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The US-origin Global Financial Crisis and the Development of Financial Regulations[1]

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1. Introduction

The sudden outbreak of the financial crisis in the US enveloped the major investment bank Lehman Brothers in its turmoil, triggering an unprecedented phenomenon that led to its collapse in September 2008. However, the Lehman collapse was not the sole result of this financial crisis. Influential investment banks, such as Bear Stearns and Merrill Lynch, also fell into financial distress and were acquired by major commercial banks. The largest insurance company in the US, AIG, was bailed out by the US government and the Federal Reserve Board (FRB) when it was hit by the crisis. Furthermore, as the US-origin crisis rapidly spread to Europe, prominent EU-based financial institutions also received public fund injections as they also fell into financial distress; this kind of contagion effects spread across both regions. In addition, in the fall of 2008, these phenomena that were primarily contained within the financial sector rapidly cascaded into the real sector, triggering an economic crisis.

Just after this outbreak of the global financial crisis, reexamination of global financial regulations started and drastic proposals for their alteration have manifested in the Basel Committee on Banking Supervision; the statements issued therein are in the process of being incorporated into financial systems. In the US as well, the general trend of financial deregulation that started in the 1970s is concluding and the most significant financial regulation reform since the Banking Act of 1933 is now emerging.

The first half of this paper clarifies the context and characteristics of this global financial crisis. The period of financial expansion in the 2000s that led to the financial crisis can be characterized by the following points, which are significantly different from those of the past. The first is the expansion of securitization. The US loan originators aggressively expanded loans and incorporated these loans into securitized products, finally sold them to institutional investors. One type of loans used for securitization was the so-called subprime

loan, residential mortgage for low-income persons. These securitized products, based on underlying assets such as subprime loans, were greatly devalued as a result of the housing bubble burst and the substantial rise in defaults on subprime mortgages, thereby leading to the disarray of financial markets worldwide.

The second is the development of the shadow banking system. The scale of the shadow banking system, which functions as a detached organization from banks themselves, significantly developed in the 2000s. The scale of their assets exceeded even that of the local GDPs in the US, the UK, and the Euro zone. These shadow banks' excessive risk-taking behavior increased the aggregate volume of risk assets in global financial markets beyond the tolerable level.

The third is the expansion of credit default swaps (CDSs). A CDS is a kind of the over-the-counter derivatives designed to transfer credit risks. Although the purchasers of CDS protection receives the benefit of being able to avoid loss associated with defaults in corporate bonds, etc., they are obliged to expose themselves to the default risk of protection sellers. This type of risk is called counterparty risk.

The fourth is the medium-term trend of financial deregulations in the US. Although the US's traditional financial system was strictly regulated, it shifted toward deregulation in the 1980s and beyond. Particularly the practical abolishment of the separation between banking businesses and security businesses can be considered to be a cause of the expansion of the bubble led by the various financial institutions.

Financial regulations after the Lehman shock can be mainly characterized by increasingly stringent initiatives, such as toughening capital adequacy requirements, the introduction of new liquidity regulations, and higher capital adequacy requirements for large-scale financial institutions; such regulations also had an emphasis on the new aspect of macro prudential policy.

However, since the financial system has the important characteristics of the institutional capital[2], with its highly public nature, we have to consider how to effectively function one. In such an aspect, we might not conclude that the present reforms may be appropriate. The second half of this paper summarizes the contents of the financial regulatory reforms in recent years and clarifies the points in dispute for these reforms.

2. Backgrounds and Characteristics of the Global Financial Crisis

The global financial crisis, which quickly spilled over its epicenter in the US across the rest of the world, was not an accident at all. Several factors led to its emergence, thereby triggering the crisis. Extracting these factors will provide a clear picture of the characteristics of the crisis.

2.1 The Expansion of the Securities Market

The first factor is the extreme expansion of transactions in capital markets. That movement is unrealistically isolated from the real economy. Table 1 indicates developments of outstanding in stocks and debt securities from 2001 to 2008, the year of occurrence of the Lehman shock, based on IMF statistics.

In 2001, the global stock market capitalization was at 29 trillion dollars, with debt securities at 42 trillion dollars, totaling 71 trillion, or 2.3 times the size of the GDP at the time (31 trillion dollars). After that, mainly private securities and stocks expanded substantially. As a

[2] The institutional capital refers to one part of social common capital as advocated by Professor Hirofumi Uzawa. The institutional capital includes institutions such as education, medical service, financial system, and judicature. Horiuchi (1995) focuses on the issues of financial order, a major function of the financial system, clarifying the traits inherent to the institutional capital.

result, an upward trend of total securities value was observed, peaking at 145 trillion dollars in 2007, and also 2.7 times the 55 trillion dollar GDP at the time. The yearly average rate of increase from 2001 to 2007 was 17.5% for private debt securities and 14.5% for stock market capitalization.

Table 1: Development of the Size of Stock and Debt Security Markets

(Units: USD, trillions)

		2001	2002	2003	2004	2005	2006	2007	2008	Avg. Growth Rate, 2001-2007 (%)
Global	GDP	31.0	32.2	36.3	41.3	44.6	48.4	54.8	61.2	9.96
	Stock Market Capitalization	28.9	22.8	31.2	37.2	42.0	50.8	65.1	33.5	14.49
	Debt Securities	41.8	43.6	51.3	57.8	59.7	69.2	80.2	83.3	11.47
	Public	22.2	16.6	20.0	23.2	23.4	25.8	28.6	31.6	4.31
	Private	19.6	27.0	31.3	34.6	36.3	43.4	51.6	51.7	17.51
	Securities Total	70.7	66.4	82.5	95.0	101.7	120.0	145.3	116.8	12.76
	vs. GDP (%)	228.1	206.2	227.3	230.0	228.0	247.9	265.1	190.8	
USA	GDP	10.1	10.5	11.0	11.7	12.5	13.2	13.8	14.4	5.34
	Stock Market Capitalization	13.8	11.1	14.3	16.3	17.0	19.6	19.9	7.3	6.29
	Debt Securities	18.5	19.0	20.7	22.3	24.1	27.0	30.3	29.1	8.57
	Public	9.7	4.5	5.0	5.5	5.9	6.2	6.6	8.8	-6.22
	Private	8.8	14.5	15.7	16.8	18.2	20.8	23.7	20.3	17.95
	Securities Total	32.3	30.1	35.0	38.6	41.1	46.6	50.2	36.4	7.63
	vs. GDP (%)	319.8	286.7	318.2	329.9	328.8	353.0	363.8	252.8	
EU	GDP	7.9	8.7	10.5	12.3	12.9	13.7	15.7	14.4	12.13
	Stock Market Capitalization	6.8	5.7	7.8	9.3	9.6	13.1	14.7	11.7	13.71
	Debt Securities	11.8	12.8	16.6	19.3	18.7	23.2	28.2	30.6	15.63
	Public	4.9	4.9	6.2	7.3	6.7	7.7	8.8	7.9	10.25
	Private	6.9	7.9	10.4	12.0	12.0	15.5	19.4	22.7	18.80
	Securities Total	18.6	18.5	24.4	28.6	28.3	36.3	42.9	42.3	14.95
	vs. GDP (%)	235.4	212.6	232.4	232.5	219.4	265.0	273.2	293.8	
Japan	GDP	4.2	4.0	4.3	4.6	4.6	4.4	4.4	4.9	0.78
	Stock Market Capitalization	2.3	2.1	4.9	5.8	7.5	4.8	4.7	3.2	12.65
	Debt Securities	6.9	6.9	8.1	9.1	8.6	8.8	9.2	11.4	4.91
	Public	5.3	4.8	5.8	6.8	6.6	6.8	7.1	9.1	4.99
	Private	1.6	2.1	2.3	2.3	2.0	2.0	2.1	2.3	4.64
	Securities Total	9.2	9.0	13.0	14.9	16.1	13.6	13.9	14.6	7.12
	vs. GDP (%)	219.0	225.0	302.3	323.9	350.0	309.1	315.9	298.0	

Data Source: IMF, *Global Financial Stability Reports*, from 2002 to 2009.

However, the summer of 2007 witnessed the subprime loan crisis in the US, and the monolines, which is financial guaranty providers in the US, began to fall into financial distress in January 2008. Moreover the crisis deepened with the deep financial difficulty to Bear Stearns in March, 2008 and the bankruptcy of Lehman Brothers in September, 2008. Consequently, global stock prices tumbled, with total securities values declining to approximately 117 trillion dollars in 2008, a major drop as opposed to 145 trillion dollars in the previous year.

In the US, the total value of stocks and debt securities from 2001 to 2008 was more than three times of GDP except for in 2002[3] and 2008, indicating the active trading at the capital markets. This ratio peaked at 3.64 in 2007.

We may consider the rapid development of securitization as a factor that led to the expansionary trend in securities-related assets. From the beginning of the 2000s the securitized products, such as asset-backed securities (ABS)[4], mortgage-backed securities (MBS)[5], and collateralized debt obligations (CDOs)[6], had been issued in great amounts. Although securitization flourished since the 1970s in US capital markets, the nature of that activity changed dramatically in the 2000s. The common method of securitizing a portion of loans held by commercial banks up through the 1990s led to the tremendous extension of the originate-to-distribute (OTD) model, which structures originated loans presuming that they will be immediately sold.

