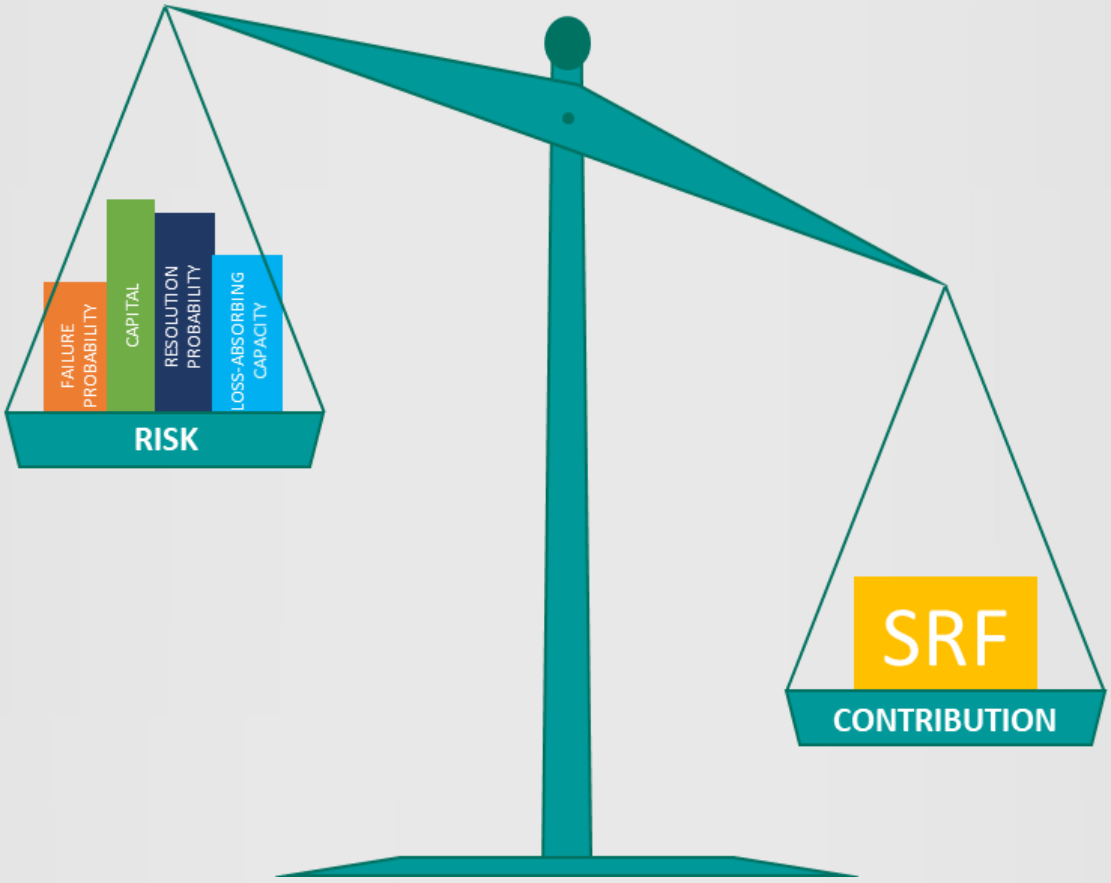

HOW TO REFINE THE CONTRIBUTIONS TO THE SINGLE RESOLUTION FUND?

PROPOSAL FOR AN ALTERNATIVE METHODOLOGY

WILLEM PIETER DE GROEN
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The Centre for European Policy Studies (CEPS) is an independent policy research institute based in Brussels. Its mission is to produce sound analytical research leading to constructive solutions to the challenges facing Europe today. CEPS paperbacks present analysis and views by leading experts on important questions in the arena of European public policy, written in a style geared to an informed but generalist readership.

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CONTENTS

List of Figures, Tables and Boxes 5
List of abbreviations 7
Executive summary 8
1. Introduction 10
1.1 SRF contribution 10
1.2 Legal cases 10
1.3 Objectives 11
1.4 Reading guide 11
2. Current SRF contribution methodology 12
2.1 Target level 12
2.2 Basic annual contribution 13
2.3 Risk factor 16
2.4 Types of contributions 18
2.4.1 Lump-sum contributions 19
2.4.2 Non-bank contributions 20
2.4.3 Mixed contributions 21
2.4.4 Risk-adjusted contributions 22
2.5 Replication of current contributions 22
3. Problems with the current SRF methodology 27
3.1 Opaqueness 27
3.2 Complexity 29
3.3 Incoherence with EU legislation 30
4. Alternative SRF contribution methodology 32
4.1 Institutions in scope 34
4.2 Annual target level 36
4.3 Types of contributions 39
4.3.1 Lump-sum contributions 40
4.3.2 Risk-adjusted contributions 41
4.4 Estimation of alternative methodology (institutions under SRB remit) 49
4.5 Estimation of alternative methodology (all risk-adjusted contributors) 53
5. Concluding remarks 56
References 59

Annexes 61
Annex 1 Data and assumptions for replication of current SRF contributions 61
Annex 2 Validation of replication following current SRF methodology 69
Annex 3 Correlation of risk indicators under current SRF methodology 70
Annex 4 List of institutions under SRB remit and their respective resolution strategies 71
Annex 5 Main assumptions alternative methodology 75

LIST OF FIGURES, TABLES AND BOXES

Figure 1 Calculation of annual contribution under alternative SRF methodology 9
Figure 2 Annual target level calculation 13
Figure 3 BAC calculation under current SRF methodology 14
Figure 4 BAC components (% of total liabilities incl. own funds) 15
Figure 5 Simplified calculation of individual risk factors 18
Figure 6 Types of contributions to the SRF 18
Figure 7 Number of institutions and share of total by type of contribution (2018) 19
Figure 8 Components of individual non-bank contributions 21
Figure 9 Calculation of individual risk-adjusted contributions 22
Figure 10 Estimated distribution of current SRF contributions by country (% of total) 23
Figure 11 Replicated contributions by institution size 23
Figure 12 Replicated contributions by type of ownership structure 24
Figure 13 Replicated contributions of 20 largest groups by country (% of total) 25
Figure 14 Replicated contributions by covered deposit intensity 26
Figure 15 Overview of alternative SRF contribution methodology 33
Figure 16 Entities within the scope of the SRF according to the alternative methodology 34
Figure 17 Number of institutions and total assets by type of institution 36
Figure 18 Calculation of annual target level (risk-adjusted contributions) 37
Figure 19 Annual target level under current and alternative methodologies 38
Figure 20 Estimated covered deposits by type of institution and country 38
Figure 21 Number of institutions and share of total by type of alternative contribution 40
Figure 22 Calculation of SRF contributions according to alternative methodology 42
Figure 23 Calculation of size component according to alternative methodology 42
Figure 24 Share of resolution group by size component over total assets 44
Figure 25 Historic cumulative peak losses (% of corrected RWAs) 45
Figure 26 Share of resolution groups under SRB remit by excess capital (% of RWAs) 45
Figure 27 Historic cumulative peak losses as share of TLOF (%) 46
Figure 28 Share of institutions under SRB remit by loss-absorption capacity as % of TLOF 47
Figure 29 Calculation of contribution key according to alternative methodology 48
Figure 30 Alternative contributions by country (% of total) 49
Figure 31 Comparison contributions by country: current and alternative SRF methodologies 50
Figure 32 Alternative contributions by institution size (% of total) 51
Figure 33 Comparison of contributions by size: current and alternative SRF methodologies .. 51
Figure 34 Alternative contributions by resolution strategy (% of total) 52
Figure 35 Alternative contributions of 20 largest groups by country (% of total) 52
Figure 36 Alternative contributions by covered deposits intensity (% of total) 53
Figure 37 Annual target level under current and modified alternative methodologies 54
Figure 38 Alternative modified contributions by resolution strategy 54
Figure 39 Distribution of SRF contributions across covered deposits by methodology 55

Table 1 Risk indicators used in the calculation of the risk-adjustment factor 16
Table 2 Requirements for qualifying for lump-sum contributions 20
Table 3 Number of contributors under current and alternative methodologies..... 39
Table 4 Thresholds and contribution amounts for lump-sum contributors..... 41
Table 5 Excess capital and corresponding resolution probabilities 46
Table 6 Loss-absorption capacity and corresponding payout probability..... 47

LIST OF ABBREVIATIONS

Acronym	Full name
BAC	Basic Annual Contribution
BRRD	Bank Recovery and Resolution Directive
CCP	Central Clearing Counterparty
CET1	Common Equity Tier 1
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
CSD	Central Securities Depository
DGS	Deposit Guarantee Scheme
EBA	European Banking Authority
ECA	European Court of Auditors
ECB	European Central Bank
ECJ	European Court of Justice
EDIS	European Deposit Insurance Scheme
FBF	Fédération Bancaire Française
FOLTF	Failing or Likely to Fail
IPS	Institutional Protection Scheme
LSI	Less Significant Institution
MPE	Multiple Point of Entry
MREL	Minimum Requirement for Own Funds and Eligible Liabilities
NCWO	No Creditor Worse Off
NRA	National Resolution Authority
RWA	Risk-Weighted Assets
SPE	Single Point of Entry
SRB	Single Resolution Board
SRF	Single Resolution Fund
SRM	Single Resolution Mechanism
SRMR	Single Resolution Mechanism Regulation
TFEU	Treaty on the Functioning of the European Union
TLOF	Total Liabilities and Own Funds

EXECUTIVE SUMMARY

The Single Resolution Fund (SRF) was created in 2016 to provide the necessary funding in resolution, avoiding the need to bail out banks with taxpayers' money. The SRF relies on banks in the Banking Union to collect the funds.

The methodology determining the current SRF contributions is specified in Commission Delegated Regulation (EU) 2015/63. This methodology has three important problems.

First, the more than 20 indicators on the more than 1,500 institutions paying a risk-adjusted contribution are not available to the individual institutions paying a risk-adjusted contribution, which makes the methodology not replicable for the contributing institutions and third parties.

Second, the large number of indicators and institutions in combination with a calculation based on interdependencies (ranking and relative size) make the methodology overly complex.

Third, the indicators used for the calculation are only partially defined in bank capital legislation and other parts of the resolution framework. Moreover, the methodology considers the banks at institutional level rather than as a combination of institutions, which is likely to be considered in resolution.

These problems have triggered various banking groups to challenge the methodology in court and have required the Single Resolution Board (SRB) to recalculate the contributions several times.

