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Regulation and Supervision

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Abstract

Why did Lehman Brothers have to go bankrupt? This question has often been asked since the bankruptcy of Lehman was recognized as having a hugely disruptive effect on the financial system and the economy around the world beyond expectations. For that question, a broad range of materials have provided various answers from each viewpoint. FCIC's report indicates that risky trading activities, enormous leverage, reliance on short-term funding, problems in its corporate governance including risk management as well as inadequate regulatory oversight can be significant causes of Lehman's collapse. However, why could such common weaknesses not be easily corrected or improved but be overlooked for a long time, and lead to such a huge calamity? A more in-depth investigation or a study from a different viewpoint may be required to grasp the essence of this problem and to find the right way and direction of regulatory reforms. In this essay, from the case studies of Bear Sterns, Lehman Brothers, and AIG, some of the essential weaknesses in their risk management and in the Federal Reserve's supervision especially over their liquidity risk are pointed out. Then, by comparing with the framework and conduct of the BOJ's monitoring of financial institutions' liquidity, the reasons why the Federal Reserve could not sufficiently exert its regulatory and supervisory power over those financial institutions' liquidity risk management will be examined. Finally, based on the analysis above, some assessment of Dodd-Frank regulatory reforms will be added.

1. Introduction

Why did Lehman Brothers have to go bankrupt?

This question has been often asked since the bankruptcy of Lehman was recognized as having a hugely disruptive effect on the financial system and the economy around the world beyond expectations. For that question, a broad range of materials —— from an investigative report like "The Financial Crisis Inquiry Report (FCIC),"[1] or "Report of Anton R. Valukas, Examiner"[2] to a documentary movie like "Inside Job"[3] or a private diary like "On the Brink"[4],—— have provided various answers from each viewpoint. For example, FCIC's report indicates that risky trading activities, enormous leverage, reliance on short-term funding, problems in its corporate governance including risk management as well as inadequate regulatory oversight can be significant causes of Lehman's collapse. However, those weaknesses or problems are not out of the ordinary at all, but the extremely general risk-factors which financial institutions, vulnerable even to a small liquidity shock, tend to hold. Why such common weaknesses could not be easily corrected or improved but be overlooked for a long time, and led to such a huge calamity? A more in-depth investigation or a study from a different viewpoint may be required to grasp the essence of this problem and to find the right way and direction of regulatory reforms.

In the following, from the case studies of Bear Sterns, Lehman Brothers, and AIG, some of the essential weaknesses in their risk management and in the Federal Reserve's supervision especially over their liquidity risk are pointed out. Then, by comparing with the framework and conduct of the BOJ's monitoring of financial institutions' liquidity, the reasons why the Federal Reserve could not sufficiently exert its regulatory and supervisory power over those financial institutions' liquidity risk management will be examined. Finally, based on the analysis above, some assessment of Dodd-Frank regulatory reforms will be added.

2. Bear Sterns, Lehman Brothers, and AIG

Regarding the causes of those three institutions' failures, the FCIC's conclusions are as follows:

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[1] Financial Crisis Inquiry Commission, "The Financial Crisis Inquiry Report, Authorized Edition: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States" January 2011

[2] United States Bankruptcy Court Southern District of New York, In re Lehman Brothers Holdings Inc., et al., Debtors, Chapter 11 Case No. 08-13555 (JMP), "Report of Anton R. Valukas, Examiner" March 11, 2010

[3] Sony Pictures Classics, "Inside Job" directed by Charles Ferguson, 2010

[4] Paulson Jr., Henry M."On the Brink: Inside the Race to Stop the Collapse of the Global Financial System" February 2011

(Bear Sterns)

Exposure to risky mortgage assets Reliance on short-term funding High leverage Weak corporate governance and risk management Inadequate supervision by SEC

(Lehman Brothers)

Inadequate regulatory oversight Risky trading activities (massive derivatives positions) Enormous leverage Reliance on short-term funding Significant problems in corporate governance including risk management

(AIG)

Enormous sale of CDS without putting up initial collateral, setting aside capital reserves, or hedging its exposure Profound failures in corporate governance, particularly its risk management practices Sweeping deregulation of OTC derivatives The OTS's failure to effectively exercise its authority over AIG and its affiliates

The fault common to those institutions, if any, can be a lack of the diversification, which is one of the most important fundamentals of risk management, of their investments and funding, in terms of financial products, maturities, or counterparties. Especially in case of Bear Sterns and Lehman Brothers, they could be too much exposed to subprime mortgage CDOs on their asset side and to overnight tri-party repos on their liability side. At least, "regional diversification within the mortgage market was illusion."[5] As a result, these 2 least diversified institutions among large financial institutions "ran into trouble first."

