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(Citation)

European Journal of Law and Economics, 27(2):177-209

(Issue Date)

2009-04

(Resource Type)

journal article

(Version)

Accepted Manuscript

(URL)

<https://hdl.handle.net/20.500.14094/90001185>



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Bank Regulation and Supervision in Bank-dominated Financial Systems: a Comparison between Japan and Germany

To be published at European Journal of Law and Economics, 2009, Vol. 27, 2, pp. 177-209.

Abstract This paper describes and compares the regulation and supervision of banks in Japan and Germany. We have chosen these countries because they have both bank-dominated financial systems and belong to the same law tradition, yet, bank stability differs significantly. We ask to what extent these countries follow best practice regulations in banking and whether differences in banking stability and efficiency can be explained by regulatory and supervisory differences. We argue that bank regulation and supervision are less efficient in Japan than in Germany and show why Japan and Germany have made different regulatory and supervisory choices.

Keywords Bank regulation and supervision · Banking stability and banking efficiency · deposit insurance · Lender of last resort · Forbearance · Japan and Germany

JEL classification G21, G32

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1 Introduction

The beneficial effects of efficient banking systems for economic growth and development are well-proven, both theoretically and empirically (Pagano, 1993; Bencivenga and Smith, 1991; Beck, Levine and Loayza, 2000). But what is an efficient banking system and why do banking systems differ across countries? Recently, the law and finance view on financial development proposed a list of best-practice corporate governance rules. According to this view, rules of corporate governance and hence financial systems differ internationally mainly because countries belong to different law traditions (La Porta, Lopez de Silanes, Shleifer and Vishny, 1997, 1998; Beck and Levine, 2003). Acemoglu, Johnson and Robinson (2001, 2002) challenge this view and argue that law traditions are less important than geography and colonization strategies, while Stulz and Williamson (2003) and Guiso, Sapienza and Zingales (2003) emphasize cultural and religious differences as being crucial for variations in financial systems. Moreover, Rajan and Zingales (2003) and Barth, Caprio and Levine (2004, 2006) regard differences in bank regulation and supervision as being decisive for different systems.

Several cross-country studies test for the propositions of the law and finance view and the alternative views (La Porta, Lopez de Silanes, Shleifer and Vishny, 1998; Stulz and Williamson, 2003; Beck and Levine, 2003; Barth, Caprio and Levine, 2004, 2006). While these studies present many insights into the determinants of well-functioning banking systems, they suffer from several short-comings. First, they construct indices of bank regulation and supervision around the world which may not be unique; though carefully constructed, different indices could lead to different results. Second, by abstracting from the institutional details of a country's bank regulatory and supervisory schemes, cross-country studies cannot cope with the richness of institutional designs that a study of individual schemes can offer. Finally, cross-country studies do not explain why individual countries choose different forms of regulation and supervision. Because banking sector politics often reflect historically fashioned attitudes toward the financial sector and the role of government regulation, political interest groups, colonial heritage, and the influence of international institutions, Barth et al. (2006: 253) demand that "(to) better understand the determinants of bank regulatory and supervisory policies and effective strategies for reforming those policies, future research should use case studies to trace the forces shaping the evolution of bank regulation and supervision."

In this paper, we explore bank regulation and supervision in two countries: Japan and Germany.¹ We have chosen these two countries because they both belong to the same civil law tradition and are bank-dominated financial systems; moreover, both countries do not have any colonial background and - according to Demirgüç-Kunt and Detragiache (2002) - have similar institutional environments (with respect to rule of law or levels of corruption).² However, the banking industries in the two countries differ especially with respect to stability: While Japanese banks suffered considerable losses in recent decades and were subject to major consolidations, German banks performed relatively well. In Germany, bank failures are comparatively rare events. All bank crises have been solved and payments came from private deposit insurance schemes without the involvement of public funds, i.e. taxes (Beck, 2002).

Against this background we assess whether the different performances of Japanese and German banking sectors can be traced back to differences in bank regulation and supervision. Following Barth et al. (2006) we refer to bank regulation as the rules that govern the behaviour of banks whereas supervision is regarded as the measures taken to insure that banks comply with these rules. Bank regulation encompasses several aspects, i.e. the entry into banking, ownership restrictions, minimum capital requirements, restrictions on activities, external auditory requirements, internal management or organizational requirements, liquidity and diversification requirements, deposit insurance schemes, provisioning requirements and exit or foreclosure rules. As for supervision one can look at the structure, the scope, and the independence of supervision; hence, one can ask whether there is a single authority only capturing all banks, whether there is a single authority for all financial activities and, finally, how independent the supervisory authority is from pressure and influence by politicians and banks (Barth et al., 2006).

Some case studies of bank regulation and supervision for Japan or Germany do exist: Beck (2002) analyzes German deposit insurance schemes set up by private commercial banks but pays little attention to deposit insurance in the public saving banks and in the cooperative banking sector as well as to changes in deposit insurance initiated by European directives in 1998. Suzuki (1980, 1987) describes post-war bank regulation in Japan and Nakaso (2001) and Kawai (2005) provide thorough descriptions of the Japanese financial crisis during the 1990s. None of this literature, however, analyzes the evolution of the current regulatory

¹ Though Germany belongs to the European Monetary Union (EMU), bank regulation and supervision still resides in the individual countries of EMU; see Barth, Caprio and Levine (2006).

² In 2006, Germany was ranked 16th, Japan was ranked 17th in the Transparency International Corruption Index. See <http://www.transparency.org>. Of course, there are still cultural and religious differences between both countries.

frameworks or pays much attention to the interplay between different regulatory authorities in each country. In this paper, we aim to close this gap and to reconstruct the evolution of current regulatory regimes in Japan and Germany.

The paper is organized as follows: Section 2 discusses the reasons why commercial banks are regulated and supervised and provides an overview over the respective literature. Section 3 describes the evolution of bank regulation and supervision in Japan and Germany and section 4 discusses the consequences of different regulatory and supervisory environments for financial stability. Section 5 presents reasons why different regulatory and supervisory frameworks have been developed in both countries. Section 6 concludes and states what lessons are to be learned from the Japanese and the German experiences for best-practice bank regulation.

2. Rationale, flaws and proposed corrections of banking regulation: An overview

Banks are financial intermediaries that simultaneously grant loans and issue deposits. They facilitate financing when informational asymmetries and transaction costs prevent markets from allocating funds efficiently.³ By gathering information about borrowers (Leland and Pyle, 1977; Diamond, 1984; Allen, 1990; Hakenes, 2004) and by transforming loans into demandable deposits (Bryant, 1980; Diamond and Dybvig, 1983), banks create liquidity and offer liquidity insurance on both sides of the balance sheet (Diamond and Rajan, 2001).

This kind of liquidity creation inevitably exposes banks to the risk of a bank run, i.e. a situation where all depositors, even without actually facing liquidity needs, wish to withdraw their deposits. From an *ex ante* point of view, however, a bank run serves as a commitment device for a bank to behave honestly and not to betray customers (Calomiris and Kahn, 1991). Therefore, it may not only be triggered by a looming misbehaviour of the bank. A run can also result from a coordination failure among depositors, i.e. when sunspot events make depositors withdraw deposits only because they believe that other depositors will also do so (Diamond and Dybvig, 1983). More importantly, a bank run can also be triggered by changing fundamentals, such as expectations that a bank's capital cushion will be totally spent when assets devalue (Jacklin and Bhattacharya, 1988; Diamond and Rajan, 2000). A bank run might even occur when the net present value (NPV) of bank assets does not change. For

³ Surveys of the literature on contemporary banking theory and on banking regulation encompass Bhattacharya and Thakor (1993); Freixas and Rochet (1997); Bhattacharya, Boot and Thakor (1998); Santos (2001); Dionne (2003); VanHoose (2006).

example, asset returns may simply be delayed or the liquidity needs of depositors may suddenly and unexpectedly increase (Diamond and Rajan, 2005).

A bank run can be tremendously costly for the society as it is associated with a premature liquidation of bank financed projects irrespective of their NPV. Hence, profitable investment returns will not be realized. A run also disturbs the investors' intertemporal consumption plans. Total costs can be even higher given the systemic risk associated with a run on a single bank. In the simplest case, a run may spread over the banking system if shocks are correlated across banks or if depositors merely believe in those similarities (Chari and Jagannathan, 1988). If worst comes to worst, however, true contagion may force otherwise sound banks into trouble. This occurs, e.g., when the liquidity needs of one bank are sufficiently large to create an economy-wide shortage of liquidity, which then spills over to other banks once the affected bank withdraws its deposits held with other banks (Allen and Gale, 2000) while at the same time solvent banks cannot raise liquidity when information about banks' assets is asymmetric in the interbank market (Freixas et al., 2000).

More subtle kinds of contagion come without any direct linkages between banks. One is related to incomplete information processing by investors and thus inefficient changes in sentiments leading to herd behaviour (Banerjee, 1992). Another kind of contagion arises when a bank, in its attempt to generate liquidity by selling assets in a fire sale, puts downward pressure on the value of other banks' assets. In order to meet their own liquidity demand, these banks will start liquidating bank assets that have not changed in their values so far. That way, the run spills over across different banking markets and affects all banks in the system (Fecht, 2004). In addition, by trying to withhold liquidity, a troubled bank may offer higher interest rates on deposits that translate into higher refinancing costs for other banks, which therefore also fall into distress (Diamond and Rajan, 2005).⁴

In sum, a run on a single bank is associated with severe externalities, which alone may already give rise for regulation. Yet, there are other externalities even when no bank run occurs. For instance, a bank operating in geographically distinct markets may face regional liquidity shocks that, although mutually offsetting, cannot be cleared efficiently when there are frictions in bank internal capital markets (Dietrich and Vollmer, 2006). Another externality arises when banks cannot differentiate between borrower types, and hence inefficient cross-subsidization between borrowers takes place (Jakivuolle and Vesala, 2007).