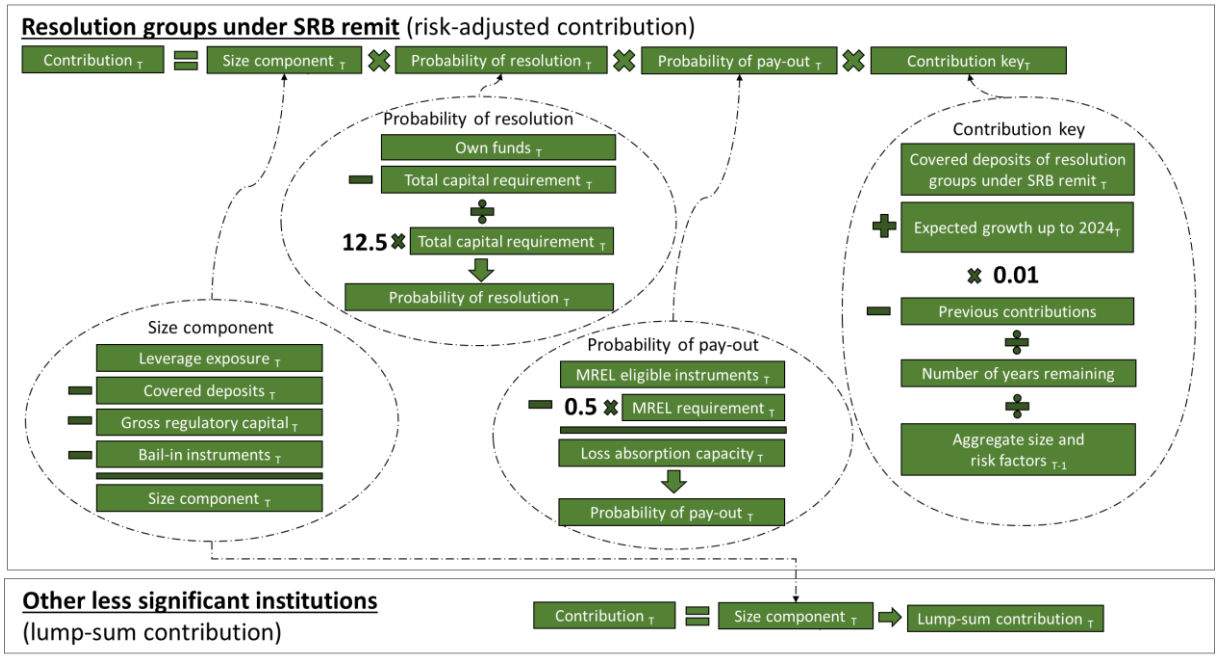
To address these problems, this study proposes an alternative methodology. The essence of the proposed alternative methodology is quite similar to the current methodology, with a size component and a risk factor (see Figure 1). However, the scope and indicators necessary have been significantly reduced and simplified. There are some important differences with the current SRF methodology:

- The alternative methodology treats the lump-sum and risk-adjusted contributions separately for the calculation of the target level, instead of deducting the lump-sum contributions from the target level for the risk-adjusted contributions under the current methodology. The reduction in target level could be considered already compensated by the increase in covered deposits during the COVID-19 pandemic.
- The alternative methodology proposes a calculation of the size component based on the maximum potential loss, which is likely to affect the amount of loss/contribution in resolution. The main difference in the calculation of the size component is that besides own funds, other bail-inable instruments are also deducted, and covered deposits can only be deducted to the extent that the deposit guarantee scheme (DGS) can cover the losses in resolution.
- The alternative methodology only requires the approximate 125 resolution groups under the SRB's remit to pay a risk-adjusted contribution. These resolution groups are most likely to receive funds from the SRF and represent 82% of the bank assets. The current methodology covers more than 12.5 times as many risk-adjusted contributors,

representing about 96% of total assets. The calculation of contributions for resolution groups rather than individual entities further better reflects the relevant entities in resolution.

- The alternative methodology only uses two indicators to assess riskiness (i.e. excess capital and loss-absorption capacity), which is far fewer than the current 18 indicators to determine the risk factor.
- The alternative methodology requires the riskiest institutions to pay up to 25 times as much as the least risky institutions, while under the current methodology it is a maximum of twice as much. Higher risk sensitivity has a stronger incentivising effect. It is nevertheless possible to reduce risk sensitivity under the alternative methodology by lowering the limits for the maximum excess capital and loss-absorption capacity considered.
- The alternative methodology introduces a contribution key based on the previous observed values to translate the size component and risk factor into an annual contribution, avoiding the need to have information on all institutions to calculate contributions, as is currently the case.

Figure 1 Calculation of annual contribution under alternative SRF methodology



Source: Authors (2021).

1. INTRODUCTION

The Single Resolution Mechanism (SRM) was established in 2014 as part of the Banking Union to reduce the risk of private losses needing to be covered through public bailouts. The SRM provides a uniform framework for an orderly procedure for bank resolution, including institutional framework, resolution planning, resolution tools and actions, and financing.

1.1 SRF contribution

The Single Resolution Fund (SRF) was created in 2016 to provide external funding in resolution. The SRF has a target size of 1% of covered deposits (more than EUR 60 billion), which should be reached by 2024.

The SRF is financed through individual annual contributions from financial institutions. The current methodology for the calculation of ex-ante contributions to the SRF is based on a size and risk component.

The size component is determined for all institutions covered by the resolution mechanism licensed in the euro area. It is calculated as total liabilities less own funds, covered deposits and other deductions.

The risk component is only calculated for larger institutions. It is based on a list of risk indicators, which are each assigned a certain weight. The institutions are compared against each other for each of the risk indicators to determine the composite risk factor.

The final ex-ante contribution combines both size and risk components based on the notion that larger and riskier banks pay larger contributions.

The current SRF methodology is inherently opaque and complex. Hence, the calculation of risk-adjusted contributions of the individual institutions depends on the risk indicators of other institutions, (partially) confidential data and indicators that are solely required for the calculation of the contribution. These limitations currently make it impossible for institutions to accurately predict their risk-adjusted SRF contributions or evaluate their validity.

1.2 Legal cases

The validity of the current SRF methodology used for the calculation of ex-ante contributions has been contested by several hundred contributing institutions at various courts in the European Union. Among these cases are three notable ones against the Single Resolution Board (SRB) in relation to the SRF contributions calculation brought before the European Court of Justice (ECJ). The institutions involved[1] sought to annul their 2017 SRF ex-ante contributions, arguing that the SRB did not provide sufficient data to verify the accuracy of their contributions. The ECJ ruled in favour of the applicants, confirming that the data provided by the SRB was insufficient[2]. In one case, there was also a plea of illegality of the risk-adjustment part of the

[1] German Portigon AG (Case T-420/17), Voralberg Bank AG and Hypothekenbank AG (Case T-414/17) and Landesbank Baden-Württemberg (Case T-411/17).

[2] Infringement of the obligation to state reasons (Article 296 TFEU).

current methodology. The ECJ concluded[3] that the risk-adjustment part of the current contribution methodology was unnecessarily opaque. In line with these conclusions, the ECJ ruled that the risk-adjustment part of the contributions calculation was unlawful insofar as it prevented the SRB from providing institutions with sufficient data[4]. Based on the ECJ ruling, the applicants' 2017 SRF ex-ante contributions were annulled.

Following an appeal to the ECJ, the legality of the current SRF methodology was restored. However, the contributions remain annulled as the reasoning of the SRB is still considered inadequate. Moreover, the data provided by the SRB is still considered insufficient to enable institutions to systematically detect errors made by the SRB in the calculation of contributions (ECJ, 2021).

1.3 Objectives

Against this background, this report aims to come up with a proposal for an alternative methodology for SRF ex-ante contributions that addresses the key weaknesses in the current methodology. Moreover, it aims to assess the impact of the alternative methodology on contributions.

1.4 Reading guide

Chapter 2 describes the **current SRF methodology** used for the calculation of ex-ante contributions. Moreover, it provides the results of a replication of current SRF contributions across different types of banks and countries. This allows us to identify the main challenges in replication by contributing institutions and aspects that make the current methodology opaque.

Chapter 3 discusses the **main problems with the current SRF methodology**, as well as the main **conditions for a potential alternative methodology**. It considers both court rulings and the experience of policymakers and resolution officers dealing with the current methodology.

Chapter 4 describes the **proposed alternative methodology** for calculating SRF ex-ante contributions. This includes considerations on the scope of institutions and the calculation of their contributions. Moreover, it provides a **simulation of the alternative SRF methodology**, and compares the results with the current SRF methodology to understand the expected differences in practice.

Chapter 5 draws the main **conclusions** from the analysis and reflects on the benefits of the proposed alternative methodology compared to the current SRF contribution methodology in addressing the problems connected with the current methodology.

[3] Directive 2014/59/EU and Regulation (EU) No 806/2014.
[4] Infringement of the obligation to state reasons (Article 296 TFEU).

2. CURRENT SRF CONTRIBUTION METHODOLOGY

This chapter discusses the key characteristics of the current SRF methodology. It further provides a replication of the contributions based on the current SRF methodology to get a full understanding of the practical complications in the calculation of contributions, as well as distribution of the contributions across institutions.

The SRF should reach the target level of 1% of covered deposits by 2024. This amount is distributed across the eight years since the establishment of the SRF.

Commission Delegated Regulation (EU) 2015/63 specifies how the contributions are distributed across institutions, considering the size and risk profile of the institutions:

- **Size** is a first indicator of risk that institutions pose – smaller institutions are less risky and less systematically important than larger institutions. Size is calculated for each licensed institution individually as **basic annual contribution (BAC)** on the basis of its liabilities.
- The **risk** level of the institutions should be reflected in contributions to ensure that the ex-ante contributions are proportionate to the risk that institutions pose. The **risk factor** is calculated only for institutions deemed sufficiently large, and takes into account a number of different indicators, each assigned a certain weight.

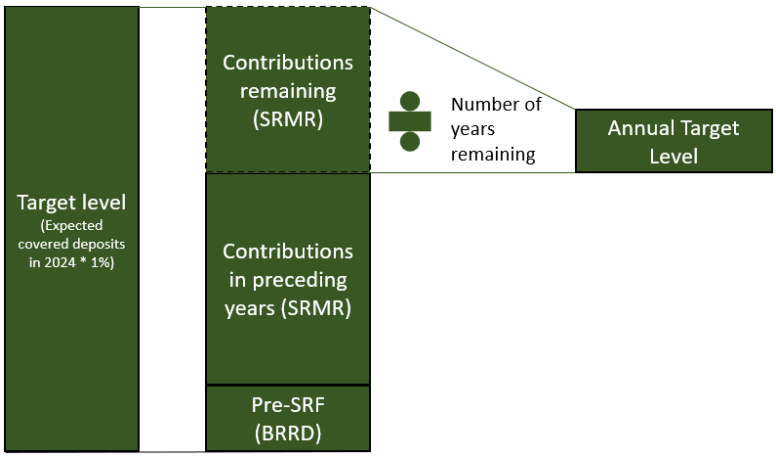
2.1 Target level

The SRF has a target size of 1% of covered deposits. The SRF needs to collect the funds through annual contributions to reach the target size for the first time in 2024. During the transition period from 2016 to 2024, the SRF needs to collect one eighth of the target per annum[5] (see Figure 2). This annual target contribution needs to take into account the growth in covered deposits and funds already collected under the Bank Recovery and Resolution Directive (BRRD, Directive 2014/59/EU) before the SRF started collecting the funds (about 5% of the target size[6]).