3. The Federal Reserve's supervision

(1) Macro-prudential viewpoint

Their excessive exposure to CDOs has two important implications in terms of the investment banks' business model. First, their business model has been dramatically changed. Investment banks' business had been basically "advising and conducting fee-oriented transactions for clients,"[6] but recently they

[5] These quotations in this paragraph are adduce from Professor Jacques Rolfo's lecture notes of "Credit Risk and Financial Regulation," Columbia Business School, Spring, 2011

[6] These quotations in this paragraph are adduced from Chaplinsky, Susan "Bear Sterns and the Seeds of its Demise"

have invested "their own and shareholders' funds in securities," and earned their profits mainly from "these investments and their proprietary trading." Second, investment in mortgage CDOs can result in weaker risk management, in comparison with making mortgage loans. One of the most significant problems of securitization is that "transfer of credit risk distanced the borrowers from the lenders." "The banks' incentive to carefully approve loan applications, to monitor and to collect the loans is weakened considerably because a substantial portion of credit risk is soon passed on to other financial institutions." Therefore, too much exposure to CDOs can lead "to an erosion of lending standards and to excesses in lending."

Actually, on the vulnerable assumption that the housing prices continue to rise, huge capital flew continuously into the mortgage CDOs whose risks those institutions ultimately took on. That means that huge risks were accumulated in the mortgage CDO market and some problem in that market could cause serious damage not only to the assets of individual financial institutions, but also to the financial system as a whole through the complicated interconnectedness of financial institutions with each other. If such a sense of crisis had been broadly shared among the market participants, including supervisory and regulatory authorities, at the earlier stage, the risks accumulated in the market would have been minimized or, at least, reduced earlier. In that sense, it is very important, in order to prevent financial crises, for the supervisory authorities to have effective measures to give an early warning of the risks accumulated in the financial system, from a macro-prudential viewpoint, and to share such a prudent perception with individual financial institutions.

(2) Lender of last resort

On the other hands, FCIC (2011) also pointed out that "the inconsistency of federal government decisions in not rescuing Lehman after having rescued Bear Sterns and GSEs, and immediately before rescuing AIG, added to uncertainty and panic in the financial markets." Why the Federal Reserve could not act as a lender of last resort in Lehman's case? Or why didn't Fed Chairman Bernanke buy Lehman's "ketchup" in order to prevent this catastrophe although, by section 13 (3) of the Federal Reserve Act, the Board of Governors of the Federal Reserve System may authorize any Federal reserve bank to make secured loans

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Daden Business Publishing, University of Virginia (2008)

to any individual or corporation in unusual and exigent circumstances when the borrower is unable to secure adequate credit accommodations from other banking institutions?

Regarding this criticism, Fed Chairman Bernanke made a counterargument that the Federal Reserve did not have legal authority to rescue Lehman and that Lehman did not have sufficient collateral to secure a loan from the Federal Reserve under section 13 (3) of the Federal Reserve Act. However, as Federal reserve General Counsel Scott Alvarez mentioned, requiring loans under 13 (3) to be fully secured could "undermine the very purpose of 13 (3), which was to make credit available in unusual and exigent circumstances to help restore economic activity."

In contrast, to deal with the consequences of the bursting of the asset bubble in 1990s and to ensure the stability of the financial system and of the economy, the Bank of Japan took boldly several unconventional measures. As Shirakawa (2011)[7] pointed out, one of the important measures "is the provision of loans as a lender of last resort to a security company whose solvency could not be judged clearly."