⁴ Since 1970 there were 117 banking crises in 93 countries and 51 non-systemic runs in 45 countries (Caprio and Klingebiel, 2003).

In addition, when the costs of delegated monitoring by banks are increasing in credit risk, bank-financed firms may have an incentive to choose to overly save, and thus inefficient investment projects, in order to avoid high financing costs (Dietrich and Hauck, 2007).⁵

Given these externalities, institutional arrangements averting runs that are not caused by the misbehaviour of banks are beneficial. But some proposals are ill-suited from the outset (Santos, 2001). For example, with restricting banking activities to narrow banking, where a bank invests only into liquid and riskless securities, banks no longer add value; the same holds if banks were forced to refinance themselves with only long-term debt or equity. Alternatively, a suspension of convertibility in the case of substantial withdrawals, putting the bank at risk, does not work when liquidity needs cannot be perfectly anticipated.

Introducing a deposit insurance scheme, however, is often seen as an effective instrument to prevent a bank run and to provide a safety net.⁶ But when it cannot be made contingent on the cause of a run, deposit insurance has several drawbacks. For example, banks will invest in unduly risky assets and reduce reserves while incentives for depositors to monitor and to exert market discipline are reduced (Saunders and Wilson, 1996; Demirgüç-Kunt and Huizinga, 1999; Laeven, 2002a, 2000b, 2000c). In the debate about deposit insurance, several other flaws were uncovered and different ways to optimize insurance schemes have been discussed. For instance, Chan, Greenbaum and Thakor (1992) argue that deposit insurance schemes based upon risk-sensitive, actuarial calculations, which strive for fighting incentives to excess risk taking, cannot be implemented, whereas other insurance schemes lead to inefficient cross-subsidization within the banking sector. As a result strong banks will opt out of the scheme. In addition, deposit insurance may come along with deadweight losses for other sectors (Bhattacharya, Boot and Thakor, 1998). A different approach is to foster market discipline by limiting coverage or introducing coinsurance such that interest rates on deposits depend on a bank's profitability, liquidity and risk. For example, with limited coverage (or an insurance ceiling), some depositors such as large ones, institutional investors, corporate enterprises, other banks or foreign investors, can be excluded from insurance.⁷

⁵ In addition to these externalities associated with the specifics of the banking business there are other potential reasons for regulating banks. From political economy view, e.g., there may be political capture, while industrial economics teaches to control market power.

⁶ In 1980 only 16 countries had explicit deposit insurance schemes. By 1999, this number was 68 (Demirgüç-Kunt and Sobaci, 2001, Garcia, 1999).

⁷ Avery, Belton and Goldberg (1988) and Park (1995) present evidence that large depositors enforce higher interest rates.

Adverse incentives caused by full deposit insurance coverage can also be mitigated by further restricting a bank manager's scope of activities. Gennotte and Pyle (1991), e.g., argue that incentives to capitalize on deposit insurance benefits can be mitigated when bank managers face a restriction on the maximum volume of deposits, i.e. when there is a minimum capital adequacy as put forward by the first Basel accord. Capital adequacy ratios, however, may result in an increase of a bank's probability of default and therefore cause bank instability. Based upon portfolio theoretical considerations (Pyle, 1971, and Hart and Jaffee, 1974), it has been argued that a flat rate capital requirement may induce banks to choose even higher risks (Kahane, 1977, and Koehn and Santomero, 1980). To remedy this adverse incentive effect, Kim und Santomero (1988) have proposed to adopt risk-sensitive capital standards. However, even then a bank may choose too high a probability of default when liability is limited, which may be prevented with an additional minimum equity base (Rochet, 1992, and Blum, 2007). Alternatively, adverse investment incentives can also be mitigated if only depositors benefit from deposit insurance rather than the banker. This idea can be translated into policy by assigning the control rights over bank assets to the regulator or insurer in a state-contingent fashion, i.e. when insurance claims are filed (Dewatripont and Tirole, 1993a, 1993b).

While deposit insurance mainly aims to prevent single bank runs and to protect depositors, a lender of last resort (LLR) has been assigned the task to shield bank-financed firms from being prematurely liquidated. In most cases, LLR means discretionary provision of emergency liquidity to a single financial institution or the financial markets by the central bank (CB) usually only against first-class collateral. Such emergency lending to illiquid but solvent banks can be justified if – due to lack of information – inter bank markets do not work smoothly. Because the failure of an insolvent financial institution may have systemic consequences, CBs sometimes also consider the provision of risk capital as being part of their LLR function. Since this may create a moral hazard on the part of commercial banks, CBs often are ambiguous about whether or not they act as LLR and therefore maintain secrecy about the conditions under which financial assistance will be granted (Freixas et al., 2000).

Regulating banks is a particularly difficult task when several regulators with different mandates and potentially conflicting interests are in charge. The discussion often neglects this feature of real world regulation. Sometimes the interplay between different regulation schemes is taken into account. For instance, the relationship between bank closure policies and deposit insurance pricing (Pennacchi, 1987; Acharya and Dreyfuss, 1989; Allen and

Saunders, 1993), between LLR and deposit insurance (Kanas, 1986; Sleet and Smith, 2000), and between bank capital regulation and deposit insurance have been considered. But these studies assume that different regulatory authorities are driven by common interests. Exceptions are Repullo (2000) and Kahn and Santos (2005). Repullo (2000) analyzes to which regulatory authority the task of an LLR should be assigned with: the central bank or a deposit insurer. He concludes that the central bank should act as LLR when a bank's liquidity needs are small, but that the deposit insurer is in charge when they are large. Kahn and Santos (2005) further argue for allocating supervisory power to the deposit insurer and identify conditions under which centralizing LLR and deposit insurance functions is inefficient. In particular, when incentives to share information are weak, the allocation of regulatory power across government agencies should be contingent on their respective comparative advantages in gathering and utilizing relevant information.

All measures taken by authorities change efficiency and stability of the banking system and it still remains an open question as to what accounts for "best practice" in banking regulation and supervision. Moreover, in many countries, existing regulatory and supervisory frameworks were not designed from scratch as the outcome of a theoretically founded debate but evolved from a political discourse, often during a financial crisis. This, at least, applies for the two countries considered here.

3 The evolution of bank regulation and supervision in Japan and Germany

Japanese and German banking sectors belong to the largest in the world. Among G-7 countries, Japan is ranked second with respect to the ratio of financial intermediaries' assets to GDP, and number 1 if measured by households' currency and deposit holdings as a percentage of total assets, and by non-financial corporate sector loans as a percentage of GDP; Germany is ranked fifth, second and third in these figures (International Monetary Fund, 2003a; the data refers to 2002). Moreover, both financial systems share similarities in their scope and structure. For example, there are not only private credit institutions but public banks and credit cooperatives which also play a major role in both countries.⁸

⁸ Much of the information presented in the following sections refers to Nakaso (2001); Barth et al. (2006), from personal interviews with representatives of the respective institutions and from their websites. See <http://www.fsa.go.jp>; <http://www.dic.go.jp>; <http://www.bundesbank.de> and <http://www.bafin.de>

3.1 Japan

In the postwar period, Japan followed a single regulator approach. The Japanese financial system was heavily regulated by the Ministry of Finance (MoF) and supervised by the Bank of Japan (BoJ), which was at that time itself under the control of MoF. Interest rates were regulated under “window guidance” and international capital flows were controlled; introduction of new financial products required authorization by MoF (Suzuki, 1987). These measures were taken under the so called “convoy system” which implicitly guaranteed the survival of financial institutions. Market discipline was missing as it was implicitly assumed that the banking system was fail-proof.

Financial deregulation began in the early 1970 but proceeded very slowly. Formal deposit insurance, in line with the still intact convoy system, was introduced in 1971. It was funded mainly by public funds, and insurance payments were by law limited for a single case (“payoff cost limit”). Interest rate liberalization started late in 1979 and was completed in 1994. The incomplete and imbalanced deregulations in combination with implicit bail-out guarantees incited Japanese banks to invest in less regulated but risky and unfamiliar assets, especially in the housing markets. When financial liberalization completed, market participants began to shift portfolios away from the real estate market as monetary policy tightened; the resulting sharp fall in asset prices caused substantial losses (Ueda, 2000, Nagahata and Sekine, 2002).

Japanese authorities reacted to the financial crisis by taking a piecemeal approach, [where a more aggressive monetary policy seemed to be needed \(Kimura et al, 2007\)](#). In 1993, capital regulation, as laid down by the Basel I accord, came into effect. In response, the weakly capitalized banks in particular increased their risky lending activities ([Watanabe 2008](#), [Woo 1999](#)). Hence, adverse incentive effects of capital regulation, as suggested by theory, actually prevailed. In 1994, the Governor of BoJ announced termination of the convoy system. Shortly thereafter, two major credit-cooperatives failed. Fearing a systemic crisis, authorities (under the leadership of MoF and BoJ) decided to recapitalize these banks such that they became able to fully payout depositors. However, due to the existing payoff cost limit, the Deposit Insurance Corporation of Japan (DICJ) was not allowed to finance this measure completely alone. Despite the earlier announcement of the BoJ Governor, BoJ funded a new “bad” bank jointly with private financial institutions in order to resolve the crisis.⁹ As for BoJ this

⁹ This bank (Tokyo Kyodou Bank) was later reorganized into a “bad bank”, the Resolution and Collection Bank (RCB) which was designed as the general assuming bank for failed credit cooperatives. In 1999 RCB

measure was legitimated as being part of its LLR function which included not only liquidity support but also risk capital provision ([Hatakeda, 2007](#)). In addition, DICJ provided financial assistance within the payoff cost limit, and the private financial institutions provided low-interest loans. While in 1994, it was difficult for financial institutions to reject authorities' demands for additional funds, this political pressure was not sufficient in the case of the failure of another credit cooperative in August 1995. Eventually, in 1996 the Deposit Insurance Law was amended: Payoff cost limits were temporarily lifted, insurance premiums were increased, and a new Chief Executive Director was appointed by the MoF and separated from the office of the Deputy Governor of BoJ.

