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Tolling the Bell for "Too-Big-to-Fail"? – A Comparison Between Four Special Bank Resolution Regimes

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Abstract

In many countries, legislators have introduced special bank resolution regimes in order to handle the "too-big-to-fail"-(TBTF)-problem. Bank resolution schemes allow supervisors to restructure or liquidate an ailing bank, even without the consent of the bank owners. We identify key elements of bank resolution schemes and consider how they are implemented in Japan, the US, the Euro area, and in the UK. We compare the bank resolution regimes in these countries and evaluate whether they comply with the "Key Attributes" proposed by the Financial Stability Board. We also ask whether they are effective in addressing the TBTF-problem and promoting financial stability.

Das Ende von "Too-Big-to-Fail"? – Ein Vergleich zwischen vier Bankabwicklungsregimen

Zusammenfassung

In vielen Ländern hat der Gesetzgeber spezielle Abwicklungsinstrumente für Banken geschaffen, um das „Too-big-to-fail"-(TBTF)-Problem zu lösen. Diese Instrumente erlauben es der Bankenaufsicht, in finanzielle Schwierigkeiten geratenen Banken zu sanieren oder zu liquidieren – auch ohne Zustimmung der Eigentümer. Wir identifizieren Kernelemente von Bankenabwicklungsregimen und prüfen, wie diese umgesetzt wurden in Japan, den USA, der Eurozone und in Großbritannien. Wir vergleichen die in diesen Ländern bestehenden Bankenabwicklungsregime und fragen, inwieweit sie den „Key Attributes" genügen, die vom Financial Stability Board vorgegeben wurden. Wir fragen auch, inwieweit die nationalen Abwicklungsregime das TBTF-Problem lösen und zur finanziellen Stabilität beitragen können.

Keywords: Bank resolution, too-big-to-fail, statutory bail-in, bank levy, resolution fund, single-point-of-entry, multiple-point-of-entry

JEL Classification: G01, G21, G38

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I. Introduction

In reaction to the recent financial crisis, legislators in many countries amended their banking legislation in order to increase the stability of the financial system. One of the most far-reaching reforms was the introduction of special bank resolution regimes. They allow supervisors to intervene in the business of a bank before balance sheet insolvency has occurred – even without the consent of the bank owners. Such amendments to banking laws became necessary, because general corporate bankruptcy procedures often need too much time, inhibit any pre-emptive intervention and do not take into account the systemic effects of a bank failure (*Hüpkes* 2005; *Brierley* 2009; *Alexander* 2009). Supervisors very often had only the choice between permitting disorderly bank insolvency or approving a bank-bailout and injecting taxpayer money into banks. Because the macroeconomic costs of disorderly bank insolvency were regarded as excessive, politicians were tempted to choose a bail-out of ailing banks (*Çihak/Near* 2012).[2]

Special bank resolution schemes offer bank regulators a new instrument for handling the failure of banks and other financial institutions, which are regarded as “too-big-to fail” (TBTF) or “too-interconnected-to-fail” (TITF).[3] They allow supervisors to withdraw property rights from bank owners and to reorganize or liquidate the bank before balance sheet insolvency has occurred. This is expected to enable the market exit of large financial firms without severe systemic disruptions and without exposing taxpayers to loss (Financial Stability Board 2014a). Moreover, bank resolution regimes may also induce bank owners to take less risk, so that the banking system becomes more stable ex ante (*Dewatripont* et al. 2010).[4]

The paper compares and evaluates the special bank resolution schemes in four different countries.[5] The focus is on bank resolution schemes, because they are

[2] Examples are the bail-outs of Northern Rock in the UK, Commerzbank AG and West-LB in Germany, Goldman-Sachs in the USA, or the Long Term Credit Bank in Japan. The liquidation of Lehman Brothers constitutes a case of a disorderly insolvency; as explained in *Bernanke* (2015), the US Government had no bank resolution instruments at its disposal at that time.

[3] The term “special bank resolution” refers to the fact that the resolution process is different from an ordinary insolvency procedure and that it is applied only in a special case, namely in case of resolution of large, systemically important financial institutions. The new resolution regimes are denoted “Orderly Resolution Scheme” in Japan, “Orderly Liquidation Authority” in the US, “Special Resolution Regime” in the UK, and “Bank Recovery and Resolution Scheme” in the EU.

[4] For evidence on the influence of special resolution scheme on risk-taking of US banks, see *Ignatowski/Korte* (2014).

[5] We use the term “countries”, although we are of course aware that the Euro area is a community of national states.

a major regulatory innovation and form the most significant policy reaction to the recent financial crisis. We take a comparative perspective because there is some evidence that regulatory differences between countries are determinants of cross-border financial flows and that an incomplete financial integration may destabilize financial markets.[6] We use the “Key Attributes” proposed by the Financial Stability Board (2014) as a benchmark for evaluating the different resolution regimes. We consider Japan, the US, the Euro area, and the UK, which have well-organized and highly-developed financial systems.[7] Moreover, their financial sectors are among the largest in the world and are significant from the viewpoint of systemic risk.

The main purpose of the paper is to find out which elements of a bank resolution regime are indispensable and which are supplemental for financial stability. We do not explain why different countries chose different resolution regimes nor evaluate how differences in bank resolution regimes reflect differences in national banking systems. Instead, we pose the following questions: What are the key elements of a bank resolution scheme and how do they contribute to financial stability? How are bank resolution schemes currently designed in the four countries? Do they comply with the “Key Attributes” proposed by the FSB? What are the strengths and the weaknesses of these regimes? Do they help promote financial stability without inducing banks to become “Too-big-to-fail”? We find that bank resolution regimes differ significantly among the four countries under review. While we are not able to provide a rigid “rank-order” between resolution regimes, we identify several strengths and deficiencies in the resolution regimes.

Other research also compares bank regulatory regimes in Japan, the US, and Europe, but does not explicitly take into account special bank resolution schemes, since these are rather new (*Barth* et al. 2006; *Bebenroth* et al. 2009; *Konoe* 2014). Some papers analyze the crisis resolution instruments in Japan and in the Nordic countries during the financial crises of the 1990s (*Honkapohja* 2009; *Diemer/Vollmer* 2015). They mention the bank resolution regimes introduced in Japan during the 1990s, but do not analyze the current resolution schemes. Finally, some papers focus on bank resolution regimes and take a comparative perspective (*Brierley* 2009), but only few of them consider the recent European legislation (*Haentjens/Janssen* 2015).

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[6] For evidence that multinational banks conduct “regulatory arbitrage” and react to regulatory differences, see *Houston* et al. (2012), *Karolyi* et al. (2015), and *Reinhardt/Sowerbutts* (2015). *Acharya* (2003) and *Draghi* (2014) argue that incomplete financial integration may endanger financial stability.

[7] We exclude China from the sample because it does not have a special bank resolution regime. Instead banks, are subject to resolution under a combination of general insolvency law and certain special rules in the Commercial Bank Law.

The remainder of the paper is organized as follows. Section 2 reviews the literature in order to identify key elements of a bank resolution regime. Section 3 describes the design of bank resolution schemes in the countries under consideration. Section 4 compares, and section 5 assesses the four resolution regimes. Section 6 concludes.

II. What Do We Know About Special Bank Resolution Schemes?

1. Key Elements of Special Bank Resolution Procedures

In general, a bank resolution scheme enables a specified authority to intervene in the business of a bank, even if the bank has not violated any law or broken other rules. The intervention could be a restructuring or a liquidation of the bank, and consent by the bank owners is often not even necessary. The intervention may occur immediately after the bank has become insolvent and liabilities have begun to exceed assets ("post-insolvency resolution"). This will usually be declared on the Friday after the insolvency has occurred, so that the resolution procedure will be wound-up over the weekend. The intervention may also start even before balance-sheet-insolvency, that is, when resolution authorities receive signals that this could happen or is likely to happen in the near future ("pre-insolvency resolution").

