

MREL and TLAC: The Path from Bail-out to Bail-in for Banks' Creditors in the European Union

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Abstract

In the wake of the financial market crisis new rules on banking recovery and resolution of systemic banks have been enacted in order to facilitate the bail-in of banks' creditors. Banks will be required to maintain sufficient amounts of own funds and bail-inable debt called Minimum Requirement for own funds and Eligible Liabilities (MREL) or Total Loss-Absorbing Capacity (TLAC) respectively. Hence even more competing norms exist in parallel most of which aim to correct the results of banks' internal models which have often times underestimated risks. Because the multitude of new and existing rules overlap, reducing unnecessary complexity is needed and can be accomplished without changing capital and MREL requirements overall. A pro-forma analysis relating to a sample of 23 systemically important banks in the European Union support this view.

Durch MREL und TLAC vom Bail-out zum Bail-in der Bankengläubiger in der Europäischen Union

Zusammenfassung

Infolge der Finanzmarktkrise wurden Regeln zur Sanierung und Abwicklung systemisch bedeutender Banken verabschiedet, um auch Gläubiger mit den Kosten einer Abwicklung zu belasten (Bail-in). Banken werden verpflichtet, angemessene Beträge an Eigenmitteln und bail-in-fähiger Verbindlichkeiten, die als Minimum Requirement for own funds and Eligible Liabilities (MREL) bzw. Total Loss-Absorbing Capacity (TLAC) bezeichnet werden, zu halten. Dadurch hat das Nebeneinander konkurrierender Regelungsnormen zugenommen, die versuchen die durch bankinterne Modelle oftmals unterzeichneten Risiken zu korrigieren. Da die Vielzahl an bestehenden und neuen Normen sich überschneiden, ist eine Reduzierung unnötiger Komplexität dringend geboten und auch möglich, ohne dass dadurch Kapitalanforderungen und MREL-Beträge insgesamt

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verändert werden. Diese These wird durch eine Pro-forma-Untersuchung für eine Stichprobe von 23 Großbanken in der Europäischen Union unterstützt.

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I. Introduction

The recent crisis revealed multiple flaws in the regulation and supervision of the banking sector. Numerous large systemically important banks (SIBs) were close to insolvency. However, as evidenced by the adverse repercussions of the unorderly and unexpected collapse of U.S. based Lehman Brothers, ordinary insolvency proceedings were not suitable for these institutions due to their size, interconnectedness and complexity. Therefore, several governments felt prompted to use public funds to support failing banks with capital and liquidity in order to avoid even greater economic disturbances. Direct beneficiaries of such support – which is often times wrongly referred to as bank rescue – were the failing banks' creditors as well as the creditors of their counterparties.¹

Globally, governments have been aiming to address these shortfalls through a surge of new regulation. The focus has been on strengthening the resilience and resolvability of systemically important banks. In the European Union, the regulatory minimum requirements for own funds as well as the banking resolution directive are particularly important. At the global level, the Financial Stability Board has launched proposals to improve the resolvability of global systemically important banks (G-SIBs).²

Improving the resolvability of systemically important banks has gained prominence. There is a shift away from the idea of pursuing the continuation of troubled institutions as well as their creditors' protection in times of crisis as equally important supervisory goals. With the new legislation, even senior creditors should make contributions as needed if it is necessary in the public interest to facilitate the restructuring and continuation of a bank that cannot be liquidated following ordinary insolvency proceedings. As a consequence, the objective of creditor protection has been subordinated to public interests but also to some extent to the bank owners' interests who otherwise would have been required to provide additional amounts of capital or reduce business volumes. Especially the latter was politically not desirable. Despite the high levels of public and private

¹ See European Commission (2015a), p. 4: The authorized amount of state aid was €600–1.600 billion depending on the calculation method.

² See Financial Stability Board (2015). The list of global systemically important banks that are assessed on a set of criteria and the respective capital buffers will be published on an annual basis in November.

sector indebtedness the belief of key policymakers still prevails that a debt crisis can be resolved by extensive bank lending.³

Sections II-V summarize the key features of the minimum requirements for own funds and those for maintaining own funds and eligible liabilities that are necessary to facilitate a bank resolution. Section VI examines the interaction of these requirements and provides a pro-forma analysis of a sample of banks that shows why the multitude of norms appears to be unnecessary. Section VII outlines an exemplary approach on how simplification can be achieved by reducing the number of computations within the scope of the current calibrations of regulatory norms. Section VIII ends the report with concluding remarks.

II. The CRD IV Package to Improve Banks' Capital Positions

The CRD IV package as endorsed by the European Parliament and the European Council came into force on January 1, 2014 and comprises regulation No. 575/2013 (Capital Requirements Regulation, CRR) as well as directive 2013/36/EU (Capital Requirements Directive, CRD IV). The regulation which became immediately enforceable as law in all member states mainly comprises the already binding minimum requirements on banks' capital and liquidity as well as the proposed first-time introduction of a cap on leverage and minimum requirements for stable funding (pillar 1). Regarding the bank's own funds requirements, the directive, which had to be transposed into national law by all member states, covers as before the option to apply a discretionary capital surcharge within the supervisory review and evaluation process (SREP surcharge under pillar 2) as well as the new regulation on mandatory and discretionary supervisory capital buffers which may be applied depending on market conditions and entity-specific factors. The main goal of this reform process is strengthening the banks' resilience by raising the minimum amount and quality of capital by the end of a multi-year transition period.⁴

The regulatory minimum requirements regarding the level and composition of own funds are specified as ratios. The numerator uses the three components of regulatory own funds as defined by the Capital Requirements Regulation and the denominator uses on- and off-balance sheet assets net of eligible collateral multiplied by risk weights which should reflect the differences in riskiness of as-

³ Banking associations and politicians often raise alleged concerns about banks' reduced ability to extend loans as a result of the reform process. However, this is counter-intuitive considering the level and trend of public and private indebtedness in the EU. For data on indebtedness since the introduction of the euro see European Central Bank, Statistical Data Warehouse.

⁴ On the rationale and content of the CRD IV package see European Commission (2013) and the recitals to CRR and CRD IV.

sets (Risk Weighted Assets, RWA). Although the approach has proven to be fundamentally flawed as became evident by the crisis, banks may continue using internal risk models to compute their RWA.⁵

In order to reduce the risk of excessive leverage caused by inappropriately low risk weights, the Capital Requirements Regulation includes two additional precautionary measures besides the SREP surcharge:

- Firstly, Art. 500 CRR requires banks to maintain at all times 80 % of the own funds that they would be required to hold under Basel I, i.e. before banks were authorized to use internal risk models for regulatory purposes. This is the Basel I floor which applies at least until December 31, 2017.
- Secondly, Art. 429 CRR introduces the computation of the leverage ratio as the total of a bank's Common Equity Tier 1 (CET1) and Additional Tier 1 (AT1) capital divided by its leverage exposure measure (not risk-weighted). The leverage ratio is currently disclosed but not binding during the observation period. The European Commission recently proposed a binding leverage ratio of 3 % from 1 January 2019.⁶

Hence, three competing norms emanate from the CRD IV package:

1. the three regulatory risk-weighted ratios according to CRR which may be raised by up to four regulatory capital buffers⁷ and the SREP surcharge as applicable,
2. the risk-weighted Basel I floor,
3. the leverage ratio, provided that it becomes binding from 2019.