When more and more banks and securities firms failed, among them Sanyo Securities, Yamaguchi Securities and the Long Term Credit Bank of Japan, Japanese authorities were looking for an efficient means to channel public funds into the financial sector. In February 1998, a law was enacted that explicitly introduced public funds to solve the financial crisis. In total 30 trillion Yen was provided, partly to cover losses from failed banks while the rest was distributed among still vivid banks. A newly created Financial Management Committee was responsible for selecting banks which needed capital injections and to decide on the amount of money to be infused. The committee, however, did not possess any supervisory powers and lacked information about individual banks. Banks were thus reluctant to apply for capital injections because they feared to be singled out as a weak institute; thus, all major banks collectively applied for capital injections to be not singled out as a weak bank.

After some public debates with regards to whether capital should be injected into weak banks on a compulsory basis, in October 1998 a new law replaced the one which was created in February. This law established a Financial Reconstruction Commission as the parent organization of the also newly founded Financial Supervisory Agency and was thus vested with supervisory mandates. Moreover, a second law came into effect in order to deal with failed banks which could either be placed under Financial Reorganisation Administration or temporarily nationalized ([Fukuda and Koibuchi, 2006](#)). The Financial Supervisory Agency took over regulatory and supervisory powers from the Banking Bureau and the Securities Bureau of MoF, from local finance bureaus of MoF in each prefecture and from prefecture governments (which were regulating credit cooperatives). In July 2000, this new agency was renamed Financial Services Agency (FSA) and has been established as the main body entrusted with the regulation and supervision of commercial banks. Since the previous MoF

was reorganized in to the Resolution and Collection Corporation (RCC) which was given the capability to purchase bad loans from banks (Nakaso, 2001).

style of supervision was “almost entirely compliance–geared” (International Monetary Fund, 2003a), it conducted little off-site monitoring or other regular contact with supervised institutions; under new FSA rules, off-site supervision has developed and been combined with the inspections function that has been designed to ensure that banks comply with the law and that their financial statements are produced in accordance with MoF guidance.

Currently, the FSA is an external organ of the Japanese Cabinet Office and is managed by the Commissioner and his staff¹⁰. There is no board or other collective decision making body (International Monetary Fund, 2003a). The FSA controls entry into the financial sector for banks, security firms and insurance companies. It grants licenses, sets bank regulations and supervises banks. It is the only body responsible for bank regulation in Japan but it shares supervisory authorities with the Bank of Japan. Onsite inspections in banks are conducted annually for major banks and biannually for all other banks.

The minimum amount of capital required for entry is 2 billion Yen. It is legally required that the applicant submits information on the source of funds to be used as capital; moreover, sources of the funds must be verified by the FSA. There are no restrictions on the maximum percentage of bank capital that can be owned by a single owner; banks are allowed to hold ownership on non-bank financial firms. In line with Basel I, the minimum capital–to–asset ratio is 8 % for internationally active banks; it is only 4% however for domestic banks. The ratio is roughly risk–weighted but does not vary with individual bank’s credit risk or market risk. Accounting practices for banks are in accordance with International Accounting Standards (IAS) as well as with US Generally Accepted Accounting Standards (GAAP).

In accordance with universal banking principles, there are only minor restrictions on bank activities; real estate business is prohibited and the owning of non-financial firms by banks is restricted. Periodic external audits are compulsory; auditors have to be licensed or certified and have to submit a copy of their report to FSA. However, FSA has no right to meet with external auditors to discuss their reports without the approval of the bank in question, and auditors are not legally required to inform the supervisory agency about presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse. FSA may take legal action against external auditors for negligence. Moreover, it may force a bank to change its internal organizational structure.

¹⁰ Sakai, S. (2002) The Deeper Implications of Postponement, in internet: http://pranj.org/papers/sakai-csis_sep02.htm, downloaded on June 19th 2008. Also visible at the Case of Ashikaga Bank, see: Negishi, M. (2003) Government intervenes to rescue Ashikaga Bank. <http://search.japantimes.co.jp/cgi-bin/nn20031130a1.html>

Table 1
Number of cases of financial assistance in Japan: 1992-2006 (in Billion Yen)

Fiscal year	Number of cases of financial assistance	Grants	Asset purchases	Others
1992	2	20.0	-	8.0
1993	2	45.9	-	-
1994	2	42.5	-	-
1995	3	600.8	-	-
1996	6	1,316.0	90.0	-
1997	7	152.4	239.1	4.0
1998	30	2,674.1	2,681.5	-
1999	20	4,637.4	1,304.4	-
2000	20	5,157.4	850.1	-
2001	37	1,641.8	406.4	-
2002	51	2,318.7	794.9	-
2003	0	-	-	-
2004	0	-	-	-
2005	0	-	-	-
2006	0	-	-	-
Total	180	18,607.0	6,366.3	12.0

Source: Deposit Insurance Corporation of Japan, http://www.dic.go.jp/english/e_katsudou/e_katsudou1-2.html

Deposits are insured through above described DICJ which is a semi-governmental organization.¹¹ It is subject to supervision through FSA and is by law required to seek approval from the government on various issues, including budget and operational manual. DICJs capital comes from the government, the Bank of Japan, and private financial institutions; a very small amount comes also from labor cooperatives. Moreover, DICJ raises funds from the market using government guarantees; during the financial crisis, loans from BoJ and Government grants were also used (table 1). Participation in the deposit insurance system is compulsorily for most banks.

The deposit insurance premiums are collected regularly in advance from the insured financial institutions; they have to be paid within three months after the beginning of each business year (although the premium may be split into two semi-annual payments). The premium is calculated on the basis of the average daily balance of deposits (and other claims) throughout the previous fiscal year. Beginning with fiscal year (FY) 1996 the premium rates effectively sum up to 0.084%; they are not based on any assessment of risks.

¹¹ For the following information see the annual report of DIJC.

From 1996 all deposits were fully covered, but this blanket guarantee has been gradually lifted since 2003 (see figure 1). During fiscal year 2003 and 2004 only demand deposits were covered in full and since 2005, only “deposits for payment and settlement purposes” are fully protected. Other deposits, current deposits, ordinary deposits and specified deposits, are insured in total up to a maximum principal of ¥10 million plus accrued interest per depositor per financial institution.¹² Foreign currency deposits, negotiable certificates of deposit, money trust under no guarantee of principal etc. are not protected. Similar holds for interbank deposits. In FY 2006, the coverage limit was 2.5 times GDP per capita.

In case of a bank failure, DICJ does not pay insurance benefits directly to depositors but transfers, in whole or in part, the operation of the failed institution to an assuming institution and provides public assistance to either the failed institution or to the assuming institution. Financial assistance may take the form of a monetary grant, loan or deposit of fund, purchase of assets, guarantee or assumption of debts, subscription of preferred shares, or loss sharing (Deposit Insurance Company of Japan, 2006). From 2003 onwards not all deposits are covered; hence, certain restrictions were imposed on the business of failed banks to prevent an outflow of assets (see figure 1).

Figure 1
Scope of deposit protection in Japan

		April 2002- March 2005	From April 2005
Deposits within the scope of protection	Current deposits Ordinary deposits Specified deposits	Full coverage	Full coverage for deposits for payment and settlement purpose, which bear no interest and meet other conditions (permanent measures)
	Time deposits Installment savings Money trusts under the guarantee of principal Bank debentures (custody products)	Total up to a maximum principal of JPY 10 million Plus accrued interest thereon The portion in excess of JPY 10 million will be paid, depending on the state of assets of a failed financial institution (subject to deductions)	
Deposits outside the scope of protection	Foreign currency deposits Negotiable certificates of deposits Money trusts under no guarantee of principal	Not protected Payable depending on the state of assets of failed financial institution (some may be unpaid)	

¹² In the two years from April 2003 to the end of March 2005, the full amount for current deposits, ordinary deposits, and specified deposits was fully protected.

Source: Deposit Insurance Company of Japan (2006).

After a failure, non-performing assets of a failed institution are transferred to the RCC with the purpose to sell these assets at a market price. The sound assets and the insured deposits are transferred to an assuming bank which continues the business of the failed bank. To accelerate proceedings, the [Japanese Parliament](#) passed a law allowing for a temporary nationalization of troubled banks.¹³ In the case that an assuming bank cannot be found at the time of failure, the assets and deposits are transferred to “The Second Bridge Bank of Japan, Ltd.”, a 100 % subsidiary of DICJ which aims at temporarily continuing the operations and seeking an assuming financial institution. Normally, this procedure is limited to two years but it can be extended to three years.

