FSB FINANCIAL STABILITY BOARD

Historical Losses and Recapitalisation Needs

Findings Report

9 November 2015

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Abbreviations

BRRD	Bank Recovery and Resolution Directive
D-SIB	Domestic systemically important bank
G-SIB	Global systemically important bank
IFRS	International Financial Reporting Standards
RWA	Risk-weighted assets
TA	Total assets
TCI	Total comprehensive income
TCI_adj	Total comprehensive income, with regulatory adjustments
TBTF	Too-big-to-fail
TLAC	Total loss-absorbing capacity
US GAAP	Unites States Generally Accepting Accounting Principles

I Introduction

On 10 November 2014, the Financial Stability Board (FSB) published, in consultation with the Basel Committee on Banking Supervision (BCBS), a consultative document on the total loss-absorbing capacity (TLAC) of global systemically important banks (G-SIBs) in resolution, including high-level principles and a more detailed term sheet.[1] To finalise the TLAC standard, including the final calibration of the minimum TLAC requirement, the FSB conducted a comprehensive impact assessment study during the course of 2015.

One element of the impact assessment studies is an analysis of historical losses and public recapitalisation needs for selected systemically important institutions that failed or received official support. This report presents the findings from that analysis.

All cases are taken from the recent global financial crisis and the Japanese banking crisis in the 1990s. The next sections present the scope and methodology and an evaluation of the results. While the report is part of the input for the TLAC framework, it should not be seen as a calibration exercise. The analysis is primarily factual and does not make policy recommendations.

Main findings:

1. The main findings are based on 13 banks: ten cases from the recent crisis and three earlier Japanese cases. The volumes of losses and recapitalisations vary significantly across banks (Figures 1 and 2). Total losses have been up to almost 5 percent of total assets (Merrill Lynch, Wachovia) with half of the banks in a 2-4 percent range. In terms of RWA, maximum losses have been close to 13 percent (Dexia, Fortis) with six banks in a 4-8 percent range.
2. Losses and recapitalisation together have been in a 4-6 percent range for most cases, up to approximately 9 percent of total assets (Fortis). In terms of RWA, losses and recapitalisation have been in a 5-15 percent range for nine cases, up to 25 percent of RWA (Fortis).
3. These numbers would be higher if the full losses were taken into account of banks that have ceased reporting separately, either because they failed (Lehman Brothers) or because they were acquired (Bear Stearns, Wachovia). Some tentative evidence of this is presented in the report, but not as part of the baseline results.
4. Within the sample considered in this report, higher losses are positively correlated with greater public capital support. A significant share of the capital provided in 2008 was repaid in 2009, after which repayments were modest. This indicates that while several banks faced a temporary downward shock that soon reversed – and, with hindsight, may be considered less relevant from a resolution perspective – others faced a long period of ongoing losses.

Public support measures other than capital injections and asset relief measures are not included in the analysis. Such measures – particularly funding guarantees and liquidity support – are outside the direct scope of TLAC, while it is hard to quantify their impact on bank-specific losses. Nonetheless, they significantly contained losses and recapitalisation needs and may not be available on a similar scale in the future.

[1] See http://www.financialstabilityboard.org/wp-content/uploads/TLAC-Condoc-6-Nov-2014-FINAL.pdf

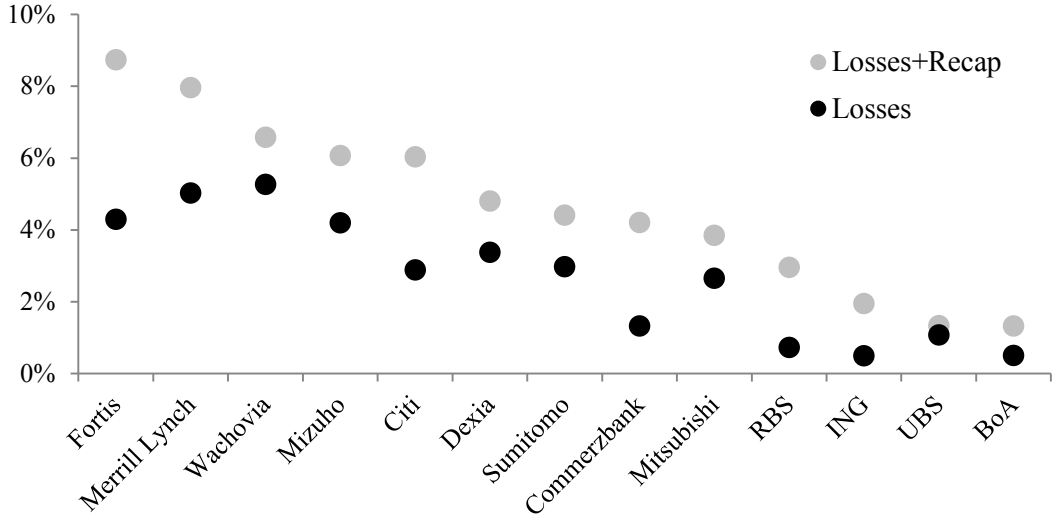
The analysis in this report is subject to a number of caveats. These include data gaps, the use of different definitions across jurisdictions and the fact that many cases are complex and require judgement. These caveats are inevitable and hard to quantify, but addressed on a best-effort basis and following a conservative approach, i.e. likely leading to underestimation rather than overestimation of losses and recapitalisation needs. Examples of conservatism are the exclusion of extreme cases from the baseline results and the cautious approach regarding asset relief measures. In addition, several definitions and specifications are presented to check the robustness of the results under different assumptions.

Finally, it should be noted that the historical cases took place under regulatory frameworks that have changed significantly in recent years. Banks have become better capitalised and macro-prudential tools – including capital buffers – have been developed, which increases banks' ability to deal with a crisis and contain losses. Moreover, increased risk weights under Basel III imply that losses and recapitalisation as a percentage of RWAs will be lower than under the old rules as applied to the historical cases in this report.[2] At the same time, stricter requirements on prudent valuation in resolution imply that historical cases may underestimate losses compared to how these would be established under the current rules. The presence of bail-in instruments will also change loss patterns: such instruments reduce moral hazard and related risks in the run-up to a crisis, but they also reduce the anticipation of public bail-outs, which helped to contain funding costs during the recent crisis. Overall, new regulatory frameworks include aspects that would have increased historical losses as well as elements that would have contained losses. It is difficult to assess the net impact on the estimated losses and recapitalisation needs presented in this report.

[2] Prior to the recent crisis, risk-weights (risk-weighted assets divided by total assets) of G-SIBs have dropped significantly (see FSB, 2015). Under Basel III, risk weights increased compared to Basel II (see BCBS, 2010c). Note, however, that most banks in this report were primarily reporting under Basel I over the loss intervals considered (see Annex 3). Focusing on the first year of losses, which is used as a denominator in loss and recapitalisation ratios, ten out of thirteen cases are based on Basel I data.

Figure 1 Losses and recapitalisation (total assets)

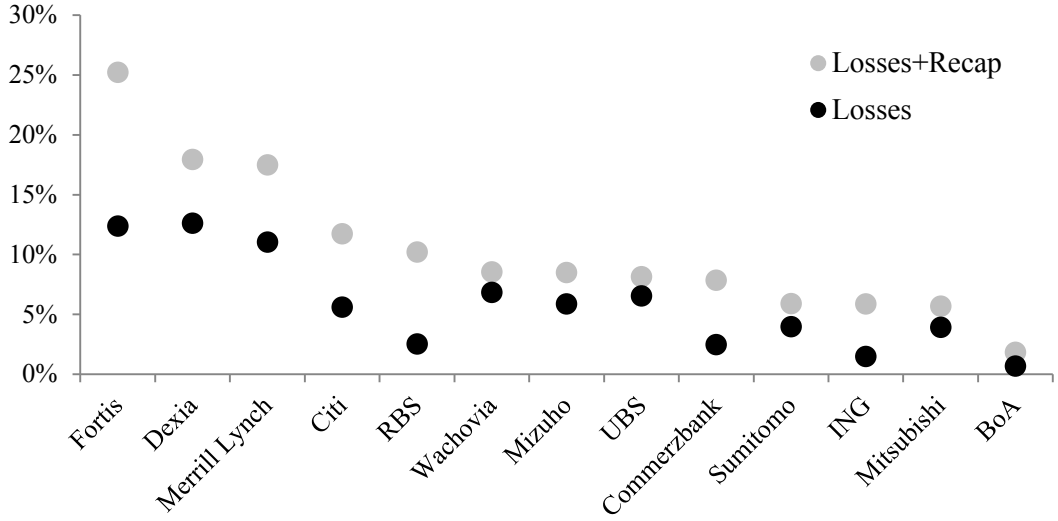
TCI (with regulatory adj.) and total recapitalisation, percentage of total assets



Note: total assets are based on the first year a bank had losses. If TCI with regulatory adjustments is not available, unadjusted TCI is used.

Figure 2 Losses and recapitalisation (risk-weighted assets)

TCI (with regulatory adj.) and total recapitalisation, percentage of RWA



Notes: risk-weighted assets are based on the first year a bank had losses. If TCI with regulatory adjustments is not available, unadjusted TCI is used.

II Scope and methodology

Scope of the analysis

Historical losses and public capital support

This report examines historical losses and the official support measures that restored banks' capital ratios. More specifically, this is measured by (1) historical losses as reported in banks' accounts and (2) public support through direct capital injections and asset relief measures. The use of direct capital injections and asset relief measures may be seen as a proxy for TLAC, which functions to, respectively, absorb losses and recapitalise banks through bail-in.

Public support measures other than capital injections and asset relief, such as funding guarantees and central bank support, are not included in the analysis. These support measures were mainly aimed at ensuring access to funding when confidence among investors disappeared in the most acute phase of the crisis. Although these measures helped to contain losses by reducing funding costs and preventing a fire sales of assets, quantifying this for individual banks is not straightforward.[3] In a similar way, banks have benefited from the expectation of public bail-outs, which particularly reduces funding costs in a crisis, when the TBTF premium is highest. Overall, support measures other than capital support were relevant to contain losses and may not be available on the same scale in future crises, but are not included because they are difficult to quantify and outside the direct scope of TLAC.

Box 1 Previous studies on historical losses

A number of reports about banks' historical losses have been published in recent years. The Basel Committee (BCBS, 2010a) analyses historical losses for a large group of banks. The study covers the recent crisis as well as earlier episodes, such as the Asia crisis and the Nordic banking crisis. In addition to losses reported in banks' income statements, this report also considers the outcomes of stress-tests. Losses have been up to 29 percent of RWA, with the average around 5 percent.

The UK's Independent Commission on Banking (2011) published a study that considers a broad set of banks, focusing mostly on the recent crisis (2007-2010). Cumulative peak losses are up to 16 percent of RWA (excluding an outlier – Anglo Irish Bank – of 39 percent). This study concludes that around 16-24 percent of RWA would be sufficient to cover losses by nearly all banks in the crises considered.

A study by the European Commission (2012) considers a set of 23 banks in the recent crisis (2008-2010). Average losses are found to be around 3 percent of total liabilities on average, with third quartile losses of 6 percent. Losses plus recapitalisation needs are estimated at 6 percent of total liabilities (third quartile around 10 percent).