Following a transition period, the minimum own funds ratio will be 10.5 % from January 1, 2019, as shown in Figure 1. It comprises all mandatory components of own funds including the capital conservation buffer. For global systemically important banks the ratio is expected to be raised by 100 basis points (bps) to 350 bps depending on the assessment on each bank. Other capital buffers and SREP surcharges will be determined at supervisors' discretion. Most of the time, the required capital ratios will presumably be less than 15 % even for systemically important banks. Rarely, total capital requirements will add up to more than 20 % for the largest institutions as currently in Sweden.⁸

⁵ See Basel Committee on Banking Supervision (2016). The committee is currently proposing to restrict the use of internal models.

⁶ See European Commission (2016a).

⁷ Capital conservation buffer (Art. 129 CRD IV), countercyclical buffer (Art. 130 CRD IV), capital buffer for global and other systemically important banks (Art. 131 CRD IV), systemic risk buffer (Art. 133 CRD IV).

⁸ See Finanzinspektionen (2015), p. 1.

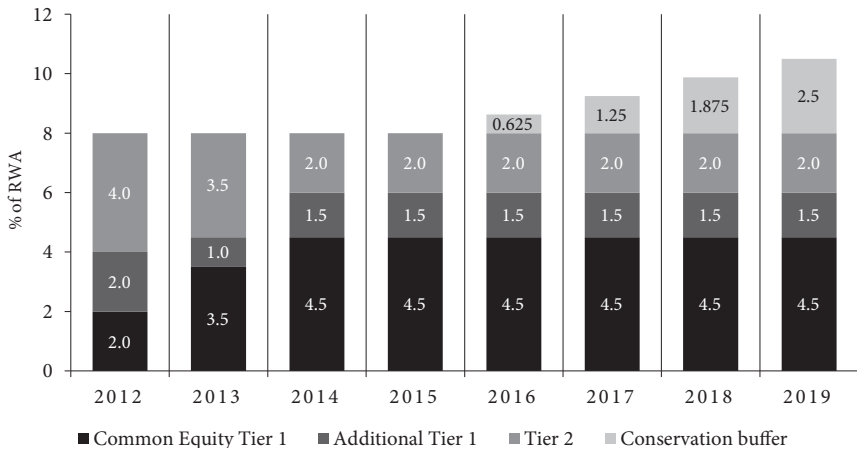


Figure 1: Transitional Arrangements of the CRD IV Package Regarding the Size and Composition of Own Funds

III. The Bank Recovery and Resolution Directive to Improve Banks' Resolvability

The Bank Recovery and Resolution Directive (BRRD) 2014/59/EU came into force on January 1, 2015 and provides a harmonized framework for the recovery and resolution of failing systemically important banks within the European Union. Its objective is to minimize the negative economic repercussions and the cost to taxpayers (bail-out) when a bank resolution occurs. Because the use of resolution tools may interfere with owners' and creditors' rights a bank resolution should only be resorted to if a liquidation following ordinary insolvency proceedings would jeopardize the stability of financial markets.⁹

A core principle of bank resolution under BRRD, which serves to continue at least parts of a banking institution, requires that losses incurred as well as the cost of a recapitalization should be borne firstly by a bank's owners and secondly by its creditors (bail-in). The chain of liability according to Art. 48 and 108 BRRD (see Table 1) is to be followed. However, as stipulated by Art. 34 BRRD, no creditor should incur greater losses in resolution than under ordinary insolvency proceedings. Subject to this, the bail-in tool according to Art. 43ff BRRD facilitates the write-down or conversion into equity of specified creditors' claims.

⁹ On the rationale and content of BRRD: European Commission (2014) and recitals to BRRD.

The BRRD stipulates that only when exceptional circumstances prevent owners and creditors from bearing the entire losses and recapitalization costs, then national resolution funds, which systemically important banks in the member state are required to fund, may be used to cover resolution costs including loss absorption of up to 5 % of a bank’s own funds and liabilities. However, this is provided that owners and creditors have contributed to loss absorption and re-capitalization as follows:

- According to Art. 44, Paragraph 5 BRRD an amount that is at least equivalent to 8 % of a bank’s own funds and liabilities after giving full recognition to counterparty netting rights, or
- According to Art. 44, Paragraph 8 BRRD an amount that is at least equivalent to 20 % of RWA.¹⁰

Liabilities excluded from bail-in are in particular:

1. Covered deposits (up to €100.000 within the European Union),
2. Secured liabilities including covered bonds,
3. Liabilities to institutions that are not part of the banking group with an original maturity of up to seven days,
4. Liabilities to payment and securities settlement systems with an original maturity of up to seven days.

Table 1
**Chain of Liability: Order by Which Own Funds
and Liabilities are Required to Contribute to Loss Absorption
and Recapitalization According to Art. 8 and 108 BRRD**

Order	Own Funds and Liabilities
1	<i>Common Equity Tier 1</i>
2	<i>Additional Tier 1 capital</i>
3	<i>Tier 2 capital</i>
4	<i>Other subordinated liabilities</i>
5	<i>Eligible liabilities:</i> German legislation distinguishes between 5a) suitable and 5b) other liabilities
6	<i>Deposits not covered</i> from natural persons, micro, small and medium-sized enterprises above €100.000

¹⁰ Art. 44, Paragraph 8 BRRD is relevant outside the euro zone only. It has been designed for countries where risk weights are particularly low. It will presumably be relevant for Sweden only.

In Germany, resolution legislation¹¹ has revised the insolvency ranking among eligible liabilities (see item 5 in Table 1) not excluded from bail-in. Effective January 1, 2017, liabilities that in the legislator's opinion can be bailed in more effectively (see item 5a in Table 1, for example plain vanilla bonds and promissory notes) will rank junior to other liabilities (see item 5b in Table 1, for example derivatives, structured notes with embedded derivatives and unspecified money market instruments) that currently rank *pari-passu*.¹²

For banks' creditors this means that they will have to pay close attention to the ranking of their claims within the chain of liability, the amount of liabilities ranking junior to their claims, and the amount of claims ranking *pari-passu*. The latter is important because losses and recapitalization costs can be spread more widely and hence lower the loss severity as the amount of *pari-passu* claims increase.

Moreover, creditors' claims to systemically important banks should generally be less risky than those to non-systemic banks. This can be explained as follows:

- Firstly, at resolution creditors' contribution to loss absorption and recapitalization could be lower but should never be higher than in liquidation following ordinary insolvency proceedings due to the "no creditor worse off" principle.
- Secondly, if the conditions of Art. 44 BRRD are fulfilled the resolution fund may cover costs that otherwise creditors would have to bear. In this case, it would be beneficial if the amount of junior claims was sufficiently large to meet the requirements that allow tapping the resolution fund.

IV. Minimum Requirement for Own Funds and Eligible Liabilities (MREL)

According to Art. 45 BRRD systemically important banks in the European Union are required to maintain at all times an entity-specific minimum amount of own funds and eligible liabilities expressed as a percentage of the total of own funds and liabilities (MREL ratio) of the bank in order to facilitate a bail-in. The entity-specific MREL ratio follows the resolution plan as drawn up by resolution authorities.¹³

¹¹ German Bank Resolution Act (Abwicklungsmechanismusgesetz), Art. 46f German Banking Act (Kreditwesengesetz), November 2, 2015. See also Deutsche Bundesbank (2015b), p. 75 and German Federal Financial Supervisory Authority (2016).

¹² It is problematic that the adverse treatment of creditors within item 5a will retroactively extend to bonds issued before January 1, 2017.

