Knowledge Sharing Program

2017/18 Knowledge Sharing Program with Mongolia (II):

Sharing Experiences in Strengthening the Infrastructure of Financial Markets

Ministry of Economy and Finance
KDI Korea Development Institute
FINANCIAL RESEARCH CENTER OF KOREA

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Preface

Today's economy is called knowledge economy. It highlights the importance of knowledge as a vital ingredient that determines a nation's economic growth and social development. Policymakers all over the world, especially in developing countries, now face a key question of how to establish an environment that encourages and facilitates the creation and dissemination of knowledge across their nations. This need has led many countries to engage themselves in active policy dialogues to share their development experiences and benefit from mutual learning.

Korea's development has also depended heavily on knowledge. Its remarkable transition from a predominantly agrarian economy to an industrialized country was made possible by its well-rounded and extensive understanding of technology, management, public policy, and other diverse issues acquired from domestic and foreign sources and through trial and error. Building on these rich experiences, the Korean Ministry of Economy and Finance (MOEF) launched the Knowledge Sharing Program (KSP) in 2004 to assist partner countries to improve their policymaking. KSP, as implemented by Korea Development Institute (KDI), focuses on providing solutions customized to each country's economic, social and administrative settings, building capacity for effective policymaking and strengthening global networks for development cooperation. In 2017/18, KSP policy consultations were organized with 31 partner countries, with Mekong River Commission joining the partnership for the first time.

The 2017/18 KSP with Mongolia (II) was undertaken by the MOEF of Korea and the Ministry of Finance (MOF) of Mongolia with the aim of "Sharing experiences in strengthening the infrastructure of financial markets." To that end, the FiREC research team and the counterpart of Mongolia made a range of collaborative efforts by exchanging development experiences, conducting joint studies and designing a policy action plan in line with the country's development targets.

With that, it is with great optimism for the future of Mongolia that the results of the 2017/18 KSP are presented. I firmly believe that KSP will serve as a stepping stone to further elevate the mutual learning and economic cooperation between the two countries and hope it will contribute to Mongolia's sustainable development in the future.

I wish to convey my sincere gratitude to Principal Investigator Dr. Geun Woo Seoh as well as project consultants Prof. Sung In Jun and Ki Young Lee for their extensive contributions to the successful completion of the 2017/18 KSP with Mongolia. I am also grateful to Project Manager Dr. Hokyoung Bang, Project Officers Prof. Kyeong-Hoon Kang and Mr. Jun Hee Kim, and researchers, Prof. Chang Gyun Park and Prof. Jin Q Jeon, and all members of the FiREC for their hard work and dedication. Lastly, I extend my warmest thanks to the MOF, FRC, MCSD, MSCC and other institutions in Mongolia for their active cooperation and great support.

Dong Han Yoon
Chairman
Financial Research Center of Korea

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Chapter 2

2017/18 KSP with Mongolia (II)

Kyeong-Hoon Kang (Project Officer, Dongguk University)

The Knowledge Sharing Program (KSP) is a demand-driven and performance-oriented comprehensive consultation project designed to assist development partnership countries in key policy areas by sharing Korean development knowledge and experiences. It was launched by the Ministry of Economy and Finance (MOEF), in 2004, with the Korea Development Institute (KDI) as the implementing institution.

The KSP with Mongolia was launched in 2010 and since then it has provided policy consultation on various topics. They include 'Public-private infrastructure investment and deposit insurance in Mongolia', 'Macro policy framework for sustainable development in Mongolia', 'Selective policy recommendations for sustainable economic growth of Mongolia trade macroeconomic and public policy areas', 'Policy agenda in housing, logistics, and credit guarantee of Mongolia'.

The topic for the 2017/18 KSP with Mongolia is "Sharing experiences in strengthening the infrastructure of financial markets." The MOEF, KDI and Mongolian government agreed to the topic and its two sub-topics. The following table gives a brief overview of this year's program, including its topics and team of researchers and staffs.

Project Title: Sharing experience in strengthening the infrastructure of financial markets.
Project Manager: Hokyoung Bang (Specialist, Division of Development Research, CID, KDI)
Principal Investigator: Geun Woo Seoh (Senior Advisor, Korea Institute of Finance)

Sub-topics	Researchers
1. Improvement of the Payment and Settlement System of the Capital Market by Concentrating on Redefining Market Participants' Business Model and Functions	Prof. Jin Q Jeon (Dongguk University)
2. Exploring the Feasibility of Risk-Based Supervisory Framework in Mongolia : Non-Bank Deposit Taking Institutions	Prof. Chang Gyun Park (Chung Ang University)

The 2017/18 KSP with Mongolia was conducted through four stages, which are summarized in the following table.

No.	Program Cycle	Date	Venue
1	Launching Seminar & High-level Meeting	Feb. 21 ~ 24, 2018	Ulaanbaatar, Mongolia
2	KSP Policy and In-depth Study	Apr. 22 ~ 25, 2018	Ulaanbaatar, Mongolia
3	Interim Reporting & Policy Practitioners' Workshop	Jun. 3 ~ 8, 2018	Seoul & Busan, Korea
4	Final Reporting Workshop & Senior Policy Dialogue	Jul. 22 ~ 25, 2018	Ulaanbaatar, Mongolia

In order to identify policy needs for each research topic, the KSP research team led by Principal Investigator Dr. Geun Woo Seoh, Korea Institute of Finance, conducted a Launching Seminar & High-level Meeting in Ulaanbaatar, Mongolia from 21st to 24th February 2018. Meetings with partner organizations were carried out with Ministry of Finance (MOF), Bank of Mongolia (BOM), Financial Regulatory Commission (FRC), Mongolian Central Securities Depository (MCSD) and Mongolian Securities Clearing & Settlement CO. LTD (MSCC) to get an understanding of the current status of Mongolia on each topic. During this process, the research team examined whether the research area in the written demand survey corresponded to Mongolian situation.

KSP Policy and In-depth Study were carried out at Ulaanbaatar, Mongolia in between Apr. 22nd to Apr. 25th in 2018. The Progress Review Meetings about the topic 1 & 2 were conducted by Korean experts and local consultants with experts from MOF, FRC, MCSD, MSCC and MSE (Mongolian Stock Exchange) for in-depth

survey and research to gather relevant data and additional information. During this trip, the progress of the study was shared and reviewed, and the Terms of Reference (ToR) for all local consultants was finalized.

From Jun. 3rd to Jun. 8th, 2018, the Interim Reporting and Policy Practitioners' workshop was carried out in Seoul & Busan, Korea. Eight delegates came to Korea led by the Head Mr. Sonor L. from the MOF. The interim reporting workshop was hosted to share the progress and tentative policy recommendations of each research topic. In addition, institutional visits to Financial Services Commission, Financial Supervisory Service, Korea Banking Institute, Korea Federation of Savings Banks, Korea Securities Depository, Korea Exchange and Korea Housing-Finance Corporation were arranged to provide a better understanding of policy implications by experiencing Korea's economic development. The delegation expressed high satisfaction about the meetings and hoped to continue the cooperation in future under the KSP.

As the final stage of KSP, the research team led by Dr. Seoh (Principal Investigator) conducted the Senior Policy Dialogue and the Final Reporting Workshop in Ulaanbaatar, Mongolia, from Jul 22nd to 25th, 2018. More than forty participants attended the final reporting workshop from relevant organizations including Ministry of Finance (MOF), Financial Regulatory Commission (FRC), Mongolian Central Securities Depository (MCSD), Mongolian Securities Clearing & Settlement CO. LTD (MSCC), Commercial Banks and Mongolian National Broadcaster (MNB). Korean experts and local consultants shared the outcome of the study of the past 8 months and had in-depth discussions on how to utilize outcomes of the discussion in an appropriate and effective manner. In particular, there was a practical policy talk, where Korean experts, Prof. Sung In Jun and Ki Young Lee, presented their policy recommendations and a Q&A session followed. During the seminar, the MOF expressed its strong will to continue cooperation to proceed with implementation of the policies and to strengthen the partnership between the two countries even further. High levels of satisfaction were expressed during the project completion interview and it was stated that this year’s program was well executed with significant progress made in the KSP with Mongolia.

Executive Summary

Geun Woo Seoh (Korea Institute of Finance)

Mongolian economy is now at the stage of transitioning from nomad economy to more typical natural resource-based economy. This kind of change usually brings unprotected exposure to high volatility of international financial markets, despite expectations of significant economic growth.

The experience of economic development in Mongolia over the last decades showed us its potential of becoming a country with developed market economy, although it also reminded us that sustaining economic stability is not an easy task. After six IMF bailouts, Mongolia needs to be equipped with measures to deal with largely unexpected predicaments in order to keep moving forward in economic development.

Unfavorable geographical location suggests that adopting the strategy of manufactured goods-oriented export economy would be problematic. This implies that Mongolia's industrial growth would inherently involve instability coming from monotonous economy, and the Mongolian government therefore has to prepare diverse shock-absorbing apparatus including deeper and wider financial markets and industries.

Compared to more advanced resource-abundant economies, Mongolian economy is still not yet capable of dealing with the caprice of international markets. Heavy price fluctuations in commodity markets had seriously damaged the Mongolian economy several times, and a number of international organizations has offered

policy guidance in order to rehabilitate the Mongolian economy. Although significant institutional changes have already been executed according to those organizations' suggestions, there are several more tasks that needs to be done.

In financial markets, there are some highly conspicuous gaps to be filled. Despite the strong demand for long-term financing including debts and investments such as private equity-style financing, banking sector and deposit taking financial institutions are reluctant to offer such products as their risk appetites are limited to short-term assets and liabilities.

Given this limited financial environment, the government has given a priority to building securities market infrastructures. Advances in deposit and settlement system are expected to stabilize the securities market and grow the size of domestic and foreign investments, which are desperately wanted by Mongolian businesses.

At the same time, the government has also put their efforts into increasing its regulatory power over non-bank deposit taking financial institutions, which provide financial services to the majorities of Mongolian population. Regulation and supervision for banks are currently carried out by the central bank with enough manpower and resources. It is expected that supervising non-bank financial institutions should promptly match the level of banking supervision in terms of its effectiveness, especially with growing number of institutions and citizens dependent on them.

Under these circumstances, the Korean government had agreed upon implementing the 2017/18 Knowledge Sharing Program (KSP) with Mongolia to assist in developing financial market infrastructure including modernizing financial supervision. The 2017/18 KSP with Mongolia, entitled "The way in strengthening of infrastructure of financial market in Mongolia," covers two key policy issues, which were carefully chosen given the policy priorities of the Mongolian government. First research topic is the improvement of the payment and settlement system of the capital market, focusing on redefining market participants' business model and functions. Second topic is regarding developing a risk-based supervisory framework in Mongolia, concentrating on the supervision of non-bank deposit taking Institution.

Research findings and major policy recommendations for each policy area are as follows:

1. Improvement of the Payment and Settlement System of the Capital Market by Concentrating on Redefining Market Participants' Business Model and Functions

The main objective of this chapter is to review the Mongolian financial market infrastructure (FMI) and to provide policy implications based on benchmarking the evolution of FMIs in Korea and some other markets. Even though the standard system of the securities payment and settlement operation is introduced by internationally reputable organizations, application may vary depending on the characteristics of the capital market in each jurisdiction. Accordingly, this paper first analyzes the characteristics and potential challenges of the Mongolian FMIs. Then, based on the Principles for Financial Market Infrastructure (PFMI, 2012) published by the CPSS and IOSCO and on experiences of evolution in Korea and several Asian/ European markets, I provide the policy and operational implications to improve the FMI of the Mongolian market.

In the efforts to overcome the overall economic and financial difficulties faced in Mongolia and to stabilize the economy, the Ministry of Finance of Mongolia (MoF) is mandated to develop a Financial Sector Strategy 2025, which will include a road map plan for creating an active secondary market of government securities, improving money market and FMI and strengthening investor confidence and interests in the financial market. More specifically, it pursues reforming FMI such as clearing, settlement and depository systems to shift pre-funding scheme to the global standard DVP and t+2 systems and to develop the investor-friendly environment especially for foreign and institutional investors.

The paper provides five policy implications for the FMI development in Mongolia. I emphasize that how to create the investor-friendly, operational efficient, cost-effective, risk minimizing system must be key concerns in defining the role of FMIs, i.e, MCSD and MSCC. The examples of the roles of FMIs in several Asian markets are presented for the benchmarking purpose.

The paper also suggests that MSCC as a clearing house introduce the CCP framework where MSCC acts as a buyer (or seller) to selling (or buying) brokers. Doing so may minimize the counterparty credit risk by netting transactions between multiple counterparties as well as maximize operational efficiency.

Newly introducing a T+2/3 settlement scheme will create credit risk in securities settlement. The paper proposes several tools to minimize the risk of settlement failure. These include introducing the CCP system, adopting DVP settlement method and maintaining a settlement guarantee fund and credit line with commercial banks.

The paper also discusses the possible business model of MCSD which is not charging any fee for its current service. MCSD may be able to develop a wide range of services based on dematerialization of their deposited securities. The examples may include securities lending and borrowing, securities information management, securities pledging service, among many others.

Given that the standards or practices of good corporate governance evolve over time, the paper emphasizes that FMIs should adopt the governance mechanism adequate to address the interests of system users as well as the public authorities. I introduce the principles regarding governance standards in the PFMI and show a various governance structure of Asian and European FMIs. As long as internal governance mechanism is concerned, governance arrangements must be documented to provide clear lines of responsibility and accountability. The roles and responsibilities of BOD must be clearly specified, too, and be focused on risk management.

Lastly, settlement finality must be legally protected and enforced. That is, it is necessary that settlement finality be a clear and well-defined point in time, backed by a strong legal basis in order to attract more foreign investors to the Mongolian capital market. In addition, an intraday liquidity supply by a central bank is necessary to prevent the situation that the entire payment system is in confusion due to temporary shortage of funds or system error of one or more participating institutions.

Newly constructing and maintaining financial market infrastructure is always costly and time-consuming because of its intensity. For this reason, an investment on FMIs need to be accompanied by its need in the capital market. This may let policy makers find it useful to separate planning into short-term and long-term framework. Among several suggestions that this paper provides, 4.1 (Defining the roles of MCSD and MSCC), 4.4 (Business models of MCSD) and 4.6 (Additional issues) may be located on the short-term strategy, while 4.2 (Developing the CCP framework), 4.3 (Risk management) and 4.5 (Corporate governance of FMIs) would be included in the long-term strategy to improve the Mongolian FMIs.

Again, a large amount of investment in FMIs is valuable in the environment of the sufficiently active markets that have the heavy volume of transactions, various type of financial instruments, and large domestic and foreign institutional investors. Therefore, one may argue that a discussion and research on making active financial markets, which of course has been widely discussed and analyzed in Mongolia, must be preceded before developing FMI improvement issues. It is also important how those two issues should be interconnected, which I leave for future research.

2. Developing Risk-Based Supervisory Framework in Mongolia: Non-Bank Deposit Taking Institutions

The purpose of this chapter is to make policy recommendations to the Financial Regulatory Commission (FRC) of Mongolia on establishing risk-based regulatory framework for non-bank deposit taking institutions (NBDIs), particularly savings and credit cooperatives (SCCs) in Mongolia. Risk-based supervision is of particular importance for deposit taking institutions since they are by nature especially vulnerable to external shocks and depositor protection is the paramount interest from the perspectives of financial regulators. Moreover, the FRC chose the microfinance sector along with banking and insurance sectors as one of the three cornerstones in financial market in the document titled "Comprehensive National Strategy for Financial Market Development". Obviously, SCCs are the most important constituents in Mongolian microfinance sector. Therefore, introducing risk-based supervisory framework for SCCs can be regarded as an important task the Mongolian government pursues to achieve national strategy for development of financial markets.

The Basel Committee on Banking Supervision defines risk-based supervision (RBS) as "a forward-looking approach where the supervisor assesses the various business areas of the [financial institution], and the associated quality of management and internal controls to identify the areas of greatest risk and concern". In other words, RBS is a supervisory approach designed to work as a structured process that identifies the most critical risk factors faced by an individual financial institutions. RBS is a dynamic process where the emphasis is more on understanding and anticipating the possible risks the supervised entity will be facing when executing its business plan thus going beyond the current financial situation. RBS is different from the traditional supervisory approach in that the former is more focused on principle while the latter relies on rules supervised institution must observe such as various prudential ratios. Forward looking nature of RBS requires supervisors to start with the business strategy or plan of the supervised institution rather than focusing on a limited number of risk factors that are subject of the rules the supervisory authority established such as credit, liquidity, and market risks. The top-down approach of RBS focuses on comprehensive examination of a financial institution under review. It documents and tests the adequacy and appropriateness of policies, procedures, systems, and management practices of the institution under review. Rather than case-by-case scrutiny of individual transaction, top-down approach utilize transaction review to test the compliance of stated policies, procedures, systems, and practices with the supervisory requirements.

In general, RBS is executed following several steps. The starting point for RBS is developing an understanding of the institution, its management, and business

practices of the institution under review. Next step is for examiners to develop a supervisory plan that is up-to-date and reflecting size, structural complexity, and risk profile of the institution under review. The third stage is to make sure that procedures of examination should be tailored to the distinct characteristics of each institution such as size, complexity, and risk profile. On-site examination is conducted following the schedule and procedures in the scope memorandum drafted in the previous stage. Examination procedures focus on developing appropriate documentation to adequately assess management's ability to identify, measure, monitor, and control risks. Finally, follow-up and monitoring activities are conducted to provide the follow-up service for implementation of the supervisory directives and recommendations made to the institution under examination.

290 SCCs are currently offering the core banking services, deposits and loans, in Mongolia. Total number of the SCCs' members are 55,624, 67.9 percent of which are borrowers and 52.5 percent depositors. About 90 percent of the total SCCs' have retained earnings from the members, but remaining 10 percent have no accumulation of retained earnings as capital base. Total assets of the SCCs amount to MNT 153.1 billion and total deposits of MNT 99.3 billion in 2017. About 97 percent of the total deposits were time deposits, remaining 3 percent were demand deposits. Three SCCs with deposits more than MNT 10 billion account for 62.0 percent of total deposits held by SCCs. Total loans of the SCCs have reached to MNT 105.2 billion in 2017, up by 26.1 percent from 2016,. Non-performing loans amounted MNT 4.5 billion, which are 4.2 percent of the total loan portfolio. The FRC regulate and supervise SCCs in Mongolia. Savings and credit cooperatives law of 2014 provides the legal foundation for regulatory and supervisory decision and actions taken by the FRC. In 2017, 26 on-site examinations were conducted by the FRC that has only 6 inspectors to examine SCCs.

There are various non-bank deposit taking institutions (NBDIs) in Korea; savings banks, credit unions, and four separate cooperatives. NBDIs serve customers, individuals and small size self-employed, with lower credit grades charging higher interest rates than commercial banks. There are 898 credit unions currently in operation with total assets worth KRW 82 trillion in 2017. In addition, there are 2,678 cooperatives with total assets worth KRW 511 trillion at the end of the same year. In Korea the Financial Services Commission (FSC) is the ultimate bearer of the responsibility of regulating credit unions in Korea but delegates most supervisory authorities to the Financial Supervisory Service (FSS). The FSC retains the authority to license a new credit union and order prompt corrective actions to credit unions under financial stress. There are too many credit unions that with limited resources it is impossible for the FSS to handle the supervisory duties on credit unions. The Credit Union Act allows the FSC to delegate some of their authorities on credit unions to the National Federation of the Credit Unions (NFCU). The NFCU conducts supervision

and inspection on credit unions and reports the results to the FSS and the FSC. The FSS can inspect and examine credit unions if necessary.

Community Credit Cooperatives are licensed and regulated by the Ministry of the Interior and Safety, Agricultural and Forestry cooperatives by the Ministry of Agriculture, Food, and Rural Affairs (MAFRA), Fisheries Cooperatives by the Ministry of Oceans and Fisheries (MOF). However, like the FSC, MAFRA and MOF delegated their supervisory authorities to the FSS. While MAFRA does not delegate its supervisory authority to the FSS, the Ministry participates in a consultative group formed by the government ministries that are responsible for regulation and supervision of cooperative financial institutions and cooperate with other regulatory authorities to harmonize and coordinate regulatory policies.

For the present, considering the current state of market development, the implementation of full-scale risk-based regulation is not practical for SCCs in Mongolia. A step-by-step approach would be fruitful for developing countries with insufficient supervisory resources.

Three policy recommendations are made to the FRC in establishing risk-based supervisory framework for SCCs. First, a strong legal foundation for SCCs and supervisory framework should be establish. A strong supervisory framework should be built upon a secure legislative foundation that is prudential, proportional and predictable. Prudential legislation establishes financial standards to which an SCC must adhere to protect the financial health of the institution and safeguard member deposits. Proportional legislation recognizes the risks an SCC presents to depositors and the financial system as a whole and establishes appropriate rules to mitigate those risks. Predictable legislation provides an SCC the clarity and certainty it needs to plan and invest for the future. The current state of legal framework for SCCs in Mongolia should be re-examined based on the three principles previously mentioned and be reshuffled to enhance the coherence with international best practices in regulation of credit unions and cooperatives. As a practical reference, one can consult a model law for credit unions proposed by the World Council of Credit Unions (WOCCU) in 2015, which is also applicable to SCCs.

Second, as of 2017, there are 290 SCCs in Mongolia but the supervisory resources in terms of both financial and human resources in FRC is severely limited. It is virtually impractical to expect the FRC to fulfill its responsibility of supervising SCCs in a complete manner. The model of delegated supervision may provide the FRC with a practical solution to the problem it is facing in supervising SCCs. Unfortunately, the national association of SCCs does not currently exist in Mongolia that the FRC should find an appropriate candidate for delegation of its supervisory power. An option the FRC can take is to promote the establishment of the national association of SCCs and

delegate at least part of its supervisory power to the national association.

Third, It is needless to say that SCCs examiners need to be well-trained and have at their disposal the tools and power to be effective enforcement authorities. They must have a reporting and monitoring system that gives them the ability to complete off-site examinations and identify problems that warrant an on-site field examination. The department responsible for supervision of SCCs in the FRC is significantly under-staffed that it should increase in size and more resources should be put into capacity building of its staff members thorough education and training. International corporation is a possible venue through which the FRC find resources necessary for capacity building of the supervisory body. The FSS of Korea offers an on-the-job training program for staff members of financial regulators in developing countries. In addition, Korea National Federation of Credit Unions and Korea National Federation of Community Credit Cooperatives offer customized education and training programs to staff members of nation association of credit unions or cooperatives from developing countries.

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Chapter 1

Improvement of the Payment and Settlement System of the Capital Market by Concentrating on Redefining Market Participants' Business Model and Functions

Improvement of the Payment and Settlement System of the Capital Market by Concentrating on Redefining Market Participants' Business Model and Functions

Jin Q Jeon (Dongguk University)
Ganzorig Saruuldorj (Ministry of Finance, Mongolia)

Summary

The main objective of this chapter is to review the Mongolian financial market infrastructure (FMI) and provide policy implications based on benchmarking the evolution of FMIs in Korean and some other developed markets. Even though the standard system of the securities payment and settlement operation is introduced by international reputable organizations, application may vary depending on the characteristics of the capital market in each jurisdiction. Accordingly, this paper first analyzes the characteristics and potential challenges of the Mongolian FMIs. Then, based on the Principles for Financial Market Infrastructure (PFMI, 2012) published by the CPSS and IOSCO and on experiences of evolution in Korea and several Asian/European markets, I provide the policy and operational implications to improve the FMI of the Mongolian market.

The money and capital markets in Mongolia are still underdeveloped. Although Mongolian policy makers recently implemented several measures to develop local money and capital markets, challenges still remain in the money and capital markets overall. Interbank money market transactions are very limited, while the Mongolian banking sector dominates the financial system with more than 95% of total assets. There is no corporate bond market in Mongolia and the equity market today is a relatively limited and does not play a significant role in providing financing to the

Keywords: Financial Institutions, Securities Deposit and Settlement, Payment System, CCP, Market Infrastructure

broad economy. The Mongolian financial market also lacks long-term financing sources, as there are no substantial institutional investors, such as life insurance providers and pension funds, which can invest in long term financial products.

In the efforts to overcome the overall economic and financial difficulties faced in Mongolia and to stabilize the economy, the Ministry of Finance of Mongolia (MoF) is mandated to develop a Financial Sector Strategy 2025, which will include a road map plan for creating an active secondary market of government securities, improving money market and FMI and strengthening investor confidence and interests in the financial market. More specifically, it pursues reforming FMI such as clearing, settlement and depository systems to shift pre-funding scheme to the global standard DVP and t+2 systems and to develop the investor-friendly environment especially for foreign and institutional investors.

By analyzing the current status of the Mongolian financial market and investigating the PFMI as well as experiences of evolution in various benchmarked markets, this paper suggests the following policy implications regarding the development of the Mongolian FMIs.

According to the Resolution of the government of Mongolia #147 "On the Reorganization of the Central Securities Depository and Clearing & Settlement Co.,Ltd" (April 13, 2015), Mongolian Securities Clearing Co.,Ltd (MSCC) and Mongolian Central Securities Depository Co.,Ltd (MCSD) were separately established with the aim to provide more specialized services for securities settlement and clearing. In defining the roles of MCSD and MSCC, the key concerns should be how to create the investor-friendly, operational efficient, cost-effective, and risk minimizing system. For the benchmarking purpose, examples in several Asian markets are presented.

It is also suggested to develop the central counterpart (CCP) framework where a clearing intermediary steps in between the original buyer and seller of securities in order to remove the counterparty risk. By doing so, the counterparty risk can be minimized by netting offsetting transactions between multiple counterparties. However, authorities should be aware of potential reverse effect by adopting the CCP as discussed in Section 4.2. The third suggestion is about credit risk management. In the case that the current pre-funded system is migrated to a T+2/3 settlement scheme, the paper proposes several settlement guarantee tools to mitigate the risk of settlement failure.

Forth, as for the business model of MCSD, the paper suggests that it may be able to develop a wide range of services based on dematerialization of their deposited securities. The fifth issue is related to the improvement of the high standard of

corporate governance of FMIs in terms of both ownership structure and internal governance mechanism. Given that the standards or practices of governance evolves over time, the FMIs should adopt the governance mechanism adequate to address the interests of system users as well as the public authorities. Many examples of governance structure in Asian and European FMIs are presented. Lastly, the paper discusses that employing legal settlement finality and intraday liquidity supply by a central bank may be necessary to enhance the stability and reliability of the Mongolian market.

Newly constructing and maintaining financial market infrastructure is always costly and time-consuming because of its intensity. For this reason, an investment on FMIs need to be accompanied by its need in the capital market. This may let policy makers find it useful to separate planning into short-term and long-term framework. Among several suggestions that this paper provides, 4.1 (Defining the roles of MCSD and MSCC), 4.4 (Business models of MCSD) and 4.6 (Additional issues) may be located on the short-term strategy, while 4.2 (Developing the CCP framework), 4.3 (Risk management) and 4.5 (Corporate governance of FMIs) would be included in the long-term strategy to improve the Mongolian FMIs.

Again, a large amount of investment in FMIs is valuable in the environment of the sufficiently active markets that have the heavy volume of transactions, various type of financial instruments, and large domestic and foreign institutional investors. Therefore, one may argue that a discussion and research on making active financial markets, which of course has been widely discussed and analyzed in Mongolia, must be preceded before developing FMI improvement issues. It is also important how those two issues should be interconnected, which I leave for future research.

1. Introduction

The main objective of this chapter is to review the Mongolian financial market infrastructure (FMI) and provide policy implications based on benchmarking the evolution of FMIs in Korean and some other developed markets. Even though the standard system of the securities payment and settlement operation is introduced by international reputable organizations, application may vary depending on the characteristics of the capital market in each jurisdiction. Accordingly, this paper first analyzes the characteristics and potential challenges of the Mongolian FMIs. Then, based on the Principles for Financial Market Infrastructure (PFMI, 2012) published by the CPSS and IOSCO and on experiences of evolution in Korea and several Asian/European markets, I provide the policy and operational implications to improve the FMI of the Mongolian market.

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In the efforts to overcome the overall economic and financial difficulties faced in Mongolia and to stabilize the economy, the Ministry of Finance of Mongolia (MoF) is mandated to develop a Financial Sector Strategy 2025, which will include a road map plan for creating an active secondary market of government securities, improving money market and FMI and strengthening investor confidence and interests in the financial market. More specifically, it pursues reforming FMI such as clearing, settlement and depository systems to shift pre-funding scheme to the global standard DVP and t+2 systems and to develop the investor-friendly environment especially for foreign and institutional investors.

By analyzing the current status of the Mongolian financial market and investigating the PFMI as well as experiences of evolution in various benchmarked markets, this paper suggests the following policy implications regarding the development of the Mongolian FMIs.

According to the Resolution of the government of Mongolia #147 "On the Reorganization of the Central Securities Depository and Clearing & Settlement Co.,Ltd" (April 13, 2015), Mongolian Securities Clearing Co.,Ltd (MSCC) and Mongolian Central Securities Depository Co.,Ltd (MCSD) were separately established with the aim to provide more specialized services for securities settlement and clearing. In defining the roles of MCSD and MSCC, The key concerns should be how to create the investor-friendly, operational efficient, cost-effective, and risk minimizing system. For the benchmarking purpose, examples in several Asian markets are presented.

It is also suggested to develop the central counterpart (CCP) framework where a clearing intermediary steps in between the original buyer and seller of securities in order to remove the counterparty risk. By doing so, the counterparty risk can be minimized by netting offsetting transactions between multiple counterparties. However, authorities should be aware of potential reverse effect by adopting the CCP as discussed in Section 4.2. The third suggestion is about credit risk management. In the case that the current pre-funded system is migrated to a T+2/3 settlement

scheme, the paper proposes several settlement guarantee tools to mitigate the risk of settlement failure.

Forth, as for the business model of MCSD, the paper suggests that it may be able to develop a wide range of services based on dematerialization of their deposited securities. The fifth issue is related to the improvement of the high standard of corporate governance of FMIs in terms of both ownership structure and internal governance mechanism. Given that the standards or practices of governance evolves over time, the FMIs should adopt the governance mechanism adequate to address the interests of system users as well as the public authorities. Many examples of governance structure in Asian and European FMIs are presented. Lastly, the paper discusses that employing legal settlement finality and intraday liquidity supply by a central bank may be necessary to enhance the stability and reliability of the Mongolian market.

The paper is organized as follows. Section 2 analyzes the FMI in the Mongolia market and Section 3 introduces and assesses the Korean FMIs. In Section 4, I provide policy implications on Mongolian FMIs, while Section 5 summaries the paper.

2. Analysis of the Payment and Settlement System of the Capital Market in Mongolia

2.1. Overview of the Mongolian Capital Market

The section describes the current state of the Mongolian capital market. Mongolia's capital market has emerged over the last 25 years. However, compared to other similar levels of economies, the capital market development has been weakening at the start-up or the "frontier market" level, reducing the role of brokerages in the financial sector, and making it hard to attract long-term investment projects and programs through the capital market, which would contribute to economic growth.

Mongolia's economy grew by 17.5 percent in 2011, due to the mining sector development, and becoming the fastest growing economy in the Asia-Pacific region and internationally. Mining companies registered in the Mongolian Stock Exchange TOP-20 index have experienced a sudden increase in stock prices following this economic boom.

This economic growth resulted in increased number of domestic and foreign investors, and brokerage firms in the capital market. However, the lack of infrastructure, new products and services and weak legal environment in the capital market caused the investment amount and capital market evaluation to decrease in 2015.

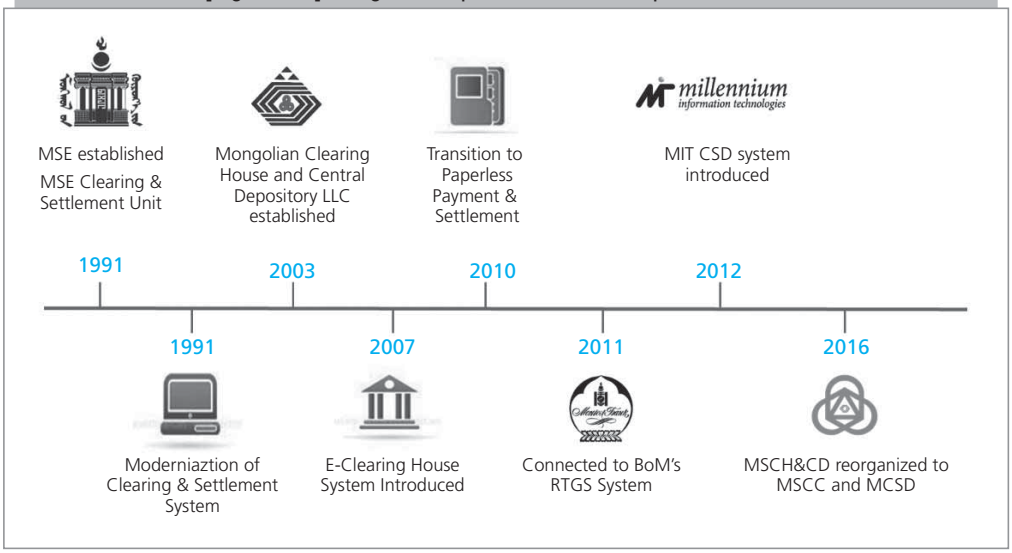
The Law of Mongolia on Securities and the overall legal environment have improved in recent years due to the development of proper supervisory and regulatory systems. But the infrastructure growth of the capital market has been slow, in particular, the trading, clearing and settlement systems and their connection with the brokerage and other market participants has been insufficient. Lack of new products and services, low securities trading and liquidity, inefficient supervisory and regulatory mechanisms have negative impact on the capital market development.

Mongolia's banking sector makes up 88.4%[1)] of the financial sector and the non-banking financial sector makes up 11.6%, which shows that the entire economy relies upon the banking sector. Furthermore, banking sector intermediaries cause significant potential systemic risk in the financial sector and have negative impact on the overall financial stability.

In Mongolia, "Mongolian Stock Exchange", Mongolian Central Securities Depository, Mongolian Securities and Clearing House and other brokerage firms are the main infrastructure participants in the capital market. These companies require efficient IT systems that protect consumer's personal data to provide quick, reliable and safe service to the market participants.

Therefore, a comprehensive, detailed capital market development program is required to develop the capital market, increase its market share and demand in the overall economy, support the development of new products and services,

[Figure 1-1] Mongolian Capital Market Development Timeline



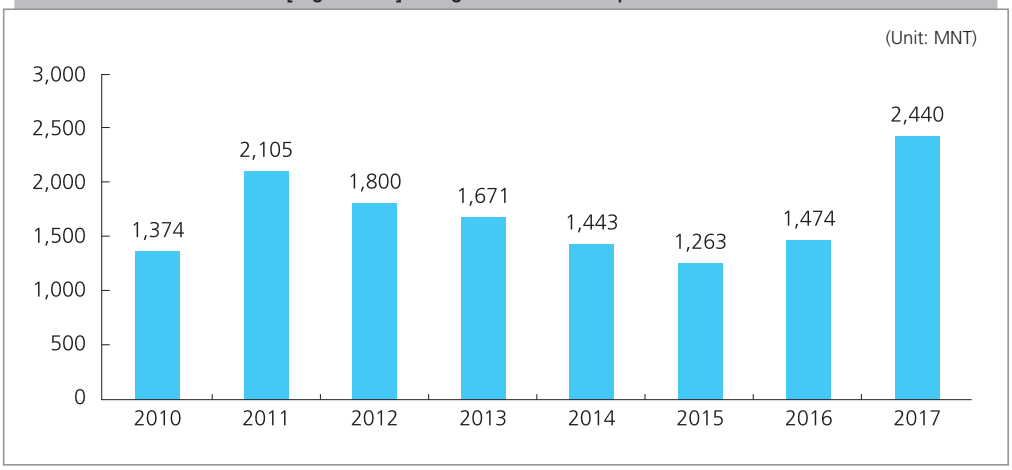
Source: Minstry of Finance of Mongolia (2018).

1) Bank of Mongolia; Statistical Bulletin (https://www.mongolbank.mn/eng/liststatisti c.aspx? id=7)

improve the infrastructure, define the roles of market participants and expand their operations, reflect international practices in to the overall legal environment of the capital market. [Figure 1-1] shows the timeline of capital market development.