[5] Article 69, Regulation (EU) No 806/2014.

[6] According to the SRB, the total amount collected under the BRRD in 2015 was EUR 4.3 billion, which is equivalent to about 5% of the total target size (2020 contributions calculation).

Figure 2 Annual target level calculation



Source: Authors (2021).

The covered deposits are adjusted each time for expected growth. According to the latest SRF contributions calculation[7], covered deposits are expected to grow by a total of 35% between 2016 and 2024. This is a sharp increase compared to the previously expected total growth of 15%, which is mostly explained by an increase in household savings after the COVID-19 outbreak. Indeed, in 2020 covered deposits grew by 7% compared to an average annual growth of 4% in previous years (SRB, 2021a).

For the reference year used in this study (2018) the target level was calculated as 1% of covered deposits in the previous year (2017). This amount was then adjusted for expected growth in covered deposits (15%) and totalled EUR 8.1 billion. The actual total contribution collected from all institutions combined was somewhat lower than that – EUR 7.5 billion. This was due to the restatement of data on the institutions and revisions, as well as the deduction of funds collected by National Resolution Authorities (NRAs) under the BRRD prior to the establishment of the SRF.

2.2 Basic annual contribution

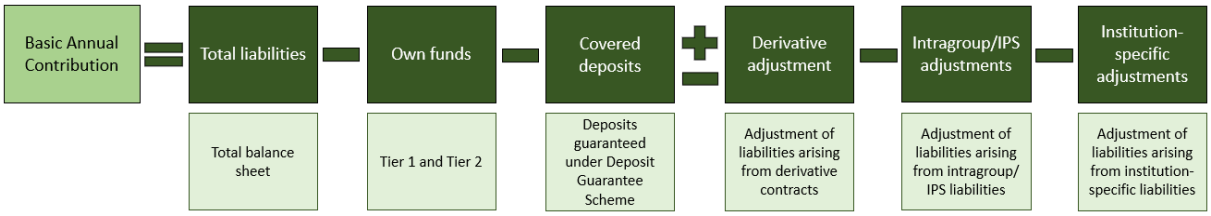
The basic annual contribution (BAC) or size component is calculated for all institutions contributing to the SRF.

The size of the institution concerned is the main risk indicator according to Delegated Regulation (EU) 2015/63. The larger the institution, the larger the chance its resolution is in the public interest and it could make use of a resolution financial arrangement, including resources from the SRF.

The BAC is calculated as total liabilities minus own funds, covered deposits, derivative adjustments, intragroup / institutional protection scheme (IPS) adjustments and institution-specific adjustments (see Figure 3).

[7] Total covered deposits as disclosed by the SRB for the calculation of 2021 contributions.

Figure 3 BAC calculation under current SRF methodology



Source: Authors (2021).

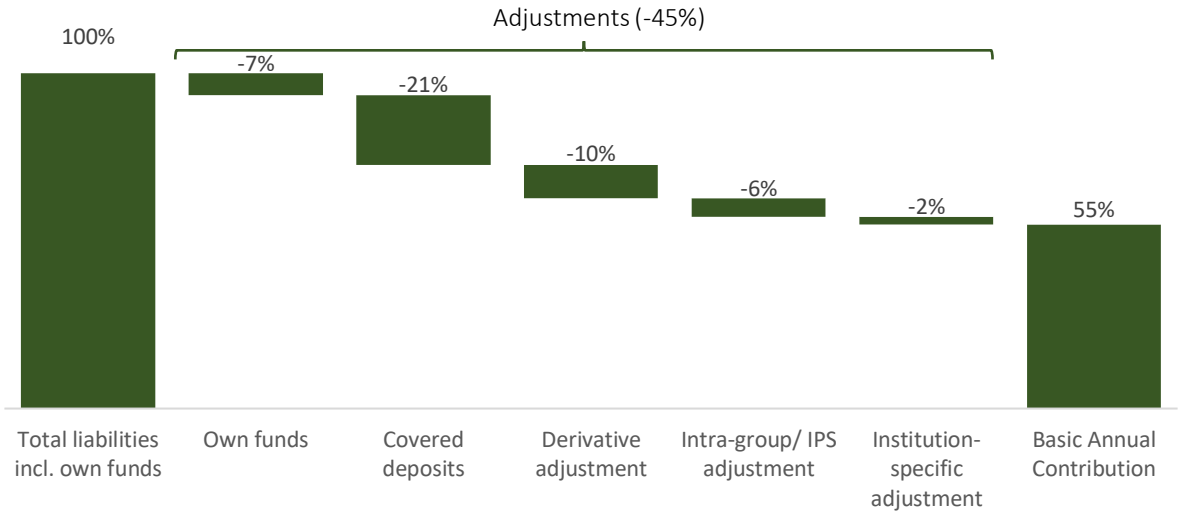
Subtracting covered deposits, own funds, derivative adjustment and other deductions from total liabilities reflects the potential need for funding in case of resolution (see Figure 4).

- **Own funds** are the sum of Tier 1 and Tier 2 capital held by the institution. Own funds are deducted because receiving a contribution from the SRF in case of resolution is conditional on the sufficient use of own funds to absorb losses (i.e. bail-in)[8]. Own funds make up about 7% of total liabilities including own funds.
- **Covered deposits** are those customer deposits held by the institutions, which are eligible for protection under a national deposit guarantee scheme (DGS). Covered deposits are deducted because national DGSs can contribute to the resolution, absorbing the losses on covered deposits in resolution. Covered deposits are the largest deduction in BAC calculation, and represent about 21% of total liabilities including own funds.
- **Derivative adjustment** aims to capture the difference between the derivatives held by institutions as valued in accordance with accounting value and leverage ratio methodology. This adjustment was introduced to ensure harmonised treatment of derivatives. Currently, the accounting of derivatives is not harmonised in the EU with respect to individual accounts, which could impact the amount of liabilities in the calculation. The derivative adjustment accounts for about 10% of liabilities including own funds.
- **Intragroup/IPS adjustments** aim to reflect total intragroup and IPS liabilities carried out by the institutions that are part of the integrated group or an IPS. This adjustment is deducted from the BAC to avoid double counting of intragroup/IPS liabilities. Intragroup/IPS adjustments account for about 6% of total liabilities including own funds.
- **Institution-specific adjustments** capture liabilities of institutions that do not hold covered deposits and have a very specific business model[9] that is distinct from traditional credit institutions. The adjustment aims to capture the less risky, non-banking activities of institutions, for which the bank activities make only a small share of total liabilities. This adjustment has a relatively small impact on the BAC, representing about 2% of total liabilities including own funds. Nevertheless, the adjustment has a large impact on individual institutions.

[8] European Commission (2014), Regulation (EU) No 806/2014.

[9] Central Clearing Counterparties (CCPs), Central Securities Depositories (CSDs), promotional banks and investment firms.

Figure 4 BAC components (% of total liabilities incl. own funds)



Note: The sum of the shares of liabilities presented in the figure can deviate from the aggregates due to rounding.
Source: Authors (2021).

The public information that is currently available does not allow the BAC to be replicated. In fact, only the total liabilities, own funds and accounting value of liabilities arising from derivatives are disclosed consistently by the institutions contributing to the SRF. Other details, such as covered deposits, derivatives measured according to leverage ratio methodology, intra-group assets and liabilities and other indicators[10], are disclosed by very few institutions or not disclosed at all.

For the replication, the indicators that have not been publicly disclosed are estimated. This requires making some assumptions in line with the SRF methodology in order to approximate the missing data and define the BAC for each institution. The key assumptions[11] made during the estimation of the BAC are:

- Distribution of **covered deposits** across institutions within a country is proportionate to distribution of customer deposits across institutions within the country.
- Market value of **derivatives** is a reliable indicator of the sum of derivative replacement cost used in the calculation of the derivative adjustment.
- Distribution of **total derivatives** held by the institution across its total liabilities is proportionate to distribution of total liabilities of that institution. This assumption is applicable to those institutions without data on total derivatives.
- Distribution of **off-balance sheet activities** across various instruments is proportionate to distribution of on-balance sheet activities across the same instruments.
- Distribution of **intra-group/IPS liabilities across subsidiaries / IPS members** within a country is proportionate to distribution of total liabilities across subsidiaries / IPS members within that country.

[10] The other indicators include: i) liabilities arising from derivatives held off-balance sheet, ii) liabilities arising from derivatives related to institution-specific liabilities, and iii) liabilities arising from derivatives related to intra-group/IPS liabilities.
[11] The full list of assumptions and approximations made is available in Annex 1.

2.3 Risk factor

The risk factor is calculated for all institutions with a BAC above EUR 300 million or a total balance sheet larger than EUR 1 billion, with the exception of non-bank institutions.

The risk-adjustment factor is based on a number of elements or 'pillars'. Each pillar contains one or more indicators. When assessing the risk profile of each institution, the following pillars and weights are applied:

I. Risk exposure (50%)
II. Stability and variety of source of funding (20%)
III. Importance of the institution to the stability of the financial system (10%)
IV. Additional risk indicators (20%)

The precise elements constituting each pillar are defined in terms of specific balance sheet and regulatory indicators (see Table 1). However, due to the unavailability of harmonised data, three indicators[12] were omitted in 2018 by the SRB, which is responsible for the calculation of the contributions. Their weights were redistributed evenly across the remaining pillars and indicators.

Table 1 Risk indicators used in the calculation of the risk-adjustment factor

Pillar	Indicator	Regulatory weights		Current weights	
		Weights of indicators in pillar	Weight of pillar	Weights of indicators in pillar	Weight of pillar
Pillar I: Risk exposure	Leverage ratio	25%	50%	33%	55.6%
	Common Equity Tier 1 (CET1) Capital Ratio	25%		33%	
	Total risk exposure divided by Total assets	25%		33%	
	Own funds and eligible liabilities held in excess of minimum requirement for own funds and eligible liabilities (MREL)	25%		0%	
Pillar II: Stability and variety of source of funding	Liquidity coverage ratio	50%	20%	100%	22.2%
	Net stable funding ratio	50%		0%	
Pillar III: Importance of institution to stability of financial system or economy	Share of interbank loans and deposits in the EU	100%	10%	0%	0%
Pillar IV: Additional risk indicators to be determined by the resolution authority	Risk-weighted assets (RWAs) for market risk divided by total assets	5%	20%	5%	22.2%
	RWAs for market risk divided by CET1	5%		5%	
	RWAs for market risk divided by total risk exposure	5%		5%	
	Off-balance sheet nominal amount divided by total assets	5%		5%	
	Off-balance sheet nominal amount divided by CET1	5%		5%	

[12] These indicators include: i) own funds and eligible liabilities held in excess of MREL, ii) net stable funding ratio, and iii) share of interbank loans and deposits in the EU.