Since the time window for a post-insolvency resolution procedure is often very small, resolution authorities may require banks to write recovery and resolution plans ("living wills") and lay open their most fundamental financial relationships with other institutions. The resolution authority in turn has to continue the business of the resolved bank and continue with deposit payments, even if the bank will eventually be liquidated. For that purpose, some financial inflows have to be made into the ailing bank in order to maintain its necessary ongoing business. This financial inflow could comprise taxpayer money or come from a special bank resolution fund financed by a bank levy paid by all banks in advance. If the bank is liquidated, depositors are protected under a deposit insurance scheme, at least up to a covered amount. All other creditors may lose their investment in the bank whenever a bail-in mechanism is stipulated. Such bail-in mechanisms may or may not apply to all liabilities (such as interbank liabilities) and may follow a hierarchy.

The bank resolution scheme must stipulate in advance, which authority in which country has to make the final resolution decision and who is responsible for triggering and implementing the resolution mechanism. This could be a specialized banking authority, the deposit insurance agency, or the central bank. The scheme must also codify the conditions under which a resolution procedure is triggered and decide whether or not the bank owner's consent is necessary in order to start the resolution procedure. If consent is not necessary, bank owners must have the right to take legal action. In addition, the resolution scheme must codify whether a conversion of debt in equity is permitted. In such cases, the resolution scheme must guarantee that no creditor is worse off in comparison with a (counterfactual) regular insolvency procedure. Finally, in cases of multinational banks or banking groups dealing with cross-border activities, agreements have to be reached about how losses are shared between home-country and host-country stakeholders.

2. *Choice of Resolution Authority*

The authority in charge of triggering and implementing the resolution procedure should have access to supervisory information about the banks. It should also possess enough funds to finance a resolution process. Moreover, the authority should be concerned primarily with making resolution decisions in order to avoid conflicts of interest. Seen from this perspective, a first-best choice would be a specialized resolution authority equipped with its own resolution fund (financed by a bank levy) and sufficient supervisory resources. However, if the authority co-exists together with a central bank and with a deposit insurance authority, this solution would be very expensive. Hence, as a second best choice, bank resolution tasks might be combined with other regulatory tasks in the financial sector, because in this constellation, conflicts of interests may be important.

One option could be the transfer of bank resolution powers to the central bank, which is often also engaged in bank supervision and, as a centre of money market operations, is well informed about the liquidity flows of commercial banks. Yet, conflicts of interest could emerge between the functions of a central bank as a resolution authority and its monetary policy functions (*Goodhard/Schoenmakers* 1993, 1995; *Haubricht* 1997). It is conceivable that a central bank refrains from increasing interest rates in order to avoid this threatening the solvency of major commercial banks (which later have to be resolved and recapitalized by the same central bank). In addition, the function of a resolution authority could endanger central bank independence, if resolution decisions are subject to legal actions taken by bank owners (*Vieten/Neyer* 2014).

3. *Which Resolution Tool Should be Used?*

Authorities have different tools available for a bank resolution procedure and can use them individually or in combination (*Dewatripont* et al. 2010). The first tool is to sell the bank in toto or in part to an assuming bank ("sale of business tool", "purchase and assumption transaction", P&A). If no buyer is available, the authorities may nationalize the bank and transfer it in entirety or in part to a bridge institution, which maintains the bank's vital functions and is controlled by the resolution authority ("bridge bank tool"). Alternatively, the ailing bank's assets may be transferred to an asset management vehicle, which is also controlled by the resolution authority. The asset management vehicle maintains not only the selected bank's vital functions, but sells the other junk assets or winds them down in an orderly fashion ("asset management tool" or "bad bank tool"). It may be suited to avoid a credit crunch (*Hauck/Neyer/Vieten* 2015). Since, in any case, the bank is liquidated as a legal entity and thus its franchise value is gone, all three resolution instruments may be regarded as "gone-concern" tools.

This is different for the last resolution tool, which is a bail-in procedure and can be used as a means of recapitalizing the bank. Bail-in comprises a statutory power of a resolution authority to restructure the liabilities of a bank by writing down liabilities and/or converting the unsecured debt into equity. As a "going-concern" form of resolution, the bank remains open and retains its legal entity (*Zhou* et al. 2012). The bail-in using statutory powers differs from contractual arrangements, such as the use of contingent convertible bonds ("coco bonds"). While the management of the bank responsible for the loss of capital is usually removed, the risk of contagion in consequence of disorderly liquidations is mitigated, since the bank is deleveraged without its assets being liquidated. On the other hand, however, a statutory bail-in renders difficult financing by issuing such eligible debts in markets. Moreover, if it is applied to a failed bank, creditors of other banks who hold the same kind of debts may run to the bank in order to cancel the debts before maturity. This could indeed lead to contagion (*Okina* 2015).

In order to form an effective tool, (i.) existing equity shares should be eliminated before the bail-in process of debt is started, and (ii.) debt restructuring should take into account the order of priorities applicable in a liquidation procedure. Debt restructuring should not be subject to the consent of debtors, because that would be too time-consuming. However, for fairness reasons, a "no creditor worse off" safeguard (NCWO-clause) should be incorporated, which guarantees that no creditor is worse off than with an ordinary insolvency procedure. Moreover, it may be appropriate to eliminate some types of unsecured debt from the bail-in process, such as inter-bank deposits, because they may be of systemic importance (*Zhou* et al. 2012; *Schwödiauer* 2013).

A bail-in procedure has the advantage that no fire sales of assets are needed. Moreover, there is no need to find a purchaser for the bank, which could be difficult, due to time constraints. This contrasts with an asset management tool, which may destroy some of the franchise value of the bank, and with a P&A transaction which could take a very long time to find a buyer for an ailing bank. Even a bridge bank tool is only a temporary instrument, because the bridge bank eventually has to be sold to an assuming bank. The weakness of a bail-in procedure is that the bank retains its loss-making business lines and that bad assets remain on its balance sheet, which could undermine investor confidence. Moreover, if the bank’s operations are fundamentally unsound and need to be restructured, bail-in capital could then simply delay the inevitable failure. Finally, a bail-in may not be applicable if there is the threat of systemic collapse (*Avgoulaeas/Goodhart* 2014; *Zhou* et al. 2014).[8]

4. *How Useful are a Bank Levy and a Bank Resolution Fund?*

Even though a major goal of any bank resolution regime is to prevent the reappearance of government-funded bail-outs, some capital injections will be necessary during resolution. There are two reasons for this. First, under a gone-concern procedure, bank assets have to be written down or the ailing bank has to be recapitalized before it can be sold to an assuming bank. Second, under a going-concern procedure, a NCWO-clause has to be honoured. Subsequent payments to creditors may then become necessary if they could prove that they were made worse off compared to a regular insolvency procedure. In order to make the payments, resolution authorities may build up a resolution fund ex ante or alternatively may collect ex post the necessary amount from the banking industry. The build-up of a frontloaded resolution fund may imply that some cash-management abilities are needed. In addition, there is either the risk that the fund is too small to cover all expenses or the possibility that bank contributions become a huge burden and harm financial stability. On the other hand, the collection of payments from the industry ex post may not be time-consistent and the resolution authority may lack effective means of pressure to force banks to pay.

A natural way to finance a resolution fund is to charge a bank levy. This is a tax either on the bank’s assets or on its liabilities (*Schweikhardt/Wahrenburg* 2014; *Buch/Hilber/Tonzer* 2016).[9] Ideally, the bank levy should work like a Pigovian tax and internalize the externalities caused by contagion in reaction to a bank failure. To this end, the levy should be charged on the liabilities of the bank in order to penalize excessive leveraging. Equity and covered deposits should be excluded from contribution-relevant positions. This also prevents a

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[8] *Klimek* et al. (2015) compare P&A, bail-out, and bail-in as a resolution mechanism and find in their simulations that bail-out schemes never outperform bail-ins with private sector involvement.

[9] A “bank levy” should not be confused with either a “finance transaction tax”, which imposes a tax on financial transactions, or with a “financial activity tax”, which penalizes the bank’s profits or remunerations. See *Buch* et al. (2016). All types of levies could be charged side by side at the same time.

double charging of deposits under the bank levy and by the deposit insurance, and it avoids conflicts with capital regulation. Larger banks and those which are more interconnected with other banks should be charged a larger bank levy in order to cope with the TBTF and TITF problems; the same applies to banks which are more involved in trading with risky derivatives (*Buch* et al. 2016). This implies that the charge should be risk-based, as well as size-based.