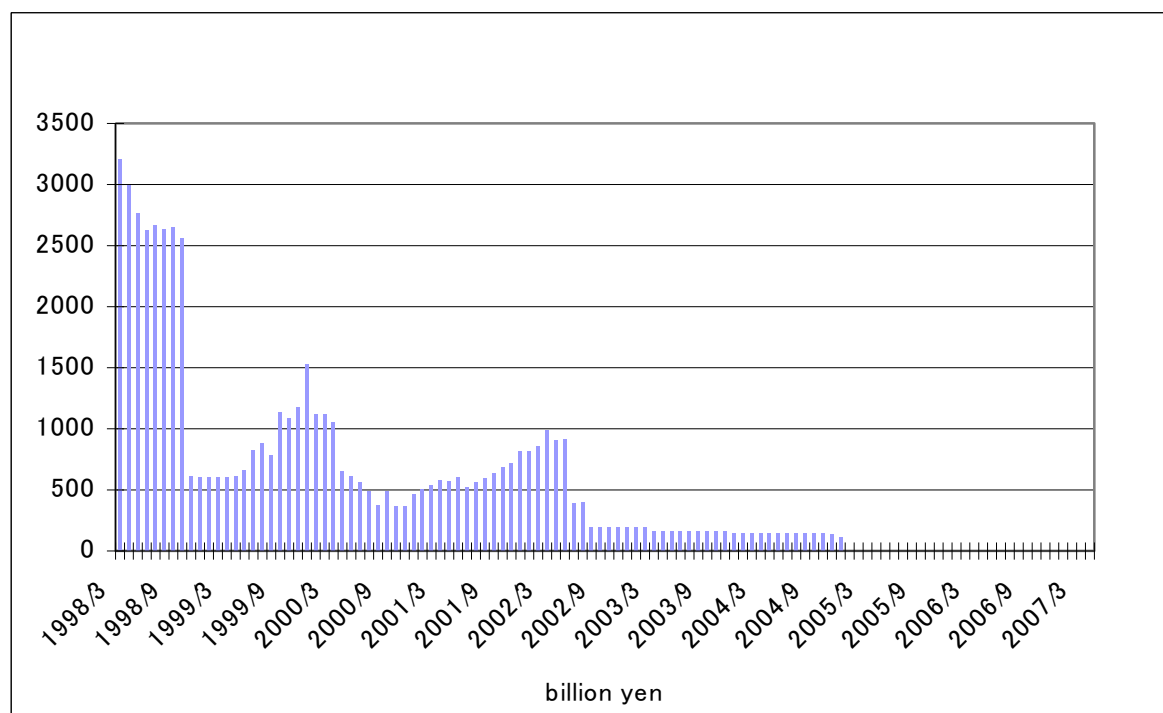
Besides deposit insurance, the Bank of Japan supplies liquidity to banks and financial institutions as the lender of last resort. It is stipulated in articles 37, 38 and 39 of Bank of Japan-Law, that BoJ may offer uncollateralized loans, with interest rates and procedures specially set by the policy board, (i) to cover an unexpected temporary shortage of funds due to accidental causes (Article 37), (ii) to maintain an orderly financial system (Article 38), or (iii) to contribute to the smooth settlement of funds (Article 30). Loans under Article 38 are granted on the request of the Prime Minister and the Minister of Finance. These “special loans” have been granted in the past in several cases (see figure 2).

In connection with this LLR function, Bank of Japan is involved in bank supervision and conducts on-site examinations as well as off-site monitoring: Examiners visit financial institutions periodically, review asset quality and risk management of financial institutions. Examined institutions will be informed at least one month prior to the actual visit and banks have to give their consent. On-site supervisions are not an exercise of administrative power and thus no legal penalties are imposed on institutions that refuse to accept BoJ’s request for an on-site examination. However, if an intended examination is refused by the banks or if consent cannot be received, BoJ may publicly announce this fact or even expel financial institutions from BoJ’s current account service. Moreover, at the request of the Commissioner

¹³ “Law concerning Emergency Measures for the Reconstruction of the Functions of the Financial System”; the law allowed a replacement of the management and a cleaning-up of the balance sheet. The first case was the failure of Long-term Credit Bank of Japan which was nationalized in October 1998.

of the Financial Services Agency, BoJ may inform FSA about the results of the on-site examinations.¹⁴

Figure 2: Volume of special loans under Article 38 of BoJ law (outstanding stock in trillion Yen)



Source: Bank of Japan

3.2 Germany

In post-war Germany, nation-wide bank regulation and supervision began in 1961 with the passage of a German Banking Act (Kreditwesengesetz, KWG) that stipulated the foundation of a federal bank supervisory agency in 1962 (“Bundesamt für das Kreditwesen” BAKred).¹⁵ The Bundesamt was only the regulatory authority for the banking industry; in addition, there were separate regulatory agencies for insurances and security firms.

Deposit insurance in Germany started in the 1930s when the cooperative banking sector initiated the foundation of a financial aid fund for cooperative banks that ran into difficulties during the great depression (Deutsche Bundesbank 1992; Beck, 2002). Commercial banks and saving banks did not have an insurance scheme until 1966 when the federation of private

¹⁴ The threat to be expelled from BoJ’s current account services became very effective since the beginning of the Quantitative Easing Policy in March 2001. According to Baba et al. (2005: 16) all financial institutions in Japan became heavily dependent on BoJ’s open market operations because the uncollateralized call market has almost collapsed due to low interest rates that did not even cover trading costs. In the meantime, however, the call market has recovered.

¹⁵ Until 1961 bank regulation was performed by the Bundesländer.

banks (Bundesverband deutscher Banken, BdB) founded a scheme where membership was voluntary. The savings banks sector followed in 1969. Due to the failure of the Herstatt Bank in 1974, private commercial banks decided to further the existing scheme to a fully-fledged deposit insurance that covered all deposits; this was done to pre-empt statutory regulations. Also in 1974, the Liquidity Consortium Bank (LCB; “LiKo-Bank”) was founded on the initiative of Deutsche Bundesbank. It is a private bank that provides liquidity to solvent banks with a liquidity shortage. It is jointly owned by the Bundesbank and all German banking associations. The federal government strongly urged the foundation of an insurance scheme that protects depositors and prevents systemic risk; compulsory deposit insurance with mandatory membership, however, was regarded as objectionable because it would hollow out civil liability.

Therefore, three independent deposit insurance schemes have evolved with one for each banking group. The insurance schemes for cooperative banks and savings banks provided indirect deposit insurance because they safeguard the viability of every single bank (institutional protection; “Institutsschutz”); the insurance scheme for commercial banks offered direct deposit insurance per depositor of up to 30 % of a bank’s liable capital; however, depositors are not legally entitled to claim this amount. Claims of institutional investors, in particular inter bank deposits, have been excluded from insurance. Membership in all three deposit insurance schemes was mandatory, but all three deposit insurance schemes did not protect depositors in the case of a systemic crisis.

To comply with EU directives, the federal government made deposit insurance compulsory for all private or public deposit-taking institutions in 1998; minimum deposit-coverage was 20.000 euro and a coinsurance of 10% was allowed (Deutsche Bundesbank 2000). Unlike previously existing rules, a bank’s license expires if a bank is not a member of a compulsory deposit insurance scheme or is being expelled from such a scheme. Statutory compensation schemes could be operated, however, by existing private-law deposit insurance schemes that were assigned the functions of an “entrusted compensation scheme”; they are now subject to supervision by the BaFin.¹⁶ The statutory protection is supplemented, if a credit institution is additionally a member of a deposit insurance scheme operated by the banking associations.

In Germany, banking regulation and supervision currently lies with the Federal Financial Supervisory Authority (“Bundesanstalt für Finanzdienstleistungsaufsicht”, BaFin) which is

¹⁶ Members of schemes safeguarding the viability of institutions, i.e. cooperative banks and savings banks, are exempted from compulsory membership in a statutory compensation scheme (Deutsche Bundesbank, 2000)

assisted by the Deutsche Bundesbank. Supervision is also conducted by the private banking federations. The BaFin is a public agency accountable to the German Minister of Finance. It was established in 2002 when the regulatory bodies for banks, insurances and security firms which were by then separately existing, were merged into one institution. Hence, the BaFin is a uniform governmental regulatory authority for all financial institutions (“Allfinanzaufsicht”). While the BaFin takes regulatory decisions, the operational supervisory process lies mainly with the Bundesbank (Deutsche Bundesbank - Bundesanstalt für Finanzdienstleistungsaufsicht, 2002). Onsite inspections in medium and large size banks are conducted annually.

The BaFin grants commercial bank licenses. The minimum capital entry requirement for opening a bank is 5 million Euro (which is identical for domestic banks and for German based foreign branches or subsidiaries). It is not legally required that the applicant submits information on the source of funds to be used as capital; moreover, sources are not verified by BaFin. There are no restrictions on the maximum percentage of bank capital that can be owned by a single owner; bank ownership of non-bank financial firms is allowed. Beyond the Basel accords, the minimum capital-to-asset ratio requirement is 8 % for all existing banks (and 12.5 % for newly established banks in the first three years of business). The ratio is risk-weighted but does not vary either as a function of the individual bank’s credit risk or as a function of market risk. Accounting practices for banks are neither in accordance with International Accounting Standards (IAS) nor with US Generally Accepted Accounting Standards (GAAP).

In accordance with universal banking principles, there are no restrictions on bank activities; however, insurance business is restricted. Periodic external audits are obligatory; auditors have to be licensed or certified and have to submit a copy of the auditor’s report to BaFin. The Federal Financial Supervisory Authority has the right to meet with external auditors to discuss their report without the approval of the bank and auditors are required by law to inform the supervisory agency of any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse. BaFin may not take legal action against external auditors for negligence, but can refuse an external auditor according to section 28 of the German Banking Act (“Kreditwesengesetz”, KWG). Moreover, it may force a bank to change its internal organizational structure.

German Banking Law does not stipulate to commercial banks explicitly verifiable and quantifiable guidelines regarding asset diversification. However, according to article 19 of the

by-laws of the European System of Central Banks, commercial banks are forced to hold minimum reserves with the central bank on which they earn interest. In addition, section 11 KWG requires banks to hold enough liquidity reserves; weighted short term assets should not be smaller than weighted short-term liabilities. Banks are not allowed to or required to hold reserves in foreign denominated currencies.

Today, the German deposit insurance system is comprised of two different schemes; both are funded by the banks and not by the government (Deutsche Bundesbank, 2000). For commercial banks which are members of the BdB all deposits are insured practically without any limit where the insurance fund of the BdB also covers the retention remaining from the compulsory scheme as well as any amount above 20.000 euro per depositor. The fund refines itself by fees from the member banks.¹⁷ Since 1998, premiums in the voluntary protection scheme are risk-adjusted: member banks are subject to an annual classification undertaken by a private limited liability company for assessing private banks ("Gesellschaft für Bankbeurteilung im privaten Bankgewerbe mbH") which is a subsidiary of the Audit Association of the German Banks. Banks are classified into three groups (A, B and C), with the last one being sub-classified again into three groups. Banks belonging to class A are regarded as little risk-prone. They pay a general annual premium of 0,03 % of their balance sheet item "amounts owed to customers". Banks in groups B and C have to pay higher premiums – up to 2.5 times the standard premium. Payments of premiums can be suspended if the assets of the deposit insurance fund are at a level seen as inappropriate. Moreover, banks in class A which have paid more than 20 annual contributions can be exempted.