¹³ These are the Single Resolution Board for banks within the Eurozone and national authorities outside the Eurozone.

MREL consists of two partial amounts:

- One amount that is sufficient to absorb the unexpected loss that an institution may incur ($MREL_L$);
- Another amount that is sufficient to replenish own funds that have been wiped out by the unexpected loss ($MREL_C$).

Public funds (bail-out) should not be used to cover a bank's losses or to recapitalize a bank. Less important banks are not supposed to be resolved but wound down following ordinary insolvency proceedings. Hence $MREL_C$ may be omitted.

Finally, it must be examined whether the conditions of Art. 44 BRRD regarding the access to the national resolution fund are fulfilled. The resolution fund should not be used to cover resolution costs directly but supplement resolution measures that cannot be borne solely by a failing bank's owners and creditors. The resolution of a systemic bank and the circumstances in which a resolution occurs will likely bring about considerable uncertainties, however. Therefore, it seems more likely than not that resolution authorities will require systemically important banks to maintain MREL amounts that allow the use of the resolution fund.¹⁴

In order to support harmonization within the European Union, the European Banking Authority submitted draft regulatory technical standards on the determination of MREL to the European Commission in July 2015 and February 2016.¹⁵ In September 2016, the European Commission adopted the draft with few changes.¹⁶

$MREL_L$ is closely linked to a bank's current capital requirement, i.e. the own funds requirements including surcharges and buffer requirements or any higher amount to comply with the Basel I floor or the leverage ratio requirement, as this would represent the best available estimator for a bank's unexpected loss.

$MREL_C$ includes own funds needed for authorization, potentially a SREP surcharge, any buffer requirements and potentially add-ons to ensure that upon resolution a bank's capital position is appropriate compared to peers and suffi-

¹⁴ According to statements by Elke König, head of the European resolution authority, the MREL ratio for banks in the euro zone is likely to be at least 8 % of the sum of equity and liabilities. See also Single Resolution Board (2016), p. 4. Originally, the European Commission proposed a minimum ratio of 10 %. According to its own calculations even 25 % would be required to cover the cost of loss absorption and recapitalization in a scenario that is comparable to the recent crisis. See European Commission (2012a), p. 150 and p. 154.

¹⁵ See European Banking Authority (2015) and European Banking Authority (2016).

¹⁶ See European Commission (2016b) and Official Journal of the European Union (2016).

Table 2
Examples for the Calculation of the MREL Ratio

Assumptions [2]–[4]					Results [4]–[6]		
	Systemic importance of the bank	Proportion of RWA that is to be continued according to the resolution plan	Regulatory capital requirement % of RWA	RWA divided by MREL denominator	MREL _L ratio	MREL _C ratio	MREL ratio
	[1]	[2]	[3]	[4]	[5]=[3]*[4]	[6]=[2]*[5]	[7]=[5]+[6]
Bank A	Low	0 %	10.50 %	35.00 %	3.68 %	0.00 %	3.68 %
Bank B	Medium	50 %	10.50 %	35.00 %	3.68 %	1.84 %	5.51 %
Bank C	High	100 %	15.00 %	35.00 %	5.25 %	5.25 %	10.50 %

cient to restore market confidence. Any additional amount to comply with the Basel I floor or the leverage ratio requirement needs to be considered as well. Resolution authorities should use the most recent reported risk or Leverage Ratio Exposure amount as a starting point and may adjust as appropriate.

However, MREL_C is largely influenced by the resolution plan. Possibly, RWA and Leverage Ratio Exposure may change due to resolution measures, for example if part of a bank should be discontinued while systemically important functions should be continued within a bridge bank. The former would not require resources for recapitalization.

The European Banking Authority¹⁷ published three examples for the calculation of the MREL ratio which are presented in Table 2.¹⁸

All three examples assume that resolution authorities adopt the regulatory capital requirement without adjustments when determining the MREL ratio.

- Bank A with low systemic importance can presumably be liquidated without jeopardizing financial stability. Therefore it is only required to maintain the regulatory minimum [3] of 10.5 % which in the supervisor's opinion is sufficient to absorb the unexpected loss. MREL_L [5] of 3.68 % results from the regulatory capital requirement [3] of 10.5 % multiplied by the ratio of RWA to MREL denominator [4] of 35 %.¹⁹

¹⁷ See European Banking Authority (2015), p. 8 f.
¹⁸ A typo in European Banking Authority (2015), p. 9 has been corrected in Table 2. Bank C's MREL_L is 5.25 % not 5.4 %.
¹⁹ See Table 5 for a definition of the MREL denominator.

- Bank B with medium systemic importance should be continued partially (50 % of its RWA). Therefore, it is only required to maintain $MREL_C$ ($[6] = [5] * 50\%$) of 1.84 % in addition to $MREL_L$ [5] of 3.68 %. This adds up to 5.51 %. In order to keep the option open to use the resolution fund, resolution authorities would have to increase the MREL ratio to at least 8 %. Whether a partial continuation can be credibly planned at all is questionable.
- Bank C has high systemic importance. The regulatory minimum requirement including capital buffers of 15 % [3] is higher than the one for Bank A and B (10.5 % each). Moreover, in case of resolution Bank C is to be continued in its entirety to minimize potential disruptions of financial stability. Therefore, it must maintain on top of $MREL_L$ [5] an equivalent amount of $MREL_C$ [6] unless a reduction of RWA as a result of planned resolution measures can be anticipated with high confidence. In the example, the conditions for the use of the resolution fund are met because the resulting MREL ratio [7] of 10.5 % exceeds 8 %.

From the information provided by the European Banking Authority follows that the MREL amount in case the resolution plan stipulates a bail-in is equivalent to two times the regulatory own funds requirement (in line with example C) unless resolution authorities make adjustments.²⁰ Normally, such amount should be sufficient to meet the requirements for tapping the resolution fund (8 % of the MREL denominator or 20 % of RWA).²¹ However, if on average the risk weighting on assets and/or the regulatory own funds ratio is low, then two times the regulatory own funds requirement may be less than 8 % of the MREL denominator (see Figure 2). For example, the MREL ratio of Bank C would be less than 8 % in following cases:

- Own funds ratio of 10.5 % and ratio of RWA to MREL denominator of less than 38.1 % ($= (8\%/10.5\%) * 50\%$), or
- Own funds ratio of 15 % and ratio of RWA to MREL denominator of less than 26.7 % ($= 8\%/15\% * 50\%$).

Conversely, the ratio of MREL amount to RWA will inevitably increase with decreasing risk weight. For example, assume the resolution authorities require a MREL ratio of 8 %. The ratio of MREL amount to RWA will be 16 % if the ratio of RWA to MREL denominator is 50 % and it rises to 32 % if the ratio of RWA to MREL denominator is 25 %. Therefore, a floor of 8 % for the MREL ratio provides some protection against internal models which underestimate risks.

²⁰ See Bank of England (2015), p. 8: „For institutions for which bail-in is the appropriate strategy, the Bank would generally need to set MREL equivalent to two times the current minimum capital requirements“.

²¹ See section VI.