In other words, loan originators aggressively expanded their loans, while securitizing those loans and sell them off to institutional investors. These securitized financial instruments were then actively traded in global financial markets, with some of them are secondarily securitized, eventually becoming widely held among not only the US domestic investors but also investors in many different countries.

One of the most popular types of the loans incorporated into these securitized instruments was the subprime loans, a type of residential loans offered to low-income persons. The securitized instruments that

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[3] The major drop in US and global stock market capitalization in 2002 can be attributed to the IT bubble burst, which existed between the late 1990s and the early 2000s.

[4] Securities issued based on underlying cash flows from assets, such as credits and real estates, which the firm separates from its normal operations for issuing them.

[5] A type of securities backed by a collection of residential or commercial mortgage loans.

[6] A type of asset-backed securities with underlying assets of large-scale pecuniary claims, such as loans for government or enterprises and corporate or government bonds.

included these subprime loans as a part of their underlying assets were forced into devaluation due to the collapse of the housing bubble and rapidly increasing subprime loan defaults, leading to the great confusion of global financial capital markets.

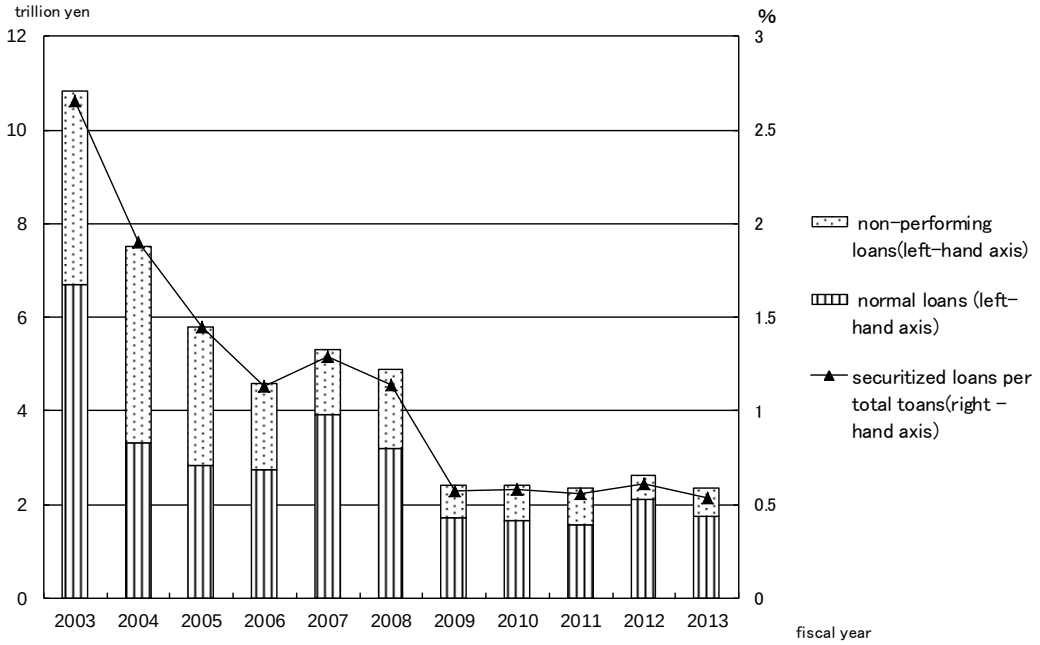
Next, in the EU region, its total stock plus debt securities values set against GDP reveal that the ratios are nearly similar levels to those seen worldwide, although they are lower than that in the US. The annual average growth rate between 2001 and 2007 indicates double-digit growths in both values of stocks and debt securities, with private debt securities seeing a notable growth of 18.8%. As can be seen from this situation, though the epicenter of the global financial crisis was found in the US, the bubble-like phenomena were existing in Europe as well, that was why the US origin crisis spilled over to the EU region immediately.

Lastly in Japan, the value of stocks and debt securities set against GDP exceeded three times from 2003 to 2007. The ration in Japan was higher than those seen in the EU and worldwide. However, the nature of this situation significantly differed from that of other regions. One determinant of Japan's high security value over GDP ratio was that Japan's GDP was stagnant during this period, with an additional factor that the value of government bonds greatly exceeded GDP. Indeed, this reflects serious fiscal conditions for the central and local governments in Japan. Conversely, private debt securities comprised a smaller portion of the total securities, with the annual average growth rate between 2001 and 2007 at a fairly low level of 4.6% as opposed to those in other regions.

The context surrounding this scenario in Japan is that the originate-to-hold (OTH) business model, whereby an originator continues to hold a loan to maturity, was still the most mainstream way of doing financial business. Securitization was only developed within a limited framework, and the above-mentioned OTD model that had spread across the US gained little footing in Japan. Figure 1

illustrates the recent trends in the loan securitization; the total of normal and bad loans made liquid in the market was 10.8 trillion yen in 2003, at a relatively high level of 2.65% of the total outstanding loans. However, these securitized amounts significantly declined thereafter, with the total amounts in 2009 and thereafter only slightly exceeding 2 trillion yen, comprising the only 0.5%–0.6% of the total outstanding loans.

Figure 1　　Securitization of Credited Loans in Japan



Note: The bar graph totals all securitized credits, including designated cession of loan obligations, trusts, and loan participations.
The denominator of the line graph is outstanding loans for domestic banks and domestic branches of foreign banks.
Data Source: Bank of Japan and Japanese Bankers Association

Until the early 2000s, the Japanese banking industry was obliged to hold a huge amount of non-performing loans and faced severe management conditions[7]. As a result, banks strived to reduce their risk burdens through the joint acts of securitizing not only the bad

[7] For details, refer to Chapter 3 of Hanazaki (2008).

loans but also healthy loans. That is why the loan securitization was relatively high levels in 2003.

The recovery of the real economy that followed would decrease the amount of newly emerged bad loans and also allow for progress in disposing of existing bad loans and serving to improve banking industry profitability. This implies that banks then became more capable of bearing risks, leading to a substantially diminished securitization of existing bad loans because of the losing significance in expanding securitization. Compared with the US and the EU, the loan securitization and the investment in securitized instruments in Japan was extremely limited, which resulted in a corresponding limited influence by the global financial crisis on the performances of Japan's financial institutions.

2.2 The Development of the Shadow Banking System

According to a report by the Financial Stability Board (2011), the shadow banking system is defined as "credit intermediation involving entities and activities outside the regular banking system." Since it exists outside the banking system, it is also outside of the scope of official safety nets.

IMF (2014) offers a new definition of the shadow banking, which focuses on fund raising activities; that is, the financing of banks and nonbank financial institutions through non-traditional liabilities regardless of the entities. Based on this new definition, securitization constitutes the shadow banking, because it is a kind of fund raising activities, being conducted in some cases directly on balance sheet of bank entities or in other cases indirectly through the use of the Special Purpose Vehicle.

Including this new idea, the shadow banking has a wide variety of definitions. It can be broadly understood as the system expanding access to credit and supporting the functions of market liquidity,

maturity transformation, and risk sharing as a complementary force to traditional banking.

According to IMF (2014), the shadow banking as broadly defined above approximately constitutes one-fourth of the total financial intermediations worldwide. Particularly, the shadow banking has the great presence in the US, the UK, and the Euro zone. To consider the UK as an example, the amount of assets of the shadow banking exceeded two times that of GDP in the mid-2000s, exceeding three times that of GDP in 2009 and thereafter. The US is the only nation where the amounts of shadow banking assets have exceeded those of the traditional banking sector in 2001 and thereafter. The ratio of shadow banking assets set against traditional banking assets peaked at 2.2 in 2007. Although it declined in the following years, it has risen once again to approximately 1.8 in recent years.

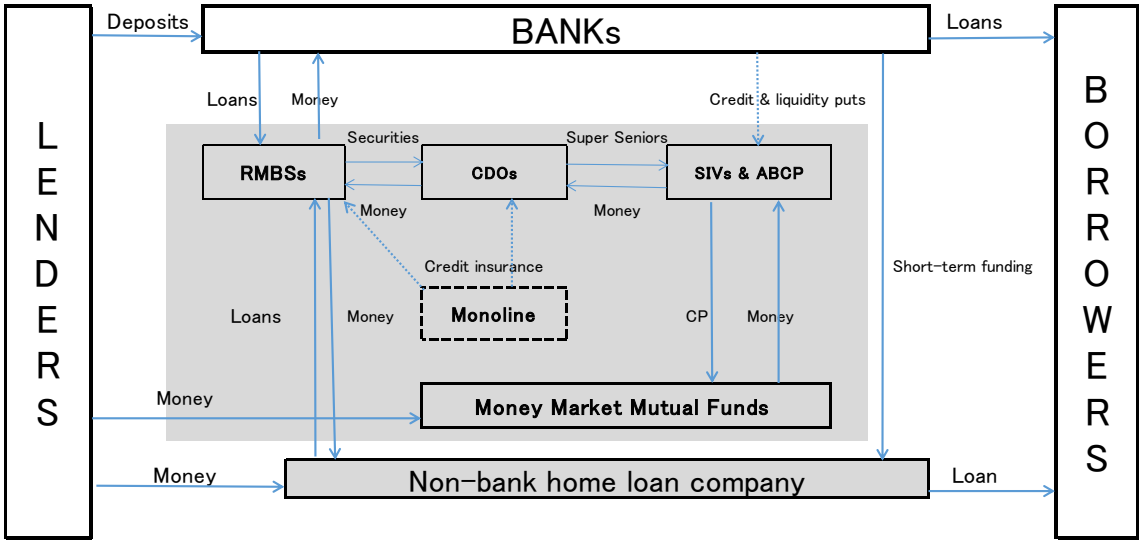
Figure 2 displays an overview of the shadow banking system in the US. The grey background in the figure delineates the scope of the shadow banking. Until 2007, the US financial system relied on procuring funds through repos (repurchase agreements) [8] and securitization through various types of conduits. In addition, investment trust instruments, such as money market mutual funds, are supported by the substantial capital inflow through global excess liquidity.