The compulsory scheme does not apply to banks for which the viability is safeguarded by virtue of their by-laws, as for example to saving banks and "Landesbanken", as well as to credit co-operatives and their regional institutions. For those institutions being members of such mutually supportive banking groups, direct deposit insurance does not only cover liabilities since the respective banking federation ("Deutscher Sparkassen- und Giroverband", DSGV, and "Bundesverband der deutschen Volks- und Raiffeisenbanken", BVR) is obliged to guarantee the existence for each single bank ("Institutsschutz").

In the event of drawing on deposit insurance by commercial banks which are members of the BdB the banking federation is allowed to take any measures suitable to avoid severe

¹⁷ By law, Deutsche Bundesbank or European Central Bank is not allowed to act as lender of last resort to the deposit insurance scheme. However, there is expected, that "in case of a systemic crisis, a political solution will be found" (Deutsche Bundesbank, 1992; Beck, 2002: 706).

financial distress of the bank. This includes restricting lending and deposit-taking as well as personnel measures, i.e. it can dismiss managers, and even take over ownership of the bank. Moreover, claimants have to subrogate their rights to the deposit insurance fund.

4 Japanese versus German Banking Regulation: Similarities and Differences

Although the question of what constitutes the best practice in banking regulation and supervision is still unsettled, the literature review from section 2 has given some hints about how banks should be regulated. In this section we compare the current Japanese and German regulatory frameworks and ask what framework is likely to be more efficient.

4.1 Independence of regulatory institutions

The current institutional structure creates more scope for the Japanese regulatory authorities than for the German authorities to be subject to political pressure. As mentioned above, the operations of FSA are controlled by the Minister of Financial Services and hence by the Cabinet. This could result in conflicts of interest between financial stability and other political goals. The FSA is, e.g., responsible for ensuring that banks increase their lending to SMEs to ease a potential credit crunch (International Monetary Fund, 2003a). Moreover, FSA is managed by a commissioner and not by a board which means less personal independence from the Ministry. Finally, FSA is funded from central government funds and has no budgetary independence; it cannot charge fees for the regulatory services it provides to banks. Moreover, FSA's and DICJ's autonomy is further confined by Article 102 of the Japanese Deposit Insurance Law. It provides that if a failure of a financial institution poses a serious threat to the financial system, the Prime Minister can, on the advice of the Financial System Management Council, enforce financial assistance through DICJ, meaning recapitalization of a not yet failed bank with public funds.

This is in contrast with Germany, where a large part of regulatory and supervisory authority lies with the banking associations. In addition, Deutsche Bundesbank enjoys formal, personal, and financial independence from other government agencies. The BaFin is also functionally and organizationally independent from the Ministry of Finance. Although the latter acts as the “supreme official authority”, it refrains from giving instructions and does not interfere with the supervision of individual financial institutions in practice. Moreover, BaFin

is managed by a board and enjoys some financial independence because its operations are financed by the institutions supervision (International Monetary Fund, 2003b).¹⁸

4.2 Distribution of regulatory and supervisory powers

In comparison to Germany, regulatory and supervisory powers are more dispersed in Japan. DICJ is not involved in bank supervision at all, and even FSA operates with negligible supervisory personnel. Almost all supervision is done by BoJ which examines banks and major financial institutions. According to the International Monetary Fund (2003a) there are, however, no formal procedures for a regular exchange of information, although such exchanges take place on an ad hoc basis, and FSA and BoJ maintain close contact at operational and senior official levels ([Miyao, 2008](#)). Nevertheless, a request for information could be rejected on legal and confidentiality grounds (International Monetary Fund 2003a).

In Germany much bank supervision is done by BaFin, Deutsche Bundesbank and the banker's federations which are also responsible for the insurance schemes. In the area of banking supervision, though complaints about the lack of information sharing are often reported, BaFin and Bundesbank cooperate in principle (Deutsches Institut für Wirtschaftsforschung, 2006). Moreover, all members of the BdB have to be members of the Auditing Associations of German Banks that also conducts a lot of bank auditing, both on-site and off-site (see Beck, 2002). Prompt corrective actions can be imposed if circumstances indicate increased riskiness in the bank's business or a violation of banking laws.¹⁹ Penalties may restrict the volume of deposit business or particular types of lending.

4.3 Deposit insurance schemes and management of a financial crisis

Japanese and German deposit insurance schemes are also quite different; table 3 compares both deposit insurance schemes with deposit insurance schemes around the world.²⁰ While the Japanese deposit insurance scheme is compulsory, publicly managed and jointly (publicly and privately) funded, the German scheme is voluntary, privately managed and privately funded; the government is assumed to intervene only in the case of a systemic crisis and in case of

¹⁸ The International Monetary Fund (2003b) notes, however, concerns that the interests of supervised institutions receive too much weight on the Board (10 out of 21 members are from supervised institutions).

¹⁹ As reported by Beck (2002) problems with SMH bank were discovered in the 1980s by the German Bank Association; these problems, however, remained undetected by supervisory offices.

²⁰ For an in-depth analysis of the German deposit insurance scheme see Beck (2002). Demirgüç-Kunt and Sobaci (2001) compare deposit insurance schemes around the world.

losses beyond the private insurer's capacity (which has not happened yet). Both schemes offer almost unlimited coverage for depositors who, hence, do not have any incentive to exercise market discipline and to monitor and discipline banks. Due to its public nature, the Japanese insurance scheme relies on public monitoring while the private nature of the German scheme promotes peer monitoring and discipline by banks that have strong incentives to monitor one another. While insurance premiums are risk-adjusted in Germany, no such risk-adjustment is practiced in Japan.

Table 2
Deposit insurance schemes in Japan and Germany (BdB) – comparisons to world average

	Japan	Germany (BdB) ¹⁾		World average
		Statutory protection	Voluntary deposit protection	
Explicit	Yes	Yes	Yes	68 countries
Coverage limit	10 billion Yen ²⁾	Up to 90% of a deposit (maximum 20,000 Euro)	Per depositor up to 30% of the liable capital of the institution	On average three times per capita GDP
Coinsurance	No	Yes ³⁾	No	17 out of 68 countries have coinsurance
Foreign currency deposit covered?	Yes	Yes	Yes	Covered in 48 out of 68 countries
Interbank deposit covered?	No	No	No	Covered in 18 out of 68 countries
Funding	Ex ante funded; during crisis a de facto ex post system due to shortage of funds	Ex ante funded, but additional funds callable	Ex ante funded, but additional funds callable	58 out of 68 countries have funded schemes
Source of funding	Government, Bank of Japan, and banks	Banks only	Banks only	Private: 15, Public: 1 Joint: 51
Management	Public	Private; public supervision of the insurance scheme	Private	Private: 11, Public: 33 Joint: 24
Membership	Compulsory	Compulsory	Voluntary	Compulsory in 55 out of 68 countries
Risk-adjusted premiums	No	No	Yes	21 out of 68 countries have risk-adjusted premiums

¹⁾ Cooperative banks and savings banks enjoy institutional protection so that deposits are indirectly insured.

²⁾ Blanket guarantee for Payment and settlement deposits.

³⁾ Voluntary deposit insurance covers 10% coinsurance of depositors.

Sources: Deutsche Bundesbank (2000); Beck (2002), Demirgüç-Kunt, Sobaci (2001).

In case of a bank failure, DICJ usually does not liquidate the bank and payout depositors, but follows the financial assistance method (“purchase and assumption”, P&A) and transfers

solid assets and deposits to an assuming bank. P&A was used because it had the prospect of being less costly than the straight deposit payout method.²¹ In case that such an assuming bank cannot be found immediately, the Second Bridge bank steps in. In contrast to this, deposit insurance by the German BdB conducts both a straight deposit payout and a transfer of deposits to another financial institution. The decision on and the selection of the assuming bank are made by the insurance scheme on a cost basis (Beck, 2002).²² Moreover, there is no public resolution and collection corporation for bad loans in Germany, comparable to the RCC in Japan.²³

Though the members of the European Monetary Union (EMU) jointly conduct monetary policy, lender of last resort assistance is still a national responsibility; national central banks have, however, agreed to cooperate in crisis management and to share information during financial crises. Possible liquidity impacts have to be managed in a way that the unified monetary policy stance in the EMU can be maintained. Deutsche Bundesbank has announced that it will only provide temporary liquidity to individual solvent banks (via loans from LCB against collateral) to handle possible liquidity shortages in individual banks. Conflicts of interest between LLR and deposit insurance are prevented because LCB is commonly owned and managed by Deutsche Bundesbank and bankers federations. According to Beck (2002) the LCB has no incentive to lend to failing banks because resulting costs have to be borne by the deposit insurance schemes.

4.4 Lender of last resort

Deutsche Bundesbank itself does not provide liquidity to insolvent individual banks nor act as a lender of last resort to deposit insurance schemes in order to avoid possible conflicts of interest between a central bank's function in monetary stabilization policy and safeguarding financial markets. If the failure of a bank should over burden the financial capacity of a deposit insurance scheme or endanger the whole banking system, the Bundesbank regards it

²¹ See Gilbert (1994) for a comparison between both methods; whether P&A is less costly than liquidation depends on the premium paid by the assuming bank.