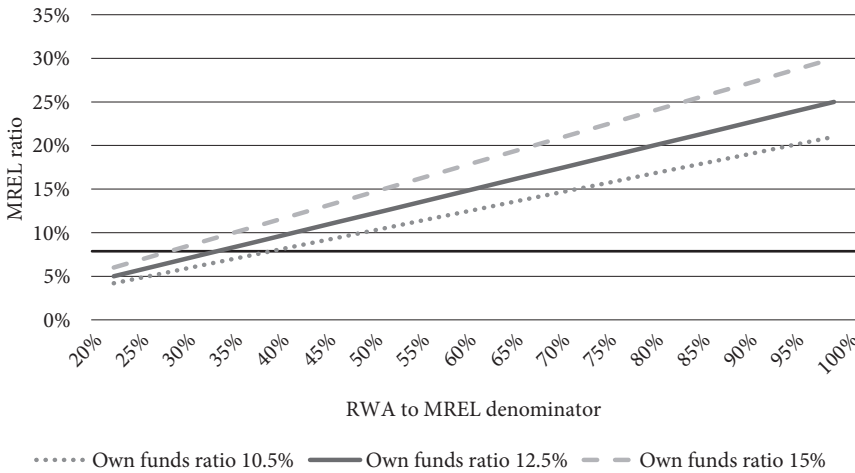


Figure 2: Dependencies Between MREL Ratio, Risk Weights and Own Funds Ratio

Assuming the MREL ratio is at least 8 %, then the proposed leverage ratio of 3 % under pillar 1 (or 6 % if equivalent to two times the minimum capital requirement in case the leverage ratio requirement is binding) is unlikely to become relevant for the computation of the MREL denominator.²²

Since January 1, 2016, resolution authorities are required to apply the rules on bank-specific MREL ratios. Banks can be granted a transition period of up to 48 months both at first-time application and for replenishing the MREL following resolution.

V. Requirements for Total Loss-Absorbing Capacity (TLAC)

As described, systemically important banks in the European Union have to fulfill MREL requirements. In addition, global systemically important banks will presumably be obliged to meet the requirements of the Financial Stability Board on Total Loss-Absorbing Capacity.²³ In essence, the function of TLAC is similar to that of MREL. Both aim to ensure that banks have sufficient amounts of equity and debt instruments that are available at any time to absorb losses and facilitate a recapitalization.²⁴ TLAC is a global standard that has been developed

²² See section VI.

²³ Financial Stability Board (2015).

²⁴ Gracie (2015), p. 81 and Metz et al. (2016), p. 84 point out that liabilities not eligible for MREL or TLAC may still need to contribute to cover the cost of resolution. There-

in parallel to MREL and would have to be followed by global systemically important banks (13 of which are based in the European Union).²⁵

The terms for bail-inable liabilities under MREL and TLAC are similar (see Table 3).²⁶

Table 3
Terms for Bail-inable Liabilities

Terms	MREL	TLAC
Creditors' payment	Fully paid in	Fully paid in
Collateral or guarantees	Unsecured and not funded by the bank	Unsecured and not funded by the bank
Remaining maturity	At least one year or perpetual	At least one year or perpetual
Subordination	Not required; authorities need to address potential obstacles to resolution	Contractual, statutory or structural subordination required; exception up to 2.5%/3.5% of RWA possible
Derivatives	Not eligible	Not eligible
Preferred deposits	Not eligible	Not eligible
Composition	At authorities' discretion	Expectation that Common Equity Tier 1 accounts for less than 2/3 of TLAC
Breach of requirements	Not specified	Dividend restrictions
Set-off/netting rights	Not specified	Not allowed
Maturity profile	Not specified	Adequate profile to reduce cluster risk
Early redemption	Not specified	Subject to supervisory approval
Holdings of MREL or TLAC issued by other [global] systemically important banks	May be restricted ²⁷	Must be deducted from own TLAC or regulatory capital

fore, the amount available for bail-in may exceed the minimum requirement in case of resolution.

²⁵ See Kupiec (2015) on the implementation of TLAC for U.S. bank holding companies.

²⁶ See BBVA (2014) and BBVA (2015) and European Parliament (2016) on main differences between MREL and TLAC.

²⁷ The lack of restrictions is a design failure that could give rise to obstacles to resolution. See Deutsche Bundesbank (2015a), p. 26 and Krahnen (2014) on TLAC which also applies to MREL.

Whereas MREL requirements will be set individually by national resolution authorities in the European Union, TLAC is a minimum requirement for all global systemically important banks which authorities may opt to raise. Table 4 displays key characteristics of MREL and TLAC requirements compared to those on regulatory capital and leverage.

Table 4
Comparison of Key Characteristics of New Regulatory Requirements

	Own funds Ratio	Leverage Ratio	MREL Ratio	TLAC Ratio
Legislation	CRD IV package (CRR and CRD IV)	CRR	BRRD and national legislation	Yet to be adopted
Scope	All banks in the European Union	All banks in the European Union	Systemic banks in the European Union that cannot or should not be liquidated; applies to the consolidated group and individually	Global systemically important banks; applies to each resolution entity within a G-SIB on a consolidated basis; stipulates the positioning of TLAC within the group
Start date	Jan. 1, 2014	Jan. 1, 2015 observation only	Jan. 1, 2016	Jan. 1, 2019 (emerging markets Jan. 1, 2025)
End of transition	Dec. 31, 2019 (Dec. 31, 2023 deductions from capital)	Mandatory potentially from Jan 1, 2019	Not later than Dec. 31, 2019 (up to 48 months)	Jan. 1, 2021 (emerging markets Jan. 1, 2027)
Numerator	(1) Common equity tier 1 (CET1) (2) Additional tier 1 capital (AT1) (3) Subordinated debt (T2) (1)+(2)+(3) = Own funds	Tier 1 capital = CET1 + AT1	CET1 + AT1 + T2 + liabilities eligible for bail-in	CET1 + AT1 + T2 + liabilities eligible for bail-in

(Continue next page)

(Table 4: Continued)

	Own funds Ratio	Leverage Ratio	MREL Ratio	TLAC Ratio
Denominator	RWA (on- and off-balance). Covers credit, market and operational risks.	Balance sheet total after consolidation adjustment + Derivatives netting + Add-on potential future exposure + Net written credit protection + Weighted off-balance sheet exposures (10 % to 100 %) + Securities financing adjustment + Other adjustments.	Liabilities and own funds giving full recognition of derivatives netting rights. Off-balance sheet exposures not considered.	(1) RWA (2) Leverage Ratio denominator
Minimum requirement after transition	(1) CET1: 4.5 % (2) AT1: 1.5 % (3) T2: 2 % (4) Capital conservation buffer: 2.5 % (CET1 instruments only) Total: 10.5 %	3 % proposed by the European Commission.	Bank-specific requirement; MREL ratio may be 0 % if a bank can be liquidated, and higher or lower than 8 % if a bank should be resolved.	(1) from 2019 (2025): 16 %; from 2022 (2028): 18 % of RWA (2) from 2019 (2025): 6 %; from 2022 (2028): 6.75 % of Leverage Ratio Exposure
SREP surcharge and capital buffers	At the discretion of supervisors	–	Included in MREL	Excluded from TLAC, i.e. to be held on top of TLAC
Basel I floor	Yes (80 %)	–	–	–
Mandatory disclosure	Yes	Yes	Not specified	Yes

VI. A Pro-forma Analysis

Considering the calculation methods as described in sections II.–V. and the resulting dependencies between the requirements for own funds, MREL and TLAC, a holistic approach should be considered. Capital requirements aim to ensure that unexpected losses are covered. This corresponds to the partial amount

$MREL_L$. Since $MREL_L$ will likely correspond to the amount needed for recapitalization $MREL_C$, there is a direct link between a bank's capital requirements and its MREL amount ($MREL_L + MREL_C$). TLAC has ultimately the same function as MREL. The overlaps resulting from the three concepts are examined below.²⁸ In particular, it is investigated in a pro-forma analysis of a sample of banks, whether the methodologies actually complement each other in a useful way.