Pillar	Indicator	Regulatory weights		Current weights	
		Weights of indicators in pillar	Weight of pillar	Weights of indicators in pillar	Weight of pillar
	Off-balance sheet nominal amount divided by total risk exposure	5%		5%	
	Derivatives exposure divided by total assets	5%		5%	
	Derivatives exposure divided by CET1	5%		5%	
	Derivatives exposure divided by total risk exposure	5%		5%	
	Membership of an IPS	45%		45%	
	Extent of previous extraordinary public financial support	10%		10%	

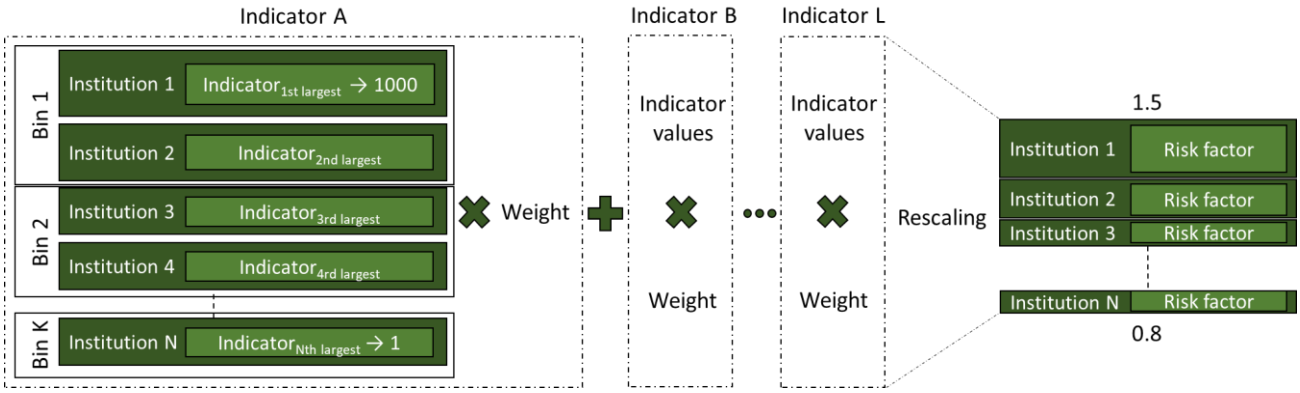
Source: Authors' compilation based on SRF methodology.

To calculate the composite risk factor, institutions are compared against each other for each indicator. First, the number of rank categories – bins – is defined for each of the indicators. The number of bins is calculated based on the number of institutions, average value of the indicator and individual distance to the average. All bins must contain an equal number of institutions. Institutions are then sorted from the lowest value to the highest value and assigned to bins depending on their ranking. The higher the value of the indicator, the higher the bin the institution is placed in.

To ensure comparability of institutions across indicators with a different number of bins, institutions' ranks within each indicator are then rescaled to fit from 1 to 1,000. Moreover, each indicator is assigned a sign (positive/negative) to express the implication of its value for risk. The indicator is assigned a positive sign if the higher value implied higher risk and a negative sign if the higher value implied lower risk.

Based on the rescaled indicators and their relative weights, a composite risk-adjustment factor for each institution is calculated. Risk factors are then rescaled again to fit within the range of 0.8 to 1.5 (see Figure 5). This is done to limit the variance of risk-adjusted contributions. For the re-fitting, the highest original individual risk factor (max) is assumed to be 1.5, while the lowest original individual risk factor (min) is assumed to be 0.8. The remaining risk factors are defined depending on their distance to maximum and minimum risk factors.

Figure 5 Simplified calculation of individual risk factors



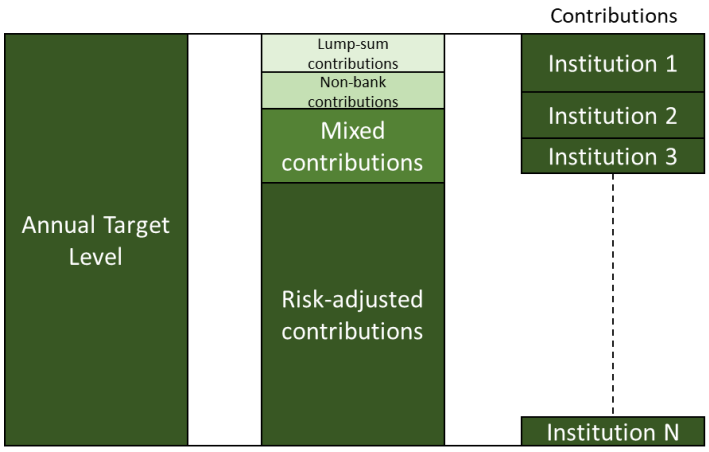
Source: Authors' compilation based on SRF methodology.

2.4 Types of contributions

The SRF methodology as specified in Delegated Regulation (EU) 2015/63 recognises that not all institutions within the scope of the SRF have the same likelihood of being placed under resolution or benefiting from a resolution financing arrangement. The SRF methodology distinguishes between four main types of contributions (see Figure 6):

- **Lump-sum contributions** apply to small institutions, which have to pay a flat-rate contribution based on their size.
- **Non-bank contributions** are paid by investment firms and covered bond-financed mortgage institutions based on their size and type of institution.
- **Mixed contributions** apply to mid-sized institutions, which have to pay a combination of a lump-sum contribution and a risk-adjusted contribution.
- **Risk-adjusted contributions** apply to large institutions, which pay a risk-adjusted contribution.

Figure 6 Types of contributions to the SRF



Source: Authors (2021).

Contributions are calculated separately for each of the 3,315 institutions within the scope of the SRF in reference year 2018[13], even if they are part of a consolidated corporate group (see Figure 7). Although risk-adjusted contributors only account for about a fifth of the institutions, they are responsible for nearly all of the total assets (88%), covered deposits (86%) and replicated contributions to the fund (92%). Among the other types of contributions, mixed contributors account for more than a quarter of the institutions (28%) and a much smaller but still significant share of total assets (5%) and covered deposits (9%). Their contributions are limited (3%). Lump-sum contributors account for a large share of the institutions (49%), but are relatively limited in size (2%) and replicated contributions (0.2%).

Figure 7 Number of institutions and share of total by type of contribution (2018)

Note: Number of institutions as reported by the SRB. Total assets, covered deposits and replicated contributions are based on the replication performed in the context of this study.
Source: Authors' calculations based on Orbis and SRB (2018).

2.4.1 Lump-sum contributions

All institutions are required to contribute to the SRF. However, smaller institutions rarely pose a systemic risk and are more likely to be liquidated instead of being put under resolution. Delegated Regulation (EU) 2015/63 envisages simple flat-rate contributions for institutions with less than EUR 1 billion in total assets and less than EUR 300 million BAC[14]. The final size of the lump-sum contribution varies depending on the BAC and balance sheet total of the institution (see Table 2).

[13] SRF contributions in 2018 were calculated based on the data reported in the most recent annual financial statements, which at the time of data submission were for 2016.
[14] Total liabilities less own funds, covered deposits, derivatives adjustment and other institution-specific deductions.

Table 2 Requirements for qualifying for lump-sum contributions

Total assets (EUR million)	and	Basic annual contribution (EUR million)	Lump-sum contribution (EUR)
<1,000		<50	1,000
		≥50 and <100	2,000
		≥100 and <150	7,000
		≥150 and <200	15,000
		≥200 and <250	26,000
		≥250 and <300	50,000

Source: Authors (2021).

Institutions just paying a lump-sum contribution account for almost half of the institutions, but only about 5% of the covered deposits and total assets in the Banking Union. Their contributions account for a marginal share (0.2%) of the total SRF ex-ante contributions.

2.4.2 Non-bank contributions

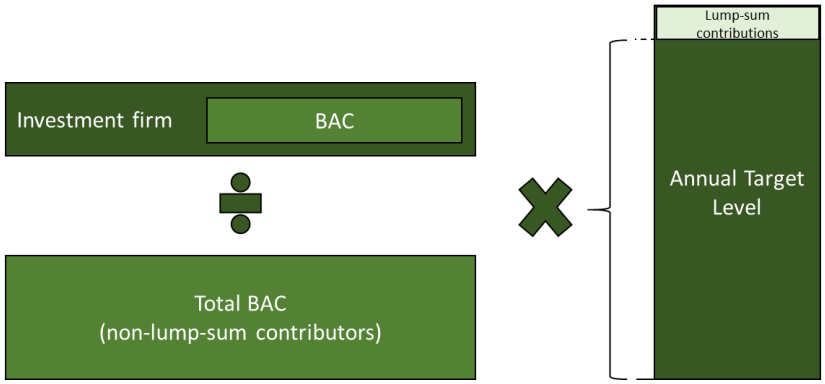
Specialised investment firms and covered bond-financed mortgage institutions cannot benefit from the resolution financing arrangements, and must be wound up through national insolvency procedures. Therefore, these non-bank institutions that do not qualify for a lump-sum contribution pay a specially calibrated contribution.

The share of the total contributions for each individual institution is based only on the BAC and is calibrated differently depending on the type of institution:

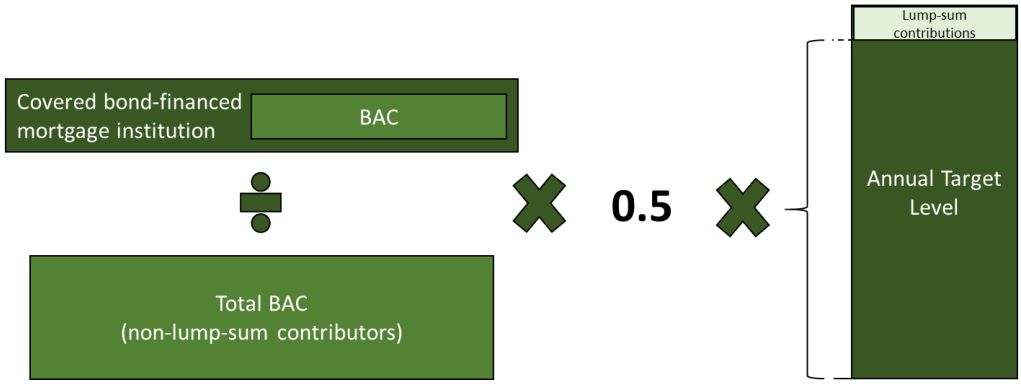
- For investment firms with limited services and activities, contributions are calculated by multiplying the annual target level excluding lump sums by the share of the BAC of the investment firm of the total BAC of all institutions, excluding those paying a lump-sum contribution (see Figure 8A).
- For covered bond-financed institutions, contributions are calculated in the same way as for investment firms. However, covered-bond institutions only pay a contribution based on 50% of their BAC rather than 100% (see Figure 8B).

