confidence interval, on the other hand, bank size (BS) has negative correlation with the ln Z -score at the 1% confidence level. To summarize, among three groups variables, only four variables, such as IT1, IT3, BA and BS are confirmed as key drivers for improving of the soundness of banking sector in Uzbekistan over the period of 2003 to 2017.

#### 5.2.3 Empirical results for CAPM model for listed and unlisted banks

In panel regression analysis, we employed standard panel methods, namely a Pooled Ordinary Least Square (OLS), a Fixed Effect (FE) method and a Random Effect (RE) method to assess the effect of corporate governance on cost of equity capital in banking sector of Uzbekistan. All regression results are broadly shown in Table 5.8 for Polled OLS regression on CAPM model, Table 5.9 for Fixed Effect regression on CAPM model and Table 5.10 for Random Effect regression on CAPM model in Appendix II. According to Hausman test and Breusch and Pagan Lagrangian Multiplier test, it is suggested that Random Effect Model is the most

suitable method among other methods to test our hypothesis. Therefore, this paper used the Random Effect Model as the estimation technique.

Table 5.11 presents a summarized empirical result on regression models of the dependence of cost of equity capital on corporate governance and other controlling bank-specific variables.

BETA	(OLS)	(FE)	(RE)	
OWN	5.30***	3.52*	4.28***	
ECG	0.17	-2.06	-0.41	
ICG	2.91	-1.81	-0.82	
IP	-1.33**	-0.94	-1.09*	
BANKSIZE	0.55	0.31	0.39	
BASEL3	0.01**	0.01	0.01*	
DE	0.17	0.23*	0.20*	
LISTING	2.13***	1.30	1.69**	
POLICY	1.48*	1.80**	1.64*	
Constant	1.88**	1.22	1.40	

Table 5.11. A summarized empirical result for CAPM model (Model 3)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

where, OWN = ownership, ECG = external corporate governance, ICG = internal corporate governance, IP = investor protection, BANKSIZE = bank size, BASEL3 = capital regulation requirement, DE = debt to equity ratio (financial leverage), LISTING = listing dummy, POLICY = policy dummy.

According to the result of Random Effect model in column (RE), OWN and IP variables are significantly positive and negative signs respectively. In the other hands, both ECG and ICG corporate governance variables are found negative impact on BETA, however, insignificant at any confidence level in the model. As for OWN variable, if a share of government ownership (OWN) increases by 1% in equity capital of banks, on average, cost of equity capital also increases by 4.28%. It means that widely concentrated ownership increase cost of equity capital in banking sector. This finding is opposite to the result in the paper by Jensen M. and Meckling W. (1976), stated that a widely dispersed ownership increases cost of equity capital. From this result, two views were revealed. Initially, this positive association points out the weak monitoring by government and lack of appointment of bank managers based on existing corporate governance mechanism. This is also consistent with the quiet life hypothesis developed by Hicks (1935), suggest that more concentrated banking system may result in decreasing the efficiency of banking sector. More interestingly, this finding is also consistence with the outcomes of our first paper in which the profit inefficiency of the state-owned banks

is more likely connected with the "political" theory (La Porta R. et al., 2002). Therefore, this may be a reasoning for higher cost of equity capital in banking sector.

Another possible reason that bank managers don't act in the best interests of government and other majority shareholders, so their behaviors look like "quiet life" in the banks with state ownership, because they may not be efficiently monitored and controlled by shareholders (H.Izawa and Y.Tsutsui, 1998). However, this result is inconsistence with our findings by Shehzad et al. (2010) even though government ownership is about 67% in banking sector of Uzbekistan. According to their paper result, ownership concentration is greater than 50%, which is beneficial for the banks, when shareholder protection rights are weak in the banking system. In my opinion, there should be an optimal level of government concentration due to a need of government involvement in systematic and strategic economic branches from the viewpoint of the development theory (A. Gerschenkron, 1962). In addition, investor protection (IP) finds a crucial factor in lowering cost of equity capital, that is, if investor protection is reinforced by 1%, on average, cost of equity capital reduces by 1.06%. This finding is also consistent with the outcomes from other papers by La Porta R. et al., (1997, 1998). Hence, the investor protection is a key determinant of cost of equity capital in banking sector of Uzbekistan. More specifically, the cost of equity capital decreases as the same level as investor protection increases. Both ECG and ICG corporate governance variables are found negative impact on BETA, however, insignificant at any confidence level in the model. This result explains that internal and external governance mechanisms are strong complements as well as corporate governance mechanisms are stronger in case internal governance also works (Cremers M. and Nair V., 2005). This result is also consistent with our second paper's finding that internal corporate governance mechanism doesn't not fully work in banking system of Uzbekistan (Atamuratov U., Izawa H., 2020). Moreover, the results indicate among other controlling variables for bank-specific characteristics, BASEL3 and D/E variables have positive and significant impacts on cost of equity capital, whereas BANKSIZE variable is found insignificant in the model. Furthermore, the LISTING and POLICY dummies are significant positive relation to BETA at the 1% and 5% confidence intervals respectively. The above results suggest that the banking sector with both higher capital regulation and higher financial leverage ratios have higher cost of equity capital in banking sector. This is also relevant to the findings supported by Modigliani F. and Miller M. (1958), Gray P., et al. (2009) and Yang J. and Tsatsaronis K. (2012). In the other sides, the development of stock market can reduce the cost of equity capital by decreasing debt to equity (financial leverage) ratio in banking sector (Levine R. and Zervos S., 1998). More importantly, there is no size effect on cost of equity

capital in banking sector. Moreover, a positive correlation between LISTING dummy and BETA explains that 20 listed banks in TRSE is not enough power to lower cost of equity capital in banking industry. Similarly, new monetary policy could not support for lowering cost of equity capital within two years since POLICY dummy is positively associated with dependent variable.

#### 5.2.4 Empirical results for Economic growth model

The empirical results on Economic growth model can be explained in two models, including regression results from the VAR model on economic growth (see. Table 5.12 in Appendix II) and regression results from the VECM model on economic growth (see. Table 5.14 in Appendix II) as well as the results of both models are summarized in Table 5.17 in Appendix II. Initially, let's look at the results from short run VAR model. According to the outcomes of Table 5.12, we determine significant causal relationship among GDP, BSD and SMD variables in short run. The overall result of our causality analysis is summarized below in Table 5.13.