The main indicator for the stock market is market capitalization and its growth and decline reflects the indicator that shows the level of market development and consequences of the economic development. [Figure 1-2] presents the annual trend of market capitalization.

[Figure 1-2] Mongolian Market Capitalization



Source: Mongolian Financial Regulatory Committee (2018).

In 2011 and 2017, number of companies offering the their shares to public and the share prices of the mining companies has risen due to external economic factor. Since 2012, commodity prices had fallen in international market and foreign investment shortage and economic growth decrease has directly influenced to Mongolian capital market. In end of 2017, Mongolian Capital market capitalization reached 2.4 trillion MNTs, its shown 65 percent of growth that compared to previous years result. But capital market capitalization its only 8 percent of the GDP[2)]

2.2. The Role of MCSD and MSCC

Mongolian Securities Clearing and Central Depository Co.,Ltd (MSC&CD) had been conducting clearing and settlement activities together with central depository and registration of ownership rights operation until 2015. The section discusses the current roles of securities payment and settlement institutions; MCSD and MSCC.

2) National Statistical Office of Mongolia (http://en.nso.mn/index.php)

2.2.1. The Role of MSCC

In 2012, the market failed to implement T+3 clearing and settlement routine by introducing Millennium IT technology through Mongolian Stock Exchange's arrangement with London Stock Exchange Group. Many factors influenced the failure of the implementation. One of the biggest factors was lack of clearing body and members with adequate capital, human and technical resources. Since then, from 2015, pre-funded scheme is used on the market.

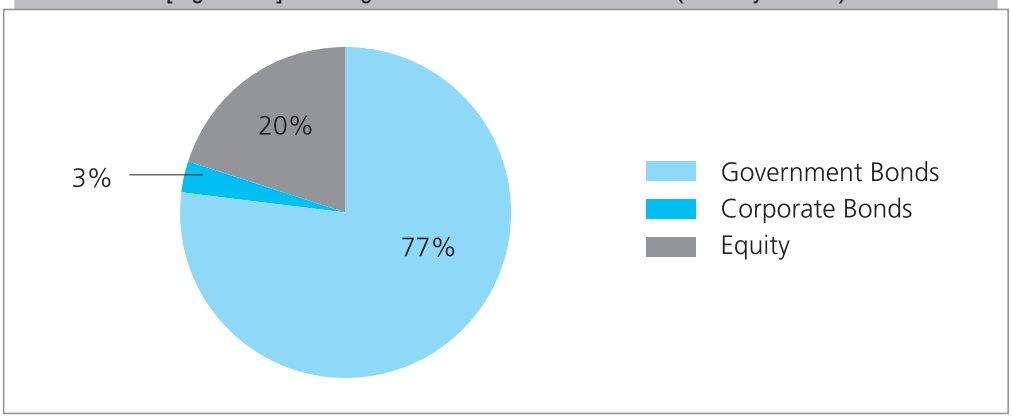
In 2012, Mongolian Stock Exchange made arrangement with London Stock Exchange for introducing Millennium IT technology. And in 2013 Securities Market law amendment has approved by Parliament. And Financial Regulatory Committee approved the enact of the shifting prefunding scheme to DVP/T+2. But the market failed to implement T+3 clearing and settlement routine. Many factors influenced the failure of the implementation.

One of the biggest factors was lack of clearing body and members with adequate capital, human and technical resources. Since then, from 2015, pre-funded scheme is used on the market. Based on the above mentioned factors, the Government of Mongolia decided to form a clearing house with intention to be grown into central clearing party in the future. Therefore, the 147th resolution of the Mongolian Government was released as legal document for MSCC to be organized as an independent entity for securities clearing and settlement operation.

In the framework of "Renovation of national payment system" program MSCC has joined the central bank's payment system, connected to RTGS which enables MSCC to conduct cash settlement side. According to "The law on securities market", clearing and settlement operations are subjects to two separate licenses. MSCC has obtained the both licenses from the FRC. MSCC clears cash leg between 4 settlement banks in net basis for the secondary market. For the primary market MSCC acts as settlement bank for every customer, receiving and sending money directly to customers' settlement bank for gross basis. As for securities MSCC clears cross basis, because securities account structure in Mongolia is beneficial. There is no securities omnibus or nominee account yet. But clients are able to choose existing custodian banks where a custodian is registered as one customer at the depository.

Trade fees are charged directly from the customers' accounts and calculated in the clearing process at the MSCC. The trade fee includes brokerage, exchange, clearing and FRC's fee. Receiving fee amount (in percentage from the trading value) from the brokers, MSCC calculates the fee for above mentioned organizations and distributes the monies accordingly daily basis. [Figure 1-3] shows the percentage of clearing of MSE traded primary shares in 2017.

[Figure 1-3] Clearing of MSE Traded Shares in 2017 (Primary Market)



Source: Mongolia Securities Exchange.

2.2.2. The Role of MCSD

The Mongolian Central Securities Depository (MCSD) is a sole nominated securities depository in Mongolian territory, as stated in Mongolia Securities Law. MCSD maintains all domestically issued securities registry in dematerialized form. Maintains beneficial/individual and omnibus accounts. Assigned sole entity in Mongolia to issue ISIN for Mongolian securities.

Currently, registered security types are:

- Exchange traded shares of the public listed companies.
- Shares of closed joint venture companies.
- Government bonds, traded at Mongolian Stock Exchange (MSE).
- Government bonds, traded at Bank of Mongolia (BOM), limited to commercial banks.
- Corporate bonds.
- Asset backed bonds of the LLC (currently only for one company "Mongolian Mortgage Corporation").
- Shares of "Erdenes Tavan Tolgoi" State owned company, all Mongolian citizens are entitled to free shares (estimated value of US$450).

a. Company Share Depository

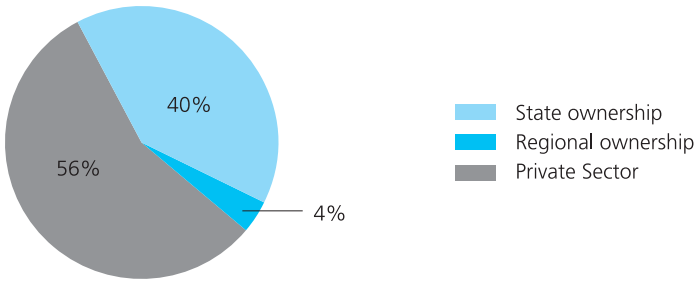
The Company has been keeping 22.2 billion shares of 317 listed companies' worth 1.4 trillion MNT (~USD 600.0 billion) deposited as of end 2017, as shown in [Table 1-1]. [Figure 1-4] reports the distribution of listed firms.

〈Table 1-1〉 Summary of Deposited Shares in MCSD

	Number of Company	Number of Shares
Listed Public company	312	7.0 billion
Closed JS Company	5	15.2 billion
Total	317	22.2 billion

Source: MCSD (2018).

[Figure 1-4] Distribution of Listed Firms



Source: MCSD (2018).

b. Bond Depository

The Company has been keeping 289 types of 1.95 billion quantity of bonds.

- 35 types of 23.3 million corporate bonds.
- 154 types of retail government bonds of 5.5 million quantity.
- 30 types of mortgage-backed bonds of 29.6 million quantity.
- 70 types of wholesale government bonds of 1.9 billion quantity, closed trade for commercial banks only through Bank of Mongolia.

c. Client Account

The Mongolian Central Securities Depository is a sole nominated securities depository within Mongolian territory, as stated in Mongolia Securities Law. MCSD maintains all domestically issued securities registry in dematerialized form. Maintains beneficial/individual and omnibus accounts. Assigned sole entity in Mongolia to issue ISIN for Mongolian securities.

〈Table 1-2〉 Client Account Types

Year	Individuals		Entities	
	Mongolian	Foreign	Mongolian	Foreign
2013	8,948	108	65	16
2014	10,448	43	35	14
2015	19,593	72	47	3
2016	80,899	66	50	2
2017	19,334	107	94	9

Source: MCSD (2018).

There are other security types that are not registered nor deposited at MCSD. For example: Central Bank Bills, Mongolian government sovereignty bonds traded at international markets (Samurai bond, Chinggis bond).

Near future new securities: a) there are initiative by MSE to introduce dual listings of the companies listed at foreign exchanges b) currently in process, to deposit LLC Company's closed release corporate bonds.

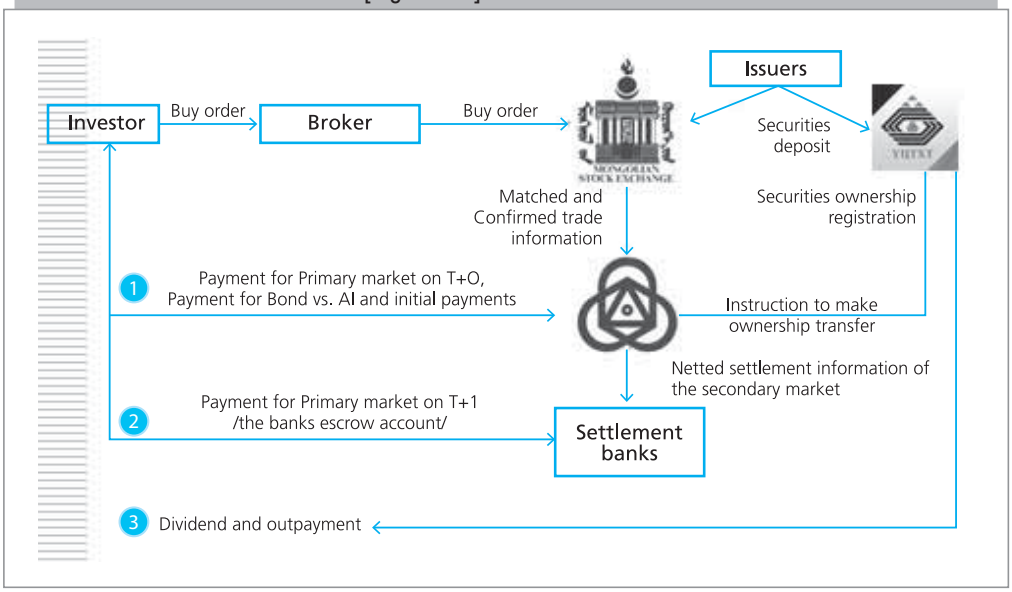
Operation types include securities depository services, OTC transactions, holder or record service to issuers, dividends distribution, securities REPO, pledging of securities.

2.3. Functional Flowcharts and Operating Statistics

Below is the current flowchart where cash settlement is executed differently due to primary or secondary market. Issuers are contracted with the central depository and transfer dividend via MSCD.

That makes, each client has 3 accounts in 3 different organizations in order to participate in the securities market. Namely, 1 account at the MSCC for primary market, 1 for secondary market at the settlement bank and 1 account to receive dividend at the MSCD.

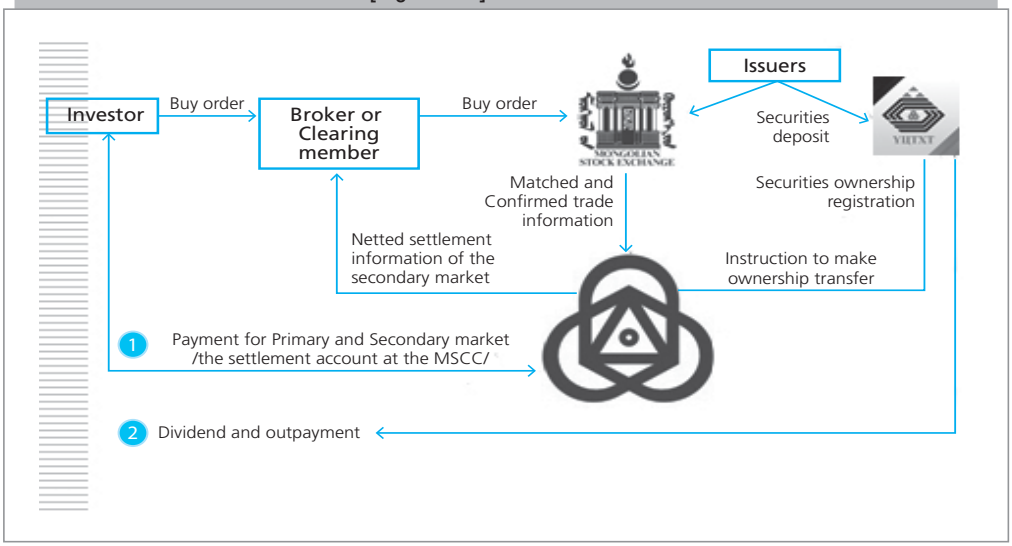
[Figure 1-5] Current Scheme



Source: Minstry of Finance of Mongolia (2018).

MSCC is working with market participants to shift the settlement scheme from pre-funding to T+2. In this framework, MSCC has taken the initiative to act as settlement bank for all customers so that payments for both markets could be executed at one organization using one account for a customer. Below is our intended scheme when the market migrates to T+2 scheme.

[Figure 1-6] Future Scheme



Source: Minstry of Finance of Mongolia (2018).

〈Table 1-3〉 Mongolian Central Securities Depository Operation Statistics

Statistics	Volume (mln shares)	Value (MNT)
Deposited securities	27.7 billion	5.3 trillion
Public shares	7.5 billion	1.3 trillion
Closed JV shares	20.2 billion	72.6 billion*
Bonds	33.9 million	3.9 trillion
Securities at Custodians (3 licenses)	978 thousand	153 million
Registered Shareholding companies	320 entities	
Listed companies	313 entities	
Closed shareholding companies	7 entities	
Bonds	33.9 million	3.9 trillion
Government bonds (at exchange MSE)	7.7 million	224.8 billion
Government bonds (at Mongol Bank)	2.9 million	1.1 trillion
Corporate bonds	23.3 million	2.6 trillion
Publically traded securities value	-	1.7 trillion**
Trade available to commercial banks and Mongol bank value	-	3.4 trillion**

Note: 1) Erdenes Tavan Tolgoi shares value not included (= 0 MNT)
2) Actual number may vary ± 5%
Source: MCSD (2018).

2.4. Potential Challenges of the Payment and Settlement System

Currently, MSE uses Millennium IT (MIT) system for trading. And account management is also run through MIT. Cash clearing is executed with domestically developed program that is called E-Clearing. To process the data, MSCC downloads trade information from MSE's web interfaced program and uploads to its E-clearing by manually. That may cause errors. Main IT challenge is to develop clearing program that suites for T+2/3 and supports straight through processing (STP) with all market participants. Risk monitoring is required to be set as a part of the program.

The potential challenges of the current process in securities payment and settlement can be summarized as following;

Main challenge:

- Due to the current pre-funding system, no day trading is allowed and trading volumes and liquidity are limited
- Manual rekeying of orders and file transmission increases operational risk;
- Lack of DvP; Lack of 'straight through processing' (STP);
- Modern risk management systems and mechanisms not introduced (i.e guarantee fund, margin management etc);
- Short selling and stock borrowing & lending are inhibited;
- No modern IT infrastructure in place;
- CCP (Central counterparty) is not introduced

All of above are necessary to be considered to construct the developed FMIs.

3. The Payment and Settlement Infrastructure: The Cases of Korea

3.1. Payment and Settlement System in the Korean Market

Korea Exchange (KRX) was launched on 27 January 2005 and was created through the integration of the Korea Stock Exchange (KSE), Korea Securities Dealers Association Automated Quotation trading board (KOSDAQ) and the Korea Futures Exchange (KOFEX). KRX is the operator of Korea's securities and derivatives markets under the 'Financial Investment Services and Capital Markets Act' (FSCMA). The KRX is a self-regulating organization supervised by the Financial Supervisory Commission (FSC).

The KRX is responsible for:

- conducting listing and disclosure business for capital raising, the original mandate of the capital market and for enhancing corporate transparency;
- building an STP (Straight Through Process) system encompassing various financial investment products to improve efficiency and security of financial assets trading;
- implementing market surveillance to prevent market abuses; and
- carrying out information business to create value from various market information.

Especially, as a designated and licensed CCP for Exchange and OTC Markets according to FSCMA, KRX provides clearing and settlement services to both Exchange and OTC Markets and at the same time, provides robust risk management services to

enhance financial market stability. [Table 1-4] shows the product types and statistics of trading and settlement in the KRX.

〈Table 1-4〉 Trading and Settlement Products and Statistics

(Unit: KRW in billions, 2016)

Category	Product		Trading value	Settlement value
Securities Market	Stock	KOSPI listed, KOSDAQ listed, KONEX listed	22,494	2,007
		DRs(Depository receipts) etc		
	Structured	ETFs (Exchange Traded Funds), ETN(Notes), ETW(Warrants)		
	Bond	Government bonds, Municipal bonds, Repurchase agreements		
Derivatives Market	Futures	Stock indices (KOSPI 200, KOSDAQ 150), individual stocks, FX, etc	41,432	793
	Options			
	OTC Derivatives		473,000	

Source: Revised from the KRX website (www.krx.co.kr, retrieved on June. 21, 2018).

Korean Securities Depository (KSD) was established in 1974 as the central depository and settlement institution for listed companies. Securities companies and other financial intermediaries are required to open accounts and deposit their securities with the KSD. The KSD is also the paying agent for income and is authorized to exercise voting rights according to instructions from beneficial owners. KSD is owned by the KRX and 59 financial institutions. There are over 3,300 KSD participants that include securities firms, banks, insurance companies, pension funds, investment trust companies and other corporations.

Settlement in the Korean market stands for DVP (Delivery-versus-Payment) mechanism whereby the delivery of securities and the payment of funds occur concurrently. In 1999 the Bank of Korea (BOK) began offering DVP services through linkage of the securities settlement systems with BOK-Wire (The Bank of Korea Financial Wire Network) which was updated to BOK-Wire+ due to the surging volume of settlement in 2009. The major securities settlement systems in Korea have all adopted DVP settlement mechanisms, thereby removing principal risk from among the various securities settlement risks, and also legally guaranteeing settlement finality.

The KRX guarantees settlement in its capacity as the CCP for transactions in both exchange-traded securities, derivatives and OTC IRS. In order to secure the financial

resources necessary for settlement, the KRX retains some of its assets in the form of settlement reserves. It in addition allows only members meeting certain qualifications to participate in transactions, and has its members contribute to joint compensation funds to make up for any losses arising from possible settlement failures.

As the CCP for clearing and settlement of institutional stock trades, KSD guarantees settlement of these transactions. It also allows only members meeting certain qualifications to participate in transactions, while securing settlement reserves and having its members contribute to joint compensation funds.

Meanwhile, in order to mitigate settlement delays and gridlock in the securities settlement systems, and to relieve the resulting concentration of settlement at around the BOK-Wire+ closing time, the BOK, the KRX and KSD have jointly established the "Strategies for Securities Market Settlement Systems Upgrade," which they have implemented since 2012. Under the Strategies, a continuous net settlement (CNS) mechanism has been introduced for settlement of exchanged-traded stock transactions, under which if a seller fails to deposit the stocks by the settlement deadline the settlement for that transaction is carried over to the next business day.

For the settlement of stock transactions between institutional investors and KRX members, the settlement mechanism has been changed to DvP2, by which the securities transfer obligations are settled on a gross basis during the day and the funds transfer obligations then settled later on a multilateral net basis, thereby enabling securities settlement to occur earlier and reducing the settlement amounts. In addition, the starting time for settlement of exchange-traded government bonds during the day has been pushed up from 15:00 to 09:00, while the BOK has begun providing KRX and securities companies with intraday liquidity needed for the settlement of exchange-traded and OTC bonds, through repos transactions with the BOK.

The institutions responsible for trading, settlement, payment and clearing operation are summarized in [Table 1-5].

〈Table 1-5〉 Clearing and Settlement in the Korean Market

	Exchange-traded Products				OTC Products			
	Stocks (KOSPI, KOSDAQ & KONEX)	Government Bonds	Corporate Bonds	Derivatives (futures, options, etc)	KRW and USD IRSs	Institutional Stocks	Institutional Bonds	K-OTC
Clearing (CCP)	KRX(CCP)					KSD (CCP)	KSD	
Securities (or physical assets) Settlement	KSD			commercial banks	commercial banks	KSD		
Settlement Banks	BOK-Wire+			commercial banks		BOK-Wire+		
Settlement day	T+2	T+1	T	T+1	T+1	T+2	T+1	T+2
Settlement Model	DVP3	DVP1	DVP3	DVP3	DVP3	DVP2	DVP1	DVP3
Number of Participants	51	37	75	47	50	81	143	51

Source: Revised based on KRX and KSD websites (http://www.krx.co.kr, http://www.ksd.or.kr, retrieved on June. 21, 2018).

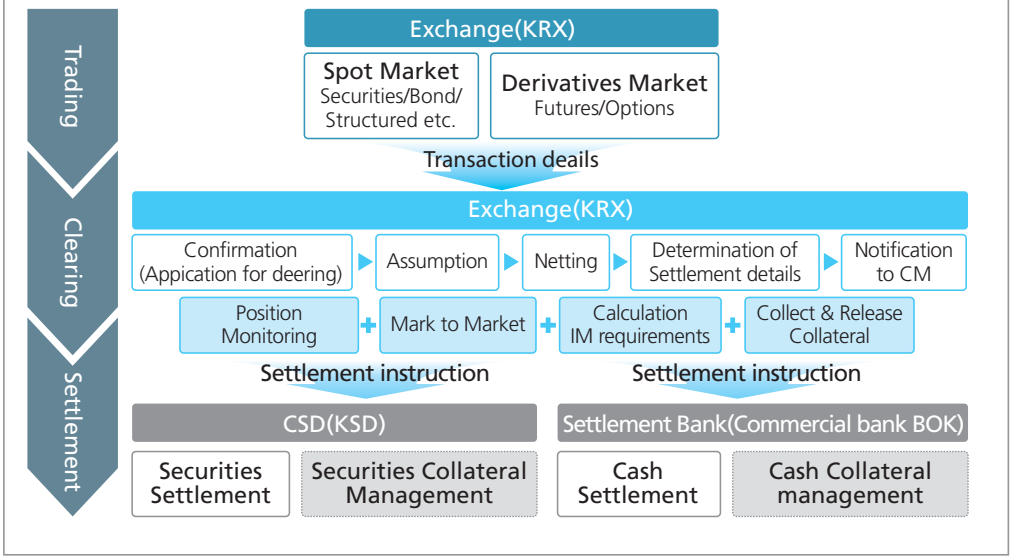
[Figure 1-7] summarizes the operation procedure of securities trading, clearing and settlement in the exchange as well as in the OTC. In exchange trading, trades are executed on the stock markets such as KOSPI, KOSDAQ and KONEX and the derivatives market. Details of executed trades are automatically sent to clearing and settlement system to make automatic trade confirmation. KRX takes up the responsibility of performing settlement by confirming the trade details executed on the Securities and Derivatives Markets and assuming the liabilities on the confirmed trades. The size of the liability assumed by KRX through the trade confirmation and liability assumption is reduced via netting. The clearing house typically reduces counterparty risk by reducing the size of settlement through multilateral netting.

KRX publishes the settlement details every business day to Securities and Derivatives Markets members, of which corrections on transaction errors can be made by 15:30 of the next trading day. Once the trade details/trade confirmation details are sent to CCP, the liabilities are assumed and net settlement details for each position of each participant are calculated. Then the net settlement details (settlement instruction) are sent to KSD, settlement.

In the Securities Market, KRX instructs KSD to make cash and securities settlements. On receiving the settlement instruction, KSD transfers the securities from

sellers' accounts to buyers' accounts and at the same time makes cash settlement instruction to the BOK-Wire+ to complete the delivery and payment.

[Figure 1-7] Overview of Clearing and Settlement Process



Source: KRX 'Principles for PFMI Disclosure' (2018).

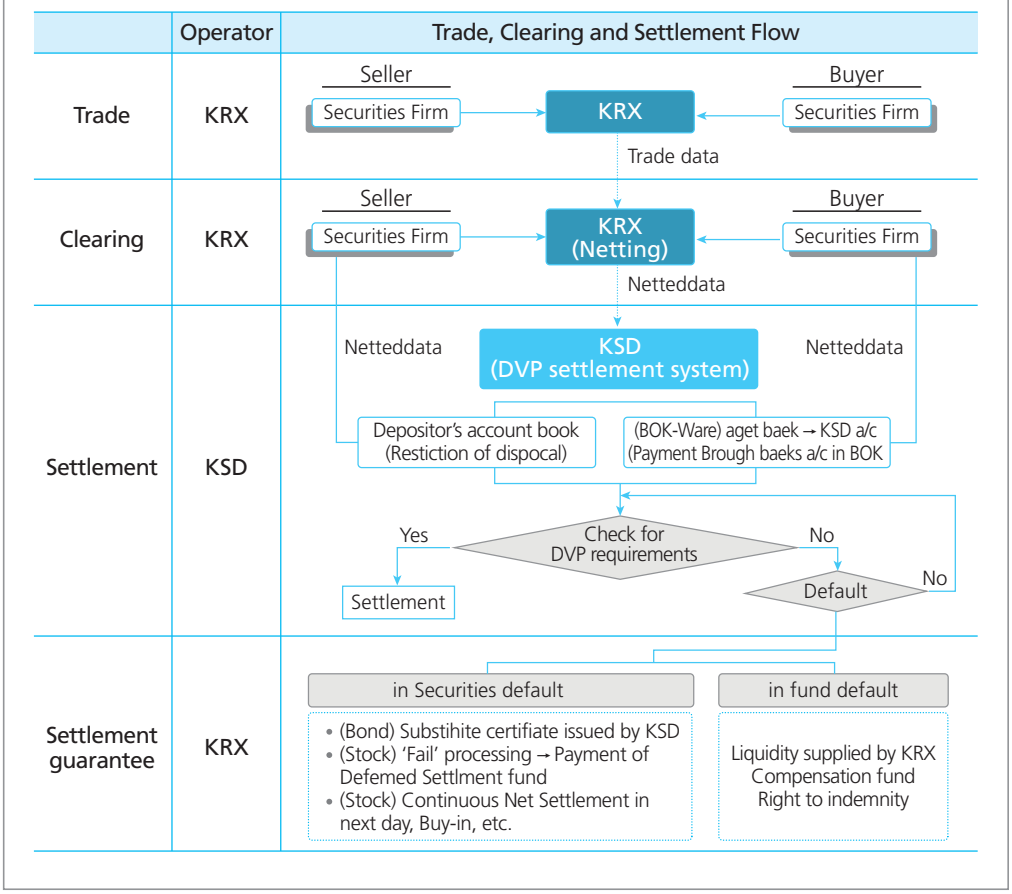
3.2. Roles of KRX, KSD and other Institutions

• Exchange Traded Market Clearing and Settlement

This is the service to exercise the clearing of securities traded between KRX members such as securities firms in KOSPI market, KOSDAQ Market, KONEX market, and KRX Trading System for government securities (so-called 'KTB') operated by the Korea Exchange ('KRX'). In this area, clearing service (trade confirmation, confirmation of claim and obligation, settlement guarantee, etc.) is done by KRX, and settlement service (delivery of securities and payment of fund) is done by KSD.

The settlement cycles are T+2 for equities and KTB, T+1 for government bonds and T+0 for ordinary bonds. Contractual settlement is not allowed under Korean regulations. Settlements must be posted on an actual settlement date basis. Settlement on T+2 is compulsory, whether or not the broker receives payment. When a broker does not receive payment of the relevant cash or securities to settle the trade, the broker must use their own funds or securities holdings. A broker that fails either to pay or to deliver securities is considered to be in default by FSC. [Figure 1-8] summarizes the process of In-Exchange Market Settlement.

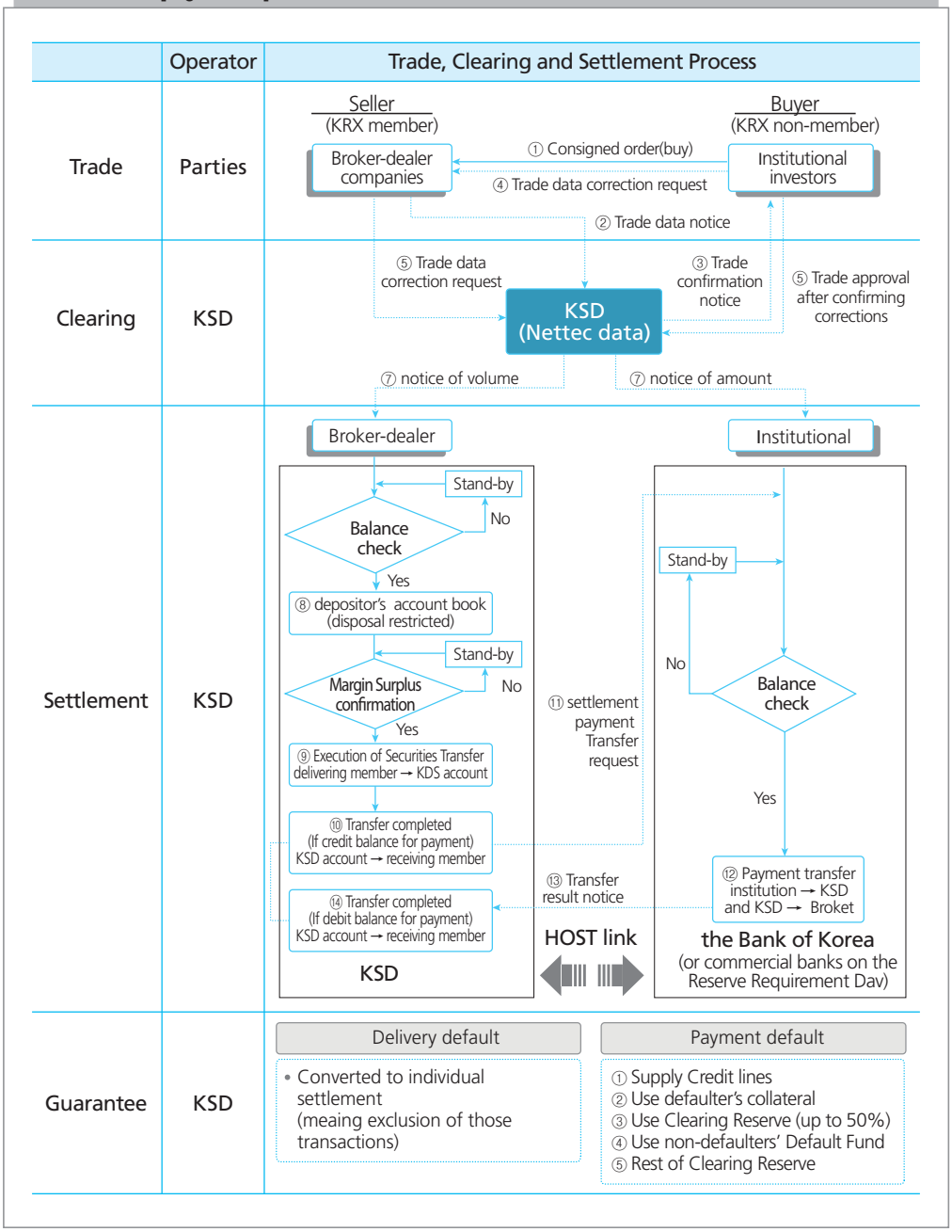
[Figure 1-8] Process of In-Exchange Market Settlement



Source: KSD website (www.ksd.or.kr, retrieved on June. 21, 2018).

KSD conducts trade matching and settlement services for trades executed in OTC market. Types of services include institutional investors' settlement for stocks and bond and K-OTC Settlement. In institutional investors' settlement for stocks, KSD receives trade data, fixes securities and fund to be settled after trade confirmation, and respectively settles securities per each trade and fund positions deduced by multi-lateral netting per each member (DVP2 method). In institutional investors' settlement for bonds, KSD receives trade data for bonds (including CDs and CPs) from securities firms as a broker/dealer and institutional investors, fixes securities and fund to be settled after trade confirmation, and settles gross volume and amount in real time per each trade (DVP1 method). Lastly, in K-OTC settlement, KSD receives trade data from K-OTC operated by the Korea Financial Investment Association, and settles securities and fund throughout the bi-lateral netting for both securities and fund after trade confirmation. [Figure 1-9] summarizes the processes of OTC institutional settlement for stocks.

[Figure 1-9] Process of Institutional Investors' Settlement for Stocks



Source: KSD website (www.ksd.or.kr, retrieved on June. 21, 2018).

3.3. Risk Management Devices and Procedures

The section documents potential risks in securities settlement and payment procedure; credit risk, liquidity risk and operational risk which are defined as follows.

Credit risk is the possibility of loss to be incurred by the Exchange due to the default such as a member's settlement failure and the change in ability to perform the obligations of a transaction counterparty. Market risk is the possibility of loss to be incurred by the Exchange due to the changes in the market prices of stocks, interest rates and exchange rates. Liquidity risk is the possibility of loss to be incurred by the Exchange due to the risk to face an insolvency by a mismatch of the lead time in operating funds or unexpected funds outflow and the possibility of loss due to unfavorable borrowing conditions or sale of assets under adverse conditions to raise insufficient funds.

Lastly, operational risk is the possibility of loss to be incurred by the exchange due to inappropriate or erroneous internal procedures, personnel, systems and/or external events including such risks as:

- Business risk: Risk of loss by an error, accident (including natural disasters and external incidents), and misbehavior in carrying out business;
- IT risk: Risk of computer systems' accidents such as suspension or errors of computer systems, computer crime, etc.;
- Legal risk: Risk of loss from inappropriate response to various legal disputes or breach of laws or regulations; and,
- Reputation risk: Risk of failure in market management, in-house corruption and illegality, poor business performance, social controversial events, etc.

Based on Risk Management Plan, the Risk Management Department of the KRX collects risk management reports on the quarterly basis from each business department. The department, then, makes a comprehensive analysis on the risk management situation of which results are reported to the Risk Management Committee. The checklist and indicators by the types of risk is as [Table 1-6].

〈Table 1-6〉 Checklist and Indicators by Types of Risk in KRX

Risk Type	Check item	Management Indicator	Tools/ Resources
Credit Risk	Risk of a member's default	Settlement amount	Role of CCP
		Value at Risk(VaR) of each member	Daily mark-to-market basis
	Member's financial stability	Capital ratio	
		Credit rating	Margin arrangement
Market Risk	Operating asset management	VaR of operating funds	
Liquidity Risk	Stability of settlement bank	Capital ratio of settlement bank	Default Fund
	Temporary lack of liquidity	Maintain credit lines and settlement reserve	Settlement Reserve
		Liquidity stress-test	Credit-line
Operation risk	Operational risk	Risk control self-assessment (RCSA)	
		Key risk index (KRI) management	

Source: Revised originally from the PFMI report of KRX (2018).

• Credit Risk

KRX defines the credit risk as the risk of loss (possibility of loss from a default Identification of Credit Risk or the change of credit status of a clearing member) to be incurred by providing clearing services to participants, and manages the credit risk by way of monitoring and measuring the credit exposures considering main sources (factors) that may generate the risk of ross. KRX classifies credit exposure into current exposure and potential future exposure, and reclassifies the potential future exposure into exposure under normal market situation (including intraday sudden market changes) and the exposure under extreme market situation to restrain and mitigate credit risk.

To calculate and manage current exposure, KRX makes mark-to-market for futures based on closing prices and collects and pays the evaluation gains and losses. As per options, KRX reevaluate options value based on closing prices to calculate and collect options prices margin (which composes the net exposure margin among the margins in Derivatives Market). As per the Securities Market, the current exposure is calculated and managed through the variation margin among the Securities Market Margins introduced on Sep. 27, 2017.

To calculate and manage potential future exposure under normal market

situation, KRX calculates and imposes margin requirement that corresponds to the initial margin of PFMIs. For the Securities Market, net exposure margin, among the factors that composes the Securities Market Margin, is calculated to manage clearing member's potential future exposure by proprietary account group and customer account group. As of the derivatives market, KRX calculates and imposes margin requirements by account of clearing member as of the daily market close. Regarding this, net exposure margin, among the margin factors, is calculated to cope with the maximum loss that may occur from the futures and options portfolio of each account. KRX evaluates all positions of each participant based on daily market prices through which it pays and collects net cash settlement amount including the daily net settlement amount to cover current exposure.