5. How Efficient are Pre-insolvency Resolution Procedures?

Unlike post-insolvency resolution procedures, pre-insolvency procedures give the resolution authority more time to prepare and to implement the resolution process. The flipside, however, is that the authority has to rely on supervisory information about the likelihood that the bank concerned is going to fail in the near future. This information may be of good quality only when supervision is by the resolution authority itself. Otherwise, information leakages may occur and cause two types of mistake. The resolution authority could close a bank that should be left open ("type-1-mistake") or vice versa ("type-2-mistake"). In this scenario, the usefulness of a pre-insolvency resolution mechanism as an instrument for preventing excess risk-taking by banks may depend on the quality of the supervisory information available to the resolution authority (*Vollmer/Wiese* 2013).

6. Cross-border Challenges to the Resolution Process of G-SIFIs

In case of resolving multinational banks with subsidiaries in different countries (G-SIFIs), authorities have to allocate decision-making powers and enter ex ante into an international burden-sharing arrangement. As of November 2016, there were 30 SIBS worldwide, mostly in the US and the Euro area (Table 1). For G-SIFIS, authorities have to decide how losses are to be divided among stakeholders from the different countries involved. It is possible to differentiate between two alternative stylised resolution strategies (Financial Stability Board 2013; *Faia/Weder di Mauro* 2015). Under a single-point-of-entry (SPE) approach, the resolution procedure is executed by the authority of the country in which the multinational bank's holding company is located. The resolution procedure is carried out top down, beginning with the holding company, independently of where the problems originate. In such cases, the loss-absorbing capacity of stakeholders is shared across jurisdictions. By contrast, under a multiple-point-of-entry (MPE) approach, the authorities from the host country of the multinational bank's subsidiaries are in charge of the resolution procedure. This implies that stakeholders in the host-countries where the subsidiaries are located carry the financial burden.

Table 1

G-SIFIS in Four Regions (November 2016)
(http://www.fsb.org/wp-content/uploads)

Japan	US	Euro area	UK	Rest of World
3	8	8	4	7

As long as regulators can fully commit to cooperating during the bank resolution procedure, SPE is the efficient resolution mechanism, since it requires a lower loss-absorbing capacity than the MPE approach. The reason is that regulators under the SPE approach are allowed to make transfers between bank subsidiaries, which are located in different jurisdictions. The drawback, however, is that the SPE approach is not ex-post incentive-compatible, because regulators may opt out from the cooperative solution and instead, start a national resolution scheme, once the resolution procedure has begun (or “ring-fence” their domestic subsidiaries). This is likely whenever the expected cross-jurisdictional transfers are asymmetric and applies especially to those regulators who expect to make a large inter-jurisdictional transfer.

Since the SPE approach is not incentive-compatible ex post, it is also not credible ex ante, as long as regulators cannot firmly bind themselves to making payments during resolution. A memorandum of understanding between the jurisdictions involved might not be sufficient to overcome this problem. Rather, the transfer of resolution authority from the level of single jurisdictions to a supranational body is suitable for realizing the full benefits from a SPE resolution procedure (*Bolton/Oehmke* 2015).

III. Bank Resolution Schemes in Practice

Bank resolution schemes form packages of multiple regulations, which can be implemented differently in various countries. It is thus not surprising that actual bank regulation schemes differ significantly among countries, as we will now demonstrate.

1. Japan

We start with Japan, which is the only country in our sample that had already introduced a bank resolution scheme during the 1990s. This legislation was later integrated into several amendments of the Japanese “Deposit Insurance Act” (DIA). The current Japanese bank resolution legislation is thus the outcome of a long evolutionary process, which contrasts with other countries considered here, where bank resolution procedures are rather recent legislative outcomes.

Immediately after the breakout of the Japanese financial crisis during the 1990's, the authorities lacked adequate crisis-management instruments. The only authority able to react was the "Deposit Insurance Corporation of Japan" (DICJ), but its chances of providing financial assistance were rather limited. The main reason was that DICJ was subject to a statutory "pay-off cost limit", which allowed for the provision of financial assistance only up to the ailing bank's total amount of insured deposits. Any recapitalization of banks through DICJ was prohibited. Instead, the Ministry of Finance (MOF), which had absolute authority, tried to collect contributions ad hoc from the financial industry (this was called "Houga-chou Houshiki", "subscription note method"). Funds were also raised from the Bank of Japan (BOJ) which at that time, lacked independence from the MOF and had been called the "Ookura-shou Nichigin Kyoku", BOJ Division of the MOF.

With the amendment of the Deposit Insurance Act in June 1996, DICJ became temporarily able to exceed the "pay-off cost" limit, because the pay-off tool itself was suspended and a blanket guarantee for all deposits introduced until March 2001. DICJ became able to provide financial assistance to assuming banks which purchased the business of failed banks and/or merged with them. In order to finance its activities, DICJ was allowed to significantly increase the insurance premium charged on banks. Because of this legislation, in both the 1996 and 1997 fiscal years, about 2.5 trillion Yen of public money was channelled as a special financial support into banks, which purchased the assets and liabilities of failed banks.

In October 1998, the "Financial Revitalization Law" ["Kin'yu Saisei Hou"] and the "Law for Early Restoration and Strengthening of Financial Functions Soundness" ["Kin'yu-Kinou Souki Kenzenka Hou"] were legislated, because some large-scale banks ("Long-Term Credit Banks") had run into serious financial difficulties. Both laws were temporarily valid until March 2001. The "Financial Revitalization Law" introduced, for the first time, a bank resolution tool to legislation and offered the following three instruments to bank supervisors:

- A "financial administrator", to whom DICJ could be appointed, could replace the management of a failed bank. The business of the failed bank was allowed to continue and depositors and lenders were protected from the bank failure. The financial administrator had to look for an assuming bank as early as possible, and the administration of the failed bank had to be terminated within one year.
- In cases where a purchasing bank could not be found within a reasonable period of time, a bridge bank was to be formed as a subsidiary of DICJ, which was allowed to lend to the bridge bank and to guarantee its liabilities. Liquidity required by the assuming bank or by the bridge bank was to be offered by BOJ.

- Failed banks, especially "systemically important banks" (SIBs), which are crucial for the financial system as a whole, were to be set under "special public administration" (meaning a temporary nationalization). All equity shares were to be transferred to DICJ and a new management selected by DICJ based upon a nomination by the "Financial Revitalization Committee" ["Kin'yu Saisei Iinkai"]. The committee consisted of five members, including a cabinet minister as the chairperson, which symbolizes the fact that the cabinet itself took direct responsibility for the bank resolution. Representatives of the Financial Service Agency (FSA), the regulator, also joined the committee.

The purpose of the second law referred to above was to provide financial assistance to still viable banks. The law allowed the government to inject public money into banks through DICJ's "Special Early Restoration Account" and to promote mergers and acquisitions between sound banks and ailing banks, in order for the latter to become sound and to regain competitiveness. The special account could be funded up to 25 trillion Yen at most, through borrowing which was to be guaranteed by the government. Actually, a total amount of 9.5 trillion Yen was injected into 32 banks.

In April 2001, DIA was amended once again. The amended DIA replaced the existing provisional laws, and the rules specified by those laws became permanent. The law was enacted in order to prepare for bank resolution on the assumption that a pay-off cost limit of insured deposits would be re-introduced as an alternative option.[10] The amended DIA allowed three alternative measures for special bank-resolution. It also stipulated that the responsibility to decide about which bank resolution measures was applied lay with the Prime Minister, after deliberations by the Financial Crisis Response Committee, which was also presided by the Prime Minster. The three alternative measures are as follows:[11]

[10] The pay-off cost limit was reintroduced in 2005 and executed for the first time in 2010, when "Nihon Sinko Ginko" ("Incubator Bank of Japan", which was established in 2004 in order to support start-ups and small- and medium-sized firms) was liquidated. Only insured deposits were protected, with the share of insured deposits being 98 %. The repayment ratio of uninsured deposits after the liquidation was 58 % and the rest of uninsured deposits (whose share was merely 2 %) was written off.