Dependent	t-statistics	Granger / Wald	Wald	Decision
variable		test	coefficient test	
GDP	BSD_2: Significant	BSD: Significant	BSD: Significant	BSD Granger-causes GDP
	SMD_1: Significant	SMD: Significant	SMD: Significant	SMD Granger-causes GDP
BSD	SMD_1: Significant			SMD Granger-causes BSD
SMD	BSD_1: Significant	BSD: Significant	BSD: Significant	BSD Granger-causes SMD
	BSD_2: Significant	GDP: Significant	GDP: Significant	GDP Granger-causes SMD
	GDP_2: Significant			

 Table 5.13. A causality analysis in short run VAR model

From this Table 5.13, we can conclude that there is bi-directional causality from BSD to SMD and vice versa as well as from SMD to GDP and vice versa. This finding is similar to the result of the paper by Hassan M. et al. (2011). However, unidirectional causality from BSD to GDP, on average, ceteris paribus. This findings is consistent with the findings of paper by Christopoulos D. and Tsionas E. (2004).

In the other sides, to check the long run relationship between targeted variables, we analyze the regression results of both the VECM model on economic growth in Table 5.14 and long run Johansen normalization equation on VECM model in Table 5.15 in Appendix II. To determine the robustness of our model, we perform some diagnostic tests, such as autocorrelation, normality and stability test on VECM model. The test result shows, there is no autocorrelation

at lag order, all equations normally distributed on the error terms and there is no stability problem (See. Table 5.16 in Appendix II).

According to the VECM model on economic growth and long run Johansen normalization equation on VECM model, we can get the following targeted parameters and signs:

$$ECT_{t-1} = 1.000GDP_{t-1} + 36.26BSD_{t-1} - 34.11SMD_{t-1} - 14.08$$

Based on above equation result, we interpret that BSD has a negative effect, while SMD has a positive impact on GDP in long run. Therefore, it can be concluded that BSD and SMD have asymmetric effects on GDP in long run, on average, ceteris paribus. The overall results of my research paper are associated with empirical evidence from the paper by Ghirmay T. (2004) where determined a cointegrating relationship between financial development and economic growth. In addition to the causality, the outcomes of study are very sensitive to the context of single country.

In addition to this, we can also rewrite long run VECM model with coefficients where GDP as the target variable.

 $\Delta GDP_t = -0.0002 + 60.30\Delta GDP_{t-1} + 31.77\Delta BSD_{t-1} + 20.59\Delta SMD_{t-1} - 1.098ECT_{t-1}$ 

From this model, we interpret the ECT coefficients, that is, the adjustment term (-1.098) is statistically significant at the 1% level, suggesting that previous year's errors (or deviation from long run equilibrium) are corrected for within the current year at a convergence speed of 109.8%.

#### 5.3 Conclusion

This chapter deals with a preliminary data analysis and an empirical analysis on four econometric models. In this chapter, we only focus a preliminary data analysis on studying overall feature of banking sector and the difference between listed and unlisted banks in terms of the cost of equity capital and corporate governance variables. The result of preliminary analysis shows that beta coefficient for unlisted banks seems more volatile than that of listed banks in the analyzed period. This concludes that the corporate governance mechanism of unlisted banks is differently from that of listed banks even though corporate governance policies and legal environment are the same within the country.

This chapter covers all regression results from Trans-log Cost and Profit Function (Model 1.1 and Model 1.2), Log Z score model (Model 2) and CAMP model (Model 3) which are estimated using either the fixed effects or the random effects model, following results from Hausman's test and Breusch-Pagan's test. In addition, a time-series regression result from Economic growth model with estimation VAR and VECM econometric techniques (Model 4.1

and Model 4.2) as well as perform some diagnostics test on time series analysis, including stationarity test, Johansen cointegration test, causality analysis tests, autocorrelation, normality and stability tests. There is a brief discussion as to whether or not the main results support past theory and the findings in literature.

## Chapter 6. Discussion

This chapter provides a brief discussion of the main results with respect our research hypotheses based on obtained empirical results in Chapter 5 with reference to our four regression models. In addition to the unique and new findings obtained from this PhD research are presented in this chapter. There is also information about the limitations of this study and proposed directions for further research.

## 6.1 Discussion with respect to research hypotheses

In this section of the research, we analyze extensively the confirmation of research hypotheses based on the findings of the empirical results on the model. According to our empirical findings, we accept or reject the following research hypotheses:

#### *H*<sub>1</sub>: Corporate governance effects on banking sector performance;

According to empirical results from Model 1.1 and Model 1.2, we can accept this hypothesis  $(H_1)$ , since there is a strong negative correlation with cost and profit efficiency as well as OWN variable is very significant even controlling for other variables in the both models. It means that corporate governance impact on the performance of the banking sector in Uzbekistan for analyzed period.

#### *H*<sub>2</sub>: Corporate governance effects on banking sector soundness;

According to empirical result from Model 2, we cannot fully accept this hypothesis (H<sub>2</sub>), since internal corporate governance (ICG) and external corporate governance (ECG) variables are statistically insignificant in short run and long run. However, it is confirmed that there is only jointly negative effect of external corporate governance along with stock market to the soundness of banking system Uzbekistan.

#### *H<sub>3</sub>: Corporate governance impacts on stock markets development;*

According to empirical results from Model 3, we may accept this hypothesis  $(H_3)$ , since there is a strong positive and negative correlation between the bundle of targeted corporate governance variables and the cost of equity capital as determinants of stock market development.

#### H<sub>4</sub>: There is a casual impact between banking sector development and economic growth

According to empirical results from Model 4.1 and Model 4.2, we accept this hypothesis (H<sub>4</sub>), since in sort run there is unidirectional causality from BSD to GDP, on average, ceteris paribus. Moreover, in long run BSD has a negative effect on GDP.

*H<sub>5</sub>: There is a casual impact between stock market development and economic growth* According to empirical results from Model 4.1 and Model 4.2, we can also accept this hypothesis (H<sub>5</sub>), since in sort run there is bi-directional causality from SMD to GDP and vice versa, on average, ceteris paribus.