On the securitization aspect, mortgage originators aggressively provided subprime mortgages supported by the housing bubble, which were securitized into residential mortgage-backed securities (RMBS) that were further re-securitized into CDOs. Banks provided credit guarantees and liquidity for structured investment vehicles (SIVs) and a type of conduit called asset-backed commercial paper (CP). Banks

[8] Repos imply a buyback condition for the sale of bonds in the US (primarily treasury bills). However, the pre-determination of price and interest rate stipulations for the bonds means that this is essentially a short-term lending with a collateral of the bonds themselves.

also provided short-term lending to mortgage originators. In addition, monolines[9], financial guarantors, provided credit insurances for losses from asset-backed CP and SIVs utilizing securitized instruments.

Figure 2　The US Shadow Banking System



Source: IMF, *Global Financial Stability Report,* October 2014

Finally, the increase of defaults in the subprime loan market that manifested in 2007 led to a liquidity crisis in the markets for RMBS, CDOs, and asset-backed CP as investors refused to maintain holdings in those securities. Money market mutual funds also experienced runs just after the Lehman shock.

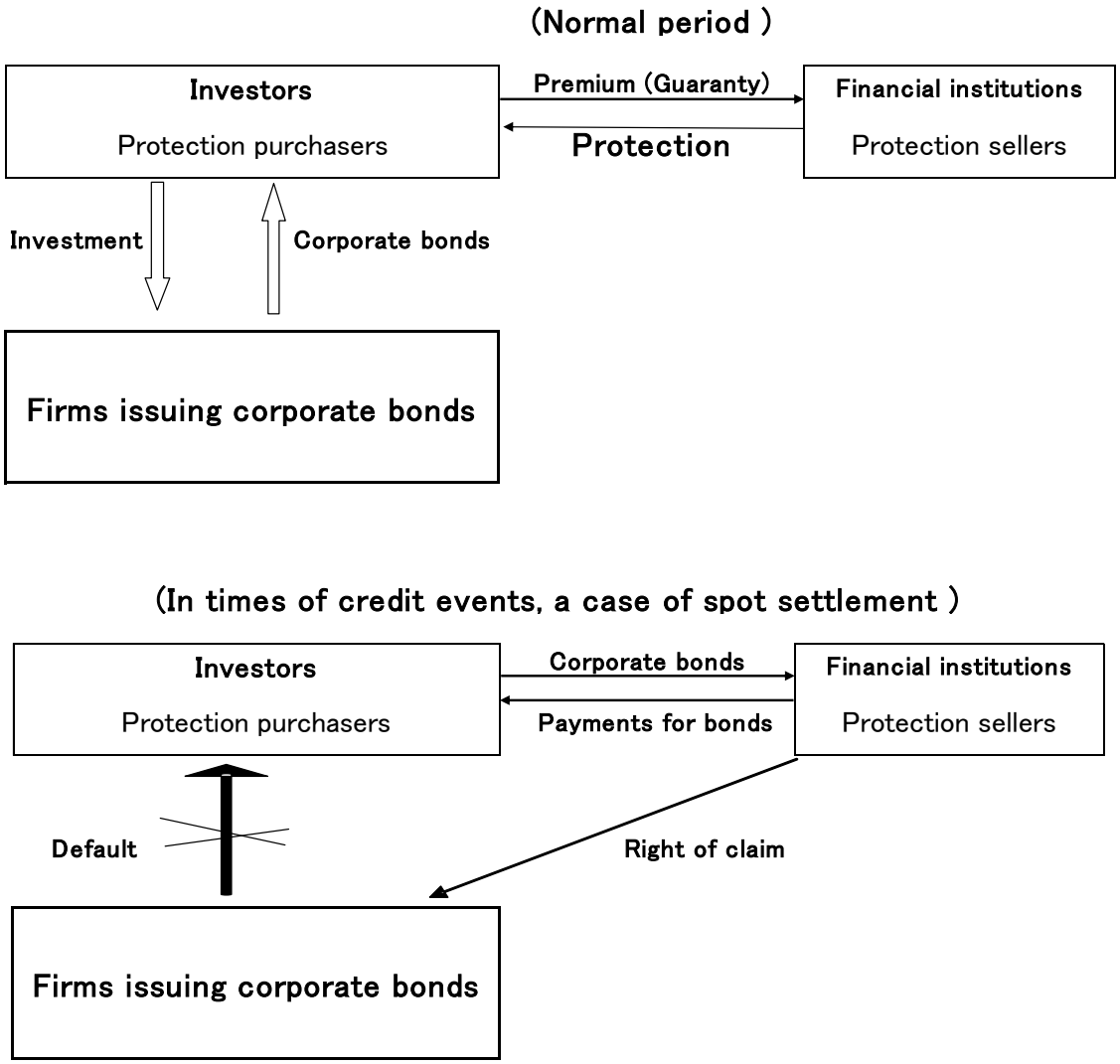
As indicated by Ikeo (2013), the rise of the shadow banking system is partly due to incentives for regulatory arbitrage. Since the formal banking system is subject to various financial regulations, a bank inspection and supervision, etc., shadow banks detached from normal banks were created in great numbers to dodge these restrictions. However, Ikeo (2013) emphasizes beyond the perspective of evading regulations that a significant aspect is also observed in the shadow

[9] A "monoline" insurance company is dubbed because it handles only one business, which is providing guarantees to financial liabilities, as opposed to normal "multiline" insurers that handle a wide range of insurance businesses.

banking system in resolving issues of insufficient short-term safe assets. This aspect would be regarded as a positive response towards investor needs.

As implied by this point, the argument focused on only the shadow banking system's drawbacks would be unbalanced and unfair. However, it is crucial to consider best practices to manage the shadow banking system in the interest of the future of financial systems[10].

Figure 3　Basic Structures of Credit Default Swap (CDS)



[10] Ikeo (2013) argues that an advanced and evolved macro prudential policy framework is necessary to produce an effective shadow banking system.

2.3 The Swelling of Credit Default Swaps

A CDS is a type of over-the-counter derivatives designed to transfer credit risk. Figure 3 displays the CDS structure. In transactions without a CDS, investors in a corporate bond bear the credit risk involved. When utilizing a CDS, regular pecuniary payments can instead be traded off to purchase credit risk protection against the bond's notional principal. And on the occurrence of a credit event[11] the financial institutions selling the protection purchase the bond in question from the protection buyer, via either the delivery of the reference bond at face value or cash settlement.

Although a CDS is a method for shifting the credit risk of the company issuing a corporate bond, its uses have spread beyond companies alone to nations and government-related institutions and ABS, MBS, and other securitized instruments. Furthermore, since a CDS not only shifts credit risk but also reflects the probability of a credit event occurrence for the relevant entity through its price, we understand that CDSs serve to reveal through their prices how market players view the degree of credit risk for the relevant entities behind those CDSs at any point in time.