²² In the case of the recent failure of 'Privatbank Reithinger', BaFin declared in September 2006 that these bank was not able anymore to pay out depositors; they were informed and paid out by the deposit insurance scheme of the BdB. For details see the webpage of BdB: <http://www.bankenverband.de/channel/101832/art/1836/index.html>

²³ Only the cooperative banking sector, maintains such a private resolution company, called "Bankaktiengesellschaft Hamm" which resulted from a failure of a cooperative bank in 1984. In 2003 there was some public discussion to establish a public "bad bank" in Germany but this plan was rejected (Frankfurter Allgemeine Zeitung, 2003). Instead, commercial banks increasingly use credit derivatives to hedge risk; especially credit default swaps (see Deutsche Bundesbank, 2004a, 2004b).

to be the political task of the government to decide what has to happen in such a case of “too big to fail”. This action should not be calculable in advance (Deutsche Bundesbank 1992).

Unlike Deutsche Bundesbank, the Bank of Japan abstains from such a “constructive ambiguity” and rather wants to base LLR assistance on a set of predetermined principles which seem to be better placed in terms of transparency and accountability. Further differences concern the BoJ’s uncollateralized loans to banks and non-bank financial institutions at interest rates and amounts set individually by the Policy Board; moreover, the BoJ also lends to the deposit insurer at the official discount rate.

4.5 Bank stability

Since 1999, the IMF has conducted stress tests to assess the stability of banking systems in different countries as part of the Financial Sector Assessment Program; such stress tests were conducted in the first half of 2003 for Germany and in the second half of the same year for Japan. The aim of such stress tests is to detect potential weaknesses of the banking system when it is faced with extremely intensive changes in credit risk and in market prices or with deteriorating macroeconomic conditions.²⁴ In Germany, stress tests were done for a significant increase in a borrower’s probability of default (of 30% and 60% respectively), for a 30% decline in stock market prices within a period of one month, for a significant shift in the yield curve and for a 15% exchange rate change of the Euro against the US-Dollar within one month; moreover, macro stress tests were conducted which assumed that several risk factors were positively correlated. In Japan, credit risk stress shock was a 3 % loss of book value of their portfolios; market risk stress shocks were a 20 % decline in equity prices and a 200 basis point increase in yields; macro stress tests were conducted for a combined decline in share prices by 20% and an increase in interest rates by 1 %. All tests determined the consequences of these market changes for the bank’s risk-adjusted capital ratios.

In Germany stress tests were conducted for two banking groups, the first one containing only large, internationally active banks and the second one on a number of further Landesbanken, saving banks and cooperative banks (see Deutsche Bundesbank, 2003). As a result an increase in the probability of default amounting to 60% led in the most extreme case to a decrease of the risk-weighted regulatory capital ratio to 9% which is distinctively higher than the 8% ratio required by Basel regulations. The same applies for equity risk which is the most important market risk for large internationally active banks and which could lead to a

²⁴ The methodology is explained in International Monetary Fund (2003b:) and in Deutsche Bundesbank (2003),

loss of equity capital up to 20%: even in this case, however, no bank undershot the 8% capital ratio. Macro stress tests also did not indicate a risk to the stability of the German banking system (Deutsche Bundesbank, 2003).

Things were, however, different in the case of Japanese banks which did not all pass the similar stress tests (see International Monetary Fund, 2003b). In Japan, stress tests were conducted for two bank groups, the first one containing city banks and cooperative central banks, and the second group containing regional banks.²⁵ The IMF concluded that single market stress events consumed a high portion of the financial system's risk bearing capacity. City banks had the largest equity exposures and cooperative sectors' central banks had the largest interest risk exposure. Market stress endangers the risk-bearing capacity of many banks, especially of city banks; regional banks are less vulnerable to market stresses. A combined credit risk and market risk shock would completely decimate book shareholder equity in a large number of banks (see International Monetary Fund, 2003a).

Table 3

Fairly priced insurance premiums in Japan, Germany and the U.S. (1991-1999)

Premium (% of deposits)	Japan	Germany	U.S.	Average developed countries	Average developing countries	Average all sample countries
$\rho=1.00$	0.090	0.000	0.002	0.042	0.322	0.188
$\rho=0.97$	0.417	0.152	0.009	0.153	0.641	0.407

Source: Hovakimian, Kane and Laeven (2002: 31); Laeven (2002b: 52-53).

Beside market stress tests, several studies try to estimate to what extent deposit insurance schemes are "fairly priced", over – priced, or under – priced and whether they contend either a subsidiary or a tax to banks.²⁶ Fries, Mason and Perraudin (1993) find evidence that Japanese banks were highly subsidized by deposit insurance agencies during 1975 and 1992. Hovakimian, Kane and Laeven (2002) calculate country averages of actuarially fair deposit insurance premiums for the period 1991 to 1999 for a sample of 25 developing countries and 23 developed countries. The premiums are expressed as a percentage of deposits and are estimated under the assumption of no regulatory forbearance ($\rho=1.00$) and under the assumption of a regulatory forbearance parameter of $\rho=0.97$; the calculations assume that all bank debt is insured.²⁷ The results are reported in table 6 which shows that Germany had a

²⁵ Also stress tests for insurance companies were conducted.

²⁶ Most of these studies use the option-pricing model (Merton, 1977) that considers deposit insurance as a put option on the bank's assets.

²⁷ A regulatory forbearance parameter of $\rho=0.97$ ($\rho=1.00$) assumes that the book value of a bank's assets can fall to 97% (100%) of the bank's debt before the bank is closed by regulators.

relatively low fair deposit insurance premium compared to Japan. The authors also conclude that deposit insurance was under priced in Japan and that Japanese banks were granted considerable subsidiaries during the 1990s.²⁸

5 Why did Japan and Germany make different regulatory choices?

The current Japanese regulatory framework evolved during a time of financial and macroeconomic crisis and this fact is reflected in the chosen design of rules ([Amaya, 2008](#)). Before the financial crisis, the Japanese Deposit Insurance Law was revised in 1986 and DICJ was provided with two policy options in case of bank failures: The liquidation of the failed bank and payoff of deposits (up to an amount of 10 million Yen per depositor) or financial assistance where the business of the failed bank was transferred to an assuming bank which received financial help.²⁹ When the first two credit cooperative banks failed in December 1994, authorities decided to avoid the payoff of deposits because they feared large-scale bank-runs on other financial institutions; instead, they opted for financial assistance, but could not find an assuming bank. Moreover, there was a legal limit to the amount of financial assistance to be offered in a single case. As a consequence, Bank of Japan and private financial institutions established a new bank that assumed the business of failed cooperative banks. Capital injections came from BoJ and the financial sector and were a substitute for insufficient financial assistance by DICJ.

This semi-private sector solution, however, did not result in a voluntary, privately run protection scheme as a supplement to the statutory deposit insurance because after one of the next bank failures, authorities concluded that it would no longer be possible to raise the necessary amount of funds from private financial institutions; moreover, financial institutions feared that contributions to failing banks would erode their profitability and impair their market position. Instead, the payoff limit for DICJ was lifted in 1996 and the government stepped in after a fierce debate in the Diet. The lifting of the payoff-limit gave authorities leeway to handle financial crisis without depending on private financial assistance (Nakaso, 2001).

²⁸ For similar results see Laeven (2002a, 2002c)

²⁹ On this and for the following see again Nakaso (2001).

This episode contrasts with the German experience in 1976, where in fact the voluntary deposit insurance scheme was also introduced after a series of bank failures (especially after the closure of Bankhaus Herstatt), but where no public money was spent. Instead, authorities notified an amendment of the banking law (KWG), announced to establish a statutory deposit insurance scheme and to found a commission of experts (“Studienkommission Grundsatzfragen der Kreditwirtschaft”) with the task to prepare a proposal for banking reform. In reaction to these announcements and to prevent statutory measures, the commercial banks banker’s federation proposed a privately run solution and to expand the existing insurance scheme. The commercial banks had to react quickly because depositors began to shift deposits to run-proof savings banks which were regarded as safe due to their “Institutsschutz” (see for this and the following Busch, 2001; 2004).

The German government accepted because the proposal offered a blanket guarantee for deposits (which was more than originally provided in the statutory deposit insurance plan) without incurring any costs for the government. The banker’s federation, on the other hand, kept the management of the insurance scheme and member banks agreed because they preferred to open their books to their own umbrella organization instead to showing detailed information to the government. It seems that in both cases the Japanese and the German governments tried to vent pressure from the financial industry but by different means; while in Japan the government provided public money to banks, the German government forced the financial sector to find a privately organized solution.

After the advance of the financial crisis, Japanese authorities reacted in a way which is comprehensible from the perspective of contemporary banking theory. As mentioned above, authorities regarded political costs of a straight deposit payoff as being very high and so opted for a bail-out and for financial assistance to failing banks. Financial assistance may be regarded as an efficient reaction, because it is optimal for a regulator to liquidate a bank only if its financial condition is even lower than a threshold value which depends negatively on the social costs of bankruptcy (Repullo, 2000; Kahn and Santos, 2005).

After the failure of a privately-organized rescue package, BoJ provided first-aid and injected risk capital into financial institutions because neither DICJ nor the government had an institutional framework to inject capital into banks with solvency problems; later, BoJ financial support was substituted by DICJ managed financial assistance. This change in the allocation of regulatory powers and of liquidity provision from BoJ to DICJ is broadly in line with theoretical considerations of banking regulation, as surveyed in section 2: If liquidity

shocks are relatively small, liquidity should be provided by the central bank while with higher liquidity shocks this task should be allocated to the deposit insurer. Besides allocating these functions centrally, the optimal allocation of liquidity providing functions can also be achieved in a decentralized fashion by letting bank owners choose which agency to turn for support (Repullo, 2000).

Interesting enough, such mechanisms, indeed, were working in Japan during the financial crisis: After the default of Sanyo Securities in November 1997, which was outside the coverage of the deposit insurance system. BoJ decided not to intervene because it assessed that the case did not have systemic implications. Market participants in Japan, however, reacted and tended to withdraw deposits and preferred to hold cash or to deposit with still implicitly insured banks, i.e. the postal savings system or banks which were regarded as too big to fail (see Nakaso, 2001). The Japanese government reacted in February 1998 by explicitly introducing public money to protect depositors and to create a fully-fledged deposit insurance scheme.