1. Steps of the Analysis

Step 1: As shown in section IV, the MREL amount will likely be equivalent to two times the current capital requirements which in turn is derived from the highest of the three minimum requirements of the CRD IV package which are listed at the end of section II. Therefore, it is examined which of the three norms has practical relevance.

Step 2: After having identified the relevant of the three norms that determines the capital requirement it is examined whether MREL is either determined by two times the current capital requirement or the conditions that would allow tapping the national resolution fund according to Art. 44 BRRD.

Step 3: Finally, it is tested whether the resulting MREL amount is higher or lower than the required TLAC amount for global systemically important banks. We do not look into technical and legal issues regarding the harmonization of MREL and TLAC²⁹ but instead focus solely on the required amounts.

The analysis relates to 13 global systemically important banks and further 10 other systemically important banks within the European Union at year-end 2015.³⁰

The sample calculation requires an estimate of the MREL denominator which is neither well defined yet nor currently disclosed. In order to gain a plausible approximation, we deduct from the balance sheet total the derivatives liabilities amounts not set off on the balance sheet as disclosed in the accounting notes, and adjust for differences in the scope of regulatory consolidation as disclosed in the calculation of the Leverage Ratio Exposure.

²⁸ Deutsche Bundesbank (2014), p. 41 points to the competitive relationship between CRR's own funds ratio and the MREL ratio.

²⁹ See European Parliament (2016).

³⁰ An analysis based on data at year-end 2016 confirm the results.

Step 1 Comparison of the three minimum requirements of the CRD IV package

It turns out that for all banks within the pro-forma analysis the calculation based on RWA drives the capital requirements. This is because the leverage ratio and the Basel I floor requirements are comparatively low (see Figure 3). Generally, neither the leverage ratio nor the Basel I floor are currently relevant for systemically important banks in the European Union.

Both leverage ratio and Basel I floor may constrain regulatory capital requirements if the ratio of Basel III RWA to Leverage Ratio Exposure or Basel III RWA to Risk Exposure is very low. Risk Exposure is defined as the total of the non-risk weighted credit and counterparty exposure amount on which the capital requirement is calculated according to CRR, and the risk-weighted exposure amounts for market and operational risk. Constraints may occur, considering the Basel III minimum requirement of $10.5\% \times \text{RWA}$, if either of the following holds:

- $\text{Basel III RWA} < 28.6\% (=3\%/10.5\%) \times \text{Leverage Ratio Exposure}$, or
- $\text{Basel III RWA} < 76.2\% (=8\%/10.5\%) \times 80\% \times \text{Basel I RWA}$.

Low risk weights can be observed for Scandinavian banks and are typical for banks with a large proportion of residential mortgage loans in countries with a recent history of few loan losses. It appears that internal risk models ignore the distant past such as the banking crisis in Scandinavia in the early 1990s as well as recent developments if they have occurred outside a bank's home markets e.g. Ireland, Spain or United Kingdom.

Where leverage ratio or Basel I floor potentially constrains capital requirements, supervisors tend to apply a set of capital surcharges and floors which implicitly raise banks' own computations of RWA when considered too low.³¹ Whereas Swedish supervisors use the whole range of tools,³² others apply comparatively high buffers for other systemically important banks of 3% ³³ or at times even higher SREP surcharges.³⁴

However, the application of these discretionary tools, used to correct the results of inappropriate internal risk models, increases complexity for all market participants without reason. Moreover, it makes international comparisons of capital ratios even harder. For example, Swedish banks appear to be much better

³¹ Deutsche Bundesbank (2015a), p. 24 rightly raises doubts about the appropriateness of internal models and the low level of 3% for the leverage ratio.

³² See Finanzinspektionen (2015).

³³ This is generally true for systemically important banks in The Netherlands and Danske Bank.

³⁴ The SREP buffer on Lloyds Banking Group amounts to 4.6% .

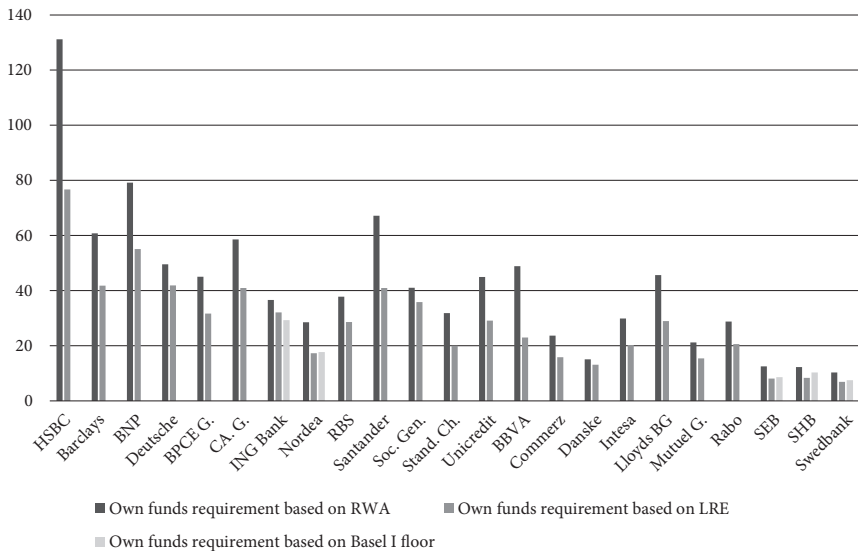


Figure 3: Comparison of the Three Minimum Requirements of the CRD IV Package, in € Billion

capitalized than their international peers with high capital ratios of more than 20 %, however the high levels largely reflect supervisory concerns about internal risk models.

Step 2: Comparison of capital requirements and MREL requirements

As explained in section IV and shown in Figure 2, two times regulatory capital requirements based on RWA may be less than 8 % of the MREL denominator if both the ratio of RWA to MREL denominator and at the same time the minimum capital ratio are low.

However, this is true for only one bank (Société Générale) among the 13 global systemically important banks and none of the 10 other systemically important banks in the sample because of the supervisory capital surcharges that raise minimum capital ratios of systemically important banks.³⁵

³⁵ An exception is Sweden where Art. 44, Paragraph 8 BRRD is relevant. An own funds ratio of 13 % would have been sufficient for all systemically important banks. Art. 44, Paragraph 8 is no restriction in practice because two times the systemically important banks' RWA based own funds requirements exceeds 21 % (2*10.5%). This can also be seen in Table 5 of step 3.