To cover potential future exposure, KRX has established the settlement resources deposited by members' and CCP's own resources. The settlement resources deposited by members are composed of (a) Margin that can cover, with the confidence level of 99.7%, potential future exposure that may arise from each participant's position, and (b) Default Fund that can cover default loss of a participant's with maximum exposure under an extreme market situation through stress-testing.

KSD effectively measures, monitors, and manages its credit exposures to participants and those arising from its payment and settlement processes. KSD manages constantly the exposures of credit risk through the relevant Regulations and SAFE+ system. Regarding the Institutional Investors' Settlement for Stocks, KSD maintains high fidelity financial resources sufficient to cover a wide range of potential stress situations by means of the compensation fund and internal reserve, etc. with regard to the Institutional Investors Settlement for Stocks. Currently, the compensation funds amounts to 50 billion Won and KSD additional charges the compensation funds to participants on the pro-rata basis. In addition, it conducts daily stress tests based on stress scenarios that reflects extreme but plausible market situations. In addition, KSD accepts the securities for collateral only with low credit, liquidity, and market risks, and takes the appropriate risk management measures such as a conservative haircut, daily evaluation, etc.

- Liquidity Risk

KRX is equipped with a firm-wide and CCP-level liquidity risk management framework in relation with its clearing business. This framework satisfies liquidity risk-related requirements defined in the Business Guideline for Financial Market Infrastructure of the FSC. Under the framework, KRX measures and monitors major factors related to the liquidity risk, which may occur in the course of operating the clearing business. Based on such measuring and monitoring activities, KRX has liquidity resources such as credit lines, etc. to prepare for liquidity shortfalls.

KRX continuously monitors the financial market situation and reviews appropriateness of the risk management framework every year. KRX measures and monitors the flow of settlement and financing activities on a real-time basis during the day through the clearing and settlement system. After producing settlement details calculated through evaluating participants' position every day and creating a scenario for fund transfer on the settlement day (the next day of the calculation) based on the calculated settlement details, the clearing and settlement operating team monitors on a real-time basis the settlement flow. On the settlement day, the team monitors whether the actual settlement is made or not according to the scenario in the real-time. [Table 1-7] shows the current resource status of KRX risk management.

〈Table 1-7〉 Liquidity Resource Status of KRX

(June 2017, trillion KRW)

Classification	Exchange Trading	OTC
Required Amount	1.7	0.3
Liquidity Resources (A+B+C)	4.48	3.75
CCP Settlement Reserve (A)	0.4	0.05
Default Fund (Joint Compensation Fund) (B)	0.58	0.2
Credit line (C)	3.6	

Source: Revised originally from the PFMI report of KRX (2018).

KSD maintains the credit-line agreements amounting to 200 billion KRW with the Shinhan and Woori Bank in Korea and checks up the feasibility of the credit-lines regularly. In addition, KSD is equipped with appropriate risk management system against the default of securities and fund settlement by introducing the intraday Repo system through the link with the central bank and automatic SLB system.

• Operational Risk

KRX defines the operational risks as losses incurred by the wrong internal procedures, personnel, systems and external events. Types of operational risks are classified as page 23. KRX conducts the periodic monitoring of operational risks at the individual department level or occasional self-assessment. The individual operational risk management department reports recognized risks to Risk Management Department on occasional basis. Risk Management Department evaluates the risk management report and reports the analysis to Risk Management Committee.

To prevent operational and IT risks, the market management actions taken by

employees is monitored by supervisor in real time, and in order to ensure the stability of the function, the system operation status is dually monitored by both KRX IT department and its IT subsidiary. Other operational risks are managed through the analysis and assessment of Risk Management Department and Risk Management Committee in the regular basis.

Regarding general business risk, KRX is maintaining a system to monitor and manage all risks related to its business as an exchange and CCP, to improve the efficiency. In order to manage the potential general business risk where a sudden cash outflow occurs when entering into new business and investment or where long-term loss occurs, KRX establishes the necessary capital plan for each major project and constructs the mid- and long-term business plan. The capital plan that maintains stability, liquidity and profitability is established every year to measure potential losses.

KSD is established under the FISCMA (The Financial Investment Services and Capital Markets Act) and its operation and management are regulated and supervised by the several laws including the Act on Management of Public Institutions under which the entrance of general business is controlled, the general business risk involved with KSD is extremely limited. Other than that, KSD maintains monitoring and reviewing system for general business risk associated with new business, etc. through the Internal Risk Management Regulations and the internal risk management system, and holds sound net current assets based on equity such as its own voluntary reserve equivalent to at least operating expenses necessary for 6 months.

Regarding operational risk KSD maintains a constant monitoring system for all operational risks through the Internal Risk Management Regulations and the internal risk management system, engages in regular system improvements to ensure a high degree of operational reliability, and promotes continuous operational improvement such as the SAFE+ and other IT systems. However, the target recovery time in the event of a disruption such as the status fell into BCP is currently is set up as 3 hours in accordance with the Regulation on Supervision of Electronic Financial Transactions which has been enacted by FSC and applied to other FMIs such as KRX in common.

The authorities continue to participate in the international discussions on financial security. They will strengthen the standards for security applied to the domestic financial market infrastructures (FMIs), by establishing measures for domestic implementation of international cyber security standards as they are formulated.

3.4. Assessment of the Korean System

In 1973, under the Securities and Exchange Act, the securities settlement system was introduced in the Korean capital market. Initially being carried out within the Korean exchange until 1974, the system was transferred to the Korean Securities Settlement Corp. on December, 1974, which was renamed KSD in 1994. KSD is not only a special institution established under the FISCMA, but also a corporation under the Commercial Act in which 59 financial institutes are participating as shareholders including KRX, securities firms, banks, insurance companies, etc. However, KRX, the operator of the market, holds 70.4% of shares, which may limit voices of other stakeholders to be reflected to the management of KSD and embrace various opinion.

Recently, the Financial Service Commission (July 2015) announced that in order to strengthen competitiveness of Korea's exchange markets, the KRX will be converted into a holding company. It is documented that the KRX need to do IPO to become a holding company and that it will dispose of a part or all of its shares of KSD before doing IPO. As a result, the KSD will face with a structural change in its ownership and governance. Also, KRX, KSD and relevant authorities are going to engage in sufficient discussion on whether KSD should become a separate entity from the KRX holding company structure; whether KRX should vertically integrate KSD; and how clearing business should be rearranged to KRX and KSD. At this point, it is highly anticipated that KSD will be transited from a KRX subsidiary into a public entity with multi-ownership and market-oriented structure by reducing KRX's state and introducing competition to the international CSD industry.

4. Suggestions to Improve the Payment and Settlement Infrastructure: A Benchmarking Analysis

4.1. Defining the Roles of MCSD and MSCC

According to the Resolution of the government of Mongolia #147 "On the Reorganization of the Central Securities Depository and Clearing & Settlement Co.,Ltd" (April 13, 2015), Mongolian Securities Clearing Co.,Ltd (MSCC) and Mongolian Central Securities Depository Co.,Ltd (MCSD) were separately established with the aim to provide more specialized services for securities settlement and clearing. The main activity of MSCC is to determine the payment due to the securities trading, to provide the settlement service based on the contractual basis and to collect and submit the securities trading and cash payment orders the relevant

organizations. MCSD takes a key role as depository that registers securities of the issuers and other participants on the basis of a contract, carries out activities to maintain storage and trades the records of the securities through stock market and OTC market.

It is difficult to unambiguously define the scope or roles of intermediaries in a clearing and settlement operation. How to define the roles of the institutions responsible for securities deposit, clearing and settlement may vary across countries depending on the environment of the capital market. At any rate, a key feature in creating the investor-friendly FMI is to develop the system that minimizes the related costs and risk involved in securities trading. Rather than directly providing the best practice of FMI in the Mongolian market, this paper would like to review the roles of CSDs and clearing houses in key Asian markets.

[Table 1-8] shows which institutions are responsible for securities deposit, settlement and clearing infrastructure. It shows that China, Hong Kong, and Singapore integrate a central counterparty into to deposit, clearing and settlement infrastructure, while in most of the other markets, the role of CSD and clearing houses are separated.

〈Table 1-8〉 CSDs/CCPs and Payment Systems in Asia

	CSD	CCP	Clearing House
China	CSDCC (equity, funds, corporate bonds, ETF) - integrated		
	SHCH (interbank RMB, FX) – integrated		
	CCDC (treasury bonds, interbank bonds)		
	CSDCC: China Securities Depository and Clearing Corp CCDC: China Central Depository & Clearing Co SHCH: Shanghai Clearing House		
Hong Kong	HKSCC (listed securities)		
	CMU (bonds) – integrated		
	HKSCC: Hong Kong Securities Clearing Company Ltd CMU: Central Money Markets Unit		
Indonesia	KSEI	KPEI	KPEI
	KSEI: Kustodian Sentral Efek Indonesia, Securities depository and settlement company KPEI: Kliring Penjaminan Efek Indonesia, Indonesian clearing and guarantee corporation		
Japan	JASDEC	JSCC	JSCC
	JASDEC: Japan Securities Depository Center, Inc JSCC: Japan Securities Clearing Co		

〈Table 1-8〉 Continued

	CSD	CCP	Clearing House
Korea	KSD	KRX	KRX
	KSD (integrated, OTC institutional stock trading only) KSD: Korea Securities Depository KRX: Korea Exchange		
Malaysia	Bursa Depository	Bursa Clearing	Bursa Clearing
	Bursa Depository: Bursa Malaysia Depository Sdn Berhad Bursa Clearing: Bursa Malaysia Securities Clearing Sdn Berhad Both are subsidiaries of Bursa Securities (exchange)		
Singapore	CDP (integrated)		
	CDP: SGX-subsidiary central depository		
Taiwan	TDCC	TWSE	TWSE
	TWSE: Taiwan Stock Excahnge TDCC: Taiwan Depository & Clearing Corporation		
Thailand	TSD	TCH	TCH
	TSD: Thailand Securities Depository TCH: Thailand Clearing House		

Source: Revised originally from the Clearstream website (www.clearstream.com, retrieved on June. 21, 2018).

4.2. Developing the Central Counterparty (CCP) Framework

MSCC plays a clearing house in the market. They collect settlement results from MCSD using the MIT system and, then, send payment instruction to the RTGS system in BoM via the E-clearing system. In this process, brokers transfer the trading order and settlement banks post the payment information and inquire their net settlement position via the MIT system. However, none of them is directly involved in settlement and clearing process.

In order to minimize counterparty credit risk and maximizing operational efficiency, MSCC may need to employ the CCP framework by acting as a buyer to selling brokers and as a seller to buying brokers. To do so, the market is required to introduce Clearing Members (CMs). Any broker holding CM license may become a counterparty of MSCC. Also, MSCC consider how to manage transactions by brokers which do not hold CM license.

The CCP system may enable the market to more efficiently carry out buy and selling transactions while reducing the risk of settlement failure. Moreover, by acting

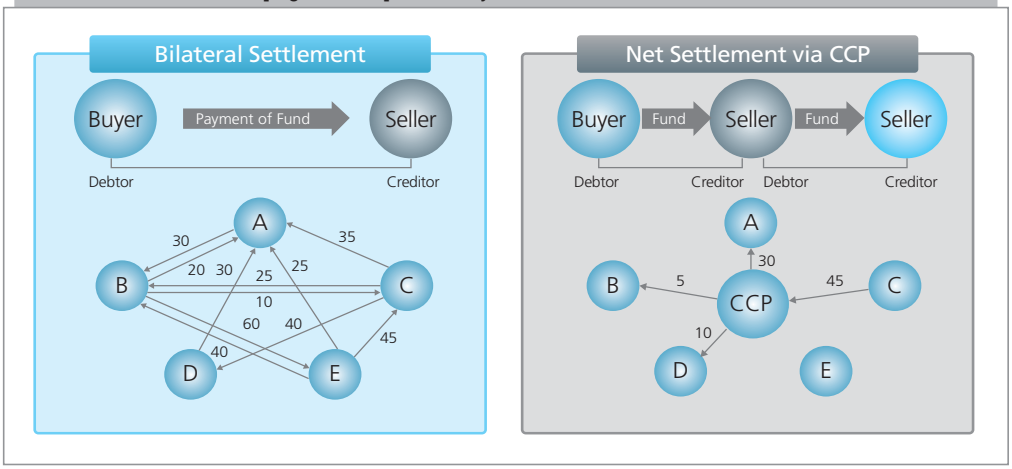
as a CCP, MSCC may be able to provide various services regarding risk management, collateral management and delivery management.

Of course, those advantages may not be significant at the current stage of the Mongolian market where the 100% prefunded transactions are required. Also, in order to bear the costs of counterparty non-performance, CMs need to provide funds to the CCP for a default fund, which is very costly. Also, the CCP framework may create moral hazard and unintended systemic risk (Pirrong 2011). Authorities and MSCC need to acutely aware of the potential for such reverse effects before employing the CCP framework, which causes it to be a long-term project in the Mongolia market.

After the financial crisis of 2007-08, the CCP framework is widely accepted worldwide; DTCC's subsidiary the National Securities Clearing Corporation in U.S.A, LCH.Clearnet and others in Europe (See Panel B of Table 1-10), various CCPs in Asia (see Table 1-8).

[Figure 1-10] shows the efficiency of net settlement via CCP.

[Figure 1-10] Efficiency of Net Settlement via CCP



Source: Revised originally from the PFMI report of KRX (2018).

4.3. Risk Management

Under the 100% pre-funding requirement, settlement failure is little possible and, therefore, any rule and process to manage the settlement failure has not been introduced. However, securities intermediaries may need to be well trained and to invent new practice to manage the credit risk which may significantly arise if the

pre-funded system is migrated to a T+3 settlement cycle. Credit risk include 1) risk of settlement failure by a counterparty, 2) replacement risk that securities price may fluctuated when a counterparty failing settlement attempts to acquire securities, 3) lack of required fund to fulfill the payment obligations by the institutions who are responsible for settlement and clearing.

Several settlement guarantee mechanisms to effectively mitigate the credit risk have been developed in well-developed markets. For example, counterparty risk may be mitigated on the centralization and cost-efficient basis by introducing the CCP system. A CCP reduces the settlement risks by netting offsetting transactions between multiple counterparties, by requiring collateral deposits (also called "margin deposits"), by providing independent valuation of trades and collateral, by monitoring the credit worthiness of the member firms, and in many cases, by providing a guarantee fund that can be used to cover losses that exceed a defaulting member's collateral on deposit.

Another device is to adopt true delivery versus payment (DVP) settlement methods. The current settlement/payment scheme is similar to DVP model 2 based on BIS classification (BIS, 2012)). Securities transfer instructions are settled on a gross basis using the book-entry of each brokers' account in the MCSD, while funds transfer instructions are settled on a net basis by the book-entry of settlement bank's account as well as the MSCC's account in the BOM. However, this structure is not the qualitatively same as the BIS standard, in that funds instructions and securities transfer instructions are settled separately by the different institutions, and clearing member and CCP are not introduced.

Lastly, constructing a settlement guarantee fund and/or credit line with commercial banks can ensure any participant trading securities that their transactions must be settled no matter what happens to their counterparty by absorbing insolvency risk before this risk has an impact on other participants. Guarantee funds are more commonly established in a trading and clearing intermediaries rather than central depositories. In the case of the Korean market, the KRX, effectively acting as a CCP for exchange traded securities, funded at KRW 0.58 trillion as the KRX joint compensation fund and reserves KRW 0.4 trillion as the settlement reserve. The KRX also maintains a line of credit of KRW 3.6 trillion. KSD, acting as a CCP for OTC share trading, maintains a KRW 50 billion as the joint compensation fund and KRW 200 billion in reserve.

4.4. Suggestions on the Business Models of MCSD

According to the current fee structure in the Mongolian capital market, MSE charges 0.2%~0.4% for securities trading and MSCC charges 0.24% for securities

clearing, while MCSD does not charge any fee for its deposit and settlement service. I would recommend that MCSD realize the fee for their services in that securities deposit and settlement are the key services as market infrastructure. Also, charging a reasonable fee is necessary for the institutions to be sustainable in the long-run.

As a central depository, MCSD may be able to provide a wide range of services, most of which are related to dematerialization of deposited securities. Securities lending and borrowing, which is a transaction where an institution holding securities for the long term lends them to another institution which needs to avoid settlement failure or for investment strategies, is the one of good candidates for the extension of service. Other services that MCSD can consider may include securities information management, management of Repo transactions, foreign securities deposit and settlement, electronic voting and proxy, among many others.

For example, MCSD may provide a securities pledging service. Securities pledging is a series of legal acts in which the debtor (pledgor) provides his/her securities to the creditor (pledgee) as collateral after the pledge agreement is made. This service which is being rendered by CSD to market participants is to allow a pledgor/debtor to use securities as collateral or guarantee to borrow funds from a pledgee/creditor (Bank or any Lending Financial Institution). The purpose of using securities as collateral is to motivate the Banks and investors to easily do lending and borrowing guaranteed or backed by securities as a way to deepen transactions or activities in the securities market. [Table 1-9] shows the KSD income from service fees in 2016 and 2017.

〈Table 1-9〉 Various Services and Fees of KSD

(Unit: billions KRW)

Fee Types	2016	2017
Securities Settlement	59.4	53.8
Securities Deposit	38.9	37.8
Securities Lending and Borrowing	28.9	27.0
Fund Settlement	12.1	11.7
Global Affairs	13.9	10.8
Issuance Agency	7.3	7.1
Transfer Agency	6.3	5.8
Electronic Voting and Proxy	3.3	2.7
Information Management	1.1	1.1
Others	22.8	21.7
Total	194.0	179.5

Source: Revised originally from the KSD annual report (2017).

4.5. Corporate Governance of FMIs

Whatever the structure of governance applied in a jurisdiction, the CSD and clearing house systems should adopt and ensure effective implementation of high corporate governance standards or best practices employed by or recommended for firms in the jurisdiction where they operate, as such standards or practices evolve over time. In addition, the CSD and clearing house systems should adopt the governance mechanism adequate to address the interests of customers and the public authorities in the operation of the system.

Principle 2 of the PFMI sets forth governance standards for a PFMI. The principle reads "An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders." That is, FMIs should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations (key consideration 1).

• Ownership Structure

This paper does not provide any specific ownership structure for MSCC and MCSD, while it documents various examples of the governance structure in Asia and European markets.

In Asian markets, NSDL (India) and TSD (Thailand) are organized as for-profit private limited liability firms. KSD is 70% owned by KRX (Korean Exchange) and the other 30% of its shares are widely owned by domestic financial institutions, while CSDCC (China) and TSCD (Taiwan) are wholly owned by the exchange. As units of central banks or entities fully owned by the government, CMU (Hong Kong), RBI (India), BI(Indonesia), BOJ (Japan), BNM (Malaysia), BTR (Philippines), MAS (Singapore), CBC (Taiwan) and BIT (Thailand) are operated on a non-profit basis.[3)]

Major two CSDs which are dominant in the European market have the very different ownership structure. Euroclear is mainly owned by its users and shares are widely distributed to more than a hundred institutions whereas Clearstream is wholly owned by DB. The Central Securities Depositories Regulation allows these models to remain in existence, while requiring that CSDs be governed so that their activities are managed soundly and prudently and that every CSD sets up a user committee tasked with giving opinions on the policies that the CSD adopts on certain issues, such as admission rules for participants and offers of new services. If a CSD does not incur counterparty risk (apart from ancillary banking activities), these measures seem

3) Revised based on Braeckevelt (2006).

sufficient at this stage to ensure that the respective interests of its shareholders and users are not blatantly misaligned.

Among European central depositories, Euronex-CIK (Belgium), CDCR (Cyprus), CSD SA (Greece), Montel Titoli spa (Italy), Interbolsa (Portugal) are partly or wholly owned by the exchange, while OEKB AG (Austria), Euroclear Bank (ICSD), Cearstream Frankfurt (Germany), Clearstream Luxembourg (Luxembourg) are the units of banks or wholly owned by banks. VP A/S (Denmark), KELER (Hungary), CRESTCo (England), VPC (Sweden), IBERCEAR (Spain) are privately owned by the large group or system users.

The ownership of clearing houses in the European market also appears various features in each jurisdiction. LCH. Clearnet. S.A in Belgium, France, Netherlands and England are 90% owned by the exchange and LCH group and the remaining 10% is owned by Euroclear. Wiener Borse (Austria), Clearing Bank Hanover (Germany), FUTOP Clearing are jointly owned by domestic banks, while Helsinki Exchanges (Finland), Euronex Lisbon (Portugal), MEFF (Spain) and Stockholmsborsen AB (Sweden) are owned by large business groups.[4] [Table 1-10] shows the ownership structure of European CSD and CCP.

〈Table 1-10〉 Ownership Structure of European CSD and CCP

Panel A. European CSD

Country	CSD	Type	Ownership Structure
Austria	OeKB AG	Bank	User-owned, with the majority being owned by leading Austrian banks
Belgium	Euroclear Bank International CSD	Bank	Part of the Euroclear Group
	Euronext – CIK	Commercial entity	Exchange-owned, by Euronext Brussels.
Denmark	VP A/S	Non-profit commercial entity	User-owned.
Finland	APK	Commercial entity	Group-owned (OM Hex Group)
France	Euroclear France	Commercial entity	Part of the Euroclear Group
Germany	Clearstream Banking Frankfurt	Bank	Group-owned by the Deutsche Börse Group
Italy	Monte Titoli spa	Commercial entity	Exchange-owned group, owned by the Gruppo Borsa Italiana
Luxembourg	Clearstream Luxembourg	Bank	Group-owned by the Deutsche Börse Group

4) Revised based on Russo, Hart, Malaguti and Papathanassiou (2004).

〈Table 1-10〉 Continued

Country	CSD	Type	Ownership Structure
Netherlands	Euroclear NL	Commercial entity	Part of the Euroclear Group
Spain	IBERCLEAR	Commercial entity	Group-owned by Bolsas y Mercados Españoles (BME)
Sweden	VPC	Commercial entity	VPC is owned 98.6% by the four Nordic banks
United Kingdom	CRESTCo	Commercial entity	Part of the Euroclear Group

Panel B. European CCP

Country	CCP	Type	Ownership Structure
Austria	Wiener Börse	Commercial entity	Austrian banks and other users
Belgium	LCH.Clearnet S.A.,	Bank	Subsidiary of LCH.Clearnet Group Limited owned: 45.1% by exchanges; 45.1% by former members of LCH
Denmark	FUTOP Clearing	Commercial entity	Division of Copenhagen Stock Exchange
Finland	Helsinki Exchanges	Commercial entity	Group-owned by the OM HEX Group
France	LCH.Clearnet S.A	Bank	Subsidiary of LCH.Clearnet Group Limited
Germany	EUREX Clearing AG	Commercial entity	Owned by by Deutsche Börse AG and the Swiss Exchange
	Clearing Bank Hanover	Commercial entity	Three German banks and one Norwegian bank
Italy	CC&G	Commercial entity	Italian Stock Exchange and commercial banks
Netherlands	LCH.Clearnet S.A	Bank	Subsidiary of LCH.Clearnet Group Limited
Spain	MEFF	Commercial entity	division of MEFF Exchange
Sweden	Stockholmsbörsen	Commercial entity	division of OM AB, owned by OM HEX group
United Kingdom	LCH.Clearnet S.A	Bank	Subsidiary of LCH.Clearnet Group Limited

Source: Revised originally from Russo, Malaquti and Papathansassiou (2004).

• Internal Governance Mechanism

Key consideration 2 of Principle 2 : Governance in PFMI considers governance arrangements and disclosure. This consideration reads "An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants and, at a more general level, the public."

Key consideration 3 is about the roles and responsibilities of the board of directors, saying "The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly."

Key consideration 6 is about the roles of BOD on risk management. This consideration reads "The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

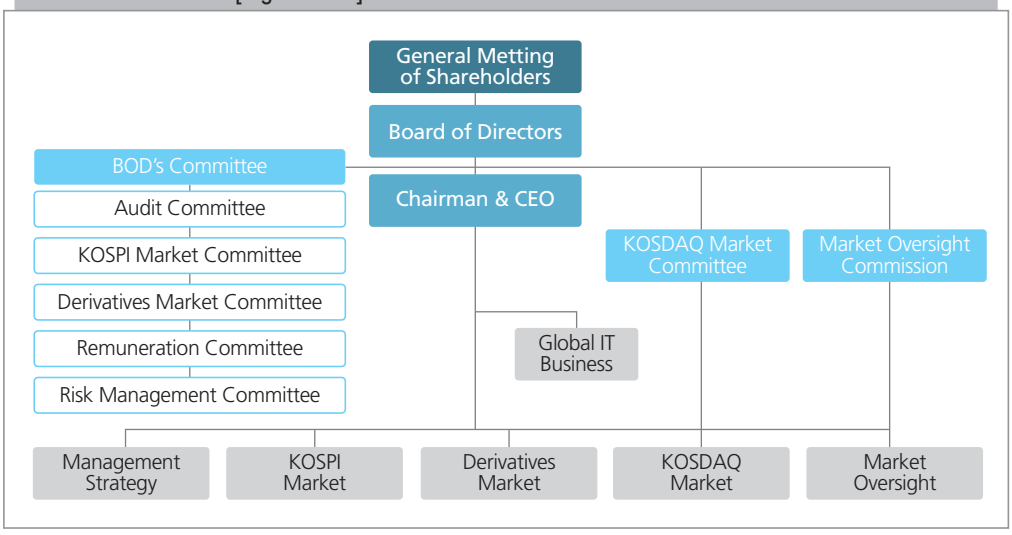
The principle sets forth the ultimate responsibility of a FMI's board to establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, and to ensure that the FMI's design, rules, overall strategy and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Accordingly, a FMI's board should have ultimate responsibility to ensure that the FMI's margin system and stress-testing framework, as key elements of the FMI's overall risk management framework, are designed: (i) to set and to maintain on an ongoing basis the required level of financial resources; (ii) to determine the amount of a FMI's own financial resources and the characteristics of those resources to absorb certain losses; and (iii) to assess and limit the effects of procyclicality. The board should also have ultimate responsibility for establishing a comprehensive disclosure and feedback mechanism for engaging with direct and indirect participants and other relevant stakeholders on the above areas of its risk management.

KRX stipulates the mattes on the governance structure such as the composition of BOD and committees within BOD and qualifications of standing directors and auditor in its Articles of Incorporation (Chapter 9. Board Members and BOD, Chapter 10. Committees within the BOD).

The Risk Management Committee (a committee within BOD) and Risk Management Department are in charge of enterprise-wide risk management business such as preparing management plan by type of risk, setting up and allocation of risk limit, report and control of risk and preparation of BCP in accordance with the Risk Management Committee Operation Regulation and Risk Management Regulation. The Audit Committee (a committee within BOD) and an audit office take up the role of accounting and business audit in accordance with the Audit Committee Operation Regulation, Audit Committee Business Duties Regulation and Internal Control Regulation. In addition, KRX established Clearing and Settlement Risk Management Committee for review and advice on clearing house's risk management system according to the Enforcement Rules on Clearing and Settlement Risk Management Committee Operation.

The committee reviews various systematic adequacy and establishes and verifies various models relating to credit and liquidity risks subject to the clearing house management. CCP Risk Management Team is in charge of settlement risk management including credit risk and liquidity risk. Preparation of important policy, changes of relevant rules and regulations and guidelines, crisis situation identification criteria (stress test), etc. are reported to the Risk Management Team, which is a enterprise-wide risk management team, and important matters related to the CCP risk management system are reported to Risk Management Committee (a committee within BOD). [Figure 1-11] shows the organization and governance structure of the KRX.

[Figure 1-11] Internal Governance Structure of the KRX



Source: Revised originally from the PFMI report of KRX (2018).

4.6. Further Issues

• Legal Settlement Finality

Settlement finality is the legally defined moment at which the transfer of an asset or financial instrument, or the discharge of an obligation, is irrevocable and unconditional and not susceptible to being unwound following the bankruptcy or insolvency of a participant.

An arrangement's legal basis consists of a legal framework that includes general laws and regulations governing property, contracts and liability, among other things. It also includes the arrangement's rules, procedures and contracts. There are certain legal issues, such as proprietary rights and settlement finality that should be articulated clearly by the arrangement, understood by participants and supported by applicable law. For example, the legal basis regarding the ownership or transfer of assets or the rights and obligations of the relevant parties may not always be clear. An arrangement typically attempts to use standardized rules or contracts to define rights, obligations and processes. In such cases, it is important to consider the soundness of these legal arrangements and their enforceability. This can be further complicated by transactions that take place across borders or in multiple jurisdictions, in which case the law underpinning the activity would need to be confirmed or adopted in multiple jurisdictions in ways that are mutually compatible. That is, it is necessary that settlement finality be a clear and well-defined point in time, backed by a strong legal basis in order to attract more foreign investors to the Mongolian capital market.

• Intraday Liquidity Supply

If the payment system is networked after transactions are settled and one of the participating financial institutions fails to pay settlement funds to other financial institutions due to temporary shortage of funds or system error, the entire payment system in the capital market can be in confusion. To prevent this, the Bank of Mongolia as a central bank may provide the means of liquidity supply throughout the day with financial institutions that temporarily lack settlement funds during the day. This enables the settlement of funds between financial institutions to be carried out safely and smoothly. Specifically, a central bank may provide daily over-the-counter collateral loans to settlement banks that are participating in the Mongolian banking network on the assumption that they will be repaid on the same day. Further, non-bank participating institutions such as securities company and the Mongolian Stock Exchange may use this intraday liquidity supply from BOM.

• Establishment and Operation of a Clearing Settlement Infrastructure Operation Council

The clearing and settlement infrastructure in the securities market is carried out via an inter-institution collaboration by a central bank, stock exchanges, clearing houses, depository and settlement firms, and IT firms. In order to improve the efficiency of the clearing and settlement services and to manage relevant risks in the more effective way, it is recommended to form a council to organically cooperate and share information among the operating institutions. In the case of Korea, this council has been organized by BOK since 2012, in which KRX, KSD, KFTC (Korea Financial Telecommunications and Clearing Institute) and other related institutions participate. In this council, participants share information on clearing & settlement trends and discuss global issues and the way to improve the system on a regular basis twice a year.

• Ensuring Stability of IT System

One of the most important agenda of the Mongolian capital market clearing settlement infrastructure is to switch from the current pre-funding scheme to DVP. In order to introduce and vitalize the DVP system, it is required to secure sophisticated construction and stable operation of the IT system where securities transactions and money transfer are settled simultaneously. In the current Mongolian capital market, securities transactions are managed via the MIT (Millennium) system while E-Clearing is utilized to execute cash clearing and MSCC manually transfers the transaction data between these two systems, which is not adequate for DVP. Therefore, before moving to DVP, it is necessary to implement the integrated system that can settle and clear securities and cash transactions simultaneously and can guarantee safety, efficiency, inter-connectedness and scalability of the transaction process.

5. Summary

The main objective of this chapter is to review the Mongolian FMI and provide policy implications based on benchmarking the evolution of FMIs in Korean and some other developed markets. Even though the PFMI requires each FMIs to maintain global standard system of the securities payment and settlement operation, specific application may vary depending on the characteristics of the capital market in each jurisdiction. Accordingly, the research first analyzes the characteristics and potential challenges of the Mongolian FMI. Then, based on experiences of evolution in Korea and other developed markets, the author provides the suggestions regarding policy and operation to improve the FMI of the Mongolian market.

The paper provides five implications for the FMI development policy in Mongolia. I emphasize that how to create the investor-friendly, operational efficient, cost-effective, risk minimizing system must be key concerns in defining the role of FMIs. The examples of the roles of FMIs in several Asian markets are presented for the benchmarking purpose.

The paper also suggests that MSCC as a clearing house introduces the CCP framework where MSCC acts as a buyer (or seller) to selling (or buying) brokers. Doing so may minimize the counterparty credit risk by netting offsetting transactions between multiple counterparties as well as maximize operational efficiency.

Newly introducing a T+2/3 settlement scheme will create credit risk in securities settlement. The paper proposes several tools to minimize the risk of settlement failure. These include introducing the CCP system, adopting DVP settlement method and maintaining a settlement guarantee fund and credit line with commercial banks.

The paper also discusses the possible business model of MCSD which is not charging any fee for its current service. MCSD may be able to develop a wide range of services based on dematerialization of their deposited securities. The examples may include securities lending and borrowing, securities information management, securities pledging service, among many others.

Given that the standards or practices of good corporate governance evolve over time, the paper emphasizes that FMIs should adopt the governance mechanism adequate to address the interests of system users as well as the public authorities. I introduce the principles regarding governance standards in the PFMI and show a various governance structure of Asian and European FMIs. As long as internal governance mechanism is concerned, governance arrangements must be documented to provide clear lines of responsibility and accountability. The roles and responsibilities of BOD must be clearly specified, too, and be focused on risk management.

Lastly, settlement finality must be legally protected and enforced. That is, it is necessary that settlement finality be a clear and well-defined point in time, backed by a strong legal basis in order to attract more foreign investors to the Mongolian capital market. In addition, an intraday liquidity supply by a central bank is necessary to prevent the situation that the entire payment system is in confusion due to temporary shortage of funds or system error of one or more participating institutions.

Newly constructing and maintaining financial market infrastructure is always costly and time-consuming because of its intensity. For this reason, an investment on

FMIs need to be accompanied by its need in the capital market. This may let policy makers find it useful to separate planning into short-term and long-term framework. Among several suggestions that this paper provides, 4.1 (Defining the roles of MCSD and MSCC), 4.4 (Business models of MCSD) and 4.6 (Futher issues) may be located on the short-term strategy, while 4.2 (Developing the CCP framework), 4.3 (Risk management) and 4.5 (Corporate governance of FMIs) would be included in the long-term strategy to improve the Mongolian FMIs.

Again, a large amount of investment in FMIs is valuable in the environment of the sufficiently active markets that have the heavy volume of transactions, various type of financial instruments, and large domestic and foreign institutional investors. Therefore, one may argue that a discussion and research on making active financial markets, which of course has been widely discussed and analyzed in Mongolia, must be preceded before developing FMI improvement issues. It is also important how those two issues should be interconnected, which I leave for future research.

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Chapter 2

Exploring the Feasibility of Risk-Based Supervisory Framework in Mongolia: Non-Bank Deposit Taking Institutions

Exploring the Feasibility of Risk-Based Supervisory Framework in Mongolia: Non-Bank Deposit Taking Institutions

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Summary

The purpose of this chapter is to make policy recommendations to the Financial Regulatory Commission (FRC) of Mongolia on establishing risk-based regulatory framework for non-bank deposit taking institutions (NBDIs), particularly savings and credit cooperatives (SCCs) in Mongolia. Risk-based supervision is of particular importance for deposit taking institutions since they are by nature especially vulnerable to external shocks and depositor protection is the paramount interest from the perspectives of financial regulators. Moreover, the FRC chose the microfinance sector along with banking and insurance sectors as one of the three cornerstones in financial market in the document titled "Comprehensive National Strategy for Financial Market Development". Obviously, SCCs are the most important constituents in Mongolian microfinance sector. Therefore, introducing risk-based supervisory framework for SCCs can be regarded as an important task the Mongolian government pursues to achieve national strategy for development of financial markets.

The Basel Committee on Banking Supervision defines risk-based supervision (RBS) as "a forward-looking approach where the supervisor assesses the various business areas of the [financial institution], and the associated quality of management and internal controls to identify the areas of greatest risk and concern". In other words,

Keywords: Risk based supervision, Non-bank deposit taking institutions, Credit union, Financial supervision, Risk management

RBS is a supervisory approach designed to work as a structured process that identifies the most critical risk factors faced by an individual financial institutions. RBS is a dynamic process where understanding and anticipation of risk factors a financial institution may confront during the course of its business activities. RBS is different from the traditional supervisory approach in that the former is more focused on principle while the latter relies on rules supervised institution must observe such as various prudential ratios. Forward looking nature of RBS requires supervisors to start with the business strategy or plan of the supervised institution rather than focusing on a limited number of risk factors that are subject of the rules the supervisory authority established such as credit, liquidity, and market risks. The top-down approach of RBS focuses on comprehensive examination of a financial institution under review. It documents and tests the adequacy and appropriateness of policies, procedures, systems, and management practices of the institution under review. Rather than case-by-case scrutiny of individual transaction, top-down approach utilize transaction review to test the compliance of stated policies, procedures, systems, and practices with the supervisory requirements.