Figure 8 Components of individual non-bank contributions

a) Investment firms



b) Covered bond-financed mortgage institutions



Source: Authors (2021).

Non-bank institutions make up a marginal part of total institutions contributing to the SRF. Only 2% of all institutions are investment firms or covered bond-financed mortgage institutions. About two thirds of them are covered bond-financed mortgage institutions and the remaining third are investment firms. These institutions together account for 5% of total assets and no covered deposits. Their aggregated contribution is estimated at 5%, of which about half is provided by covered bond-financed mortgage institutions and the remaining half by investment firms.

2.4.3 Mixed contributions

A simplified regime applies to institutions that have total assets of relatively low value (less than EUR 3 billion). These institutions pay a combination of a lump sum contribution and a risk-adjusted contribution. The lump sum is paid over the first EUR 300 million of BAC, which is identical to the maximum BAC for small institutions. The risk-adjusted contribution is calibrated over the BAC minus EUR 300 million.

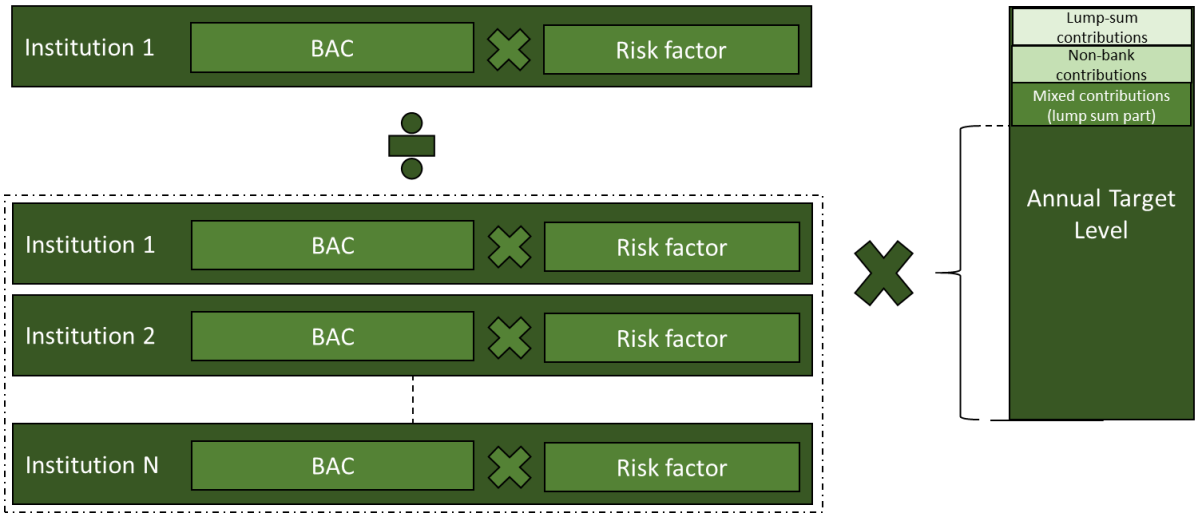
Institutions paying mixed contributions account for less than a third (28%) of all institutions within the scope of the current SRF methodology. They are responsible for 5% of assets and 9% of total covered deposits. These institutions contribute an estimated 3% of total SRF ex-ante contributions.

2.4.4 Risk-adjusted contributions

For all institutions not meeting the requirements for lump-sum, non-bank and mixed contributions, a risk-adjusted contribution is calculated. The share of the total contributions for each individual institution is based on a combination of the individual BACs and risk factors (see Figure 9).

Risk-adjusted contributions are calculated by multiplying the annual target level excluding lump-sum and non-bank contributions by the share of the risk-adjusted BAC of the institution in the sum of all risk-adjusted contributions.

Figure 9 Calculation of individual risk-adjusted contributions



Note: Risk-adjusted contributions only consider institutions that are not paying a lump-sum contribution or non-bank contribution. Moreover, for the mixed contributors, the BAC is reduced by EUR 300 million.
Source: Authors (2021).

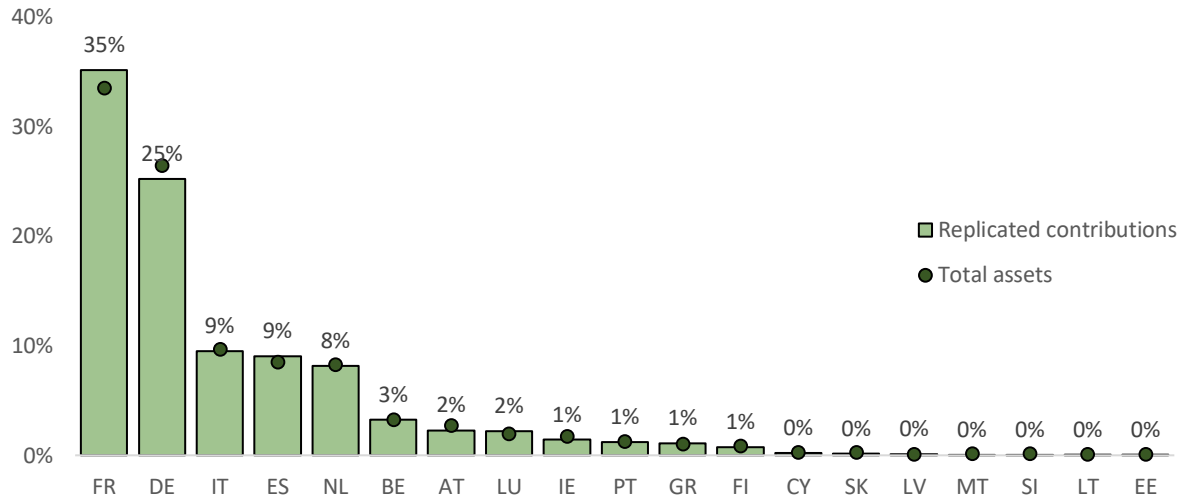
Slightly more than a fifth (21%) of all banks in scope qualify for fully risk-adjusted contributions. These institutions together are responsible for about 88% of total assets and account for about 86% of the total covered deposits in the Banking Union. The risk-adjusted contributions cover about 92% of the replicated contributions.

2.5 Replication of current contributions

Overall, the share of replicated contributions is fairly similar to the market share of institutions measured in assets. French and German institutions are the largest contributors by size and by share of replicated contributions to the SRF (see Figure 10)[15]. Collectively, institutions in France and Germany account for 60% of total assets and contributions. Institutions in other countries account for 9% or less of the contributions.

[15] These and other figures presenting the results are replicated following the methodology detailed in the Annexes.

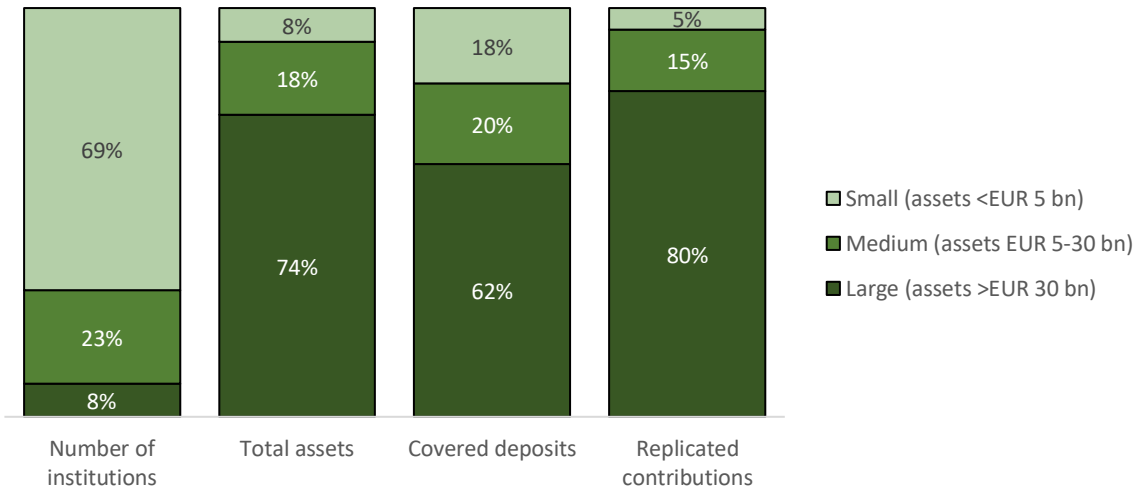
Figure 10 Estimated distribution of current SRF contributions by country (% of total)



Note: Replicated contributions are based on the replication performed in the context of this study.
Source: Authors' calculations based on Orbis and SRB (2018).

Looking at the replicated contributions by size (see Figure 11), the approximate 8% of institutions classed as large institutions (i.e. with total assets above EUR 30 billion) pay about 80% of the contributions. This is significantly more than their share of total assets (74%) and covered deposits (62%). In turn, small (with less than EUR 5 billion in assets) and medium-sized institutions (between EUR 5 billion and EUR 30 billion in assets) contribute a smaller share than their share of total assets and covered deposits. Small and medium-sized institutions combined account for 92% of the institutions.