Strah et al. (2013) analyse losses of 26 US banks in the recent crisis (2007-2010), which they translate into a measure of capital erosion. In eight cases, Tier 1 common capital depletion was more than 4.5 percent of RWA, with a maximum (Washington Mutual) of 12 percent.

In contrast to the other studies, this report focuses exclusively on (near-) G-SIBs and extends the period considered to 2014. The analysis is broader than just historical losses and also includes recapitalisation from public resources.

[3] For the funding cost advantage, this would require a benchmark for funding costs that would have been relevant without funding guarantees. Levy and Zaghini (2011) have followed such an approach to estimate total loss avoidance due to funding guarantees for a limited number of banks.

Private recapitalisations, such as rights issues, are also excluded, as the TLAC framework is designed for circumstances in which private capital sources are not available or insufficient. In addition, private capital injections often serve other goals than covering losses, such as the financing of new activities or repaying state aid.

Focus on G-SIBs and "near-G-SIBs"

The sample of banks includes (near-) G-SIBs that failed or received state aid in the recent crisis. The definition of (near-) G-SIB leaves some room for interpretation, as most of the rescue operations took place before an official G-SIB list was compiled. The following banks are examined:

- *(Former) G-SIBs.* Banks that have been on the FSB's G-SIB list since 2011 and received support include Bank of America, Citigroup, Commerzbank, Dexia, ING, RBS and UBS.[4]
- *Other systemic banks.* Fortis was a large, internationally-oriented bank prior to the crisis. Wachovia was the fourth largest US bank.
- *Investment banks that (almost) failed.* Lehman Brothers went bankrupt, while in other cases – Bear Stearns and Merrill Lynch – bankruptcy was avoided because the banks were taken over by other institutions. The inclusion of these banks helps to avoid survivorship bias.
- *Japanese cases from the 1990s.* These historical cases – including Mizuho, Mitsubishi UFJ and Sumitomo Mitsui – are included, which helps to avoid a sole focus on the recent global financial crisis.[5]

For the US investment banks and the Japanese cases, collecting consistent data is more challenging than for the other banks. Investment banks were subject to different regulation and did not publish all the information that is available for regular banks.[6] Moreover, they ceased reporting before all of their losses fully crystallised. Hence, the results for Lehman Brothers and Bear Stearns are tentative and these banks are not included in the baseline analysis.[7] For the Japanese banks, it is particularly difficult to collect information from the 1990s based on definitions that are consistent with the more recent cases.

Other potentially systematically important banks – in some cases denoted as domestic SIBs or D-SIBs – are not included in the analysis. These banks may have similar incentives to take

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[4] Note that Commerzbank and Dexia were only on the 2011 G-SIB list; the other banks have been on each G-SIB list since 2011.

[5] For the Japanese cases, the years 1995-2006 have been considered. Extending this period to 2014 would not change the results, as the banks considered did not make losses and did not receive capital support in these years.

[6] In the case of Lehman, the losses that manifested themselves after bankruptcy are likely much higher than they would have been in an orderly resolution process or a takeover. Hence, alternative information is presented to assess the historical losses for Lehman, including the results of due diligence by firms that considered acquiring Lehman prior to its failure (see Box 3).

[7] Wachovia was also acquired before it could report its full losses. This bank is included in the baseline analysis, while a (more tentative) higher loss estimate including post-merger information is included in the alternative specifications in Annex 1.

excessive risks and some of them experienced huge losses.[8] However, the TLAC framework is intended for G-SIBs, which are likely – but not necessarily – more diversified.

Measuring losses

Losses are based on reported total comprehensive income (TCI), a broad definition which also comprises unrealised losses that are not directly reflected in the profit and loss (P&L) statement.[9] As an alternative loss measure, TCI figures are corrected for regulatory adjustments, such as changes in goodwill and deferred tax assets. With these adjustments, the losses are translated into a measure of capital erosion (see Box 2).[10, 11] Differences between TCI and adjusted TCI can be substantial for individual banks; both are considered in the analysis.

Box 2 Translation of TCI into a measure of capital erosion

Under Basel III, banks have to make a number of adjustments to their capital and earnings, to arrive at a definition of CET1 regulatory capital (see BCBS, 2010b). These are typically components that are uncertain or involve judgement, such as goodwill or deferred tax assets. The adjustments imply that the deterioration of a bank's financial position due to losses does not necessarily match the erosion of regulatory capital. For instance, the losses of RBS in 2008 were almost entirely from the writing down of goodwill, which therefore did not have much impact on its regulatory capital ratios in that year (see Annex 3).

In this report, the following adjustments have been considered:

Starting point: total comprehensive income (TCI)

Adjustment 1	*Goodwill and other intangible impairment charge in the P&L*
Adjustment 2	*Movement on deferred tax assets*
Adjustment 3	*Movement on cumulative gains and losses due to changes in own credit risk on fair valued financial liabilities*
Adjustment 4	*Movement on hedge reserve*
Adjustment 5	*Movement on shortfall of provisions to expected loss*
Adjustment 6	*Movement on gain on sale related to securitisation transactions*

The resulting adjusted TCI is a measure of capital erosion. Calculations in this report are presented for TCI as well as adjusted TCI, which are both considered relevant measures of losses.

Losses reported in the income statements in banks' accounts are a straightforward measure of losses, as the results are relatively prudent and audited. However, they are based on the assumption that the bank is a going concern. In circumstances where there is a doubt over the

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8 Notably Greek and Irish banks, but also e.g. Hypo RE, WestLB, SNS and Washington Mutual. See the studies discussed in Box 1, which are based on broader sets of banks.

9 The difference between TCI and net income – other comprehensive income (OCI) – includes e.g. unrealised gains and losses on available for sale securities, gains and losses on derivatives held as cash flow hedges, gains and losses from foreign subsidiaries' financial statements due to currency differences, actuarial gains and losses on pension liabilities and changes in revaluation surplus.

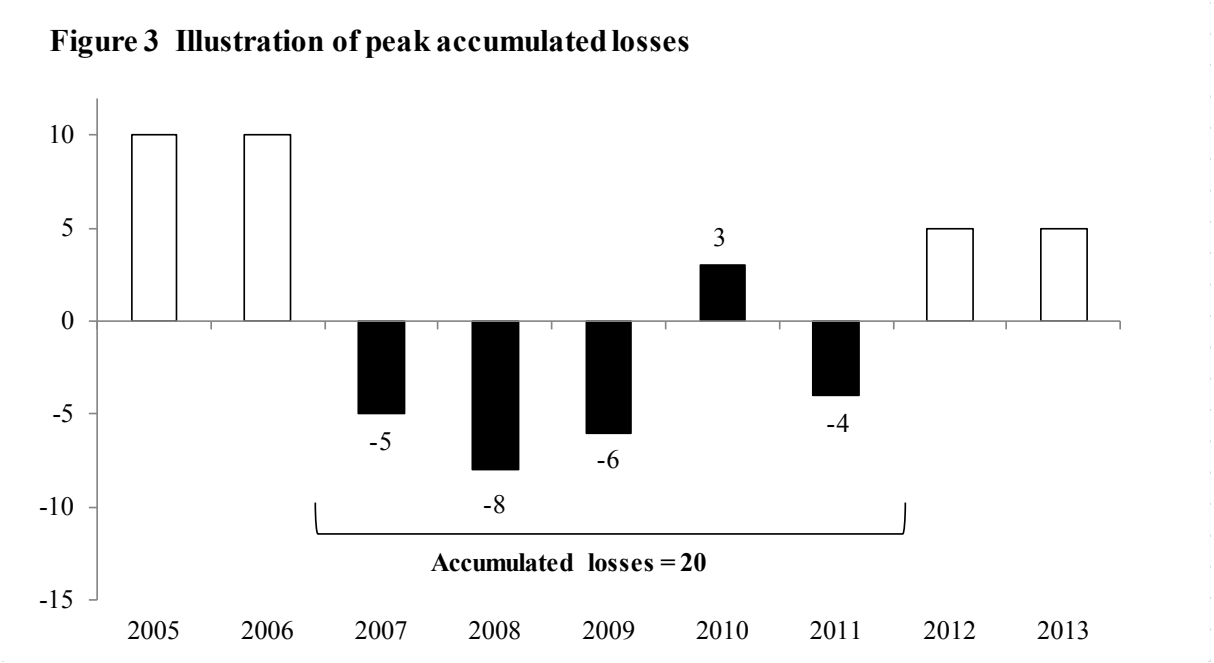
10 As such items are excluded from the definition of capital, losses that manifest themselves through e.g. a write-down of goodwill are less relevant from a regulatory perspective.

11 It should be noted that there are costs to resolution that are not reflected in this loss calculation, such as administrative costs to resolving a firm.

going concern assumption, one could argue that fair values for assets would not be reliable and so the losses might prove to be understated. Even with hindsight, however, such judgements are difficult to make.[12]

The main indicator is the maximum amount of losses, accumulated over several periods. This means that losses over successive years – which may include one or more periods of positive income – are aggregated. The interval that maximises accumulated losses is used to calculate the overall loss metric (see Figure 3, for a hypothetical example).[13] Focusing on bank-specific intervals that maximise losses, rather than a fixed crisis period for all banks, is consistent with the role of TLAC in absorbing losses for individual G-SIBs. It should be noted that the use of annual data is likely to lead to an underestimation of the accumulated peak losses, as losses in the first and last years of the interval may be partly compensated by profits in the same year. Quarterly data would provide a more precise picture, but these are not available in sufficient detail for all banks over the considered period.

Figure 3 Illustration of peak accumulated losses



Measuring recapitalisation

The report considers both direct capital injections and asset relief measures, which have a similar effect in terms of improving capital ratios. While measuring direct capital injections is relatively easy, finding a similar metric for asset relief transactions is less straightforward.

[12] The possibility of a special disclosure regime for banks has been considered for the UK by the Sharman Inquiry (2012).

[13] The use of total accumulated (peak) losses has also been applied by other studies, such as BCBS (2010a), Independent Commission on Banking (2011) and Strah et al. (2013).

Direct capital injections

In this case, the public sector directly provides capital to a bank, for instance in the form of ordinary shares or a specific capital instrument that is recognised as regulatory capital. Governments may also provide capital as an investor, for instance if the bank is already (partly) state-owned. In practice, however, government stakes in (near-) G-SIBs were typically minor or absent prior to the crisis. Hence, in principle, capital injections by governments since 2007 should be interpreted as a support measure.[14] For Bank of America, a significant share of the direct capital injection – USD 30 bn of USD 45 bn – was provided to support the merger with Merrill Lynch and cover losses for the latter (see Annex 2 and 3). In the calculations, this has been allocated to Merrill Lynch.