The resulting Japanese safety-net, however, did not allocate any supervisory functions to the deposit insurer and DICJ does not have the right to expel any commercial bank from the insurance scheme. This is in contrast with Germany, where both the voluntary and the statutory compensation schemes may expel banks from coverage. In a multi-regulator arrangement where the central bank is responsible for the provision of emergency liquidity and the deposit insurer is responsible for the provision of deposit insurance it is advantageous to endow the deposit insurer with the right to withdraw insurance coverage (see Kahn and Santos, 2005). Without this right, banks could protect themselves against failure in the case of small liquidity shocks by holding enough liquidity; hence, regulators are not able to close the bank even if its probability to survive is small and closure is optimal from a social point of view. This may lead to excessive forbearance, provided that the political costs of bankruptcy are high. If, however, the deposit insurer has the right to expel a bank from insurance coverage, the bank may be closed even for small liquidity shocks and though there is excessive forbearance, this problem is less severe (Kahn and Santos, 2005).

6 Japan versus Germany: What lesson can be learned?

After the war Japan has followed a centralized approach to banking regulation with MoF being in the centre of the regulatory framework. In accordance with theoretical predictions a unified regulator arrangement led to too much forbearance under the pursuit of a “convoy system” where excessive risk-taking by banks was implicitly insured by regulatory authorities.

This framework broke up during the financial crisis and institutions like FSA, including DICJ gained in importance. A transformation to an explicit safety-net took place that still comprises considerable government involvement and public finance. This is in contrast with Germany which started after the Herstatt crisis with a much more decentralized regulatory framework that allocated considerable regulatory and supervisory powers to private bankers' associations.

In consequence, reforms are due in Japan as well as in Germany. In its financial system stability assessment report, the International Monetary Fund (2003a) demanded more independence for Japan's regulatory and supervisory institutions and the introduction of a clear legal framework where neither the Prime Minister nor the Minister for Financial Services have a role in taking decisions on individual supervised institutions. This report also proposed more use of independent external auditors and a better exchange of information with BoJ and other regulatory bodies, like FSA. Moreover, supervisory powers should be allocated to DICJ which still lacks the existence of a well trained staff for on-site and off-site examinations. Deposit insurance premiums should be risk-adjusted to prevent excessive risk-taking by deposit taking financial institutions. For Germany, the International Monetary Fund (2003b: 4-7) demanded reforms of the public-owned Landesbanken to address the phasing out of public guarantees and a legal framework that reduces existing legal and other barriers to restructuring within or across the three pillars. Moreover, it demanded the phasing-out of existing regional limitation to banking.

Acknowledgments

We would like to thank Hiroshi Nakaso (Bank of Japan, Tokyo), Yutaka Nishigaki and Nobusuke Tamaki (both Deposit Insurance Corporation of Japan, Tokyo) and Akihiko Watanabe (Bank of Japan, Osaka Branch) for helpful comments (without implicating them). Research assistance by Monika Bucher and excellent proofreading by David Beckstead is also acknowledged. Of course, the usual disclaimer applies. Parts of this research were done while Vollmer was on leave at Kobe University. He wants to thank Kobe University for its hospitality and the Japan Society for the Promotion of Science (JSPS) and Deutscher Akademischer Austauschdienst (DAAD) for financial support.

References

- Acemoglu D, Johnson S, Robinson JA (2001) The colonial origins of comparative development: An empirical investigation. *American Economic Review* 91(5): 369-1401.
- Acemoglu D, Johnson S, Robinson JA (2002) Reversal of fortune: Geography and institutions in the making of the modern world income distribution. *Quarterly Journal of Economics* 117(4), 1231-1294.
- Acharya S, Dreyfus J-F (1989) Optimal bank reorganization policies and the pricing of federal deposit insurance. *Journal of Finance* 44: 1313-1333.
- Allen F (1990) The market for information and the origin of financial intermediation. *Journal of Financial Intermediation* 1: 3-30.
- Allen F, Gale D (2000), Financial contagion. *Journal of Political Economy*, 108: 1-33.

- Allen L, Saunders A (1993) Forbearance and valuation of deposit insurance as a callable put. *Journal of Banking and Finance* 17: 629-643.
- Amaya T (2008) [saikin no kinyuu kensa no ugoki] Movements of recent financing examinations, *Kinyuu journalu [in Japanese] Financial Journal*, 6, 45-48.
- Avery RB, Belton TM, Goldberg MA (1988) Market discipline in regulating bank risk: new evidence from capital markets. *Journal of Money, Credit, and Banking* 20: 597-610.
- Baba N, Nishioka S, Oda N, Shirakawa M, Ueda K, Ugai H (2005) Japan's deflation, problems in the financial system and monetary policy. *BIS Working paper No 188*, Basel, November.
- Banerjee AV (1992) A simple model of herd behaviour. *Quarterly Journal of Economics* 107: 797-817.
- Barth JR, Caprio G Jr, Levine R. (2004) Bank regulation and supervision: What works best?. *Journal of Financial Intermediation* 13: 205-248.
- Barth JR, Caprio G. Jr., Levine R (2006) Rethinking bank regulation. Till angels govern. Cambridge.
- Beck, T. (2002) Deposit insurance as a private club: is Germany a model? *The Quarterly Review of Economics and Finance* 42: 701-719.
- Beck T, Levine R (2003) Legal institutions and financial development, World Bank Policy Research Working Paper No. 3136, Washington 2003, http://econ.worldbank.org/files/29888_wps3136.pdf.
- Beck T, Levine R, Loayza, N (2000) Finance and the sources of growth. *Journal of Financial Economics* 58: 261-300.
- Bencivenga V T, Smith, BD (1991) Financial intermediation and endogenous growth. *The Review of Economic Studies* 58 (2): 195-209.
- Bhattacharya S, Boot, AWA, Thakor, AV (1998) The economics of bank regulation. *Journal of Money, Credit, and Banking* 30, 745-770.
- Bhattacharya S, Thakor, AV (1993) Contemporary banking theory. *Journal of Financial Intermediation* 3: 2-50.
- Blum J (2007) Why 'Basel II' may need a leverage ratio restriction. Swiss National Bank, Zurich, mimeo.
- Bryant R (1980) A model of reserves, bank runs and deposit insurance. *Journal of Banking and Finance* 4: 335-344.
- Busch A (2001) Keeping the state at arm's length: banking supervision and deposit insurance in Germany, 1974-1984. In: Bovens M, 't Hart P, Peters BG (eds.): Success and Failure in Public Governance: A Comparative Analysis, Elgar, Cheltenham.
- Busch A (2004) Institutionen, Diskurse und "policy change". Bankenregulierung in Großbritannien und der Bundesrepublik. *Politische Vierteljahresschrift* 34: 127-150.
- Calomiris CW, Kahn, CM (1991) The role of demandable debt in structuring optimal banking arrangements, *American Economic Review*, 81: 497-513.
- Caprio G, Klingebiel D (2003) Episodes of systemic and borderline financial crises, World Bank, mimeo.
- Chan Y-S, Greenbaum, SJ, Thakor, AV (1992) Is fairly priced deposit insurance possible?. *The Journal of Finance* 47: 227-245.
- Chari VV, Jagannathan R (1988) Banking panics, information, and rational expectations equilibrium. *The Journal of Finance* 43: 749-761.
- Demirgüç-Kunt A, Detragiache E (2002) Does deposit insurance increase banking system stability? An empirical investigation. *Journal of Monetary Economics* 49: 1373-1406.
- Demirgüç-Kunt A, Huizinga H (1999) Market discipline and financial safety net design. *World Bank Policy Research Paper* No. 2183.
- Demirgüç-Kunt A, Sobaci T (2001) Deposit insurance around the world. *World Bank Economic Review* 15: 481-490.
- Deposit Insurance Company of Japan (2006) Annual report 2005, April 2005-March 2006, Tokyo.
- Deutsche Bundesbank (1992) Deposit protection schemes in the Federal Republic of Germany, *Monthly Report of the Deutsche Bundesbank*: 28-45.
- Deutsche Bundesbank (2000). Deposit protection and investor compensation in Germany, *Monthly Report of the Deutsche Bundesbank*, 29-45.
- Deutsche Bundesbank (2003) Stress testing the German banking system. *Monthly Report of the Deutsche Bundesbank*: 53-61.
- Deutsche Bundesbank (2004a) Credit risk transfer instrument: their use by German banks and aspects of financial stability. *Monthly Report of the Deutsche Bundesbank*, April, 27-45.
- Deutsche Bundesbank (2004b) Credit default swaps – functions, importance and information content. *Monthly Report of the Deutsche Bundesbank*, December, 43-56.
- Deutsche Bundesbank (2007) Statistisches Beiheft zum Monatsbericht 1, Bankenstatistik. Frankfurt/Main, September.