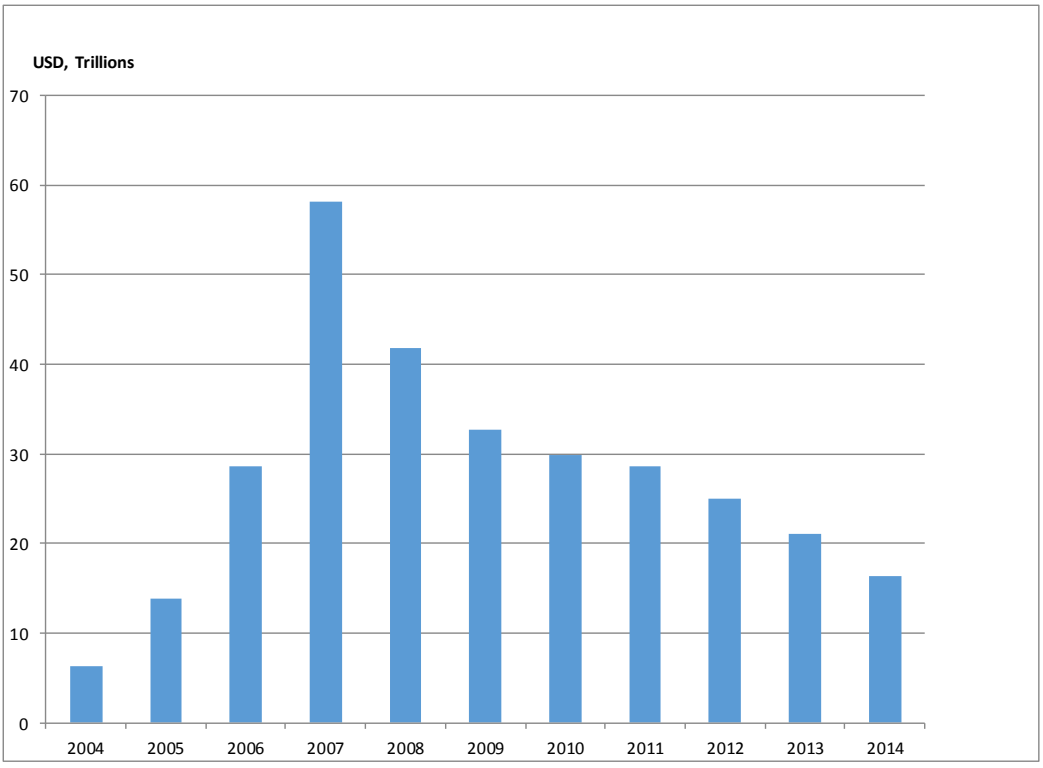
Although we may consider a CDS as functioning similarly to credit guarantees, fundamental differences also exist. Namely, in a guaranty contract, the relationship between the claim and the obligation is specified, and among creditors and debtors the entity receiving the guaranty is the creditor. When the relevant claim is transferred to another entity, the guaranty contract is also transferred. For CDSs, in contrast, the relationship between the claim and the obligation is not specified, and the credit risks of various economic entities, such as

[11] A credit event is an issuing entity's debt default, bankruptcy, or other such situations that affect the liability's conditions.

companies, nations and securitized instruments, are designed to be traded on the CDS market. This allows for CDSs to not only function as a transaction for corporate bonds, as illustrated in Figure 3, but also to simply “buy protection” without holding any of the underlying assets, such as a corporate bond. This also naturally allows for the reverse activity of “protection sales” in a credit risk market for economic entities and securitized instruments.

Together with CDSs’ above-mentioned characteristics of being not restricted by the real demand principle and the advancements in financial technology which enabled the quantitative valuation of credit risk, speculative CDS transactions by hedge funds and financial institutions grew enormously in the 2000s. According to BIS surveys, this resulted in a rapid growth of CDS notional outstanding worldwide in the 2000s, peaking at the end of 2007 at 58 trillion dollars (see Figure 4). The global GDP of approximately 55 trillion dollars in 2007 suggests excessive swelling of CDSs.

Figure 4　CDS Notional Outstanding



Data Source: BIS Quarterly Review

Executing a CDS contract, the corporate bond investor, or "protection buyer," may have hoped to be released from the credit risk at hand, but this does not always hold true. This is due to the counterparty risk of the "protection seller" defaulting and not being able to fulfill contractual duties even if a credit event was to occur.

In fact, as the severity of the subprime loan crisis deepened in the summer of 2007 and thereafter, the RMBS that used the subprime loans as underlying assets and the CDOs saw major devaluations in the market; thus, the financial institutions that served as "protection sellers" and hedge funds sustained great losses. In September 2008, despite the US government's neglect of the Lehman Brothers failure, AIG, the biggest insurer in the US, which was practically falling into bankruptcy, got relief from the US government. This was because AIG was the largest seller of CDS protection during that time, and it was believed that if AIG were to go bankrupt as Lehman Brothers, the market for CDSs and other securities would be completely devastated.

As depicted in Figure 4, CDS notional principals peaked in 2007 and trended downward thereafter, declining down to only 30% of its peak, or 16 trillion dollars, in 2014[12].

These CDSs, developed to transfer credit risk, were amplified as one of the targets for speculative transactions in the formation of the financial bubble, and finally further exacerbated the financial crisis resulting from the bubble's collapse.

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[12] The premium paid for CDS protection is called the CDS spread. The five-year spread listed at Markit iTraxx Japan (a credit index with a basket of 50 major Japanese firms) trended at a high level since the subprime loan crisis surfaced in the summer of 2007 at 1% (100 basis points), then climbed to abnormally high levels between the end of 2008 and the beginning of 2009 (from 3% to 5%). It gradually declined after that point and is trending around 60 basis points as of September 2015.

2.4 Development of Financial Deregulation in the US

A striking background for the above mentioned expansion of securitization, shadow banking, and CDSs in the 2000s is the development of financial regulatory reform in the US. This section overviews the movements seen in that area.

The financial regulatory structure of the US was built by the Banking Act of 1933 (the Glass–Steagall Act). This law, in recognition that excessive speculation by the banking sector was one of the determinants of the Great Depression, intended to restrain the speculative activities of the banking sector. More specifically, it prohibited commercial banks from participating in security-related operations (underwriting and dealing in securities, etc.), established the Federal Deposit Insurance Corporation, authorized the FRB to set bank deposit interest rate ceilings, and introduced other regulations along with other related laws[13].

Federal financial regulations extended further to cover bank holding companies[14] with the Bank Holding Company Act of 1956. This law in principle banned interstate banking operations and non-banking operations for bank holding companies, and the Bank Holding Company Act Amendments of 1970 provided fairly tight restrictions on the scope of non-banking activities in which the unit bank holding company may engage.

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[13] For more information about the details of the Glass–Steagall Act, see Hanazaki (1985); for more on the context leading up to its enactment, see Uzawa (2000).

[14] In the US financial system, opening bank branches is an overall restricted practice, and many states utilize a unit banking system that wholly bans opening bank branches. The bank holding company system arose in response to these restrictions to provide similar effects as would be experienced by opening bank branches.

Table 2 Chronology of Easing Financial Regulations in the US since 1980

1980 Mar	Depository Institutions Deregulation and Monetary Control Act enacted	gradual abolishment of deposit interest rate ceilings and eased regulations on savings and loan associations (S&Ls) to put them on similar scope of businesses as depository institutions.
1980 Nov	Easing of S&L capital adequacy regulations	FHLBB (Federal Home Loan Bank Board) lowered S&L required net work from 5% of total deposits to 4% and abolished S&Ls' broker deposit limitations.
1981 Aug	Tax Reform Act enacted	Created powerful tax incentives for individuals investing in real estate, spurring the real estate boom that followed.
1981 Sep	Issuance allowed of income capital certificates	FHLBB approved issuance of income capital certificates (ICC) by financially troubled S&Ls as a method for raising net worth.
1982 Jan	Further easing of S&L capital adequacy regulations	FHLBB further eased prudential regulations on S&Ls, including lowering their required net worth from 4% to 3% of total deposits.
1982 Apr	Abolished regulations on S&L stockholders	FHLBB abolished minimum required number of stockholders for S&Ls (previously more than 400 people with min. of 125 local residents). Acquiring S&Ls became easier as a result.
1982 Jul	Penn Square Bank failed	Oklahoma-based Penn Square Bank failed due to over-lending in the oil/gas industry. FDIC paid off insured deposits, took over deposit operations for the bank for two years.
1982 Dec	Garn-St. Germain Depository Institutions Act enacted	Expanded S&L operating scope, approved such activities as commercial mortgages of up to 40% of total assets, consumer loans of up to 30%, and introduced Net Worth Certificate Program (NWCP), whereby FDIC buys net worth certificates issued by depository-insured institutions to prop up capital account.
1982 Dec	Deregulation of state-chartered S&L	As state-chartered S&Ls were shifting in great numbers to federal certification, California and other states approved limitless investment in any sort of business for state-chartered S&Ls.
1983 Nov	S&L capital adequacy regulations strengthened	FHLBB raised required net worth for newly certified S&Ls to 7%. This period marks the beginning of the FHLBB's shift away from a deregulatory stance.
1984 May	Continental Illinois National Bank and Trust Company failed	Chicago-based Continental Illinois National Bank failed under burdens of bad assets bought up from Penn Square and bad energy-related loans. Total assets held were $33.6 billion, the largest held ever at collapse. The FDIC took bailout measures, including direct funds injection to keep the institution alive. The FDIC bore costs of $1.1 billion in handling the bank's failure.
1985	S&L crisis in Ohio and Maryland	S&L crises became apparent in Ohio and Maryland. The state deposit insurance funds run out.
1987	S&L crisis in Texas	Texas state economy fell into great disarray, with S&L failures happening in succession. Of the 20 most loss-inducing S&L bankruptcies, 14 were at Texas-based institutions.
1987 Aug	Competitive Equality Banking Act enacted	Federal Savings and Loan Insurance Corporation (FSLIC), the organization in charge of S&L-related insurance, approved $10.8 billion in new capital procurement. This was not nearly enough to deal with the enormous costs incurred in processing failed S&Ls.
1988	Bank failures reached peak intensity	Bank failures, which had been growing during the 1980s, reached their peak; the number of cases with involvement by the FDIC reached 279, the highest since the FDIC began operations in 1934.
1988 Jul	First Republic Bank Corporation failed	Dallas, TX-based First Republic Bank fell into insolvency due to downturns of the loans in energy, real-estate, and agriculture. Though the FDIC put bridge-bank procedures in place, the costs involved reached $3.9 billion, the highest amount seen up to that point.
1989	S&L bankruptcies hit peak intensity	S&L bankruptcies reached a peak of 326, with a total of 533 bankruptcies between banks and S&Ls - exceeding 1988's 464 total bankruptcies.
1989 Aug	Financial Institutions Reform, Recovery, and Enforcement Act enacted	In line with S&L handling measures announced by the G. H.W. Bush administration in February of the same year, this law abolished the FHLBB, transferred depositor insurance from the FSLIC to the FDIC and created a new supervisory authority for S&Ls: the OTS (Office of Thrift Supervision). It also established a new RTC (Resolution Trust Corporation) to handle disposal of failed thrift institutions.
1991	Mergers/restructuring continued at major banks	Chemical Banking (merge between Chemical Bank and Manufacturers Hannover, July), Nations Bank (NCNB, C&S Sovran merger, July), BankAmerica (BankAmerica and Security Pacific merger, August). Restructuring at Citicorp and others.
1991 Feb	US Department of the Treasury announced plan for financial system reforms	This plan included drastic financial systemic reforms to cope with financial crises. Primarily, they included the introduction of a risk-based deposit insurance premium, the reduction of deposit insurance coverage, the bank supervision based upon the subdivisions in capital adequacy ratios, and eased regulations on opening branches interstate.
1991 Dec	Federal Deposit Insurance Corporation Improvement Act enacted	Though this law was enacted in connection to the Department of the Treasury's reform plans, key items of the plan were excluded, such as deregulation of bank operations and decreasing the scope of deposit insurance.
1992	S&L crisis peaked out	181 bank and S&L failures comprised a drop to approximately one-third the 1989 peak (533 failures), with the S&L crisis heading toward its final days.
1995 Dec	RTC abolished	The RTC, established in 1989 to deal with thrift institutions that failed, finished its duties and was abolished at the end of 1995 . The RTC was involved in a total of 747 bankruptcy procedures comprising $420.6 billion in total assets.
1999 Nov	Gramm-Leach-Bliley Act enacted	A banking system for financial holding companies was established on top of the existing system for bank holding companies, and cross entry into banking, security, and insurance businesses became possible. This law effectively repealed the 1933 Glass-Steagall Act's separation of banking and security businesses.