#### H<sub>6</sub>: There is the complementarity or the substitutability between banking sector and

#### stock market in financial sector.

According to empirical results from Model 4.1 and Model 4.2, we may accept this hypothesis  $(H_6)$ , since BSD has a negative effect, while SMD has a positive impact on GDP in long run. Therefore, BSD and SMD have asymmetric effects on GDP in long run, on average, ceteris paribus. It means that BSD and SMD are substitute in long run.

#### 6.2 What is new and unique about this PhD study?

New information has been added to the body of knowledge through results obtained from this doctoral research. Initially, the study brings together concepts of corporate governance, financial sector and economic growth in order to shed new light on corporate governance-economic growth linkage through financial sector development. Unfortunately, there is not still a clear theoretical foundation for corporate governance framework in banking sector in existing literature since corporate governance concept is used a narrow and a boarder scale. In this regard, corporate governance framework has been developed based on reviewed studies, theories and corporate governance mechanisms by borrowing new conceptual ideas from other academic fields as well as foreign experiences from developed countries.

Secondly, it is tested a theoretical linkage between corporate governance and economic growth through the development of financial sector, namely banking sector and stock market that has not previously been tested in empirical studies.

Thirdly, this study included a bundle of approach for corporate governance variables which allows to capture any possible interaction effects among corporate governance mechanisms (Aguilera et al. 2012; Fiss 2007) to eliminate any measurement errors as well as reducing potential problems relating to very substantial risks of correlated omitted variables bias when one single variable is used in the model (Larcker et al., 2007).

The last not least, we create new methodological approach (extension of the CAMP methodology) based on a backward-looking approach and a forward-looking approach to evaluate the cost of equity capital for unlisted banks and listed banks together. This new methodology can be used in other researches to measure cost of equity capital of financial and non-financial companies in case market data for stock prices is not available.

The findings of this doctoral study will rebound to the benefit of economy considering that corporate governance plays an important role in financial sector development leads to economic development. The greater investor demand for sound and stable banking sector justifies the need for improving the effectiveness of corporate governance mechanisms in financial sector. Government authority will guide on what should be emphasizes by banks in the structure of corporate governance to have a good corporate governance mechanism.

#### 6.3 Limitation of the research and future directions

In general, no research study is close to perfection, so our doctoral work also has some limitations. This study is conducted only by focusing on a single country perspective, particularly in Uzbekistan. Indeed, each country is located in separate region, the cultural aspect of different nations as well as institutional and legal development in the countries can influence the practices of financial sector and its corporate governance. Another limitation is our sampled datasets covered the period of 2003-2018, so the result might be slightly changed when the dataset periods are extended. In addition, due to insufficient available data we could not control for the other corporate governance characteristics, like board size, shareholder size and other related quantitative variables have likely required us to constraint the scope of our analysis for their impact on corporate governance on economic growth through the development of financial sector, namely banking sector and stock market in Uzbekistan. Moreover, this research was limited to 20 listed banks in TRSE and 11 unlisted banks, there is need for more extensive study which includes all banks and other financial institutions and some other corporate governance variables to reduce the bias which is associated with generalization of findings. For the researchers, this study will help them uncover critical areas financial sector that many researchers were not able to explore in developing country, particularly in Uzbekistan. Thus, a new corporate governance theory on financial sector may be arrived at.

#### 6.4 Conclusion

This chapter includes a detailed discussion of the findings with respect to our research hypotheses as well as of the unique and new discoveries. There is also information about the limitations of this study and proposed directions for further research.

As referred above, all research hypotheses almost accepted, only one hypothesis is partially confirmed by the empirical findings. More importantly, this doctoral research discovers there are unique and new findings in terms of conceptual, empirical and methodological natures. Also, limitation of the study has been shown from the viewpoint in individual characteristics of this research and some other factors resulting in constraining the scope of research analysis.

# Chapter 7. Conclusions and policy implications

This concluding chapter provides a summary of the research and main findings that has been undertaken in examining the effect of corporate governance on economic growth through financial sector development in Uzbekistan. In addition, policy implications are discussed in this chapter.

#### 7.1. Research summary and main findings

Our research summary is divided into four groups based on empirical results derived from four different models used in this doctoral study.

- According to our first empirical results in Model 1.1 and Model 1.2, we conclude that there is a very strong relationship between the structure of bank ownership and bank performance even when controlling for other performance variables in the model. Moreover, the paper reports that bank capitalization and price policy are insignificant factors for the performance of the banking sector in Uzbekistan. This study also finds that state owned banks pay more attention their efforts in cost efficiency, while the profit efficiency is only secondary. In contrast, other types of banks aimed to increase profit efficiency rather than managing and improving cost efficiency in the last two decades. Furthermore, it has been concluded that there is a significant space for improving the overall performance of the banking sector through privatization of the two biggest state-owned banks by implementing good corporate governance practice in the banking system of Uzbekistan.
- According to our second empirical result in Model 2, we conclude that internal and external corporate governances do not directly impact on the soundness of the banking sector in both short-run and long-run. More interestingly, external corporate governance along with stock market jointly impacts on the soundness of banking sector in Uzbekistan. However, internal corporate governance does not fully work in the banking system in the analyzed period. In turn, bank age and bank size are also considered as key determinants for improving the soundness of banking sector in Uzbekistan. To sum up, we find that corporate governance itself is not enough for

increasing the soundness of banking sector, stock market development is also considered as a key driver for improving on the soundness of banking sector in Uzbekistan.

- According to our third model result in Model 3, we conclude the corporate governance mechanisms are still ambiguous in banking sector of Uzbekistan. The investor protection is recognized as an effective corporate governance mechanism to encourage lower cost of equity capital. In the other hands, government mechanism on corporate governance is not confirmed as an effective instrument in banking sector while external and internal corporate governance mechanism do not effectively work to manage the cost of equity capital. In addition, non-state banks are more likely to have stronger corporate governance mechanism than the banks with state ownership in Uzbekistan. Furthermore, the expansion of stock market is not at certain level where can reduce the cost of equity capital in banking sector of Uzbekistan.
- According to our fourth model results in Model 4.1 and Model 4.2, we conclude that corporate governance in financial sector is very crucial towards further economic growth through financial sector development in Uzbekistan since the development of banking sector and stock market have a strong causal relationship with on economic growth. More specifically, in short run there is bi-directional causality from stock market to economic growth and vice versa while there is unidirectional causality from banking sector, on average, ceteris paribus. More interestingly, banking sector has substitution effect while stock market has a complementary impact on economic growth in short run and in long run. In addition, in long run banking sector and stock market have asymmetric effects on GDP, on average, ceteris paribus. It means banking sector and stock market are substitute each other in economic development of Uzbekistan.