Asset relief transactions

Two main types of asset relief transactions can be distinguished: the acquisition of assets by the state and the provision of guarantees on bank assets.[15]

- *Acquisition of bank assets*. For instance, assets may be transferred to a state-sponsored special purpose vehicle. The amount of state aid may be measured as the difference between the price paid for the assets and the "real" value, which could be the market value or an estimation of the underlying real economic value.
- *Provision of guarantees on banks assets*. Asset guarantees can be provided in a variety of ways, mainly depending on risk sharing arrangements. For instance, a government may guarantee losses beyond a first loss tranche and/or may guarantee only a proportion of the losses, to provide incentives to the bank to manage its risks. The amount of state aid may be calculated as the difference between losses with and without the guarantee under a baseline scenario.

For the purpose of this report, it is important to quantify asset relief measures in such a way that they can be directly compared to direct capital injections. For two cases (Fortis and ING), the European Commission's assessments of state aid have been used as a proxy (see Annex 2).[16] For Citigroup, the impact of the asset guarantee on regulatory capital has been published (USD 16 bn), which is used to quantify the recapitalisation.[17] One remaining case where asset guarantees were provided (Dexia), has not been included in the recapitalisation metric.[18]

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[14] Exceptions are Dexia and Fortis. In the case of Dexia, existing shareholders – including from the private sector – provided part of the capital support together with the Belgian and French governments, under the same conditions. Therefore, only EUR 3 bn of the EUR 6 bn direct support provided in 2008 has been included in this report's recapitalisation metric. In the case of Fortis, the Dutch government provided capital injections to finance the separation of its ABN Amro stake from the previous ABN Amro group and integrating it with Fortis, which was already planned before the government support measures and was unrelated to losses. About EUR 2.3 bn of the capital injections has therefore not been included in this report's recapitalisation measure for Fortis.

[15] See Boudghene and Maes (2012) for a further explanation of these two types of asset relief.

[16] See European Commission (2009) and Boudghene and Maes (2012) for an explanation of the European Commission's approach to assessing asset relief and associated state aid.

[17] See Citigroup (2008).

[18] In its state aid assessment, the European Commission (2010) has quantified this guarantee within a range of EUR 2.2-4.0 bn, but this number has not been included in the calculations. Prior to the crisis, the portfolio covered by the guarantee was not included in Dexia's banking assets, but was part of an insurance entity regulated in the United States, without an own funds requirement for Dexia. The guarantee was provided to facilitate a sale of Dexia's US insurance division. The

Measuring assets

Losses and recapitalisation measures are presented as a percentage of bank assets. Three definitions of assets are used:

- *Total assets (TA).* This provides figures that can be related to the TLAC leverage ratio denominator requirement.
- *TA excluding derivatives positions.* This is to correct for a difference between IFRS (which includes gross derivatives positions) and US GAAP (which allows netting of derivatives positions).
- *Risk-weighted assets (RWA).* This provides figures that can be related to the RWA TLAC requirements. Unfortunately, RWAs are not available for most US investment banks.

In the baseline results, losses and recapitalisations are expressed as a percentage of assets of the first year of the period over which peak accumulated losses are calculated (in Figure 1, this would be 2007). Alternative approaches – assets one year before the first losses, averages over the entire loss-making period – are investigated as a robustness check.

Caveats

The analysis is subject to a number of caveats, due to practical implementation challenges as well as more conceptual issues:

- *Observations are incomplete.* In some cases, data on total assets are not available for all years. In general, if TA or RWA are missing for a particular year, assets of the preceding year are used as a denominator to present losses and recapitalisations. For the Japanese cases, TCI is not available prior to 2001; net income is used instead for these years. See Annex 3 for an overview of the data for each bank, including adjustments to deal with missing data.
- *Data definitions are not fully consistent across banks or over time.* Different accounting standards are used across jurisdictions: IFRS for European banks, US GAAP for US banks, previous standards in the 1990s for Japanese banks. Regulatory standards have changed over time: most of the RWAs are based on Basel I or Basel II, while for some banks the period considered includes both definitions (see Annex 2). The US investment banks were not subject to the same regulation as other banks. As these inconsistencies are inevitable, calculations are based on the information that is available for each bank. In some cases – like the correction for derivatives to better align total assets for US and non-US banks – alternative calculations are presented to improve consistency.
- *Annual data may not fully pick up quarterly losses.* If a bank starts making losses in, say, the fourth quarter of a year while it made profits in the first three quarters, the overall loss figure is reduced. This has particularly been relevant in 2008, when several banks reported positive earnings in the first half of the year. Peak accumulated

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portfolio was then included in Dexia's RWAs and a first tranche of losses USD 4.5 bn was deducted from Dexia's own funds. In addition, only the buyer (an American monoline insurer), and not Dexia, had the right to be compensated in case of losses. All losses related to this portfolio have been supported by Dexia and have been covered by the capital increases of 2008 and 2012 already taken into account in this report.

losses using quarterly data would therefore lead to higher losses than the figures presented in this report.

- *Several cases are complex and require judgement.* In practice, support measures were often hybrid approaches, combining different measures (direct capital injections as well as asset relief measures) and sometimes involving the private sector.[19] In addition, rescue operations often involved break-ups and mergers of banks, which make it difficult to allocate losses and support measures to individual institutions. In general, private sector involvement has been excluded from the analysis and in cases where different measures were taken simultaneously, their combined impact is considered in order to avoid double-counting.

These caveats need to be taken into account when interpreting the results in this report. For the first two items – missing observations, inconsistent definitions – there are no a priori upward or downward biases. The use of annual data is likely to lead to underestimation of the results. Finally, the use of judgement is applied in a neutral way where possible and conservatively in the case of incomplete information. The overall impact of these caveats are difficult to quantify, but because this report follows a conservative approach the outcomes are likely to be underestimations. Moreover, different definitions and specifications are presented to investigate robustness of the results.

III Results

Figure 4 gives an overview of aggregated public capital support for the entire set of banks since 2008 and for the Japanese banks since 1997, as well as repayments. Nearly all support was provided in the first three years, primarily through capital injections. Interestingly, a significant share of capital support was repaid in 2009, particularly by Citigroup, Bank of America/Merrill Lynch and ING, while in subsequent years repayments were limited. Some banks recovered quickly – and may therefore be considered less relevant from a resolution perspective – while others needed many years to recover. The Japanese banks (Mitsubishi, Mizuho and Sumitomo Mitsui) repaid support over a number of years, with the last repayments in 2006 (see Annexes 2 and 3).

[19] The Dexia (BE, FR, LU) and Fortis (BE, LU, NL) bail-outs involved several governments. Commerzbank merged with Dresdner between two bail-outs; Bear Stearns, Merrill Lynch and Wachovia were taken over by, respectively, JP Morgan, Bank of America and Wells Fargo. The Fortis group was split into parts that merged with BNP Paribas and ABN Amro, while the insurance parts continued independently. See Annex 2 for more information.

Figure 4 Total size of of support measures

Percentages of total assets, aggregated; Japanese banks: 1995-2006

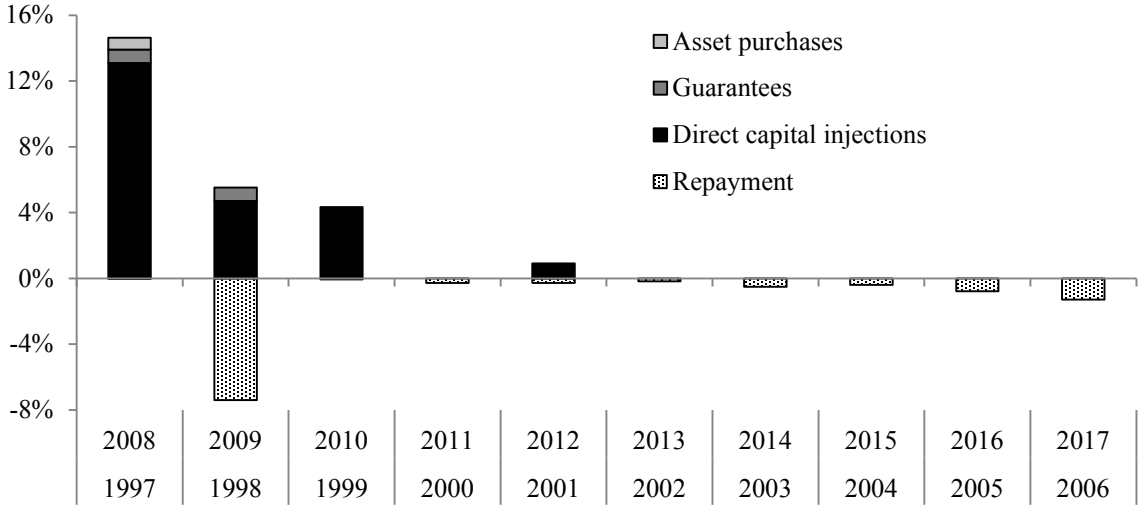

Figure 1 (see introduction) presents for banks in the sample the total amount of losses – measured by TCI – and total recapitalisation, as a percentage of total bank assets. Losses vary from less than one percent (ING, Bank of America, UBS) to almost 5 percent (Wachovia), with most banks in a 2-4 percent range. Recapitalisation was strongest for Fortis, Merrill Lynch, Citigroup, Commerzbank and RBS. Losses and recapitalisation combined totalled almost 9 percent of total assets for Fortis, with most banks in the 4-8 percent range.

If losses and recapitalisations are expressed in terms of RWA rather than TA, the picture changes somewhat (Figure 2). Losses go up to 12-13 percent (Fortis, Dexia), with most other cases in the 4-8 percent range. The combination of losses and recapitalisation is in the 6-15 percent range for most cases, and is highest for Fortis (25 percent) with four banks above 15 percent. As one may expect, losses and recapitalisation are positively related, particularly when they are expressed in terms of RWA (correlation 65 percent) but also in terms of total assets (correlation 44 percent).

Table 1 presents key results for both income definitions and the three measures of assets. In general, the outcomes for TCI and adjusted TCI are very similar, despite substantial differences between both concepts in individual cases (Annex 3). The same holds for total assets including or excluding derivatives: in individual cases this leads to significant differences, but overall, the impact is limited.

Table 1 Losses and recapitalisation as a percentage of assets

Percentage of assets

	TCI			TCI with regulatory adjustments			N
	Min	Interquartile range	Max	Min	Interquartile range	Max	
TA							
Losses	0.4%	1.7% - 4.0%	4.7%	0.5%	1.1% - 4.2%	5.3%	13
Recapitalisation	0.3%	1.3% - 2.9%	4.5%	0.3%	1.3% - 2.9%	4.5%	13
Losses + recap	1.2%	3.9% - 6.1%	8.8%	1.3%	3.0% - 6.1%	8.7%	13
TA excl. derivatives							
Losses	0.4%	1.7% - 4.0%	4.9%	0.5%	1.3% - 4.2%	5.3%	13
Recapitalisation	0.3%	1.3% - 2.9%	5.1%	0.3%	1.3% - 2.9%	5.1%	13
Losses + recap	1.3%	3.9% - 6.1%	10.0%	1.3%	3.9% - 6.1%	10.0%	13
RWA							
Losses	0.6%	3.9% - 7.6%	12.8%	0.7%	2.5% - 6.8%	12.6%	13
Recapitalisation	1.1%	1.8% - 6.1%	12.8%	1.1%	1.8% - 6.1%	12.8%	13
Losses + recap	1.7%	6.1% - 15.3%	25.3%	1.8%	5.9% - 11.7%	25.2%	13

Notes:
TCI = Total Comprehensive Income, TA = total assets, RWA = risk-weighted assets.
Losses are peak accumulated losses; assets measured in first year when losses occurred.
If adjusted TCI and TA are not available, the unadjusted numbers are used.
Bear Stearns and Lehman Brothers are excluded.