> *In the autumn of 1997, massive off-balance-sheet liabilities were suddenly revealed at Yamaichi Securities, one of the biggest securities companies in Japan at the time, and it was decided to liquidate the company. However, the company had bank subsidiaries in Europe, and at that time, other Japanese financial institutions held a large amount of impaired assets. Thus, it was judged that an immediate legal liquidation would very likely pose a systemic risk. The bank of Japan, therefore, decided to provide Yamaichi with an unlimited amount of liquidity to support the orderly closure of its business operations.*[8]
>
> *Regrettably, at Yamaichi's subsequent legal bankruptcy proceedings, it was determined in 2005 that a part of the loans by the Bank of Japan to Yamaichi was unrecoverable. However, it should be noted that a situation like the one after the failure of Lehman Brothers, when real quarterly GDP contracted at a double-digit rate on a year-to-year basis, was avoided.*

The FCIC (2011) also criticizes the Federal Reserve for not furnishing "to

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[7] Shirakawa, Masaaki, "150 Years of Innovation and Challenges in Monetary Control," Speech at Goethe-Universitaet Frankfurt am Main in Celebration of the 150th Anniversary of German-Japanese Diplomatic Relations, March 8, 2011

[8] The Bank has made its view clear in applying the following four principle on providing such special loans:
Principle 1: There must be a strong likelihood that systemic risk will manifest itself.
Principle 2: There must be no alternative to the provision of central bank money.
Principle 3: All relevant parties are required to take clear responsibility to avoid a moral hazard.
Principle 4: The financial soundness of the Bank itself must not be impaired.

the FCIC any written analysis to illustrate that Lehman lacked sufficient collateral to secure a loan under 13 (3)." In March 2008, the Federal Reserve had already provided a loan under 13 (3) for Bear Sterns and bought its non-performing assets to facilitate JP Morgan's purchase of Bear (so-called "Maiden Lane"). A logical conclusion to which those arguments above can lead is that the Federal Reserve could not accurately grasp the details, including the values, of Lehman's assets and liabilities, and Lehman's interconnections with other financial institutions, or that the Federal Reserve could underestimate the impact of Lehman's bankruptcy. In his other speech[9], Chairman Bernanke remarked the following:

> *In the United States, in ordinary circumstances only depository institutions have direct access to the discount window, and open market operations are conducted with just a small set of primary dealers against a narrow range of highly liquid collateral. In contrast, in jurisdictions with universal banking, the distinction between depository institutions and other types of financial institutions is much less relevant in defining access to central bank liquidity than is the case in the United States. Moreover, some central banks have greater flexibility than the Federal Reserve in the types of collateral they can accept in open market operations. As a result, some foreign central banks have been able to address the recent liquidity pressures within their existing measures. In contrast, the Federal Reserve has had to use methods it does not usually employ to address liquidity pressures across a number of markets and institutions. In effect, the Federal Reserve has had to innovate in large part to achieve what other central banks have been able to effect through existing tools.*
>
> *The efficacy of the discount window has been limited by the reluctance of depository institutions to use the window as a source of funding. The "stigma" associated with the discount window, which if anything intensifies during periods of crisis, arises primarily from banks' concerns that market participants will draw adverse inferences about their financial condition if their borrowing from the Federal Reserve were to become known.*

As Thornton (2009)[10] indicated, the Federal Reserve might not be confident that it could allocate credit to the financial institutions most in need of liquidity by using traditional tools. In other words, "while well-established mechanisms existed for injecting reserves into a country's financial system, official had no way to guarantee that the reserves will reach the banks that need

[9] Bernanke, Ben S. "Liquidity Provision by the Federal Reserve." Presented at the Federal Reserve Bank of Atlanta Financial Market Conference, Sea Island, Georgia, May 13, 2008

[10] Thornton, Daniel L. "The Fed, Liquidity, and Credit Allocation." Federal Reserve Bank of St. Louis Review, January/February 2009

them."[11] On the other hands, "the Federal Reserve Act does not prevent the Fed from purchasing asset-backed securities, commercial paper, and a wide range of other securities, such as those taken as collateral against loans under the new lending programs. Nor does the Act prevent the Fed from engaging in open market operations with institutions with other than primary security dealers."[12] From those statements and analyses, it may be said that the bottom line is that the Federal Reserve's improvement in its measures of the supervision of financial institutions, including introduction of fine-tuned measures to provide sufficient liquidity for the financial institutions most in need, was one step behind.