The main findings obtained in this research will be relevant to policymakers, regulatory authorities, domestic and foreign investors as well as the financial experts and new researchers who need to obtain information about the corporate governance practices in financial sector and its effects on economic growth in Uzbekistan.

#### 7.2. Policy implications

The findings of this study provide more insight to financial and bank managers as well as domestic and foreign investors about the nexus between corporate governance and economic growth though financial sector development, with respect to Uzbekistan. More importantly, this study contributes to the existing literature by adding new conceptual, empirical and methodological evidence from developing countries, namely Uzbekistan. The outcomes of the study are also helpful for regulatory authorities and policymakers in the formulation of longterm corporate governance strategies to explore why some corporate governance mechanisms are still ineffective in banking sector as well as managing the performance of banking sector. The main policy suggestion is that there is a need to arrangement ownership structure of banking sector, including privatization of state-owned banks can be implemented either directly selling the bank's assets to strategic investors or selling equity shares through domestic and foreign stock markets. In my opinion, there should be an optimal level of government concentration due to a need of government involvement in systematic and strategic economic branches from the viewpoint of the development theory (A. Gerschenkron, 1962). Indeed, it is important to strengthen the ability and incentives of domestic and foreign investors to exert governance over banking sector rather than relying excessively on government regulators. Besides that, this paper also provides support for prudential tools that give incentives for regulatory authorities and banks to build capital cushions at the situation when the cost of equity capital is higher. In addition, regulatory authorities and policymakers should pay further higher attention to stock market development that can reduce the cost of equity capital when stock market reaches a reasonable size. Furthermore, policymakers take into more consideration the improvements of legal environments for investor protection in decisionmaking processes regarding the corporate governance policies in order to promote effective corporate governance practices in banking system of Uzbekistan.

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# Appendix I





Table 2.1. All commercial banks in Uzbekistan over the period of 2003-2018

N	Bank's name	Bank type	Founded year	Bank age	Capitalization (in billion UZS)
1	NBU	Public	1991	27 years	4 916,26
2	XALQ	Public	1993	25 years	1 496,53
3	ASAKA	Joint Stock	1996	22 years	2 530,72
4	SQB	Joint Stock	1991	27 years	3 203,47
5	TURON	Joint Stock	1991	27 years	822,99
6	AGRO	Joint Stock	1993	25 years	2 214,95
7	IPOTEKA	Joint Stock	1994	24 years	1 612,12
8	QQB	Joint Stock	1994	24 years	1 116,22
9	ALOQA	Joint Stock	1995	23 years	1 123,36
10	SAVDOGAR	Joint Stock	1995	23 years	145,63
11	HAMKOR	Joint Stock	2000	18 years	800,68
12	IPAK YULI	Joint Stock	2003	15 years	502,04
13	CREDIT STANDARD	Joint Stock	2003	15 years	M&A
14	MICROCREDIT	Joint Stock	2006	12 years	696,12
15	KAPITAL	Joint Stock	2006	12 years	397,37
16	AAB	Joint Stock	2009	9 years	229,97
17	UZAGROEXPORT	Joint Stock	2017	1 year	77,86
18	TRAST	Private	1994	24 years	307,28
19	RAVNAQ	Private	2001	17 years	110,99
20	DAVR	Private	2001	17 years	124,43
21	UNIVERSIAL	Private	2002	16 years	107,58
22	TURKISTAN	Private	2003	15 years	108,31
23	IFB	Private	2008	10 years	370,6
24	AMIR	Private	2008	10 years	M&A
25	OFB	Private	2010	8 years	629,96
26	HI-TECH	Private	2010	8 years	82,72
27	MADADINVEST	Private	2016	2 years	111,68
28	IRAN SADERAT	Foreign	1999	19 years	282,15
29	ZIRAAT	Foreign	2003	15 years	216,73
30	UZKDB	Foreign	2006	12 years	496,6
31	RBS	Foreign	2008	10 years	M&A
31	TOTAL				24 835,32

Ν	Bank's name	Bank type	Founded	Listed	Capitalization
			year	year	(in billion UZS)
1	ASAKA	Joint stock	1996	2011	2 530,72
2	SQB	Joint stock	1991	2003	3 203,47
3	TURON	Joint stock	1991	2007	822,99
4	AGRO	Joint stock	1993	2003	2 214,95
5	IPOTEKA	Joint stock	1994	2003	1 612,12
6	QQB	Joint stock	1994	2003	1 116,22
7	ALOQA	Joint stock	1995	2007	1 123,36
8	SAVDOGAR	Joint stock	1995	2008	145,63
9	HAMKOR	Joint stock	2000	2007	800,68
10	IPAK YULI	Joint stock	2003	2007	502,04
11	MICROCREDIT	Joint stock	2006	2008	696,12
12	KAPITAL	Joint stock	2006	2007	397,37
13	TRAST	Private	1994	2007	307,28
14	RAVNAQ	Private	2001	2008	110,99
15	UNIVERSAL	Private	2002	2008	107,58
16	TURKISTAN	Private	2003	2008	108,31
17	AMIR	Private	2008	2012	M&A
18	AAB	Private	2009	2014	229,97
19	IFB	Private	2008	2014	370,6
20	MADADINVEST	Private	2016	2017	111,68
	TOTAL				16 512,08
	TOTAL OF ALL BANKS				24 835,32

 Table 2.2. Listed banks in Tashkent Republican Stock Exchange, as of January 1, 2019

Table 2.3. Unlisted banks in banking system of Uzbekistan, as of January 1, 2019

N	Bank's name	Bank type	Founded year	Capitalization (in billion UZS)
1	NBU	Public	1991	4 916,26
2	XALQ	Public	1993	1 496,53
3	CREDIT STANDARTD	Joint stock	2003	M&A
4	UZAGROEXPORT	Joint stock	1993	77,86
5	DAVR	Private	2001	124,43
6	OFB	Private	2010	629,96
7	HI-TECH	Private	2010	82,72
8	IRAN SADERAT	Foreign	1999	282,15
9	ZIRAAT	Foreign	2003	216,73
10	UZKDB	Foreign	2006	496,6
11	RBS	Foreign	2008	M&A
	TOTAL			8 323,24
	TOTAL OF ALL BANKS			24 835,32