[11] Measure No. 1 was applied in the case of "Resona Ginko", which was founded in 2001, following a merger between two city banks, "Daiwa Ginko" and "Asahi Ginko". The new bank was ailing from the beginning and its capital ratio became less than half the level required (4 %) for domestic banks. In 2003, "Resona Bank" applied for capital injection, based upon the No. 1-Measure, and DICJ offered about 2 trillion Yen of funds in exchange for newly issued stocks, including ordinary shares. By June 2015, all the public funds "Resona" received so far (including funding based upon former laws) were repaid to the government. Measure No. 2 has not yet been applied. Measure No. 3 has been applied to "Ashikaga Bank", a regional (but not small) bank, which failed in March 2003. After a temporary nationalization in June 2007, institutional investors purchased it. During the resolution procedure, about 1 trillion Yen of public money was injected.

- “Measure No. 1” applies for still solvent banks with positive, but insufficient capital. It enables DICJ to inject public money and to increase capital by buying preference stocks, in order to allow the banks to continue to exist.
- “Measure No. 2” is for insolvent banks or for those which are likely to suspend deposit repayment. In these cases, the business of the ailing banks can be transferred to purchasing banks, followed by the liquidation of the failing banks. All liabilities are protected through the injection of required funds by DCIJ.
- “Measure No. 3” applies to insolvent banks or for those which are likely to suspend deposit repayment, and DICJ holds all stocks of the failing banks, providing no compensation. This measure replaced the rules of the “Financial Revitalization Law” of October 1998. The banks to which this measure applies are those under “Special Crisis Administration” (i. e., temporary nationalization). In this case, all liabilities of the failing banks are also to be protected.

In March 2014, the DIA was further amended and this established the current resolution regime, together with clauses in the DIA amended in April 2001. The regime is called “Procedure for Initiating the Orderly Resolution Mechanism of Financial Institutions in Order to Stabilize the Financial System” and follows the “Key Attributes” proposed by the FSB. It aims at the smooth resolution of systemically important financial institutions, in order to address the TBTF problem. The new clauses in the amended DIA enable an effective early resolution of financial institutions and cover not only banks, but also other financial institutions (such as security dealers and insurance companies). The clauses enacted two measures for resolution of systemically important financial institutions, adding to the existing three measures already introduced by the amended DIA of 2001, which had been designed for general cases of bank resolution. In this regime, the Prime Minister plays a central role as chairperson of Financial Crisis Response Council.

Two types of specific measures can be taken under the amended DIA of 2014, which are as follows:

- “Specific Measure No. 1”: Improperly managed, but still not failed and solvent financial institutions are specified and offered liquidity assistance from DICJ; the Prime Minister has the right of intervention and to order necessary management reforms.
- “Specific Measure No. 2”: Failed financial institutions are recognized, and when systemic risk is a concern, DICJ may be selected as a Financial Administrator and has to manage the financial institutions. DICJ has to transfer systemically important assets and liabilities to an assuming financial institution, and (whenever the Prime Minister recognizes it as necessary) to offer financial assistance to the purchasing institutions. Other general businesses and

liabilities except insured deposits of the failing institution, which are not necessarily systemically important, will be resolved under normal bankruptcy laws.

According to the above resolution procedure, DICJ is entitled to borrow necessary funds from the capital market under the government's guarantee; a front-loaded bank resolution fund does thus not exist. Losses accruing at DICJ will be covered ex post by collection of funds from the financial industry. There is no ex ante bank levy in Japan. Only when judged as unavoidable and necessary, is the government allowed to inject public money. In contrast to the No. 3-Measure in the Amended DIA of 2001, the current law does not recognize any need for an alternative measure of nationalization. This is probably because the Prime Minister has a right to temporarily stop the clearing of derivative contracts ("stay") and can prevent the contagion of succession of contracts clearing.

The amended DIA of 2014 allows Japanese banks to issue "contractual" bail-in-instruments, such as subordinated bonds or loans with trigger clauses. This contractual bail-in debt is accepted as "additional tier-I-capital" under the Basel III capital requirement and can be written down or converted into capital at the time of resolution. In contrast, a "statutory bail-in" mechanism is not permitted under the amended DIA of 2014 (*Okina* 2015). This may be because creditors' rights are strongly thought not to be impaired without consent of the court.

2. *United States*

In the US, the "Dodd-Frank Wall Street Reform and Consumer Protection Act" of 2010 ("Dodd-Frank Act", DFA) provides authorities with "Orderly Liquidation Authority" (OLA) over financial companies, which are regarded as systemically significant. The covered financial companies consist of large bank holding companies (BHCs) with assets exceeding 50 bn. Dollars, non-bank financial institutions (such as security dealers and market utility companies) and their subsidiaries, and insurance companies.

The Dodd-Frank Act established some new institutions responsible for macro-prudential policies. One new institution is the "Financial Stability Oversight Council" (FSOC). It is chaired by the Secretary of the Treasury and consists of ten members with voting rights (among others, the Comptroller of the Currency and chairpersons of the Board of Governors of the Federal Reserve Board, FRB, of the Federal Deposit Insurance Corporation, FDIC, and of the Securities Exchange Commission, SEC) and five members with no voting rights. Another institution is the "Office of Financial Research" (OFR), which collects and analyses significant information concerning macro-prudential policies and provides members of the FSOC with supervisory information.

The Dodd-Frank Act (Title II, Provision of OLA) gives FSOC a right to monitor covered financial companies. Moreover, it grants the FRB the right to intervene, called "Early Remediation". The FDIC can implement the liquidation of failing financial companies after it has been appointed as their receiver. The preconditions for the triggering of the liquidation process are that:

- the bank concerned is in default or in danger of default;
- an orderly insolvency would likely create systemic instability; and that
- no private sector alternative is available.

The process is triggered by the FDIC and by the FRB, who act at the request of the Secretary of the Treasury or on their own initiative. Upon a 2/3 vote by the Boards of both the FDIC and the Federal Reserve System, a written recommendation is delivered to the Secretary of the Treasury, requesting that the FDIC be appointed as receiver for a systemically important financial institution that is in default or in danger of default (Federal Deposit Insurance Corporation 2011). The FDIC is then authorized to establish a bridge financial company. Assets and liabilities of the covered financial company may be transferred to this bridge bank, which continues to provide all key operations and transactions. The bridge bank should be under the control of other private entities in due course (in principle two years, with up to three one-year extensions allowed, thus five years at most). Otherwise, the bridge bank has to be liquidated. The former management of the covered financial company will be exchanged. The bridge bank is owned by the FDIC; the transfer includes all assets, liabilities, and operations of the covered financial company, as necessary to achieve the maximum value of the firm. Shareholders, debt holders, and other creditors whose claims were not transferred to the bridge financial company will remain in the receivership and receive payments on their claims based on the priority of payments set forth in Section 210(b) of the Dodd-Frank Act (Federal Deposit Insurance Corporation 2011).

The costs of Orderly Liquidation Authority procedure are to be covered first by shareholders of the companies and then by unprotected creditors. Whether other creditors bear some burden, is dependent upon the financial situation of the failing institutions and the decision of FDIC. If creditors wish to contest the decision, they have to file suit at the district court of the principal place of the failing companies (Federal Deposit Insurance Corporation 2011).

The Dodd-Frank Act prohibits the direct use of public money, but allows FDIC as the receiver to borrow from the Treasury and to use the borrowed funds during the resolution procedure. This is because it is quite important for FDIC to offer liquidity to the ailing companies and to the bridge bank in the resolution process. FDIC can issue debt obligations of up to 10 % of the total consolidated assets of the failing companies, during the first month after the start of receivership. If FDIC and the Secretary of the Treasury agree to the specific plan and schedule of the debt repayment, the remaining 90 % of the funds can be raised in a similar manner. In any event, all debt to the Treasury must be repaid within 60 months after issuing the debts (except where there is a serious risk of an adverse effect on the financial system). If contributions from shareholders and creditors are ultimately insufficient for the liquidation procedure, "risk-based assessment" will be charged on "eligible financial companies". They include bank holding companies with consolidated assets of more than 50 bn. dollars and non-bank financial companies both of which are under regulation by the FRB.

