

# What makes banking crisis resolution difficult? Lessons from Japan and the Nordic Countries

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**Abstract** Banking crisis resolution is often a long-lasting process with large fiscal and social costs. We ask which difficulties authorities face when choosing and implementing resolution packages. We survey the literature analyzing the impact of single resolution instruments on moral hazard and fiscal costs. We argue that no best-practice resolution package exists and that the implementation of a package is subject to coordination failures. Since crisis resolution packages are country-specific, we follow a case-study approach and describe how regulators in Japan and the Nordic countries during the 1990s solved their financial crises. We identify several obstacles the authorities in these countries were faced with and analyse their crisis resolution in the context of moral hazard and fiscal costs. Finally, we use these lessons to reassess the policy reactions in the US and in Europe during the recent financial crisis.

**Keywords** Banking crisis · Resolution instruments · Lender of last resort · Owner of last resort · Political coase theorem

**JEL Classification** E65 · G18 · H12 · N24 · N25

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## 1 Introduction

During the recent financial crisis, authorities intervened massively in the banking sector. They provided liquidity assistance as well as equity capital for distressed financial institutions, often in order to reduce the social costs of bank failures. In many cases, such financial assistance resulted in rising public budget deficits, which indicated a trade-off between stabilizing the banking industry and maintaining sound public finances. In some European countries, such as Ireland and Spain, bank bailouts even forced governments to ask for financial assistance from the European Union and the International Monetary Fund (IMF), showing that a banking crisis can often only be solved at the expense of an increasing risk of a sovereign debt crisis (Acharya et al. 2011).

While it is important, the fiscal burden is not the only dimension of a crisis resolution. When reacting to a banking crisis, regulators must also take into account the impact of their actions on social costs in terms of GDP loss and the consequences of their actions for future risk-taking behaviour of banks. Unfortunately, the relationship between fiscal burden, GDP growth, and bank risk-taking incentives is not clear-cut. The appliance of a cheap crisis resolution tool, such as granting guarantees, might not always be efficient from a risk (moral hazard) point of view. Therefore, policy-makers have to make preferences with regard to the effects of resolution packages. This may not always be easy. In addition to conflicting goals, regulators may also face difficulties in implementing their preferred bailout policies. Such difficulties may result from transaction costs and coordination problems among authorities, such as sub-optimal allocation of responsibilities, and commitment problems.

Against this background, the aim of this paper is to identify which specific difficulties authorities face when choosing and implementing crisis resolution packages.<sup>1</sup> We review the literature on the effects of crisis resolution measures and analyse resolution paths in past crises. We ask three interrelated questions: Which trade-offs and obstacles do policy makers face when resolving a banking crisis? How did these difficulties shape the course of past banking resolutions, and what were the impacts of these instruments on moral hazard and fiscal costs? What lessons can be learnt from these experiences for future crisis resolutions?

We use the case-study method which allows us to cover contextual conditions. This approach is appropriate whenever the phenomenon studied and its context are not always distinguishable and when circumstances are highly pertinent to the phenomenon of study (Yin 2003). This is, in particular, the case during a financial crisis when policy decisions which are made reflect potential conflicts of interest between different regulatory agencies or mirror potential opposition of groups with different vested interests against single rescue packages. As the present crisis is still persisting and repercussions from the ongoing sovereign debt crisis on bank failures

<sup>1</sup> Since our main interest is in crisis reaction mechanisms (after the breakout of the crisis), we do not discuss consequences for future crisis prevention; on this, see White (2008), Freixas (2010), Allen and Carletti (2010), Cukierman (2011) and Vollmer and Wiese (2013). Political measures for crisis prevention have already been incorporated into the EU framework for bank recovery and resolution. See the Bank Recovery and Resolution Directive (BRRD).

are still possible, we do not choose the current crisis resolution as the main subject matter for our present study; rather, we consider completed crisis resolution episodes which, however, should also not date back too far in the past. We thus take the 1990s as our preferred period of observation.

We choose Japan and the Nordic countries as the subject matters for the following reasons: Firstly, both regions have suffered from the most serious financial and economic crisis experienced by advanced market economies since WWII. Secondly, economic crises in both regions came after a period of financial liberalization and happened within similar institutional contexts with great affinities to current circumstances; this allows us to transform some of the lessons learnt from past episodes to the current crisis. Finally, policy reactions are evaluated differently in the literature. While Japan is typically regarded as an example of a failed banking crisis resolution (Allen and Gale 1999; Kanaya and Woo 2000; Fujii and Kawai 2010; Hoshi and Kashyap 2010), crisis resolution in the Nordic countries is generally considered as successful, in particular in Norway and (less) in Sweden and Finland (Ingves et al. 2009; Jonung 2009).

This paper proceeds as follows: Sect. 2 reviews the literature on the effects of banking crisis resolutions on banks' risk-taking, on direct fiscal/social costs, and on the policy trade-offs for politicians; moreover, it discloses restrictions which policy-makers face when resolving banking crises. Section 3 turns to the two regions under consideration and asks why particular instruments were taken and examines how political conflicts shaped crises resolution processes. Section 4 reassesses the crisis resolution packages applied during the recent financial crisis in light of the experiences made in Japan and the Nordic countries during the 1990s. Section 5 concludes this paper.

## 2 Financial assistance, policy trade-offs and crisis resolution obstacles

### 2.1 Taxonomy

As shown in Table 1, financial assistance to troubled banks involves liquidity assistance by a lender of last resort (LLR) or/and solvency assistance measures (“bank bailouts”) by an owner of last resort (OLR). Liquidity assistance may be provided either by the central bank (CB) or by a deposit insurer (DI). It usually means the provision of liquidity to a single financial institution (“emergency liquidity assistance”; ELA) or to the financial market as a whole in the form of monetary easing or credit easing.<sup>2</sup> ELA could be provided at market interest rates or above market rates. Solvency assistance is usually provided by the Ministry of Finance (MoF) or, in exceptional cases, also by the CB. It includes instruments that either apply off the balance sheets (like guarantees to unsecured depositors or bank guarantees) or alter the banks' balance sheets. On-balance sheet instruments

<sup>2</sup> Under monetary easing, the CB increases the size of its balance sheet and provides liquidity to the markets above the benchmark allotment. Under credit easing, the CB alters the structure of its balance sheet towards riskier/longer-term assets.

**Table 1** Forms of public financial assistance to troubled banks

Liquidity assistance					
to single banks (ELA)			to the market		
at market interest rate	at penalty rates		monetary easing		credit easing
Solvency assistance (“bank bailout”)					
off-balance sheet		through the liability side		through the asset side	
guarantees to unsecured depositors	bank guarantees	new equity	debt conversion into equity	asset transfer to a bad bank	cash injection
		asset and liability transfer to a bridge bank			

comprise a recapitalization through the liability side of the balance sheet (issuance of new equity or debt conversion into equity) or through the asset side of the bank’s balance sheet (purchases of non-performing loans or “toxic assets” which are transferred to a ‘bad bank’ or cash injection). Transfer of assets and/or liabilities to a “bridge bank” may touch both sides of a troubled bank’s balance sheet.

The need for liquidity assistance results from the fact that banks are possibly subject to a bank-run. Normally, interbank markets shield individual banks against idiosyncratic liquidity shocks because they allow banks to outweigh their individual liquidity deficits and surpluses (Bhattacharya and Gale 2011; Allen and Gale 2000). During financial crises, however, interbank markets may fail and stop working smoothly because market participants perceive increases in counterparty risks or liquidity risks (Freixas et al. 2000; Eisenschmidt and Tapking 2009; Heider et al. 2010; Acharya and Skeie 2011; Vollmer and Wiese 2014). Moreover, strategic actions of surplus banks may also result in a failure of interbank markets because banks with a liquidity surplus can benefit from low prices of assets which are fire-saled by illiquid banks and thus avoid liquidity injection to illiquid banks (Acharya et al. 2012).