- Deutsche Bundesbank - Bundesanstalt für Finanzdienstleistungsaufsicht (2002). Gemeinsame Presseerklärung der Bundesanstalt für Finanzdienstleistungsaufsicht und der Deutschen Bundesbank. Frankfurt/Main, Bonn 4. November 2002.
- Deutsches Institut für Wirtschaftsforschung (2006) Evaluierungsuntersuchungen zur Bewertung der Aufsicht der Kreditwirtschaft und Erstellung eines Erfahrungsberichts (Erfahrungsbericht Bankenaufsicht), Berlin http://www.diw.de/deutsch/produkte/publikationen/diwkompakt/docs/diwkompakt_2006-024.pdf
- Dewatripont M, Tirole J (1993a) The prudential regulation of banks, MIT Press, Cambridge.
- Dewatripont M, Tirole J (1993b). Efficient governance structure: Implication for banking regulation, in: Mayer C, Vives X (eds.), Capital markets and financial intermediation, MIT Press, Cambridge: 12-35.
- Diamond DW (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies* 51: 393-414.
- Diamond DW, Dybvig PH (1983) Bank runs, deposit insurance, and liquidity, *Journal of Political Economy* 91: 401-419.
- Diamond DW, Rajan RG (2000) A theory of bank capital. *Journal of Political Economy*. 55: 2431-2465.
- Diamond DW, Rajan RG (2001) Liquidity risk, liquidity creation and financial fragility: a theory of banking. *Journal of Political Economy* 109 (2): 287-327.
- Diamond DW, Rajan RG (2005) Liquidity shortages and banking crisis. *The Journal of Finance*, 60: 615-647.
- Dietrich D, Hauck A (2007) Bank lending, bank capital regulation and efficiency of corporate foreign investment, IWH Discussion Paper No. 4/2007 Halle/Saale.
- Dietrich D, Vollmer U (2006) Banks' internationalization strategies: the role of bank capital regulation. IWH Discussion Paper No. 18/2006 Halle/Saale.
- Dionne G (2003) The foundations of banks' risk regulation: A review of the literature, CIRPÉE Working Paper 03-46, Centre interuniversitaire sur le risque, les politiques économiques et l'emploi, Montreal.
- Fecht F (2004) On the stability of different financial systems. *Journal of the European Economic Association*. 2(6): 969-1014.
- Frankfurter Allgemeine Zeitung (2003) Idee einer Auffanggesellschaft für Kredite stößt auf Ablehnung, No. 47, 25.02.2003: 20.
- Freixas X, Giannini C, Hoggarth G, Soussa F (2000) Lender of last resort: what have we learned since Bagehot? *Journal of Financial Services Research* 18: 63-84.
- Freixas X, Rochet JC (1997) Microeconomics of banking, MIT Press, Cambridge, London.
- Fries S, Mason R, Perraudin W (1993) Evaluating deposit insurance for Japanese banks. *Journal of the Japanese and International Economy* 7: 356-386.
- [Fukuda S, Koibuchi, S \(2006\) \[Furyou saiken to furyou houki: mein banku no hashirusugiru futan\] Bad Loans and Write-Offs: Overrunning burden of the Main bank \[in Japanese\], \[keizai kenkyuu\] The Economic Review \[in Japanese\] 57, 2, 110-120.](#)
- Garcia G (1999) Deposit insurance: A survey of actual and best practices. IMF Working Paper No. 99/54.
- Genotte G, Pyle D (1991) Capital controls and bank risk. *Journal of Banking and Finance* 15: 805-824.
- Gilbert RA (1994) The effects of legislating prompt corrective action on the bank insurance fund. *Federal Reserve Bank of St. Louis. Quarterly Review*: 3-22.
- Guiso L, Sapienza P, Zingales L (2003) People's opium? Religion and economic attitudes. *Journal of Monetary Economics* 50(1): 225-282.
- Hakenes H (2004) Banks as delegated risk managers. *Journal of Banking & Finance* 28: 2399-2426.
- Hart OD, Jaffee DM (1974) On the application of portfolio theory to depository financial intermediaries. *Review of Economic Studies* 41: 129-147
- [Hatakeda T \(2007\) \[Waga kuni no ginkou bumon ni okeru ryuudousei juyou nit suite- kyouwa bun kaiki bunseki ni yoru kenshou\] Bank's Demand for Liquidity in Japan- Co-integration Regression Analysis, \[Kokumin-Keizai Zasshi\] Journal of Economics & Business Administration, \[in Japanese\] 196, 3, 43-55.](#)
- Hovakimian A, Kane E, Laeven L (2002) How country and safety-net characteristics affect bank risk-shifting, mimeo, World Bank | Boston College.
- International Monetary Fund (2003a) Japan: Financial System Stability Assessment and Supplementary Information, *IMF Country Report* No. 03/287, Washington.
- International Monetary Fund (2003b) Germany: financial system stability assessment, including reports on the observance of standards and codes on the following topics: banking supervision, securities regulation, insurance regulation, monetary and fiscal policy transparency, payment systems, and securities settlement, *IMF Country Report* No. 03/343, Washington.

- Jacklin C, Bhattacharya S (1988) Distinguishing panics and information-based runs: welfare and policy implications. *Journal of Political Economy* 96: 568-592.
- Jakivuolle E, Vesala T (2007). Portfolio effects and efficiency of lending under Basel II. *Bank of Finland Research Discussion Paper* No. 13/2007. Helsinki.
- Kahane Y (1977) Capital adequacy and regulation of financial intermediaries. *Journal of Banking and Finance* 1: 207-218.
- Kahn C, Santos JAC (2005) Allocating bank regulatory powers: lender of last resort. *European Economic Review* 49: 2107-2136.
- Kanatas G (1986) Deposit insurance and the discount window: pricing under asymmetric information. *The Journal of Finance* 42:2: 437-450.
- Kawai M (2005) Reform of the Japanese banking system. *International Economics and Economic Policy*, 2: 307-335.
- Kim D, Santomero AM (1988) Risk in banking and capital regulation. *The Journal of Finance* 43: 1219-1233.
- [Kimura T, Fujiwara J, Hara N, Hirakata N, Watanabe S \(2007\) \[bubble houkaiki no nihon no kinyuu seisaku: fukakujitsu seisaku no nozomashii seisaku unei wo megutte\] Japanese Monetary Policy during the Collapse of the Bubble Economy: Political Measures under Uncertainty. \[kinyuu kenkyuu\] Institute for Monetary and Economic Studies \(IMES\) \[in Japanese\] Bank of Japan, 4, 41-85](#)
- Koehn M, Santomero AM (1980) Regulation of bank capital and portfolio risk. *The Journal of Finance* 35: 1235-1244.
- La Porta R, Lopez de Silanes F, Shleifer A, Vishny RW (1997) Legal determinants of external finance. *The Journal of Finance* 52: 1131-1150.
- La Porta R, Lopez de Silanes F, Shleifer A, Vishny RW (1998) Law and finance. *Journal of Political Economy* 106: 1113-1155.
- Laeven L (2002a) Bank risk and deposit insurance. *World Bank Economic Review* 16: 109-137.
- Laeven L (2002b) Pricing of deposit insurance. *World Bank Policy Research Working Paper* No. 2871.
- Laeven L (2002c) International evidence on the cost of deposit insurance. *Quarterly Review of Economics and Finance*, 42 (2002): 721-732.
- Leland HE, Pyle DH (1977) Informational asymmetries, financial structure, and financial intermediation, *The Journal of Finance* 32: 371-387.
- Merton RC (1977) An analytic derivation of the cost of deposit insurance and loan guarantees. *Journal of Banking and Finance* 1: 512-520.
- [Miyao, R. \(2008\) \[nihon ginkou shinseidou no wadai\] Issues of the new Japanese Banking system. *Economy, Society and Policy*, \[in Japanese\] June, 434, 24-27.](#)
- Nagahata T, Sekine T (2002) The effects of monetary policy on firm investment after the collapse of the asset price bubble: An investigation using Japanese micro data. *Bank of Japan Working Paper Series*, No. 02-3, Tokyo.
- Nakaso H (2001) The financial crisis in Japan during the 1990s: how the bank of Japan responded and the lessons learnt. *BIS papers* No 6, Basel, October.
- Pagano M (1993) Financial markets and growth: an overview. *European Economic Review* 37, 613-622.
- Park S (1995) Market discipline by depositors: evidence from reduced form equations. *Quarterly Review of Economics and Finance* 35: 497-514.
- Pennacchi G (1987) Alternative forms of deposit insurance: pricing and bank incentive issues. *Journal of Banking and Finance*, Vol. 11, pp. 291-312.
- Pyle D (1971) On the theory of financial intermediation. *The Journal of Finance* 26(3): 737-747.
- Repullo R (2000) Who should act as a lender of last resort? An incomplete contracts model. *Journal of Money, Credit, and Banking* 32: 580-605.
- Rajan RG, Zingales L (2003) Saving capitalism from the capitalists: Unleashing the power of financial markets to create wealth and spread opportunity, Crown Business, New York.
- Rochet J-C (1992) Capital requirements and the behaviour of commercial banks. *European Economic Review* 43: 981-990.
- Santos JAC (2001) Bank capital regulation in contemporary banking theory: A review of the literature, *Financial Markets, Institutions, Instruments* 10(2): 41-84.
- Saunders A, Wilson B (1996) Contagious bank runs: evidence from the 1929-1933 period. *Journal of Financial Intermediation*, 5(4): 409-423.
- Sleet C, Smith BD (2000) Deposit insurance and lender of last resort functions. *Journal of Money, Credit, and Banking* 32:3: 518-575.
- Stulz R, Williamson R (2003) Culture, openness, and finance. *Journal of Financial Economics* 70: 313-349.
- Suzuki Y (1980) Money and banking in contemporary Japan. Yale University Press, New Haven, London.

- Suzuki Y (1987) The Japanese financial system. Claredon Press, Oxford.
- Ueda K (2000) Causes of Japan's banking problems in the 1990s. In: Hoshi T, Patrick HT (eds.) Crisis and change in Japanese Financial System, Springer, Boston.
- VanHoose DD (2006) Bank behavior under capital regulation: What does the academic literature tell us?, NFI Working Paper No. 2006-WP-04, Indiana State University, Terre Haute.
- [Watanabe, W. \(2008\) \[1990 nendai ni ginko wo tsujita shikin no nagare ha dou henka shitaka?\] How did the financing of Japanese banks changed in the 1990's? *Financial Review \[in Japanese\]* 2008, 88, 39-56.](#)
- Woo D (1999) In search of "capital crunch". Supply factors behind the credit slowdown in Japan. IMF Working paper WP/99/3.