Figure 11 Replicated contributions by institution size



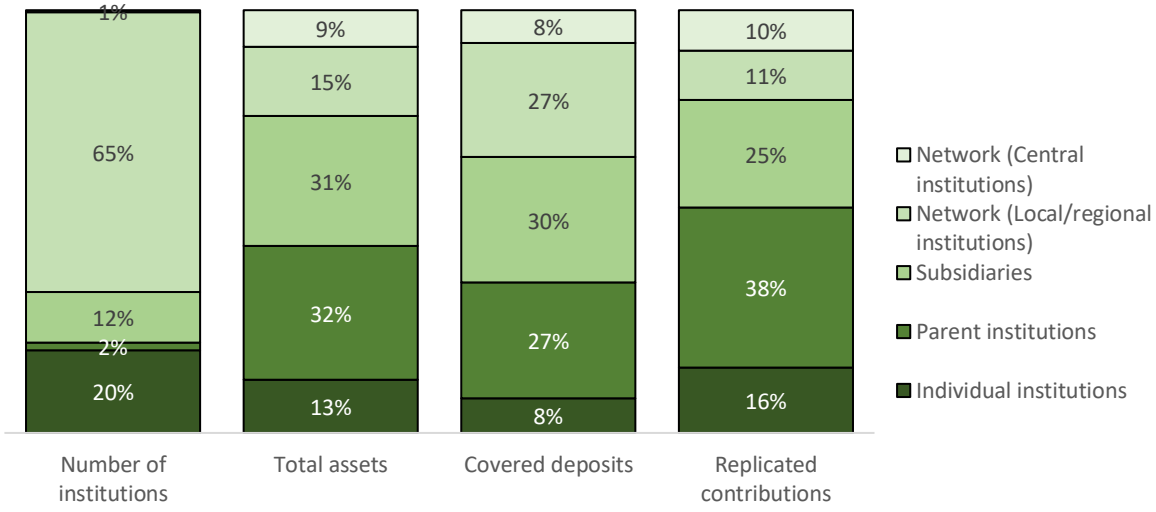
Source: Authors' calculations based on Orbis and SRB (2018).

Contributions under the current contribution methodology are paid by each institution separately, even when they form part of a larger group or network (see Figure 12). About a fifth of institutions (20%) are individual institutions without a parent, subsidiaries or network links.

Their contribution to the SRF is an estimated 16%, which is more than their share of total assets (13%) and covered deposits (8%). Parent institutions and their subsidiaries account for less than a fifth (14%) of the institutions and almost two thirds of total assets (63%) and replicated contributions (63%). Parent institutions represent only a limited share of the institutions (2%), but a significant share of both assets (32%) and covered deposits (27%). Their contribution to the SRF is relatively larger (38%). In turn, the contribution to the SRF of subsidiaries (25%) is relatively smaller than their share of total assets (31%).

Most of the institutions contributing to the SRF operate within networks of cooperatives and savings banks. Local, regional and central institutions represent more than half of the institutions (66%). The networks are relatively smaller in terms of assets, with local and regional institutions representing 15% and central institutions 9%. These banks are relatively more active in retail banking, which is reflected in a higher share of covered deposits and relatively lower replicated contributions for local and regional institutions. In turn, central institutions represent similar shares among total assets (9%), covered deposits (8%) and replicated contributions (10%).

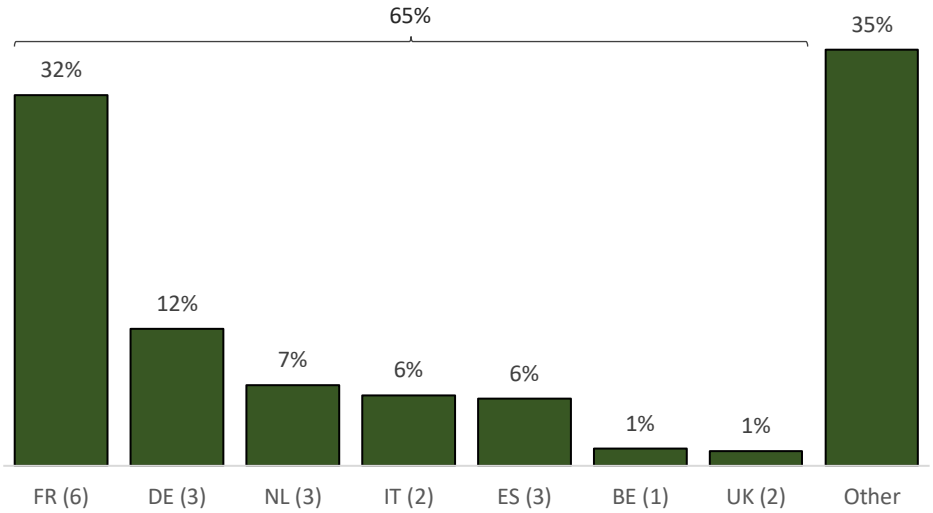
Figure 12 Replicated contributions by type of ownership structure



Source: Authors' calculations based on Orbis and SRB (2018).

Taking a closer look, a small number of banking groups are responsible for the majority of the estimated contribution. The top 20 largest banking groups together account for almost two thirds (65%) of total risk-adjusted contributions (see Figure 13), of which most are located in France (6 groups), Germany (3), the Netherlands (3) and Spain (3). The six largest French banking groups are responsible for about a third (32%) of all risk-adjusted contributions, which is similar to all 14 other large banking groups combined.

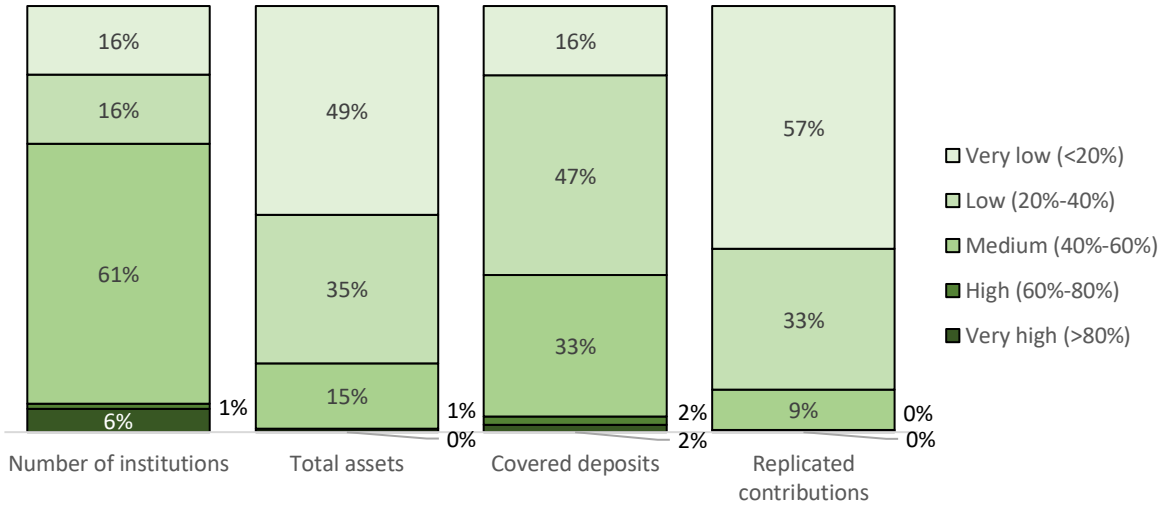
Figure 13 Replicated contributions of 20 largest groups by country (% of total)



Note: Figures in brackets indicate the number of largest groups per country. Number of banks and replicated contributions as replicated for the purpose of this study.
Source: Authors' calculations based on Orbis and SRB (2018).

There is an inverse relationship between the size of contributions and covered deposits intensity. This is understandable, as covered deposits are deducted from total liabilities for the calculation of the BAC. Looking at the figures, the bulk of contributions (57%) were made by institutions with very low covered deposits intensity, i.e. covered deposits of less than 20% of total liabilities (see Figure 14). These institutions account for 16% of total covered deposits and institutions, while they account for about half of the assets (49%). Institutions with low covered deposits intensity (20-40%) represent a similar share of the institutions, but have about three times as many covered deposits (47%). They contributed about a third (35%) of assets and replicated contributions (33%). Institutions with medium covered deposits intensity (60-80%) contributed less than one tenth of total SRF contributions and account for about a third (33%) of total covered deposits. The remaining institutions with covered deposits intensity higher than 60% contributed less than 1% of the estimated SRF contributions.

Figure 14 Replicated contributions by covered deposit intensity



Note: In brackets, share of covered deposits in total liabilities including own funds.
Source: Authors' calculations based on Orbis and SRB (2018).

3. PROBLEMS WITH THE CURRENT SRF METHODOLOGY

This chapter discusses the main problems with the current SRF methodology based on the results of the replication, court proceedings and experience of policymakers and resolution officers dealing with the current methodology.

At present, the SRF methodology suffers from three main problems: i) the methodology is inherently opaque due to the dependence on confidential data of other institutions, ii) the methodology is overly complex due to the large amount of information and computations required, and iii) the methodology is incoherent with other parts of the resolution framework and capital legislation.

3.1 Opaqueness

Calculation of both the BAC and the risk factor requires confidential data, which is only partially available to the individual contributing institutions. This makes the current SRF methodology inherently opaque insofar as it concerns risk adjustment of contributions for both contributing institutions and third parties.

The interdependent nature of the current methodology is threefold.

First, to calculate individual risk factors (applicable to all banks with BAC above EUR 300 million), institutions are compared against each other. Indeed, they are put in bins for which the thresholds are based on the values of all the institutions.

Second, to calculate the individual contributions of institutions (both non-banks and risk-adjusted contributors) the individual size components (BAC) are compared to total BACs with or without considering the risk factors. Calculation of the BAC requires information such as covered deposits and intragroup/IPS as well as institution-specific information, which is not publicly available.

Third, calculation of the annual target level for the risk-adjusted contribution requires the exclusion of non-bank and lump-sum contributions. For an accurate calculation, the BAC of all small institutions (less than EUR 3 billion) and non-banks is required.

This interdependency implies that all data on all contributors is necessary to calculate the contribution of a single institution. This is problematic because most of the data required within the current SRF methodology is confidential. Reliance of methodology on data that cannot be disseminated to third parties prevents the SRB from providing institutions with sufficient data to validate their contributions.

The data provided by the SRB does not allow institutions to detect any systematic errors made in the calculation of contributions by the SRB (ECJ, 2021). This poses substantial challenges for all stakeholders.

The inability of institutions to validate their contributions has prompted a number of banks to lodge complaints against the SRB with the ECJ. As at 1 September 2020, there were a total of 42 pending proceedings against decisions of the SRB on ex-ante contributions for the years 2016-2020 in the ECJ (ECA, 2020). Most banks are seeking annulment of their contributions on the grounds of infringement of the obligation to state reasons[16]. The ECJ has ruled on three of these cases[17], acknowledging that data provided by the SRB was insufficient, and annulling the contested ex-ante contributions (ECJ, 2020).