In contrast to the case for liquidity assistance, the case for public bank bailouts is less clear-cut. Solvency payments are not necessary in a setup of Modigliani and Miller (1958), and under the assumption that debt contracts can be renegotiated at any time because debt can be transformed into equity at no cost and the probability of default almost becomes zero (Landier and Ueda 2009; Dewatripont and Freixas 2011; Philippon and Schnabl 2013). With informational asymmetries, however, the independence of the bank value from the structure of the liability side of the bank’s balance sheet does not hold anymore; debt renegotiations may also be impossible due to the dispersion and the large number of creditors (Gilson et al. 1990; Landier

and Ueda 2009). In consequence, a bank might become subject to an insolvency shock, i.e., to the risk that capital buffers are insufficient to cover losses.

Private bailouts may form an alternative to the provision of public assistance to failed banks, but may be feasible only when the number of insolvent institutions is not too large (Acharya and Yorulmazer 2007). Under private bailouts, costs are borne by private owners of acquiring banks rather than by tax payers. Moreover, private bailouts may increase the value of acquiring banks, which may, in general, induce banks to behave more prudently (Perotti and Suarez 2002). The drawback, however, is that bank acquisitions may reduce competition on markets for banking services. The effect of reduced competitiveness on risk-taking is ambiguous because it may reduce funding costs, but also increase loan rates (Boyd and De Nicoló 2005). High loan rates increase the banks' margin and thus reduce their risk-taking, but they also influence bank customers' risk-taking and thus their probability of repayment (Martinez-Miera and Repullo 2010).

## 2.2 Liquidity provisions

Liquidity assistance to single banks reduces banks' incentives to hold liquidity because such liquidity support increases the resale value of assets (Acharya et al. 2011). Concerning the provision of liquidity at or above market rates, Bagehot (1873) argued that the Bank of England should lend against collateral any amount to an illiquid, but solvent institution only at a penalty rate.<sup>3</sup> In that case, however, a bank may increase its risk-taking because penalty rates decrease the bank's margin and thus may create incentives to gamble (Repullo 2005). The influence of penalty rates on banks' risk-taking may also depend on whether the shocks hitting the banks are caused by the banks themselves. When the bank managers' effort reduces the likelihood of large and intermediate shocks (that cause solvency and illiquidity problems as well) penalty rates increase banks' incentives to remain liquid. By contrast, if the bank managers' effort only reduces the likelihood of large shocks, penalty rates have a negative effect on the banks' effort to remain liquid (Castiglionesi and Wagner 2012). Liquidity assistance to single banks may not only affect banks' risk-taking behaviour but also cause higher fiscal costs, in particular if the liquidity support to financial institutions lasts a longer period of time and thus becomes similar to solvency support (Honohan and Klingebiel 2003).

The impact of monetary and credit easing on risk-taking depends on the capital structure and leverage of banks. With a fixed capital structure, monetary easing increases risk-taking if banks are highly capitalized; if their capitalization is small, banks reduce their risk-taking. The reason for this is that monetary easing has two different effects on the risk-taking of banks. Firstly, monetary easing reduces the interest rate which, in turn, diminishes the banks' return on loans. This "revenue effect" decreases the banks' incentives to monitor their borrowers, i.e. increases risk-taking. Secondly, monetary easing reduces the banks' funding costs which prevents them from increasing their risk ("cost effect"). In the case of a fixed capital

<sup>3</sup> For a review of the early literature on liquidity provision and bank risk-taking, see also Freixas et al. (2000).

structure, low capitalized banks lower their risk-taking if monetary easing is applied because the “cost effect” dominates the “revenue effect”. If the capital structure is not fixed, monetary easing increases banks’ risk-taking. As monetary easing reduces a bank’s benefit of a high capital base, i.e., lower debt costs, banks lower their capital base. Banks with high leverage, however, have lower incentives to survive, as they risk losing less (Laeven et al. 2010).<sup>4</sup>

### 2.3 Bank bailouts

In the Modigliani-Miller setup, in particular under symmetric information, and under the assumption that debt renegotiation is impossible, both on-balance sheet and off-balance sheet interventions can increase a bank’s stability. In either case, however, the regulator has to transfer assets to shareholders in order to make them willing to accept these measures. The required compensation is higher in the case of subsidized asset sales than in the case of asset guarantees and recapitalizations because debt recovery is higher, which in turn increases the debt value more (Landier and Ueda 2009).<sup>5</sup> Philippon and Schnabl (2013) show that under symmetric information a share in a bank’s assets, the purchase of equity shares and the issuance of debt guarantees lead to the same costs for the government.<sup>6</sup>

In the case of asymmetric information, i.e., outside the framework of Modigliani-Miller, off-balance sheet interventions, such as blanket guarantees for the survival of banks, can have a risk-reducing effect, too, because a higher bailout probability increases a bank’s charter value, which induces it to behave more prudently.<sup>7</sup> This “value effect” outweighs the “moral-hazard-effect” if the regulator can credibly commit himself to a policy which promises a bailout only in times of macroeconomic distortions and a liquidation otherwise (Cordella and Yeyati 2003). Due to the fact that the occurrence of these conditions is uncertain, such a bailout policy can be considered as “constructive ambiguity”.

Apart from guarantees for banks and their shareholders, a regulator may also guarantee the payoff of unsecured depositors with two effects on banks’ risk-taking. Both result from the fact that the guarantees for unsecured depositors decrease the risk premium banks have to pay to their depositors. This, on the one hand, increases the banks’ net profit and raises the banks’ incentives to behave prudently (“margin effect”). On the other hand, a lower risk premium induces banks to increase their deposit volume. A higher deposit volume raises deposit rates which, in turn, causes

<sup>4</sup> For empirical evidence concerning the impact of short-term interest rates on banks’ risk-taking incentives, see Jiménez et al. (2009); Ioannidou et al. (2009); Altunbas et al. 2010) and De Nicoló et al. (2010).

<sup>5</sup> This arises from the fact that interventions, which reduce the probability of default, increase the recovery value of debt. Since the bank value remains constant in the Modigliani-Miller setup, a higher debt recovery involves a lower value for shareholders. Thus, they do not have incentives to agree with these kinds of interventions unless they are compensated by a regulator, for example.

<sup>6</sup> Purchases of shares in a bank’s assets and purchases of equity shares differ in such that the latter provides a share in the bank’s assets and investment opportunities.

<sup>7</sup> In this framework, all depositors are secured by a deposit insurance. A bank bailout enables the bank (the shareholders) to generate a charter value.

higher risk-taking (“volume effect”). Whether the “margin effect” outweighs the “volume effect” depends on the elasticity of deposit demand. If this elasticity is large, a small increase in deposit rates sharply increases the deposit volume. Then banks receive the deposits cheaply and the “margin effect” dominates the “volume effect”, i.e., banks decrease their risk-taking. By contrast, if the elasticity of deposit demand is low, banks have to offer “very” high deposit rates in order to increase their deposit volume. Then the “volume effect” dominates and banks increase their risk-taking.

Moreover, bank bailouts do not only affect the risk-taking of the protected bank, but also that of its competitors. Since bailout guarantees induce the secured bank to expand, aggregate deposit rates increase. This, however, lowers the margins of the competitor banks and thus induces them to increase the competitor bank’s risk level (Hakenes and Schnabel 2010; Gropp et al. 2011). Even though the protection of banks’ depositors and creditors may decrease the risk-taking of the protected bank, it tends to increase fiscal costs of banking crises (Honohan and Klingebiel 2003). However, debt guarantees are in general less costly than the injection of free cash because the government only pays out the insurance if the bank defaults while under free cash injection, the government always pays out cash. Moreover, all banks participate in the free cash injection, i.e. also healthy banks which do not all participate in the debt guarantee program (Philippon and Schnabl 2013).