In general, RBS is executed in several steps. The starting point for RBS is developing an understanding of the institution, its management, and business practices of the institution under review. Next step is for examiners to develop a supervisory plan that is up-to-date and reflecting size, structural complexity, and risk profile of the institution under review. The third stage is to make sure that procedures of examination should be tailored to the distinct characteristics of each institution such as size, complexity, and risk profile. On-site examination is conducted following the schedule and procedures in the scope memorandum drafted in the previous stage. It is important in examination procedure to develop the framework to access the ability of management to identify, measure, monitor, and control risks. Finally, follow-up and monitoring activities are conducted to provide the follow-up service for implementation of the orders and recommendations the supervisory authority made during and after examination.

290 SCCs are currently offering the core banking services, deposits and loans, in Mongolia. Total number of the SCCs' members are 55,624, 67.9 percent of which are borrowers and 52.5 percent depositors. About 90 percent of the total SCCs' have retained earnings from the members, but remaining 10 percent have no accumulation of retained earnings as capital base. Total assets of the SCCs amount to MNT 153.1 billion and total deposits of MNT 99.3 billion in 2017. About 97 percent of the total deposits were time deposits, remaining 3 percent were demand deposits. Three SCCs with deposits more than MNT 10 billion account for 62.0 percent of total deposits held by SCCs. Total loans of the SCCs have reached to MNT 105.2 billion in 2017, up by 26.1 percent from 2016,. Non-performing loans amounted MNT 4.5 billion, which are 4.2 percent of the total loan portfolio. The FRC regulate and

supervise SCCs in Mongolia. Savings and credit cooperatives law of 2014 provides the legal foundation for regulatory and supervisory decision and actions taken by the FRC. In 2017, 29 on-site examinations were conducted by the FRC that has only 6 inspectors to examine SCCs.

There are various non-bank deposit taking institutions (NBDIs) in Korea; savings banks, credit unions, and four separate cooperatives. NBDIs serve customers, individuals and small size self-employed, with lower credit grades charging higher interest rates than commercial banks. There are 898 credit unions currently in operation with total assets worth KRW 82 trillion in 2017. In addition, there are 2,678 cooperatives with total assets worth KRW 511 trillion at the end of the same year. In Korea the Financial Services Commission (FSC) is the ultimate bearer of the responsibility of regulating credit unions in Korea but delegates most supervisory authorities to the Financial Supervisory Service (FSS). The FSC retains the authority to license a new credit union and order prompt corrective actions to credit unions under financial stress. There are too many credit unions that with limited resources it is impossible for the FSS to handle the supervisory duties on credit unions. The Credit Union Act allows the FSC to delegate some of their authorities on credit unions to the National Federation of the Credit Unions (NFCU). The NFCU conducts supervision and inspection on credit unions and reports the results to the FSS and the FSC. The FSS can inspect and examine credit unions if necessary.

Community Credit Cooperatives are licensed and regulated by the Ministry of the Interior and Safety, Agricultural and Forestry cooperatives by the Ministry of Agriculture, Food, and Rural Affairs (MAFRA), Fisheries Cooperatives by the Ministry of Oceans and Fisheries (MOF). However, like the FSC, MAFRA and MOF delegated their supervisory authorities to the FSS. While MAFRA does not delegate its supervisory authority to the FSS, the Ministry participates in a consultative group formed by the government ministries that are responsible for regulation and supervision of cooperative financial institutions and cooperate with other regulatory authorities to harmonize and coordinate regulatory policies.

For the present, considering the current state of market development, the implementation of full-scale risk-based regulation is not practical for SCCs in Mongolia. A step-by-step approach would be fruitful for developing countries with insufficient supervisory resources.

Three policy recommendations are made to the FRC in establishing risk-based supervisory framework for SCCs. First, a strong legal foundation for SCCs and supervisory framework should be establish. The legal foundation should be strengthened based on the principle of prudentiality, proportionality and predictability to secure strong supervisory framework for SCCs. Prudential legislation

establishes financial standards to which an SCC must adhere to protect the financial health of the institution and safeguard member deposits. Proportional legislation recognizes the risks an SCC presents to depositors and the financial system as a whole and establishes appropriate rules to mitigate those risks. Predictable legislation provides an SCC the clarity and certainty it needs to plan and invest for the future. The current state of legal framework for SCCs in Mongolia should be re-examined based on the three principles previously mentioned and be reshuffled to enhance the coherence with international best practices in regulation of credit unions and cooperatives. As a practical reference, one can consult a model law for credit unions proposed by the World Council of Credit Unions (WOCCU) in 2015, which is also applicable to SCCs.

Second, as of 2017, there are 290 SCCs in Mongolia but the supervisory resources in terms of both financial and human resources in FRC is severely limited. It is virtually impractical to expect the FRC to fulfill its responsibility of supervising SCCs in a complete manner. The model of delegated supervision may provide the FRC with a practical solution to the problem it is facing in supervising SCCs. Unfortunately, the national association of SCCs does not currently exist in Mongolia that the FRC should find an appropriate candidate for delegation of its supervisory power. An option the FRC can take is to promote the establishment of the national association of SCCs and delegate at least part of its supervisory power to the national association.

Third, it is needless to say that SCCs examiners should to be well-trained and be equipped with adequate and sufficient tools and power. They must have a reporting and monitoring system enabling them to conduct off-site examination as well as on-site field examination to identify problems and take necessary measures to correct problems.

The department responsible for supervision of SCCs in the FRC is significantly under-staffed. It is necessary to increase the size of supervisory staffs and to put more resources into capacity building of its staff members thorough education and training. International corporation is a possible venue through which the FRC find resources necessary for capacity building of the supervisory body. The FSS of Korea offers an on-the-job training program for staff members of financial regulators in developing countries. In addition, Korea National Federation of Credit Unions and Korea National Federation of Community Credit Cooperatives offer customized education and training programs to staff members of nation association of credit unions or cooperatives from developing countries.

1. Introduction

After years of accumulating pressure from huge budget deficits and depletion of foreign exchange reserves, Mongolia was at the verge of a financial crisis in 2016. The government of Mongolia responded by launching the Economic Recovery Plan in 2017, significantly supported by a rescue loan from the International Monetary Fund. The plan was successful in stabilizing the economy thanks to strong policy efforts and better external environment. Once the turbulence in financial markets subsided, the Mongolian government took a strong initiative to fortify the resiliency of financial sector and improve efficiency and effectiveness of financial regulatory framework. A comprehensive review on capital adequacy in the banking system are conducted and the government is strongly committed to take actions necessary to remedy deficiencies including recapitalization. The authorities have also taken a series of measures to enhance effectiveness and efficiency of financial regulatory and supervisory framework. Banking law was updated to modernize financial safety net such as early intervention facility and bank resolution procedure. In addition, risk-based supervisory approach to banking supervision was introduced by the banking regulator, the Bank of Mongolia.

This chapter is the result of joint effort by Korean and Mongolian experts engaging in research project initiated by the commission of the Governments of the Republic of Korea and Mongolia under the Knowledge Sharing Partnership (KSP) Program. The purpose of the project is to make policy recommendations to the Financial Regulatory Commission (FRC) of Mongolia on establishing risk-based regulatory framework for non-bank deposit taking institutions (NBDIs) in Mongolia. The topic was selected thorough a long and deliberate communications between the FRC and the Ministry of Economy and Finance of Korea that is responsible for administering the KSP program. As the first step in selecting research topic for this year's KSP program between Mongolia and Korea, the FRC suggested the topic of establishing risk-based supervisory framework for financial institutions under the jurisdiction of the FRC. After examining the institutional arrangement of financial supervisory system in Mongolia, the researcher from Korean side suggested that the research topic should be narrowed down by focusing on NBDIs, savings and credit cooperatives (SCCs) in particular. Risk-based supervision is of particular importance for deposit taking institutions since they are by nature especially vulnerable to external shocks and depositor protection is the paramount interest from the perspectives of financial regulators. Moreover, the FRC (2016) in the Comprehensive National Strategy for Financial Market Development chose the microfinance sector along with banking and insurance sectors as one of the three cornerstones in financial market. It goes without saying that SCCs are the most important constituents in Mongolian microfinance sector. Therefore, introducing risk-based supervisory framework for SCCs can be regarded as an important task the Mongolian government pursues to

achieve national strategy for development of financial markets.

We make policy recommendations on three important issues the Mongolian government should pay attention to in introducing risk-based supervisory scheme for SCCs; establish a firm legal foundation for risk-based supervision, build an effective regulatory structure, and develop capability of supervisors.

2. Risk-Based Supervision

2.1. Risk-Based Supervision

Financial supervisory authorities are undertaking prudential supervision to promote the maintenance of efficient, fair, safe, and stable financial institutions, especially deposit taking institutions (DTIs), for the benefit and protection of customers. An effective supervisory authority is able to require DTIs to take timely preventive and corrective measures if they fail to operate in a manner consistent with sound business practices or regulatory requirements. A simple method of fulfilling the objective is to make DTIs hold assets with as little risk as possible, but it would be a foolish approach that is self-defeating in the sense that the fundamental reason for existence of financial system is to facilitate financial intermediation by providing financing services as extensive as possible. The other extreme is to let DTIs do whatever they want without imposing any external regulation or supervision. This may allow DTIs to serve as many as customers possible. However, this option is not viable in the long run for the reasons we discussed in the last section. Therefore, an important task of supervisory authorities is to design a supervisory framework that can a delicate balance between the two tendencies.

Traditionally, supervisory authorities have performed this role by way of rule-based supervision[1)]. Under this style of supervision, DTIs must comply with a set of prudential rules generally written into the law or the subordinate legislation. The role of the supervisory authority is to ensure that DTIs do comply with these rules. In recent years, supervision has been evolving and moving away from rule-based toward the risk-based one. According to Basel Committee on Banking Supervision (2012), risk-based supervision (RBS) is defined as "a forward-looking approach where the supervisor assesses the various business areas of the [financial institution], and the associated quality of management and internal controls to identify the areas of greatest risk and concern". In other words, RBS is a supervisory approach designed to work as a structured process that identifies the most critical risk factors faced by an individual DTI. It covers assessment of an individual DTI's management of those

1) The approach is also called compliance-based supervision.

risks along with its financial vulnerability to potential adverse experiences through a focused review by the supervisor. In addition, RBS is a forward looking process with a focus on evaluating future as well as present risks, identifying problems in an early stage and facilitating prompt intervention and early corrective actions.

The characteristic features of RBS approach can be illustrated effectively by comparing it with the traditional rule-based supervision. First, under the traditional rule-based approach, supervisory activities focus on the financial situation of a supervised entity at a given point in time. On the contrary, RBS is a dynamic process where understanding and anticipation of risk factors a financial institution may confront during the course of its business activities. For example, in considering a business plan of DTI's to introduce a new product, the supervisor with RBS principle would focus on effect of the plan on the DTI's capital if the initiative were unsuccessful or too successful. The traditional rule-based approach focuses more on whether the DTI have enough capital and follows the rules that are sufficient to ensure the objectives of supervision are met. In a sense, RBS can be thought to be more preventive than curative. Second, there is a difference in flexibility supervisors can command. While the supervisors are more focused on principle under RBS, the traditional approach relies on rules DTIs must observe. Constant changes in market environment surrounding DTIs require supervisory authority with the traditional approach to revise the rules frequently to accommodate new situation, which, in general, is costly and time consuming. Third, the rule-based supervision focuses on a limited number of risk factors that are subject of the rules the supervisory authority established such as credit, liquidity, and market risks. However, forward looking nature of RBS requires supervisors to start with the business strategy or plan of DTIs. In order to understand business strategy, the supervisor should consider a wide range of risk factors including risk factors inherent in the strategy as well as the ones examined under the traditional approaches. RBS also takes into consideration risks that are external to the individual DTIs. In examining individual DTI's business strategy, supervisors need to understand the economy, loan market and the activities of competitors and the risks arising from these factors, which are, in general, not considered in rule-based supervision that focuses not on individual DTIs but on the industry consisting of DTIs. Fourth, traditional rule-based supervision takes bottom-up approach while RBS is based on top-down one. Under the traditional regime, the same procedures and standards are applied and examination are closely tied to accounting and audit information. The primary focus is to verify the accuracy of financial statements and the adequacy of internal control system that is primarily designed to prevent fraud. Transaction review is the most important job to be done by examiners and risks and issues are quantified based on the results of the review. This approach may be very useful in determining the current condition and quantifying the degree of current risk level of a DTI but cast little insight into future prospects of the supervised institution. One the other hand, the top-down approach

of RBS focuses on comprehensive examination of a DTI under review. It documents and tests the adequacy and appropriateness of policies, procedures, systems, and management practices of a DTI. Rather than case-by-case scrutiny of individual transaction, top-down approach utilize transaction review to test the compliance of stated policies, procedures, systems, and practices with the supervisory requirements.

Risk-based supervision requires a greater understanding of the supervised institutions and the environment in which they operate. It requires comprehensive understanding of the risk profile of the institution under examination to identify areas that merit particular attention of the supervisor as well as the management. It also requires fairly complete knowledge on the nature of risks a DTI is facing, together with the ability of the management to deal with internal and external risks. In sum, at the heart of risk-based supervision is to evaluate how well financial institutions manage risks.

We do not suggest to replace traditional supervision with RBS in all instances. There are appropriate places for each approach. When the supervisor is dealing with an institution that is thought to have serious and legitimate concerns on its solvency, quantification of risks adopted by rule-based approach can provide a quick and useful information on the current degree of the problem. The need to quantify risk factors and problems increases as the condition of a financial institution worsens. Under normal circumstances where prudentiality or solvency of a financial institution is not an immediate or even a remote issue, RBS is a more efficient and effective way of conducting supervision. A financial institution is evaluated by asking whether the institution is equipped with a system that can handle risk factors it faces or is expected to and minimize the adverse consequences of risk-taking. Assuring the competence of management team and the integrity of the risk management system is the ultimate goal of RBS.

2.2. Development of Risk-Based Supervision

During the last three decades important advances have occurred in supervision of DTIs. Three of them are worthy of our discussion; the Basel Accord, the Core Principles for Effective Banking Supervision, and CAMELS rating system.

2.2.1. The Basle Accords

The Basel Accord was first promulgated in September 1997 by the Basle Committee on Banking Supervision commissioned by the Bank for International Settlements in Basel, Switzerland. It provides a more consistent approach to capital adequacy requirements for DTIs, especially large commercial banks involved in international transactions, by introducing a uniform set of international standards.

The accord was revised twice in 2004 and 2011 to accommodate more sophisticated risk management framework.

The Basel Accords of July 1988 (Basel I) and subsequent amendments set out internationally agreed on standards for determining capital adequacy of banking institutions. It classifies various assets and off-balance sheet activities into several different categories according to the level of credit risk and assigns risk weights correspondingly. Then all weighted assets and of-balance sheet activities are aggregated to yield risk weighted assets. Next, Basel I classified the items on the right hand side of balance sheet into those that can be regarded as capital and those that cannot be. Finally, the capital adequacy ratio is calculated by comparing risk weighted assets and capital and the minimum acceptable capital adequacy ratio of 8% is set for international standard. Prior to Basel I, when regulators required banks to decrease the leverage ratio for prudential reasons, many banks, in most instances, responded by reducing highly liquid, high quality, and low yielding assets on their books. That improved the capital ratio but did not reduce the risks included in the assets banks hold but had an adverse effect on liquidity. Banks also sought to improve their leverage ratios by selling risky assets and engaging in risky activities that did not appear on their books. By assigning different risk weights to assets, Basel I removed the disincentive to carry large amount of highly liquid, high quality assets on the books so that liquidity can be improved without adding stress to the capital base.

Basel I was replaced with Basel II initially in 2004 as the international banking standards that specifies how much capital banks were required to hold to guard against credit risk, operational risk, and market risk contained in assets they hold. The fundamental presumption of RBS is to ensure that the more significant the risk a bank is exposed to, the greater the amount of the capital the bank should hold to secure solvency and stability. Both Basel I and Basel II attempted to achieve the objective by establishing a standard framework for risk measurement and capital requirement. The risk factors neglected in Basel I, market risk and operational risk, were covered by Basel II to offer more comprehensive tools. Basel II emphasized "three pillars" for capital regulation; minimum capital requirements, supervisory review, and market discipline. The first pillar, minimum capital requirements, is the centerpiece of Basel II and deals with maintenance of minimum amount of regulatory capital that are thought to be adequate to absorb the shocks from three major risk factors banks may face; credit risk, operational risk, and market risk. The regulatory capital to safeguard credit risk can be calculated in three ways with different levels of sophistication in calculating required amount of capital; standardized approach, foundation internal rating-based approach, and advanced internal rating-based approach. For operational risk, banks can choose an option from three alternatives; basic indicator approach, standardized approach, and internal measurement

approach. As for market risk, the preferred method of risk measurement is VaR (value at risk). Banks are allowed to choose the methodology to measure risks and develop their own models reflecting specific risk environments they face.

Basel III was developed in response to deficiencies in banking regulation revealed by the global financial crisis of 2007-08. The main objective of Basel III was to strengthen bank capital requirements and mitigate the risk of a bank run by introducing requirements on liquid asset holdings and funding stability. In addition to capital adequacy ratio required by Basel II, Basle III requires banks to hold 4.5%of risk weighted assets in the form of common equity. In 2015, the ratio has increased to 6% consisting of 4.5% of common tier 1 capital and 1.5% of additional tier 1 capital. From 2019 onward, Basel III will introduce two additional components of capital buffers; a mandatory capital conservation buffer equivalent to 2.5% of risk-weighted assets and a discretionary counter-cyclical buffer. Basel III also allows national regulators to require up to an additional 2.5% of capital during period of high credit growth. In addition to stronger capital requirements, Basel III imposed a new regulation to ask banks to maintain 3% of minimum leverage ratio. The ratio is calculated by dividing tier 1 capital with non-risk weighted average total consolidated assets[2]. Basel III introduced two additional requirements for liquidity ratios; liquidity coverage ratio and net stable funding ratio. The liquidity ratio regulation requires banks to hold sufficiently liquid assets of high quality to cover total net cash outflow over at least 30 days. It is the ratio between high quality liquid assets and total net cash outflow over 30 days and should be maintained over 100%. The net stable funding ratio is required to make sure that the available amount of stable funding exceeds the required amount over an extended period of stress, typically at least a year.

2.2.2. The Core Principles for Effective Banking Supervision

The Core Principles for Effective Banking Supervision, first proposed in 2006 by the Bank for International Settlement and revised in 2012, established the minimum standards necessary for effective supervision of DTIs, especially banks. The Core Principles in 2006 comprised 25 basic principles that should be in place for effective banking supervision and the revised version of 2012 included 4 additional core principles.[3] Principles 14, 15, 19, and 21 in 2012 version are closely related to risk-based regulation.

- Principle 14 (Corporate governance) The supervisor determines that banks

2) The approach is also called compliance-based supervision.

3) The first principle (objectives, independence, powers, transparency and cooperation) in 2006 version was divided into four different principles (Principles 1, 2, 3, and 4) in 2012 version. A new principle (Principle 14) on corporate governance of banking institutions was also added in 2012.

and banking groups have robust corporate governance policies and processes covering, for example, strategic direction, group and organizational structure, control environment, responsibilities of the banks' Boards and senior management, and compensation. These policies and processes are commensurate with the risk profile and systemic importance of the bank.

- Principle 15 (Risk management process) The supervisor determines that banks have a comprehensive risk management process (including effective Board and senior management oversight) to identify, measure, evaluate, monitor, report and control or mitigate all material risks on a timely basis and to assess the adequacy of their capital and liquidity in relation to their risk profile and market and macroeconomic conditions. This extends to development and review of contingency arrangements (including robust and credible recovery plans where warranted) that take into account the specific circumstances of the bank. The risk management process is commensurate with the risk profile and systemic importance of the bank.
- Principle 19 (Concentration risk and large exposure limits) The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate concentrations of risk on a timely basis. Supervisors set prudential limits to restrict bank exposures to single counterparties or groups of connected counterparties.
- Principle 21 (Country and transfer risks) The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate country risk and transfer risk in their international lending and investment activities on a timely basis.

2.2.3. CAMELS Rating System

CAMELS rating system is a supervisory tool originally developed in the U.S. to classify banking institutions according to overall condition and its application has been extended to other kinds of financial institutions and countries outside the U.S. CAMELS is an acronym of six components of bank's condition that are assessed; capital adequacy, assets, management capability, earnings, liquidity, sensitivity to market risk. The ratings are assigned to each components in addition to the overall financial and operational condition of banks. The ratings are assigned on a scale from 1 (best) to 5 (worst). In general, banks with composite ratings of 1 or 2 are considered to be of little concern to supervisory authority, while banks with ratings of 3 and higher present moderate to extreme degrees of supervisory concern.

Academic studies show that supervisory information, as summarized by CAMELS ratings, is useful in predicting bank failure. Barker and Holdsworth (1993) show that CAMEL[4] ratings are powerful predictors of bank failure controlling for a wide range

4) "S" in CAMELS was introduce in 1997. The empirical studies discussed in this chapter employed data on

of information[5] that are thought to be relevant for bank performance. On the other hand, Cole and Gunther (1998) find that a statistical model employing only financial data available from public source performs better in predicting bank failure than past CAMEL ratings. Hirtle and Lopez (1999) examine the usefulness of past CAMEL ratings in assessing banks' current conditions. Conditional on currently available public information, the information contained in past CAMEL ratings provides additional information on current conditions of banks.

CAMELS, in itself, is not associated with RBS and ratings are assigned utilizing more traditional approaches rather than risk-based approaches. However, it is also difficult to assign ratings, component or composite, without taking into consideration the fundamental spirit of risk-based supervision.

2.3. Procedures of Risk-Based Supervision

2.3.1. Understanding the Institution

The starting point for RBS is developing an understanding of the institution, its management, and business practices. This step is critical to tailoring the supervisory strategy to meet the characteristics of each DTI and adjusting that strategy on an on-going basis as circumstances change. Given the fast pace of technological and market development in recent years, it is very important to keep abreast of the up-to-date condition in the DTI's risk profile and to make necessary modification of supervisory strategy. Therefore, institutional overview of a DTI should be updated and submitted to the supervisor on a regular basis. The overview report should provide a summary on the structure, financial condition, and current and prospective risk profile of the DTI. Furthermore, it should also contain information on the ownership, branch network, staffing, corporate governance system, business profile and strategy, risk and challenges facing the institution, and past regulatory and any other ratings.

2.3.2. Planning and Scheduling Supervisory Activities

Next step in RBS is for examiners to develop a supervisory plan that is up-to-date and reflecting size, structural complexity, and risk profile of a DTI under review. In general, a supervisory plan is developed annually and reviewed on regular bases to accommodate changing environment and risk profile. A supervisory plan offers a bridge between supervisory concerns identified through risk assessment and the supervisory activities that need to be conducted to deal with the concerns. The plan

pre-1997 era that we use the term CAMEL instead of CAMLES here.

5) A bank's CAMELS rating is known only to the bank's senior management and the appropriate staff of the supervisory authority. Therefore, CAMELS ratings are not public information observed by econometrician or ordinary market participants.

should provide a clear schedule for off-site and on-site supervisory activities that are planned to be undertaken during a given supervisory period. To be effective, supervisory plans should explain the tools of supervision to be employed, define the scope and timing of supervisory activities, and identify resources required for supervisory activities.

2.3.3. Defining Examination Activities

Procedures of examination, whether it is full-scope or targeted examination, should be tailored to the distinct characteristics of each institution such as size, complexity, and risk profile. It is important in this stage to develop the framework to access the ability of management to identify, measure, monitor, control, and mitigate risks. Examination activities should go as far as the regulatory authority can determine whether the management of the institution is well equipped with the ability to understand, monitor, control or mitigate the risk profile the supervised institution faces.

The supervisory authority should provide the DTI under review with the memorandum that is one of the most important documents in RBS. It identifies the key objectives and the scope of the on-site examination. The focus of on-site examination activities should be oriented to a top-down approach including an assessment on the internal risk management systems and the expected level of transaction testing. Although the focus of the examination is on the institution's processes rather than on transaction records, a certain level of transaction testing and asset review are necessary to verify the integrity of internal systems.

The memorandum should, in general, include scope and objectives of the examination, summary of institution's risk profile and any changes to the institutional overview after incorporating information from preliminary review on-site and off-site information, summary of pre-examination meeting, summary of audit review, examination focus and procedures, and resource planning of supervisory staff.

2.3.4. On-site Examination

On-site examination is conducted following the schedule and procedures in the scope memorandum drafted in the previous stage. The procedure should be designed to assist examiners to determine the condition and risk profile of a bank, to identify areas in need of corrective actions and to monitor on-going activities of the institution under examination.

Examiners may use different procedures depending on the risk profile of the institution under examination. For instance, a light intensity examination procedure

can be employed to conduct reviews for low risk areas determining whether any significant changes have occurred in activities, the risk profile, management, or the financial condition of the institution under examination. On the other hand, a standard, or high intensity examination procedure may be selected to review areas of significant activities with high risks.

2.3.5. Follow-up and Monitoring

Follow-up and monitoring activities are conducted to provide the follow-up service for implementation of the orders and recommendations the supervisory authority made during and after examination. The relationship officer in charge of examination of a DTI should ensure that quarterly status of implementation reports from examined institutions are timely submitted to the supervisory authority. Further, the relationship officer should maintain the list of issues that should be followed up with the management of the institution under review.

2.4. Elements of Successful RBS

2.4.1. Legal Foundation

The central tenet of RBS is that supervisors should play a crucial role in ensuring that DTIs have adequate level of capital in place corresponding to the institutions' risks. Where a supervisor is not satisfied that the level of capital that a DTI holds, the supervisory authority should be endowed with the legal power to force the institution to increase its capital stock to the level that can satisfy the regulatory requirements. Additionally, the authority should be given, by law, the powers to intervene with DTIs to correct problems found during supervisory procedures.

2.4.2. The Structure of Supervisory Authority

Risk assessment is a subjective process in that the result is inevitably influenced by individual attitude to risk. A risk averse supervisor is likely to cast a harsh verdict on the states of a DTI under review than less risk averse ones to reduce the possibility of failing to identifying serous risk factors. As discussed above, one of the advantage of RBS over traditional supervisory approach is the possibility of comparing DTIs across time and industry. RBS makes it possible for the supervisors to compare the risk profile of a DTI with that of another DTI in the same industry and thanks to the dynamic nature of RBS, it is also possible for the supervisor to compare risk profile of a DTI at different points in time. The structure of supervisory authorities should be organized in such a way that can exploit these advantages of RBS. The most important principle that should be followed in designing organization structure of supervisory authorities is to assign the responsibility of supervising individual DTIs

to supervisors under the management of a person who oversees all DTIs and signs off on each risk and control assessment. The scheme has an additional advantage of having individual supervisors acquire more in-depth knowledge on DTIs for which they are responsible.

2.4.3. Capacity Building for Supervisors

Supervisory authorities should pay particular attention to capacity building for its members. Continuous training opportunities should be offered to supervisors. It is very helpful to provide guidance through supervisory manuals that suggest examples of good practice responding to problems supervisors frequently face with in field works.

Since RBS, by its own nature, contains subjective elements in it, supervisors should constantly be pushed to transit from relying too much on quantitative tools to utilizing more subjective risk assessments. Therefore, developing the capability of supervisors is an essential element for successful implementation of RBS.

2.4.4. Risk Rating Model

There are several models that supervisors can utilize in identifying risk factors and assessing the degree of risks contained in DTIs. All of them give us quantitative or qualitative indicators for overall risk assessments, although with different level of sophistication. The level of sophistication depends to a large extent on how the supervisory authorities want to express the final result of their supervisory activities. Simple risk models give the final assessments in very abstract and qualitative terms such as very high, high, medium, and low. More sophisticated models express probable events and corresponding possibilities in qualitative and quantitative terms. Clearly, the more granularities we have for ratings, the more useful the final assessment outcome will be in comparing DTIs across different DTIs or different points of time.

2.5. Basic Elements of Risk-Management System

Risk-based supervision has gained considerable popularity in recent years. It has been embraced in the Basel Core Principles and promoted by international organizations such as the World Bank and the IMF. Due in part to its newness, there is not yet a consensus on how to practice RBS in a correct way. Different supervisory agency is trying different version of RBS. However, we can find a set of common and basic elements from various approaches to RBS. These basic elements should be fully understood by managers and supervisors of DTIs and incorporated into the process of risk assessment and management.

First, the six most common risk factors in financial institutions accounting for the majority of losses are credit risk, market risk, operational risk, interest rate risk, liquidity risk, and foreign exchange risk. There are other risks that should be considered by managers and supervisors of DTIs such as legal, reputation, and strategic risks. Although those risk factors constitutes an important element for some DTIs, it is rarely the case that they have accounted for large losses for most DTIs. The following is brief explanation on the four common risk factors that we think are important to most DTIs.

- Credit Risk; credit risk is the potential that a borrower or counterparty would fail to fulfil contractual duties. Credit risk usually occurs in assets on the balance sheet, but it can also appear in off-balance sheet accounts like some contingent obligations.
- Liquidity Risk; liquidity risk is the potential originating from the lack of marketability of assets a financial institution holds. The risk stems from the inability to buy or sell assets quickly enough to incurring significant changes in market prices. The degree of liquidity risk of an asset is typically reflected in bid-ask spreads or price movement after transactions.
- Market Risk; market risk is the potential for an institution to experience losses from adverse movements in market prices such as stock prices, interest rates, and foreign exchange rates.
- Operational Risks; operational risk is the potential for an institution to experience losses from inadequate information system, breaches in internal control protocols, fraud, or natural disasters.

Second, three important dimensions of risk that should be centerpiece of the attention are amount of risk, duration of risk, and probability of adverse consequences. In order to understand thoroughly the risk profile of a transaction or portfolio of transactions, it is necessary to assess the three dimensions for each type of risk. The following is an explanation of the three dimensions of risk.

- Size is the amount of value at risk evaluated in currency units.
- Duration is the length of time for which an institution will be exposed. Usually the greater the length of time, the greater the probability that circumstances will change. Circumstances may change for better or worse, so that duration viewed in isolation is neither positive nor negative.
- Probability of adverse consequences evaluates the likelihood of circumstances changing in such a way as to cause an institution not to achieve desired results. For example, if an institution lends to a financially weak customer, the probability of adverse consequences is greater than lending to a financially strong customer.

Third, there are three important ways to minimize adverse consequences of risk-taking; avoiding or placing limits on risks, mitigating risks, and offsetting risks. Risk management encompasses all three kinds of activities that are associated with minimizing the adverse consequences of risk-taking.

- Risk avoidance is accomplished a number of ways. Policy statements of a DTI outline activities that an institution will be engaged in and those that it will not be engaged in. Prohibition of or placing limits on trading some products or services is a way of avoiding risk. Conservative practices, in the absence of policy statements, are also a way of avoiding risks.
- Mitigating risks encompasses measures to reduce the adverse consequences of risk-taking. It usually involves extra expenses and is often thought of in the context of internal controls. Without an accurate risk profile of a product or service, it is very difficult to design appropriate risk-management techniques. The cost expensed to mitigate risks should be less than the potential adverse consequences of naked risk-taking.
- Offsetting risks involves taking risks and a willingness to take the losses associated with risk-taking, but charging interest and fees sufficient to cover losses and yield a profit. It may also involve using income from other activities to cover losses, as is usually the case with the introduction of new products and services.

Fourth, a good practice of risk management consists of four important components; identifying risks, measuring risks, controlling risks, and monitoring risks.

- Identifying risks; In order to manage risks, risks must, first of all, be recognized. Every financial product and service has a unique risk profile. It is rather a delicate task to identify risks accurately.
- Measuring risks; once the risks associated with a particular activity have been identified, the next step is to measure the significance of each risk factor. Each risk should be understood in terms of its three different aspects: size, duration, and probability of occurrences.
- Controlling risks; once risks have been identified and measured for significance, risk manager should try to control them through three different ways discussed above; avoiding risks; mitigating risks, and offsetting risks.
- Monitoring risks; it is up to management to establish management information systems (MIS) that can accurately identify and measure risks at an early stage of transactions and activities. It is equally important to establish an MIS that can monitor significant changes in risk profiles. In general, monitoring risks means developing reporting systems that can identify adverse changes in the risk profiles of significant products, services, and activities.

In general, a good risk management system requires large expenditure. However, it is also a revenue enhancement tool. Good risk management allows an institution to operate with a high level of precision that it can contribute to higher revenue while too much risk without adequate controls would result in loss. On the other hand, too much controls and limits, given the corresponding risks, would lead to loss by incurring unproductive and unnecessary expenses. In order to maximize the benefit of risk management system, risk managers should understand the risk profiles of products and services they offer and balance them with actions to control the risks.

3. The Structure of Non-Bank Deposit Taking Institutions in Mongolia: Industry and Supervision

3.1. Structure of Financial Industry in Mongolia

The financial system of Mongolia presently comprises 14 commercial banks, 534 non-banking financial institutions, 290 savings & credit cooperatives, 17 insurance companies, 42 insurance intermediaries, 29 insurance loss adjustors, 52 securities companies, 3 custodian banks, 22 underwriters, and 9 investment funds. The FRC regulates and supervises all of these financial institutions, except commercial banks. Excluding capital market, more than 95 percent of financial sector assets are held by the commercial banks as of 2017.

〈Table 2-1〉 Financial Sectors Asset Size

(Unit: billion MNT, %)

	Amount	% of GDP
Commercial banks	28,772.9	105.9
Insurance companies	244.7	0.9
Non-banking financial institutions	969.2	3.6
Saving and credit cooperatives	153.1	0.6
Capital market	2440.2*	9.0

Note: Figures for capital market is the amount of market capitalization.
Source: Bank of Mongolia, Financial Regulatory Commission of Mongolia

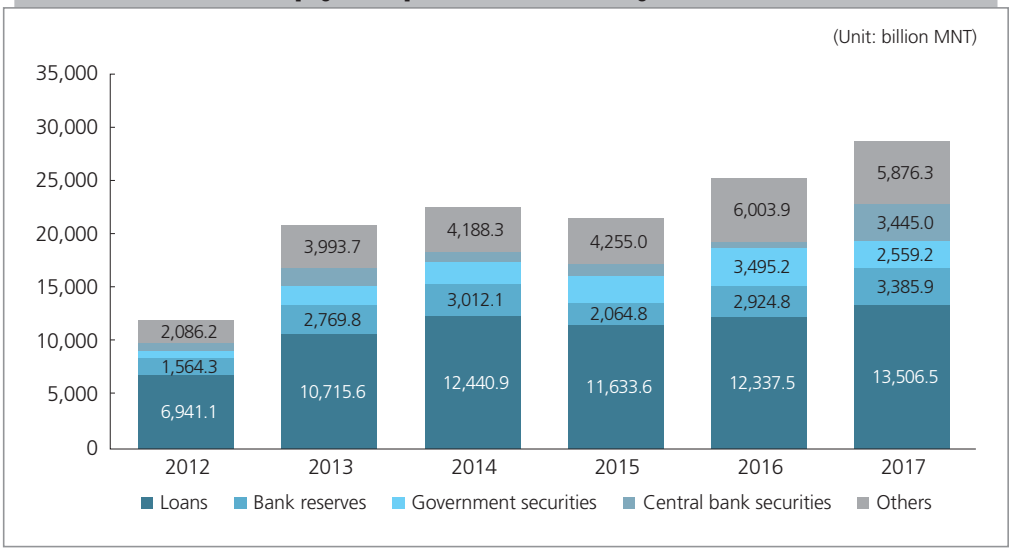
In 2017, total assets of the banking sector amounted to 105.9 percent of GDP, total assets of financial sector under the jurisdiction of FRC including insurance

market, NBFIs, and SCCs' were 5 percent of GDP. Also, stock market capitalization accounted for 9.0 percent of GDP.

3.1.1. Current State of Banking Sector

Total assets of the banking sector have increased by MNT 3.4 trillion to MNT 28.8 trillion in 2017. According to the structure of assets, 46.9 percent of total assets were loans, 11.8 percent were bank reserves, 20.9 percent were Government and Central bank securities, and the remaining 20.4 percent were other assets. Highlighting the major structural changes in the banking sector's assets, the total loan portfolio has decreased by 1.7 percentage points from previous year.