(3) Liquidity monitoring and guidance

Thus, both before and after the financial crisis, the Federal Reserve's supervision of financial institutions and its functions to maintaining of the financial system stability might not be carried out sufficiently. Moreover, Report of Anton R. Valukas (2010) may also indicate that the Federal Reserve's daily liquidity monitoring failed to function properly. According to the Report, "in regulatory filings and disclosure to the public, Lehman represented that it maintained a liquidity pool primarily intended to cover expected cash outflows", including "automatic collateral pledges to derivatives counterparties" "triggered in the events that Lehman suffered a ratings downgrades", "for twelve months in a stressed liquidity environment." Certainly, it is very important especially for investment banks, which have no stable funding source like deposits, to hold a sufficient liquidity pool as one of effective measures against an unpredictable liquidity shortage. In order to maintain the financial system stability, however, it is more important that the supervisory and regulatory authorities verify precisely whether or not the assets in the liquidity pool can really be monetized at short notice in all market circumstances, and that when they find some problem or something suspicious in the liquidity pool disclosed to the public, they direct the financial institution to correct it.

In fact, "certain assets Lehman deposited with or pledged to its clearing banks were counted in Lehman's liquidity pool." Since the summer 2008, Lehman had included such encumbered assets in its liquidity pool "despite the fact that the collateral was subject to a security interest, was returnable to Lehman only on three days' notice and was placed to ensure that" its clearing

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[11] Cecchetti, Stephan G. "Crisis and Responses: The Federal Reserve and the Financial Crisis of 2007-2008." NBER Working paper No. 14134, National Bureau of Economic Research, June 2008

[12] Thornton (2009)

banks would continue their clearing operations. The serious problem is that although "the FRBNY knew that Lehman included pledged assets in its liquidity pool, as Lehman's lender rather than regulator, the FRBNY took no step to compel Lehman to disclose the discrepancy between Lehman's reported liquidity pool and the actual, smaller number."[13]

What is astonishing most is the fact that the Federal Reserve took no step *because it was not Lehman's primary regulator but its lender* "although liquidity —the immediate ability to assess funds— is the life's blood of an investment bank", in other words, although "liquidity is more important than capital; most entities which go bankrupt do so because they run out of financing, not because the value of their assets falls below the value of their liabilities." However, as written in a general textbook on finance or banking, the essential function which a lender must carry out is monitoring prudently of the financial and liquidity situation of the borrower and encouraging it to improve the situation when necessary. And many of the functions of a supervisor are closely related to those of a lender. Also regarding the daily monitoring of Lehman's liquidity, it cannot be clearly confirmed that the Federal Reserve fulfilled the functions of a supervisor.

4. The Bank of Japan's supervision

In contrast, it may be said that the financial institutions in Japan, as a whole, could avoid a serious liquidity crisis, and the financial system of Japan could be relatively stable. What caused this significant difference between the financial system of the United States and that of Japan?

To be exact, unlike the Federal Reserve, the BOJ doesn't have regulatory authority. Therefore, the Bank must have continued to devise effective supervisory (not regulatory) means of contributing to the maintenance of stability of the financial system, which is described as one of the missions imposed to the Bank in the BOJ Act. In fact, since the Japan's financial crisis in 1997, the Bank has improved its supervisory measures to provide efficiently necessary and sufficient liquidity, while avoiding a moral hazard, for the financial system and to communicate the Bank's views on the risks which lie hidden in the financial system with the markets participants. Among them, two different kinds of measures can be considered as the effective ones which played an important role in ensuring Japan's financial system stability in 2008.

[13] Moreover, "Lehman's primary regulator, the SEC, was unaware of the extent to which Lehman was including clearing-bank collateral in its liquidity pool."

(1) Complementary lending facility

One is the provision of complementary lending through a Lombard-style standing facility[14], which "complements a framework for monetary control through market operations as well as equipped with a function to prepare for an unexpected fund shortage, thereby contributes to ensuring the stability and maintenance of smooth functioning of financial markets."[15] The complementary lending facility has "nurtured a sense of security for future funding" as its essential function, and it actually has been widely used in the crisis, in other words, it has played an important role in maintaining the financial system stability.