Financial resources required for the Orderly Liquidation Assistance procedure are deposited at the "Orderly Liquidation Fund" (OLF). They are used by the receiver (FDIC) with the agreement of the Secretary of the Treasury to the liquidation plan. The OLF does not collect money from the covered financial companies in advance, but charges money later if necessary, after the liquidation procedure has started, as described above.

3. Euro Area

Several countries from the Euro area enacted national special bank recovery and resolution laws immediately after the breakout of the subprime crisis (*Haentjens/Janssen* 2015). These laws allow regulators to deal with systemically important banks in case of financial distress. National legislators followed proposals made earlier by the Basel Committee on Bank Supervision and by the Financial Stability Board, which had proposed the development of national resolution regimes and an improved coordination between national supervisors. Within the European Union, the commission also started to introduce a common resolution framework as part of the European Banking Union (EBU).

With the start of EBU in November 2014, bank supervisory responsibility was transferred from the national to the European level.[12] The EBU consists of three pillars, namely the "Single Supervisory Mechanism" (SSM), the "Single Resolution Mechanism" (SRM) and a common European deposit guarantee scheme ("European Deposit Insurance System" – EDIS). According to the SSM, the European Central Bank (ECB) supervises all systemically important banks within the Euro area. This covers all large banks with a total balance sheet exceeding 30 bn. Euros or of more than 20 percent of the GDP of their home

[12] All Member Countries of the Euro area are automatically also members of the European Banking Union. EU Member States which have not yet introduced the Euro have the opportunity to "opt-in" and to establish "close cooperation" with the European Central Bank, i.e., they may adopt the mechanisms of the EBU. Currently, only Denmark is interested in making this decision. See, e.g., *Vollmer* (2016).

country (at least 5 bn. Euros). In addition, banks that receive financial assistance from the European Stability Mechanism (ESM) and the three largest banks within every member country are also supervised by the ECB; a bank with cross-border activity can also be declared as systemically significant. Smaller and less significant banks are still supervised by National Competent Authorities (Deutsche Bundesbank 2013; European Commission 2013; European Central Bank 2014).

The "Single Resolution Mechanism" (SRM), which started operation in early 2015, supplements the SSM. The SRM consists out of two parts, an "institutional framework" and a "financial fundament" (European Commission 2014; German Federal Ministry of Finance 2014). The "institutional framework" comprises a bank resolution authority ("Single Resolution Board", SRB), which is a fully independent authority of the European Union and is financed by contributions from the banking sector.[13] Upon notification from the ECB that a bank is failing or likely to fail, the Single Resolution Board will prepare and implement the restructuring or resolution of the ailing institution. The Single Resolution Board also decides whether resources from the "Single Resolution Fund" are to be used for resolution. While the SRB is the European Resolution Authority, the final decision on whether or not an ailing bank is resolved lies with the European Commission and the European Council. Once the SRB has decided about the adoption of the resolution scheme, it has to inform the European Commission (EC). The EC in turn has to accept the resolution plan (within 24 hours) or to propose to the European Council (within 12 hours) either to object to the resolution scheme or to submit a substantial revision. The resolution concept may enter into force if neither the EC nor the European Council has objected within a time period of 24 hours.[14] In case of objection, the SRB has to modify the resolution scheme within eight hours (Deutsche Bundesbank 2014).

Once resolution has been decided, SRB possesses four resolution tools: A sale of business (or P&A) tool, a bridge institution tool, an asset separation tool, and finally, a bail-in tool. A government financial assistance tool may also be used,

[13] The SRB is located in Brussels and has a staff of around 250. The board operates in two sessions. The executive session makes preparatory and operational decisions for resolving individual banks; participants are the chairperson of the board, the four permanent members and representatives of the national authorities where the bank is established. Only decisions involving financial support of up to 5 bn. Euros are discussed. In the plenary session, individual resolution cases are decided, if the support for a bank exceeds 5 bn. Euros. A single majority representing 30 % of the contributions to the fund takes decisions, involving the use of existing financial means of the fund; in other cases, a larger majority is needed.

[14] The EC is entitled to base its objections on the discretionary elements of the resolution scheme; the Council may object to an SRB decision if resolution is not in the public interest. See Deutsche Bundesbank (2014).

but only as a last resort (Deutsche Bundesbank 2014). With the sale of business tool, the ailing bank is sold and transferred to an assuming bank; the consent of the former bank owners is not necessary (the consent of the buyer is required, however). If no recipient is available, assets and liabilities of the ailing bank may be transferred to a bridge institution, which is established and operated specifically for this purpose by the resolution authority. The bridge bank should be sold as soon as possible (within two years). While both the sale of business tool and the bridge bank tool treat the bank as a going concern, the bank is wound down under the asset-separation tool. In such cases, assets are sold individually, while assets not worthy of being maintained are transferred to an asset management vehicle or a "bad bank".

Under the bail-in tool, the resolution authority determines the bank's cumulative losses and assesses the amount needed to return the bank's net asset value to zero. In order to absorb losses, the resolution authority either writes down unsecured debt instruments or converts them into equity capital, using a pecking order or liability cascade *(Benczur* et al. 2016). This encompasses all of an institution's unsecured liabilities and not just instruments subject to an explicit subordination agreement. The first instrument to be written down is regulatory capital (common equity tier-1 capital, additional tier-1 capital instruments, tier-2 capital), followed by subordinated debt, other eligible liabilities and finally, deposits held by households and small companies that are not covered by deposit insurance schemes ("depositor preference"). This scheme has to make cash contributions in the amount by which deposits would have been written down without the exemption. Some claims (such as short-term interbank liabilities with an initial maturity of less than seven days) are excluded from the liability cascade by law (Deutsche Bundesbank 2014).[15]

The "financial fundament" of the resolution mechanism is formed by a "Single Resolution Fund" (SRF), which was mentioned above, and is used only after the liability cascade has ended. The resolution fund is built up within eight years and shall be administered by the SRB. The ultimate capacity (i. e., target funding) shall be 1 % of all insured deposits which will be 55 bn. Euros, measured by the current volume of deposits. The Resolution Fund will be financed by an ex ante bank levy which has to be paid by all banks within the European Banking Union. The Fund may also raise money from the capital markets. As long as the common European Bank Resolution Fund has not been implemented, the financial fundament starts with a system of national resolution funds, which are financed by national bank levies. Starting in 2016, these levies are transferred to national compartments within the SRF, where they will be merged progressively

[15] This gives helps to prevent contagion in the interbank markets, but also gives banks an incentive to borrow short-term on the interbank markets, which is less stable than long-term lending (Deutsche Bundesbank 2014).

into a single mutualized fund; lending between the national funds will be possible (German Federal Ministry of Finance 2014, European Commission 2014). Funds from the Single Resolution Fund can only be used for financing the resolution after a bail-in of equity and debt of at least 8 per cent of the bank's balance sheet total has been applied. The maximum amount for the SRF to be injected into a bank resolution process is 5 per cent of the bank's total balance sheet. After all components of the liability cascade have been exhausted, the SRF will be able to borrow from the ESM (Deutsche Bundesbank 2014).

Within the European Banking Union, national deposit insurance schemes will gradually (step-by-step) be transferred into a common single deposit guarantee scheme, "European Deposit Insurance Scheme" (EDIS). Transformation will be completed by 2024. The common deposit insurance scheme will be managed by the Single Resolution Board, which will administer EDIS together with the Single Resolution Fund (European Commission 2014).

4. United Kingdom

The UK was the first country that introduced a special bank resolution regime during the recent financial crisis. The main reason was the failure of "Northern Rock" in 2007, which received special loan funds from the Bank of England (BOE). On February 17, 2008, the BOE temporally nationalized Northern Rock and (unsuccessfully) searched for an assuming bank (Shin 2008). Since a P&A transaction failed, the resolution of Northern Rock was implemented under the Banking (Special Provisions) Act 2008; yet, the ex-owner appealed to the court, arguing that the procedure was illegitimate, because it violated the owner's rights, using an improper estimation of the company's value. The owner eventually lost the lawsuit.