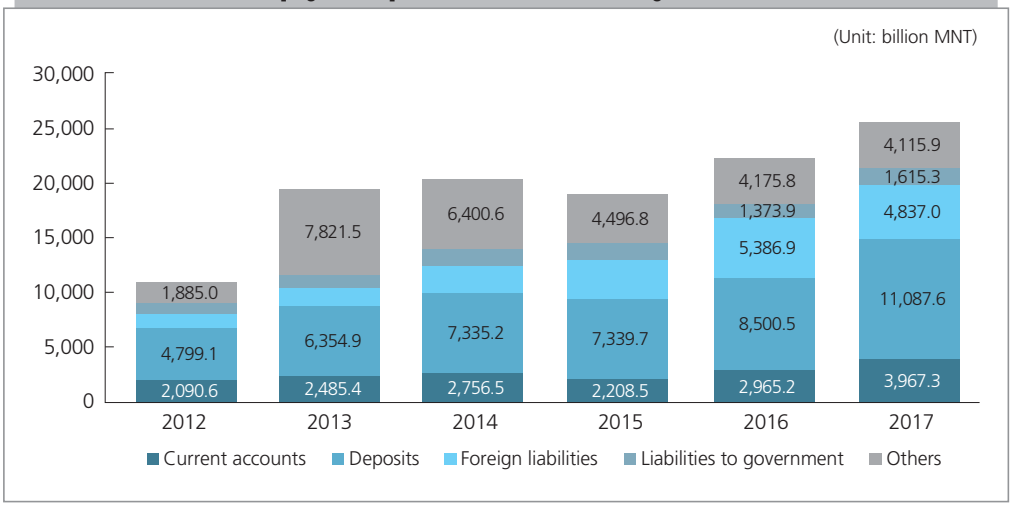
[Figure 2-1] Total Assets of Banking Sector



Source: Bank of Mongolia.

Total liabilities of the banking sector have reached to MNT 25.6 trillion in 2017, increased by 14.4 percent from the last year. The current and deposit accounts reached MNT 15.1 trillion, an increase of 31.3 percent from the previous year, mainly influence to the growth of total liabilities. 58.8 percent of total liabilities were current and deposit accounts, 18.9 percent were foreign liabilities, 6.3 percent were liabilities to government and, 16.1 percent were other liabilities.

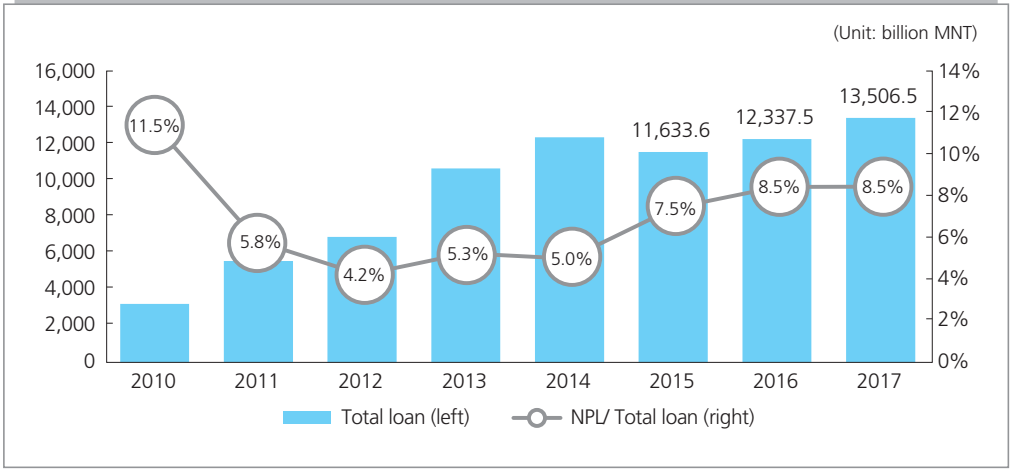
[Figure 2-2] Total Liabilities of Banking Sector



Source: Bank of Mongolia.

In 2017, total loan portfolio of the banking sector has reached MNT 13.6 trillion by growth of 9.5 percent. About 48.9 percent of total loans are to households, which have increased 2.5 percent from 2016 to 2017. Corporate loans accounted for 50.4 percent of total loans and increased by 17.9 percent in 2017. According to economic activity sector, 14.7 percent of total loans were to real estate, 13.8 percent were to wholesale and retail trade, 10.2 percent were to manufacturing, 7.6 percent were to mining, and 24.1 percent were to other sectors. The share of the non-performing loans to total loans were 8.5 percent in 2017.

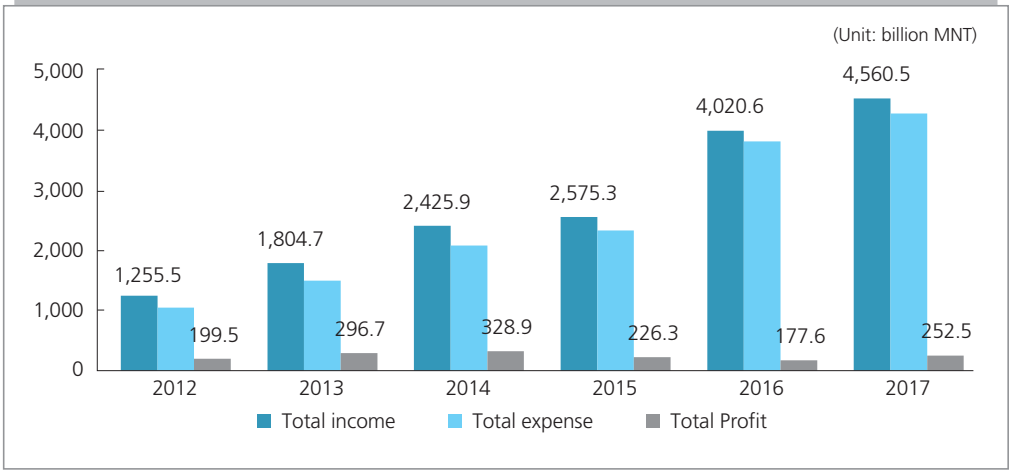
[Figure 2-3] Total Loan Size and Non-performing Loan of Banking Sector



Source: Bank of Mongolia.

Total profit of the banking sector was MNT 252.5 billion. And profitability indicators, return on assets and return on equity, were 0.7 and 7.0 percent respectively.

[Figure 2-4] Total Income and Total Profit of Banking sector



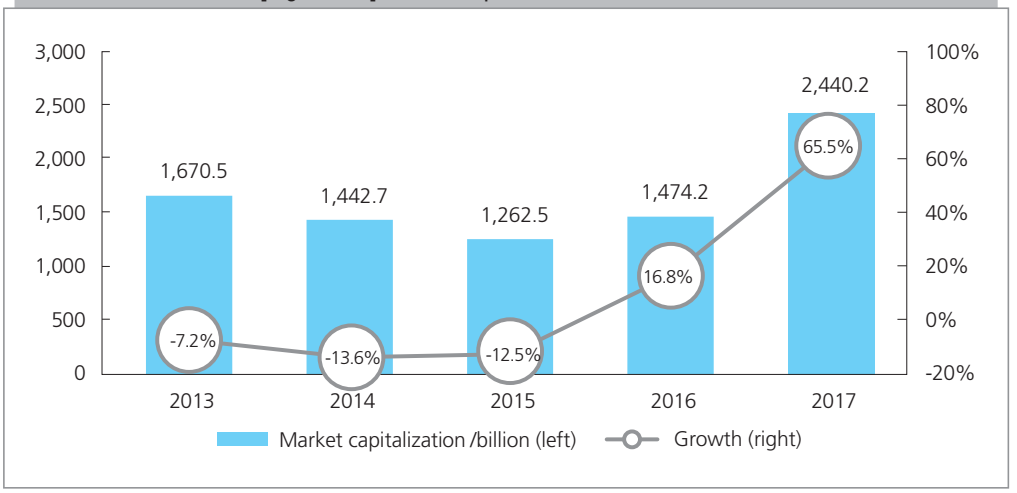
Source: Bank of Mongolia.

3.1.2. Current State of Capital Market

In the capital market of Mongolia, there are 52 securities companies, 2 securities traders, 1 securities settlement company, 1 central securities depository company, 3 custodian banks, 17 investment management companies, 1 agricultural commodity exchange, and 16 agricultural commodity brokers.

By the end of 2017, the market capitalization of the securities market reached MNT 2.4 trillion, an increase of 65.5 percent from the previous year. And liquidity of the stock market was 3.2 percent, as MNT 78.1 billion worth shares traded. This is a decrease of 0.1 percentage points compared to last year.

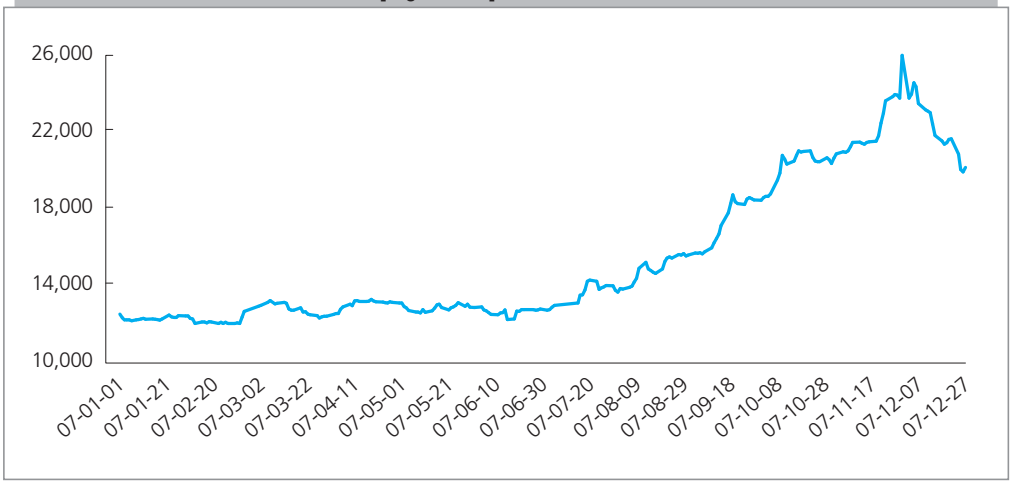
[Figure 2-5] Market Capitalization of Stock Market



Source: Financial Regulatory Commission of Mongolia.

The TOP-20 index increased by 66.5 percent to 20,736.9 units, the highest index value was 24,520.35, the lowest was 11,972.1, and the average index value was 15,511.89 units in 2017.

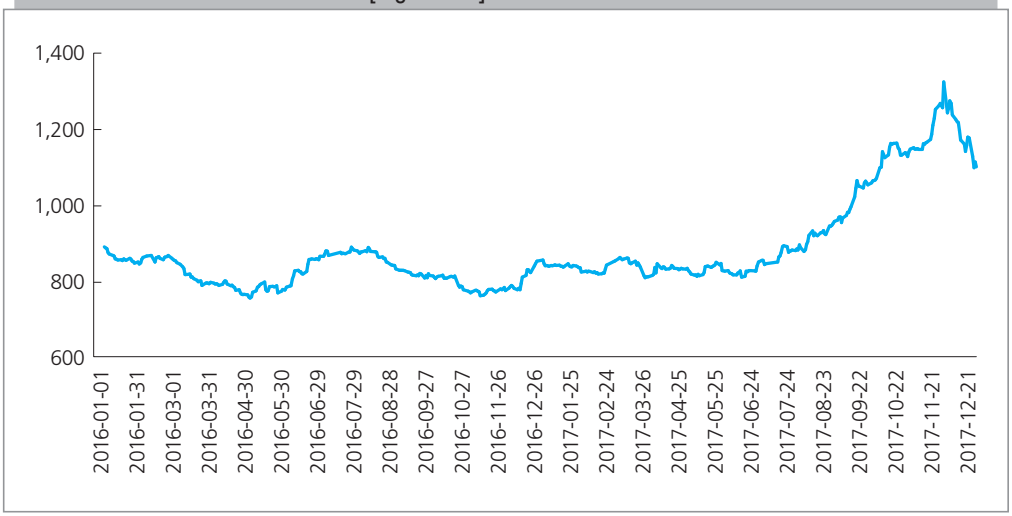
[Figure 2-6] TOP-20 index



Source: Financial Regulatory Commission of Mongolia.

The MSE-ALL index increased by 33.1 percent to 1,116.3 units in 2017, and the highest index value was 1,280.32, the lowest was 814.5, and the average index value was 950.1 units.

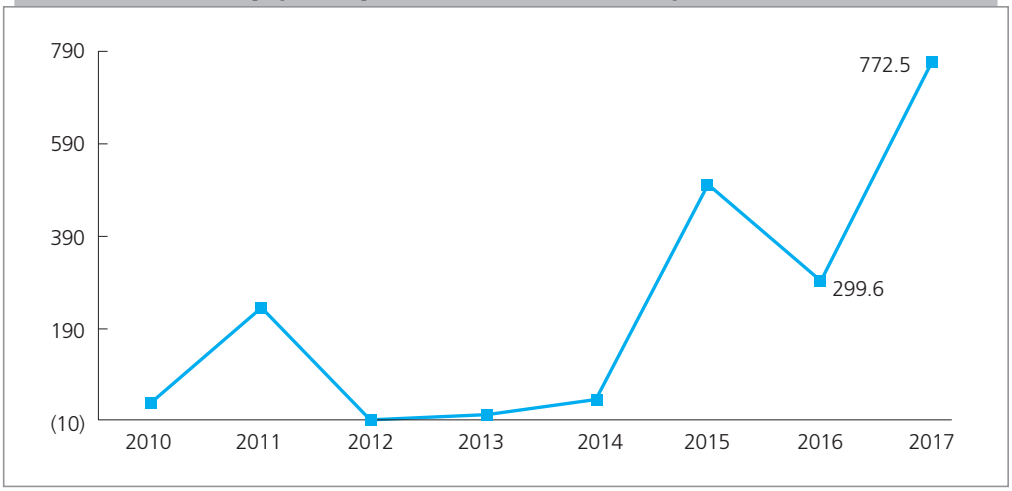
[Figure 2-7] MSE-ALL Index



Source: Financial Regulatory Commission of Mongolia.

Government securities trading volume increased by 2.5 times (MNT 472.9 billion) from the previous year. Total trading transactions accounted for 82 percent of primary trading and 18 percent of secondary market trading.

[Figure 2-8] Government Securities Trading Volume



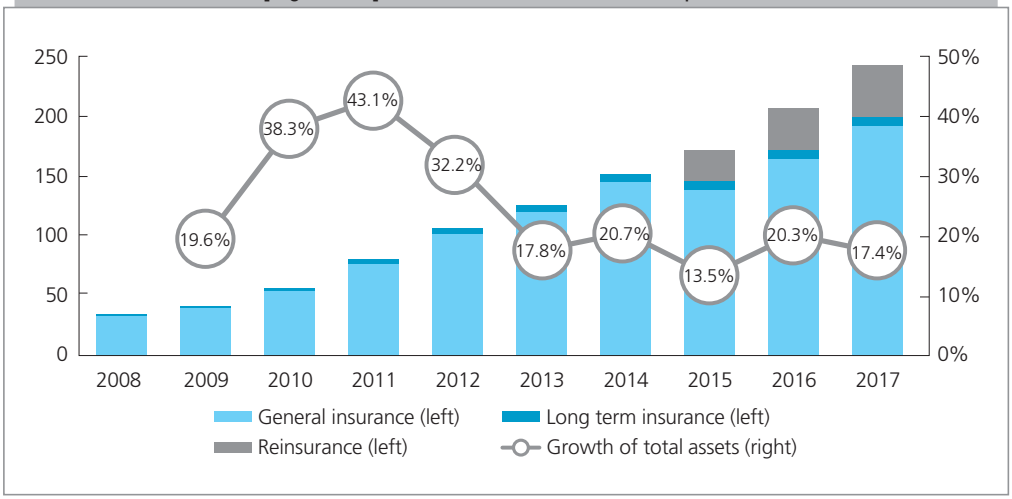
Source: Financial Regulatory Commission of Mongolia.

3.1.3. Current State of Insurance Market

The Insurance market of Mongolia comprises 17 insurance companies, 42 insurance intermediaries, 29 insurance loss adjustors and 2893 insurance agents.

In 2017, total assets have increased by 17.4 percent from the last year to MNT 244.7 billion. 17.7 percent of the insurance market total assets were reinsurance companies, 79.1 percent were the general insurance companies, and 3.2 percent were owned by the long-term insurance companies.

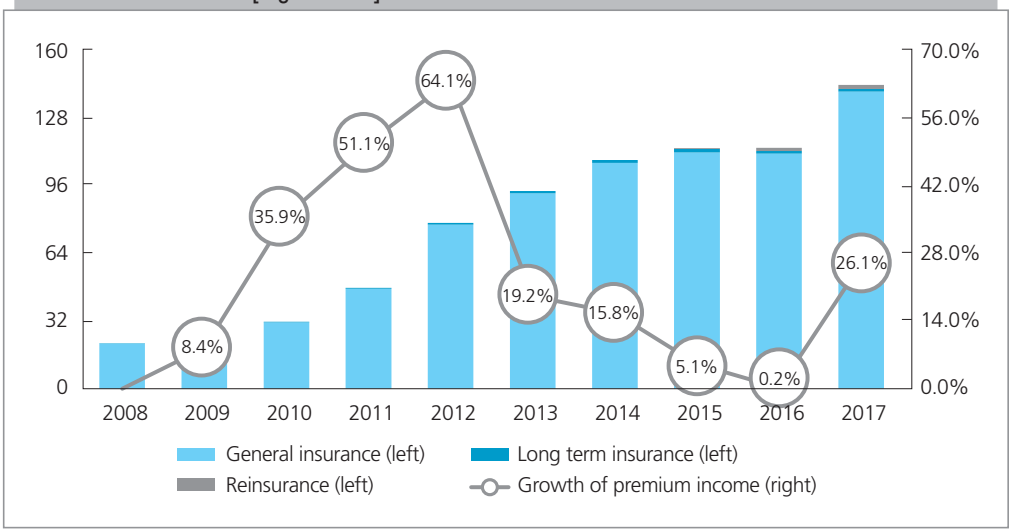
[Figure 2-9] Total Assets of Insurance Companies



Source: Financial Regulatory Commission of Mongolia.

Insurance companies collected a total of MNT 144.3 billion premium income in 2017. Of which, general insurance companies accounted for MNT 141.2 billion /97.8 percent/, long-term insurance companies by MNT 1.3 billion /0.9 percent/, and reinsurance companies by MNT 1.9 billion respectively.

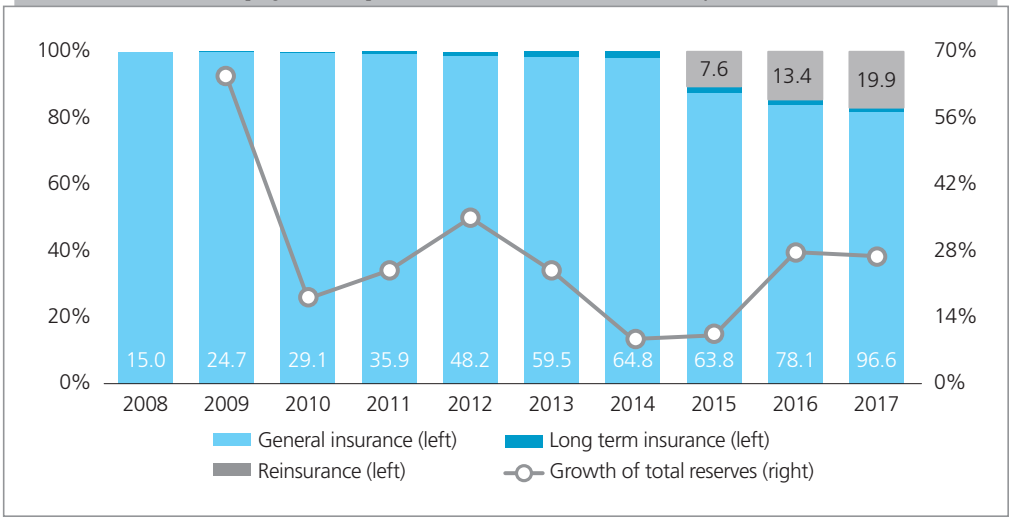
[Figure 2-10] Premium Income of Insurance Market



Source: Financial Regulatory Commission of Mongolia.

Total reserves of the insurance companies increased by 26.9 percent from the last year to MNT 118.1 billion. And total reserves of the general insurance companies increased by 23.7 percent to MNT 96.9 billion, long-term insurance companies increased by 1.8 percent to MNT 1.6 billion, and reinsurance companies increased by 48.3 percent to MNT 19.9 billion. About 50 percent of the total reserves of insurance market were located in commercial banks as savings and deposit certificates.

[Figure 2-11] Total Reserves of Insurance Companies



Source: Financial Regulatory Commission of Mongolia.

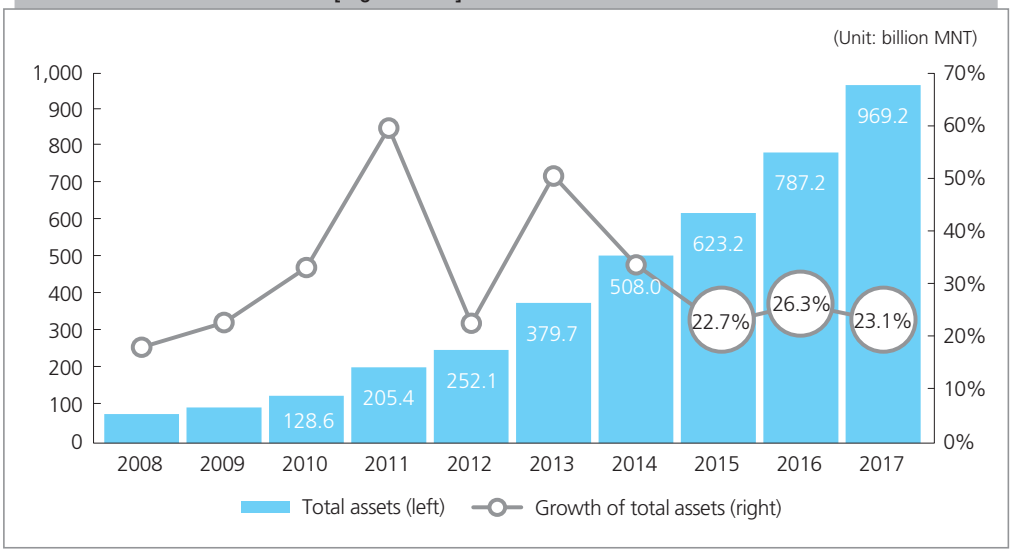
3.1.4. Current State of Non-banking Financial Institutions

The Non- banking financial institutions carry out the following 10 types of financial activities under the license issued by the FRC.

- Loan services;
- Factoring services;
- Payment guarantee services;
- Payment instrument services;
- Electronic payment and remittance services;
- Foreign exchange trading;
- Trust services;
- Investment in short-term financial instruments services;
- Investment and financial advisory services;
- Financial intermediary services related to mortgages.

In 2017, total assets of NBFIs increased by 23.1 percent to MNT 969.2 billion. By the active side, 65.8 percent of the total assets were loan, 27.2 percent were cash, and remaining 6.9 percent of other assets.

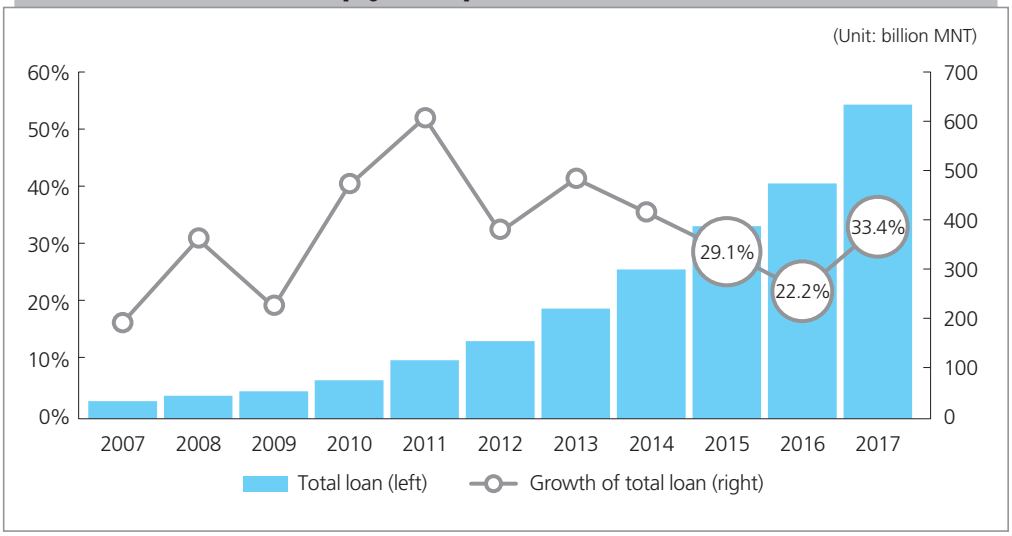
[Figure 2-12] Total Assets of NBFIs



Source: Financial Regulatory Commission of Mongolia.

The total loan portfolio of NBFIs has reached to MNT 638.1 billion, by growth of 33.4 percent. Almost half of the total loan, 50.6 percent, were to consumption, 24.5 percent were to wholesale and retail trade, 10.2 percent were to construction, and 3.8 percent were to mining sector respectively. About 12.7 percent of the total loan were non-performing loan.

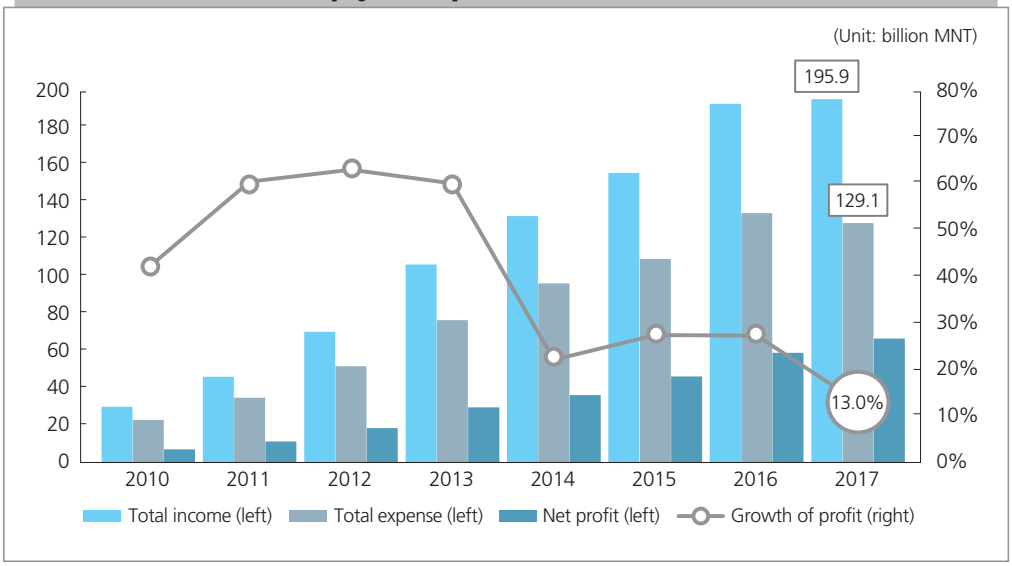
[Figure 2-13] Total Loan of NBFIs



Source: Financial Regulatory Commission of Mongolia.

In 2017, total income of the NBFIs has increased by 1.3 percent to MNT 195.9 billion, and the total net profit has increased by 13.0 percent to MNT 66.8 billion. And profitability indicators, return on asset and return on equity were 7.6 and 10.0 percent respectively.

[Figure 2-14] Total Income of NBFIs

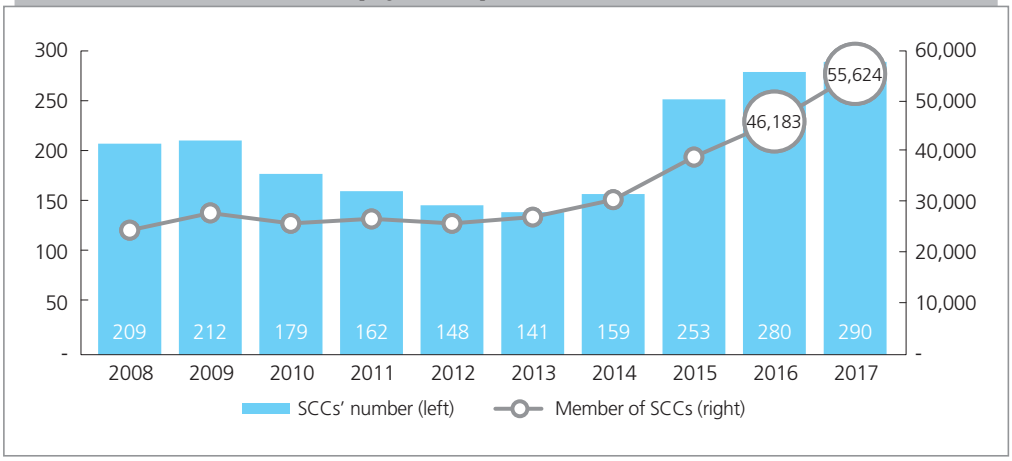


Source: Financial Regulatory Commission of Mongolia.

3.1.5. Current State of Savings and Credit Cooperatives

In 2017, there are 290 saving and credit cooperatives in Mongolia. Number of SCCs' members has increased by 20.4 percent comparing to 2016. About 58 percent of the total number of SCCs' members are female, remaining 42 percent are male. And 38 percent of the total number of members are of SCCs, in rural areas.

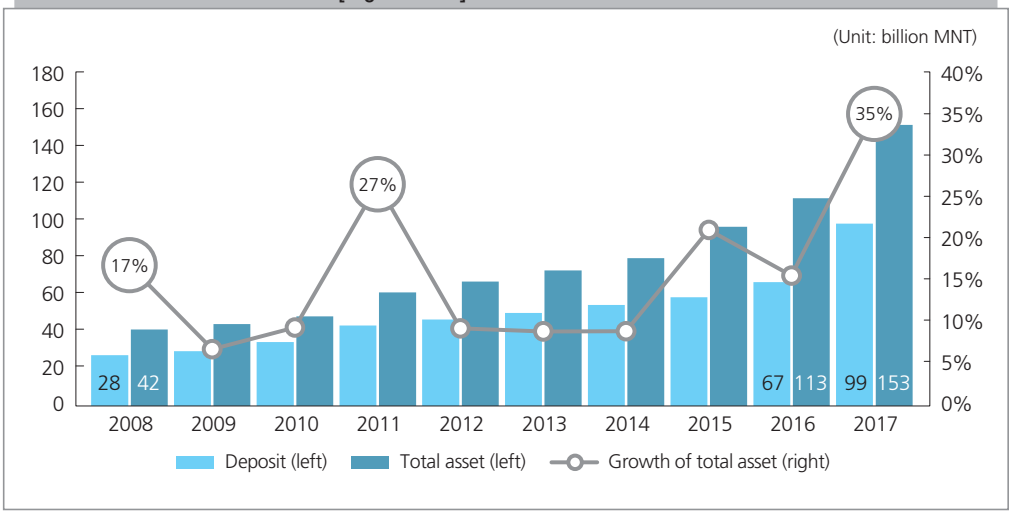
[Figure 2-15] Number of SCCs



Source: Financial Regulatory Commission of Mongolia.

In 2017, total assets of SCCs have reached MNT 153.0 billion, by growth of 35.0 percent from the previous year. Total deposits of SCCs have increased by 47.2 percent in 2017, such high growth of deposit mainly contributed to the increase in total assets.

[Figure 2-16] Total Assets of SCCs



Source: Financial Regulatory Commission of Mongolia.

Total loan portfolio of the SCCs has increased by 24.6 percent from the 2016 to MNT 105.2 billion. 91.0 percent of the total loan portfolio were standard loans, 4.8 percent were past due in arrears, and 4.3 percent were non-performing loans. Also, 3.3 percent of the total deposits were demand deposits, and 96.7 percent were time deposits.

In 2017, total profits of the SCCs were MNT 5.5 billion, amount increased by 44 percent from the previous year.

〈Table 2-2〉 Brief Financial Statements of SCCs

(Unit: billion MNT, %)

	2016	2017	Growth	
			By amount	By percent
Total assets	113.1	153.1	40.0	35.4
Total loan	84.4	105.2	20.8	24.6
Standard loan	74.6	95.7	21.1	28.3
Past due in arrears	5.2	5.0	(0.2)	-3.1
Non-performing loan	4.6	4.5	(0.1)	-3.4
Deposit	68.2	99.3	31.1	45.8
Demand deposit	3.2	3.3	0.1	2.9
Time deposit	64.9	96.1	31.2	48.0
Total income	24.7	31.8	7.1	28.8
Total expense	20.9	26.3	5.4	26.0
Total profit	3.8	5.5	1.7	44.0

Source: Financial Regulatory Commission of Mongolia.

3.2. Structure of Financial Supervision in Mongolia

3.2.1. The Supervisors

The growing economy needs money which is mostly generated by the financial market. In developed countries capital market provides long-term economic growth, this is not the case in Mongolia. Above mentioned that excluding capital market, more than 95 percent of financial sector assets are held by the commercial banks as of 2017.

3.2.1.1. The Bank of Mongolia

The primary mission of the Bank of Mongolia is to ensure balanced and sustained development of the national economy by maintaining the stability of monetary system and financial markets. In order to implement its objectives as set forth in the law of Mongolia on central bank, the Bank of Mongolia monitors commercial banks under 5 laws, 27 regulations and 7 guidelines.

3.2.1.2. The Financial Regulatory Commission

Financial Regulatory Commission of Mongolia is responsible for the regulation and supervision of the capital market, insurance market, non-banking financial institutions and savings and credit cooperatives. The Financial regulatory commission monitors regulated entities under 18 laws, 153 regulations, and 22 guidelines.

3.2.1.3. The Types of Supervision

Financial Regulatory Commission and the Bank of Mongolia supervise their market entities by two types; off-site and on-site.

In off-site supervision, it is to regularly supervise, monitor, and analyze the operations and review periodic financial reports of financial institutions to ensure compliance with regulatory requirements. The Financial Regulatory Commission monitors periodic financial reports of financial institutions which received by FINA system and in paper form.

The Financial Regulatory Commission and Bank of Mongolia are both use FINA system to monitor periodic financial reports of financial institutions since 2015. This system has helped regulators gather data from the financial institutions under its supervision in a timely manner. In 2017, FRC received a total of 3,612 financial reports based on the duplicated numbers.

In financial market except banking sector, to do on-site supervision based on complains received by the Financial Regulatory Commission, prudential ratios, planned supervision and other justifications in laws. In 2017, total on-site supervision of the market entities was 243, amount increased by 81 percent from the previous year.

〈Table 2-3〉 Number of On-site Supervised Entities

	2016	2017	Growth	
			By amount	By percent
Security market	6	37	31	516%
Insurance market	7	67	60	857%
Non-banking financial institute	98	110	12	12%
Savings and credit cooperatives	23	29	6	26%

Source: Financial Regulatory Commission of Mongolia.