Proceeding with on-balance sheet interventions, Berger et al. (2012) find empirical evidence from the German banking sector that capital injections reduce the risk-taking of the protected bank and its competitor bank in the short-run and in the long-run. Differentiating between common equity injection and preferred equity injection, Wilson and Wu (2010) show that the former is at least as efficient as the latter with regard to preventing banks from gambling. However, capital injection through the purchase of preferred stocks or the issuance of subordinated debt in exchange of warrants may limit the participation by banks that do not require recapitalization. This is a key driver for the “fact” that the purchase of equity shares leads to lower costs to the government than debt guarantees and the purchase of shares of a bank’s assets. In the latter case, the costs to the government are the highest (Philippon and Schnabl 2013). Duchin and Sosyura (2013) provide empirical evidence for the US banks during the recent crisis that public recapitalization by the issuance of preferred shares increased banks’ risk-taking. Differentiating between small and large banks, Black and Hazelwood (2013) find that the provision of capital for the US banks during this time increased the risk-taking of large banks, but decreased loan risk-taking of small banks.<sup>8</sup> Recapitalizations, however, in particular repeated recapitalizations rather increase fiscal costs of banking crises (Honohan and Klingebiel 2003).

Debt conversion into equity may be an alternative to restructure the liability side of the bank. Such contingent capital, however, raises incentives to take higher risks, especially in the case of low equity capital (Pennacchi 2010). Apart from contingent

<sup>8</sup> Duchin and Sosyura (2013) and Black and Hazelwood (2013) analyse for the US the relation between capital injection and risk-taking in the course of the Troubled-Asset-Relief-Program (TARP). Initially, the TARP was launched to purchase troubled assets in order to stabilize the US financial system. However, a short time after, the Capital Purchase Program (CPP), as part of the TARP, was unveiled.

capital, banks can be forced to issue subordinated debt. The impact of subordinated debt of banks' risk-taking is ambiguous. Niu (2008) argues that it may reduce banks' risk-taking, while Pennacchi (2010) shows that moral hazard may increase and even be higher than in the case of contingent capital. However, in both cases, the burden of these debt transformations is not borne by tax payers but by the banks' former debt holders and capital owners. Apart from forcing the bank to convert debt into equity, the regulator can force a bank to issue equity if a pre-defined solvency trigger level has been reached. This may encourage banks to remain solvent (Hart and Zingales 2011).

Besides recapitalization through the liability side, restructuring can also take place in the form of cash injection or asset sales to the government (or private investors). The impact of cash injections on banks' risk-taking may depend on whether the cash provision is unconditional or not. Granting unconditional support, i.e., lump-sum transfers, does not increase banks' risk-taking; however, it can be quite expensive for the government and tax-payers cannot participate in future upside gains. By contrast, if these interventions are conditional on, e.g., the start of a new business line, banks can externalise risks and this increases their risk appetite (Dietrich and Hauck 2012). As an alternative to cash injections, bank assets can be sold, for instance, to private sector institutions. If this increases the acquiring banks' market power, banks have an incentive to remain solvent *ex ante* (Perotti and Suarez 2002). The effectiveness of asset sales to prevent banks from risk-taking may even be higher than the issuance of preferred shares, but lower than the issuance of common equity shares (Wilson and Wu 2010). However, the purchase of assets can be quite difficult, as it is sometimes hard to evaluate these assets.

Instead of separating "bad assets", the regulator can assist the bank in separating "bad liabilities" and transfer all of the assets as well as the senior liabilities to a new bridge bank (Bulow and Klemperer 2009). Since junior creditors and shareholders of the old bank bear all of the losses, market discipline is ensured and moral hazard among shareholders is avoided. The transfer of liabilities still opens the possibility of subsidizing junior debtholders in order to avoid a run.

## 2.4 Crisis resolution obstacles

Different countries may choose different crisis resolution packages for two different reasons: different political preferences with respect to the consequences of the packages (risk-taking; fiscal costs; social costs) or different political and/or institutional restrictions. The chosen rescue packages reflect preferences only if the conditions of the "political Coase theorem" (PCT, Acemoglu 2003) are fulfilled. The PCT follows the idea of the original Coase theorem, which states that, as long as property rights are well-defined and there are no transaction costs, economic agents will conclude contracts with efficient outcomes, regardless of the distribution of property rights. Acemoglu (2003) extends this idea from the market sphere to the political sphere and describes the PCT as the idea that "political and economic transactions create a tendency towards policies and institutions that achieve the best outcomes given the various needs and requirements of societies, irrespective of who, or which social group, has political power". He confronts this idea with



“theories of social conflict” according to which societies choose different policies because of decisions made by powerful social groups that are interested in maximizing their own payoffs, not social welfare.<sup>9</sup>

Underlying the political Coase theorem are the assumptions that (1) the rights to make political decisions are well-allocated, that (2) transaction costs are low, and that (3) contracts between political actors are enforceable and not disturbed by a political commitment problem. If these conditions are not fulfilled, policies chosen will neither represent voters’ preferences nor maximize social welfare, but reflect the preferences of politicians or politically powerful social groups. Among these assumptions, the absence of enforcement problems and of political commitment problems is of special importance, because contracts that the state would like to write with others will not be enforceable by definition. Since the state can always use its powers to renege on the contract and cannot commit itself to keep to the terms of contract, the potential to reach efficient outcomes is undermined.

The difference between preferences and political/institutional restrictions is not always clear-cut, but time-dependent. A factor which constitutes a restriction to the availability of a crisis resolution measure in the short-run may form the result of a political preference in the long-run. A case in point is an exchange rate peg which limits the CB’s ability to change interest rates in reaction to a financial crisis or forces the domestic authorities to subsidize foreign bank creditors by declaring blanket guarantees on deposits. However, taking a broader time-horizon into account, the currency peg is the outcome of political preferences. Henceforth, we consider political and institutional obstacles in the point of time when resolution decisions have to be implemented.

In the case of banking crisis resolution, the following constraints may in particular shape the choice of the resolution package:

- Suboptimal allocations of responsibilities between institutions which may either act as an LLR or as an OLR, such as the CB, on the one hand, and the deposit insurer (or the Ministry of Finance), on the other hand: In case of a liquidity shock, the allocation of LLR responsibilities matters, as both types of institutions may react differently to a bank’s liquidity needs because they pursue different goals. As long as liquidity assistance is not allocated *ex ante* between both types of institutions, discretionary and non-coordinated liquidity assistance may result in the LLR being either “too strict” or “too soft”, i.e., refusing liquidity assistance when it should be provided or providing liquidity assistance when it should be refused (Repullo 2000; Kahn and Santos 2005; Hauck and Vollmer 2013).
- Transaction costs may complicate the assignment of single crisis resolution instruments, such as bank resolutions and bank nationalizations. Without a

<sup>9</sup> Acemoglu (2003) applies PCT to policies as well as institutions, i.e., to the choices made within a given framework and to the choice of the framework itself. Since institutions change only gradually, we restrict ourselves to the choice of policies. Moreover, Acemoglu (2003) also considers a “modified PCT” according to which societies choose different policies because of different choices made by leaders taken under uncertainty.

complete description of a bank's financial and non-financial activities in normal times and in crisis scenarios ("living wills"), it may be very difficult for authorities to accurately value the assets of complex and large banking firms. Consequently, the transfer of assets to a bad bank or a bridge bank may be impossible and the authorities thus have no other choice but to support such a bank under financial pressure. In addition, information costs make it difficult to differentiate between solvent and insolvent institutions, especially in a short period of time (Goodhart 1999). Finally, if a bank defaults, financial assistance by the Ministry of Finance or a deposit insurer may be difficult to organize at short notice because they usually lack funds. In contrast, liquidity provision by the central bank is relatively easy to get, even if this means that the CB takes over additional risks on its balance sheet.