Bear Stearns and Lehman Brothers are excluded from the calculations presented in Table 1, as it is hard to find information that is sufficiently consistent with the other banks in this report. These investment banks were not subject to the same regulation as regular banks and therefore did not publish items such as RWAs.[20] Moreover, they stopped reporting as independent going-concern firms before all their losses crystallised. The latter also holds for Wachovia, which published USD 36 bn losses through September 2008 when it was taken over by Wells Fargo, but these losses were revised upwards.[21] Annex 1 considers an alternative specification including tentative numbers for Bear Stearns and Lehman Brothers and the extended losses for Wachovia, which have an upward impact on the numbers presented in Table 1. A further discussion on investment banks' losses is presented in Box 3.

[20] An exception is Merrill Lynch, for which RWAs are available for 2008.

[21] Wells Fargo reported that it would write down USD 74 bn in losses on Wachovia at the time of the merger.

Box 3 US investment banks

The US investment banks in this report's sample (Lehman Brothers, Bear Stearns and Merrill Lynch) went bankrupt or were taken over by other banks. While the inclusion of these banks is important in order to avoid survivorship bias and ensure that the sample is diverse, data issues prevent their results from being included with the general sample of banks (with the exception of Merrill Lynch). The investment banks suffered large losses, and disappeared as independent firms before all their losses materialised. In addition, they were not regulated as regular banks and did not publish some of the information (e.g. RWA) that has been used for this report.

In the case of Lehman Brothers, creditor losses *after* bankruptcy – USD 218 bn, about one third of total assets – have been extremely large.[a] From the perspective of this report, it should be acknowledged that most of these losses crystallised in a gone-concern situation. They do illustrate, however, the scale of damage of a disorderly resolution process, which is what TLAC and resolution regimes aim to contain in the future. There is information about (potential) loss assessments prior to Lehman's failure. In August 2008, Bank of America conducted a due diligence and identified USD 65 bn of assets it did not want to acquire at any price. In September 2008, Barclays identified USD 52 bn in overvalued assets. Just before Lehman's failure, it was estimated that its market value – USD 60 bn early 2007 – had been fully wiped out.

Overview assessments of losses

Lehman Brothers	
Writedowns:	**USD 5.6 bn** written down in September 2008, ex post valuation **USD 21 bn**
Due diligence:	Bank of America, August 2008: **USD 65 bn** (bad assets: CRE, residential mortgages)
	Barclays, September 2008: **USD 52 bn** (bad assets: CRE)
Capital erosion:	Strah et al. (2010): **610 bp RWA losses** (T1 common capital erosion)
Gone concern:	**USD 218 bn** (estimated losses as of March 2014)
Bear Stearns	
Equity losses	**USD 9.4 bn** equity losses
Capital erosion:	Strah et al. (2010): **358 bp RWA losses** (T1 common capital erosion)

While it is not possible to assess what Lehman's losses would have been on a going concern basis, the numbers mentioned above provide some benchmarks. It would likely have been rather more than the USD 21 bn ex post valuation of losses. One could argue that a significant share of the USD 63 and 52 bad assets would have been lost – Bank of America did not want these assets at any price, even before the crisis intensified in September 2008. The overall USD 60 bn loss in market value would be an indirect estimate of the going concern losses, while the USD 218 bn of gone-concern losses are extremely large but based on a situation TLAC is designed to help address. Annex 1, which presents a number of alternative specifications, includes an extension to the baseline analysis with Lehman Brothers (assuming USD 50 bn losses) and Bear Stearns (assuming USD 9.4 bn losses).

[a] See Fleming and Sarkar (2014).

IV Concluding remarks

As indicated in the introduction, this report is part of the TLAC impact assessment, which provides input to ensure that G-SIBs are resolvable without public funds. The report is factual and does not draw policy conclusions.

The report does not take into account the impact of support measures other than capital injections. Massive liquidity support by central banks and bank funding guarantees by governments were crucial, ensuring banks' ability to finance themselves at reasonable costs and avoid fire sales, which would have further eroded capital during the crisis. Nonetheless, liquidity support and funding guarantees were excluded because their relationship with loss avoidance is hard to quantify and because these measures are outside the direct scope of TLAC.

Part of the historical cases could not be quantified in a sufficiently reliable way, so these are not included in the baseline results. Some tentative numbers are presented separately (see Box 3 and Annex 1), to give some idea about how these would affect the outcomes. In addition, several definitions of losses and balance sheet data are presented to check the robustness of the main results.

Finally, it should be acknowledged that the historical cases took place under regulatory frameworks that have changed significantly in recent years. Stricter requirements on prudent valuation in resolution imply that historical cases may underestimate losses compared to how these would be established under the current rules.[22] At the same time, the increased risk weights under Basel III would reduce losses and recapitalisation in terms of RWAs, as measured under the previous standards. Banks are better capitalised and macro-prudential tools – including capital buffers – have been developed, which should increase banks' ability to deal with a crisis and contain losses. Better instruments for orderly resolution – including TLAC – will further improve the resilience of the financial system.

[22] For instance, in Europe the BRRD requires valuation on a prudent basis, which departs from accounting rules.

References

Basel Committee on Banking Supervision (BCBS) (2010a), Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach, (http://www.bis.org/publ/bcbs180.pdf).

Basel Committee on Banking Supervision (BCBS) (2010b), Basel III: a global regulatory framework for more resilient banks and banking systems, (http://www.bis.org/publ/bcbs189.pdf).

Basel Committee on Banking Supervision (BCBS) (2010c), Results from the comprehensive quantitative impact study, (http://www.bis.org/publ/bcbs186.pdf).

Boudghene, Y., and S. Maes (2012), Empirical review of EU asset relief measures in the period 2008-2012, European State Aid Law Quarterly, pp. 31-44, (http://ec.europa.eu/dgs/competition/economist/relief_measures_en.pdf)

Citigroup (2008), Citi adds $40 Billion of Capital Benefit through Agreement with U.S. Treasury, Federal Reserve, and FDIC, press release, November 24, (http://www.citigroup.com/citi/press/2008/081124a.htm)

European Commission (2009), Communication from the Commission on the treatment of impaired assets in the Community banking sector, (http://ec.europa.eu/competition/state_aid/legislation/impaired_assets.pdf)

European Commission (2009b), State aid N 255/2009 – Belgium, and N 274/2009-Luxembourg. Additional aid for Fortis Banque, Fortis Banque Luxembourg and Fortis Holding, (http://ec.europa.eu/competition/state_aid/cases/231121/231121_1040770_72_1.pdf)

European Commission (2009c), Commission decision on the state aid implemented by the Netherlands for ING's Illiquid Assets Back-Up Facility and Restructuring Plan, 18 November 2009 (http://ec.europa.eu/competition/state_aid/cases/230724/230724_1071446_207_1.pdf)

European Commission (2010), Commission decision on state aid implemented by the Kingdon of Belgium, the French Republic and the Grand Duchy of Luxembourg for Dexia SA, (http://ec.europa.eu/competition/state_aid/cases/230284/230284_1128904_285_1.pdf)

European Commission (2011), Commission decision on the measures implemented by Dutch State for ABN AMRO Group NV (created following the merger between Fortis and ABN AMRO), (http://ec.europa.eu/competition/state_aid/cases/230806/230806_1235915_338_2.pdf)

European Commission (2012), Impact Assessment BRRD directive, (http://ec.europa.eu/internal_market/bank/docs/crisis-management/2012_eu_framework/impact_assessment_final_en.pdf)

Financial Stability Board (2015), Implementation and effects of the G20 financial regulatory reforms, Report of the Financial Stability Board to the G20 Leaders, (http://financialstabilityboard.org/wp-content/uploads/Report-on-implementation-and-effects-of-reforms-final.pdf)

Fleming, M.J., and A. Sarkar (2014), The failure and resolution of Lehman Brothers, Federal Reserve Bank Of New York Economic Policy Review, December, pp. 175-206, (http://www.ny.frb.org/research/epr/2014/1412flem.pdf)

Independent Commission on Banking (2011), Final report – recommendations, http://webarchive.nationalarchives.gov.uk/20131003105424/https:/hmt-sanctions.s3.amazonaws.com/ICB%20final%20report/ICB%2520Final%2520Report%5B1%5D.pdf

Levy, A., and A. Zaghini, The pricing of government-guaranteed bank bonds, Banca d'Italia Working Papers, No. 753, (http://www.bancaditalia.it/pubblicazioni/temi-discussione/2010/2010-0753/en_tema_753.pdf)

Sharman Inquiry (2012), Going concern and liquidity risks: lessons for companies and auditors, final report, (https://www.frc.org.uk/getattachment/591a5e2a-35d7-4470-a46c-30c0d8ca2a14/Sharman-Inquiry-Final-Report.aspx).

Strah, S., J. Hynes and S. Shaffer (2013), The impact of the recent financial crisis on the capital positions of large US financial institutions: an empirical analysis, Federal Reserve Bank of Boston, (http://www.bostonfed.org/bankinfo/capital-positions/capital-positions-large-financial-institutions.pdf)

Annex 1 Alternative specifications

This Annex presents the outcomes of alternative specifications, as a robustness check for our baseline results.

Alternative sets of banks

Tables A1 and A2 present the same analysis as Table 1 in the main text, for alternative sets of banks:

- Table A1 extends the sample by including Bear Stearns and Lehman Brothers. In both cases, information on historical losses must be approximated (see Box 3). In addition, the sample includes higher losses for Wachovia (USD 74 bn instead of USD 36 bn TCI), based on Wells Fargo's write-down of Wachovia's assets at the time of the merger.
- Table A2 excludes the Japanese cases, which are older and partly based on definitions that are different from the rest of the sample.

Table A1 shows that the greatest impact is on maximum losses in the set of banks, which is primarily due to Wachovia's high loss number (the highest in the sample in terms of TA). Average numbers for official support decline somewhat, as Bear and Lehman did not receive any capital support. Overall, the average combination of losses and recapitalisation increases 0.3-0.5 percentage points. Table A2 shows that the exclusion of Japanese banks has only a limited impact on the overall results: minimum and maximum values are unaffected, while averages in RWA terms increase up to 0.7 percentage points.

Alternative TA and RWA specifications

Tables A3 and A4 present two alternative specifications of the denominator (assets):

- Instead of taking assets from the first year of losses, the results presented in Table A3 are based on the maximum assets in either that year or the preceding year. This is to ensure that the denominator is not biased downwards by a decline in assets, for instance as a result of a recovery or resolution processes during the year.
- Table A4 presents results using the average of assets over all years included in the calculation of peak cumulated losses. This is to acknowledge that for banks with shrinking (expanding) balance sheets, ongoing losses become more (less) of a burden over time.