All three cases were appealed, and a decision was taken on one. In case T-411/17 lodged against the SRB, Landesbank Baden-Württemberg had raised a plea of illegality with respect to the current SRF methodology. The applicant argued that the infringement to state reasons was deep-rooted in the legislation[18]. The ECJ ruled in favour of the applicant, stating that the current methodology was unnecessarily opaque[19], partially because it relies on comparing information on all institutions. The ECJ also ruled that the part of the calculation of the ex-ante contribution relying on the independent data was unlawful insofar as it prevented the SRB from providing institutions with sufficient data[20]. The European Commission, together with the SRB, asked for an appeal. In July 2021, the ECJ ruled on the appeal[21], restoring the legality of the current SRF methodology. Nevertheless, the contributions remain annulled as the reasoning of the SRB is still considered inadequate. Moreover, the data provided by the SRB is still considered insufficient to enable institutions to detect systematically errors made in the calculation of their contributions by the SRB (ECJ, 2021). The SRB still risks losing other pending cases against ex-ante contribution decisions due to similar infringements, as well as on the recalculation of contributions already collected by the SRB (ECA, 2020). The legal cases against the SRB seeking to annul ex-ante contributions present substantial contingent liabilities. In 2019, the total amount of contingent liabilities stemming from (nine) pending cases related to the calculation of 2017-2018 risk-adjusted contributions amounting to EUR 186 million, or about 2% of the total contributions collected that year (SRB, 2019). This amount is likely to be higher, as the number of cases lodged with the ECJ has since increased (ECA, 2020). This reduces the effectiveness of the SRB, as it temporarily lowers the amount of funds that can be used by banks in case of resolution.

The inability of institutions to calculate their own contributions also makes it more complicated to predict future contributions. Hence, the interdependency of the indicators does not allow institutions to calculate their contributions. Moreover, the alternative to predict the future

[16] Article 296 TFEU.
[17] German Portigon AG (Case T-420/17), Voralberg Bank AG and Hypothekenbank AG (Case T-414/17) and Landesbank Baden-Württemberg (Case T-411/17). All three cases are currently in appeal.
[18] Notably Articles 4-7 and 9, and Annex 1 to Delegated Regulation (EU) 2015/63, which imposes the interdependent risk-adjustment methodology.
[19] The interdependent risk-adjustment methodology was not strictly required by Regulation (EU) No 806/2014 or Directive 2014/59/EU.
[20] Infringement of the obligation to state reasons (Article 296 TFEU).
[21] Landesbank Baden-Württemberg (Case T-411/17).

contributions based on past contributions is complicated by changes in bucket thresholds, indicators used for the calculation and values for the individual institutions.

Predictable contributions allow institutions to present accurate budgets and business plans to general management, market participants, analysts, investors and authorities.

3.2 Complexity

The current SRF methodology is very complex due to the large number of data points required and the interdependencies described above.

The data for the calculations using the current SRF methodology is collected from more than 3,000 institutions in a specially designed SRF data template. The data is first collected by the NRAs and then transferred to the SRB. The template consists of about 80 questions, of which more than 20 require quantitative financial information.

Several of the indicators collected do not seem very distinct, which means that the additional indicators add little information about the riskiness of the institutions. In fact, based on the correlation between the different indicators, some indicators capture similar information (see Annex 3). Total risk exposure divided by total assets and CET1 capital ratio (Pillar I) is quite strongly correlated (about 60%) with risk-weighted assets (RWAs) for market risk divided by total assets (Pillar IV). Similarly, the CET1 capital ratio (Pillar I) is strongly correlated (about 64%) with the leverage ratio (Pillar I). Moreover, several Pillar IV indicators are very strongly correlated with each other, as they feature the same numerator. More specifically, RWAs for market risk divided by total assets is very strongly correlated (about 89%) with RWAs for market risk divided by total risk exposure. The off-balance sheet nominal amount divided by total assets, CET1 and total risk exposure respectively are also very strongly correlated (between 75% and 99%).

The complexity of the SRF methodology is aggravated by the multiple computations required to calculate individual risk-adjusted contributions. For instance, to calculate their individual risk factor, institutions are compared against each other, ranked and placed into bins based on their ranking for each of the quantitative risk indicators. This interdependency requires all submitted information to be complete and accurate at all times. Due to this interdependency, inaccuracies in information submitted lead to a shift in the ranking order and require recalculation of all risk-adjusted contributions.

This complexity is a challenge for the SRB and NRAs, as the complex computations involve significant human resources. The calculation methodology requires multiple data verifications, computations and iterations. Moreover, the reliance on thousands of inputs and institution-submitted data in general implies greater risk of mistakes due to inaccuracies. Should underlying data be inaccurate, the entire calculation must be redone, as the final individual risk-adjusted contributions depend on the comparison of institutions. Such mistakes are not hypothetical situations, as nearly every year there have been re-statements.

The complexity of the current SRF methodology is also a challenge for the contributing institutions, as they must collect and report a large number of data points on an unconsolidated basis. This is in particular a challenge for institutions that are subsidiaries of integrated banking

groups. Some of these groups may receive a waiver from national competent authorities allowing them to report certain variables (e.g. leverage ratio, CET1 capital ratio, total risk exposure, etc.) at consolidated or sub-consolidated level, rather than at individual level as required for the SRF contribution. While these waivers are accounted for in the calculation of the risk factor, a lot of data required for the calculation of the BAC must still be submitted at individual level. Moreover, several indicators are only collected for the purpose of the SRF methodology. The additional data reporting thus puts an extra burden on the institutions.

3.3 Incoherence with EU legislation

The current SRF methodology is not fully coherent with the remainder of the resolution framework and capital requirements. The concepts used to define risk of failure and loss-absorption capacity under the current SRF methodology deviate from those used for capital requirements (Directive 2013/36/EU, Regulation (EU) No 525/2013) and minimum requirement for own funds and eligible liabilities (MREL) (Directive 2014/59/EU) respectively.

The current SRF methodology measures the risk of failure based on the size of the institution and individual risk factor (Delegated Regulation (EU) 2015/63). The individual risk factor assesses the risk profile of the institution based on four pillars, taking into account risk exposure, stability and variety of funding, importance of the institution and additional risk indicators such as trading activities, off-balance sheet exposures and derivatives. Therefore, the risk of failure concept under the current SRF methodology consider different aspects of the activities of the institution.

EU capital requirements legislation treats risk of failure differently. Banks are deemed likely to fail when their regulatory capital is insufficient (Directive 2013/36/EU, Regulation (EU) No 575/2013). Regulatory capital is defined as share of own funds in total risk exposure, and differs across institutions depending on their exposures and size. It is set by both legislation and supervisory authorities. Although capital requirements are one of the main solvency indicators in the regulatory framework for banks, the current SRF methodology treats the same concept differently.

The current SRF methodology considers loss-absorption capacity, measured by own funds and eligible liabilities in excess of MREL. However, the loss-absorption concept introduced under the BRRD is much wider than that. It includes multiple adjustments depending on the systemic importance of the institution and its resolution strategy (single or multiple point of entry) (SRB, 2020). Therefore, the concept of loss-absorption capacity under the current SRF methodology is not fully consistent with loss-absorption capacity according to the BRRD.

Importantly, the current SRF methodology does not yet include the indicator measuring capital in excess of MREL. This because of a lack of harmonised data (SRB, 2021). Finally, the current SRF methodology does not consider the resolution strategy of financial institutions[22], which plays an important part in the definition of MREL under the BRRD.

[22] Institutions with a single point of entry (SPE) resolution strategy still pay the SRF ex-ante contributions individually rather than at the resolution entity.

The importance of the capital indicators and MREL is further limited as they are combined with other indicators that do not directly relate to the indicators relevant to the probability of resolution and payout in case of resolution[23].

Finally, the methodology penalises subsidiaries of integrated banking groups, which are exempted from specific prudential ratios by national competent authorities. They have to apply the ratios at consolidated or sub-consolidated level, which are often lower than if the actual ratios were observed.

[23] Liquidity coverage ratio, net stable funding ratio, off-balance sheet nominal amount and derivatives exposure.

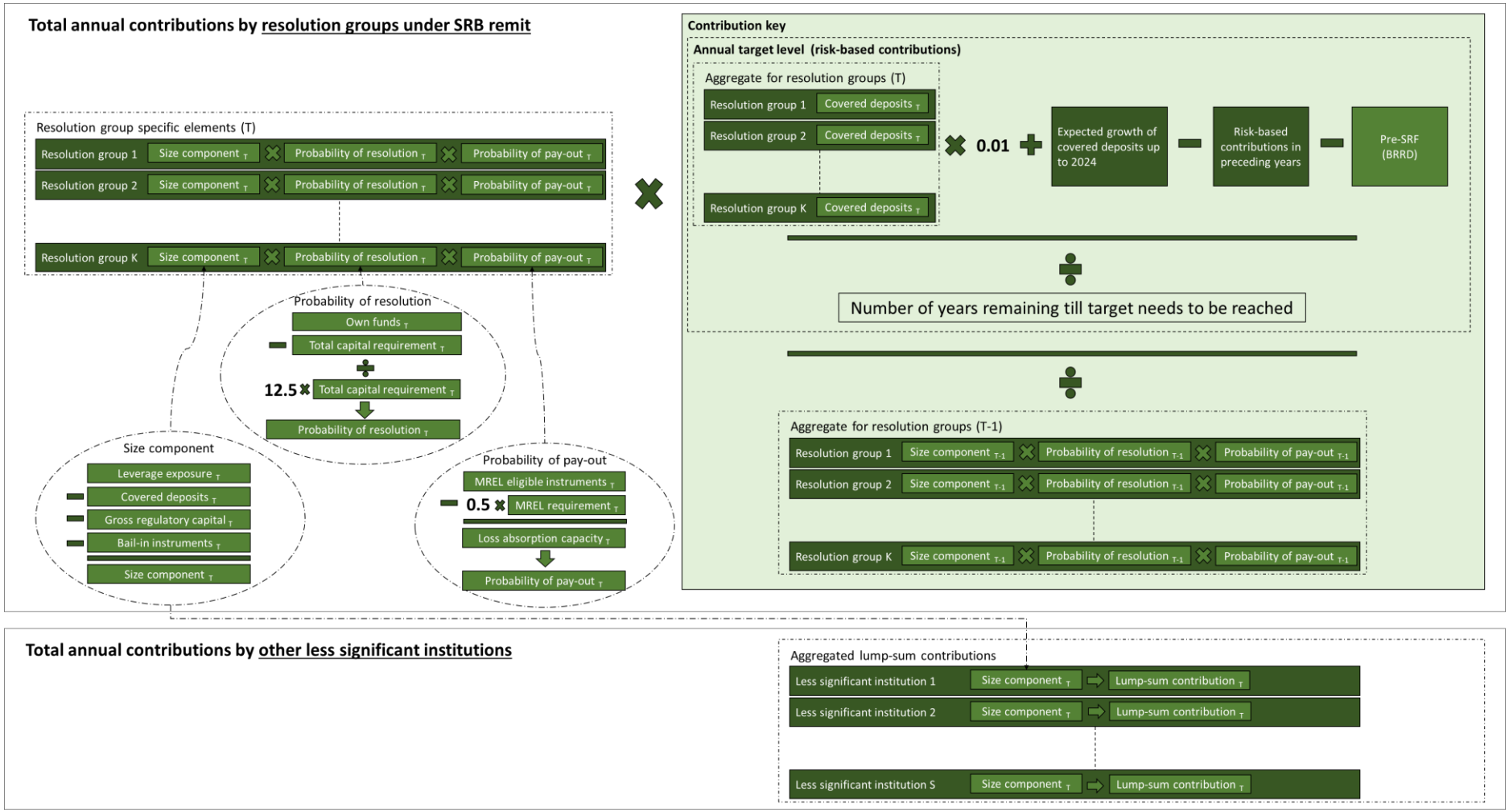
4. ALTERNATIVE SRF CONTRIBUTION METHODOLOGY

This chapter proposes an alternative methodology for the calculation of the SRF contributions. It presents the alternative methodology, underlying assumptions and a simulation of contributions under the alternative methodology based on recent information.