- Commitment problems arise for authorities providing liquidity assistance or/and equity capital as well. In the case of a LLR, providing liquidity only at a penalty rate, i.e., at an interest rate higher than the market rate, may be time inconsistent if it aggravates the bank's solvency problem. It may also send signals to the market participants that the bank is in trouble; fears of stigmatization make banks reluctant to apply for funds because they fear to be singled out as a weak institution (Dewatripont et al. 2010). Commitment problems also exist in the case of liquidity provision to the market. If the CB can commit itself *ex ante* not to lower interest rates *ex post*, banks are deterred from investing in risky assets, as they anticipate not to be bailed out by low interest rates. By contrast, if the CB cannot make such commitments, banks expect to be bailed out by low interest rates, which induces them to invest in risky assets. Consequently, many banks will be distressed *ex post* and the CB finds it optimal to bail them out by lowering interest rates (Farhi and Tirole 2009). Finally, commitment problems can also exist for an authority deciding to resolve an insolvent institution. The authority's announcement to close a bank may lose credibility if the bank is too large ("too big to fail"), the number of bank failures is large ("too many to fail"), or if the failing banks have become too complicated to be resolved ("too complicated to fail"). In all cases, the regulator may find it *ex-post* optimal to bail out some or all failed banks if bailout costs are smaller than social costs caused by liquidation (Mailath and Mester 1994; Acharya and Yorulmazer 2007, 2008; DeYoung et al. 2013).

Under these conditions, policy makers might be forced to apply inferior crisis resolution packages which do not perfectly match with voters' preferences. The task of the following section is to identify the forces that prevent an efficient choice of policies and to reveal those variables which hinder societies from implementing an efficient banking crisis resolution scheme. As mentioned in the introduction, we take Japan and the Nordic countries during the 1990s as two natural experiments.

### 3 Banking crisis resolution in Japan and the Nordic countries

#### 3.1 Japan

Before the breakout of the crisis, financial markets in Japan were heavily regulated by the MoF and closely surveyed by the Bank of Japan (BoJ).<sup>10</sup> Due to interest rate caps, portfolio regulations, and capital controls, competition in the banking sector was limited and security markets were underdeveloped (Takeda and Turner 1992; Ueda 1994). Financial deregulation in Japan started during the 1970s due to international pressures and to growing public sector budget deficits after the second oil shock. Financial sector reforms were accompanied by monetary easing by the BoJ, which decreased interest rates to avoid an appreciation of the Yen against the Dollar (Yoshino 1996; Nakaso 2001; Takeda and Turner 1992). Banks reacted to financial deregulation and monetary easing by lending an increasing fraction of their assets to small- and medium-sized firms and to the real estate sector as well, which increased banks' risk level (Hoshi and Kashyap 2000). In consequence, real estate prices started to rise until the early 1980s, when the BoJ tightened monetary policy. This caused a decrease in lending growth and a drop in asset prices and hence in the collateral value of loans (Takeda and Turner 1992; Fukao 2000, 2003).

In 1991, the Japanese banking sector experienced sporadic failures of smaller institutions, which were initially regarded as rather isolated events. Public intervention became necessary, however, when two urban deposit-taking institutions, "Tokyo Kyowa" and "Anzen", failed in December 1994. Because of fears of contagion, authorities refused to apply a haircut on deposits, which was mandatory due to a "payoff cost limit" set by law.<sup>11</sup> They, instead, decided to provide financial assistance and to cover all accumulated losses. A "bad bank" scheme was introduced and assets and liabilities of the two failed institutions were transferred to "Tokyo Kyoudou Bank" (TKB), a new bank jointly established and recapitalized by the BoJ with participation of almost all private financial institutions.<sup>12</sup> The former shareholders of the failing banks were squeezed out and the management was removed in order to prevent moral hazard (Nakaso 2001).

In July 1995, three medium-sized banks, "Cosmo Credit Cooperative", "Hyogo Bank" and "Kizu Credit Cooperative", failed. In the case of "Cosmo" and "Hyogo" assets and deposits were transferred to TKB and "Midori Bank", respectively, and both banks were dissolved. In the interim period both banks received liquidity assistance in order to be able to continue their daily business. In the case of "Kizu Credit Cooperative", private institutions refused to provide

<sup>10</sup> For thorough surveys of banking regulations and the political reactions to the financial crisis in Japan, see Nakaso (2001), Fukao (2000), Fukao (2003), Bebenroth et al. (2009), Hoshi and Kashyap (2000) and Hoshi and Kashyap (2010). Shirai (2014) analyzes Japan's more recent monetary policy stance.

<sup>11</sup> The payoff cost limit was a limit to the amount of financial assistance the Japanese Deposit Insurance Company (DIC) could legally offer in any single case. It was defined as the insured deposits times the loss ratio where the loss ratio was the part of liabilities which was not covered by sound assets (Nakaso 2001).

<sup>12</sup> Participation by private institutions was voluntary. According to Article 25 of the Bank of Japan Law, the BoJ was authorized to provide liquidity support and to inject risk capital into distressed banks as well (Nakaso 2001).

financial support because they feared that a series of financial contributions would erode their own financial soundness. Instead, they urged a reform of the Deposit Insurance Law and a lifting of the payoff cost limit, which was abandoned in 1996. In addition, the risk premium for the deposit insurance fee was increased and the “Tokyo Kyodou Bank” was reorganized into the “Resolution and Collection Bank” (RCB; later: “Resolution and Collection Corporation” RCC). It received the role of a “bank of last resort”, being able to absorb non-performing loans or even the whole business of failed institutions (Nakaso 2001).

In early 1997, the Japanese banking crisis became more severe with the bankruptcy of the first major city bank, “Hokkaido Takushoku Bank”, and the financial distress of “Nippon Credit Bank” (NCB), one out of three long-term credit banks in Japan (Hoshi and Kashyap 2010). Both institutions suffered from solvency problems and needed capital injections in excess of the financial capacity of the DIC. In the case of “Hokkaido Takushoku Bank”, the MoF first organized a private sector solution and asked large shareholders (mainly insurance companies) and the “Industrial Bank of Japan” as well as the “Long Term Credit Bank of Japan” for capital injections. Since this rescue plan turned out to be infeasible, related financial institutions and the BoJ injected new equity capital in the form of preferred shares which could be converted into common shares (Hoshi and Kashyap 2010). “Hokkaido Takushoku Bank” was finally merged with “Hokkaido Bank” and with “Chuo Trust and Banking Company”, and in the interim period the BoJ provided liquidity assistance to outweigh deposit withdrawals.

A private sector solution was also tried. It was to be implemented for NCB, but it soon turned out that the financial contributions given by large banks and other related parties were too small to provide a solid capital basis for NCB. The BoJ had to inject additional funds (in the form of preferred stocks) into NCB. Although NCB was at first saved, its asset value deteriorated quickly and the bank was nationalized in December 1998, after the capital, which had already been injected, was completely lost (Nakaso 2001).

In early November 1997, “Sanyo Securities”, a medium-sized security house, failed and suspended its business. The BoJ did not provide bilateral financial assistance because “Sanyo” did not take deposits or offer settlement services to non-banks and was not regarded as being systemic. However, “Sanyo” was a borrower on the interbank market and the BoJ underestimated the increase in risk sensitivities following from the default on unsecured interbank markets. Interest rates on unsecured interbank loans increased substantially, and in late November 1997, the BoJ massively injected liquidity into the markets. At that time, “Yamaichi Securities”, one of the largest Japanese security trading companies, failed and the BoJ then provided individual liquidity support in order to allow “Yamaichi” to continue its business and to settle all existing contacts. Such an orderly wind-down was executed to avoid a negative spillover to the banking sector and a breakdown of the interbank market (Nakaso 2001).

By the end of 1997, more bank failures were announced, among them the failure of “Tokyo City Bank”, a regional bank based in Sendai. Although “Tokyo” was not regarded as systemic, its failure destroyed depositors’ trust mainly in other regional banks, and depositors started to queue in front of them. To prevent bank runs and

contagion, the BoJ declared a blanket guarantee on all deposits (including interbank deposits) and the government decided to use public funds to stabilize the financial system. In February 1998, the “Financial Function Stabilization Act” was passed, which allowed the government not only to pay out depositors but also to recapitalize banks. A newly created “Financial Crisis Management Committee” became responsible for selecting eligible banks. In March 1998, all major banks conjointly applied for public capital, but asked for only very small amounts, which was mainly provided in the form of subordinated loans and bonds, and most of the money was left unused (Fukao 2000, 2003; Nakaso 2001; Hoshi and Kashyap 2010).