By construction, the values in Table A3 are all smaller than (or at most equal to) those in Table 1. The main deviations are the maximum values. This is primarily due to Fortis, which had significantly more assets in 2007 than in 2008 while it is also one of the banks with the highest amount of losses and state aid. The values in Table A4 result in adjustments in both directions, but mostly in the upward direction, especially for the adjusted TCI and for the RWA denominator.

Table A1 Including Bear, Lehman and (adjusted) Wachovia

Percentage of assets

	TCI			TCI with regulatory adjustments			N
	Min	Interquartile range	Max	Min	Interquartile range	Max	
TA							
Losses	0.4%	2.0% - 4.1%	9.7%	0.5%	1.1% - 4.2%	9.7%	15
Recapitalisation	0.0%	1.0% - 2.6%	4.5%	0.3%	1.3% - 2.9%	4.5%	13
Losses + recap	1.2%	3.1% - 6.5%	11.0%	1.3%	3.0% - 6.1%	11.0%	15
TA excl. derivatives							
Losses	0.4%	2.0% - 4.1%	9.7%	0.5%	1.3% - 4.2%	9.7%	15
Recapitalisation	0.0%	1.0% - 2.8%	5.1%	0.3%	1.3% - 2.9%	5.1%	13
Losses + recap	1.3%	3.1% - 7.3%	11.0%	1.3%	3.9% - 6.1%	11.0%	15
RWA							
Losses	0.6%	3.9% - 8.8%	12.8%	0.7%	2.5% - 11.0%	12.6%	13
Recapitalisation	1.1%	1.8% - 6.1%	12.8%	1.1%	1.8% - 6.1%	12.8%	13
Losses + recap	1.7%	6.1% - 15.3%	25.3%	1.8%	5.9% - 14.4%	25.2%	13

Notes:

Note: see Table 1. Included are Bear Stearns and Lehman Brothers with proxies for losses of, respectively, USD 9.4 bln and USD 50 bln. For Wachovia, a USD 74 bln loss has been included.

Table A2 Losses and recapitalisation: excluding Japanese banks

Percentage of assets

	TCI			TCI with regulatory adjustments			N
	Min	Interquartile range	Max	Min	Interquartile range	Max	
TA							
Losses	0.4%	1.2% - 3.9%	4.7%	0.5%	0.8% - 4.1%	5.3%	10
Recapitalisation	0.3%	1.3% - 2.9%	4.5%	0.3%	1.3% - 2.9%	4.5%	10
Losses + recap	1.2%	2.6% - 5.9%	8.8%	1.3%	2.2% - 6.4%	8.7%	10
TA excl. derivatives							
Losses	0.4%	1.3% - 4.0%	4.9%	0.5%	1.2% - 4.6%	5.3%	10
Recapitalisation	0.3%	1.4% - 3.1%	5.1%	0.3%	1.4% - 3.1%	5.1%	10
Losses + recap	1.3%	2.7% - 6.7%	10.0%	1.3%	2.5% - 6.4%	10.0%	10
RWA							
Losses	0.6%	3.7% - 8.5%	12.8%	0.7%	2.5% - 10.0%	12.6%	10
Recapitalisation	1.1%	2.4% - 6.4%	12.8%	1.1%	2.4% - 6.4%	12.8%	10
Losses + recap	1.7%	7.6% - 15.3%	25.3%	1.8%	7.9% - 16.1%	25.2%	10

Note: see Table 1. Excluded are Mitsibishi, Mizuho, Sumitomo Mitsui.

Table A3 Maximum assets first year or preceding year

Percentage of assets

	TCI			TCI with regulatory adjustments			N
	Min	Interquartile range	Max	Min	Interquartile range	Max	
TA							
Losses	0.4%	1.7% - 3.4%	4.6%	0.5%	1.0% - 3.4%	5.1%	13
Recapitalisation	0.3%	1.3% - 2.8%	3.4%	0.3%	1.3% - 2.8%	3.4%	13
Losses + recap	1.2%	3.9% - 5.9%	7.0%	1.3%	3.0% - 6.1%	8.0%	13
TA excl. derivatives							
Losses	0.4%	1.7% - 3.6%	4.6%	0.5%	1.2% - 3.6%	5.1%	13
Recapitalisation	0.3%	1.3% - 2.8%	3.5%	0.3%	1.3% - 2.8%	3.5%	13
Losses + recap	1.3%	3.9% - 6.1%	7.0%	1.3%	3.9% - 6.1%	8.0%	13
RWA							
Losses	0.6%	3.8% - 7.6%	12.8%	0.7%	2.5% - 6.8%	12.6%	13
Recapitalisation	1.1%	1.8% - 5.4%	9.7%	1.1%	1.8% - 5.4%	9.7%	13
Losses + recap	1.7%	5.9% - 15.3%	19.0%	1.8%	5.9% - 10.2%	19.0%	13

Note: see Table 1.

Table A4 Average assets over entire loss window

Percentage of assets

	TCI			TCI with regulatory adjustments			N
	Min	Interquartile range	Max	Min	Interquartile range	Max	
TA							
Losses	0.4%	1.7% - 4.2%	4.9%	0.5%	1.7% - 4.2%	6.1%	13
Recapitalisation	0.3%	1.3% - 3.1%	4.5%	0.3%	1.3% - 3.1%	4.5%	13
Losses + recap	0.4%	1.7% - 4.2%	4.9%	1.3%	1.7% - 4.2%	9.6%	13
TA excl. derivatives							
Losses	0.4%	1.7% - 4.7%	5.3%	0.5%	1.7% - 4.7%	6.1%	13
Recapitalisation	0.5%	1.3% - 3.1%	5.4%	0.4%	1.3% - 3.1%	5.5%	13
Losses + recap	0.4%	2.5% - 4.9%	10.7%	1.3%	2.5% - 4.9%	10.0%	13
RWA							
Losses	0.6%	4.1% - 10.2%	16.6%	0.7%	4.1% - 10.2%	19.3%	13
Recapitalisation	1.1%	1.9% - 6.9%	12.8%	1.1%	1.9% - 6.9%	12.8%	13
Losses + recap	1.7%	6.4% - 18.5%	25.3%	1.8%	6.4% - 18.5%	27.4%	13

Note: see Table 1.

Annex 2 Description of individual cases

Bank of America

- Along with Citigroup and seven other financial institutions (not including Merrill Lynch), Bank of America became one of the first recipients of Troubled Asset Relief Program (TARP) funds through the Capital Purchase Program ("CPP"). Having agreed to purchase Merrill Lynch prior to receiving CPP funds, Bank of America received TARP funds in two stages: USD 15 bn in preferred equity capital in 2008 and another USD 10 bn in January 2009 to support the bank's acquisition of Merrill Lynch.
- In January 2009, upon the close of the Merrill Lynch purchase, after the banking industry experienced tremendous losses in fourth quarter of 2008, the U.S. Treasury extended an additional USD 20 bn to Bank of America as part of the Targeted Investment Program (TIP), as Merrill Lynch had suffered severe losses throughout 2007 and 2008. At the same time, to help restore confidence, the U.S. Treasury, the FDIC, and the Federal Reserve Board agreed to share losses with Bank of America on a designated pool of assets valued at USD 118 bn through the Asset Guarantee Program (AGP). The pool was made up of mostly (~75%) Merrill Lynch assets, with Bank of America agreeing to absorb the first USD 10 bn of losses. However, while the AGP term sheet was negotiated in January 2009, the final agreement was not completed and the program was terminated in March.
- Bank of America recorded USD 4 bn of net income and a USD 7.9 bn total comprehensive loss in the fourth quarter of 2008, primarily due to USD 8.5 bn of unrealised losses on available-for-sale securities. These unrealised losses affect the overall financial status of the firm and are indicative of the additional losses that could have been experienced had the crisis continued without official sector intervention.
- Bank of America reported total equity of USD 177 bn in 2008, after recording the original USD 15 bn CPP investment, and USD 231.4 bn in 2009, in which it received the additional USD 30 bn TARP investment (USD 10 bn of CPP and USD 20 bn of TIP related to Merrill Lynch)
- The agencies participating in the government assistance have wound down the assistance and exited the program. Bank of America repaid all USD 45 bn of TARP on 23 December 2009.

Bear Stearns

- In June 2007, Bear Stearns pledged a collateralised loan of around USD 3.2 bn to stop the deterioration of its High Grade Structured Credit Strategies Fund. It also was negotiating with other lenders to lend additional money to another fund – Bear Stearns High Grade Structured Credit Enhanced Leverage Fund. Both funds were invested almost exclusively in very thinly traded collateralised debt obligations. As the market downturn accelerated the funds experienced billions of dollars in losses on securities that were unmarketable.
- 15 June 2007, The Wall Street Journal reports a hedge fund run by Bear Stearns has suffered big losses on soured subprime mortgage investments.
- 31 July 2007, Bear Stearns liquidates two of its hedge funds. Both had traded in collateralised debt obligations (CDOs) and had lost nearly all of their value due to the rapidly declining subprime mortgage market.
- In September 2007, Bear Stearns reported just over a 60% fall in net profits due to hedge fund losses.
- 4th Quarter 2007, Bear Stearns reports its first-ever quarterly loss, driven by USD 1.9 bn of bad debt write-downs.
- On 10 March 2008, Bear Stearns stock starts to fall on rumours the company is running out of cash.

- On 14 March 2008, the Federal Reserve Bank of New York agreed to provide an emergency USD 25 bn collateralised loan through JPMorgan Chase to provide to liquidity to Bear Stearns for 28 days. The announcement of the emergency liquidity provision failed to calm markets, however, and the Federal Reserve instead moved to facilitate a merger of the company with JP Morgan Chase.
- Two days later on 16 March 2008, Bear Stearns signed a merger agreement with JP Morgan Chase in a stock swap for USD 2 per share, which was less than 10% of Bear Stearns' market value just two days before and down from the USD 172 price per share the firm's stock traded at in January 2007.
- The merger with JP Morgan Chase was facilitated by a guarantee of USD 30 bn on Bear Stearns' assets by the Federal Reserve Bank of New York; JP Morgan Chase assumed the first USD 1 bn in losses on the assets.

Citigroup

- On 28 October 2008, Citigroup and eight other financial institutions became the first recipients of Troubled Asset Relief Program (TARP) funds through the Capital Purchase Program ('CPP'). This provided Citigroup with an additional USD 25 bn in preferred equity capital. Subsequently, Citigroup suffered a significant outflow of deposits, primarily in the United States, but also internationally, making it difficult to continue to fund day-to-day operations.
- On 23 November 2008, the Federal Reserve Board and the Board of Directors of the FDIC voted to recommend to the Secretary of the Treasury that the potential failure of Citigroup would pose a systemic risk to the U.S. and global economies. The agencies announced a package of additional actions and support that would be provided to Citigroup. The package, as agreed, included loss-sharing agreements on a pool of assets ('ring-fenced assets'), the issuance and purchase of an additional USD 20 bn preferred equity and the issuance of common equity warrants.
- Citigroup recorded a USD 27.7 bn loss, net of applicable taxes and extraordinary items, during the calendar year 2008. Affecting the overall financial status (and indicative of the additional losses that could have been experienced had the liquidity crisis continued), was a USD 17 bn unrealised loss in market value on AFS securities and mark-to-market derivative values during 2008.
- Citigroup reported total equity of USD 98.4 bn as of 31 December 2008, excluding the government-owned preferred equity that was associated with the support furnished to Citigroup.
- The agencies participating in the government assistance have wound down the assistance and exited the programs. Ultimately, private shareholders of the parent company, Citigroup, suffered a decline in the value of their shares. Overall, the U.S. government recovered the USD 45 bn of funds directly provided to Citigroup.