# Appendix II

# Table 4.1. Description of the variables for Trans-log Cost and Trans-log Profit function

Variables	Symbol	Type of variable	Description	Expect	ed sign
	Bank's o	output and input	variables	Cost	Profit
Total Cost	TC	Dependent variable	Total operating and financial cost over total assets		
Net Profit	π	Dependent variable	It is defined by total income after paid tax over total assets		
Total Loan	Q	Output	It is difference between gross loans and partial principal debts	Mixed	Positive
The unit price of labor	P1	Input Price_1	It is calculated as the personal expenses to total assets.	Positive	Negative
The unit price of fixed capital	P2	Input Price_2	The ratio of other operating and administrative expenses to total fixed assets	Positive	Negative
The unit price of financial capital	Р3	Input Price_3	The ratio of interest expenses to total deposits	Positive	Negative
Ownership	OWN	Control Variable	Government share in the charter capital of the commercial banks	Negative	Positive
Bank size	BS	Control variable	It is measured by Log (Loan)	Negative	Positive
Bank capitalization	BC	Control variable	It is measured by the ratio for total equity over total assets	Negative	Mixed
Asset quality	AQ	Control Variable	It is measured by loan loss reserve over total loans.	Positive	Negative
Bank liquidity	BL	Control variable	It is calculated by total loans over total assets.	Negative	Mixed
Price policy	РР	Control Variable	The difference (spread) between average loan rate and average deposit rate of banks	Negative	Positive
Listing dummy	D1	Control variable	If dummy value is 1 for the period of listed banks in Tashkent Stock Exchange, otherwise 0.	Negative	Positive
Crisis dummy	D2	Control variable	If dummy value is 1 for the before 2008's crisis period, otherwise 0.	Negative	Positive

Table 4.2. Description of the variables for Log Z score mode	Ta	able	<b>4.2.</b>	Descri	ption	of the	variables	for	Log Z	score mode
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Variables	Symbol	Variable type	Description	Expected sign
Banking Sector Soundness	BSS			
Natural logarithm of Z score	ln Z	Dependent variable	It is proxy for the rate of soundness of banking sector, defined as the natural logarithm of the value for the sum of ROA of banks and equity/asset ratio of banks over standard deviation of ROA	
Corporate governance (1 <sup>st</sup> group variables)		Explanatory variables		
Internal corporate governance	ICG	Explanatory variable	It is measured as a proportion of total created provisions of loans over total amount of bank's credit portfolio	Negative
External corporate governance	ECG	Explanatory variable	It is calculated as a proportion of bank asset over total assets of banking sector	Negative
Lag of internal corporate governance	ICG_Lag	Explanatory variable	This Lag variable displays that whether internal corporate governance has a long-term effect on the soundness of banking sector	Negative
Lag of external corporate governance	EGC_Lag	Explanatory variable	This Lag variable displays that whether external corporate governance has a long-term effect on the soundness of banking sector	Negative
Stock Market Effect	SME	Explanatory variables		
(2 <sup>nd</sup> group variables)		Valables		
Listing dummy	D	Dummy explanatory variable	If bank has a listing in TRSE at a certain year, a value is 1 at that year, otherwise 0.	Positive
Listing dummy Interaction term for yearly change in equity capital and listing dummy	D IT1	Dummy explanatory variable Explanatory variable	If bank has a listing in TRSE at a certain year, a value is 1 at that year, otherwise 0. This variable explains that how much do banks' investment activities in stock market effect on the soundness of banking sector	Positive Positive
Listing dummy Interaction term for yearly change in equity capital and listing dummy Interaction term for internal corporate governance and listing dummy	D IT1 IT2	Dummy explanatory variable Explanatory variable Explanatory variable	If bank has a listing in TRSE at a certain year, a value is 1 at that year, otherwise 0. This variable explains that how much do banks' investment activities in stock market effect on the soundness of banking sector This interaction term describes that whether internal corporate governance along with stock market jointly effects on the soundness of baking sector or not.	Positive Positive Mixed
Listing dummy Interaction term for yearly change in equity capital and listing dummy Interaction term for internal corporate governance and listing dummy Interaction term for external corporate governance and listing dummy	D IT1 IT2 IT3	Dummy explanatory variable Explanatory variable Explanatory variable Explanatory variable	If bank has a listing in TRSE at a certain year, a value is 1 at that year, otherwise 0. This variable explains that how much do banks' investment activities in stock market effect on the soundness of banking sector This interaction term describes that whether internal corporate governance along with stock market jointly effects on the soundness of baking sector or not. This interaction term shows that whether external corporate governance along with stock market jointly effects on soundness of banking sector or not.	Positive Positive Mixed Mixed
Listing dummy Interaction term for yearly change in equity capital and listing dummy Interaction term for internal corporate governance and listing dummy Interaction term for external corporate governance and listing dummy Banking Sector Indicators (3 <sup>rd</sup> group variables)	D IT1 IT2 IT3 BSI	Dummy explanatory variable Explanatory variable Explanatory variable Explanatory variable	If bank has a listing in TRSE at a certain year, a value is 1 at that year, otherwise 0. This variable explains that how much do banks' investment activities in stock market effect on the soundness of banking sector This interaction term describes that whether internal corporate governance along with stock market jointly effects on the soundness of baking sector or not. This interaction term shows that whether external corporate governance along with stock market jointly effects on soundness of banking sector or not.	Positive Positive Mixed Mixed
Listing dummy Interaction term for yearly change in equity capital and listing dummy Interaction term for internal corporate governance and listing dummy Interaction term for external corporate governance and listing dummy Banking Sector Indicators (3 <sup>rd</sup> group variables) Bank age	D IT1 IT2 IT3 BSI BA	Dummy explanatory variable Explanatory variable Explanatory variable Explanatory variable Control variables Dummy control variable	If bank has a listing in TRSE at a certain year, a value is 1 at that year, otherwise 0. This variable explains that how much do banks' investment activities in stock market effect on the soundness of banking sector This interaction term describes that whether internal corporate governance along with stock market jointly effects on the soundness of baking sector or not. This interaction term shows that whether external corporate governance along with stock market jointly effects on soundness of banking sector or not. This interaction term shows that whether external corporate governance along with stock market jointly effects on soundness of banking sector or not. This dummy variable for bank age, if bank age is more than 10 years at a certain year, a value is 1 at that year, otherwise 0. It explains that whether bank experience impact to the soundness of banking sector.	Positive Positive Mixed Nixed Positive