In mid-1998, the “Long-Term Credit Bank of Japan” (LTCB) collapsed. This bank had provided a variety of financial services and hence was of systemic importance. The BoJ did not provide liquidity as a LLR because it feared that this would have a negative “announcement effect”, cutting off LTCB’s access to interbank loans. In order to attain an orderly wind-down of LTCB, the “Financial Reconstruction Law” was passed in October 1998 by the National Diet, which enabled the temporary nationalization of insolvent deposit financial institutions. On this basis, the LTCB was nationalized and later sold to private investors; business operations of the bank continued and all existing payment obligations were honoured. The bank management was replaced and existing shareholders had to cover losses (Fukao 2000; Nakaso 2001).

Furthermore, the newly created “Financial Supervisory Agency” (FSA) took over supervisory powers from the MoF in June 1998. The FSA became subordinated to the “Financial Reconstruction Commission” (as the successor of the former Financial Crisis Management Committee) which now had the authority to inspect and supervise banks and to use information gathered by FSA. The newly enacted “Financial Function Early Strengthening Law” allowed the Financial Reconstruction Commission to recapitalize solvent banks which had lost confidence of investors and depositors and were facing difficulties in raising capital in the market on their own (Fukao 2000). The amount available for bank recapitalizations was considerably enlarged and was considered to be large enough to leave banks with sufficiently high capital ratios even after non-realized losses had been deducted. The RCC also obtained the capacity to buy bad loans not only from failed banks, but also from those which were still solvent (Nakaso 2001).

In order to restore confidence in the financial system, the government purchased mostly convertible preferred shares and subordinated debt in 1999. These capital injections were used by almost all banks. Banks which received public capital had to submit “management improvement plans” on how to improve profitability (Nakaso 2001). The recapitalization in 1999 stabilized the financial markets, though the problem of non-performing loans and the undercapitalization persisted (Hoshi and Kashyap 2010). However, as noted by Hoshi and Kashyap (2010), the nature of non-performing loans has changed since 2000. While during the 1990s banks herded by collectively lending to the real estate sector, lending to small and medium-sized enterprises became particularly important after 2000. Banks tended to overstate the quality of their loan portfolios, which were in large parts non-performing. Instead of writing off their book values or providing adequate provisions, banks tended to extend their loans to insolvent borrowers in order to conceal their losses from

outsiders. Banks, in fact, pursued “zombie lending” or “evergreening” in order to hold down risk premiums for interbank lending and to retain access to interbank markets. They kept alive enterprises and thus contributed to the bad growth record of the Japanese economy during the next decade (Peek and Rosengren 2005; Caballero et al. 2008).

### 3.2 Nordic countries

Similar to Japan, financial markets in the Nordic countries were heavily regulated before the outbreak of the crisis.<sup>13</sup> Bank credit flows were controlled and there was a cap on interest rates for bank loans (Vale 2004; Englund and Vihriälä 2009). Banks focused on capturing market shares mainly by expanding in new geographical areas. In particular, in Norway, the banks focused on lending into the oil-related business and were severely hit by the drop of the oil price in 1985, which changed the economic environment. The oil price decline stopped the boom period, and the Norwegian current account changed from a surplus into a deficit, putting pressure on the Norwegian Krone (Knutsen and Lie 2002; Vale 2004). Interest rate increases, following the German reunification, enforced an economic downturn in all three Nordic countries. In addition, Finland also suffered from the collapse of the Soviet Union, which turned down Finnish trade (Jonung et al. 2008).

#### 3.2.1 Norway

The Norwegian banking crisis began, one year before the crises in Sweden and Finland, with the failure of a medium-sized commercial bank in 1988. Until 1990, 13 small and medium-sized regional banks also failed, but they were too small to worry about systemic risks (Vale 2004). Apart from liquidity support by the Norwegian Central Bank (“Norges Bank”), bailouts by mergers and acquisitions of larger solvent banks were sufficient to avoid a collapse of the banking system (Sandal 2004). Acquisitions were supported by the banking industries’ private guarantee funds, the “Commercial Banks’ Guarantee Fund” (CBGF) and the “Savings Banks’ Guarantee Funds” (SBGF).<sup>14</sup> These funds paid out deposits, but also issued loan guarantees against other liabilities of the failed bank in order to make a takeover attractive for an acquiring bank (Vale 2004; Wilse 2004).

The private sector solution reached its limits at the end of 1990, when the crisis hit the larger banks and both private guarantee funds were neither able to inject enough capital nor to assure repayments of deposits in case of bank failure (Sandal 2004). As private investors became reluctant to provide financial assistance (Vale 2004), two government-sponsored guarantee funds, the “Government Bank Insurance Fund” (GBIF) and the “Government Bank Investment Fund” (GBF), were established in March 1991 in order to guarantee deposits and to inject capital into banks.

<sup>13</sup> For surveys of the deregulation and crisis period in the Nordic countries, see Englund and Vihriälä (2009); Drees and Pazarbasioglu (1995); Jonung et al. (2008) and Vale (2004).

<sup>14</sup> Although both funds were not state-funded, representatives from the “Banking, Insurance and Securities Commission (BISC)” and from the Norges Bank were members of their boards.

The GBIF at first extended loans to the two private guarantee funds (which invested equity capital into ailing banks); after October 1991, the GBIF directly injected capital into distressed banks under conditions, such as writing off of shareholder value, replacement of the management and restrictions on bank activities (Vale 2004; Sandal 2004). These obligations were supposed to induce the banks' managements to search for alternative solutions before demanding public support and to avoid creating competitive advantages for rescued banks (Sandal 2004).

The GBF ought to aid banks which were still solvent and which were not yet in trouble, but had difficulties in attracting private investors on their own; the GBF could only inject capital conjointly with private investors (Sandal 2004; Wilse 2004). An amendment of the "Commercial Banking Act" enabled the government to write off shares of old shareholders against losses in order to make sure that they bore the losses before public interventions became necessary. The responsibilities allocated to the public funds and the Norges Bank were clear-cut. Both the GBIF and the GBF acted as OLRs; in addition, the central bank acted as LLR for individual banks with liquidity problems (Sandal 2004).

In 1991, two more systemically relevant banks, "Christiania Bank" and "Fokus Bank", failed, and the crisis in Norway became systemic. In reaction, the public GBIF and the private CBGF injected capital (in the form of preference shares) into the distressed banks. The Norwegian government exercised its right to write off the old shares to zero before injecting fresh capital. Moreover, in 1991 and 1992 the GBIF also provided preference capital for the largest commercial bank, "Den norske Bank", before injecting ordinary share capital in 1993. Board members and members of the top management were replaced. In 1992, further loans were granted from GBIF to the SBGF, which in turn injected share capital into two banks, "Sparebanken Rogaland" and "Sparebanken Midt Norge" (Wilse 2004).

At the end of 1992, Norway de-pegged the krone (against the ECU), enabling the central bank to reduce interest rates. The peg of the krone against the ECU made the decrease of interest rates impossible. Consequently, the banking sector recovered quickly due to the improved performance of the economy; lower interest rates increased the collateral value of banks' customers and decreased their default rate (Wilse 2004). In 1993, "Christiania Bank" managed to increase its capital and to attract private investors, but the government remained a shareholder (through the GBF) until 2000 (Wilse 2004). Also in 1993, the GBIF converted its preferred capital shares of "Den norske Bank" into ordinary shares, which were partly sold at the beginning of 1994. The GBIF sold its remaining shares of "Den norske Bank" in 2001 (but the government remained the largest shareholder). The remaining shares of "Fokus Bank" and "Christiania Bank" were sold in 1995. The government-owned banks can be seen as "bridge banks" between the failed institutions and the privatizations (Vale 2004). However, as only the shareholder structure of these banks changed, these were not bridge banks in the strict sense that liabilities and assets were transferred to another bank.