Commerzbank

- Commerzbank received two capital injections from the German state (via the special fund SoFFin[23]) at the end of 2008 and in spring 2009 totalling EUR 18.2 bn (EUR 16.4 bn participation rights and EUR 1.8 bn share capital).
- In May 2009, between the two bail-outs, Commerzbank merged with Dresdner Bank – the balance sheet information given therefore refers to a pro-forma balance sheet for both groups together at the end of 2008. As of 31 December 2008, the total balance sheet size was EUR 1,046 bn.

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[23] The Federal Agency for Financial Market Stabilisation (FMSA) and the Financial Market Stabilisation Fund (SoFFin) were established on 18 October 2008 when the Financial Market Stabilisation Fund Act entered into force. SoFFin's purpose was to stabilise the financial system in Germany.

- In January 2009, Commerzbank placed a government-guaranteed bond of EUR 5.0 bn with a maturity of 3 years.
- Commerzbank reported losses in 2008 and 2009 with the peak at EUR 6.5 bn in 2008. The losses were initially completely absorbed by state aid. In order to raise the funds necessary to repay the participation capital, Commerzbank conducted two share issuances in 2011 and 2013. These share issuances, together with the share subscription of the German government (SoFFin), led to a 96% dilution of previous shareholders, practically wiping them out. SoFFin's silent participation in Commerzbank has been fully repaid on 31 May 2013. As of April 2015, SoFFin remains a 15.6% shareholder of Commerzbank.

Dexia

- Dexia was a financial group active in the banking and insurance sectors. The parent company, Dexia SA, is incorporated as a limited company under Belgian law and listed on the Euronext Paris and Euronext Brussels stock exchanges. Dexia was formed in 1996 by the merger of France's Crédit Local and Belgium's Crédit communal. It specialised in loans to local authorities but also had 5.5 million private customers, mainly in Belgium and in Turkey, via its local subsidiary DenizBank.
- Dexia was organised around a parent holding company (Dexia SA) and three operational entities located in France (Dexia Crédit Local, 'DCL'), Belgium ('DBB') and Luxembourg (Dexia Banque Internationale à Luxembourg, 'Dexia BIL'). Whereas the total balance sheet of the group was EUR 651 bn at 31 December 2008, that of the three operational entities was:
  - EUR 414 bn for DCL;
  - EUR 263 bn for DBB;
  - EUR 67 bn for Dexia BIL.
- On 30 September 2008, the Dexia Group proceeded with a capital increase of EUR 6 bn, subscribed by the French and Belgian States, Belgian regional governments and historical public and private shareholders.
- On 9 October 2008, Belgium, France and Luxembourg jointly undertook to guarantee, from 9 October 2008 to 31 October 2009, the new interbank and institutional financing and new bond financing, with a maximum maturity of three years, raised by Dexia SA, Dexia BIL, DCL and DBB. The guarantee initially covered bond liabilities amounting to a maximum of EUR 150 bn in the proportion of 60.5% for Belgium, 36.5% for France and 3% for Luxembourg. The guarantee was extended until February 2010, but its amount was reduced to 100 bn EUR.
- The maximum amount of Dexia's bond liabilities covered by the guarantee comes to EUR 95.9 bn at 27 May 2009.
- In order to facilitate the sale of FSA, a US monoline insurer that was a subsidiary of Dexia, to Assured Guaranty, the Belgian and French Governments provided a guarantee on a USD 16.98 bn of assets. Those assets essentially comprised securities linked to the US real estate sector. A first loss tranche of USD 4.5 bn was to be supported by Dexia. This amount has been deducted from the prudential own funds of Dexia, regardless to the actual amount of losses supported by Dexia.
- The FSA guarantee was wound down in 2011 without any losses for the States.
- Finally, a capital increase of EUR 5.5 bn entirely subscribed by the French and Belgian States took place in 2012. Following this, the Dexia group was put into run off, with the retail banking subsidiaries being sold.

Fortis

- The Fortis group was a financial conglomerate with banking and insurance activities, headquartered in Belgium and listed in Belgium and the Netherlands. In 2007, Fortis acquired the

Dutch bank ABN Amro, together with RBS and Santander. This consortium planned to split up ABN Amro in three parts, of which the Dutch activities would be integrated in the Fortis group.

- In September 2008, a direct capital injection was provided by the Belgian, Dutch and Luxemburg governments, who provided EUR 11.2 bn for a 49 percent stake. In October, this was followed by a series of measures that effectively led to a break-up of the Fortis group. The Dutch subsidiaries (Fortis Bank Nederland including its stake in ABN Amro, as well as insurer ASR) were sold to the Dutch government. Most of the Belgian bank (Fortis SA/BV) was sold to BNP Paribas, a bad bank was created for a portfolio of toxic assets (Royal Park Investments), and most of the remaining insurance activities continued in a separate entity under a new name (Ageas).
- Subsequent support – both direct and indirect – was provided by the Belgian and Dutch governments to the separated group entities. Only those recapitalisation measures are included that are considered state aid by the European Commission.[24] This is because some measures also (partly) involved the private sector – particularly BNP Paribas – or were carried out by the state in its role as investor.[25]
- Direct support measures:
  - The EUR 11.2 bn direct capital injection by the Belgian, Dutch and Luxembourg governments in return for a 49% stake is fully taken into account. The same holds for the Belgian purchase of the remaining 51% stake in the Belgian activities (EUR 4.7 bn).
  - Further measures by Belgium and Luxembourg in October and December 2008 are classified as direct support, as they do not have elements of asset guarantees or purchases. These are an increase in the Belgian state's contribution to the bad bank, a right granted by the state to Fortis holding to purchase BNP Paribas shares at a pre-specified price (i.e. a call option) and a conversion of debt instruments held by Luxembourg into shares. Together, these measures amount to EUR 0.89 bn. Direct capital support by the Netherlands in 2010 to the Dutch activities of Fortis it acquired amount to EUR 3.08 bn.
  - Total direct support: 11.2 + 4.7 + 4.0 = EUR 19.9 bn.
- Indirect support measures :
  - The Belgian government took four asset relief measures in October 2008, which are quantified as EUR 2.6 bn in total.[26] Three of these may also be seen as funding guarantees – which are not in the scope of this report – but because the beneficiaries are also (previous) Fortis entities, they are interpreted as asset guarantees.
  - In October 2008, The Dutch government acquired ABN Amro from Fortis Netherlands for EUR 6.5 bn by waiving a loan it provided to Fortis at an earlier stage, which can be considered an asset purchase. The European Commission's state aid assessment for this transaction was a EUR 0-3.65 bn range, taking into account that the loan had already been assessed as state aid. Because this report only considers capital support and not the provision of loans, the upper limit of this range is used as a measure of support (acknowledging that the numbers would be higher if the support was provided immediately in the form of capital support).
  - Total support through asset relief measures: 2.6 + 3.7 = EUR 6.3 bn.
- Total support provided to entities of the former Fortis group: 19.9 + 6.3 = EUR 26.2 bn.

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[24] See European Commission (2009b, 2011).

[25] The Dutch government provided capital to cover the costs of separating its ABN Amro stake from the previous ABN Amro Group and integrating it with Fortis Nederland, a project that already started before the public support measures. A private owner would also have covered these costs (and may have raised it on the capital market). This means that EUR 2.6 bn of capital injections to Fortis have not been included in this report's recapitalisation measure.

[26] The amount of EUR 2.6 bn is the midpoint of the EUR 1.5-3.7 bn range assessed by the European Commission.

ING

- In October 2008, the Dutch government provided a EUR 10 bn capital injection to ING.[27] This was done under a government facility to provide capital to "sound and viable financial institutions that are facing unexpected external shocks". The government received securities that qualified as core Tier 1 capital instruments.
- In January 2009, the Dutch state granted a back-up facility to ING, which provided a guarantee to the bank's Alt-A mortgage portfolio in the US.[28] The value of this portfolio had just been adjusted from USD 39 to USD 35.5 bn. The state and ING shared profits and losses on the basis of an 80 (state) to 20 (ING) percent ratio. As a compensation, ING pays a guarantee fee. In line with the European Commission's assessment, the measure is considered equivalent to EUR 5 bn capital support in this report.[29]
- ING has repaid all state support.

Lehman Brothers

- On 17 March 2008, Lehman Brothers stock falls 48 percent on market concern that it would be the next Wall Street firm to collapse. The following day, short pressure lets up as the firm reports a first quarter profit of USD 489 million.
- On 9 June 2008, Lehman revealed that it had booked USD 17 bn in write-downs since 2007, and had a loss of USD 2.8 bn for the quarter. Since the start of the crisis, Lehman's gross assets had decreased by USD 130 bn. Lehman, however, was able to raise USD 6 bn in capital in June. This followed the issuance of USD 4 bn in new capital in April. Lehman's stock lost over 70% of its value in the first half of 2008.
- Following the second quarter results, management changes were made, including the resignation of both the COO and CFO.
- In August, shares started rebounding on news that the Korean Development Bank was considering purchasing the firm. On 9 September 2008, the potential deal was put on hold and Lehman's stock fell 50% due to eroding investor confidence.
- The following day, Lehman announced a USD 3.9 bn loss and its intent to sell off a majority stake in its investment management business. On 11 September 2008 Lehman's stock fell another 40%.
- During the weekend of 13 September 2008, Lehman reported it had been in talks with Bank of America and Barclays for the company's possible sale. However, both firms declined. On Monday, 15 September 2008 Lehman announced it would file Chapter 11 bankruptcy. In September, Lehman reported USD 5.6 bn in write-downs.
- After bankruptcy creditor losses amounted to USD 218 bn, about one-third of Lehman's total assets.

Merrill Lynch & Co.

- After recording annual net loss of USD 8.6 bn in 2007, Merrill Lynch continued to suffer from quarterly losses throughout 2008. After the failure of Lehman Brothers, Merrill Lynch, on 13 September 2008, began merger negotiations with Bank of America. Within two days, the two

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[27] See press release *Government reinforces ING's core capital by EUR 10 billion*, http://www.dnb.nl/en/news/news-and-archive/persberichten-2008/dnb189474.jsp,

[28] See press release *Dutch State grants ING back-up facility,* http://www.dnb.nl/en/news/news-and-archive/persberichten-2009/dnb211503.jsp.

[29] See European Commission (2009c).

firms agreed and publically announced they would merge with the deal receiving Federal Reserve approval on 26 November 2008.