3.2.2. Organizational Structure of Financial Regulatory Commission

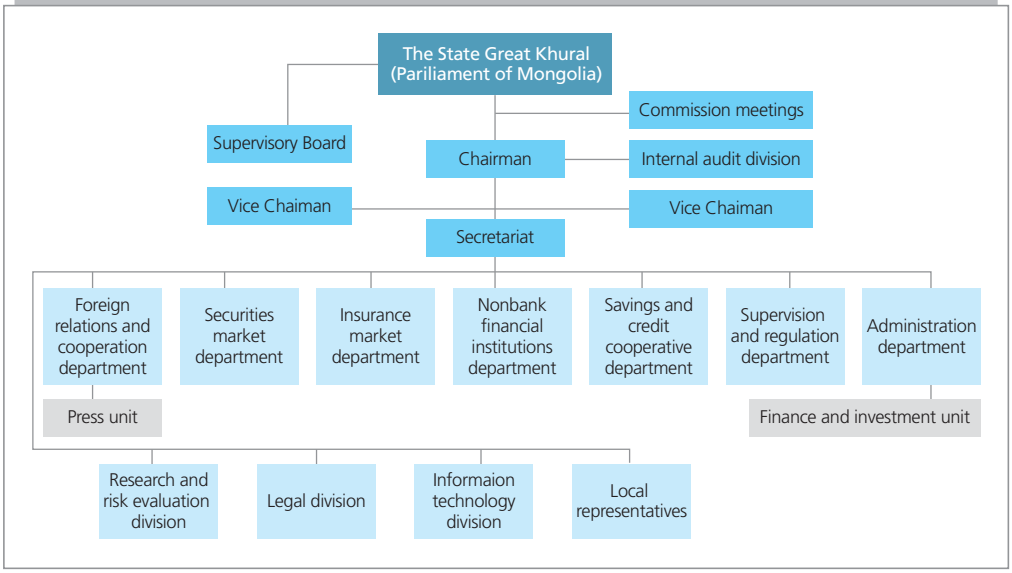
The Financial Regulatory Commission of Mongolia was established under the Parliament of Mongolia according to the Law on the Legal Status of Financial Regulatory Commission in 2006. The Commission is comprised of Chairman and six members appointed for the term of five years.

The Supervisory Board, comprised of Supervisory Chairman and four members appointed by the Parliament for the term of three years.

The Financial Regulatory Commission reports its activity to the Mongolian Parliament and it strives to ensure the stability of financial market, regulate financial service institution, monitor the implementation of all relevant legislations, and protect the rights of investors and participants of the financial markets. The Financial Regulatory Commission is a specialized government body for regulation and control over different segments of the financial system including insurance market, securities market, non-banking financial institutions, and savings and credit cooperatives.

The Financial Regulatory Commission operates with 7 departments, 4 divisions and 2 independent units.

[Figure 2-17] Organizational Structure of Financial Regulatory Commission



Source: Financial Regulatory Commission of Mongolia.

Supervision and regulation department operates with 5 divisions which are:

- Securities market,
- Insurance market,
- Non-banking financial institutions,
- Savings and credit cooperatives
- Protecting the rights of investors.

Securities market's division monitors joint stock companies, securities companies, investment management companies, investment funds, custodians, asset-backed securities companies and infrastructure entities.

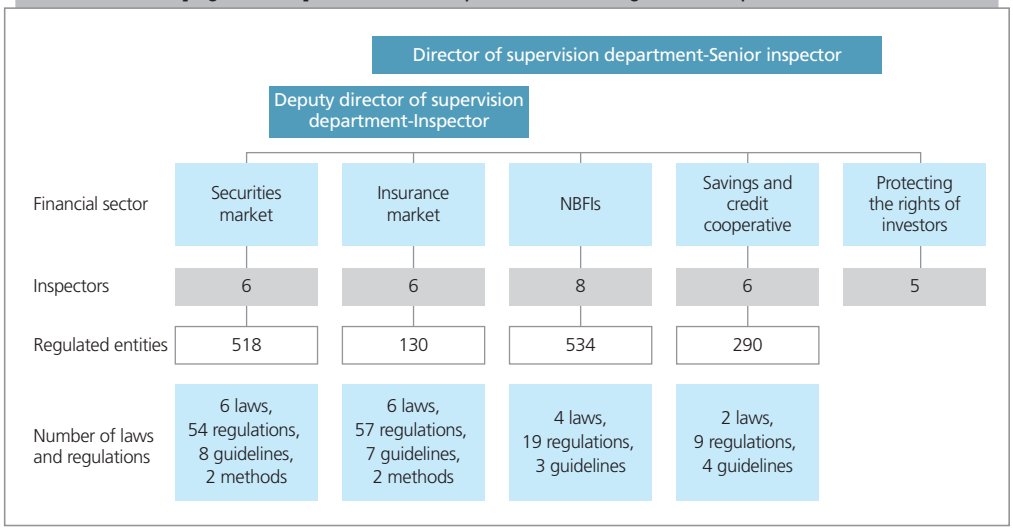
Insurance market's division monitors insurance companies, insurance brokers and intermediaries and loss adjusters.

Protecting the rights of investor's division supervision based on complains received by FRC, and resolve within legal timeframe.

Non-banking financial institutions unit monitors non-banking financial institutions and savings and credit cooperatives unit monitors on savings and credit cooperatives.

In 2017, total on-site supervision of NBFI was 110 amount increased by 12 percent from the previous year, total on-site supervision of SCC was 29 amount increased by 26 percent from the previous year.

[Figure 2-18] Structure of Supervision and Regulation Department



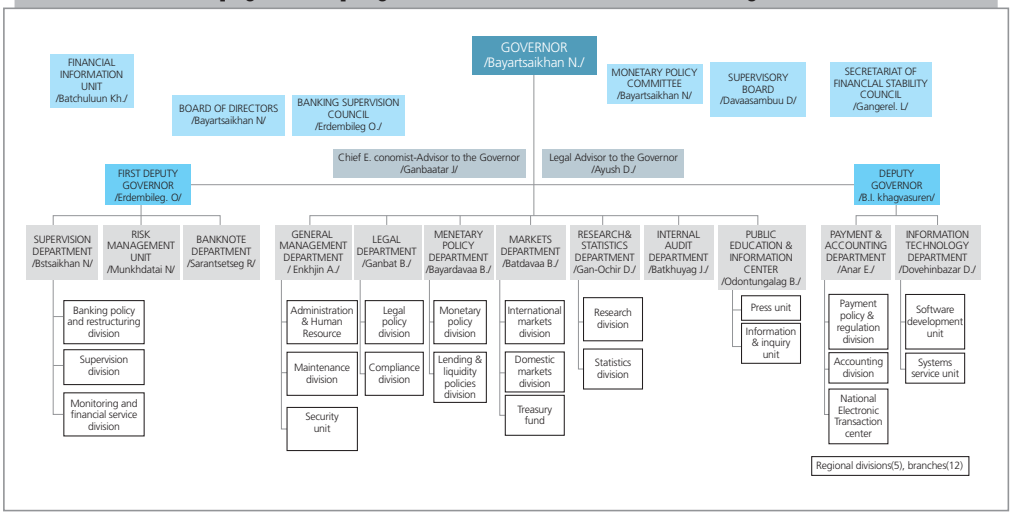
Source: Financial Regulatory Commission of Mongolia.

3.2.3. Supervision Department of Bank of Mongolia

Supervision department of BOM implements supervision over the operations of commercial banks in Mongolia. The supervision department shall be implemented in order to improve the policy and regulation of the financial system by establishing the proper regulation of banking solvency, the management and operation of their activities, the supervision of their activities, their management and their activities.

The Bank of Mongolia operates with 10 departments, 1 center, 3 independent units, 5 regional divisions, 12 regional branches and 1 representative office.

[Figure 2-19] Organizational structure of Bank of Mongolia



Source: Bank of Mongolia.

As of the end of the reporting year, a total of 14 commercial banks were operating in the banking sector through their 1511 branches and units. The total number of depositors and borrowers reached 3.0 million and 884 thousand respectively.

Supervision department of Bank of Mongolia monitors commercial banks under 4 laws, 12 regulations, 6 guidelines. Supervision department has three divisions, which are:

- Banking policy and restricting division
- Supervision division
- Monitoring and financial service division

3.2.4. Cooperation between Financial Regulatory Commission and Bank of Mongolia

3.2.4.1. The Financial Stability Council of Mongolia

The Mongolian financial sector consists of 14 commercial banks, 534 non-banking financial institutions, and 290 savings and credit cooperatives. The banking sector, which dominates the financial sector, underwent several crises in the 1990s. Following the severe banking crisis of 1998-1999, the Government implemented measures to restructure stressed banks. In addition, major commercial banks were privatized and the BOM took the measures to improve its ability to enforce prudential regulation. Important policy initiative was taken to fortify market discipline and incentives for sound bank management. The Financial Stability Council is the first ever body of this nature established in Mongolia. The Council was established by joint decree dated May 9, 2007 by the Central Bank of Mongolia, Ministry of Finance and the Financial Regulatory Commission. Its Steering Committee consists of the Governor of the Central Bank, the Minister of Finance, and the Chairman of the Financial Regulatory Commission.

The mission of the Council is to contribute to sustainable economic growth by developing sound and competitive financial infrastructure and improving financial services in terms of quality and access. The primary objectives of the Council include safeguarding the financial stability of the markets by determining any kind of financial risks and managing them within the current laws and regulations.

The Financial Stability Council has been set up in line with international best practices and is keen to co-operate with other international financial and standardization institutions. In order to boost the competitiveness of the Mongolian banking and financial sectors in the international markets, the council has been introducing best practices in banking, financing, accounting and auditing.

3.2.4.2. Memorandum of Understanding between the Bank of Mongolia and the Financial Regulatory Commission

The Bank of Mongolia and the Financial Regulatory Commission have agreed to cooperate in developing and implementing a financial market, ensuring sustainability and implementing a unified policy and signed Memorandum of Understanding. Memorandum of Understanding and Principles of Cooperation was signed by the Governor of the Bank of Mongolia N. Bayartsaikhan and Chairman of the Financial Regulatory Commission Davaasuren.S in 2017.

The Memorandum of Understanding is intended to improve the legal framework

for financial sector, improve supervision and regulation, reduce risks, protect investors and customers, improve financial education of citizens and public, improve the quality of statistical data and extend the scope of cooperation, information, experience, exchange, consultation, mutual support, collaboration, and collaboration.

3.3. Current State of NBDIs in Mongolia

In the non-banking financial sector of Mongolia, there are 290 savings and credit cooperatives, and 28 non-banking financial institutions which have trust services like savings. These institutions are regulated and supervised by Financial Regulatory Commission of Mongolia.

• Current state of SCCs

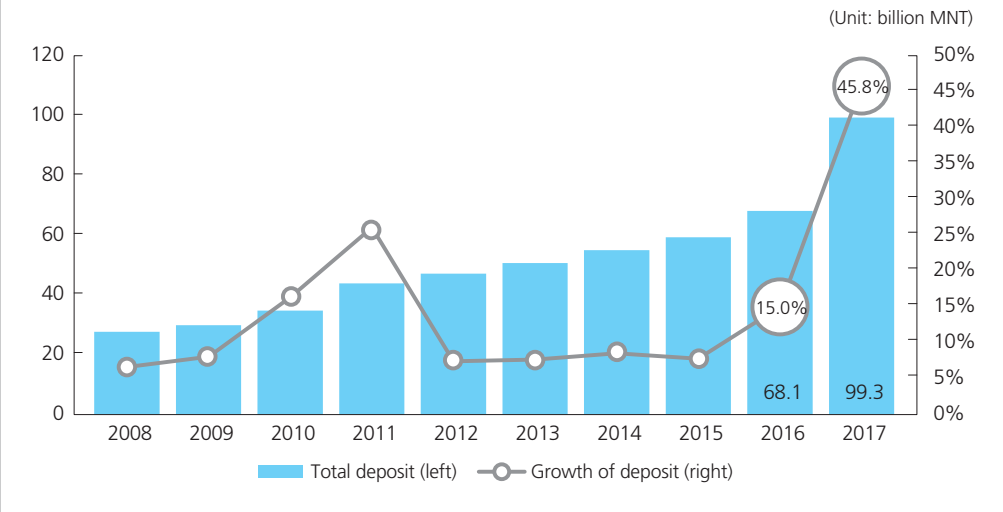
Total number of the SCCs' members are 55,624. In which of, 37,752 members are borrowers, 67.9 percent of total members, and 29,209 members are depositors, 52.5 percent of total members. About 90 percent of the total SCCs' have retained savings from the members, but remaining 10 percent have no savings.

Total assets of the SCCs amount MNT 153.1 billion. In 2017, total deposits of SCCs increased by 45.8 percent from 2016 to MNT 99.3 billion. Total deposits constituted 64.9 percent of total liabilities of SCCs. About 97 percent of the total deposits were time deposits, remaining 3 percent were demand deposits.

[Figure 2-20] Member of SCCs by Classification of Service

Source: Financial Regulatory Commission of Mongolia.

[Figure 2-21] Total Deposit of SCCs



Source: Financial Regulatory Commission of Mongolia.

To classify SCCs by amount of deposits, there are 3 saving and credit cooperatives have savings of more than MNT 10 billion, which account for MNT 61.6 billion, 62.0 percent of total deposits of SCCs. And 38.6 percent of the total SCCs have deposits amounted between MNT 10 million and MNT 50 million.

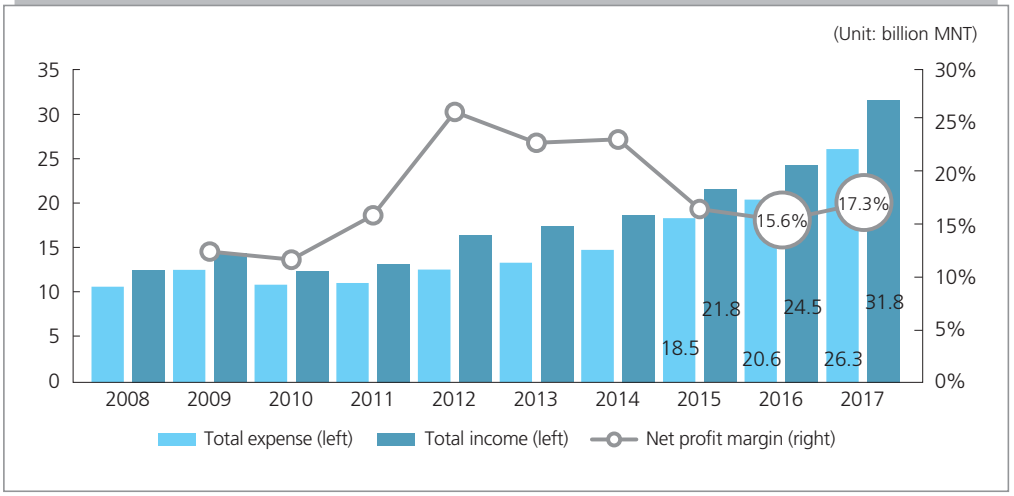
〈Table 2-4〉 Deposit Classification of SCCs

No.	Amount of deposit by interval	Number of SCCs	Amount of deposit	Percent of total deposit
1	Above 10 billion	3	61.6	62.0%
2	1 billion - 10 billion	9	22.5	22.6%
3	500 million - 1 billion	6	4.3	4.4%
4	100 million - 500 million	31	6.3	6.3%
5	50 million - 100 million	24	1.7	1.7%
6	10 million - 50 million	112	2.6	2.6%
7	5 million - 10 million	41	0.3	0.3%
8	Below 5 million	33	0.09	0.1%
9	No savings	31	-	-
Total		290	99.3	100%

Source: Financial Regulatory Commission of Mongolia.

In 2017, total income of the SCCs has amounted to MNT 31.8 billion, by growth of 28.8 percent from 2016. And total profit of the SCCs has reached to MNT 5.5 billion, an increase of 44.0 percent from the previous year, which is the highest growth of last ten years. About the profitability indicators, return on asset and return on equity was 3.7 and 39.1 percent respectively in 2017. Also, net profit margin has increased by 1.7 percentage point from 2016.

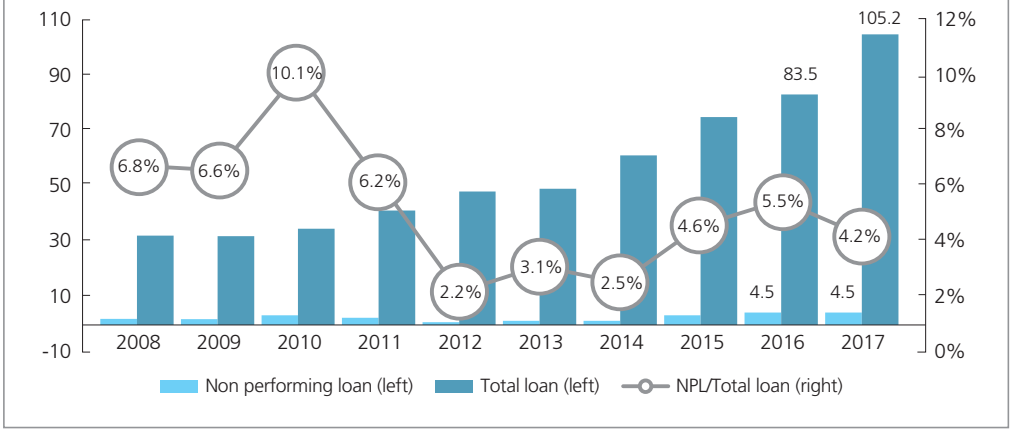
[Figure 2-22] Total Income and Expense of SCCs



Source: Financial Regulatory Commission of Mongolia.

Total loans of the SCCs have increased by 26.1 percent from the 2016, to MNT 105.2 billion. Non-performing loans amounted MNT 4.5 billion, which are 4.2 percent of the total loan portfolio.

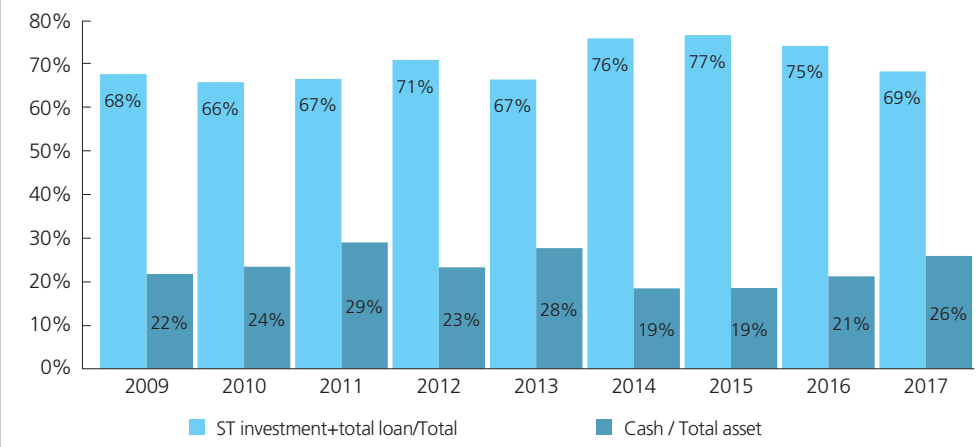
[Figure 2-23] NPL to Total Loan ratio



Source: Financial Regulatory Commission of Mongolia.

The liquidity indicators, such as ratio of short term investment and total loan size to total asset and ratio of cash flows to total assets are shown below. These ratios are indicative of how quickly the financial institution can convert its capital into cash when the depository and the investor withdraws fund. In 2017, total cash of the SCCs accounted for 26 percent of total asset and the ratio of short term investment and total loan to asset was 69 percent.

[Figure 2-24] Liquidity Ratios of SCCs



Source: Financial Regulatory Commission of Mongolia.

3.4. Financial Supervision on NBDIs in Mongolia

3.4.1. The Regulation and Supervision on NBDIs in Mongolia

Above mentioned that there are 290 savings and credit cooperatives, 28 non-banking financial institutions which have deposit services.

Based on the financial statements, supervision department monitors the operational, financial, solvency, and prudential requirements of regulatory bodies, as well as other requirements and criteria.

The FRC of Mongolia approved "Amendments to the regulation and defining prudential ratios for savings and credit cooperatives and its supervision" under the Savings and credit cooperatives law in 2014, "Amendments to the regulation and defining prudential ratios for non-banking financial institutions and its supervision" under the Non-banking financial activities law in 2016.

3.4.2. Prudential Ratios on SCCs

Savings and credit cooperatives shall assess an operational risk according to the following prudential ratios and implement it for its operation.

- Prudential standards of assets quality and protection;
- Prudential ratios for effective financial structures;
- Prudential rates of returns and cost;
- Prudential ratios on liquidity;

3.4.2.1. Prudential Standards of Asset Quality and Protection

Loan loss provision shall be established and classified according to the joint resolution approved by the Governor of the Mongol Bank and the Minister of the Ministry of Finance, numbered 475/182, of the year of 2010 "Regulation on classifying assets, establishing and spending risk funds". If an inability of a legal body intended to repay the first loan and its interest partly or wholly under the contracts and negotiations related to the loan, and other assets is defined with the appropriate documents (expired loan term, quality of collateral is not meeting the requirement, market price is declined, calamities), cooperative shall establish a loss provision by the expenditures.

Loan loss provision for performing loans and assets included in the performing class shall not be established when these assets indicated in the financial statements for the first time. In the case of creating provision loss account for performing loans, all the reasoning and documents must be submitted along with the financial statement to the FRC.

Terms of duration shall be a prime factor to classify a loan, and other assets and quality of the assets shall be considered as a comparative factor. Duration and quality indicators shall be classified according with the following:

- The sum of outstanding balance for the Nonperforming loans should not exceed 5% of the portfolio.
- Loans given to savings and credit cooperative's member and other related parties should not exceed 30% of the total equity.

〈Table 2-5〉 Classification of Loan Loss Provision Fund

No.	Asset classification	The percentage of loan loss provision fund
1	Current loans	-
2	Overdue loan	5%
3	Nonperforming loans:	
	a/ Substandard	25%
	b/ Doubtful	50%
	c/ Bad	100%

3.4.2.2. Prudential Ratios for Effective Financial Structures

Assets

- Net outstanding portfolio should be 60-85% of the total assets.
- Other owned fixed assets should not exceed more than 5% of the total assets.
- Savings and credit cooperative's net fixed assets should not exceed more than 10% of the total assets.

Liabilities

- Savings mobilized from the members of savings and credit cooperatives should be 20-80% of the total assets.
- Projects loans, and other loans from Banks and other financial institutions should not exceed 20% of the total assets.
- Single member's shared capital should not exceed 10% of the total equity.
- The property of the cooperative should no less than 5% of the total assets.
- A reserve fund made from savings and credit cooperative's net profit at the end of the financial year should not be less than 10% of the total equity.
- Savings and credit cooperatives established savings security fund by the net income of the savings and credit cooperative at the end of the year should not be less than 5 percent of the cooperative's assets.
- Savings and credit cooperatives established stabilization fund by the net income of the savings and credit cooperative at the end of the year should be at least 5 percent of the cooperative's assets.

3.4.2.3. Prudential Rates of Returns and Cost

The savings and credit cooperatives and staff in charge of the particular savings and credit cooperatives shall calculate the following return rations and compare it to the average of savings and credit cooperatives and evaluate the financial capacity and other performance of savings and credit cooperatives.

- Operating costs are related with asset management and should not exceed 15%of total assets.
- Return on assets indicates return per MNT, it is a ratio of net profit before taxes and average of total assets.
- The operational results, profit and loss, assets management and financial stability and real growth rate ratios should be calculated.
- *Interest Income/Average Total Assets*: Ratio of income from all types of interests and Average of Total Assets.
- *Interest Cost/Average Total Assets*: Ratio of all interest costs and Average Total Asset.
- *Net Interest income/Average Total Assets*: Ratio of the difference between interest income and interest costs to Average total assets.
- *Non-interest income/Average Total Assets*: Ratio of the sum of exchange rate translation income and all other incomes to Average total assets.
- *Non-interest costs/ Average Total Assets*: Ratio of the total of exchange rate translation costs, payroll costs, and all other types of costs other than potential risk costs to Average total assets.
- *Loss provision costs/Average Total Assets*: Ratio of total loss provision to average total assets.
- *Interest income/Average Total Productive Assets*: Ratio between all types of interest income to average total productive assets.
- *Loan loss provision/Total loans*: Ratio between loan loss provision and total loans outstanding. /When loan loss provision increasing due to inability of issued loans to be repaid partially or fully leads to solvency deterioration and losses/

3.4.2.4. Prudential Ratios on Liquidity

Short-term liquid assets are calculated by total of cash, deposits in banks and financial institutions, as well as loans outstanding within 30 days of the members. The liquidity ratio is calculated by comparing the liquidity assets excluding demand deposits of members, the loan paid within 30 days, members' deposits withdrawn within 30 days and other short-term liabilities to the sum of deposits withdrawn over 30 days and long-term liabilities. This ratio should be more than 5%.

Inspectors prepare and introduce savings and credit cooperatives which did not comply market laws and regulations for suspend and validate of license in meeting of Financial Regulatory Commission.

3.4.3. Prudential Ratios on NBFIs

Non-banking financial institutions shall assess an operational risk according to the following prudential ratios and implement it for its operation.

- Capital adequacy
- Liquidity risk
- Credit concentration risk
- Foreign exchange rate risk
- Trust service risk
- Fixed asset ratio
- Debt securities ratio

3.4.3.1. Capital Adequacy

Capital stands for share capital (including common stocks, preferred stocks and treasury stocks), other equity (including additional paid-in capital, revaluation surplus and donated capital) and retained earnings or losses. Tier-1 capital consists of share capital (common stocks, treasury stocks and preferred stocks), reserve funds built from net profits and retained earnings and losses, additional paid-in capital (of common stocks) and donated capital.

Risk weighted assets is calculated as the weighted sum of on balance assets and off-balance contractual contingencies and obligations with the risk-weights specified in the following:

〈Table 2-6〉 Risk Weights for Assets

No.	Asset classification	Risk level
1	Cash	0%
2	Float	20%
3	Deposits at domestic banks and financial institutions	20%
4	Deposits at foreign banks and financial institutions	20%
5	Deposits at foreign banks and financial institutions	50%
6	Deposits at foreign banks and financial institutions	100%
7	Deposits at foreign banks and financial institutions	150%
8	Government securities	0%
9	Central bank bills	0%
10	Other securities	100%
11	Loan outstanding	100%
12	Financial lease receivable	100%
13	Factoring accounts receivable	100%
14	Other fixed assets	100%
15	Fixed and intangible assets	100%
16	Other assets	100%

Source: The Financial Regulatory Commission.

The risk weights for claims on foreign banks and the exposures backed by the foreign bank guarantees shall be determined based on the table below where the corresponding risk-weights are mapped to the ratings assigned by the internationally recognized rating agencies such as Standard and Poors, Moody's, Fitch and others.

〈Table 2-7〉 Risk-Weights Based on Ratings

S&P / Fitch	AAA/AA-	A+/A-	BBB+/BBB-	BB+/B-	B-below	Unrated
Moody's	Aaa/ Aa3	A1/A3	Baa1/Baa3	Ba1/B3	B-below	
Long term claims (more than 3 months)	20%	50%	50%	100%	150%	100%
Short term claims (up to 3 months)	20%	20%	20%	50%	150%	100%

Source: The Financial Regulatory Commission.

Three prudential ratios are:

- Tier-1 capital to risk-weighted assets ratio should be more than 10 percent;
- The capital to risk-weighted assets ratio should be more than 20 percent;
- Tier-1 capital to total assets ratio should be more than 10 percent.

3.4.3.2. Liquidity Risk

The liquidity ratio shall be calculated as the liquid assets divided by the total liabilities on a standalone basis by tugrik, foreign exchange and sum of tugrik and foreign exchange minimum requirement for the liquidity ratio shall be set by the 8 percent. Liquid assets equal the sum of cash in hand, Central bank bills, deposits (current and savings accounts) placed in foreign and domestic banks less the balance of transfer delays in the clearing account.

The total liabilities shall be estimated as the sum of all types of current and savings account by banks, corporate and other entities, and individuals, trust service account, loans outstanding to the banks, funding and investments from non-banking institutions.

3.4.3.3. Credit Concentration Risk

In case where the total exposures of loan, credit equivalent assets and guarantees issued to single borrower or its related entities should be less than 30 percent of total capital. The sum of loans which are taken by board member or board chairman, shareholders, employees of non-banking financial institutions and their related person, article 3.2.1 of the Banking law people should be less than 25 percent of total capital. The loans which are taken by board member or board chairman of non-banking financial institutions, shareholder of non-banking financial institutions, employees of non-banking financial institutions and their related person, article 3.2.1 of the Banking law people should be less than 10 percent of total capital. The total amount of the NBFI's owned securities should not exceed 50% of the total capital. NBFIs can only invest in the shares of "A" board of the Mongolian Stock Exchange, and the total amount of the shares of a company should not exceed 20 percent of total capital; it shall not exceed 20 percent of the total amount of shares issued by a company. The total amount of the company's debt securities purchase should not exceed 20 percent of the NBFI's equity. Total amount of asset-backed securities should not exceed 10 percent of NBFI's equity. Total amount of guarantee issued by NBFI should not exceed 70% of equity.

3.4.3.4. Other Risks

As for foreign exchange risk, the ratio of the assets and liabilities of foreign currency should not exceed +/- 40 percent of the equity for total foreign currency. To manage trust service risk, the ratio of trust service to total capital should not exceed 80 percent. All NBFIs are required to observe that net fixed asset to total capital should not exceed 15 percent and debt securities to total capital should not exceed 50 percent.

3.4.4. Follow-up Actions

For SCCs, the licensed savings and credit cooperatives should take responsibility to meet the prudential ratios within two quarters. If the reporting period of suspension and invalidation of license in the case of SCC not meeting the prudential ratios, will start after the period as stated in the two quarters. And if licensed non-banking financial institution's tier-1 capital to risk-weighted assets ratio 1-5 percent, the capital to risk-weighted assets ratio 1-9 percent, tier-1 capital to total assets ratio 1-4 percent inspector will take the following: temporarily or permanently stop some of the activities that cause losses; suspend dividend distribution, and prohibit to take assets from others.

If the capital to risk-weighted assets ratio is less than 0 percent, the license of non-bank financial activities will suspend for 6 months. The obligation given by the Committee during the suspension period and if NBFI did not comply with requirements, then invalidate the permission and inform the public.

4. Non-Bank Deposit Taking Institutions in Korea: Industry and Supervision

4.1. Structure of Financial Industry in Korea

The topography of Korean financial industry is complex and the best way to understand it in a systematic manner is to classify all licensed institutions and organizations following the way the Financial Supervisory Services (FSS) does; financial holding companies, banking institutions, non-banking financial institutions, insurance companies, investment companies, and others. As of 2016, a total of 4,048 financial institutions are licensed and operating under the supervision by the FSS.

〈Table 2-8〉 Financial Institutions and Organizations under the FSS Supervision; 2016

Classification	The number of licensed entities
Financial Holding Companies	9
Banking Institutions	61 national banks (7), regional banks (6), specialized banks (5), branches of foreign banks (43)
Non-banking Financial Institutions	3,081 mutual savings banks (79), Agricultural, fisheries and forestry cooperatives (1,357), credit unions (904), money lenders (650), specialized credit finance companies (86), associations of non-banking financial institutions (5)
Insurance Companies	61 life insurance companies (24), non-life insurance companies (18), branches of foreign insurance companies (14), associations of insurance companies (5)
Investment Services Providers	698 Securities companies (43), futures companies (5), asset management companies (165), investment advisory firms (159), REITs (11), ship investment companies (93), ship investment management companies (5), corporates restructuring REITs (162), credit rating companies (4), bond rating companies (4), fund rating companies (4), money brokerage companies (10), branches of foreign securities companies (10), others (27)
Others	138
Total	4,048

Source: FSS.

4.1.1. Banking Institutions

Notwithstanding the gradual growth of capital market after economic crisis in 1997, banking sector is still the largest and most important intermediaries in Korean financial market (Kim (2012)). Banking institutions are classified into two different categories for supervisory purpose by the FSS; domestic banks and branches of foreign banks Domestic banks comprise national banks, regional banks, and specialized banks. National banks operate throughout the country without any regional restriction. The operational of regional banks is limited by geographical restriction and the scope of activities is slightly narrower than national banks. Specialized banks are government-affiliated policy banks created under individual legislation. A total of 19 domestic banks were under operation at the end of 2017

consisting of 8 national banks, 6 regional banks and 5 specialized banks[6]. One noticeable event in 2017 is that two internet banks started to provide banking services.

The aggregate assets of the domestic banks recorded 2,738 trillion KRW in 2017 increasing by 4.4% from the previous year and was equivalent to 158% of GDP. The growth in total assets in banking sector was fairly moderate in 2017 compared with preceding years. Deposits at domestic banks increased by 6.3% to reach 1,491 trillion KRW in 2017 while total loans rose by 79 trillion KRW to 1,764 trillion KRW for the same year. Domestic banks' net income increased significantly by 360% to 11.15 trillion KRW in 2017. In spite of steady increase in assets, employment of domestic banks have declined in recent years mainly due to widespread adoption of information technology in banking sector.

〈Table 2-9〉 Assets and Net Incomes of Domestic Banks

(Unit: trillion KRW)

Year	Banks	Employees	Assets	Equity	Deposits	Loans	Net Income
2012	18	137,583	2,031	154	1,117	1,315	9.36
2013	18	135,458	2,101	157	1,145	1,368	4.48
2014	17	135,496	2,288	169	1,221	1,495	6.84
2015	17	133,815	2,449	175	1,321	1,601	4.44
2016	17	132,901	2,623	178	1,402	1,685	2.42
2017	19	128,496	2,738	188	1,491	1,764	11.15

Note: Domestic banks include national banks, regional banks, and specialized banks.
Source: FSS.

Financial stability of domestic banks have been strongly maintained in recent years. The BIS capital adequacy ratio of domestic banks recorded 15.24% in 2017, which is well above the minimum regulatory requirement of 8%. The ratio of non-performing loans to total loans decreased to 0.9% in 2017 from 1.1% in 2016. Along with stabilization of soundness indicators, profitability of the banking sector has also been enhanced. Return on asset rose to 0.51% in 2017, which was a significant improvement compared with 0.11% in 2-16 or 0.16% in 2015. It is noticeable that the increase in profitability was achieved in spite of deteriorating net interest margin.

6) Korea Development Bank, Industrial Bank of Korea, Korea Exim Bank, Nonghyup Bank, and Soohyup Bank. Korea Exim Bank does not accept deposits but provides loans when credit provision is accompanied by exports or imports.

〈Table 2-10〉 Principle Indicators of Domestic Banks

(Unit: %)

Year	BIS Capital Ratio	NPL Ratio	ROA	Net Interest Margin
2012	14.30	1.0	0.47	2.10
2013	14.52	1.2	0.21	1.87
2014	13.95	1.0	0.31	1.79
2015	13.91	1.0	0.16	1.79
2016	14.81	1.1	0.11	1.53
2017	15.24	0.9	0.51	1.63

Note: 1) Domestic banks include national banks, regional banks, and specialized banks.
2) NPL indicates non-performing loans.
Source: FSS.

One of the most frequently debated issues in Korean financial market is the rapid growth of household loans led by credit provision by the banks. At the end of 2017, loans to the household sector by domestic banks recorded 659.54 trillion KRW, up by 7.1% from a year ago to occupy 43.2% of total loans extended by domestic banks. The rapid growth of household loans have been maintained ever since early 2000's in spite continued efforts to control the speed of growth by the regulatory authorities that become concerned about the stability of household loans.

〈Table 2-11〉 Composition of loans by Domestic Banks

(Unit: Trillion KRW)

Year	Household (A)	SME	Large Enterprise	Others	Total (B)	Proportion of Household Loans (A/B)
2012	463.50	459.95	158.16	27.73	1109.34	0.42
2013	478.18	487.04	167.32	32.44	1164.98	0.41
2014	517.41	522.43	183.52	49.76	1273.11	0.41
2015	562.07	560.70	177.50	70.15	1370.42	0.41
2016	616.05	610.16	166.17	52.19	1444.58	0.43
2017	659.54	655.46	161.64	49.57	1526.21	0.43

Note: 1) Domestic banks include national banks, regional banks, and specialized banks.
2) SME indicates loans to small and medium enterprises.
Source: FSS.