The quick and extensive policy reactions by Norwegian authorities managed to overcome the crisis swiftly and enabled the largest banks to keep operating in the international markets (Allen and Gale 1999). Commercial and savings banks regained profitability in 1993 (Vale 2004).

### 3.2.2 Sweden

At the end of 1991, two out of six major Swedish banks, “Första Sparbanken” and “Nordbanken”, incurred large losses. While in the case of the state-owned bank “Nordbanken” the government injected new equity, the state provided loan guarantees for “Första Sparbanken” (Drees and Pazarbasioglu 1995; Sandal 2004). However, at the beginning of 1992, this support turned out to be insufficient and the government bought all outstanding shares of “Nordbanken” and transferred the non-performing loans to a bad bank. In order to stabilize these institutions, both banks were supported by equity capital issued by the state (Drees and Pazarbasioglu 1995). The state-ownership may have been one reason for the subsidy passed to private minority shareholders who received a higher price for their shares than the market price (Sandal 2004; Englund and Vihriälä 2009). In 1992, “Gota Bank”, another major Swedish bank, revealed solvency problems. The problems were solved in the same way as in the case of “Nordbanken”. The “bad assets” were sold to another bad bank, whereas the performing assets were left in the “Gota Bank”. Moreover, both the bad bank and the healthy part of “Gota Bank” received further capital from the state (Sandal 2004).

When macroeconomic distortions became larger in autumn 1992, the crisis was treated as a systemic crisis. Ad hoc measures were not regarded as suitable interventions to restore stability of the banking sector (Drees and Pazarbasioglu 1995; Sandal 2004). Moreover, confidence in the Swedish financial system was low. This caused a large outflow of foreign funds on which the Swedish economy heavily relied. To restore confidence, a blanket guarantee by the government was announced which protected all bank creditors (Ingves and Lind 1996; Englund 1999). In order to avoid a conflict of interest, rescue operations were assigned to a newly created “Bank Support Authority” (BSA), which received an open-ended funding (Drees and Pazarbasioglu 1995; Ingves and Lind 1996; Jonung 2009). The authority was established to provide and to coordinate public support for the ailing banks.<sup>15</sup>

In order to increase the efficiency of support, banks were assigned to one of three categories (Ingves and Lind 1996). Banks in the first category—institutions with capital (at least slightly) above the minimum threshold of eight per cent—were encouraged to find a solution from the private sector to ensure solvency, and the BSA was to assist by temporarily providing guarantees. The second category consisted of banks which temporarily breached the capital requirements, but which might be able to meet these requirements in the long run. The BSA was prepared to inject capital into these banks or provide loans if private sector solutions were impossible. Banks from the third category were not able to fulfill capital requirements in the long run. These banks were to be either liquidated or merged or their assets were sold to “bad banks”.

Apart from “Gota Bank” and “Nordbanken”, other banks, such as the largest Swedish banks, “S-E-Banken”, “Swedbanken”, “Foreningsbanken” and “Sparbanken Sverige”, applied for capital support (Drees and Pazarbasioglu 1995).

<sup>15</sup> Its funding was open-ended to avoid political misgivings about the commitment to support the banking system (Jonung 2009).



However, a few months later, “Swedbanken” and “S-E-Banken” did not have to rely further on the support by the BSA, as their owners injected further capital (Ingves and Lind 1996). The major part of the capital support was provided to the first two banks (Drees and Pazarbasioglu 1995; Sandal 2004). In 1993, “Gota Bank” was taken over by the state-owned bank “Nordbanken” (Sandal 2004).<sup>16</sup>

The central bank, Riksbanken, used a large share of its foreign currency reserves as liquidity support through currency deposits in the banks. Moreover, banks could borrow Swedish krona freely without security in Riksbanken’s normal liquidity system (due to the government blanket creditor guarantee, Riksbanken faced no credit risk). These measures resolved the immediate liquidity problems (Sandal 2004).

The improvement of the banks’ financial position went in line with the overall macroeconomic recovery. The depreciation of the Swedish currency, the decrease of interest rates and the reduction of government deficit supported the banks’ recovery process (Ingves and Lind 1996). Public measures were supported throughout all political parties, which contributed to the credibility of the rescue programme and enabled the government to take actions immediately (Sandal 2004; Jonung 2009).

### 3.2.3 Finland

The Finnish banking crisis began in 1991 when “Skopbank”, a central institution mutually owned by the Finnish savings banks, could not meet the goals of the restructuring programme which had already begun at the end of the 1980s when the bank had been put under special and strict surveillance by the Bank of Finland and the Banking Supervision Office (Nyberg and Vihriälä 1994; Englund and Vihriälä 2009). Skopbank was taken over by the Bank of Finland, which initially acted as an OLR because of the lack of alternative resources (Sandal 2004; Honkapohja 2009); the bank was restructured by the setup of three companies which managed substantial portions of the assets of the bank. The board members of “Skopbank” were, to a large extent, replaced (Nyberg and Vihriälä 1994).

In 1992, the state-funded “Government Guarantee Fund” (GGF) was founded. It assumed the role of an OLR and allowed the central bank to concentrate on the LLR function. The aim was to ensure the stability of the banking system and to secure claims of domestic and foreign depositors. In contrast to the Swedish BSA, funds available for GGF were limited and increases in the allocation of funds had to be approved by the Finnish Parliament. The GGF could support financial institutions directly by issuing guarantees or by injecting capital into banks or indirectly through the already existing security funds of the various banking groups. However, distortionary effects on competition had to be avoided (Nyberg and Vihriälä 1994).

At the beginning of 1992, the GGF offered equity capital (preferred capital certificates) to all deposit banks, regardless of their solvency, but in relation to their risk-weighted assets. For the first three years, banks had to pay interest on these certificates slightly above the market rate. Thereafter, the differential increased. The

<sup>16</sup> Later, these banks as well as “Merita Bank”, “Unidanmark” and “Christiania Bank” formed the “Nordea banking group”, the largest in Scandinavia (Englund and Vihriälä 2009).

government had the right to convert these certificates into ordinary shares once the bank failed to fulfil its interest payments or its equity ratio fell below a required threshold. Almost all banks made use of this offer (Nyberg and Vihriälä 1994).

Furthermore, the GGF supported a merger of 41 distressed banks which formed the “Savings Bank of Finland” (SBF) and which received several capital injections until 1996 (Englund and Vihriälä 2009; Nyberg and Vihriälä 1994). The merger and a stringent restructuring programme were the preconditions for the support by the GGF. This was adjudged to be the unique solution, as several savings banks had come into financial distress because of their common responsibility for each other’s solvency and due to the fact that shares in Skopbank comprised a large part of their assets (Nyberg and Vihriälä 1994). The government intervened further into the banking sector when in 1992 it took over a large part of the “toxic assets” of a small commercial bank (“STS-Bank”) which had been acquired by one of the largest banks “Kansallis-Osake-Pankki” (KOP).

In early 1993, the government announced a blanket guarantee for all liabilities of Finnish deposit banks and in mid 1993 the GGF guaranteed for the Tier-2-capital as well as for interest payments of the two major commercial banks, “KOP” and “Suomen Yhdyspankki” (SYP) (Englund and Vihriälä 2009). However, only bank creditors and not bank equity holders were protected (Sandal 2004). In addition, non-performing or defaulting loans from several banks, e.g., “Skopbank”, “STS-Bank” and “SBF”, were transferred to a newly established state-owned bank (“Asset Management Corporation Arsenal”; Englund and Vihriälä 2009; Nyberg and Vihriälä 1994).