logTC	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
logQ	002	.104	-0.02	.983	207	.203	
logsqQ	018	.029	-0.65	.517	074	.038	
logP1	.968	.188	5.14	.000	.598	1.34	***
logP2	.002	.085	0.03	.978	166	.171	
logP3	.435	.075	5.82	.000	.288	.581	***
logsqP1	.091	.059	1.53	.125	025	.208	
logsqP2	.028	.022	1.25	.213	016	.071	
logsqP3	.046	.010	4.47	.000	.026	.066	***
logP1logP2	.054	.056	0.96	.335	056	.164	
logP1logP3	007	.051	-0.14	.886	107	.092	
logP2logP3	029	.033	-0.89	.374	095	.036	
logQlogP1	002	.030	-0.08	.933	061	.057	
logQlogP2	023	.022	-1.06	.290	066	.019	
logQlogP3	.009	.012	0.75	.452	016	.035	
OWN	001	.001	-3.06	.002	002	001	***
BC	028	.145	-0.20	.844	312	.255	
AQ	.493	.346	1.43	.154	185	1.171	
BL	236	.107	-2.20	.028	447	026	**
PP	002	.007	-0.29	.773	015	.011	
D1	039	.032	-1.22	.222	101	.023	
D2	087	.034	-2.54	.011	154	019	**
Constant	2.035	.412	4.93	.000	1.226	2.844	***

Table 5.5. Empirical result for Trans-log Cost function (Model 1.1)

\*\*\* p<.01, \*\* p<.05, \* p<.1

Note: the cost efficiency  $(TC_{ij})$  trans-log functions with 1 output-loan  $(Q_{ij})$  and 3 inputs, including fixed capital, labour and deposit  $(P_{ij})$ , OWN- ownership, BC-bank capitalization, AQ-Asset quality, BL-Bank liquidity, PP-Price policy, D1-Listing dummy and D2-Crisis dummy variables.

LogProfit	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
logQ	.585	.553	1.06	.290	498	1.669	
logsqQ	302	.144	-2.09	.036	585	019	**
logP1	-2.723	.948	-2.87	.004	-4.583	863	***
logP2	1.447	.432	3.35	.001	.599	2.294	***
logP3	692	.389	-1.78	.075	-1.453	.069	*
logsqP1	672	.305	-2.20	.028	-1.269	074	*
logsqP2	200	.111	-1.81	.070	418	.017	*
logsqP3	.048	.051	0.94	.350	052	.147	
logP1logP2	.001	.295	0.00	.998	578	.580	
logP1logP3	330	.257	-1.28	.199	834	.174	
logP2logP3	.285	.179	1.59	.112	066	.635	
logQlogP1	192	.157	-1.23	.220	499	.115	
logQlogP2	236	.118	-2.00	.045	467	005	**
logQlogP3	.030	.066	0.45	.656	100	.160	
OWN	017	.002	-7.04	.000	022	011	***
BC	.658	.746	0.88	.378	804	2.12	
AQ	3.209	1.820	1.76	.078	357	6.776	*
BL	397	.530	-0.75	.453	-1.435	.641	
PP	.056	.034	1.64	0.100	011	.122	
D1	532	.159	-3.35	.001	843	220	***
D2	.426	.175	2.44	.015	.084	.768	**
Constant	-11.312	2.093	-5.41	.000	-15.414	-7.211	***

 Table 5.6. Empirical result for Trans-log Profit function (Model 1.2)

\*\*\* p<.01, \*\* p<.05, \* p<.1

Note: the profit efficiency ( $\pi_{ij}$ ) trans-log functions with 1 output-loan ( $Q_{ij}$ ) and 3 inputs, including fixed capital, labour and deposit ( $P_{ij}$ ), OWN- ownership, BC-bank capitalization, AQ-Asset quality, BL-Bank liquidity, PP-Price policy, D1-Listing dummy and D2-Crisis dummy variables.

Log Z	Coef.	St.Err.	t-value	p-value	[95%	Interval]	Sig
				1	Conf		0
ICG	397	.608	-0.65	.514	-1.588	.794	
ECG	139	1.016	-0.14	.891	-2.131	1.853	
ICG_Lag	87	.532	-1.64	.102	-1.913	.173	
ECG_Lag	.642	.795	0.81	.42	916	2.2	
D	.036	.1	0.36	.719	159	.231	
IT1	.217	.036	6.03	.000	.147	.288	***
IT2	864	1.514	-0.57	.568	-3.832	2.104	
IT3	-4.587	1.212	-3.79	.000	-6.961	-2.212	***
BA	.13	.063	2.07	.038	.007	.252	**
BS	155	.02	-7.74	.000	194	116	***
Constant	3.52	.159	22.14	.000	3.209	3.832	***
Mean dependent var		2.698	SD depe	ndent var		0.720	
Overall r-squared		0.071	Number of obs 283		283		
Chi-square		135.849	Prob > chi2 0.000				
R-squared within		0.358	R-squared between 0.083				
*** <i>p</i> <.01, ** <i>p</i> <.05, * <i>p</i> <.1							

Table 5.7. Empirical result for Log Z model on bank soundness (Model 2)

**Note**: The result of the model shows that **IT1**, **IT3** and **BS** variables are strongly correlated with dependent variable at 1 % confidence interval. Moreover, **BA** is statistically significant at confidence level of 5%. The remainder variables in the model are found insignificant.