- As Bank of America conducted due diligence on the firm, Merrill Lynch continued to suffer increasing losses during the fourth quarter of 2008. On 19 December 2008, Bank of America informed the Federal Reserve of additional losses discovered at Merrill Lynch, which totalled USD 15.3 bn (after tax) for that quarter.
- In addition to the USD 8.6 bn loss in 2007, Merrill Lynch reported a USD 27.6 bn net loss for 2008. Peak loss experienced was USD 36.2 bn, as the firm recorded a quarterly profit in the first quarter of 2009.
- The deal between Bank of America and Merrill Lynch closed on 1 January 2009. While Merrill Lynch never directly received Troubled Asset Relief Program (TARP) funds, USD 10 bn of the USD 25 bn Capital Purchase Program (CPP) funds ultimately provided to Bank of America was for Merrill Lynch within days of closing the deal.
- Merrill Lynch reported shareholders' equity of USD 20 bn as of 31 December 2008, down ~40% from 2007.

Mitsubishi UFJ

- The Mitsubishi UFJ Financial Group has the Bank of Tokyo-Mitsubishi UFJ as a bank subsidiary, which was established in 2006 through the merge of the Bank of Tokyo-Mitsubishi and UFJ Bank. The UFJ Bank was established in 2002 through the merge of the Sanwa Bank and the Tokai Bank.
- The Mitsubishi UFJ Financial Group has also the Mitsubishi UFJ Trust and Banking Cooperation, which was established through the merger of The Mitsubishi Trust and Banking Corporation and UFJ Trust Bank in 2005. The Mitsubishi Trust and Banking Corporation was established through the merger between the Mitsubishi Trust and Banking Corporation, the Nippon Trust and Banking Corporation and the Tokyo Trust Bank in 2001. The UFJ Trust Bank was reformed through the change in business name from the Toyo Trust Bank in 2002.
- The consolidated pro-forma P&L accounts of the Mitsubishi UFJ shows losses started in 1997 until 2004, and peaked in 2000 at JPY 1.2 tn.
- In order to cope with the situation in the late 1990s where the confidence in Japanese financial system has been shaken, the government decided to use public funds to help restore the strengthen of financial institutions, restore confidence in financial institutions both at home and abroad and normalise financial functions in Japan.
- In March 1998, Japanese authority injected JPY 400 bn as follows.
  - The Bank of Tokyo-Mitsubishi: JPY 100 bn (subordinated bond)
  - The Mitsubishi Trust and Banking Corporation: JPY 50 bn (subordinated bond)
  - The Sanwa Bank: JPY 100 bn (subordinated bond)
  - The Tokai Bank: JPY 100 bn (subordinated loan)
  - The Toyo Trust Bank: JYP 50 bn (subordinated bond)
- In March 1999, Japanese authority injected JPY 1.8 tn as follows.
  - The Mitsubishi Trust and Banking Corporation: JPY 200 bn (preferred share), JPY 100 bn (subordinated bond)
  - The Sanwa Bank: JPY 600 bn (preferred share), JPY 100 bn (subordinated bond)
  - The Tokai Bank: JPY 600 bn (preferred share)
  - The Toyo Trust Bank: JPY 200 bn (preferred share)
- The Mitsubishi UFJ has repaid all of these funds by June 2006.

Mizuho

- The Mizuho Financial Group has the Mizuho Bank as a bank subsidiary, which was established in 2013 through the merge of the Mizuho Bank and Mizuho Corporate Bank. The two banks were established in 2002, following the consolidation and reorganisation of the Dai-Ichi Kangyo Bank, the Fuji Bank, and the Industrial Bank of Japan.
- The Mizuho Financial Group has also the Mizuho Trust and Banking Corporation. The Mizuho Asset Trust and Banking, which changed the business name from the Yasuda Trust and Banking Corporation in2002, was merged into the Mizuho Trust and Banking Corporation in 2003.
- The consolidated pro-forma P&L accounts of the Mizuho shows losses started in 1997 until 2004, and peaked in 2004 at JPY 2.5 tn.
- In order to cope with the situation in the late 1990s where the confidence in Japanese financial system has been shaken, the government decided to use public funds to help restore the strengthen of financial institutions, restore confidence in financial institutions both at home and abroad and normalise financial functions in Japan.
- In March 1998, Japanese authority injected JPY 449 bn as follows:
  - The Dai-Ichi Kangyo Bank: JPY 99 bn (preferred share)
  - The Fuji Bank: JPY 100 bn (subordinated bond)
  - The Industrial Bank of Japan: JPY 100 bn (subordinated bond)
  - The Yasuda Trust and Banking Corporation: JPY 150 bn (subordinated bond)
- In March 1999, Japanese authority injected JPY 2.5 tn as follows:
  - The Dai-Ichi Kangyo Bank: JPY 700 bn (preferred share), JPY 200 bn (subordinated loan)
  - The Fuji Bank: JPY 800 bn (preferred share), JPY 200 bn (subordinated bond)
  - The Industrial Bank of Japan: JPY 350 bn (preferred share), JPY250 bn (subordinated bond)
- The Mizuho has repaid all of these funds by July 2006.

RBS

- The deterioration of the global financial system, which started mid-2007 significantly accelerated after the bankruptcy filing by Lehman Brothers in September 2008. This led to severe dislocation of financial markets and unprecedented levels of illiquidity, to which RBS was particularly exposed.
- RBS took a series of steps during 2008 to restore its capital base. A capital raising was carried out in the spring which involved a GBP 12 bn rights issue. It was completed in June 2008. RBS also made two material disposals during 2008, with the sale of Angel Trains Group and its 50% interest in the Tesco Personal Finance JV.
- Despite such measures, RBS reported a GBP 34.5 bn loss in 2008 and has made further losses in every year since (up to 2014).
- RBS's recapitalisation was announced on 13 October 2008 by the UK Government and completed, in the form of both ordinary shares and preference shares, on 1 December 2008. The State injected approximately GBP 15 bn into RBS through the acquisition of ordinary shares. This gave it a 58% stake in the company. On the same day it subscribed to GBP 5 bn of preference shares.
- On 26 February 2009 the UK authorities and RBS announced a new aid package in respect of RBS. An amended aid package was announced on 3 November 2009 which includes an up-front recapitalisation of GBP 25.5 bn, and a five year contingent commitment to subscribe for a additional GBP 8 bn of capital in B shares in the event that RBS's Core Tier 1 capital ratio falls below 5%.
- The February 2009 aid package also included participation in the Asset Protection Scheme (APS). The APS was an unfunded guarantee scheme under which the UK government committed to cover

90% of the losses in excess of an initial amount ("the first-loss position") arising from a defined portfolio of assets. The first-loss was to be borne by RBS which was also supposed to support 10% of the additional losses on the covered portfolio. In exchange for this cover, RBS committed (among other things) to pay a fee and to lend to the real economy at agreed levels on commercial terms.

- Under the adjusted terms, the APS covered assets of GBP 281 bn. RBS exited the APS in 2012, having paid an exit fee of GBP 2.5 bn. There were no payouts under the APS. Capital deductions, together with the capital requirements necessary to cover the 10% of losses in excess of the first-loss (to be also covered by RBS), meant that the participation in the APS would not improve the current capital ratio of the group.

Sumitomo Mitsui

- The Sumitomo Mitsui Financial Group has the Sumitomo Mitsui Bank as a bank subsidiary, which was established in 2001 through the merge of the Sakura Bank and Sumitomo Bank.
- The consolidated pro-forma P&L accounts of the Sumitomo Mitsui shows losses started in 1996 until 2004, and peaked in 2000 at JPY 1.0 tn.
- In order to cope with the situation in the late 1990s where the confidence in Japanese financial system has been shaken, the government decided to use public funds to help restore the strengthen of financial institutions, restore confidence in financial institutions both at home and abroad and normalise financial functions in Japan.
- In March 1998, Japanese authority injected JPY200 bn as follows.
  - The Sakura Bank: JPY100 bn (subordinated bond)
  - The Sumitomo Bank: JPY 100 bn (subordinated bond)
- In March 1999, Japanese authority injected JPY 1.301 tn as follows.
  - The Sakura Bank: JPY 800 bn (preferred share)
  - The Sumitomo Bank: JPY 501 bn (preferred share)
- The Sumitomo Mitsui has repaid all of these funds by October 2006.

UBS

- Three years in a row (2007 until 2009) the aggregated UBS Group recorded a loss before tax, in total CHF 33.4 bn. Approximately 80% of this overall loss occurred in the year 2008. The losses stem predominantly from the investment banking business in the US market. Earnings from non-affected private banking and Swiss retail banking business softened considerably the total impact on the Group in that period.
- While UBS managed to raise CHF 29 bn equity and tier 1 capital from private sources (starting with a mandatory convertible note[30] of CHF 13bn, arranged in late 2007, and followed by a large direct share issuance of CHF 16 bn in June 2008), it no longer managed to agree acceptable terms for a further private sector assistance in Q4 2008. The third and last private sector equity increase of CHF 3.8 bn (bringing the private funding to a total of CHF 32.8 bn) as a matter of fact took place with private institutional investors in June 2009, eight months after the Swiss Government's investment in the bank when prospects were again much brighter.

[30] The mandatory convertible note allows the issuer to attract and keep hold of an investor, who within short period of time (maximum 3 years in Swiss practice) inevitably becomes an equity holder, while – in the interim – he may originally benefit from a fixed interest on the investment, when dividend payments are very unlikely. Ideally, the effect should be calculated after deduction of interest expenses by the bank but numbers are not adjusted here.

- In late October 2008 the Swiss Confederation stepped in and subscribed to the issuance of mandatory convertible notes resulting in a tier 1 capital injection of CHF 6 bn. In an action closely coordinated with the Government the Swiss National Bank (SNB) established the SNB StabFund with 10% equity from UBS and loans from the SNB. StabFund agreed to acquire defined positions from UBS (which the bank in application of its accounting standard ran the risk to adjust in value). The assets sold to the StabFund reached a total of approx. USD 39 bn in the second year, lower than the original maximum target of up to USD 60 bn. The facts that positions acquired had been written down substantially in UBS before the acquisition by the Fund, and that the equity portion in the Fund had to be paid-in entirely by UBS, allowed SNB at all times to define its role as the one of a liquidity-provider alone. The final outcome (a profit of USD 3.7 bn for SNB five years later when the fund was repurchased by UBS, on top of the steady interest income from the loan) makes it hard to argue against the SNB standpoint.
- Eventually the losses were completely borne by the shareholders through cancellation of dividends, share dilution and share price decreases. As in other jurisdictions the public incurred losses due to tax cancellations for many consecutive years. The UBS shareholder base was well diversified at the inception of the crisis.