4.1.2. Insurance Companies

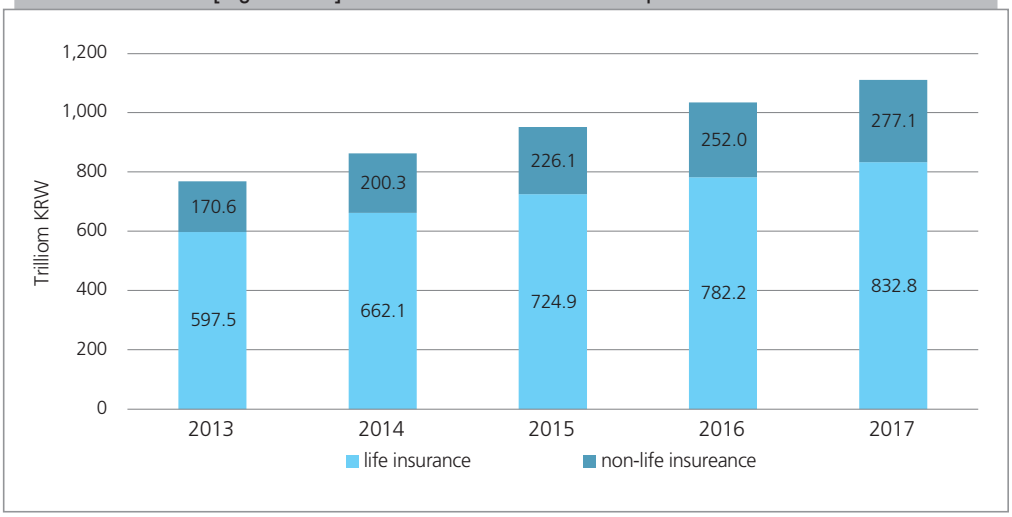
Even with short history of development, Korean boasts one of the largest and most advanced insurance industries in the world. According to Swiss Re (2017), Korea was ranked seventh in the world in terms of total insurance premium written in 2016 with 170.9 billion USD. Normalizing the size of insurance market with size of economy to make international comparison, Swiss Re (2017) reported that the ranking of the Korean insurance market rose to fifth in terms of insurance penetration defined as total insurance premium relative to GDP. Utilizing data from 30 OECD member countries, Park (2014) showed that insurance industry in Korea was relatively large or mature after controlling for the effect of income on demand for insurance.

Despite relatively high saturation, insurance market in Korea is expected to grow steadily thanks to rapid progress of aging process and accompanying increase in demand for pension products. Park (2015) showed that Korea had relatively young population in 2010 compared to most European countries with aging index around 15 but is projected to become the oldest country in the world in 2060 with the index higher than 80. In the meantime, life cycle theory of savings predicts that young Koran population will accumulate assets to finance consumption after retirement. Long-term insurance products and pension assets would be the main vehicle for retirement savings.

There were 57 licensed insurance companies in Korea at the end of 2017. 25 among them are life insurers and 32 non-life insurers. Foreign investors can participate in Korean insurance market as a locally incorporated entity or branch of foreign insurance company and 26 foreign insurers had business operation in Korea in 2017. The insurance industry has maintained strong growth in recent years. The total asset of all insurance companies, life and non-life, had increased by 9.6 percent[7)] per year from 2013 to 2017 to reach 1,110 trillion KRW. Life insurance industry occupies three quarters of all assets in the insurance industry though the growth of assets had been faster in non-life insurance companies.

7) From 2013 to 2017, average annual asset growth rate was 8.7 percent for life insurance and 12.9 percent for non-life insurance.

[Figure 2-25] Total Assets of Insurance Companies in Korea



Source: FSS.

The profitability of life insurance companies had been deteriorated in recent years mainly due to falling return from investment and increasing expenditure incurred by business activities. Return on assets of life insurance companies reached 0.48% in 2017, which was still lower than in previous years. With worsening profitability, risk-based capital ratio, an indicator for ability of insurance companies to cope with expected cash outlay from insurance claims, declined from 310.4% in 2014 to 267.6% in 2017.

In contrast to like insurance industry, the profitability of non-life insurance industry had been steadily improved thanks to decrease in loss ratio. Increasing profitability was noticeable in that it was achieved in the midst of worsening operational efficiency and slumping investment return. Ratio of operating expenses, operating expenses compared to total premium written, rose from 18.46% in 2014 to 20.30% in 2017. Moreover, return on investment decreased from 3.97% to 3.39% during the same period. Higher profitability of non-life insurance companies does not seem to have contributed to enhancing their ability to respond to cash outflow, expected and unexpected. The risk based capital ratio was 238.51% in 2017, which was significantly lower than 261.02% in 2013.

〈Table 2-12〉 Key Indicators of Insurance Industry

(Unit: %)

		2013	2014	2015	2016	2017
Life	ROA	0.48	0.51	0.52	0.33	0.48
	Ratio of New Contracts	13.31	17.62	16.95	14.95	12.84
	Ratio of Lapses & Surrenders	7.16	8.82	8.47	8.42	8.36
	Ratio of Claim Paid	54.76	54.94	53.43	56.85	65.49
	Ratio of Operating Expenses	7.41	7.27	6.86	6.94	8.51
	Return on Investment	4.8	4.6	4.5	4.0	3.9
	RBC	283.5	310.4	278.3	240.6	267.6
Non-life	ROA	1.22	1.26	1.27	1.45	1.46
	Direct Loss Ratio	33.73	34.4	35.19	36.09	37.45
	Earned Incurred Loss Ratio	84.05	85.03	84.72	83.36	81.91
	Ratio of Operating Expenses	19.13	18.46	18.96	19.11	20.30
	Return on Investment	4.03	3.97	3.79	3.53	3.39
	RBC	261.02	256.28	244.34	227.91	238.51

Note: 1) ROA = (net income/total assets)*100
2) Ratio of new contracts = (new contracts/total contracts at the beginning of the year)*100
3) Ratio of lapses and surrenders = (contracts lapsed and surrendered/ total contracts at the beginning of the year)*100
4) Ratio of claim paid = (claim paid/premium written)*100
5) Ratio of operating expenses = (operating expenses/premium written)*100
6) RBC (risk-based capital) = (available capital/required capital)*100
7) Direct loss ratio = (direct claims paid/direct premium written)*100
8) Earned incurred loss ratio = (incurred losses/earned premium)*100
9) Ratio of operating expenses = (operating expenses/net premium written)*100

Source: FSS.

4.1.3. Financial Investment Services Providers

4.1.3.1. Capital Markets in Korea

Stock market is economic space where securities representing ownership of the issuing company are traded. Stock markets can be classified into the primary markets and the secondary markets. Newly issued equities through initial public offering (IPO) or seasoned offering are sold to the general public in the primary markets and investors purchase equities from other investors, rather than from issuing companies themselves in the secondary markets.

External financing through issuance of equity securities in the primary markets is significantly affected by financial market conditions. The primary markets were very sluggish in 2012 and 2013 due to uncertainties surrounding international financial markets such as European sovereign debt crisis, upcoming tapering of quantitative easing in the United States, and economic instability of several emerging economies. The market recovered steadily that total amount of new stock issuances amounted to 12.196 trillion KRW in 2017.

〈Table 2-13〉 Stock Issuance in Korea

(Unit: billion KRW)

Year	IPO	Seasoned Offering	Total
2011	2,438.5 (67)	9,410.2 (79)	11,848.7 (146)
2012	466.4 (25)	1,794.5 (55)	2,260.9 (80)
2013	1,289.1 (47)	3,644.0 (61)	4,933.1 (108)
2014	4,664.9 (82)	3,741.8 (66)	8,406.7 (148)
2015	4,520.8 (142)	4,639.4 (54)	9,160.2 (196)
2016	6,451.1 (107)	6,245.8 (87)	12,696.9 (194)
2017	7,771.9 (106)	4,424.6 (83)	12,196.5 (189)

Note: 1) The sum of issuance amount in KOSPI and KOSDAQ markets
2) The numbers in parentheses are the numbers of issuances.
Source: FSS.

There are two secondary stock markets in Korea; KOSPI market and KOSDAQ market. The former is the market for stocks of traditional and mature companies and the latter for relatively new and technology-intensive ones. The total of 2,041 companies, 774 in KOSPI and 1,276 in KOSDAQ, were listed and traded at the end of 2017. The market capitalization of KOSPI market in 2017 was 1,605 trillion KRW while KOSDAQ market was much smaller with market capitalization of 143 trillion KRW in the same year. Trading activities had been slowed down steadily in both markets. The average trading amount decreased to 5.95 trillion KRW in 2017 from 7.89 trillion KRW in 2012.

〈Table 2-14〉 Size of Stock Markets in Korea

(Unit: Trillion KRW)

Year	KOSPI Market		KOSDAQ Market		Total	
	Market Cap.	Daily Trading	Market Cap.	Daily Trading	Market Cap.	Daily Trading
2011	1,042.00	5.19	46.19	1.25	1,088.19	6.44
2012	1,154.29	5.80	86.10	2.10	1,240.40	7.89
2013	1,185.97	5.62	97.97	1.92	1,283.95	7.54
2014	1,192.25	6.86	105.99	2.25	1,298.25	9.11
2015	1,242.83	4.82	109.12	2.13	1,351.95	6.95
2016	1,308.44	3.99	119.29	1.82	1,427.73	5.82
2017	1,605.82	3.98	143.09	1.97	1,748.91	5.95

Note: Daily trading indicates average daily trading amount in KRW.
Source: FSS.

Marketable debt instruments are traded in bond markets. Like stock markets, bond markets are classified into two different categories with different economic functions; the primary markets and the secondary markets. Bond markets in Korea also classified into several categories according to who issue the securities; Korea Treasury Bonds (KTB) by the government of Korea, municipal bonds by local governments, special bonds by government-sponsored enterprises, monetary stabilization securities (MSB) by the Bank of Korea, financial bonds by licensed financial institutions including banks, corporate bonds, and asset backed securities (ABS). KTBs are the most important debt securities both in the primary and the secondary markets. In 2017, the market share of KTB markets in Korean bond markets was 33.6% in terms of outstanding volume and 76.2% in terms of trading volume, both of which had been increasing continuously. The market for MSBs was also very active in the primary as well as the secondary markets while the outstanding volume is relatively low due to short maturities of MSBs.

〈Table 2-15〉 Bond Market in Korea: New Issuance

(Unit: Trillion KRW)

	2011	2012	2013	2014	2015	2016	2017
KTB	104.1	112.9	136.7	149.0	164.3	139.4	124.3
Municipal Bond	3.7	4.0	4.8	4.9	6.1	4.0	3.9
Special Bond	71.3	107.1	88.5	60.4	91.4	61.8	64.1
MSB	197.1	167.2	175	189.9	188	161.1	163.7
Financial Bond	109.6	96.6	105.3	121.4	143.1	143.5	171.7
Corporate Bond	72.9	76.8	66.8	58.5	58.3	50.4	64.0
ABS	13.2	19.3	21.4	21.2	24.5	22.4	22.8
Total	572.0	583.9	598.4	605.2	675.7	582.6	614.4

Note: 1) KTB indicates bonds issued by the Ministry of **Economy and Finance** of Korea.
2) ABS indicates asset-backed securities.
Source: Korea Financial Investment Association.

〈Table 2-16〉 Bond Market in Korea: Outstanding Volume

(Unit: Trillion KRW)

	2011	2012	2013	2014	2015	2016	2017
KTB	104.1	112.9	136.7	149.0	164.3	139.4	124.3
Municipal Bond	3.7	4.0	4.8	4.9	6.1	4.0	3.9
Special Bond	71.3	107.1	88.5	60.4	91.4	61.8	64.1
MSB	197.1	167.2	175	189.9	188	161.1	163.7
Financial Bond	109.6	96.6	105.3	121.4	143.1	143.5	171.7
Corporate Bond	72.9	76.8	66.8	58.5	58.3	50.4	64.0
ABS	13.2	19.3	21.4	21.2	24.5	22.4	22.8
Total	572.0	583.9	598.4	605.2	675.7	582.6	614.4

Note: 1) KTB indicates bonds issued by the Ministry of **Economy and Finance** of Korea.
2) ABS indicates asset-backed securities.
Source: Korea Financial Investment Association.

〈Table 2-17〉 Bond Market in Korea: Trading Volume

(Unit: Trillion KRW)

	2011	2012	2013	2014	2015	2016	2017
KTB	4013.4	4695.4	4953.1	4279.3	4653.8	5741.1	4,634.4
Municipal	15.9	19.5	19.5	18.4	21.2	16.1	13.7
Special	244.9	373.3	340.2	307.6	294.6	271	256.7
MSB	1612.4	1491	1403.4	1222.6	1270.8	1138	1,131.7
Financial	582	514.6	538.1	579.8	592.4	612.1	691.8
Corporate	181.9	195.1	177.6	161.6	122.5	119.5	127.8
ABS	28.2	32.1	36.6	34.7	30.9	34.8	43.7
Total	6,678.6	7,321	7,468.5	6,604	6,986.3	7,932.6	6,899.8

Note: 1) KTB indicates bonds issued by the Ministry of Economy and Finance of Korea.
2) ABS indicates asset-backed securities.

Source: Korea Financial Investment Association.

Another important group of capital market products in Korea is derivative security. A total of 13,409 futures and options products were listed and traded on the Korea Exchange on December 29 2017 and are written on various underlying assets such as stock indexes, single stocks, interest rates, currencies, and commodities.[8)]

〈Table 2-18〉 Listed Derivative Products in Korea

	Futures	Options	Total
Stock Index	204	1,294	1,498
Single Stocks	2,316	9,202	11,518
Interest Rate	9	0	9
Currency	274	86	360
Commodity	24	0	24
Total	2,827	10,582	13,409

Source: Korea Exchange.

8) Stock index derivatives are written on various market indexes constructed from KOSPI and KOSDAQ markets. The underlying assets for interest rate derivatives are return on 3-year, 5-year, 10-year Korea Treasury Bonds. Derivatives on US Dollar, Japanese Yen, Chinese Yuen, and Euro are currently listed and traded. Futures on gold and pork are commodities derivatives.

Exchange-traded derivative markets in Korea is one of the largest in the world. Statista reports that the Korea Exchange is the 12th largest derivative market in the world in terms of the number of derivative contracts traded in 2016[9]. In particular, according to World Federation of Exchanges (2017), KOSPI 200 Index Options are the second largest derivative product in the world measured by the number of contracts traded in 2016.

Derivatives written on stock indexes are the most actively traded products in the Korea Exchange followed by derivatives on single stocks. Markets for derivative securities on stock indexes had the largest trading volume in the world up until 2012. The dramatic drop in trading volume of stock index derivatives was the result of regulatory measures to cool down the market by the FSC concerned about overheated trading activities in previous years.

〈Table 2-19〉 Derivative Contracts Traded

(Unit: Contracts)

Year	Stock Index	Single Stock	Interest Rate	Currency	Commodity
2011	1,662,668,710	59,966,168	37,643,887	71,221,596	5,981
2012	3,734,092,898	100,490,960	42,773,176	54,506,045	11
2013	630,431,297	95,870,157	41,284,603	53,027,990	68
2014	500,070,922	88,015,444	31,489,812	49,803,565	0
2015	533,038,635	113,776,978	37,791,849	53,934,228	0
2016	403,384,632	183,685,044	40,539,805	65,606,504	0
2017	621,819,419	297,738,393	34,287,487	62,203,981	0

Source: Korea Exchange.

4.1.3.2. Securities Dealers and Brokers

Securities dealers are called securities companies in Korea and they also provide brokerage services for securities trading. In particular, securities companies are engaged in brokerage, issuance and underwriting and dealing of securities. In addition, they also sell collective investment products and provide asset management services such as management of wrap accounts and cash management accounts.

As of 2017, 55 securities companies, 44 domestic companies and 11 branches of foreign securities companies, were licensed to provide dealing and brokerage

9) https://www.statista.com/statistics/272832/largest-international-futures-exchanges-by-number-of-contracts-traded/

services. Domestic securities companies' assets increased by 9.4% to 381.5 trillion KRW in 2017 from 348.9 trillion KRW in the previous year. The relative asset size of securities companies compared to commercial banks had been slightly increased from 23.5% in 2016 to 24.7% in 2017. The market structure of securities dealing and brokerage services industry is much more competitive than that in commercial banking industry in that the Herfindahl-Hirschman index, an indicator of market concentration, was 744 for securities dealing and brokerage services industry and 1,722 for banking industry in 2017. The profitability of securities companies improved significantly in recent years. Slumping in 2012 and 2013, securities companies' operating profits as well as net income have recovered since then driven by the increase in brokerage commissions. In contrast to improved profitability, net capital ratio (NCR)[10], the main indicator of financial stability of securities companies, had been declined due to the fact that asset growth had been much faster than increase in shareholders' equity. However, the current level of NCR is still high enough that it should cause no concern on sustainability of the industry.

〈Table 2-20〉 Key Indicators of Domestic Securities Companies in Korea

	Asset	Equity	Operating Profit	Net Income	NCR	ROE
2011	222,367	38,337	1,894	1,457		
2012	250,710	38,859	781	591		
2013	262,568	38,543	180	-228		-0.59
2014	305,819	39,935	1,853	1,348		3.48
2015	337,684	43,541	3,665	2,871	659	6.85
2016	348,905	45,193	2,240	1,761	617	4.50
2017	381,529	46,630	4,352	3,400	573	7.19

Note: 1) NCR indicates net capital ratio.
2) ROE is return on equity calculated as the ratio of net income to shareholders' equity.
Source: FSS.

In addition to securities companies, another kind of investment service providers offering securities dealing and brokerage services are futures companies that are involving exclusively in handling derivative securities. There are six futures companies currently under operation.

10) NCR is the ratio of surplus capital to the minimum capital requirement. Surplus capital is the difference between net operating capital and amount of total risk quantified in monetary units.

4.1.3.3. Asset Management Companies

An asset management company is an investment service provider that manages assets of a collective investment vehicle. The current law regulating investment services in Korea allows two forms of collective investment vehicle; investment trusts and investment companies also called mutual funds.

As the general public's interests in indirect investment instruments collective investment vehicles offer increases, the asset management industry has experienced fast growth in recent years. The number of asset management companies had been tripled from 71 in 2010 to 215 in 2017. In addition, asset under management (AMU) by asset management companies increased by 73.7% during the same period.

Financial Investment Services and Capital Markets Act, the law regulating capital markets in Korea, classifies collective investment vehicles into five categories based on the types of assets held; securities, MMF, real estates, special assets and mixed assets. Securities type vehicles are further divided into six different sub-types; bind, equity, hybrid bond, hybrid equity, derivatives, fund of funds. Stocks funds were the most important indirect investment vehicle until 2014 when money market funds overtook stocks funds as the leading vehicle in terms of assets under management by collective investment vehicles.

〈Table 2-21〉 Assets under Management by Fund Types

(Unit: billion KRW)

	2011	2012	2013	2014	2015	2016	2017
Securities	186,980	201,996	210,790	227,413	241,794	257,754	283,070
Stocks	87,464	86,262	80,056	73,439	75,187	67,498	87,464
Bonds	43,310	47,251	56,115	71,820	85,835	104,006	95,733
Derivative	21,332	31,652	32,211	32,999	30,602	36,746	45,563
Other types	34,874	36,831	42,408	49,155	50,170	49,504	54,310
Real Estates	16,429	19,901	24,249	29,741	35,908	47,166	61,382
MMF	53,883	63,986	67,090	83,234	94,073	104,995	97,963
Others	18,275	22,906	28,603	34,615	41,810	52,480	64,438
Total	277,341	307,592	328,445	371,392	413,585	462,395	506,853

Note: 1) Other types of securities funds include hybrid equity, hybrid bond, fund of funds types.
2) Others include special assets type and mixed assets type.
Source: Korea Financial Investment Association.

4.1.3.4. Investment Advisory Companies

Investment advisory companies provide investors with advisory services on the value of financial investment products or decision makings related to financial investment. They also conduct investment activities on behalf of clients based on their own professional discretion. The number of investment advisory companies increased continuously from 29 in 2011 to 34 in 2014 and 56 in 2017. In contrast, the total amount under investment advisory contracts and discretionary investment contracts had not grown in line with the increase in the number of companies or employees.

〈Table 2-22〉 Investment Advisory Companies

(Unit: billion KRW)

Year	No. of Companies	No. of Employees	Discretionary Contracts	Advisory Contracts
2011	29	209	13,536	12,292
2012	30	181	12,257	10,546
2013	31	180	12,125	7,688
2014	34	192	13,865	9,679
2015	39	216	16,459	18,254
2016	43	224	15,839	8,480
2017	56	305	8,801	7,080

Source: FSS.

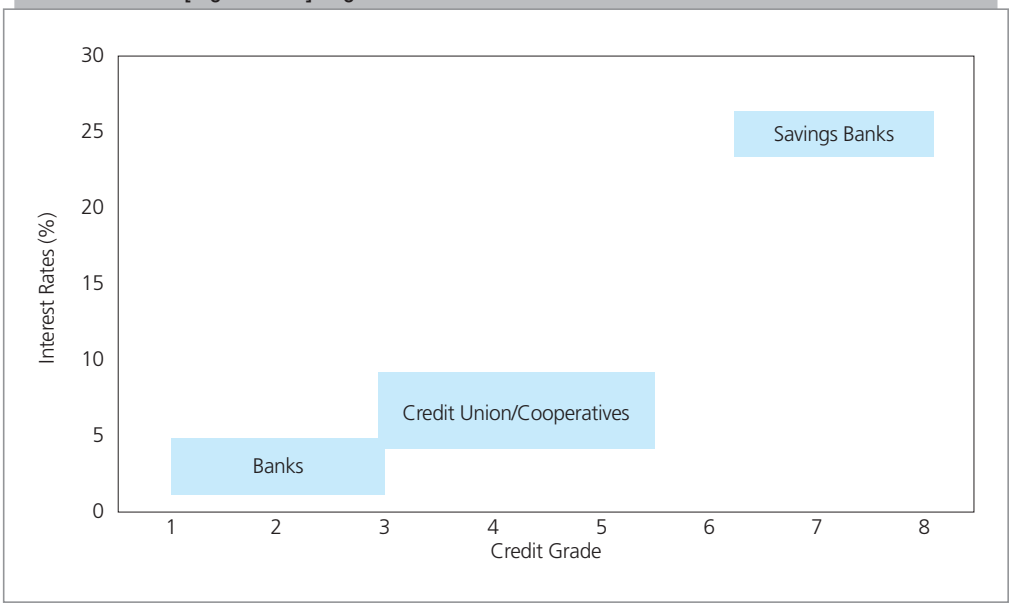
4.1.4. Non-Bank Deposit Taking Institutions (NBDIs)

Non-bank deposit taking institutions (NBDIs) are the financial institutions that are allowed to take deposits from the general public excluding commercial banks. They are savings banks, credit unions, and four separate cooperatives[11]. Deposits are very special financial products in that severe informational asymmetry makes it impossible to transfer deposit contracts to the third parties and very vulnerable to external shocks. Consequently, financial supervisors pay particular attention to stability or prudentiality of deposit taking financial institutions. In most countries, deposit taking institutions are treated symmetrically by supervisory authorities as far as prudential regulations are concerned. However, prudential requirements for NBDIs in Korea are somewhat less strict than for commercial banks. The rationale for

11) They are agricultural cooperative, fisheries cooperatives, forestry cooperatives, and community credit cooperatives.

asymmetric treatments between commercial banks and NBDIs is segmentation of the consumer credit market. The dominant majority of NBDIs' customers are households and the small self-employed. Commercial banks also have significant interests in the same groups of customers. Unlike other countries where commercial banks confronts with direct competitions from NBDIs in credit markets for households and the self-employed, there exists a clear segmentation of the market in Korea. Commercial banks are serving prime customers while NBDIs occupy credit markets for sub-prime customers as illustrated in [Figure 2-26].

[Figure 2-26] Segmentation of Consumer Credit Markets in Korea



Note: The figure illustrates market positions of deposit taking institutions for non-collateralized loans to households and the self-employed.

Commercial banks offer non-collateralized loans with low interest rates to households and the self-employed of the best credit grades. Credit unions and cooperatives serve customers of lower credit grades with higher interest rates. The markets for banks and credit unions overlap in small area but they are distinguishable in most of the cases. Savings banks provide customers of very low credit grades with non-collateralized loans charging interest rates near the legal limit of 25% per year. Asymmetric regulatory approaches adopted by the Korean supervisors may reflect the structural differences in credit risks of main customer bases.

4.1.4.1. Credit Unions

A credit union is a not-for profit financial institution that is collectively owned by its members. In principle, credit unions take deposits from the members and make loans to the members. The organizational unit for a credit union is the commonality in community, workplace or occupation. It was 1960 that the first credit union, Holy Family Credit Union, was established in Korea by the employees of a hospital affiliated to the Catholic church. The legal basis for credit unions was found by the enactment of Credit Unions Act in 1972. The law lays down the institutional provisions for important organizational and functional aspects of credit unions; membership, governance structure, business area, the National Federation, and supervision.[12)]

A credit union provide a wide range of financial services to its members; deposits and savings, loans, domestic exchange, custody of securities and valuable goods, bill discounting, fraternal insurance.[13)] The law also specifies that the National Federation of Credit Unions is to be established by equity investment of all licensed credit unions. The National Federation are allowed to collect membership fees to provide the following services to unions; guidance and coordination in the matters of business of unions, education of members, executive officers, and employees of unions, inspection and supervision of unions as designated by the Financial Services Commission, taking and managing deposits and savings from unions, extension of loans to unions, and fraternal insurance for unions and members.

There were already 582 credit unions in operation at the end of 1971, a year before Credit Unions Act was first went into effect. Up until 1997 when the Asian economic crisis hit hard Korean economy as well as financial markets, the number of credit unions had increased steadily to reach 1,666. Financial market instability caused by the crisis resulted in massive amount of non-performing loans, leaving a large number of credit unions insolvent. Restructuring of credit unions under stress was carried out led by the Financial Services Commission, thereafter. Liquidation and mergers of stressed credit unions resulted in significant reduction in the number of credit unions, 898 at the end of 2017. The total assets was stagnant during early 2000s and it recovered the pre-crisis level only in 2004. Ever since, the total assets have grown in a firm manner at average annual growth of rate of 10.7% from 2005 to 2017. It is remarkable that the steady asset growth was achieved while restructuring of the industry was continuing. The growth of credit unions from late 2000's was accompanied by increase in deposits from 22.6 trillion KRW in 2006 to 48.8

12) The English translation of the current version of Credit Unions Act can be found from http://elaw.klri.re.kr/kor_service/lawView.do?hseq=43321&lang=ENG.

13) Non-members are allowed to use the financial services offered by credit unions with some restrictions. In particular, loans and bill discounting provided to non-members cannot exceed one-third of total loans and bill discounting.

trillion KRW in 2012 and 73.3 trillion KRW in 2017. The profitability of credit unions started to improve from 2013 primarily thanks to increase in loans-to-deposit ratio. Loan-to-deposit ratio increased to 80.2% in 2017 from 67.3% in 2013 and 73.8% in 2015, respectively. Thanks to continuous efforts to strengthen financial stability, the ratio of non-performing loan had been constantly decreased from 12.1% in 2000 and 4.17% in 2013 to 2.13% in 2017.

〈Table 2-23〉 Key Indicators of Credit Unions

(Unit: billion KRW, %)

Year	Number	Assets	Net Income	Deposits	Loans	NPL Ratio	ROA
2000	1,317	20,469	-102	17,042		12.1	-0.60
2003	1086	19,556	100	16,353	11,066	6.33	0.50
2006	1024	26,290	122	22,585	15,255	4.49	0.47
2009	982	39,730	185	32,031	22,915	3.74	0.47
2012	949	55,340	173	48,827	32,147	4.17	0.34
2013	942	56,702	132	50,226	33,783	4.62	0.24
2014	920	60,523	190	53,639	37,470	3.51	0.34
2015	910	65,820	235	58,332	43,030	2.35	0.37
2016	904	73,740	228	65,409	51,850	2.06	0.33
2017	898	82,120	335	73,303	58,784	2.13	0.43

Source: FSS.

4.1.4.2. Cooperatives

In Korea, there are four cooperatives providing credit related services to their own members; Community Credit Cooperatives (CCCs), Agricultural Cooperatives, Fisheries Cooperatives, Forestry Cooperatives. No difference exists between cooperatives and credit unions when it comes to credit related services they provide. However, some important differences exist between credit unions and cooperatives. First, organizational units for cooperatives are defined for much narrower area than credit unions. CCCs are organized by the people who live in the same administrative area such as city or county and Agricultural Cooperatives by those who are engaged in agricultural sector and live in the same city or county. The membership qualification for Fisheries and Forestry Cooperatives are defined in a similar way to Agricultural Cooperatives. Second, the competent authorities are different. Credit unions are licensed and regulated by the Financial Services Commission (FSC) while CCCs by the Ministry of the Interior and Safety, Agricultural and Forestry cooperatives by

the Ministry of Agriculture, Food, and Rural Affairs (MAFRA), Fisheries Cooperatives by the Ministry of Oceans and Fisheries (MOF). However, the FSC, MAFRA, and MOF delegated their supervisory authorities to Financial Supervisory Services (FSS). While MAFRA does not delegate its supervisory authority to the FSS, the Ministry participates in a consultative group formed by the government ministries that are responsible for regulation and supervision of cooperative financial institutions and cooperate with other regulatory authorities to harmonize and coordinate regulatory policies. Next, cooperatives provide their members with non-credit services credit unions cannot. For example, CCCs plays active roles in community development and Agricultural Cooperatives operate joint purchase business for their members.

The first Community Credit Cooperative started as a credit union in 1963 by the National Reconstruction Movement Federation. CCCs had been under the jurisdiction of Credit Union Act since the legislation of the law in 1972. The enactment of Community Credit Cooperatives Act in 1982 separated CCCs from credit unions and provided legal and institutional foundation that allowed CCCs to pursue their own development strategies. The implementation of the Act was follows by a series of reorganization of cooperatives that were under severe financial stress causing the number of members to decline from 5.38 million in 1982 to 3.84 million next year. Banking services by Agricultural Cooperatives were launched in 1969 and the enactment of Credit Union Act established the legal framework to incorporate banking services provided by Agricultural Cooperatives into the financial system regulated by competent authorities. Fisheries Cooperatives started to provide banking services to their own members in 1974 and Forestry Cooperatives in 1993.

〈Table 2-24〉 Key Indicators of Cooperatives; 2017

(Unit: billion KRW, %)

	Community	Agricultural	Fisheries	Forestry
Number	1,315	1,131	90	142
Assets	150,481	326,240	27,702	6,327
Deposits	133,318	299,396	22,931	4,953
Loans	104,403	228,315	17,964	3,450
NPL	1.60	1.05	2.08	1.83
ROA	0.40	0.45	0.58	0.62
NCR	8.13	8.72	4.79	12.97

Note: 1) Number indicates the number of cooperatives.
2) NPL indicates the ratio of non-performing loans out of total loans.
3) ROS indicates return on assets and calculated as the ratio of net income to total assets.
4) NCR indicates net capital ratio and calculated as the ratio of net capital to total assets.
Source: FSS, National Federation of CCCs.

With assets worth over 510 trillion KRW in 2017, cooperatives constitute an important component in Korean financial system. They have the most extensive network of offices over the entire nation with more than 2,500 offices. Agricultural Cooperatives are the largest among cooperatives with the total assets of 362.2 trillion KRW followed by CCCs with the total assets of 150.5 trillion KRW.

4.1.4.3. Savings Banks

Savings banks in Korea provide core banking services such as deposits and loans. They share core customers with credit unions and cooperatives. The majority of their customers are sub-prime households or the self-employed that generally have difficulties in accessing to loans by commercial banks due to poor credit records or insufficient documentations for income verification. In addition to the core banking services of deposits and lending, savings banks provide their customers with a variety of services such as discounting of bills, foreign exchange transactions, safekeeping, execution of collection and payment as agents, intermediaries for corporate mergers and acquisitions. Originally, saving banks were called "mutual credit facilities" since their business of deposit taking and lending were restricted to members of credit fraternities that constitute the facilities. However, customer base of savings banks have been gradually expanded to include all customers without any restrictions.

Mutual banks have been subjected to somewhat strict regulations with a view to enhancing public confidence in savings banks, maintaining sound management practices, and preventing majority shareholders from abusing their power. For example, savings banks are prohibited from extending loans to any shareholders with more than 2 percent of total shares, to members of banks' management, and to those having special relations with banks. Moreover, savings banks are required to maintain at least a certain portion of total loan portfolio with individuals and SMEs within their business area that were prescribed by the license. The purpose of the regulation is to make sure that savings banks contribute to promoting regional economy and facilitating access to core financial services.

The Korea Federation of Saving Banks is a non-profit corporation with all savings banks as its members. The key functions of the Federation are conducting research and investigation to support business of savings banks, performing promotional activities to bolster sound credit culture and to consumer protection, and accepting deposits for reserve requirement from member banks, providing member banks with temporary loans and guarantees to help them maintain adequate level of liquidity.

Savings banks suffered from massive loss in early 2010's and prudentiality was deteriorated significantly. The losses resulted from the mismanagement of loan portfolio. Most of saving banks hold at least a third of loan portfolio with real

estate sector that experienced overheated boom followed by painful bursting of bubbles. Consequently, total assets decreased by 52.1% between 2011 and 2014 and the number of savings banks reduced to 87 in 2014 from 104 in 2011. BIS capital adequacy ratio, a representative indicator of financial soundness, reached a dangerously low level of 0.84% in 2011 but recovered minimum regulatory requirement of 8% in 2013 while ratio of non-performing loans, another important indicator of financial soundness, showed much slower recovery than BIS ratio. Saving banks are not yet fully recovered from the shocks that hit them in early 2010's.

〈Table 2-25〉 Key Indicators of Savings Banks

(Unit: billion KRW, %)

Year	2011	2012	2013	2014	2015	2016	2017
Numbers	104	96	91	87	79	79	79
Assets	76,701	57,799	42,785	36,756	40,192	47,526	54,959
Deposits	71,116	51,542	36,900	30,697	34,282	40,616	47,221
Loans	58,261	40,475	29,135	27,569	32,167	39,465	47,259
ROA	-7.13	-4.40	-2.47	-1.31	1.23	2.07	1.83
BIS	0.84	4.07	9.88	14.28	14.24	14.53	14.26
NPL	26.93	24.43	21.31	18.97	12.47	8.75	6.01

Note: 1) Number indicates the number of saving bank.
2) NPL indicates the ratio of non-performing loans out of total loans.
3) ROA indicates return on assets and calculated as the ratio of net income to total assets.
4) BIS indicates BIS capital adequacy ratio and calculated as the ratio of qualified capital to risk-weighted assets. The regulatory minimum of BIS ratio is 8%.

Source: FSS.

4.2. Financial Supervision in Korea

4.2.1. Financial Services Commission

In Korea, regulation of the financial industry are the responsibility of the Financial Services Commission (FSC). First established in 1998, the FSC is the single integrated regulator since it has the sole authority to regulate and supervise all financial institutions. The FSC is also responsible for formulating and executing financial policies.

The FSC is an independent government commission and given abroad mandate to oversee and regulate the financial markets and institutions and to enforce rules and

regulations on all licensed financial institutions and individuals. The jurisdiction[14] of FSC includes;

- Matters concerning financial policies and financial systems
- Supervision, inspection, and sanctions of financial institutions
- Licensing financial institutions and approval on mergers, conversions, and business transfer or takeover of financial institutions
- Surveillance, management, and supervision of capital market
- Protection of financial consumers including depositors and investors and damage remedy
- Establishment, amendment, and repeal of laws, rules, and regulations on matters under its jurisdiction
- Supervision of soundness of financial institutions dealing with transactions of foreign exchanges

The Commission consists of the Chairman, the Vice Chairman, and seven Commissioners.[15] All commission members are appointed by the President of Korea. The terms and status of commission members are guaranteed by law to ensure independence of the Commission.

4.2.2. Financial Supervisory Service

The Financial Supervisory Service (FSS) is a civilian executive agency for the FSC. It is responsible for supervision and inspection of financial institutions and enforcing rules and regulations directed by law. The FSC was first established on January of 1999 under the Act on the Establishment of Financial Supervisory Organizations[16] by consolidating four separate supervisory bodies; Banking Supervisory Authority, Securities Supervisory Board, Insurance Supervisory Board, and Non-bank Supervisory Authority.

The functions[17] of the FSC include;

- Inspection of business activities and fiscal soundness of licensed financial institutions
- Sanctioning licensed financial institutions and individuals according to results of inspections as warranted by law and delegated by the FSC

14) Article 17 of the Act on Establishment of Financial Services Commission
15) Four of them, vice minister of the Ministry of Economy and Finance, Governor of the Financial Supervisory Service, President of the Korea Deposit Insurance Corporation, Deputy Governor of the Bank of Korea, are *ex officio* members. The Chairman recommends the other three Commission members to the President of Korea for appointment.
16) It was replaced by the Act on Establishment of the Financial Services Commission in 2008.
17) Article 37 of the Act on Establishment of the Financial Services Commission

- Assistance to the FSC and its affiliated organizations

The Governor of the FSS is appointed by the President of Korea and the Vice Governors are appointed by the Chairman of the FSC with the recommendation from the Governor. The FSC has the power to approve the revision of the article of association and annual budget of the FSS.