This trend of tightening financial regulations drastically shifted toward a deregulatory posture with the Depository Institutions Deregulation and Monetary Control Act[15] in 1980. The regulatory reforms established since this particular law can be viewed in Table 2. These reforms, however, are not wholly of a deregulatory nature[16]. More specifically, the US experienced a savings and loan (S&L) crisis starting in 1982 that bankrupted many financial institutions and resulted in toughened capital adequacy requirements imposed on S&Ls (1983).

In 1984, because of the severe financial troubles happened in the US such as the bankruptcy of its eighth-biggest bank, Continental Illinois National Bank and Trust Company, the financial deregulation trend temporarily halted. However, as the S&L crisis passed its worst days in around 1992, deregulation gained momentum once again and the Gramm–Leach–Bliley Act was enacted in 1999. This law created the financial holding company system, enabling banks to directly hold securities and insurance companies as their subsidiaries. This reform of the system effectively repealed the barriers of banking and securities established by the 1993 Banking Act[17].

As stated above, the bubble-like expansion in the US financial sector and financial instruments was most striking after the beginning of the 2000s. Undoubtedly, the financial deregulation trend that began from the early 1980s and concluded with the enactment of the Gramm–Leach–Bliley Act in 1999 was a driving force that helped expand the financial bubbles from a systemic standpoint.

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[15] This law follows precedent studies such as the Hunt Commission Report (1971), which emphasized the need for reform to realize a free and competitive financial market, and the Financial Institutions and the Nation's Economy (FINE) Study (1975), which proposed the abolishment of deposit interest rate ceiling regulations and the expansion of savings financial institutions scope of operations. For more details, see Hanazaki (1985).

[16] See Hanazaki (2000).

[17] Securities operations by banks themselves continue to be prohibited.

3. Theory and Reality in Financial Regulations

3.1 Unique Nature of Banks and Rationale for Banking Regulations

The primary function of a bank is financial intermediation. More specifically, it fundamentally raises funds from entities with financial surplus (excess saving) through a depository system and supplies those funds to entities with financial shortage (excess investment) via a loan system. In this process, the deposits are the bank's liabilities, while the loans are its credits.

Non-financial firms also have credits and liabilities; this is not a particular characteristic limited only to banks. In addition, while bank claims are primarily against companies, it is hardly a rare situation for a non-financial firm to also have a large share of claims against other companies; no fundamental difference also exists from this perspective. The particularities of banks as opposed to those of non-financial firms are the counterparties of their liabilities. To be more precise, non-financial firms' liability counterparties often comprise banks, other financial institutions, business partners, and related companies, whereas banks' core liability counterparties are individual small depositors.

In general, it would be preferable for the creditors to a bank to monitor or intervene the bank management, if the creditors' rights were to be infringed upon by inappropriate management. However, small depositors do not have sufficient ability or incentive to gather information about and monitor their bank's management. The small depositors are considered to be in a disadvantaged position owing to the limitations of information gathering and protective measures. Thus, prudential regulations against banks were deemed to be necessary, justifying the existence of a financial agency that could monitor bank management or intervene during poor performance on behalf of depositors (Dewatripoint and Tirole, 1993).

3.2 Origin of the Basel Regulations

As observed above for the US, financial regulatory systems in advanced nations, such as the US, European countries, Japan, etc., were constructed on the basis of historical experience in banking activities and the situation of the financial system in each individual nation.

However, prompted by the development of international economic activity based on the post-World War II IMF–GATT system, the 1970s and thereafter saw active cross-border capital flows. Under such circumstances, the failures of US-based Franklin National Bank and subsequently West Germany's Herstatt Bank that surfaced in May and June 1974 inflicted great chaos on international financial markets[18].

This chaos that emerged in international financial markets spread the awareness of a need for an international banking supervisory system; thus, the Basel Committee on Banking Supervision was established in 1975, which held significant active discussions on the topic. Following the experience of Black Monday (October 1987), it was once again recognized that international cooperation between financial agencies was crucial; to that end, unified international standards for bank capital adequacy (BIS standards) were determined in July 1988. Otherwise known as the Basel Accord, it imposed homogenous competitive conditions on banks from various nations that were involved in international banking operations, consequently seeking to improve the soundness and stability of international financial systems. In brief, this demanded that banks seeking to engage in international

[18] Herstatt Bank entered into foreign exchange contracts with the US banks whereby it would purchase Deutsche marks and buy US dollars; however, due to the time zone difference between Germany and the US, it went bankrupt after receiving the marks but before delivering the dollar payments. The US banks that were its transaction partners suffered significant loss. The time zone-related exchange settlement risk seen herein has come to be called "Herstatt risk."

operations should hold owned capital of at least 8% set against a total asset value calculated with risk weighting.

This regulation, which subsequently came to be known as Basel I, became effective at the end of 1992 for financial institutions from major nations that sought to run banking operations internationally.

3.3 Refinement of the Basel Regulations

In the initial Basel Accord, the credit risk of assets was the sole target of regulation. The expansion of marketable asset transactions by banks led to considerations of best practices to manage risks for fluctuations of interest rates, prices, and exchange rates for the assets held by banks in trading accounts purposed for short-term arbitrage. The resulting amendment to the Basel Accord, which commenced at the end of 1997, added a capital charge for the amounts equivalent to the market risks to the total risk-weighted assets when trading accounts exceeded a certain amounts.

The expansion of newly developed securitized instrument trading on the market in the 1990s as a result the progress of the financial engineering also led to an increased need to evolve risk management techniques for banks. The limitations of Basel I were recognized and discussions began anew at the Basel Committee on Banking Supervision in the second half of the 1990s about new capital adequacy regulations. After multiple public consultative proposals and hearings from commercial banks and so on, the final text of Basel II was published by the committee in June 2004, to commence in the period following the end of 2006.

Basel II stipulates a new category of risk, called "operational risk[19]," that is added to the total risk-weighted assets; this simultaneously permits broader ranges of risk weighting for each asset based on

[19] The operational risk refers to the risk of operational accidents, system malfunctions, fraudulent activity, or other loss-causing incident within a financial institution.

creditworthiness, also enables banks to utilize internal credit rating models for the calculation of credit risks. Furthermore the promotion of banks' own efforts toward information disclosure and risk management comprise a distinguishing feature of Basel II[20].