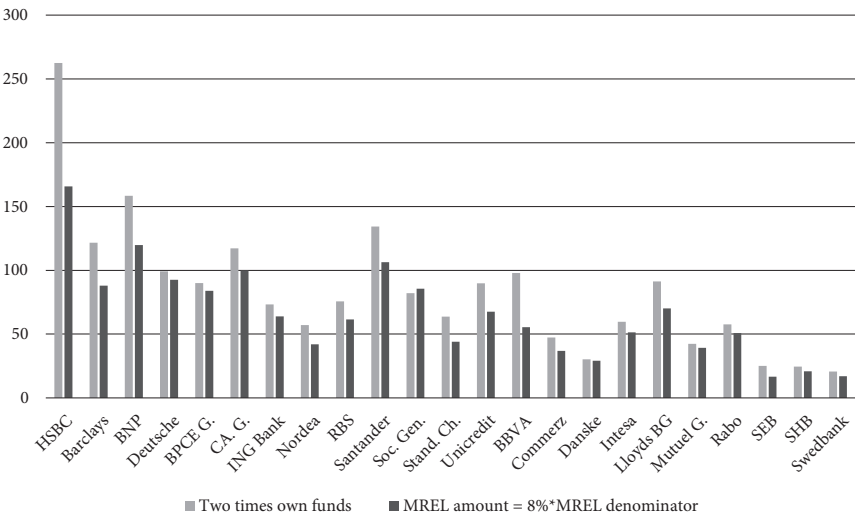


Figure 4: Comparison of the Requirements for Own Funds and MREL in € Billion

The pro-forma analysis on the 23 banks suggests that MREL amounts derived from the MREL denominator due to Art. 44, Paragraph 5 BRRD exceed two times regulatory capital requirements only in exceptional situations, i.e. when risk weightings and capital surcharges or floors are very low. Therefore, the introduction of the MREL denominator is hardly justifiable. It is another not risk weighted exposure measure besides the Leverage Ratio Exposure which causes additional complexity for no good reason.³⁶

Step 3: Comparison of MREL and TLAC requirements

Because none of the TLAC minimum requirements³⁷ is more restrictive than the MREL requirements presumably MREL will be binding for global systemically important banks in the European Union and not TLAC. This can be explained as follows.

If the MREL ratio is at least equivalent to two times the regulatory capital requirements in order to cover both the unexpected loss and the recapitalization requirements, the minimum TLAC amount of 18 % of RWA and capital buffers

³⁶ European Parliament (2016), p. 2: “While the calculation of the MREL is mainly based on risk weighted assets (RWA), the MREL will eventually be denominated as a percentage of total liabilities and own funds”.

³⁷ See section V., Table 4.

Table 5
Comparison of TLAC Ratio and MREL Relative to RWA

TLAC ratio [1]	Conserva- tion buffer [2]	G-SIB buffer [3]	Total TLAC+buffer [4]=[1]+[2]+[3]	Reg. Mini- mum * 2 [5]	G-SIB buffer *2 [6]	MREL/RWA [7]=[5]+[6]
18.0 %	2.5 %	1.0 %	21.5 %	21.0 %	2.0 %	23.0 %
18.0 %	2.5 %	1.5 %	22.0 %	21.0 %	3.0 %	24.0 %
18.0 %	2.5 %	2.0 %	22.5 %	21.0 %	4.0 %	25.0 %
18.0 %	2.5 %	2.5 %	23.0 %	21.0 %	5.0 %	26.0 %
18.0 %	2.5 %	3.0 %	23.5 %	21.0 %	6.0 %	27.0 %
18.0 %	2.5 %	3.5 %	24.0 %	21.0 %	7.0 %	28.0 %

is not an additional constraint. The TLAC ratio is lower than the ratio of MREL amount to RWA (see Table 5).

The second condition stipulates that TLAC must be at least 6.75 % of the Leverage Ratio Exposure. However, the pro-forma analysis on the 23 banks shows that the TLAC amount is always below the MREL amount equivalent to two times the regulatory capital requirements. This follows from step 1. Exposure measures which are not risk weighted lose relevance to the extent that supervisors apply capital surcharges and floors particularly to systemically important banks with the objective to compensate for internally computed risk weights which they consider too low.

2. Summary Assessment

The use of the common exposure measures (RWA, Leverage Ratio Exposure) to compute the requirements for regulatory capital, MREL and TLAC creates dependencies and overlaps.

Step 1 of the analysis confirms that neither the leverage ratio nor the Basel I floor drive capital requirements. Step 2 implies that the MREL denominator, another not risk weighted exposure measure besides Leverage Ratio Exposure, is not needed. Step 3 proves that the TLAC amount is lower than the MREL amount. These results can be explained by the use of capital surcharges (SREP, use of capital buffers) and floors (e.g. floors on residential mortgage loans). This essentially means that capital requirements based on Basel III RWA prevail.

However, it seems not sensible and quite unnecessary to correct inadequate risk weighting, which are based on banks' internal risk models, by the discretionary use of a variety of supervisory instruments (leverage ratio, SREP surcharge, buffers, floors), if this can be achieved in a simpler way that tackles the root cause of the problem.

VII. An Approach to Reduce Unnecessary Complexity

With a properly calibrated common floor for risk weighting supervisors might achieve tangible simplifications as well as better transparency and comparability without the need to revise capital requirements and MREL amounts upwards or downwards. Our analysis confirms that by using a minimum ratio for RWA to Leverage Ratio Exposure the existing floors (Basel I floor and floors on residential mortgage loans) become redundant, the process for SREP surcharges can be streamlined, and the use of capital buffers can be reduced to fulfill their primary functions.

In our analysis based on 23 banks we apply a regulatory floor of 35 % for RWA to Leverage Ratio Exposure. This means that the relevant RWA amount to compute the capital requirement is the maximum of the RWA amount as computed by a bank and 35 % of Leverage Ratio Exposure.

Because of the floor we only consider mandatory buffers such as the conservation buffer and buffers for systemically important banks. With respect to global systemically important banks we follow the recommendation of the Financial Stability Board. However, with respect to other systemically important banks we reduce buffers to 1 % (equivalent to the lowest level for global systemically important banks) where supervisors currently apply a variety of unusually high buffers which presumably try to compensate for RWA amounts considered too low.³⁸

Firstly, we investigate the impact of the floor regarding RWA to Leverage Ratio Exposure on MREL and TLAC. A comparison of the MREL amounts (while still using two times the regulatory capital requirements based on RWA to ensure that the unexpected loss and recapitalization costs will be covered) before and after the introduction of the floor reveals that MREL amounts remain broadly unchanged (see Figure 5). At the same time, the TLAC requirement is still no restriction. Therefore, the introduction of the MREL denominator is not justifiable.

Then we investigate the impact of the floor regarding RWA to Leverage Ratio Exposure on capital requirements. A comparison of capital requirements after

³⁸ Adjustments are applied to the buffers for banks in Sweden, The Netherlands, Denmark and UK.

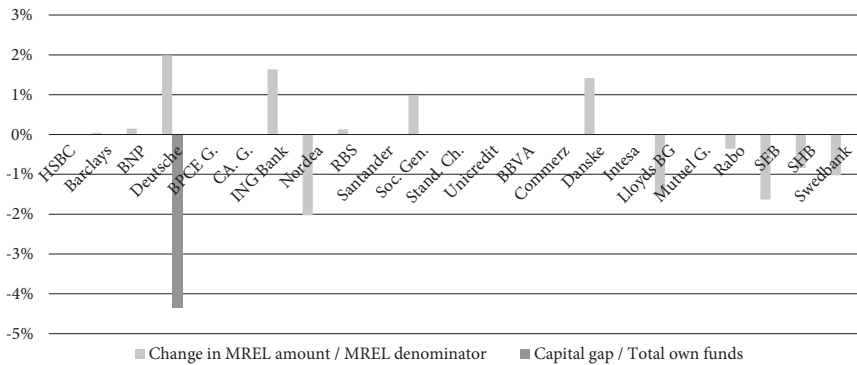


Figure 5: Impact of the Floor Regarding RWA to Leverage Ratio Exposure on MREL and Own Funds

introducing the floor on RWA to Leverage Ratio Exposure and the 23 banks' capital positions at year-end 2015 reveals a small gap for only one bank (see Figure 5), while total capital requirements for the 23 banks overall would remain broadly unchanged.