The operational expenses of the FSS are covered by the contribution from the Government of Korea, the Bank of Korea, and licensed financial institutions. The amount of individual contribution is determined by various factors such as operating income, size of debts, and amount of resources the FSS expensed in inspecting financial institutions.

Examination is the one of most important activities for the FSS in fulfilling its mission and tasks. Because of the critical importance of effective examination in ensuring the safety and soundness of individual financial firms, a prerequisite for the stability of the financial system, the FSS routinely carries out both full-scope and targeted examinations paying attention to all aspects of financial institutions; business plan and activities, risk management, financial soundness, internal controls, and management competence. The FSS also conducts off-site surveillance of financial services firms on an ongoing basis to ensure safety and soundness of financial institutions and to monitor compliance. The examination cycle or frequency is determined by their risk exposure, scale of business, and complexity. The FSS takes the philosophy of risk-based supervision in its examination activities. Full-scope examinations are generally planned in advance in order to ensure a full and complete evaluation of a financial services firm's business conditions and financial health. Supervisory ratings, such as CAMEL-R for banking organizations, are usually reserved for the full-scope examination of the subject financial services firm's main office. Targeted examinations are also normally planned ahead but may take place on an ad hoc basis when deemed necessary for the purposes of consumer protection, risk prevention or mitigation, and safety and soundness. Upon the completion of an examination, the examiners' findings are communicated to the financial services firm's senior management and the board of directors with recommendations for changes and actions necessary to address areas of weakness that do not raise any significant supervisory concerns. Robust enforcement actions including referral to the prosecution authority for possible criminal penalties, revocation of business license, and monetary fines may ensue for more serious violations.

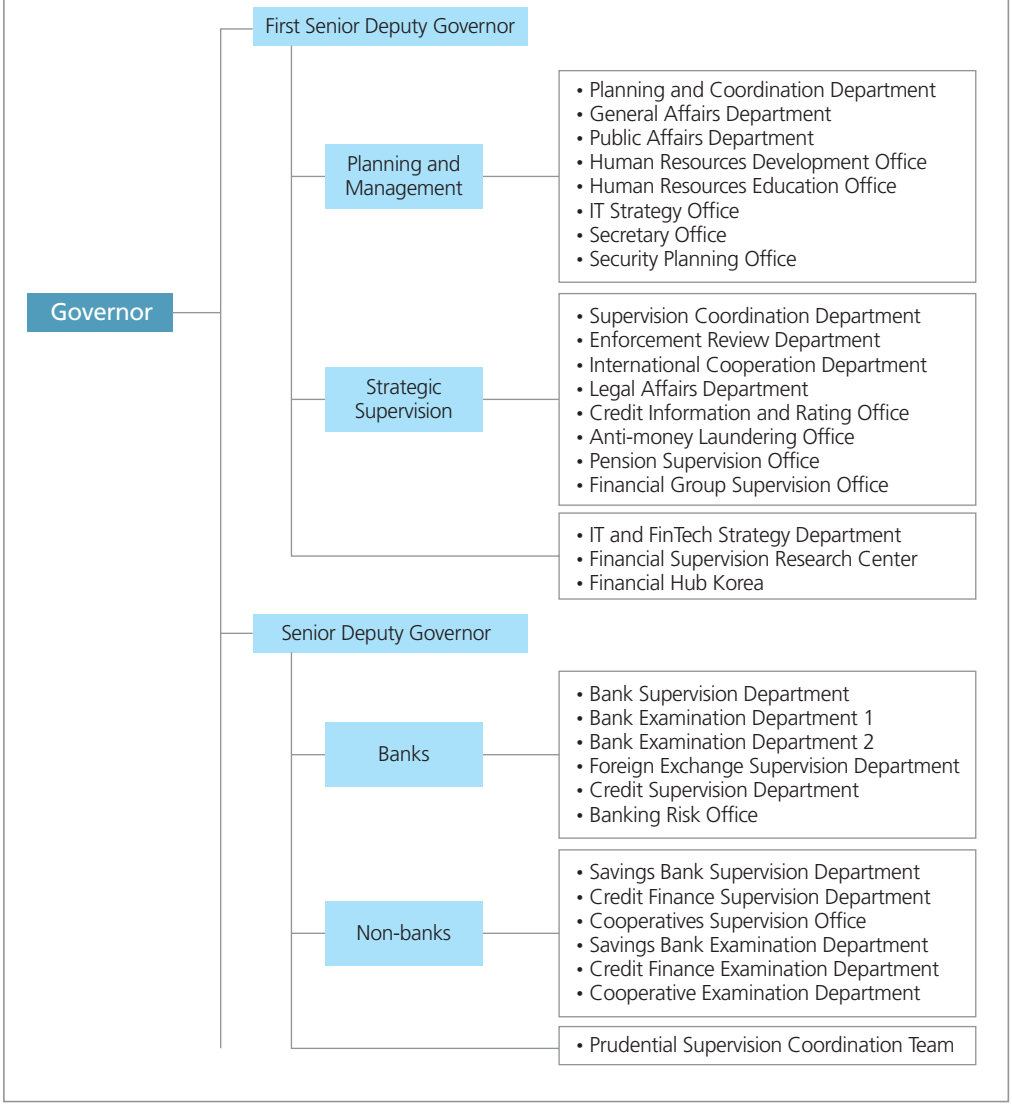
Capital market supervision by the FSS consists of three areas: corporate disclosure supervision, secondary securities market supervision, and investigation of unfair securities trading. Supervision on corporate disclosure is conducted to ensure that qualified companies disclose required information in appropriate manners to the

public. For example, primary securities issuers should file with the FSS the disclosure reports such as prospectus, registration statements, investor solicitation, and filing exemption. Companies whose securities are traded in the secondary markets are required to file periodic business reports and any material information relevant to valuation of companies in a timely and fair manner. Large shareholder holding more than five percent of total shares and insiders such as board members of publicly traded companies should also disclose with the FSS the current states of equity ownership. The key component of the FSS disclosure regime is Data Analysis Retrieval and Transfer (DART) system, an electronic disclosure information filing system. The system makes it possible for companies to file disclosure information electronically round the clock and makes the filed information instantly available online to anyone with internet connection. The FSS monitors and supervises activities taking place in the secondary securities markets to ensure fair and orderly facilitation of securities trading and to protect investors. Jointly with the FSC, the Korea Exchange, the FSS is also responsible for enforcing securities law and regulations. It constantly monitors securities markets to detect violations of securities laws and regulations and takes enforcement actions, if necessary, by imposing administrative penalty or referring to the prosecutors' office for criminal procedure.

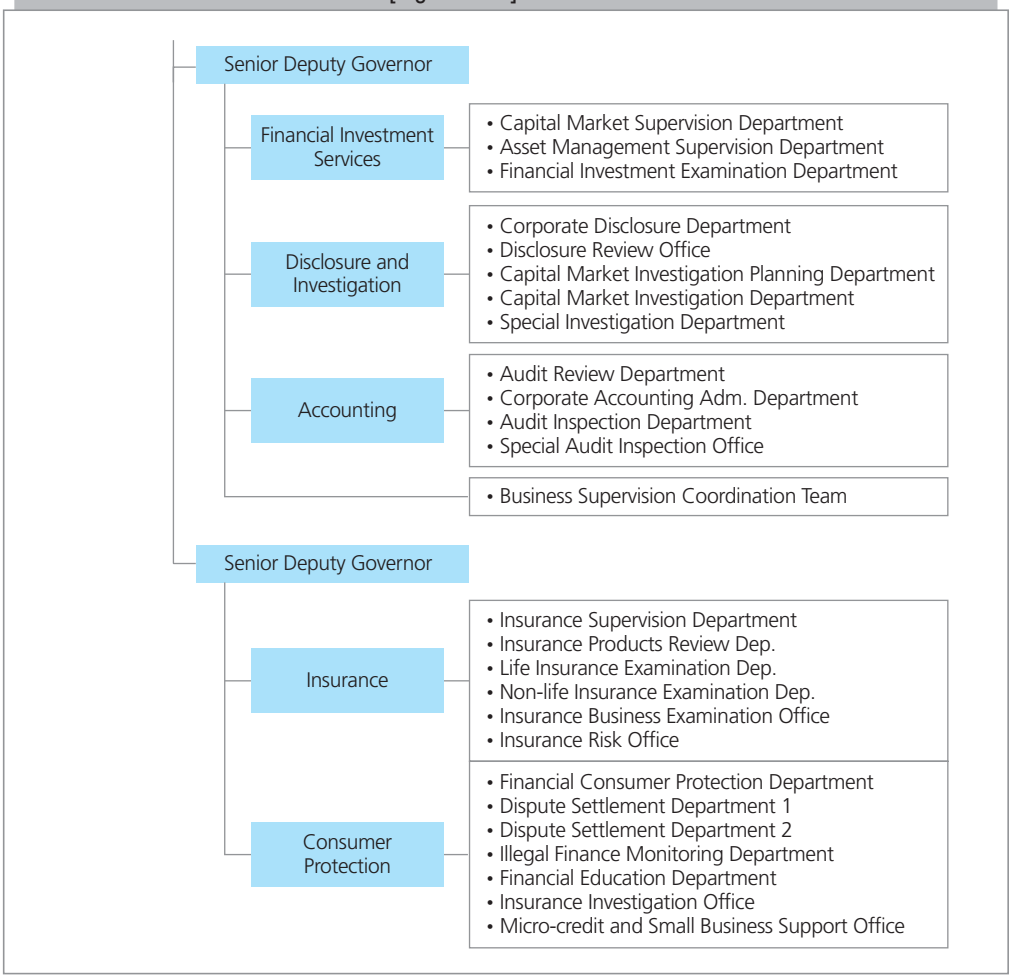
The FSS performs accounting and audit supervision under the oversight authority delegated by the FSC, which is responsible for setting financial accounting standards and the oversight of the accounting profession under the Act on External Audit of Stock Companies. The FSS inspects audits performed by accounting firms in order to ensure that external auditors provide independent and accurate audit services.

Another important business area of the FSS is supervision on financial institutions and financial markets to protect consumers. The purpose of the consumer protection is to safeguard consumers in financial markets from malpractice and abuse of financial institutions and preserve environment for fair transactions in financial markets. In an effort to emphasize the importance of consumer protection as a mission of the FSS, Financial Consumer Protection Bureau was established in 2012 as a special division in the FSS, whose mission is to protect consumers and promote financial literacy including financial education. In addition, Financial Consumer Protection Committee under Financial Consumer Protection Bureau to detect major issues for consumer protection and ensure effective coordination with the examination and supervision departments. Consumers can file complaints with the FSS against financial institutions through the consumer complaint resolution service and seek mediation for resolution. After case review process including fact finding is completed, the parties involved are encouraged to come to a resolution without litigation through the court. Cases not satisfactorily resolved are referred to the FCPC for final mediation.

[Figure 2-27] Organizational Structure of the FSS



[Figure 2-27] Continued



Source: FSS.

As of the end of 2017, with 1,998 employees, the FSS is organized along 9 divisions, 37 departments and 27 offices. In addition to its headquarters in Seoul, the FSS maintains 11 regional offices nationwide and seven representative offices overseas. Total budget of the FSS in 2017 was 366.6 billion KRW, up by 12.6 percent from 325.6 billion KRW in 2015.

4.2.3. The Bank of Korea and The Korea Deposit Insurance Corporation

The Bank of Korea (BOK) is a component of the financial supervisory framework in Korea though it does not have direct supervisory power over financial institutions. The BOK is responsible for conducting monetary policy and maintaining stability of

financial system. The BOK is entrusted with the power to order financial institutions to submit relevant information and to ask the FSS to inspect financial institutions when it is necessary.

The Korean Deposit Insurance Corporation (KDIC) was established as a protection scheme for bank depositors in 1996 by the Depositor Protection Act. The coverage of the protection by the KDIC has been extended to include insurance contracts and depositors of savings banks, credit unions[18]. The mission of the KDIC is to safeguard public interests by protecting financial stability of the deposit insurance fund. To fulfil the mission, the KDIC is given the power to order the insured financial institutions to submit relevant information. The KDIC can ask the FSS to conduct special inspections on insured financial institutions.

4.3. Financial Supervision on NBDIs in Korea

4.3.1. Financial Supervision on Credit Unions

The FSC is the ultimate bearer of the responsibility of regulating credit unions in Korea but delegates most supervisory authorities to the FSS. The FSC retains the authority to license a new credit union and order prompt corrective actions to credit unions under financial stress, etc. There are too many credit unions that with limited resources it is impossible for the FSS to handle the supervisory duties on credit unions. The Credit Union Act allows the FSC and the FSS to delegate some of their authorities on credit unions to the National Federation of the Credit Unions (NFCU). The NFCU conducts supervision and inspection on credit unions and reports the results to the FSS and the FSC. The FSS can inspect and examine credit unions if necessary.

The FSC establishes standards for financial structure, asset quality, accounting and reporting, and risk management, which each credit union should comply with. In order to prevent credit unions from being exposed to credit risks too large to manage, various restrictions on loans are imposed. Credit extension to a borrower and connected borrowers may not exceed the larger of either 20 percent of the capital or 1 percent of the assets from the previous year's balance sheet. The maximum amount of credit extension permitted for credit unions whose capital was more than KRW50 billion won from the most recent accounting period is 10 billion KRW. For credit unions with less than KRW50 billion in capital, the limit is 5 billion KRW. In respect of asset-based credit extension limit, the maximum is 700 million KRW. Credit unions must hold at least 10 percent of the member deposits as redemption reserve, and at least 50 percent of the reserve must be deposited at the national federation and the rest held in the form of cash or deposits in a financial

18) Credit unions separated themselves from the KDIC protection scheme in 2004 and established their own depositor protection fund.

services company or in qualified investment.

Prudential standards for credit unions are similar to those that are applicable to banks, some of which are less stringent in consideration of characteristic of business activities and customer basis of credit unions. Asset classification for credit unions is primarily made on the basis of the borrower's transaction history, credit rating, the duration of delinquent payment, and any occurrence of default with some adjustments available for the types of businesses of credit unions. Unlike the assets of banks, the assets of credit unions are not subject to forward-looking criteria. There are five categories of asset quality; normal, precautionary, substandard, doubtful, and presumed loss. Credit unions should map all loans to one of the categories according to the standards established by the FSC and accumulate minimum allowances for credit losses.

〈Table 2-26〉 Asset Classification and Minimum Allowance for Credit Unions

(Unit: %)

Classification	Duration of Non-payment	Minimum Allowance
Normal	Shorter than one month	1.0
Precautionary	Shorter than 3 months	10.0
Sub-standard	Longer than 3 months (estimated collection amount)	20.0
Doubtful	3 to 12 months (excess of estimated collection amount)	55.0
Presumed Loss	Longer than 12 months (excess of estimated collection amount)	100.0

Source: FSS.

Credit unions should maintain the minimum prudential ratio, net capital ratio. The net capital ratio is defined as the ratio of qualified capital to regulatory assets. Qualified capital is calculated by adding total assets, sub-ordinate debts, and loan loss allowance and deducting total liabilities and callable paid-in capital while regulatory assets are the sum of total assets and loan loss allowances. The NCR should be maintained at higher than 5 percent at all times. A credit union with lower than 5 percent of NCR is subject to corrective supervisory measures by the FSC. Three different corrective actions can be taken according to severity of violation of the minimum prudential requirement. The NFCU issues recommendation to improve financial soundness to credit unions with NCR lower than 5 percent but higher than 3 percent. The recommendation may include measures such as reduction of employees, cost reduction, assets sales, restriction on distribution of profit, capital increase, and recommendation for merger. The NFCU issues requirement to improve financial

soundness to credit unions with NCR lower than 3 percent but higher than 0 percent. Stronger measures can be taken such as reduction of employees and organization, restriction on interest rates on deposits, partial suspension of business, suspension of executives and board members. The strongest action is order to improve financial soundness and issued to credit unions with NCR lower than 0 percent. Some stronger additional measures can be taken such as partial or full suspension of business, prohibition of debt repayment, sales of asset, and change of executives and board members.

The FSS evaluates financial institutions' business operation and soundness and assigns an overall rating. Supervisory rating was first introduced for banks in October 1996 following Korea's membership in the OECD and the Bank for International Settlements. The rating regime was expanded to other types of financial institutions including credit unions. For the evaluation and rating of credit unions, the five components of CAMEL—Capital adequacy, Asset quality, Management, Earnings, and Liquidity—are used. A credit union is assigned one of the five grades of management ratings from 1 (excellent) to 5 (risky).

〈Table 2-27〉 Management Ratings of Credit Unions

	Quantitative	Non-Quantitative
Capital Adequacy (25%)	• Net Capital Ratio • Total Asset Ratio • Equity to Asset Ratio	• Adequacy of capital change • Management approach to preserving capital adequacy • Compliance with supervisory guideline
Asset Quality (25%)	• Ratio of loans weighted with loss probability • Ratio of loans classified as sub-standard or below • Ratio of loans with delinquent payment	• Appropriateness of credit policy, procedure, and management • Appropriateness of asset classification • Appropriateness of loan loss provision • Appropriateness of risky assets holding relative to capital base
Management (15%)		• Financial states and management ability • Appropriateness of internal controls system and implementation • Appropriateness of risk management system and implementation • Compliance with remedial measures recommended by supervisors • Appropriateness of management formulation and implementation • Appropriateness of standard programs use and drafting of call report

〈Table 2-27〉 Continued

	Quantitative	Non-Quantitative
Earnings (25%)	• Return on Assets • Cost-income ratio • Cost-asset ratio	• Appropriateness of earnings structure • Appropriateness of earnings management • Efforts to enhance efficiency • Appropriateness of budget implementation
Liquidity (10%)	• Liquidity coverage ratio • Fixed asset ratio	• Appropriateness of liquidity changes • Ability to manage liquidity • Appropriateness of financing structure and management

Note: Number in parentheses is the weight for each evaluation category.
Source: FSS.

4.3.2. Saving Banks

Savings banks are regulated depositary institutions that provide retail and small business banking in limited scale with geographical restriction. Although they are deposit-taking institutions and provide banking services, they are not classified as banks for supervision purposes because they are incorporated and regulated under the Mutual Savings and Finance Company Act.

Savings banks are subject to credit extension limits that are similar in purpose to those for banks. For a single counterparty, credit extension may not exceed 20 percent of the bank's capital. An additional limit of 10 billion KRW is applicable where the counterparty is a corporate borrower - KRW5 billion for an individual business owner and 800 million KRW for an individual borrower. Moreover, the aggregate amount of credit extensions to a same counterparty may not exceed 25 percent of the bank's capital. Credit extension to a single counterparty exceeding 10 percent of the capital is deemed a large credit extension, and the aggregate amount of such large credit extensions must be less than 500 percent of the capital. Credit extension limits for savings banks belonging to a business group were instituted in September 2010. For such savings banks, the total credit extended to a single counterparty may not exceed 20 percent of the bank's capital on a consolidated basis. Similarly, the total credit to a same counterparty—a counterparty and any group of connected counterparties—may not exceed 25 of the bank's capital on a consolidated basis. Savings banks must also comply with requirements on lending to individual borrowers and SMEs. For savings banks operating in major metropolitan areas, at least 50 percent of the total loans must be made to individual borrowers and SMEs. In addition, credit extension for real estate project finances may not exceed 20 percent of the total credit. Some limits also apply to securities investments.

The aggregate amount of securities investment of savings banks may not exceed 100 percent of the mutual savings bank's capital. Moreover, investments on stocks may not exceed 50 percent of the capital.

Prudential standards for savings banks are similar to those that are applicable to banks, some of which are less stringent in consideration of characteristic of business activities and customer basis of savings banks.

Asset classification for credit unions is primarily made on the basis of the borrower's transaction history, credit rating, the duration of delinquent payment, and any occurrence of default with some adjustments available for the types of businesses of savings banks. There are five categories of asset quality; normal, precautionary, substandard, doubtful, and presumed loss. Savings banks should map all loans to one of the categories according to the standards established by the FSC and accumulate minimum allowances for credit losses.

〈Table 2-28〉 Asset Classification and Minimum Allowance for Savings Banks

(Unit: %)

Classification	Duration of Non-payment	Minimum Allowance
Normal	Shorter than one month	1.0
Precautionary	Shorter than 3 months	10.0
Sub-standard	Longer than 3 months (estimated collection amount)	20.0
Doubtful	3 to 12 months (excess of estimated collection amount)	55.0
Presumed Loss	Longer than 12 months (excess of estimated collection amount)	100.0

Source: FSS.

Savings banks should maintain the minimum prudential ratio, BIS capital adequacy ratio. The ratio is defined as the ratio of qualified capital to risk weighted assets. Qualified capital is the sum of assets that can be regarded as capital base of savings banks including paid-in capital, retained earnings, and sub-ordinate debts. Risk weighted assets can be calculated by multiplying all assets with corresponding risk weights. The BIS capital adequacy ratio should be maintained at higher than 7 percent at all times. A savings bank with lower than 7 percent of BIS capital adequacy ratio is subject to corrective supervisory measures by the FSC. Three different corrective measures can be taken according to severity of violation of the minimum prudential requirement. The FSC issues recommendation to improve financial soundness to savings banks with the BIS capital adequacy ratio lower than

7 percent but higher than 5 percent. The recommendation may include measures such as reduction of employees, cost reduction, assets sales, restriction on distribution of profit, and capital increase. In addition, the FSC issues requirement to improve financial soundness to savings banks with the BIS capital adequacy ratio lower than 5 percent but higher than 2 percent. Stronger measures can be taken such as demand for merger, sales of assets, restriction on risky asset holding, reduction of employees and organization, restriction on interest rates on deposits, and change of executive members. The FSC issues order to improve financial soundness to savings banks with the BIS capital adequacy ratio lower than 2 percent. The order may include measures such as retirement of shares, appointment of legal administrator, merger, acquisition, transfer of business and contracts, and suspension of business shorter than 6 months.

For the evaluation and rating of savings banks, the five components of CAMEL—Capital adequacy, Asset quality, Management, Earnings, and Liquidity—are used. A credit union is assigned one of the five grades of management ratings from 1 (excellent) to 5 (risky).

〈Table 2-29〉 Management Ratings of Savings Banks

	Quantitative	Non-Quantitative
Capital Adequacy (20%)	• BIS ratio • Equity to Asset Ratio	• Adequacy of capital change • Management approach to preserving capital adequacy • Compliance with supervisory guideline • Appropriateness of capital structure and possibility of capital increase
Asset Quality (20%)	• Ratio of loans weighted with loss probability • Ratio of loans classified as sub-standard or below • Ratio of loans with delinquent payment	• Appropriateness of credit policy, procedure, and management • Appropriateness of asset classification • Appropriateness of loan loss provision • Appropriateness of risky assets holding relative to capital base • Asset soundness on consolidate basis • Appropriateness of loan monitoring system
Management (20%)		• Financial states and management ability • Appropriateness of internal controls system and implementation • Appropriateness of risk management system and implementation • Compliance with remedial measures recommended by supervisors • Appropriateness of management formulation and implementation

〈Table 2-29〉 Continued

	Quantitative	Non-Quantitative
		• Appropriateness of standard programs use and drafting of call report • Appropriateness of management of subsidiaries
Earnings (20%)	• Return on Assets • Cost-income ratio • Cost-asset ratio	• Appropriateness of earnings structure • Appropriateness of earnings management • Efforts to enhance efficiency • Profitability on consolidate basis
Liquidity (20%)	• Liquidity coverage ratio • Tangible asset ratio • Available fund ratio	• Appropriateness of liquidity changes • Appropriateness of financing structure and management

Note: Number in parentheses is the weight for each evaluation category.
Source: FSS.

5. Policy Recommendations

Risk-based supervision can be applied to all financial institutions but is of particular importance for supervision of deposit taking institutions. Three different kinds of financial institutions takes deposits; commercial banks, saving and credit cooperative (SCCs), and trust company. Since commercial banks are not under jurisdiction of FRC of Mongolia and risk-based supervision scheme are prepared to be implemented by the bank of Mongolia, we will focus on risk-based supervision of SCCs. We exclude trust companies form our discussion since the risk-based supervision framework for commercial banks can be applied to trust companies with minor modifications.

5.1. Establish a Firm Legal Foundation for SCCs

For the present, considering the current state of market development, the implementation of full-scale risk-based regulation as discussed above is not practical for SCCs in Mongolia. A step-by-step approach would be fruitful for developing countries with insufficient supervisory resources. The first step would be to establish a strong legal foundation for SCCs and supervisory framework.

A strong legal foundation for SCCs and supervisory framework should be establish. The legal foundation should be strengthened based on the principle of prudentiality, proportionality and predictability to secure strong supervisory

framework for SCCs. Prudential legislation establishes financial standards to which an SCC must adhere to protect the financial health of the institution and safeguard member deposits. Proportional legislation requires that the depth and strength of supervisory activities and measures should be proportional to the level of risks posed by SCCs. Predictable legislation enables SCCs to interpret laws with clarity and certainty that is crucial for planning and investment for the future. The current state of legal framework for SCCs in Mongolia should be re-examined based on the three principles previously mentioned and be reshuffled to enhance the coherence with international best practices in regulation of credit unions and cooperatives. As a practical reference, one can consult a model law for credit unions proposed by the World Council of Credit Unions (WOCCU) in 2015, which is also applicable to SCCs.

Legislation intended for commercial banks is inappropriate for SCCs in most cases since commercial banks and SCCs possesses different organizational principles. The former tries to maximize the value of shareholders while the latter pursues maximization of stakeholder value. More specifically, SCCs are different from commercial banks in some practical aspects, which warrants different legislative approaches. First of all, SCCs may include members with no or limited access to affordable financial services and hence have limited ability to raise start-up capital. Next, SCCs have very unique governance structure since they do not have external shareholders but have members who own the institution and receive the financial services provided by SCCs. SCCs are governed by the board of directors elected by members through one-member one-vote process. In consequence, external monitoring on board of directors should be carried out by members who possess weak incentive to do the job. In addition, SCCs, in general, do not have the same access to capital market as commercial banks. Finally, SCCs cooperate and even share resources in several areas such as back-office operations, marketing activities, and cross-guarantee system to take advantage of the benefits of the economies of scale. These cooperative activities should not be considered as anti-competitive and collusive practices.

The current state of legal framework for SCCs in Mongolia should be re-examined based on the three principles mentioned above and be reshuffled to enhance the coherence with international best practices in regulation of credit unions and cooperatives. As a practical reference, one can consult a model law for credit unions proposed by the World Council of Credit Unions (WOCCU) in 2015, which is also applicable to SCCs. The key elements of effective legislation for credit unions include;

- minimum requirements for organizing and licensing a credit union
- definition of what constitutes capital in a credit union
- definition of the powers and permissible activities of s credit union
- field of membership requirements

- identification of a supervisory body
- credit union association
- election process for board members
- deposit and loan concentration limits for any one member or related members
- recordkeeping and anti-money laundering polices

WOCCU (2015a) also proposed a model regulation on credit unions paying special attention to prudential standards. First, regulatory standards for initial start-up capital should be much lower for SCCs than commercial banks. Credit unions are established at the community level to serve low- and moderate-income members by offering convenient access to small savings accounts and loan products. Instead of focusing on start-up capital, regulators should pay attention to other aspects of credit unions in granting a license such as the number of signatories indicating commitment to become members and presentation of viable business plan for early stages of business. Next, capital adequacy ratio of credit unions should be the center of attention of supervisors since the capital base is the primary instrument to protect members from unexpected losses from possible excessive risk-taking by credit unions. In many credit unions, management and staff members lack sufficient professional training and the customer base is geographically concentrated. In addition, it is not easy for credit unions to access capital market to secure funding when necessary. Therefore, a conservative approach to capital adequacy is important as far as credit unions are concerned. WOCCU (2015) recommends prudential standards that should be emphasized in regulation of credit unions such as;

- The minimum capital-to-asset ratio for credit unions should be 10% of total assets. Components of capital include retained earnings, donations and statutory reserves. Member shares should not be considered capital.
- Loans past due more than 30 days comprise less than 5% of the total loan portfolio.
- Tired loan loss provisioning system is recommended with a reasonable loan classification schedule depending on the level of credit union's technology. It is recommended that at least 35% of the outstanding loan balance, not just the missed payments, should be provisioned for all loans between one and 12 months delinquent and 100 percent provisioning should be provided for loans past due more than 12 months. A possible system of loan classification and tired loan loss provisioning is given below in Table 2-30.
- Loans more than 12 months past due should be written off the credit union's books as a loss on a regular basis. Although a loan may be written off the books, the credit union should still seek to collect payment for the outstanding balance.
- Credit unions should limit non-earning assets, such as land, buildings, vehicles, furniture and cash, to a maximum of 5% of total assets.

- Credit unions should maintain efficiency by limiting operating costs to 5% of average assets.
- To meet the demands of loan disbursements and savings withdrawals, it is recommended that credit unions maintain 15% of withdrawable savings in easily accessible instruments and accounts.
- Credit unions should limit the risk of concentrating the loan portfolio in one or a few related loans. It is recommended the maximum amount of related aggregate loans or credits be the less of 10% of the credit union's total assets or 25% of its institutional capital.
- Credit unions specialize in financial intermediation and should not focus resources on non-financial operations such as retail store operations. It is recommends that the sum of non-financial investments not exceed 5% of total assets.
- Borrowing by the credit union is limited to a certain percentage of total assets, depending on the level of capital reserves.

〈Table 2-30〉 Recommended Schedule of Asset Classification and Loan Loss Provision

(Unit: %)

Classification	Duration of Non-payment	Minimum Provision
Special Mention	1 to shorter than 3 months	10
Sub-standard	3 to shorter than 6 months	35
Doubtful	6 to shorter than 12 months	65
Presumed Loss	Longer than 12 months	100
Presumed Loss	Longer than 12 months (excess of estimated collection amount)	100.0

Source: WOCCU (2015b).

5.2. Develop an Effective Supervisory Structure

Different models of supervision of credit cooperatives including credit unions have evolved around the world. Each model possesses its strength and weakness, depending on the perspective of the supervisory agency, the supervisee, credit cooperatives, and the members of the credit cooperatives. Consumer confidence is one of the most important ingredients for the successful operation of deposit taking institutions and the supervisory framework should be designed to ensure high level of consumer confidence.

We can classify various supervisory frameworks of credit cooperatives into three models. The first one is direct supervision model. The government regulator

directly supervises all credit cooperatives with statutory responsibility. The model ensures application of uniform standards of competition, minimizes the possibility of regulatory arbitrage, and promotes greater consumer confidence on credit cooperatives as a deposit taking institution. The biggest difficulty in adopting this model is the costs. In general, there are hundreds or thousands of credit cooperatives nationwide but the government supervisor has a limited access to resources. Supervisors can charge for their services to finance resources necessary for supervisory activities but in most cases a majority of credit cooperatives with their small size cannot afford to pay their fees charged by the supervisor. Especially in developing countries, the model of supervising all credit cooperatives by government regulator is not feasible due to lack of resources.

The next type of credit cooperatives supervision is the model of partial supervision. In some countries, the financial regulator directly supervises only credit cooperatives of larger size in terms of assets or deposits. The model first evolved in Latin American countries in the mid-1990's and is now utilized in countries like Bolivia, Chile, Columbia, Ecuador, and El Salvador. In some instances like Bolivia and El Salvador, smaller credit cooperatives that are not under supervision of the financial regulator are subject to non-oversight from another government agency that are not responsible for financial regulation. However, the oversight is not prudential but administrative in nature. In other countries like Chile and Uruguay, the government ministry responsible for non-bank financial institutions like mortgage brokers, insurance and money transfer firms, supervises smaller credit cooperatives. This type of model requires less resources from the supervising agency than the direct supervision model but is highly likely to create regulatory arbitrage. The smaller credit cooperatives exempt from stringent supervision by financial regulator may find ample opportunities from lack of regulation. The model also divides the credit cooperatives into two groups with differing compliance. The bifurcation is likely to lead to impairment of consumer confidence in the credit cooperatives since depositors may be confused about which credit cooperative are supervised and which are not.

The third type of credit cooperative supervision is the model delegated supervision. The government formally assigns the responsibility and the power through law or regulation to a third party, most often national association of credit cooperatives or an arm of the association. The model can help ensure closer communication and feedback between credit cooperatives and their supervisor compared to direct supervision model. The model benefits the government by allowing it to avoid the financial cost of supervision and the national association by providing a stable income stream from performing supervisory activities. In addition, credit cooperatives benefit from a friendlier and closer relationship with the supervisor, the national association, whose responsibility is to ensure growth and

promotion of credit cooperatives. The crucial element for success of the model is the strong institutional facility to handle possible conflict of interests the supervisor with delegated power possesses. It is particularly true when the entity designated for delegated supervision is the national associations of credit cooperatives. The national association is primarily an advocate for credit cooperative and governed by the organizations it supervises. Another important for successful delegated supervision is the development of strong technical expertise in the delegated entity. In order to help the delegated entity secure financial resource and promote investment for capacity building of its staff members, the right to levy examination fees on the credit cooperatives is also delegated to the delegated entity.

As of 2017, there are 290 SCCs in Mongolia but the supervisory resources in terms of both financial and human resources in FRC is severely limited. It is virtually impractical to expect the FRC to fulfill its responsibility of supervising SCCs in a complete manner. The model of delegated supervision may provide the FRC with a practical solution to the problem it is facing in supervising SCCs. Unfortunately, the national association of SCCs does not currently exist in Mongolia that the FRC should find an appropriate candidate for delegation of its supervisory power. An option the FRC can take is to promote the establishment of the national association of SCCs and delegate at least part of its supervisory power to the national association. A better way to establish the national association is to provide legal foundation by make the national association a statutory entity. The law regulating SCCs could be revised to incorporate clauses to recognize the national association of SCCs as a legal entity and to specify roles and responsibilities of the national association. WOCCU's model law for credit unions suggest that the section on national association (credit union association) may as well include clauses related to legal foundation of the association and the central finance facility.

In Korea, the National Federation of Credit Unions is a statutory institution and the FSC delegates part of its supervisory power to it. Even after its establishment, it will take considerable amount of time for the newly established national association to accumulate adequate technical expertise to supervise SCCs. In the meantime, maintaining the current system of direct supervision by the FRC is unavoidable but more efforts should be made to improve the efficiency and effectiveness of supervisory activities.

5.3. Capacity Building for Supervisors

The government agency responsible for supervising financial sector should also supervise all SCCs to ensure safety of member deposits and to avoid regulatory arbitrage. The supervisor should create a specialized unit of professional staffs and examiners trained in the nature, risks and methodologies of SCCs. For example, SCCs

have higher transactions costs relative to a commercial bank serving large business and wealthy individuals since SCCs focus on retail market, offering small savings and loans.

It is needless to say that SCCs examiners should to be well-trained and be equipped with adequate and sufficient tools and power. They must have a reporting and monitoring system enabling them to conduct off-site examination as well as on-site field examination to identify problems and take necessary measures to correct problems. As we have repeatedly pointed out, the current state of supervision on SCCs in Mongolia has much to be improved especially in terms of human resources. Considering the numbers of SCCs and their importance as deposit taking institutions, the department responsible for supervision of SCCs in the FRC is significantly under-staffed that it should increase in size and more resources should be put into capacity building of its staff members thorough education and training. If the FRC decides to take the route of delegating part of its supervisory power to the national association of SCCs, much resources should be committed to human resource development and capacity building of examiners belonging to the national association.

International corporation is a possible venue through which the FRC find resources necessary for capacity building of the supervisory body. The FSS of Korea offers an on-the-job training program for staff members of financial regulators in developing countries. For example, in last June, the FSS invited four members of departments of insurance and securities regulation at the FRC to Korea and offered seven-week training program for them. In addition, Korea National Federation of Credit Unions and Korea National Federation of Community Credit Cooperatives offer customized education and training programs to staff members of nation association of credit unions or cooperatives from developing countries.

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