BETA	Coef.	St.Err.	t-value	p-value	[95%	Interval]	Sig
					Conf		
OWN	5.303	.683	7.76	0	3.96	6.646	***
ECG	.177	3.276	0.05	.957	-6.263	6.618	
ICG	2.913	4.162	0.70	.484	-5.269	11.096	
IP	-1.334	.416	-3.20	.001	-2.153	515	***
BANKSIZE	.546	.443	1.23	.219	326	1.418	
BASEL3	.012	.004	2.88	.004	.004	.02	***
DE	.169	.088	1.91	.057	005	.343	*
LISTING	2.134	.434	4.92	0	1.281	2.987	***
POLICY	1.478	.639	2.31	.021	.221	2.735	**
Constant	1.876	.576	3.26	.001	.743	3.008	***
Mean dependent var		0.547	SD dependent var			4.099	
R-squared		0.195	Number of obs			414	
F-test		10.872	Prob > F			0.000	
Akaike crit. (AIC)		2272.143	Bayesian	crit. (BIC)		2312.402	

 Table 5.8. Polled OLS regression on CAPM model (Model 3)

\*\*\* *p*<.01, \*\* *p*<.05, \* *p*<.1

BETA	Coef.	St.Err.	t-value	p-valu	e [95%	Interval]	Sig
				-	Conf	_	U
OWN	3.515	1.386	2.54	.012	.789	6.241	**
ECG	-2.06	6.33	-0.33	.745	-14.507	10.388	
ICG	-1.812	4.435	-0.41	.683	-10.531	6.908	
IP	936	.598	-1.56	.119	-2.113	.24	
BANKSIZE	.311	.636	0.49	.625	939	1.561	
BASEL3	.009	.005	1.73	.084	001	.02	*
DE	.233	.113	2.07	.039	.011	.455	**
LISTING	1.3	.688	1.89	.06	053	2.652	*
POLICY	1.796	.683	2.63	.009	.452	3.139	***
Constant	1.22	.83	1.47	.142	412	2.852	
Mean dependent va	r	0.547	SD depen	dent var		4.099	
Overall r-squared		0.158	8 Number of obs		414		
F-test		2.388	Prob > F			0.012	
R-squared within		0.054	R-squared	l betweer	n	0.182	
*** n < 01 ** n < 0	5 * n < 1						

 Table 5.9. Fixed Effect regression on CAPM model (Model 3)

\*\*\*p<.01, \*\*p<.05, \*p<.1

Table 5.10. Random Effect	t regression on	CAPM model	(Model 3)
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BETA	Coef.	St.Err.	t-value	p-value	[95%	Interval]	Sig	
				-	Conf			
OWN	4.28	1.008	4.25	0	2.304	6.256	***	
ECG	408	4.751	-0.09	.932	-9.719	8.903		
ICG	817	4.225	-0.19	.847	-9.098	7.465		
IP	-1.086	.489	-2.22	.027	-2.045	126	**	
BANKSIZE	.389	.522	0.74	.456	635	1.412		
BASEL3	.01	.005	2.10	.036	.001	.019	**	
DE	.204	.1	2.05	.041	.009	.399	**	
LISTING	1.691	.574	2.95	.003	.566	2.817	***	
POLICY	1.644	.642	2.56	.01	.386	2.903	**	
Constant	1.396	.737	1.89	.058	049	2.841	*	
Mean dependent va	r	0.547	SD deper	ndent var	ar 4.099			
Overall r-squared		0.185	Number of	of obs	414.000			
Chi-square		35.302	Prob > ch	ni2	0.000			
R-squared within		0.051	R-square	d between		0.251		

\*\*\* *p*<.01, \*\* *p*<.05, \* *p*<.1

# Table 5.12. Empirical result for VAR model on economic growth (Model 4.1)

. var GDP BSD SMD, lags(1/2)

Vector autoregression

Sample: 2005 -		Number or	=	14				
Log likelihood = 66.444					AIC		=	-6.492057
FPE	=	4.09e-07			HQIC		=	-6.580791
Det(Sigma_ml)	=	1.51e-08			SBIC		=	-5.533471
Equation		Parms	RMSE	R-sq	chi2	P>chi2		
GDP		7	. 757377	0.8261	66.52767	0.0000		
BSD		7	.057479	0.7476	41.46513	0.0000		
SMD		7	.012697	0.9286	182.1943	0.0000		

		Coef.	Std. Err.	Z	P> z	[95% Conf.	Interval]
GDP							
	GDP						
	L1.	.2497277	.2509277	1.00	0.320	2420815	.7415369
	L2.	4544368	.226976	-2.00	0.045	8993017	009572
	BSD						
	L1.	-7.077145	4.346494	-1.63	0.103	-15.59612	1.441826
	L2.	-27.68442	9.428875	-2.94	0.003	-46.16468	-9.204167
	SMD						
	L1.	48.99667	14.88493	3.29	0.001	19.82275	78.17059
	L2.	-8.092583	12.5196	-0.65	0.518	-32.63054	16.44538
	_cons	14.03987	4.423756	3.17	0.002	5.369471	22.71028
BSD							
	GDP						
	L1.	0207521	.0190433	-1.09	0.276	0580763	.0165721
	L2.	.0180107	.0172256	1.05	0.296	0157508	.0517722
	BSD						
	L1.	.9184788	.3298626	2.78	0.005	.2719601	1.564998
	L2.	.5685337	.7155729	0.79	0.427	8339634	1.971031
	SMD						
	L1.	-2.223534	1.129642	-1.97	0.049	-4.437591	0094767
	L2.	1.120732	.950133	1.18	0.238	7414943	2.982959
	_cons	.0293818	.3357261	0.09	0.930	6286293	. 687393
SMD							
	GDP						
	L1.	.0033357	.0042066	0.79	0.428	0049091	.0115804
	L2.	.0119303	.0038051	3.14	0.002	.0044726	.0193881
	BSD						
	L1.	.1662766	.0728652	2.28	0.022	.0234635	.3090897
	L2.	. 636201	.1580668	4.02	0.000	.3263956	.9460063
	SMD						
	L1.	3109168	.2495328	-1.25	0.213	799992	.1781585
	L2.	. 5578431	.2098801	2.66	0.008	.1464856	.9692005
	_cons	2700027	.0741604	-3.64	0.000	4153544	124651

#### Granger causality Wald tests

Equation	Excluded	chi2	df P	rob > chi2
GDP	BSD	11.769	2	0.003
GDP	SMD	19.923	2	0.000
GDP	ALL	22.21	4	0.000
BSD	GDP	2.1598	2	0.340
BSD	SMD	4.1743	2	0.124
BSD	ALL	8.4412	4	0.077
SMD	GDP	10.772	2	0.005
SMD	BSD	22.361	2	0.000
SMD	ALL	28.034	4	0.000