Similar to the developments in Sweden, the depreciation of the Finnish currency and the reduction of interest rates in 1993 and 1994 supported the export market and increased share prices. The banking sector improved in both of these years as well as in the years that followed, though the non-performing loans were still responsible for the non-profitability in 1993, despite the decrease of interest rates. The situation remained critical, especially in the case of “SBF” and “Skopbank” (Nyberg and Vihriälä 1994; Drees and Pazarbasioglu 1995). However, the reduction of the number of assets through several mergers increased the efficiency of the Finnish banking sector and contributed to the return of profitability in the banking sector in the mid 1990s. “STS-Bank” was merged with “KOP”, which itself became part of the merger with “SYP” in 1995. The new bank, “Merita Bank”, became part of the “Nordea Bank”. The performing parts of the “SBF” were merged with other commercial bank cooperative banks as well as the state-owned Post-Office-Bank (Honkapohja 2009).

### 3.3 Determinants of crisis resolution paths

As mentioned above, political preferences as well as coordination failures may shape a country’s crisis resolution package. Political preferences were important in all four countries, but their effects on the crisis resolution differed in each country. In Japan public opinion initially heavily opposed injections of tax payers’ money into ailing banks. This became “almost a political taboo” (Nakaso 2001). Such opposition was much weaker in the Nordic countries, especially in Norway and

Sweden, due to a long history of partnership between the public sector and the private sector (Sandal 2004; Englund and Vihriälä 2009; Jonung 2009; Eckbo 2010).

Although authorities in the Nordic countries were less reluctant to provide public funds to the ailing banks, they initially shared with Japan the focus on private sector solution. These attempts to support private mergers and acquisitions may have resulted from the fact that the authorities tried to avoid moral hazard among banks, as private solutions tend to have a stabilizing effect (Perotti and Suarez 2002; Acharya and Yorulmazer 2007, 2008). However, private sector solutions became infeasible, either because the amounts needed were too large or because the acquiring banks did not participate. They feared getting into difficulties themselves.

Once private sector solutions became impossible, two types of public interventions remained: liquidation or provision of financial support to ailing banks. Authorities in all four countries chose the latter possibility and provided liquidity as well as solvency assistance. Liquidity support was provided to individual banks and to the market in all four countries. While the BoJ immediately provided liquidity to the market at low interest rates, the CBs in the Nordic countries were not able to change their domestic interest rates before de-pegging their currencies. Whether the decrease of interest rates by the BoJ was an advantage over the CBs in the Nordic countries remains doubtful because lower interest rates may support the recovery process, but may also encourage the risk-taking incentives of banks. Due to the peg of the currencies, the commitment not to lower interest rates and to bail banks out may have been more credible in the Nordic countries than in Japan and may have prevented banks from gambling (Farhi and Tirole 2009). In Japan such a commitment was not feasible.

Apart from liquidity assistance, banks in all four countries received solvency assistance. This way, authorities accepted moral hazard among creditors because the social costs of systemic crisis were regarded as being larger than the costs of additional risk-taking by the banks. As a consequence, bank resolutions under ordinary insolvency laws were not applied to prevent systemic effects, despite the fact that this may have created the least moral hazard, at least in case of low solvency shocks (because senior management would lose their jobs, shareholders would lose their equity holdings and creditors including depositors would be subject to a haircut). Rather, an approach outside the legal framework of existing insolvency laws was applied which fully protected creditors. To reduce moral hazard on the side of bank management and shareholders, the senior management in all four countries was often replaced and shareholders' capital was used to cover bank losses, but additional public funds were injected into ailing banks in order to prevent a haircut on creditors' claims. Thus, moral hazard was contained only on the sides of management and shareholders, but not on the side of creditors who were not required to take responsibility for bank failure (Nakaso 2001; Sandal 2004).

Political preferences shaped the way ailing banks were targeted. Authorities in all four countries provided solvency assistance through the liability side of the banks' balance sheets and injected capital into banks, mostly in the form of preferred shares and subordinated debt. While the impact of recapitalizations on risk-taking is ambiguous, they allow for participating in upside gains. Yet, authorities had to

recapitalize not only insolvent banks, but also solvent institutions, as became obvious from the aborted attempt to recapitalize insolvent Japanese banks in February 1998. It failed because banks with financial difficulties hesitated to apply for financial assistance in order not to be singled out as a bank with financial difficulties. Instead, they tried to hide their non-performing loans (NPLs) on their balance sheet from supervisors (Hoshi and Kashyap 2010). Japanese banks had little incentives to remove NPLs from their balance sheets because the opportunity costs of holding them were low, due to the loose monetary policy of the Bank of Japan and to extremely low interest rates (Nakaso 2001). To prevent such negative incentive effects, regulators had to offer financial assistance across the board, which made crisis resolution more costly for tax payers, especially in Japan, where the number of banks was large.

In addition to recapitalizations, authorities in Japan, Sweden and Finland initially also used a bad bank scheme, but rather in a piecemeal fashion. This was due to the fact that the transfer of assets from an ailing bank to another institution was connected with several legal and economic problems, such as the setting of transfer prices and the withdrawal of experts from the distressed banks (Vale 2004). Sweden, Finland and Japan also announced a blanket guarantee for bank creditors (Sandal 2004; Jonung 2009). However, as mentioned above, the impact of equity injections and bank guarantees is not clear-cut (Hakenes and Schnabel 2010).

Apart from political preferences, it were also transaction costs, misallocations of political responsibilities and coordination failures within the political sectors which shaped the course of banking crisis resolution paths, especially in Japan. After the breakout of the crisis, the Bank of Japan had to act not only as an LLR, but also as an OLR. This was due to the fact that a public recapitalization fund was not available and the “payoff cost limit” prohibited the Japanese Deposit Insurance Company (DIC) to provide liquidity assistance to ailing banks. This contrasted with Norway and Sweden where public funds were quickly established and allowed authorities to recapitalize ailing banks without taking recourse to the CBs.

In Japan, it took several years to implement major legislative reforms to remove the payoff cost limit (in 1996) and to permit recapitalizations of nationalized banks (in 1998). In the meantime, the Bank of Japan was forced to take considerable risks on their balance sheets and even, as in case of the bailout of “Nippon Credit Bank”, to incur painful capital losses. Such losses helped to protect bank creditors and to prevent systemic effects, but at the same time undermined public confidence in the BoJ and in the stability of the financial system. The Bank of Japan was heavily criticized on these grounds in the Japanese public and in the National Parliament (Nakaso 2001).

Suboptimal allocations of responsibilities between regulatory authorities further aggravated the crisis in Japan when the two securities houses “Sanyo” and “Yamaichi” ailed in autumn 1997. Although security houses acted as participants in the interbank markets, their liabilities to counterparties were not covered by the Deposit Insurance Corporation. The BoJ refused to provide liquidity support to “Sanyo” because it was legally impossible to use the deposit insurance fund to co-insure the BoJ against potential credit losses. The BoJ tried to negotiate an agreement with the MoF on this matter, but this needed approval from the National

Parliament. Such an agreement was reached only very shortly before the possible failure of “Yamaichi Securities”, which eventually received liquidity support from the BoJ (Nakaso 2001).

The resolution packages in Japan and the Nordic countries caused different fiscal and social costs. For Japan, gross fiscal costs are estimated between 14 % and more than 20 % of GDP and output losses amounted to 45 % of GDP. Public debt increased by 41.7 % of GDP. For Finland, gross fiscal costs are estimated between 8.9 and 12.8 % of GDP. Output loss reached 69.6 % of GDP. Public debt increased by 43.6 % of GDP. These numbers are much higher than for Norway and Sweden. For Norway, gross fiscal costs are estimated between 2.0 and 8.0 % of GDP. Estimated output losses reach 5.1 % of GDP and public debt increased by 19.2 %. For Sweden, gross fiscal costs amounted between 3.6 and 4.0 % of GDP and output losses reached 32.9 % of GDP. Public debt increased by 36.2 % of GDP (all numbers are from Sandal 2004; Laeven and Valencia 2012; Honohan and Klingebiel 2003).