In reaction to this case, the UK Banking Act was amended in February 2009, which incorporated a special resolution regime. The regime was subsequently amended and further strengthened, reflecting the FSBs "Key Attributes" and the provisions of the European legislation, namely BRRD (Bank of England 2014). The scope of the UK resolution regime is not limited to SIFIs, but applies to various types of ailing financial institutions, including deposit-taking institutions (such as banks and building societies) and investment firms. It aims at resolving these financial institutions without causing severe financial instability and without exposing taxpayers to losses, which should be covered by equity holders and unsecured creditors.

Under the UK resolution regime, the responsibility for resolving a failing financial firm is with the BOE. The BOE decides, after consultation with the prudential regulator (which is either the "Prudential Regulation Authority", PRA, or the "Financial Conduct Authority", FCA) whether a financial firm is subject to a resolution procedure.[16] The BOE also decides which resolution tools will be applied and conducts the resolution procedure. This is conducted together with HM Treasury (HMT) if a bank is put under temporary public financial ownership or if a public equity injection is made.

Two key conditions must be fulfilled before a financial firm can be put into resolution. The first is that the firm must be failing, or likely to fail. The assessment of whether this is the case is made by the PRA or by the FCA, after consultation with the BOE. The second condition is that financial firm most likely cannot avoid failing without the resolution regime. This condition is assessed by the BOE, after consultation with the PRA, or the FCA, and HMT.

In a run-up of a resolution procedure, the banking firm is likely to be subject to intense and heightened supervision by the PRA or the FCA. Under the Proactive Intervention Framework, PRA judges how close the financial firm is to failure and supervisors will expect the firm's management to take more appropriate action, as the conditions of the firm deteriorates. The actions should not impede the authorities' ability to resolve the bank, should that become necessary. HMT, BOE, and the PRA have to sign a memorandum of understanding about how they will cooperate with each other before and during the resolution of an institution.

The UK resolution regime seeks to strike a balance between starting a resolution procedure before all the franchise value of the bank has been eroded and avoiding the situation of a bank being resolved before all possible private sector solutions have been exhausted. After consultation among PRA, BOE, and HMT, a public interest test has to be made, because a resolution procedure implies substantial interference in private property rights. Once the public interest test has been met, BOE may apply one or more of the following resolution tools (Bank of England 2014):

- P&A tool: Transfer all or parts of a firm's business to an appropriate and willing private sector purchaser.
- Bridge bank tool: Transfer all or parts of a firm's business to the bridge bank established as a subsidiary of BOE, with the intention of selling it later.
- Bail-in tool: Restoring solvency of the failing firm with the loss being covered by shareholders and unsecured creditors, and recapitalization being done through converting of some part of the unsecured creditors, at least if necessary. The creditor preference hierarchy is to be respected with this bail-in procedure and NCWO safeguard is secured.

[16] The PRA is a subsidiary of the Bank of England and regulates deposit-taking firms and major investment firms. The FCA regulates the majority of the investment firms independently of the BOE.

For those parts[17] of the firm that will not be maintained and have to be wound-down, two tools can be used, but only together with one or more of the above stabilization tools.

- Asset Separation Tool: To allow assets and liabilities of the failed firm to be transferred to and managed by a separate asset management vehicle (AMV) or a bad bank. This part of the firm or the AMV is to be sold eventually or written down later in an orderly manner.
- Bank Administration Procedure: To administer the part of the failed bank (including building society), which was transferred neither to a private sector purchaser nor to the bridge bank. This part is called the "Residual Bank". This will be maintained as far as its services are necessary, to the new owner of any transferred business and until a permanent arrangement makes the services unnecessary, when the residual bank is subject to a normal bank administration procedure.

Each procedure is subject to a NCWO-clause, which is guaranteed by an independent valuator, who is appointed by HMT. In case of a shortfall, shareholders and creditors are entitled to receive compensation, which must be financed by the banking industry (Bank of England 2014). In line with European legislation, public funds may be used when necessary to stabilize the financial system, provided that unsecured liabilities of at least 8 % of the bank's total balance sheet (as valued at the time of resolution) have been used to cover losses (and have been bailed-in).[18] The government makes the decision and possible only as a last resort, when the stability of the financial system is in danger. If public assistance is granted, the funds come from the general budget, since the UK has not established (and will not establish) a prepaid bank resolution fund.[19] Since the beginning of 2011, banks (temporarily) have to pay a bank levy with the proceeds going into the general government budget. The levy is charged annually on balance sheets and has to be paid by both UK resident entities and permanent UK branches of foreign banks.

[17] Activities and services that do not seem worth maintaining and continuing to offer customers, from the perspective of systemic importance.

[18] As a member of the European Union (though not of the Euro area and the EBU), Great Britain has fulfilled the BRRD, which sets the 8 % limit. For the transposition of BRRD into UK Law, see HM Treasury (2014).

[19] The UK Treasury objected to pre-funding resolution schemes, because the unused pot of money would act as a drag on growth, create a moral hazard for banks and reduce the credibility of the bail-in tools (Financial Times 2013).

IV. Comparisons

Table 2 highlights the main characteristics of the four bank resolution regimes. As common features, all countries under consideration allow for early interventions and apply pre-insolvency bank resolution procedures. They also require banks to write "living wills" and enforce an institutional separation between the bank resolution instrument and the deposit insurance.

Looking at subsamples, the special bank resolution regimes in Japan and in the US share major similarities but differ in important aspects from the two European regimes. In both Japan and the US, there are neither resolution funds and ex-ante bank levy systems, nor statutory bail-in powers. In Japan, the central bank hardly plays any role at all during the resolution procedure. There is thus a strict separation between monetary policy and bank supervision. Moreover, the Japanese legislation does not provide for a statutory bail-in instrument. In case of a bank failure, all liabilities will be protected, except for the failure of a very small institution where a pay-off cost limit will be implemented. Finally, Japan does not charge a bank levy and will not build up a frontloaded bank-resolution fund. However, the authorities are able to inject public money into banks through various types of measures offered by the amended DIAs of 2001 and of 2014. Public money injection is allowed, provided that an ex post collection of funds from the finance industry is likely to endanger financial stability. When financial institutions fail, purchasing institutions can, in almost all cases, obtain financial support in the form of public money, and even in the case of solvent financial institutions, public money can be injected to increase the bank's capital. Japan also allows borrowing from the BOJ and/or from the Treasury with government guarantees.[20]

In this respect, the Japanese resolution scheme differs fundamentally from the US legislation, which prohibits any public solvency assistance during a resolution procedure. The Dodd Frank Act only allows for liquidity assistance from the FDIC in order to enable continuation of the ailing bank's fundamental functions and to maintain asset values. A recapitalization of the bank with taxpayers' money is not possible. For the purpose of liquidity assistance, the FDIC may

[20] *Izu* (2015) gives three (socio-cultural) reasons why proactive resolution measures, depending more upon public money injection and less upon bail-ins, are preferable for the Japanese public. Firstly, economic recession was long-lasting and seemingly due to a "too-late-too-small" reaction to the crisis. This caused people to lose sight of proper standards for judging what constitutes an appropriate policy, and made them tired of thinking about it. Secondly, Japan has a long history of financial regulation by the government and the Japanese people do not much like being controlled by an "Okami" (which means "authorities" or the "government"). Third, the Japanese mostly have a tendency to regard humans as good not as evil, and therefore do not take the possibility of moral hazard as seriously as in Europe.