## Wald Coefficient test

test ([GDP]: L.BSD L2.BSD)	. test ([GDP]: L.SMD L2.SMD)
(1) [GDP]L.BSD = 0	(1) [GDP]L.SMD = 0
(2) [GDP]L2.BSD = 0	(2) [GDP]L2.SMD = 0
chi2(2) = 11.77	chi2(2) = 19.92
Prob > chi2 = 0.0028	Prob > chi2 = 0.0000
test ([BSD]: L.GDP L2.GDP)	test ([BSD]: L.SMD L2.SMD)
(1) [BSD]L.GDP = 0	(1) [BSD]L.SMD = 0
(2) [BSD]L2.GDP = 0	(2) $[BSD]L2.SMD = 0$
chi2(2) = 2.16	chi2(2) = 4.17
Prob > chi2 = 0.3396	Prob > chi2 = 0.1240
test ([SMD]: L.GDP L2.GDP)	test ([SMD]: L.BSD L2.BSD)
(1) [SMD]L.GDP = 0	(1) [SMD]L.BSD = 0
(2) [SMD]L2.GDP = 0	(2) $[SMD]L2.BSD = 0$
chi2(2) = 10.77	chi2(2) = 22.36
Prob > chi2 = 0.0046	Prob > chi2 = 0.0000
# Table 5.14. Empirical result for VECM model on economic growth (Model 4.2)

. vec GDP BSD SMD, trend(constant)

Vector error-correction model

Sample: 2005 - 2018 Log likelihood = 62.08 Det(Sigma_ml) = 2.82e		8 8		Number of obs AIC HQIC SBIC		= = = =	14 -6.440069 -6.511902 -5.664071
Equation	Parms	RMSE	R-sq	chi2	P>chi2		
D_GDP	5	. 754323	0.5493	10.97057	0.0520		
D_BSD	5	.057701	0.3301	4.435782	0.4885		
D_SMD	5	.013012	0.6553	17.11158	0.0043		

		Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
D_GDP							
	_ce1	_1 008575	2770617	-2 01	0 004	_1 027602	- 2505476
	ш.	-1.098575	.3//081/	-2.91	0.004	-1.837602	3595476
	GDP						
	LD.	. 6030255	.2747574	2.19	0.028	.0645109	1.14154
	BSD						
	LD.	31.7714	12.90348	2.46	0.014	6.481037	57.06175
	SMD						
	LD.	20.59482	15.06867	1.37	0.172	-8.939237	50.12888
	_cons	0002039	.231032	-0.00	0.999	4530184	.4526105
D_BSD							
	_cel						
	L1.	.0229266	.028843	0.79	0.427	0336047	.0794578
	GDP						
	LD.	0338738	.0210173	-1.61	0.107	075067	.0073194
	BSD						
	LD.	5198925	.9870403	-0.53	0.598	-2.454456	1.414671
	SMD						
	LD.	-1.540341	1.152665	-1.34	0.181	-3.799522	.7188403
		- 0014127	0176726	-0.08	0 936	- 0360503	0332240
		0014127	.01/8/28	-0.08	0.950	0500505	.0352249
D_SMD							
		0010100	0065040	2 25	0 001	0000007	0245500
	L1.	.0218108	.0065042	3.35	0.001	.0090627	.0345589
	GDP						
	LD.	0127	.0047395	-2.68	0.007	0219893	0034108
	BSD						
	LD.	56438	.2225826	-2.54	0.011	-1.000634	1281262
	SMD						
	LD.	4471321	.2599317	-1.72	0.085	9565889	.0623246
	_cons	0087872	.0039853	-2.20	0.027	0165981	0009762

 beta	Coef.	Std. Err.	<i>z</i>	P> z	[95% Conf	. Interval]
 ,						
 GDP	1					
BSD	36.26209	2.807478	12.92	0.000	30.75954	41.76465
SMD	-34.1121	3.238781	-10.53	0.000	-40.46	-27.76421
_cons	-14.08262	•	•			

## Table 5.15 Long run Johansen normalization equation on VECM model

Identification: beta is exactly identified

Johansen normalization restriction imposed

Note: The signs of the coefficients are reversed in long run equation.

## Table 5.16 Autocorrelation, normality and stability test on VECM model

#### . veclmar

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	6.0417	9	0.7357 <b>4</b>
2	10.5879	9	0.30501

H0: no autocorrelation at lag order

#### . vecnorm, jbera

Jarque-Bera test

chi2	df	Prob > chi2
0.332	2	0.84705
4.785	2	0.09141
0.098	2	0.95211
5.215	6	0.51656
	chi2 0.332 4.785 0.098 5.215	chi2 df 0.332 2 4.785 2 0.098 2 5.215 6

. vecstable

Eigenvalue stability condition

Eigenvalue	Modulus
I	1
1	1
8159278	.815928
. 4152559	. 415256
.2164324	.216432
1909819	.190982

The VECM specification imposes 2 unit moduli.

Regressions	VAR regression result (Model 4.1)			VECM regression result (Model 4.2)			
Variables	(1) GDP	(2) BSD	(3) SMD	(1) D GDP	(2) D BSD	(3) D SMD	
LGDP	0.250	-0.021	0.003				
	(0.251)	(0.019)	(0.004)				
L2.GDP	-0.454**	0.018	0.012***				
	(0.227)	(0.017)	(0.003)				
L.BSD	-7.077	0.918***	0.166**				
	(4.346)	(0.330)	(0.073)				
L2.BSD	-27.68***	0.569	0.636***				
	(9.429)	(0.716)	(0.158)				
L.SMD	49.00***	-2.224**	-0.311				
	(14.88)	(1.130)	(0.250)				
L2.SMD	-8.093	1.121	0.558***				
	(12.52)	(0.950)	(0.210)				
Lce1				-1.099***	0.023	0.022***	
				(0.377)	(0.029)	(0.007)	
LD.GDP				0.603**	-0.0339	-0.013***	
				(0.275)	(0.021)	(0.005)	
LD.BSD				31.77**	-0.520	-0.564**	
				(12.90)	(0.987)	(0.223)	
LD.SMD				20.59	-1.540	-0.447*	
				(15.07)	(1.153)	(0.260)	
Constant	14.04***	0.029	-0.270***	-0.0002	-0.001	-0.009**	
	(4.424)	(0.336)	(0.074)	(0.231)	(0.018)	(0.004)	
Observations	14	14	14	14	14	14	

 Table 5.17. Summarized regression results for both VAR model and VECM model

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1