4. Financial Regulations after the Lehman Shock

4.1 Situations in the US

The US government's reaction to the Lehman shock was swift. On October 3, 2008, not even three weeks after the bankruptcy of Lehman Brothers, the Emergency Economic Stabilization Act of 2008 was established. This law includes a measure for the government purchase of troubled assets, such as financial instruments that incorporate residential mortgages, securing a maximum budget of 700 billion dollars for such purchases[21]. This emergency step has been considered to be effective in preventing a chain reaction bankruptcies of financial institutions facing insufficient liquidity (Allen and Carletti, 2010).

Subsequently in June 2009, a financial regulatory reform proposal (titled "Financial Regulatory Reform—A New Foundation: Rebuilding Financial Supervision and Regulation") was publically announced by the US Department of the Treasury. This reform proposed an integration of the divided and complicated supervision system for financial institutions, a tightening of regulations on hedge funds, securitized instrument markets, and CDSs; these items would later be implemented as part of the Dodd–Frank Act.

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[20] See Hanazaki (2013) for more details regarding the development of the Basel regulations.

[21] This swift response may well reflect the so-called "Fed View." The Fed View, which traditionally expresses the FRB's basic stance on macroeconomic policy, saw difficulty in controlling bubble phenomena through the monetary policy and a need for a swift reaction at the time of a bubble's collapse. This view stands in contrast to the BIS view, which emphasizes a need for preventative measures to keep bubbles from swelling.

Another occurrence that significantly impacted the world was a new regulatory proposal (titled "President Obama Calls for New Restrictions on Size and Scope of Financial Institutions to Rein in Excesses and Protect Taxpayers") by US President Barack Obama on January 21, 2010. This proposal was one primarily advocated by a former FRB chair Paul Volcker (1979–1987), who was, at that time, the economic brains behind President Obama's administration: this is known as the "Volcker Rule."

The Volcker Rule aims at setting limitations on commercial banking operations in two ways. The first is to limit the operating scope; more specifically, prohibiting a bank or a financial institution that contains a bank from owning, investing in or sponsoring a hedge fund or a private equity fund as well as from being involved in proprietary trading operations unrelated to serving customers. The second imposes limitations on size, and placing broader limits on the excessive growth of the market share of liabilities at the largest financial firms, to supplement existing market share caps applied to deposits

Considering the influence wielded by financial liberalization in the US (as mentioned in Section 2.4 of this paper) on the financial crisis whereby the Lehman shock occurred, the Volcker Rule intended to cast a regulatory net over banks' excessive risk-taking behaviors. However, the process for institutionalization of the Volcker Rule had its ups and downs. The context behind this turbulence comprises resistance from commercial banks claiming that profit-increasing opportunities would be likely to shrink due to toughened market transaction regulations; this context complexly combined with the intent of regulatory agencies to utilize this opportunity to improve banks' internal control system.

After the determination that the general provisions of the Volcker Rule were to be incorporated into the Dodd–Frank Act (to be discussed below), a final set of regulations was approved and announced in December 2013. Although bank proprietary transactions would be banned by these regulations in principle, exceptions were set for banks

that met certain terms, allowing them to engage in underwriting, market making activities, risk hedge-related transactions, and transactions involving public bonds. In addition, although banks were banned from directly and indirectly owning hedge funds or private equity funds, approval for association with these was granted in accordance with the satisfaction of certain conditions, if the funds provided trust, trustee, or advisory services.

Thus the final regulatory form of the Volcker Rule swelled with exceptions, and there are deep-seated concerns whether it would achieve its expected results in the end. However, this regulation also included tougher compliance regulations for banks and would assuredly increase various related burdens and costs for banks. The final approved regulations were fully enforced by July 2015.

4.2 The Dodd–Frank Act

The most major reform in the US financial regulatory system since the Banking Act of 1933 (the Glass–Steagall Act) is the Dodd–Frank Act (Dodd–Frank Wall Street Reform and Consumer Protection Act), established on July 21, 2010. The reason for the establishment of this law was the excessive risk-taking behavior by the financial sector that served as a factor causing the financial crisis that peaked with the collapse of Lehman Brothers as well as the nonexistence of regulations on new financial instruments, such as CDSs together with inappropriate and insufficient supervisory structure for financial institutions; the regulatory structure at the time was not considered to be capable of protecting consumers and investors from suffering losses.

The enactment of this law concluded the aforementioned (Section 2.4) financial deregulatory and liberalization trend of the 1980s and 1990s. In contrast to the former deregulatory trend, it included various important regulatory measures, such as the establishment of the Financial Stability Oversight Council and Bureau of Consumer Financial Protection, the Volcker Rule, restrictions on derivatives and

securitization, and other tougher financial restrictions. Table 3 provides an overview of this law.

Table 3　Main Contents of the Dodd–Frank Act

1．FSOC（Financial Stability Oversight Council） Established ① Composed of 10 voting members (Secretary of the Treasury, FRB Chairman, Comptroller of the Currency, FDIC Chairman, etc.) and five advising members ② Identifies risk factors for entities, pushes market discipline to end "too big to fail," and removes roadblocks toward financial system stability ③ Applies prudential regulations for the systemically significant nonbanks (large-scale insurers and securities firms, etc.) ④ Introduces the OLA (Orderly Liquidation Authority) for insurers and nonbanks
2．Regulations on Private Fund Investment Advisors ① Requires investment advisors to register with the SEC (excludes venture capital funds)
3．Volcker Rule ① Prohibits proprietary trading by banking entities (some exceptions for underwriting, market-making, hedging, and other transactions) ② Prohibits banking entities from investing in or sponsoring a hedge fund or a private equity fund, etc. (except for the cases that the investment amount is less than of 3% of fund asset size and is below 3% of the bank's Tier 1 capital)
4．Regulations on Derivatives ① Mandates CFTC (Commodity Futures Trading Commission) and SEC to regulate over-the - counter derivative market transactions and market participation with respect to CDS and other such products ② Implements swap push-out rule (banks must, on principle, engage in swaps with external players) for all swaps (incl. security-based swaps)
5．Regulations on Securitization ① In asset-backed securitization, a certain level of credit risk retention is required for securitizing entities
6．BCFP（Bureau of Consumer Financial Protection） Established ① Established within the Fed to regulate financial products/services for consumers and to promote information disclosure
7．Other ① Introduces rigorous regulations on credit rating agencies ② Sets restrictions on FRB emergency loans (supplying liquidity is permitted; bailouts are not) ③ Corporate governance articles (strengthening shareholder rights, improving executive compensation disclosure, etc.)

4.3 Basel III

At the Basel Committee on Banking Supervision, drastic reforms to the Basel regulations were discussed with respect to best practices to restore the soundness of the banking sector from the period just after the Lehman shock.

As a result, the Basel Committee on Banking Supervision's July 2010 report and the agreement reached among its Group of Governors and Heads of Supervision indicated a fundamental posture toward capital adequacy requirements; more specific details were presented in September 2010 in an agreement among the Group of Governors and Heads of Supervision. Discussions continued on regulations upon liquidity and other areas, and two kinds of documents were presented by the committee in December 2010. This is so-called Basel III.

The fundamental awareness behind Basel III was that the crisis of 2007–2009 symbolized by the Lehman shock, was caused by insufficient and/or lax financial regulations and that those regulations needed to be rebuilt.

The core of Basel III is the toughening of capital adequacy requirements. Although the calculation methods and composition items used for capital adequacy ratios had been refined from Basel I to Basel II, the required 8% ratio did not change. Accordingly, the nature of that capital was revised in Basel III as well as new regulatory items were introduced, with this new regulation effectively raising capital ratios required overall.

More specifically, it limits core Tier 1 capital to common stock and internal reserves (referred to hereafter as "common stock, etc."), with the minimum requirement raised to 4.5%. It, in principle, excludes any capital gained by banks and other financial institutions trading mutually among themselves to cosmetically inflate their capital. However, for a bank investing in a financial institution outside the scope of accounting consolidation, if the bank had an ownership of greater than 10% of the target institution, then the investment portion

exceeding 10% of the Tier 1 common stock, etc. would be excluded from the bank's capital. If the bank were to own up to a 10% share of the institution in question and its total ownership on the range of financial institutions were to exceed 10% of the bank's common stock, etc., then that excess portion would be excluded from the bank's capital[22].

Basel III also makes the holding of a new 2.5% capital conservation buffer in the form of common stock, etc. compulsory that can be broken down during financial distress. Introduction of this buffer increases the capital adequacy requirements to 7.0% of the total capital in common stock, etc., raising Tier 1 and Tier 2 combined capital requirements to 10.5%. Furthermore, in complement to this capital conservation buffer, a new countercyclical buffer has also been implemented. This is a capital buffer designed to absorb the potential losses suffered by banks during economic recession that follow excessive credit expansion. This ratio is determined independently by each nation's financial authorities and can be set between 0% and 2.5%[23].

Basel III's enhancement of capital adequacy requirements have been implemented in phases since 2013 and are scheduled to be in full effect in January 2019.

4.4 Introduction of Macroprudential Policy

The global financial crisis that originated in the United States had a revolutionary effect on the state of policies for ensuring financial systems' stability. Specifically, before the crisis at hand, financial authorities of major nations and international organizations tended to think that achieving a secure financial system was feasible through

[22] This means that the double gearing that is frequently seen between Japanese banks and life insurance companies would be counted toward the bank's capital to some extent.