Regarding such a standing facility like the discount window, both the stigma problem[16] and moral hazard problem in liquidity risk management should be also recognized. However, the BOJ, "to facilitate the use of the measure while avoiding the stigma, has been extremely careful in that, for example, not disclosing the name of financial institutions that used it." On the other hand, as a countermeasure against moral hazard problem, the Bank has "included 'appropriateness of liquidity risk management' as an eligibility requirement for becoming a counterparty of the complementary lending facility." Therefore, against the financial institutions which constantly and excessively depend on the complementary lending facility, the Bank needs to take necessary steps to make them improve their liquidity risk situation and management system including securing alternative efficient funding sources. The important point is that this measure is not provided in order for the Bank to bail out individual financial institutions which are suffering from liquidity shortage, but to maintain the stability of the financial system.

(2) Financial System Report

The other is the regular publication of the Financial System Report, which "analyzes and assesses the risks and their magnitude in Japan's financial system", "presents a comprehensive evaluation," and "facilitates communication

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[14] By this facility, financial institutions can request to use whenever necessary within the amount of collateral that have been submitted.

[15] These quotations in this paragraph and in the next paragraph are adduced from Bank of Japan, "Liquidity Risk Management in Financial Institutions Following the Global Financial Crisis" July 2, 2010

[16] In general, financial institutions have a feeling of resistance to using the measure for fear of damaging their reputations by the actual use becoming clear.

with concerned parties in order to contribute to securing the stability."[17] The Financial System Report, which the Federal Reserve does not draw up unlike other central banks, also contributes to assessing, from a macro-prudential perspective, the current state of Japan's financial system and the location of risks "by taking account of the interconnectedness of economic activities, financial markets and the behavior of financial institutions, and to taking conscious steps to base institutional design and policy responses on such assessments."[18]

In fact, the Bank had already pointed out in the Report 2006 that "banks have increased investing in alternative financial products, such as structured bonds, securitized products, hedge funds, private equity funds, and real estate funds."[19] And, at the same time, it had warned financial institutions that "banks need to carefully monitor the nature and extent of the risks associated with investments in alternative financial products" not only because "the risk and return profiles of these products are not easy to quantify due to the complexity of their design and the limited availability of information required for the qualification of risk," but because "it is often difficult to liquidate investments in alternative products in a timely fashion." Such efforts by the BOJ to share the Bank's view about the risks in the financial system with financial institutions, combined with on-site examinations, off-site monitoring, and fine-tuned measures to provide necessary and sufficient liquidity, have proved effective in the financial crisis of 2008.

In view of the fact that the United States has experienced financial crises or panics repeatedly in its history, it seems to be necessary that the regulatory and supervisory authorities in the United States also devise the effective measures to give an early warning of the risks accumulated in the financial system as a whole, from a macro-prudential viewpoint, and to share such a prudential perception with individual financial institutions. Actually, as Shirakawa (2009) indicated, "the recent financial crisis may have reached a global scale and involved new financial products and players, but essentially it is a classic example of the rise and collapse of an economic bubble." And, in retrospect, it is observed that before the previous crises and panics in the United States, money stock or stock price almost necessarily had grown at much higher rate than real economy continuously (Table(1)). As such a simple observation indicates, before the bursting of a bubble, or in the midst of a bubble, something a

[17] These quotations are adduced from Bank of Japan, "Financial System Report" September 28, 2010

[18] This quotation is adduced from Shirakawa, Masaaki, "Macroprudence and the Central Bank" Speech at the Seminar of the Securities Analysts Association of Japan Tokyo, December 22, 2009

[19] These quotations in this paragraph are adduced from Bank of Japan, "Financial System Report" July 20, 2006

little abnormal happens and often continues: Isn't the gap between the growth rate of stock price and that of long-term real GDP abnormally and continuously huge? Is it normal that 30-year swap spread continues to be negative or that 10-year swap spread continues to be quite small? Is Facebook really a firm worth of 50 billion dollars?[20]

Table (1) Average annual growth rates of money stock, stock price and long-term real GDP

—%

	Panic of 1893	Panic of 1907	Recession 1920	Great Depression	IT bubble	Financial crisis
M2[1)]	6.00	8.18	14.62	4.87	6.78	5.70
Dow Jones [2)]	n.a.	16.42	20.07	38.14	8.39	11.25
Long–term real GDP	2.99[3)]				3.06[4)]	