The analysis confirms that with a properly calibrated floor regarding RWA to Leverage Ratio Exposure it would no longer be necessary to apply a variety of instruments to raise internal model-based RWA considered too low. This is definitely true for the Basel I floor and floors on residential mortgage loans but also largely for capital surcharges from the SREP and the use of systemic buffers. Therefore, fewer bank-specific measures would be required with the introduction of a common floor.

A common floor with respect to RWA to Risk Exposure defined as the total of the not weighted credit and counterparty exposure amount on which the capital requirement is calculated according to CRR, and the risk-weighted exposure amounts for market and operational risk for example could even make the leverage ratio redundant. The leverage ratio currently has no impact and apparently is not supposed to have an impact at the proposed low level of 3%. With a regulatory floor of 37.5% for RWA to Risk Exposure the impact on MREL, TLAC, and capital requirements would be quite similar to that of the floor regarding RWA to Leverage Ratio Exposure. MREL amounts would remain broadly unchanged, TLAC requirements would be no restriction, and none of the banks would reveal a capital gap compared to their current capital position due to the floor regarding RWA to Risk Exposure (see Figure 6). Moreover, total capital requirements for the 23 banks would remain broadly unchanged as well.

Eventually, all requirements can be expressed as a percentage of a common denominator, for example Basel III RWA. The view that alleged national or

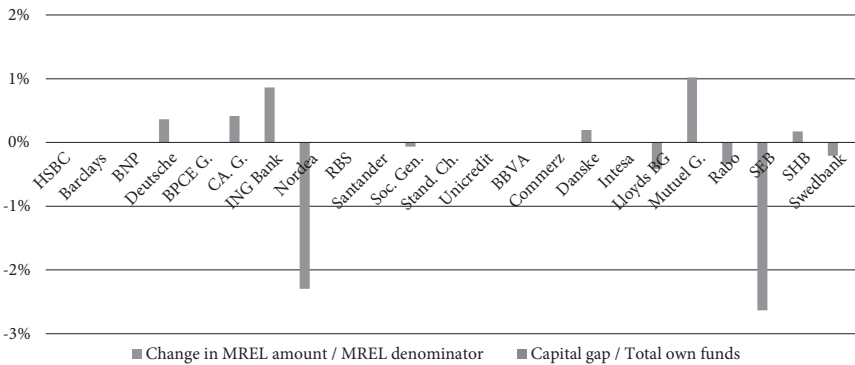


Figure 6: Impact of the Floor Regarding RWA to Risk Exposure on MREL and Own Funds

bank-specific characteristics require special rules is questionable considering that the process to assess appropriate minimum capital requirements for banks cannot be performed objectively and inevitably requires discretion and judgement.

VIII. Conclusion

The bail-in tool, MREL and TLAC provide suitable instruments that will potentially allow authorities to pass on the cost of resolution of systemic banks to their owners and creditors while preserving public funds (bail-in instead of bail-out). It remains doubtful whether new regulations sufficiently consider legitimate creditors’ interests in protection and whether supervisors and resolution authorities will be held responsible for potential misbehavior or misjudgment.

The experience of the recent crisis as well as the analysis of the European Commission indicate that both capital and MREL requirements need to be higher than currently discussed in order to protect against severe crises.³⁹ While the European Commission points out that outside the banking sector own funds amount to 30–50 % of the balance sheet total,⁴⁰ it proposes a leverage ratio of only 3 %. Moreover, it hasn’t explained why authorities should not insist that the funds to absorb losses and recapitalize a bank be provided by its owners and the

³⁹ See European Commission (2012a), Annex XIII and European Commission (2012b), p. 13ff and Standard & Poor’s (2015).

⁴⁰ See European Commission (2015b), p. 25 ff.

holders of hybrid and subordinated debt instruments.⁴¹ Finally, considering the comprehensive powers assigned to supervisors under the new rules, it remains unclear why they shouldn't contribute if resolution costs exceed own funds available as this would better align supervisors' authority and responsibility/liability.

The new rules will increase the risk for banks' creditors to cover losses and the cost of recapitalization. Therefore, banks should be obliged to provide comprehensive and easy to understand information on the position of each group of creditors within the chain of liability. This representation should clearly show the funds available to cover losses and the cost of recapitalization as well as the order by which available funds would be used. Inevitably, banks' reporting would also require information on the resolution plan and liabilities excluded from bail-in if any. Moreover, the reporting should be supplemented by a bank-specific scenario analysis by the resolution authorities. This would help creditors to form an opinion on important pricing parameters such as default probability and loss severity. Therefore, it is hard to understand why the new resolution framework currently does not stipulate any rules on appropriate disclosure.

Reducing unnecessary complexity as a result of the surge of new regulations is much needed and would also help transparency. As discussed, the various regulatory ratios that have been established, all of which have to be respected at any time, do not seem to be necessary. Currently, a multitude of instruments such as the Basel I floor, the leverage ratio, SREP surcharges, capital buffers, and a floor for the MREL ratio that implicitly derives from the BRRD have been made available to address risks emanating from the use of internal models. Unless authorities intend to replace internal risk models by a more sophisticated standardized approach,⁴² one could largely address legitimate concerns related to the appropriateness of RWA based on internal risk models by determining a common floor for RWA to Leverage Ratio Exposure or RWA to Risk Exposure, respectively. With significantly reduced costs for all market participants by addressing unnecessary overlaps, authorities would still have the tools available to address risks that are not sufficiently covered otherwise.

⁴¹ BRRD, recital 79 points out that resolution authorities may require a certain composition of MREL to ensure the effectiveness of the bail-in tool.

⁴² See Basel Committee on Banking Supervision (2014) and Basel Committee on Banking Supervision (2015), p. 8–11. In addition, the Basel Committee has issued a second consultative paper on the "Revisions to the Standardized Approach for credit risk".

References

- Bank of England (2015): The Bank of England's Approach to Setting a Minimum Requirement for Own Funds and Eligible Liabilities (MREL). December 2015, URL: <http://www.bankofengland.co.uk/financialstability/Documents/resolution/mrelconsultation2015.pdf>, download on July 4, 2016.
- Basel Committee on Banking Supervision (2014): Basel Committee Consults on Capital Floors. December 22, 2014, URL: <https://www.bis.org/bcbs/publ/d306.pdf>, download on December 4, 2016.
- (2015): Finalising Post-Crisis Reforms: an update. November 2015, URL: <https://www.bis.org/bcbs/publ/d344.pdf>, download on December 4, 2016.
 - (2016): Reducing Variation in Credit Risk-Weighted Assets – Constraints on the Use of Internal Model Approaches. Consultative Document, March 2016, URL: <https://www.bis.org/bcbs/publ/d362.pdf>, download on December 4, 2016.
- BBVA (2014): Total Loss-Absorbing Capacity (TLAC): Making Bail-In Feasible and Credible Instead of Bail-Out. Global Regulation Watch, November 11, 2014, URL: https://www.bbvaresearch.com/wp-content/uploads/2014/11/20141111_Regulation-Watch_TLAC-V-def1.pdf, download on July 4, 2016.
- (2015): EU Loss-Absorbing Capacity Requirement: Final MREL Guidelines. Europe Regulation Watch, July 7, 2015, URL: <https://www.bbvaresearch.com/en/publicaciones/eu-loss-absorbing-capacity-requirement-final-mrel-guidelines/>, download on July 4, 2016.
- Deutsche Bundesbank (2014): Europe's new Recovery and Resolution Regime for Credit Institutions. Monthly Report, June 2014, pp. 31–55, URL: https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Monthly_Report/2014/2014_06_monthly_report.pdf?__blob=publicationFile, download on December 4, 2016.
- (2015a): Approaches to Strengthening the Regulatory Framework of European Monetary Union. Monthly Report, March 2015, pp. 15–37, URL: https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Monthly_Report/2015/2015_03_monthly_report.pdf?__blob=publicationFile, download on December 4, 2016.
 - (2015b) Financial Stability Review 2015, URL: https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Financial_Stability_Review/2015_financial_stability_review.pdf?__blob=publicationFile, download on December 4, 2016.
- European Banking Authority (2015): EBA Final Draft Regulatory Technical Standards on Criteria for Determining the Minimum Requirement for Own Funds and Eligible Liabilities Under Directive 2014/59/EU. July 3, 2015, URL: <https://www.eba.europa.eu/documents/10180/1132900/EBA-RTS-2015-05+RTS+on+MREL+Criteria.pdf>, download on March 1, 2016.
- (2016): Opinion of the European Banking Authority on the Commission's Intention to Amend the Draft Regulatory Technical Standards Specifying Criteria Relating to the Methodology for Setting Minimum Requirement for Own Funds and Eligible Liabilities According to Article 45(2) of Directive 2014/59/EU. February 9, 2016, URL: <https://www.eba.europa.eu/documents/10180/1359456/EBA-Op-2016-02+Opinion+on+RTS+on+MREL.pdf>, download on March 1, 2016.