Table 2

Key Features of Special Bank Resolution Schemes in Japan, the US, the Euro Area, and the UK

	Japan	*United States*	*Euro Area*	*United Kingdom*
Legislation	• Deposit Insurance Act • General Bankruptcy Laws	• Federal Deposit Insurance Act • Federal Banking Act • Dodd-Frank Wall Street Reform and Consumer Protection Act	• Bank Recovery and Resolution Directive (BRRD) • Single Resolution Mechanism Regulation • National laws	• Banking (Special Provisions) Act of 2008 • UK Banking Act of 2009 • Financial Services (Banking Reform) Act 2013
Resolution authority • Triggering *(T)* • Final decision making *(DM)* • Implementation *(I)*	• Financial Services Agency FSA *(T)* • Prime-Minister *(DM)* • Deposit Insurance Corporation of Japan DICJ *(I)*	• Board of Governors of the Federal Reserve System/Federal Deposit Insurance Corporation (FDIC) *(T)* • Financial Stability Oversight Council (FSOC, chaired by Secretary of the Treasury (*DM*) • FDIC (*I*)	• European Central Bank/Single Resolution Board *(T)* • European Commission/European Council *(DM)* • National Competent Authorities/Single Resolution Board *(I)*	• Bank of England/Prudential Regulation Authority PRA/Financial Conduct Authority FCA *(T, DM, I)* • HM Treasury in case of public funding being used (*DM*)
Criteria for resolution	• Bank is insolvent/likely to become insolvent • Suspension of deposit payments has occurred/is likely to occur	• Bank is in default/in danger of default • Orderly insolvency likely to create systemic instability • No private sector alternative is available	• Institution is failing/likely to fail • No reasonable prospect that alternative measures would prevent failure • Resolution is necessary in the public interest	• Bank is failing/likely to fail • Financial firm probability cannot avoid failing outside the resolution regime • Resolution is necessary in the public interest

Ex-ante bank levy?	• No	• No	• Yes (proceeds go to the Resolution Fund)	• Yes (proceeds go to the General Budget)
Resolution fund?	• No	• No	• Yes	• No
Ex-post funds collections?	• Yes	• Yes	• No	• No
Public fund injections allowed?	• Yes	• No	• Yes	• Yes
Statutory bail-in power?	• No	• No	• Yes	• Yes
No-creditor-worse-off clause?	• No	• No	• Yes	• Yes
Separation between resolution instrument and deposit insurance?	• Separate accounts; both managed at DICJ	• Separate accounts; both managed at FDIC	• Yes	• Yes

Source: Own compilations.

borrow funds from the Treasury. In the event that the bank cannot repay the liquidity assistance, the financial industry has to fill into the gap. The US does not charge an ex ante bank levy, and there is no paid-in bank resolution fund (Federal Deposit Insurance Corporation 2011). Like Japan (but unlike the Euro area), the US legislation does not have a statutory bail-in instrument.

Bank resolution schemes in the UK and in the Euro area share major similarities, because they are based on the same EU Directive 2014/59/EU (Bank Recovery and Resolution Directive, BRRD).[21] Firstly, in both countries the central bank plays an important role during the resolution procedure. Secondly, BRRD demands all Member States of the EU to ensure that the bank resolution is truly in the public interest. Thirdly, in case of seriously deteriorating financial conditions, national competent authorities have to apply early intervention measures and to require members of the bank management body to be removed. Fourthly, in case of a resolution action, statutory bail-in must be applied to all uninsured and non-guaranteed debt instruments with a clear hierarchy of claims. Finally, the NCWO-principle has to be respected.

Despite the common legislative origins, the resolution schemes in the UK and in the Euro area reveal two major differences. The first is that the resolution scheme in the Euro area provides access to a bank resolution fund (financed from proceeds of a bank levy) and offers a fiscal backstop from the European Stability Mechanism (ESM). In contrast, while the UK also charges a bank levy, the proceedings go into the General Budget. A bank resolution fund does not exist and the UK does not participate in the ESM. The second difference is of course, that the resolution decision is taken at the national level in the case of the UK, but on the supranational level for the Euro area. This makes it easier to apply the SPE approach for the resolution of multinational bank holding companies with subsidiaries located within the Member States of the Euro area (while the problem still remains as how to handle the resolution of multinational banks with subsidiaries located outside the EBU).

[21] The legislative procedure within the European Union rests on two pillars and uses either regulations or directives. Regulations are binding in entirety and directly applicable in all EU-Member States with no decision-making leeway. Unlike regulations, directives are binding as to the result to be achieved, but leave Member Countries some leeway as to the form and methods; they thus set minimum standards for all member countries of the European Union. BRRD is supplemented by the "Single Resolution Mechanism Regulation" which transfers the decision-making process with respect to those countries that participate in the "Single Supervisory Mechanism" (SSM), from the national to the European level. Where the BRRD offers option and discretions, these options and discretions are exercised for the countries participating in the SSM in the same way (Deutsche Bundesbank 2014).

V. Evaluation and Compatibility with Key Attributes

Given these differences, it is difficult to evaluate the strengths and weaknesses of national special bank resolution schemes. One way to do so is by drawing on experiences from past resolution procedures. Two results are central in this context. First, we know from the Japanese financial crisis of the 1990s that ex-post collections of contributions to bank resolution funds are difficult to implement. Such collections were done under the "Houga-chou" method mentioned above, which was successful only during the early part of the financial crisis. It became difficult to implement, however, when the amount needed to resolve a bank became excessive (*Nakaso* 2001).

Second, the European financial crisis reveals that the bail-in tool often needs to be accompanied by cross-border capital controls (with negative consequences for the real economy). The bail-in tool was applied for the first time in March 2013 in Cyprus, when the two largest commercial banks ("Laiki Bank" and "Bank of Cyprus") were merged as part of a bank resolution procedure. The merger involved a transfer of uninsured deposits into equity, in order to cover the banks' losses. Before this transaction, the possibility of a bail-in was widely discussed for more than three months, with leakages of information during negotiations of the bail-in agreement, implying that many deposits (especially of more sophisticated depositors) were withdrawn from the country before the bail-in was executed and capital controls introduced (*Michaelides* 2015; *Zenio* 2015).[22]

Finally, recent experiences with the aborted resolution of Italian banks indicate some enforcement problems in the European resolution framework. Because a significant share of creditors were unsophisticated retail investors, it was quite uneasy for the resolution authorities to enforce the statutory bail-in. In this situation, European institutions have send signals that they are ready to inject public money, thus contradicting European regulations and endangering the credibility of the European resolution framework (*Götz/Krahnen/Tröger* 2017).

Another way to evaluate the bank resolution schemes uses the list of "Key Attributes" of an effective bank resolution regime, published by the Financial Stability Board (2014a). The purpose of a special bank resolution scheme is to address the TBTF problem by allowing the liquidation of a large financial institution without losses to the general public or losses to secured and guaranteed creditors, while maintaining the institution's vital functions. In order to achieve these objectives, a resolution scheme should be able to:

[22] Similar things happened in summer 2015 during the Greek crisis, when rumours of a bail-in caused a capital flight.

1. ensure continuity of financial functions;
2. protect insured claims and secure a rapid return of payments;
3. allocate losses to bank owners and unsecured and uninsured claim holders, according to a hierarchy of claims;
4. not rely on public solvency support;
5. avoid unnecessary destruction of firm's value;
6. provide fast and transparent resolution decisions;
7. provide a mandate in law for cooperation, information exchange and coordination with the relevant foreign authorities;
8. ensure an orderly market exit for non-viable financial firms; and
9. enhance market discipline.

From the above list of attributes, all resolution regimes seek to guarantee the continuity of systemically important financial functions (attribute No. 1) during the resolution process and the continuity of payment, clearing, and settlement functions. Moreover, the repayment of insured claims (attribute No. 2) is guaranteed by the respective deposit guarantee schemes. Finally, the four resolution schemes provide a mandate in law for cooperation, information exchange, and coordination with relevant foreign authorities (attribute No. 7).