Wachovia

- In September 2006, Wachovia acquires Golden West Financial Corp. for USD 25.5 bn, extending its West Coast presence and taking on more mortgage business.
- April 2007, Wachovia announces its first quarterly loss in 7 years.
- As the 2008 financial crisis unfolds, Wachovia suffers heavy losses in its loan portfolio due largely to its acquisition of Golden West Financial, which exposed Wachovia to risky adjustable rate mortgages. In the 2nd quarter, Wachovia reports a larger than anticipated USD 8.9 bn loss.
- On 26 September 2008, Wachovia's stock fell 27% and depositors began a silent run—withdrawing USD 5 bn in deposits (about 1% of total deposits) by the end of the working day.
- Over the following weekend, the FDIC approached Citigroup and Wells Fargo about buying Wachovia's banking operations. On 29 September 2008, the FDIC announced that Citigroup would buy Wachovia for USD 2 bn (USD 1 per share) with FDIC assistance in the form of an "open bank" transfer of ownership (the FDIC would guarantee all losses at Wachovia above USD 42 bn). Citigroup was to provide Wachovia with much-needed liquidity until the acquisition was completed. Before the Citigroup deal could be completed Wells Fargo announced on 3 October 2008, that it would acquire Wachovia for USD 15 bn (USD 7 per share) via an all-stock transaction requiring no government involvement. At the time of the purchase on 22 October 2008, Wachovia reported USD 23.9 bn in losses.
- Prior to its merger with Wells Fargo, Wachovia had been the 4th largest US bank holding company based on assets. Wachovia's shareholders bore the cost of saving the bank; the firm's stock was priced at USD 38 at the beginning of the year, and over 10 months, it fell to just USD 2 a share.
- The Wells Fargo and Wachovia deal closed on 31 December 2008 with full government approval.

Annex 3 Bank-specific data

The table below presents the main bank-specific data used in this report. Periods over which peak accumulated losses are calculated are marked grey in the TCI and TCI_adj columns.

Bank of America	**Assets**				**Losses**		**Recapitalisation**				
USD mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur	
2006	1,459,737		1,054,090	B-I	22,286	23,685					*A total amount of USD 45 bn was provided to BoA, but USD 30 bn of this was to support merger and losses of Merrill Lynch. **2009 loss figure TCI_adj excluded because related to Merrill Lynch.
2007	1,715,746		1,212,905	B-I	23,821	25,314					
2008	1,817,943		1,320,469	B-I	-7,946	-9,159	15,000*				
2009	2,223,299		1,542,517	B-I	11,482	-5,675**		15,000			
2010	2,264,909		1,456,000	B-I	3,431	15,978					
2011	2,129,046		1,284,467	B-I	-3,925	-5,996					
2012	2,209,974		1,205,976	B-II	6,828	3,657					
2013	2,102,273		1,297,593	B-III	5,771	8,990					
2014	2,104,534		1,261,544	B-III	8,970	9,178					

Bear Stearns	**Assets**			**Losses**		**Recapitalisation**				**Notes**
USD mn	TA	TAexDer	RWA	TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur	
2006	350,433									
2007	395,360									
2008	396,400			-9,400	-9,400					

Citigroup	**Assets**				**Losses**		**Recapitalisation**			
USD mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2006	1,884,318		1,057,872	B-I	20,370	21,223				
2007	2,187,480		1,253,321	B-I	2,508	3,637				
2008	1,938,470		996,247	B-I	-48,219	-59,578	25,000			
2009	1,856,646		1,088,526	B-I	5,065	3,752	20,000	61,000	16,000	
2010	1,913,902		977,629	B-I	13,262	5,358				
2011	1,873,878		973,369	B-I	9,556	7,449				
2012	1,864,660		1,110,859	B-II	8,433	7,100				
2013	1,880,382		1,103,045	B-III	11,422	12,758				
2014	1,842,530		1,080,716	B-III	3,421	3,963				

Commerzbank	**Assets**				**Losses**		**Recapitalisation**			
EUR mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2007	630,639*	660,416*	338,000*	B-I						
2008	630,639*	660,416*	338,000	B-I	-6,457	-6,457	8,200			
2009	630,639	660,416	280,138	B-II	-4,564	-1,914	9,972			
2010	624,574	625,332	267,500	B-II	2,013	2,675				
2011	527,911	532,600	236,588	B-II	8	-481				
2012	527,453	523,183	208,138	B-II	1,100	1,713				
2013	469,263	479,494	190,588	B-II	722	685		600		
2014	417,358	471,838	215,262	B-III	115	345				

* Total assets and risk-weighted assets are not available prior to, respectively, 2008 and. 2009. For these missing years, the numbers for 2008 and 2009 are used.

Dexia	**Assets**				**Losses**		**Recapitalisation**			
EUR mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2006	545,934	521,902	133,369	B-I	2,080	1,918				
2007	595,641	566,423	159,383	B-I	-885	-1,503				
2008	632,420	577,207	152,837	B-II	-9,239	-12,532	3,000		not quantfied	
2009	560,643	519,915	143,170	B-II	6,335	7,807				
2010	547,299	500,222	140,834	B-II	-1,492	-1,457				
2011	412,759	384,461	83,374	B-II	-13,732	-11,584				
2012	357,210	326,684	55,321	B-II	-1,329	-510	5,500			

2013	222,936	200,445	47,335	B-II	387	339					
2014	247,120	216,345	53,377	B-III		-683					

Fortis	**Assets**				**Losses**		**Recapitalisation**			
EUR mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2006	674,658									
2007	767,213	738,765	270,207	B-I	154	1,191				
2008	586,777	514,642	203,405	B-I	-25,353	-25,182	16,785		2,000	4,250
2009										
2010							3,080			

ING	**Assets**				**Losses**		**Recapitalisation**			
EUR mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2006	894,985	878,776	337,926	B-I	3,813	2,991				
2007	994,113	975,347	402,727	B-II	3,732	3,274				
2008	1,034,689	980,072	343,388	B-II	-6,091	-5,142	10,000		5,000	
2009	882,119	849,343	332,375	B-II	6,888	8,121		5,000		
2010	933,073	888,120	321,103	B-II	4,469	4,878				
2011	961,603	900,269	321,103	B-II	4,049	4,476		2,000		
2012	834,433	771,615	278,656	B-II	2,343	3,003		750		
2013	787,644	749,915	300,958	B-II	729	1,174		750		
2014	828,602	771,741	296,427	B-III	6,581	5,886		1,500		

Lehman	**Assets**			**Losses**		**Recapitalisation**				
USD mn	TA	TAexDer	RWA	TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur	
2006	503,545									*2008 loss is a conservative
2007	691,063									(low-end) proxy, based on
2008	639,000			-50,000*	-50,000*					different assessments.

Merrill Lynch	**Assets**				**Losses**		**Recapitalisation**				
USD mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur	
2006	841,299		383,154*	B-II	7,494	7,097					*As 2006 and 2007 RWA are not available, proxies are derived by multiplying total assets by the 2008 ratio of RWA/TA. **Provided to BoA to support merger and losses Merrill Lynch.
2007	1,020,050		464,563*	B-II	-8,956	-14,825					
2008	667,543		304,020	B-II	-32,141	-36,447	30,000**				
2009					7,228	7,578		30,000			
2010					3,634	4,242					
2011					-1,628	1,588					
2012					-2	-3,024					

Mitsubishi UFJ	**Assets**				**Losses**		**Recapitalisation**				
JPY bn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur	
1995	180,204		124,780	B-I	317*						* As TCI is not available for these years, net income is used instead.
1996	184,043		124,780	B-I	-1,125*						
1997	189,979		124,780	B-I	213*						
1998	211,144		124,780	B-I	-1,162*		400				
1999	186,359		124,780	B-I	-1,164*		1,800				
2000	177,083		120,716	B-I	340*			101			
2001	206,399		117,775	B-I	-125			362			
2002	179,270		111,589	B-I	-995						
2003	179,383		101,378	B-I	-874			250			
2004	188,750		100,183	B-I	684						
2005	192,839		99,676	B-I	417						
2006	187,047		110,293	B-I	2,498			1,252			

Mizuho	**Assets**				**Losses**		**Recapitalisation**				
JPY bn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur	
1995	151,676			B-I	100*						* As TCI is not available for these years, net income is used instead.
1996	157,432		112,356	B-I	-568*						
1997	168,085		115,448	B-I	-69*						
1998	170,176		106,699	B-I	-1,000*		449				

1999	159,002		105,451	B-I	-1,049*		2,500				
2000	152,712		104,972	B-I	194*						
2001	163,455		105,318	B-I	36						
2002	151,312		94,289	B-I	-1,655						
2003	134,033		71,824	B-I	-2,498			50			
2004	137,750		68,424	B-I	688			625			
2005	143,076		67,325	B-I	1,117			825			
2006	149,613		77,535	B-I	1,881			944			

RBS	**Assets**				**Losses**		**Recapitalisation**			
GBP mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2006	871,432	754,751	400,300	B-I						
2007	1,840,829	1,563,427	609,000	B-I	10,088	11,352				
2008	2,401,652	1,409,093	695,800	B-II	-27,480	1,815	19,969		not quantfied	
2009	1,696,486	1,255,032	668,600	B-II	-6,158	-6,524	33,558			
2010	1,453,576	1,026,499	571,100	B-II	-671	-1,020				
2011	1,506,867	977,249	508,100	B-II	-780	-1,008				
2012	1,312,295	870,392	459,600	B-II	-7,097	-2,500				
2013	1,027,878	739,839	385,500	B-II	-10,189	-6,458				
2014	1,050,763	697,173	355,900	B-II	-783	1,037				

Sumitomo Mitsui	**Assets**				**Losses**		**Recapitalisation**			
JPY bn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
1995	104,722		78,433*	B-I	-311**					
1996	107,004		78,433*	B-I	-385**					
1997	110,280		78,433*	B-I	86**					
1998	117,530		78,433	B-I	-340**		200			
1999	103,989		72,483	B-I	-1048**		1,301			
2000	102,263		70,198	B-I	124**					
2001	119,243		71,817	B-I	79					
2002	108,005		67,548	B-I	-784					

* Total assets and risk-weighted assets are not available prior to 1998. Instead, the 1998 number is used.
** As TCI is not available for these years, net income is used instead.

2003	104,607		59,167	B-I	-543			200		
2004	102,215		59,204	B-I	584					
2005	99,732		60,553	B-I	97			268		
2006	107,011		65,322	B-I	1,465					

UBS	**Assets**				**Losses**		**Recapitalisation**			
CHF mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2006	2,348,733	2,055,758	341,892	B-I	11,157	11,600				
2007	2,274,891	1,846,674	372,298	B-I	-2,623	-3,693				
2008	2,012,876	1,158,776	334,893	B-II	-16,732	-20,676	6,000	464		
2009	1,338,239	916,545	225,628	B-II	-2,366	154				
2010	1,314,813	913,667	215,010	B-II	8,811	9,559		1,500		
2011	1,416,962	930,378	256,437	B-II	3,180	41		500		
2012	1,259,797	840,840	258,113	B-III	-1,768	-9,436				
2013	1,013,355	759,271	225,153	B-III	2,523	3,442				
2014	1,062,478	805,500	216,462	B-III	5,220	3,262				

Wachovia	**Assets**				**Losses**		**Recapitalisation**			
USD mn	TA	TAexDer	RWA		TCI	TCI_adj	Recap_dir	*repay*	Recap_gua	Recap_pur
2007	782,896		592,065	B-I	7,757	8,181				
2008	760,558		585,064	B-I	-36,042	-40,072	10,000			