Source: *Historical Statistics of the United States Millennial Edition Online (Cambridge University Press), Federal Reserve Statistical Release and Historical Data (Board of Governors of the Federal Reserve System)*

1) Average annual growth rates of five years just before each event
2) Industrial. Average annual growth rates of two years just before each event
3) Average annual growth rate of 50 years before Great Depression (1880-1930)
4) Average annual growth rate after WW II (1945-2002)

(3) Fine-tuned daily liquidity monitoring, advice and guidance

Moreover, in order to ensure sufficient functioning of those supervisory measures argued above, flexible and fine-tuned daily liquidity monitoring, advice, and guidance by the Bank is needed. That is the foundation of the Bank's supervision, and regarding its importance, the Bank of Japan (2010)[21] observed the following:

> *One of the important lessons from the experience of the financial turmoil since 2007 on the financial institutions' risk management is that the foundation of financial institution management could be threatened by liquidity crunch, even though the financial institution had a solid capital base. Appropriate liquidity risk management is vital both for achieving sound management of financial institutions and for maintaining*

[20] In this connection, the BOJ has indicated, in its Financial System Report 2010, three risks of the present Japan's financial system; accumulated credit risk associated with small and medium-sized firms and mortgage, accumulating interest rate risk associated with government bond investment, and remaining market risk associated with stockholding.

[21] Bank of Japan "Liquidity Risk Management in Financial Institutions Following the Global Financial Crisis" July 2, 2010

financial system stability. In highly globalized financial markets, liquidity risk could immediately spread once it manifests itself and might induce a global liquidity crisis. Financial institutions need to strive constantly to improve liquidity risk management. The BOJ also needs to encourage financial institutions to steadily pursue such efforts in order to preempt a future financial crisis.

The Bank monitors financial institutions' funding and investment policies, financial data, and liquidity positions[22] largely in the off-site monitoring section and it grasps and verifies the internal control mechanism and the preparation of contingency plans mainly through the on-site examination. In the off-site monitoring section, persons in charge monitor liquidity position on a daily basis and exchange opinions regularly, which is a major characteristic of the BOJ's liquidity monitoring. The concrete methods of the Bank's liquidity monitoring can be summarized as a process of (1) taking into account the factors such as versatility of financial institutions' businesses and changing market conditions, and (2) from a viewpoint of looking through each financial institution's fund availability in the future, (3) judge the liquidity risk situation in a comprehensive manner based on a broad range of information obtained through monitoring, and provide fine-tuned advice and guidance, when necessary, through a daily dialogue with financial institutions. And in the recent financial crisis, such monitoring was strengthened through expanding the contents and increasing the frequency of information collected from financial institutions, and by thoroughly encouraging stable daily funding.[23]

(4) Culture and values

Through such flexible and fine-tuned daily liquidity monitoring, advice, and guidance, the Bank not only encourages financial institutions to improve their liquidity risk management, but also shares with them the view that financial institutions, together with the central bank, take on the responsibility of ensuring smooth settlement of funds among financial institutions. Smooth settlement of funds is not only the most fundamental condition for the financial system stability, but one of the most important social infrastructures, like

[22] The Bank monitors changes in each financial institution's assets and liabilities including off-balance items and gauges a mismatch between the maturity of assets and liabilities and the degree of leverages. The Bank also obtains various information on daily finance operations, including products, types, terms, amounts, and rates (and, in some cases, counterparties) of investment and fund-raising, from each financial institution and examines, for example, whether or not the dependence on funding from the market is adequate for its funding ability, or whether or not there are problems in managing collateral.

[23] The explanation in this paragraph as to the Bank's liquidity monitoring is based on Bank of Japan "The Bank of Japan's Approach to Liquidity Risk Management in Financial Institutions" June 26, 2009 and Bank of Japan (2010).

electricity, waterworks, and roads, which contribute to efficient and smooth economic activities. Once only a component of the infrastructure (each financial institution) falls into malfunction, the whole infrastructure (the financial or settlement system as a whole) can malfunction through the network effect (in other words, through the complicated interconnectedness with each other component), and the whole economy can be seriously damaged. Because of such a huge external effect, each component of the infrastructure, namely each financial institution, is always required to function soundly and to be highly disciplined. And only after they can fulfill such requirements, they can directly access the central bank money.