Attributes No. 4, 8 and 9 are related; if the resolution regime allows an injection of public money, it enables unsustainable institutions to survive and also impairs market discipline, all of which may in turn further raise the burden on tax payers. The TBTF-problem will persist. As mentioned before, the bank resolution regimes in the Euro area, in the UK, and especially in Japan depend more extensively on public financial assistance than in the US. In contrast, the US resolution scheme is much more resilient to public financial assistance, because any public solvency assistance is forbidden, and no taxpayer losses from a bank resolution process are allowed. Within the Euro area, Article 29(9) of the SRM-Regulation entitles the SRB to search for further funding "from alternative financing sources", but only after i.) all unsecured, non-preferred liabilities, other than eligible deposits have been written down or converted in full, and ii.) up to 5 per cent of total liabilities, including equity, have been covered by the Single Resolution Fund. While these conditions appear able to protect taxpayers against losses, one should bear in mind that some bank liabilities, such as interbank claims, are excluded from a bail-in procedure. Moreover, the volume of the planned European Single Resolution Fund is only 55 bn. Euros and probably too small to provide a credible backstop (especially when several banks have to be resolved).[23]

[23] The balance sheet total of all financial institutions within the Euro area amounts to more than 30 trillion Euros; the Single Resolution Fund will thus cover only 0.2 % of this amount.

In the case of the UK, such public assistance is allowed within the rules of BRRD, but the UK has no access to the ESM. In addition, resolution planning is conducted on the assumption that no public funds will be available to cover the losses of creditors and shareholders in the event of resolution. The decision to use public funds is made by the government, subject to approval from the European Commission (EC) under the state aid framework (*Bank of England* 2014). In Japan, losses accruing at DICJ will be covered by the ex post collection of money from the financial industry. The government is allowed to inject public money, only when this is regarded as unavoidable and necessary. This may be the case if the ex post collection from the financial industry is regarded as leading to concerns of causing systemic risk, through impairing an excessive burden on the financial industry.

Attributes No. 3 and No. 5, in combination, suggests the introduction of the statutory bail-in according to a preference hierarchy of claims. The resolution regimes in Japan and in the US do not possess any statutory bail-in instrument and are prone to result in a larger destruction of values than the European resolution regimes. That is because under a bail-in procedure, losses are determined up-front through a valuation, rather than after the transfer or liquidation of the firm’s assets. A bail-in may therefore result in smaller losses for creditors than other resolution tools and liquidation, because it avoids the break-up of a complex group into good/bad or critical/non-critical components and mitigates the destruction of franchise value that may result from a run-off or liquidation of assets (*Brierley* 2009). There are some differences with regard to the treatment of uninsured deposits among countries. The US and the EU both apply depositor preference and treat uninsured deposits preferentially to other claims during resolution. In Japan, however, uninsured deposits are treated in the same way as other uninsured claims.

Finally, with respect to attribute No. 6, there are doubts as to whether the decision-making process in the Euro area is sufficiently fast and transparent. The Single Resolution Board does not have access to its own supervisory information, and must depend on information provided by the ECB. According to Article 18 of SRM-Regulation, the ECB will usually trigger the resolution procedure, if it receives information that the supervised financial institution is failing or likely to fail. The SRB in turn, has to assess whether the resolution action is in the public interest and to check that no alternative private sector solution is available which would prevent the failure. This complex procedure involves several actors (ECB, SRB, EC, and the European Council) who have to act sequentially during a resolution within a very short period.

Legal constraints were largely responsible for this solution, because the transfer of discretionary decision-making powers to the Single Resolution Board would have needed a revision of the European primarily law (Deutsche Bundesbank 2014).[24] This currently stipulates only seven principal European decision-making bodies, with the European Commission, the European Council, and the ECB each being one of them. A revision of the treaty was regarded as very time consuming, because any revision needed unanimity. The ECB plays an essential role in this decision-making process, because it is the only actor with its own supervisory information about financial institutions. This implies that the decision made by the ECB Governing Council on whether or not to trigger a resolution procedure is of major significance.[25]

Table 3

Key Attributes for Effective Bank Resolution Regimes in Four Financial Markets (Authors' own compilations)

Key attribute	*Japan*	*US*	*Euro area*	*UK*
1. Continuity	+	+	+	+
2. Protection of insured claims	+	+	+	+
3. Statutory bail-in according to hierarchy of claims	-	-	+	+
4. No public solvency support	-	+	-	-
5. Avoidance of destruction of value	-	-	+	+
6. Fast/transparent resolution decisions	+	+	-	+
7. International cooperation	+	+	+	+
8. Orderly market exit	-	+	-	-
9. Market discipline	-	+	-	-

[24] In 1958, the Court of Justice of the European Union (CJEU) decided that an EU institution may only delegate decision-making powers to a newly established EU agency – like the SRB – if "the scope of the agency's powers is clearly defined, limiting the institution's margin for discretion from the start" (Deutsche Bundesbank 2014).

[25] This view seems to be shared by some of the EU Member States outside the Euro area, which hesitate to establish close cooperation with the ECB and joining SRM (*Kisgergely/Szombat* 2014; Narodowy Bank Polski 2014). Should they enter into EBU, large banks are subject to a potential resolution process triggered by the ECB and implemented by the Single Resolution Board, without representatives of the country having the right to object to any decision made by the ECB, because they are not members of the Euro area.

Table 3 summarizes our assessments about the extent to which the four bank resolution regimes fulfil the Key Attributes and to what extent they are able to tackle the TBTF-problem.[26] It seems that the bank resolution schemes in the US and (partially) in the UK largely comply with the "Key Attributes"; this is to a far lesser extent the case with the resolution regimes in Japan and the Euro area. Japan has no statutory bail-in instrument and treats uninsured deposits in the same way as other non-insured claims. Thus, Japan seems to be more generous than other countries with regard to public money injection and is least compliant with the "Key Attributes". This may imply that Japan is not so worried about the TBTF problem. In the case of the Euro area, the major drawback of the bank resolution scheme is that the decision-making process is highly politicized and may suffer from a "too-little-too-late" bias. In extreme cases, the final decision about a bank resolution will be taken in the European Council by the representatives of all Member States, and it is less likely that they will agree on a bank liquidation. Rather, they are more likely to depend on a public bail-out, given the fact that the Euro area possesses an institutionalized bail-out instrument. The European Stability Mechanism (ESM) is entitled to grant capital to ailing banks. In contrast, a bail-in is less likely, although it has been used in the case of Cyprus (but not in that of Greece).

VI. Conclusions

The purpose of the present paper was to compare and evaluate the current bank resolution schemes in Japan, the US, the Euro area, and in the UK. Bank resolution schemes allow the authorities to recapitalize or wind down a systemically significant financial institution outside the rules of an ordinary insolvency procedure. We identify common elements of a bank resolution procedure and show that the regimes in the four countries under consideration differ in some major aspects. We use the "Key Attributes" proposed by the FSB to evaluate the different bank resolution schemes. While we were unable to derive a rank-order for the four resolution schemes, and found that the schemes in the Euro area and in Japan are less in line with the "Key Attributes" than the resolution schemes in the UK and in the US.

An interesting issue is the extent to which differences in special bank resolution schemes are capable of implementing direct cross-border financial flows and triggering regulatory arbitrage. Important factors are differences in bail-in-mechanisms and in the degree of creditor protection. Bail-in capital is by nature risky and investors will thus demand a higher interest rate as compensation for their risk-taking. A natural response by banks that care about the costs

[26] A "plus" indicates a situation in which a "Key Attribute" is fulfilled, while a "minus" indicates the converse.

of credit is to issue debt in locations where creditor rights are better protected (because a NCWO-clause applies) or where it is easier to initiate a lawsuit against a bail-in procedure (*Lupo-Pisini/Buckley* 2015).

A common deficit of all bank resolution regimes is the lack of adequate rules for the resolution of cross-border financial entities. Three points are fundamental. Firstly, in many countries, a general statutory mechanism to ensure a prompt legal domestic impact for foreign resolution actions does not exist. In consequence, authorities have great difficulties in effectively implementing group-wide resolution plans for cross-border groups (Financial Stability Board 2014b). Secondly, an agreement is lacking on an internationally agreed standard regarding the adequacy of the total loss-absorbing capacity for G-SIFIs (Financial Stability Board 2014c). Finally, the prospect of ring-fencing the assets of domestic branches of foreign institutions, aimed at preserving such assets to the primary satisfaction of domestic creditors, may undermine cross-border cooperation (International Monetary Fund 2015).

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