[23] This also included a trial implementation of a simple leverage ratio for capital adequacy requirements (a ratio of Tier 1 capital as a percentage of its total on-balance sheet exposures).

the use of policies meant to bolster the soundness of individual financial institutions (microprudential policy).

However, this crisis that many countries experienced have led to the spread of an awareness that microprudential policy alone is insufficient to stabilize financial systems and that macroprudential policy[24] is indispensable as well. A report by the FSB, IMF, and BIS (2011) characterized macroprudential policy as follows.

1) Macroprudential policy is designed to limit systemic risk in financial market.
2) Macroprudential policy encompasses the financial system as a whole, including the interaction between the financial and the real sectors.
3) Instruments used in macroprudential policy are primarily prudential tools calibrated to target the sources of systemic risk[25].

Systemic risks would cause external diseconomies manifesting in financial markets and systems in the event of, for example, the failure of a major bank that significantly influenced the market. Therefore, macroprudential policy exists to block channels from which external diseconomies may arise and to prevent financial crises and to stabilize financial systems.

We may therefore understand that the liquidity regulations, the second pillar of Basel III, were introduced from the point of view of macroprudential policy. In the crisis period from 2007 through the bankruptcy of the Lehman Brothers, the formerly animated financial markets witnessed extremely rapid contraction, and liquidity procurement became a formidable problem. Then many banks faced a dearth of liquidity, being forced to rely on the support of financial

[24] The term "macroprudential policy" is not new, but in fact dates back to the 1970s. See Okina (2010).
[25] Details on the selection of policy tools in macroprudence can be found in CGFS (2012).

authorities. In other words, the banking sector's risk management was lax on liquidity issues, and liquidity regulations were introduced to correct such a problem beforehand.

Basel III provides for two new complementary liquidity standards. The first standard is called the Liquidity Coverage Ratio, aiming to ensure that a bank maintains an adequate level of unencumbered, high-quality liquid assets that can be converted into cash to meet its liquidity needs for a 30 day under a significantly severe liquidity stress scenario. This standard is defined as follows.

$$\frac{\text{Stock of high-quality liquid assets}}{\text{Total net cash outflows over the next 30 days}} \geqq 100\%$$

High-quality liquid assets are calculated by combining level 1 assets (cash, central bank reserves, marketable securities representing claims on or claims guaranteed by sovereigns, central banks or international organizations, etc. that satisfy several conditions, such as assigned a 0% risk-weight under the Basel Ⅱ Standardised Approach, etc.) and level 2 assets (marketable securities representing claims on or claims guaranteed by sovereigns or central banks, etc. that satisfy several conditions, such as assigned a 20% risk-weight under the Basel Ⅱ Standardised Approach, etc. , corporate bonds and covered bonds that satisfy several conditions; they can comprise no more than 40% of the overall stock after at least a 15% haircut has been applied). The denominator of the LCR is calculated via the difference of total expected cash outflows (calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance sheet commitments by the rates at which they are expected to run off or be drawn down) and total expected cash inflows (calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in up to an aggregate cap of 75% of total expected cash outflows).

The second standard is called the Net Stable Funding Ratio that establishes a minimum acceptable amount of stable funding based on the liquidity characteristics of an institution's assets and activities over a one year horizon. In particular, the NSFR standard is structured to ensure that long term assets are funded with at least a minimum amount of stable liabilities in relation to their liquidity risk profiles. It is specifically defined as follows.

$$\frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} > 100\%$$

The numerator above includes bank capital, preferred stock and liabilities with effective maturities of one year or greater, and portions of non-maturity deposits and wholesale funding that would be expected to stay with the institution for an extended period in a stress event. The denominator is calculated as the sum of the value of the assets held and funded by the institution, multiplied by a specific required stable funding (RSF) factor assigned to each particular asset type, added to the amount of the off-balance sheet activity multiplied by its associated RSF factor. The Liquidity Coverage Ratio has been implemented in phases beginning in 2015, and the Net Stable Funding Ratio is scheduled to be phased in gradually starting in 2018.

4.5 Systemically Important Financial Institutions

The Financial Stability Board (FSB) [26], comprising financial ministries, central banks and other financial supervisory authorities from G20 nations, has continued to expound on the necessity of policies effectively preventing moral hazard of systemically important financial institutions (SIFIs) since it was established in 2009.

[26] The FSB is administered directly by the G20; it inherited the operations of the Financial Stability Forum as of April 2009 and makes the offering of an opinion on financial regulatory reforms, etc.

Since the systemic risk expected to arise if a SIFI were to fall into a financial distress would be a grave issue, FSB therefore concludes that the moral hazard problem of "too big, interconnected, or complex to fail" would be easily provoked[27].

Therefore, whether bankruptcy procedures for failed SIFIs can be smoothly conducted to prevent moral hazard and avoid systemic chaos is one of the most crucial issues from the viewpoint of macroprudence. In an FSB report in October 2011 (Key Attributes of Effective Resolution Regimes for Financial Institutions), the organization addressed this problem by indicating the necessity of various aspects regarding financial systems, such as making effective bankruptcy procedures that do not burden the taxpayer, establishing close international corporations for the issues relating to global activities of SIFIs, and guaranteeing transparency and rapidity of the bankruptcy procedures, etc.

In July 2011, the Basel Committee on Banking Supervision published a consultative document on "global systemically important banks" (G-SIBs). On the document, G-SIBs were made subject to additional capital requirements (surcharges) due to the enormous levels of bad effects that their bankruptcies would exert. This surcharge is between 1% and 3.5% depending on the importance of each G-SIB, to be met with Tier 1 Common Equity. However, 2.5% is the current upper limit, with the surcharge to be applied in phases starting on January 1, 2016, and will be fully established on January 1, 2019.

According to the Basel Committee on Banking Supervision, global systemic importance should be measured in terms of the impact that a

[27] The bailout of American International Group, Inc., the largest insurance company at that time, by the US government and FRB immediately after the Lehman bankruptcy in September 2008 was a classic example of a bailout decision because an organization was "too big, interconnected, or complex to fail."

failure of a bank can have on the global financial system and wider economy. The selected five indicators that define G-SIBs reflect the size of banks, their interconnectedness, the lack of readily available substitutes for the services they provide, their cross-jurisdictional activity and their complexity. The Basel Committee is of the view that the number of G-SIBs will initially be 28[28].

The FSB is further aiming to task G-SIBs with a new requirement—Total Loss Absorbency Capacity (TLAC). In the FSB consultative document issued on November 10, 2014, the FSB proposes to achieve the availability of adequate loss-absorbing capacity for G-SIBs in resolution by setting a new minimum requirement for TLAC. TLAC is a combination of an 8% minimum requirement for equity capital excluding the capital buffer stipulated by Basel III and eligible liabilities.[29]

The FSB proposes that a TLAC requirement be set within the range of 16-20% of risk-weighted assets (RWAs) and at least twice the Basel III Tier 1 leverage ratio requirement. Though the TLAC is expected to see revision going forward, presumption of the original proposal becoming official regulation [30] would result in a required total risk-asset ratio of 19.5% to 26% for capital and qualifying debt holdings for G-SIBs, comprising TLAC (16%–20%), capital buffer (2.5%), and surcharge (1%–3.5%).

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[28] The list of G-SIBs is updated on a yearly basis; as of November 2015, 30 banks worldwide are on that list. Three Japanese banks are included in the list, including Mitsubishi UFJ (1.5% surcharge), Mizuho (1.0% surcharge), and SMBC (1.0% surcharge).

[29] Eligible debt requirements: unsecured, issued by a bankrupt entity, with at least one year to maturity, and subordinated.

[30] According to the FSB as of November 2015, the TLAC is to be implemented in phases beginning on January 1, 2019.

5. Harmful Effects of Financial Regulations

As mentioned at the previous section, because of the financial regulation reforms as represented by Basel III, the regulations tend not only to widen but also to tighten. Can we, however, say that the occurrence and severity of the financial crisis connected to Lehman Brothers' bankruptcy were solely due to lax or nonexistent financial regulations? In other words, would stronger regulation prevent reoccurrence of a crisis? My answer is "no." On the contrary, the existence of regulations and institutions may, in some ways, induce crisis.

Let us first examine the harmful effects of capital adequacy requirements, the most important financial regulations. The first issue facing these is that of procyclicality. During periods of economic recession or financial crisis, on the one hand, degradations in the numerator of capital adequacy ratios are caused by increasing amounts of nonperforming assets and falling profitability, thus banks have to decrease total risk assets to maintain required capital adequacy ratios by squeezing new loans or retracting a line of credit. This process would then lead to make the economy worse. During periods of economic expansion, on the other hand, banks' own capital tends to increase and they tend to have aggressive loan behaviors. Therefore, greater economic expansion would be realized. This is the fundamental mechanism of procyclicality. In fact, the problem of procyclicality derived from the Basel capital adequacy regulations would have exerted a negative influence from the post-Lehman Brothers' collapse of fall 2008 through to 2009, as the financial crisis was transformed into the global economic crisis.