#### 4 Reassessment of current crisis resolution procedures

Although the crises in Japan and in the Nordic countries were rather local events and took place in less complex financial systems, they share some important similarities to the recent financial turmoil.<sup>17</sup> Before the start of the current crisis, financial institutions across the board in the US were heavily exposed to the real estate sector, and real estate price indices declined significantly. Provisioning by banks was insufficient and informational asymmetries about a single bank’s solvency caused a breakdown of interbank lending and a significant rise in interest rates for unsecured interbank loans. Regulators initially accepted failures of some non-deposit taking institutions, such as Lehman Brothers in the US or Northern Rock in the UK, but underestimated the consequences for risk sensitivity of lender on interbank markets. Similar to their predecessors during the 1990s, they avoided haircuts for creditors due to fear of contagion and systemic crises. As deposit insurance corporations were not funded, the initial burden of adjustment was mainly with the central banks which acted as LLR and took considerable risks on their balance sheets. Similar to the Nordic countries and Japan, the authorities in the recent crisis used asset purchase programmes, issued guarantees to a large extent and partially transferred assets to bad banks (Laeven and Valencia 2010, 2012; Claessens et al. 2011).

Despite these similarities, there are some important differences in crisis reaction, especially with respect to the Japanese case. Firstly, authorities both in the US and in Europe were more willing to inject risk capital into ailing banks than Japanese authorities during the 1990s. While political opposition against bank bailouts was considerable in Japan, the US government already started in October 2008 the “Troubled Assets Relief Program (TARP)” and the “Capital Purchase Program

<sup>17</sup> This applies at least to the US and to the subprime crisis in Europe. With respect to the European sovereign debt crisis since 2010, Europe differs from Japan, which did not suffer yet from a sovereign debt crisis.

(CPP)” which allowed the US Ministry of Finance to purchase troubled assets from financial institutions or to provide them with capital. In Europe, in September 2008, the German government founded the “Special Financial Market Stabilization Funds” (Sonderfonds Finanzmarktstabilisierung, SoFFin; since 2011: “Finanzmarktstabilisierungsanstalt”), which was empowered to provide liquidity to eligible financial institutions (mainly by guaranteeing debt issues) or to recapitalize ailing banks (such as “Commerzbank AG” or “Hypo Real Estate Holding AG”). Similar programmes were also introduced in other European countries, such as in France [“Société de prise de participations de l’Etat (SPPE)”], in Italy (“Ministry of Economy and Finance”) or in the UK (“Government Recapitalization Scheme”; Faeh et al. 2009; Petrovic and Tutsch 2009).

Secondly, authorities in the US and in Europe quickly started implementing special bank resolution schemes into national legislation (see Deutsche Bundesbank 2011). Such schemes allow authorities an orderly wind-down of systemically important financial institutions (SIFIs). Ordinary bankruptcy codes are usually insufficient to reach that goal because they usually stipulate a suspension of all payments after failure has been declared. This provision intends to treat all creditors equally. Such a suspension of payments, however, could cause considerable damage in the case of failure of a financial institution which acts as a clearing house for many counterparties. To prevent this damage, special bank resolution schemes usually ensure that SIFIs continue their ordinary payment services (Fukao 2000).

Thirdly, central banks intervened on a more massive and widespread scale than in the past, at least with respect to liquidity support for interbank markets and particular institutions. While during the 1990s interest rates in the Nordic countries and in Japan were kept at a high level or even increased in order to avoid a depreciation of their currencies, interest rates in the US and Europe were quickly decreased to a low level (Claessens et al. 2011). In contrast to Japan and Finland, the central banks did not inject risk capital in the course of the recent crisis, but only provided liquidity support to financial institutions.

Finally, the recent financial crisis differed in the economic and fiscal costs from the crises in Japan and the Nordic countries. Laeven and Valencia (2012) determine gross fiscal costs of 3.9 % of GDP in the Euro area and 4.5 % of GDP in the United States. Taking the advanced economies into account, Laeven and Valencia (2010) calculate direct fiscal costs of 5.9 % for the years 2007–2009. In comparison with the Nordic countries and Japan, the fiscal costs in the recent financial crisis were rather low. Output losses amounted to 23 % of GDP in the Euro area and 31 % of GDP in the US, which is higher than output losses in Norway and similar to output losses in Sweden, but lower than output losses in Japan and Finland. In the recent crisis the public debt increased by 19.9 % of GDP in the Euro area and by 23.6 % in the US. Both figures are similar to the increase in public debt in Norway, but much lower than the increase in debt in Sweden, Finland and Japan during the 1990s (Laeven and Valencia 2012).

Despite these numbers, current crisis resolution packages still suffered from major drawbacks which made appropriate reactions difficult. One major drawback was the inability of authorities to handle systemically important financial institutions (SIFIs) which are considered as being too complex to be resolved in a

short period of time. In reaction, legislators became entitled to demand SIFIs to write “living wills” which describe in advance how an ailing bank could be quickly resolved. In contrast to bankruptcy procedures for normal industrial companies, where a liquidator often commands creditor protection, it is impossible for a banking company to execute such a suspension of payments because it could mean illiquidity for other financial or non-financial companies. Therefore bankruptcy procedures for banks have to be executed very quickly and the ailing bank has to maintain vital payments to other banks. Living wills help to distinguish vital from non-vital payments and thus help to remove pressures from regulators to bail-out an ailing bank because they do not know what services are vital for the functioning of the banking system.

## 5 Conclusion

The purpose of this paper was to find out which difficulties authorities face when they have to solve a banking crisis. Our survey of the theoretical and empirical banking literature has shown that there is no “best-practice” banking crisis resolution package which dominates all others in terms of social and fiscal costs and effects of risk-taking. Instead, authorities face important trade-offs, because instruments with only small adverse incentives for banks’ risk-taking are often costly to implement. Moreover, even the impact of single resolution instruments on moral hazard is often not clear-cut. Since no superior policy package exists, policy reactions are country-specific and depend on policy makers’ preferences. The implementation of a preferred crisis resolution package, however, is often subject to coordination failures within the political sector, which create additional costs for society. These coordination failures result from suboptimal allocations of regulatory responsibilities between single authorities and from commitment problems which force regulators to choose an inferior crisis resolution package.

Our case study has shown that policy makers in all countries considered here avoided haircuts for creditors and thus allowed for some additional moral hazard, because they feared the social costs of a systemic financial crisis. While this package made some form of bank recapitalization necessary, authorities in Japan lacked public support and the necessary legal instruments to provide solvency assistance to ailing banks. In addition, badly-defined political responsibilities for bank crisis resolution and commitment problems made the implementation of the chosen resolution package difficult and costly in terms of fiscal outlays and output loss. This contrasted with two of the Nordic countries, where political resentments against public bailouts were less significant, banks were quickly recapitalized and coordination failures were less relevant. The resolution of the recent financial crisis revealed some similarities, but also differences to the crises in Japan and the Nordic countries in the 1990s. At the beginning, one attempted to solve the crisis by private solutions and to avoid moral hazard by liquidating ailing institutions. However, when this approach failed, authorities massively injected capital into insolvent banks and provided guarantees. Moreover, measures were often taken ad hoc.

Although many lessons learnt were incorporated into the new regulatory framework—such as a list of available resolution tools, which lowers transaction costs—further efforts are necessary to resolve future crises efficiently. Firstly, coordination failures may still exist. In the Eurozone, for instance, the European Central Bank's policy is not restricted to liquidity provision. As we have seen in Japan and Finland, a clear cut between liquidity provision and solvency assistance may be more appropriate. Otherwise, if the central bank injects equity into ailing banks, its incentives may change and therefore, evoke commitment problems. Secondly, political processes of long duration should be avoided. If the political parties have to become aware of their preferences within a crisis, the decision-making process may last too long, which may aggravate the crisis situation. Therefore, political parties should be aware of their preferences *ex ante*. Thirdly, each resolution authority should develop a list of potential obstacles for efficient resolutions and try to eliminate them in advance. Finally, further research is necessary in order to have a clear picture of how single resolution instruments affect fiscal costs and moral hazard.

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