European Commission (2012a): Commission Staff Working Document Impact Assessment, Accompanying the document: Proposal for a Directive of the European Parliament and of the Council, Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms and Amending Council Directives 77/91/EEC and 82/891/EC, Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC and 2011/35/EC and Regulation (EU) No 1093/2010. June 6, 2012, URL: http://ec.europa.eu/internal_market/bank/docs/crisis-management/2012_eu_framework/impact_ass_en.pdf, download on March 1, 2016.

- (2012b): Discussion Paper on the Debt Write-Down Tool – Bail-In. URL: http://ec.europa.eu/internal_market/bank/docs/crisis-management/discussion_paper_bail_in_en.pdf, download on March 1, 2016.
- (2013): Capital Requirements – CRD IV/CRR – Frequently Asked Questions. March 21, 2013, URL: http://europa.eu/rapid/press-release_MEMO-13-272_en.htm, download on March 1, 2016.
- (2014): EU Bank Recovery and Resolution Directive (BRRD): Frequently Asked Questions. April 15, 2014, URL: http://europa.eu/rapid/press-release_MEMO-14-297_en.htm, download on March 1, 2016.
- (2015a): European Commission – Fact Sheet Updated Version of First Memo Published on 15/04/2014 – Banking Union: Restoring Financial Stability in the Eurozone. 24 November 2015, URL: http://europa.eu/rapid/press-release_MEMO-15-6164_en.htm?locale=en, download on March 1, 2016.
- (2015b): Annex Accompanying the Consultation Paper on the Possible Impact of the CRR and CRD IV on Bank Financing of the Economy. URL: http://ec.europa.eu/finance/consultations/2015/long-term-finance/docs/consultation-document-annex_en.pdf, download on March 1, 2016.
- (2016a): Proposal for a Regulation of the European Parliament and of the Council Amending Regulation (EU) No 575/2013... URL: http://ec.europa.eu/finance/bank/docs/regcapital/crr-crd-review/161123-proposal-amending-regulation_en.pdf, download on December 4, 2016.
- (2016b): Commission Delegated Regulation (EU) .../... of 23.5.2016 Supplementing Directive 2014/59/EU of the European Parliament and of the Council with Regard to Regulatory Technical Standards Specifying the Criteria Relating to the Methodology for Setting the Minimum Requirement for Own Funds and Eligible Liabilities. URL: http://ec.europa.eu/finance/bank/docs/crisis-management/160523-delegated-regulation_en.pdf, download on July 7, 2016.

European Parliament (2016): Loss Absorbing Capacity in the Banking Union: TLAC Implementation and MREL Review, European Parliament Briefing. July 7, 2016, URL: [http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/574408/IPOL_BRI\(2016\)574408_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/574408/IPOL_BRI(2016)574408_EN.pdf), download on December 4, 2016.

Financial Stability Board (2015): Principles on Loss-Absorbing and Recapitalisation Capacity of G-SIBs in Resolution Total Loss-Absorbing Capacity (TLAC) Term Sheet. November 9, 2015, URL: <http://www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf>, download on March 1, 2016.

- Finanzinspektionen (2015): Capital Requirements of the Swedish Banks, Third Quarter 2015. Memorandum, November 25, 2015, URL: http://www.fi.se/upload/90_English/20_Publications/20_Miscellaneous/2015/Kapital_PM_2015Q3_engNY2.pdf, download on March 1, 2016.
- German Federal Financial Supervisory Authority (2016): Classification of Certain Liabilities of CRR Institutions Under Insolvency Law. November 7, 2016, URL: https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Merkblatt/mb_160805_Auslegungshilfe_46f_en.html, download on December 4, 2016.
- Gracie, A. (2015): TLAC and Financial Stability, in European Economy – Banks, Regulation, and the Real Sector, Capital Requirements and Loss Absorption Capacity for Large Banks. Issue 2015.1, URL: http://european-economy.eu/wp-content/uploads/2015/04/EE_1.2015.pdf, download on July 4, 2016.
- Krahnen, J. P. (2014): Implementing Bail-In Properly. SAFE Policy Letter, No 35, November 13, 2014, URL: <http://nbn-resolving.de/urn:nbn:de:hebis:30:3-356804>, download on July 4, 2016.
- Kupiec, P. H. (2015): Will TLAC Regulations Fix the G-SIB Too-Big-To-Fail Problem?. AEI Economic Policy Working Paper 2015-08, November 25, 2015. URL: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2631617, download on July 4, 2016.
- Metz, V./Richter, K./Weiss, P./Rottensteiner, B./Unterkofler, D./Langthaler, J./Pechmann, P. (2016): Minimum Requirement for Own Funds and Eligible Liabilities (MREL) – Initial Assessment for Austrian Banks and Selected Subsidiaries in the EU. Österreichische Nationalbank Financial Stability Report 31, June 2016, pp. 82–95, URL: <https://www.oenb.at/Publikationen/Finanzmarkt/Finanzmarktstabilitaetsbericht/2016/financial-stability-report-31.html>, download on July 4, 2016.
- Official Journal of the European Union L237/1 (2016): Commission Delegated Regulation (EU) 2016/1450 of 23 May 2016. September 03, 2016, URL: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1450&from=DE>, download on December 4, 2016.
- Single Resolution Board (2016): SRB 2nd Industry Dialogue. January 12, 2016, URL: http://srb.europa.eu/sites/srbsite/files/2nd_industry_dialogue_12-1-2016_-_mrel.pdf, download on July 4, 2016.
- Standard & Poor's (2015): When it Rains, it Pours: Study of State Aid for Failing EU Banks Informs the Debate on Future Capacity Needs to Absorb Losses. March 9, 2015, URL: https://www.globalcreditportal.com/ratingsdirect/renderArticle.do?articleId=1388052&SctArtId=302009&from=CM&ns_l_code=LIME&sourceObjectId=9073468&sourceRevId=1&fee_ind=N&exp_date=20250308-20:09:14, download on July 4, 2016.