Many scholars and economists have already pointed out the procyclicality issue. As a result of the Basel Committee on Banking Supervision discussions for Basel III, requirements for capital conservation buffer that can be broken down during financial distress were realized. However, requiring capital buffers in Basel III and

strengthening capital adequacy regulations implies that banks would be forced to hold more costly capital, encouraging risk-taking behaviors for banks, as will be stated later.

Rajan (2009), in recognition of the problems surrounding capital buffers and in consideration of cycle-proof regulation (effective regardless of any economic states), proposed the introduction of a contingent capital which is a kind of debt issued by banks that could be converted into stock in times of crisis. Debt with equity characteristics, in general, tends to provide advantages to investors when stock prices are going up. However, debt such as contingent capital, which can be converted into stock in times of crisis, would likely not be highly attractive to investors unless the interest rate of that debt were to be set rather high. That means issuing contingent capital would force the bank into higher funding costs. Moreover, if the introduction of contingent capital were to effectively decrease a bank's risk of insolvency, it could also then cause a negative impact upon the disciplinary mechanism toward the bank management.

The second harmful effect caused by capital adequacy regulations is that they would encourage risk-taking behavior by banks. As pointed out by Hellmann, Murdock, and Stiglitz (2000), although capital adequacy regulations do have the short-term effect of suppressing a bank's risky behavior, they decrease the bank's franchise value[31] by forcing it to hold costly capital, which may lead to the bank's risky behavior in the long run. Eventually, capital adequacy requirements introduced with the intention of guiding sounder bank management may have the opposite effect and induce a bank's risk-taking behavior, thus jeopardizing sound banking operation.

The third important issue with strengthening global financial regulations is the intent to lay a strong and uniform net of regulations

[31] The franchise value refers to net present value of a bank's future earnings so long as a chartered bank continues to operate.

without consideration of the differences among the nations' financial systems. Financial systems can be broadly classified into market-based system and intermediary-based system. And financial systems in different countries at different eras may be diverse, depending on the characteristics and preferences of firms and households that utilize financial services. In that sense, these financial systems inherently possess extremely diverse sets of characteristics, no matter how the globalization process may develop. It is not likely that each country's financial system would converge into one single model; instead, it is more apt to retain country specific natures.

Under the circumstances that the nature of financial systems varies among nations, imposing rigorous and uniform capital adequacy regulations worldwide on the pretext of maintaining the soundness and stability of financial systems is assured to be an inefficient solution. Moreover, as these regulations would impose significant restrictions upon banking behaviors, there are concerns that they may exert negative influences on the real economy.

The fourth bad effect of the current regulation and system is mark-to-market accounting. Generally speaking, the market price of a financial product is the foundation of mark-to-market accounting and provides a useful signaling function with regard to the behavior of financial institutions and other market participants and the market price itself influences their behaviors. During ordinary periods, this creates a positive cycle of information. However, if market prices were to begin to go up, then the first increase would trigger aggressive behaviors of market participants and lead to yet another increase in market prices, eventually resulting in an asset price bubble as prices continue to go up. Conversely, in periods of crisis, such as the Lehman Brothers' shock, an initial fall in asset prices can cause negative reactions from financial institutions, intensifying that price decline(Plantin, Sapra, and Shin, 2005; Allen and Carletti, 2008;

Adrian and Shin, 2010). In other words, the mark-to-market accounting system exerts procyclical effects much like capital adequacy regulations.

6. New Direction for Future Financial Regulations

Given the diversity of financial systems around the world, enhancing their functionalities from a perspective of fairness and efficiency would require correcting regulations and systems that induce the above-mentioned issues of procyclicality and excess risk-taking. From this standpoint, we would not be able to conclude that tightening the Basel Committee's capital adequacy requirements worldwide would be a desirable direction for financial regulations.

By loosening global financial regulations, on the contrary, banks would secure an enhanced degree of freedom in their activity. And each country's financial authorities should be responsible for identifying long-term sustainability for financially troubled banks and in the event of unsustainability they should provide for an orderly liquidation procedure instead of falling into the trap of "too big to fail". This type of direction would appear more advantageous. On depositor protection, though a deposit insurance system designed by each country is primarily crucial, review is required on possible improvements to these systems, such as the introduction of a variable insurance premium system depending on the degree of bank soundness and the levy of a certain percentage of deposit interest rates as a premium of the deposit insurance, etc.

A shift in emphasis from global regulations to local ones necessitates discussion on how to handle G-SIBs. Most importantly, handling a G-SIB's bankruptcy is a critical and troublesome issue. As mentioned before, G-SIBs currently have surcharges imposed upon them as part of capital adequacy ratios, ostensibly to add a layer of loss absorption. However, the problem of adding further excess regulations to G-SIBs is

compounded by the serious issue of regulatory unfair disparity between banks identified as G-SIBs and those that are not.

In contrast, a more locally-focused regulatory system could well be a practical solution strategy. That is G-SIBs' cross-border branches should be incorporated into local subsidiaries and should be supervised by the country's regulatory authorities.

The various experiences generated by the US origin financial crisis would be highly suggestive that the present state of financial regulations requires drastic reexamination.

References

[1]Hanazaki, Masaharu (1985), “Financial Liberalization and Deposit Insurance Systems in the United States,” (in Japanese), *Economics Today*, Vol. 6-3, Research Institute of Capital Formation, Japan Development Bank.

[2]Hanazaki, Masaharu (2000), “A Chronology of Financial Crisis in Japan and the United States,” (in Japanese), Hirofumi Uzawa and Masaharu Hanazaki (eds.), *Economics of the Financial System,* 23-52, University of Tokyo Press.

[3]Hanazaki, Masaharu (2008), *Corporate Governance and Corporate Finance: An Informational and Institutional Approach*, (in Japanese), University of Tokyo Press.

[4]Hanazaki, Masaharu (2013), “Financial System and Financial Regulations after the Lehman Shock – A Critical Discussion of Basel III”, (in Japanese), Masaharu Hanazaki, Masayuki Otaki and Quing-yuan Sui (eds.), *Economic Analyses of Financial Systems and Financial Regulations*, 100-134, Keisoshobo.

[5]Horiuchi, Akiyoshi (1995), “‘Credit Order’ as Institutional Capital”, (in Japanese), Hirofumi Uzawa and Morio Kuninori (eds.), *Economics of Institutional Capital*, 17-43, University of Tokyo Press.

[6]Ikeo, Kazuhito (2013), “Financial Crisis and Market-based Indirect Finance – an economic analysis of the ‘Shadow Banking System’,” (in Japanese), Masaharu Hanazaki, Masayuki Otaki and Quing-yuan Sui (eds.), *Economic Analyses of Financial Systems and Financial Regulations*, 71-99, Keisoshobo.

[7]Okina, Yuri (2010), *Financial Crisis and Prudential Policy*, (in Japanese), Nikkei Publishing Inc.

[8]Uzawa, Hirofumi (2000), “Social Common Capital and Financial Systems,” (in Japanese), Hirofumi Uzawa and Masaharu Hanazaki (eds.), *Economics of the Financial System,* 1-22, University of Tokyo Press.

[9]Adrian, Tobias and Hyun Song Shin (2010), "Liquidity and leverage," *Journal of Financial Intermediation*, Vol. 19, Issue 3, 418-437

[10]Allen, Franklin and Elena Carletti (2008), "Mark-to-Market Accounting and Liquidity Pricing," *Journal of Accounting and Economics,* Vol. 45 Issue 2-3, 358-378.

[11]Allen, Franklin and Elena Carletti (2010), "The Global Financial Crisis," Banco Central de Chile Working Papers No. 575.

[12]Committee on the Global Financial System (2012), *Operationalising the Selection and Application of Macroprudential Instruments*, Bank for International Settlements, December.

[13]Dewatripont, Mathias and Jean Tirole (1993), *The Prudential Regulation of Banks,* MIT Press.
[14]Financial Stability Board (2011a), *Shadow Banking: Strengthening Oversight and Regulation*, 27 October.
[15]Financial Stability Board (2011b), *Key Attributes of Effective Resolution Regimes for Financial Institutions,* October.
[16]Financial Stability Board, International Monetary Fund, and Bank for International Settlements (2011), *Macroprudential Policy Tools and Frameworks Progress Report to G20*, 27 October.
[17]Hellmann, Thomas F., Kevin C. Murdock and Joseph E. Stiglitz (2000), "Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?" *American Economic review,* 90(1), 147-165.
[18]International Monetary Fund (2014), *Global Financial Stability Report: Risk Taking, Liquidity, and Shadow Banking: Curbing Excess While Promoting Growth,* October.
[19]Plantin, Guillaume, Haresh Sapra, and Hyun Song Shin (2005), "Marking to Market, Liquidity and Financial Stability," *Monetary and Economic Studies,* Vol. 23, No. S-1, 133-164.
[20]Rajan, Raghuram G. (2009), "The Credit Crisis and Cycle-Proof Regulation," *Federal Reserve Bank of St. Louis Review,* SEPTEMBER/OCTOBER 2009 Vol. 91, No. 5, Part 1, 397-402.

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