The BOJ includes "appropriateness of liquidity risk management" as an eligibility requirement for becoming a counterparty of the Bank's complementary lending and open market operations[24], and publishes the checklist for liquidity management, based on which the Bank checks financial institutions' liquidity risk management system in order to strengthen the stability of Japan's financial system. These measures, in one view, can be also considered to play a significant role in planting firmly in financial institutions' culture the normative view that they have to take on the quasi-public responsibility as an important component of the social infrastructure. That may be one of the interesting characteristics of Japanese financial institutions[25] which can be justified in accessing directly the central bank money.

5. Institutional difference between the US and Japan

Why the BOJ has continued and must have continued to devise and improve its supervisory measures intensively? One of the possible reasons can be the subtle difference of its position from that of the Federal Reserve as an authority which has responsibility for the maintenance of the financial system stability.

In "The Federal Reserve System: Purposes and Functions," (bank) regulation is defined as "actions to make and issue rules and regulations and enforce those rules and other laws governing the structure and conduct of banking," and on the other hand, it defines (bank) supervision as "oversight of individual banks to ensure that they are operated prudently and in accordance

[24] When financial institutions are judged not to meet the requirements, the Bank can take measures such as canceling the approval at the time of approval renewal, regular selection, or on an ad-hoc basis.

[25] It may be a typical example of that kind of culture of Japanese financial institutions that the President of Mizuho Bank is reported to resign to take responsibility for its system malfunction.

with applicable statutes and regulations." According to these definitions, the Federal Reserve can be considered to have regulatory and supervisory authority over financial institutions. On the other hand, it may be inaccurate that the Bank of Japan has regulatory authority over, and regulatory responsibilities even for, banking institutions.

The BOJ conducts the monitoring and examining of financial institutions, but does not have authority to make and to issue rules and regulations. In other words, bank regulation is the duty of the Financial Service Agency in Japan. For example, the BOJ can carry out its on-site examination of financial institutions, and the Bank does it not because the on-site examination by the BOJ is legally enforceable, but because the Bank may conclude a contract concerning the on-site examination, with the financial institutions that would be the counterparty in the Bank's business, in other words, would like to open their current account at the Bank.

Another difference is to what extent each central bank has to be legally and clearly responsible for the stability of the financial system. Bank of Japan Act clearly describes the purposes of the Bank.

Article 1 (Purpose)
(1) The purpose of the Bank of Japan, or the central bank of Japan, is to issue banknotes and to carry out currency and monetary control.
(2) In addition to what is prescribed in the preceding paragraph, the Bank of Japan's purpose is to ensure smooth settlement of funds among banks and other financial institutions, thereby contributing to the maintenance of stability of the financial system.

On the other hand, such a clear description of the financial system stability as one of the purposes of the Federal Reserve cannot be found in Federal Reserve Act although the Federal Reserve has the "lender of last resort" function and is, of course, expected to have the same responsibility for systemic risk containment as the BOJ. These differences or the cultural and historical backgrounds that are underlying causes of those differences seem to characterize the practical approaches of each central bank to the supervision of financial institution, especially its off-site liquidity monitoring, and to the maintenance of stability of the financial system.

Unlike the BOJ which must maintain the financial system stability under the restrictions that it is not given regulatory authority, in other words, that it

has only supervisory authority and its main measure is limited to the off-site liquidity monitoring, advice and guidance, the Federal Reserve has supervisory and strong regulatory authority over some segments of the banking industry, but not over all financial institutions. In terms of the measures to improve the liquidity risk management of financial institutions and to maintain the financial system stability, excessive dependence on the regulations and rules can weaken its approach in off-site liquidity monitoring to the improvement of financial institutions' risk management because regulations and rules seem to be stronger and easier (but, maybe less effective) measures than monitoring, advice and guidance in off-site supervision, in general. However, easy way is not necessarily the best way.

Conversely, the Federal Reserve's approaches as a "lender of last resort" to the problems, especially the problems of liquidity risk management, of the financial institutions which are outside its responsibility can be insufficient although those institutions are the major participants of financial markets and the major components of the financial system. In other words, although the Federal Reserve, not as a regulator but as a (potential) lender, needed, from the viewpoint of financial system stability, to encourage such financial institutions to improve their risk management, it might not really put its back into dealing with that problem only because it was not the primary regulator of the large investment banks like Lehman Brothers. That can be one of the major causes of mounting liquidity risk in the financial system.

6. Concluding remarks

Based on the arguments above, the important measures to maintain the financial system stability can be classified as Table (2). Instead of Financial System (or Stability) Report by the Federal Reserve, the Office of Financial Research will be established by the Dodd-Frank Act that is in charge of the research and analysis of the financial system as a whole and is expected to support of the activities of the Financial Stability Oversight Council (FSOC). The FSOC is also created by Dodd-Frank Act, whose purposes are the following[26]:

1) Identify risks to the financial stability that could arise from material financial distress or failure or ongoing activities of large, interconnected bank holding companies or nonbank financial companies

[26] The following description about its purpose is quoted from the lecture notes of Professor Philip R. Giles, "Banking and the Money Markets" Columbia Business School, Autumn 2010

2) To promote market discipline by eliminating expectations on the part of shareholders, creditors and counterparties of such companies that the government will shield them from losses in the event of failure

3) To respond to emerging threats to the stability of the financial system

Establishing such organizations can be recognized as a certain progress in the sense that what was definitely lacking to ensure the stability of the financial system will be finally fulfilled.

Table (2) Classification of the measures to stabilize the financial system

	Micro-prudence	Macro-prudence
Supervisory measures	On-site examination Off-site monitoring, advice and guidance Lender of last resort	Financial System (or Stability) Report Ample liquidity provision to the markets
Regulatory measures	BaselⅢ capital adequacy and liquidity standards Prompt corrective action	Countercyclical capital buffer? Volcker Rule?

On the other hands, regarding some regulatory measures created by Dodd-Frank Act, including regulation of over-the-counter swaps markets and Volcker Rule[27], Alan Greenspan, the former chairman of the Federal Reserve, has warned that they could create the largest regulatory-induced market distortion in the US[28]. He has also criticized that "the financial system on which Dodd-Frank is being imposed is more complex than lawmakers, and even most regulators, apparently contemplate", observing that returning "to the simpler banking practices of a half century ago" may not be possible if we wish to maintain today's levels of productivity and standards of living."

But, as far as the current supervisory functioning is premised, "returning to the half-century-ago banking practices" may have to be accepted to ensure the stability of the financial system and of the economy. Actually, John Liechty, a professor of marketing and statistics at Pennsylvania State University, who helped create the Office of Financial Research, first got the idea when he met

[27] This rule prohibits a bank or institution that owns a bank from engaging in propriety trading that isn't at the behest of its clients, and from owning or investing in a hedge fund or private equity fund, as well as limiting the liabilities that the largest banks could hold.

[28] Greenspan, Alan, "How Dodd-Frank fails to meet the test of our times" Financial Times, March 29, 2011

regulators at a workshop after the crisis because he realized that regulators surprisingly had a completely lack of real information about how markets work, the size of positions and exposures among institutions.[29] Volcker Rule and lower standards of living may be the social cost necessary for the US. Conversely, in order to ensure the stability of the financial system on the long-term basis, the introduction of strong regulatory measures like Volcker Rule or BaselⅢ capital adequacy and liquidity standards alone is not sufficient and the continuous improvement in the supervisory function is also necessary.

Another important factor for ensuring the stability of the financial system may be requiring each financial institution to have a stronger sense of responsibility as an important component of the social infrastructure. What is worthy of attention as to this point is that some business schools intend to place greater emphasis on ethics or balance in their curriculum. For example, in Columbia Business School, the main topic of the last lecture of "International Banking" course was "ethics, return, and balance[30]," and Harvard Business School was reported to be adding new required courses with an increased focus on ethics and teamwork in its MBA program[31]. These attempts may be most meaningful from a long-term viewpoint.

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[29] Van Duyn, Aline, "Understand the financial system first, then regulate it" Financial Times, April 2/3, 2011

[30] From Professor Robert E. Fallon's lecture notes of "International Banking, Value and Risk" Columbia Business School, Fall 2010

[31] Middleton, Diana and Light, Joe, "Harvard Changes Course" Wall Street Journal, February 3, 2011