The alternative methodology aims to address the main shortcomings of the current SRF contribution methodology by making the calculation more transparent, less complex and more coherent with the remainder of the resolution and capital legislation framework for banks.

The main assumptions underlying the alternative SRF contribution methodology are discussed in Annex 5.

Figure 15 Overview of alternative SRF contribution methodology



Source: Authors (2021).

4.1 Institutions in scope

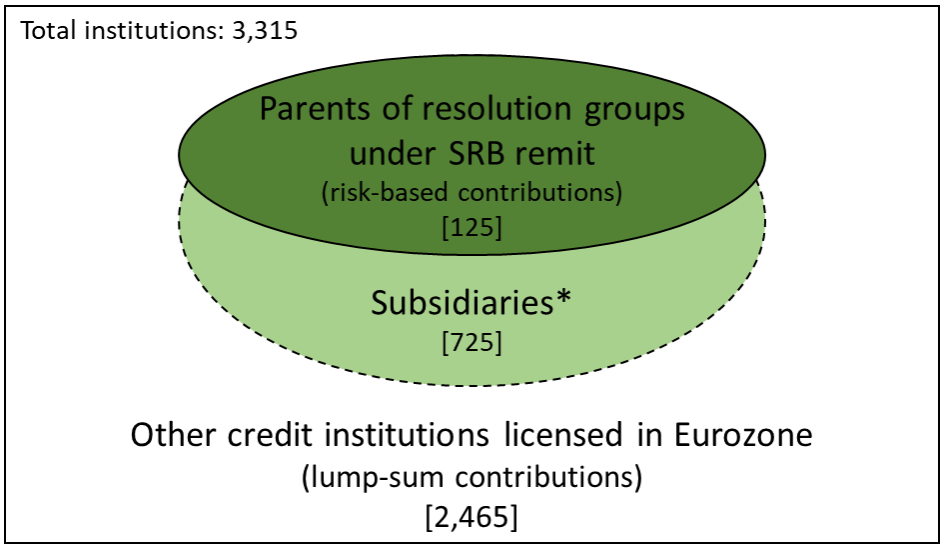
Under the proposed alternative SRF contribution methodology, all institutions potentially benefiting from contributions from the SRF should also contribute to the SRF. This means that all institutions with a credit institution licence in the Banking Union should contribute. In this sense, the alternative methodology covers the same institutions as the current methodology, though some institutions contribute as part of a resolution group rather than individually.

Under the alternative methodology, the size of the annual contributions is supposed to be related to the probability of resolution and contribution from the SRF in resolution. The probability of resolution and contribution from the SRF is significantly lower for institutions that are not under the remit of the SRB. Indeed, only failing or likely to fail (FOLTF) institutions for whom resolution is in the public interest can potentially obtain funds from the SRF.

According to the BRRD and Single Resolution Mechanism Regulation (SRMR), the resolution of a failing entity is considered to be in the public interest if its liquidation under normal proceedings would put financial stability at risk, interrupt the provision of essential services and affect the protection of covered deposits. Significant and cross-border institutions under the remit of the SRB are much more likely to meet these conditions than less significant institutions (LSIs) under the NRAs. Moreover, responsibility for the resolution of LSIs would have to be moved to the SRB before an LSI can access the SRF.

Therefore, institutions under direct responsibility of the SRB should pay a higher risk-adjusted contribution, while other institutions should contribute a relatively lower lump-sum contribution (see Figure 16).

Figure 16 Entities within the scope of the SRF according to the alternative methodology



Note: The figures in parentheses indicate the number of institutions in scope. * The activities of the subsidiaries included in the resolution groups of institutions under the SRB's remit are covered by the activities of the parent institutions. The subsidiaries therefore do not pay a separate contribution.
Source: Authors (2021).

Contributions should be made by banking groups at the level relevant in resolution. For banking groups following the single point of entry (SPE) approach, the entire group should be covered. These banking groups should pay their contribution at parent level. In turn, banking groups following a multiple point of entry (MPE) approach should make contributions for the resolution groups covering Banking Union entities.

Contributions under the alternative methodology are calculated for 2021, therefore covering data relating to 2019. This would result in an alternative scope covering a total of 3,315 institutions from 19 eurozone countries[24] (see Figure 16). In total, about 850 institutions (26% of the total institutions) are part of a banking group under the remit of the SRB.

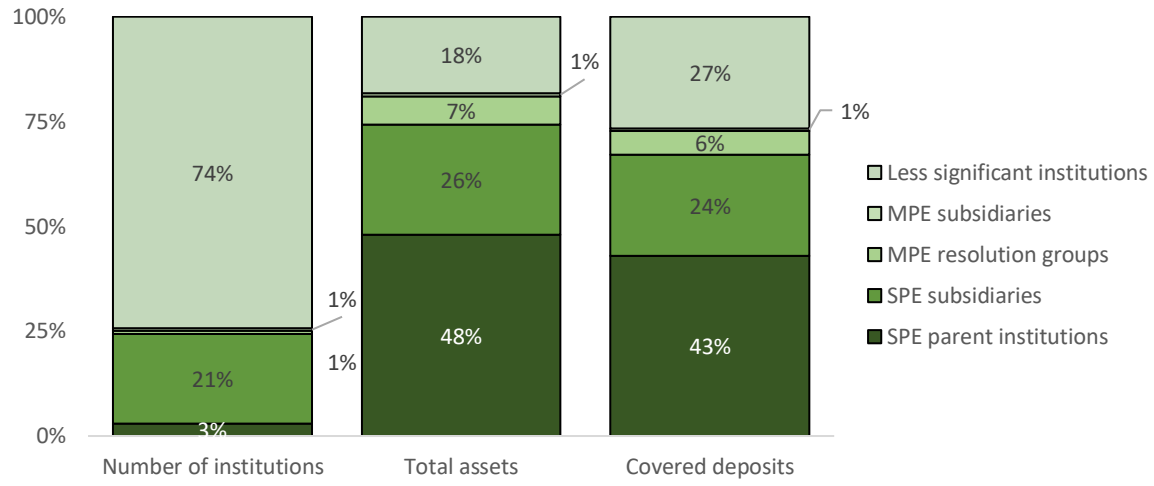
At the end of October 2020, there were 115 institutions under the remit of the SRB. The majority of these (100, or 87% of institutions under the SRB's remit) follow an SPE approach in resolution[25]. The remaining 15 banking groups follow an MPE resolution strategy, with eurozone activities distributed across 25 resolution groups. The banking groups following the MPE approach in resolution include some with their global headquarters in the Banking Union, but most of the resolution groups belong to subsidiaries of banking groups from outside the Banking Union.

The banking groups under the SRB's remit control about 82% of total assets. The large majority of assets are controlled by banking groups following an SPE approach (74% of total assets) and a minority by banking groups following an MPE approach (8%). The other LSIs are responsible for the remaining assets (18%). The distribution of covered deposits across institutions is largely similar to the distribution of total assets – about two thirds (67%) of covered deposits are held by banking groups following an SPE approach and less than one tenth (7%) of covered deposits are held by banking groups following an MPE approach. The other LSIs are responsible for the remaining covered deposits (27%).

[24] The scope was assumed to remain the same under both the current and alternative SRF contribution methodology for comparability. Hence, the institutions in Bulgaria and Croatia that joined the Banking Union in 2021 are not yet included.

[25] The full list of institutions and their respective resolution strategies can be found in Annex 4.

Figure 17 Number of institutions and total assets by type of institution



Source: Authors (2021).

4.2 Annual target level

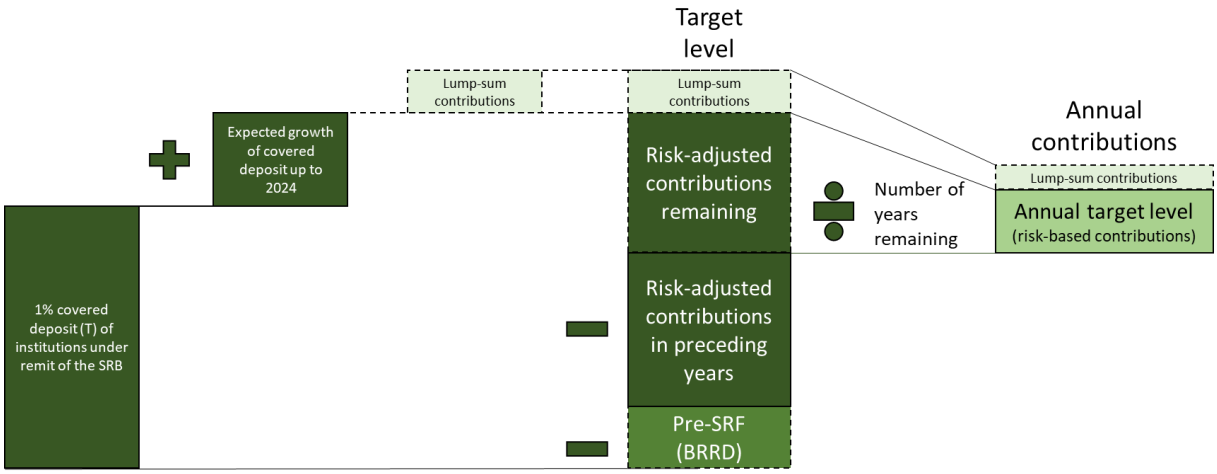
The target level of the alternative methodology is equal to 1% of covered deposits of the institutions paying risk-adjusted contributions plus lump-sum contributions. This is different from the current methodology, which considers the covered deposits of all institutions for the target level. However, the institutions paying a lump sum are unlikely to receive any funds in resolution from the SRF.

The focus of this study is on the contribution methodology and not on the target level, which is derived from the legislation. The appropriateness of the target level is thus not assessed, unlike in our previous study (De Groen and Gros, 2015), which found that the SRF target level – in 2015 calculated at EUR 55 billion – would be sufficient to cover the potential capital contributions in nearly all circumstances. Nevertheless, as the expected payout is largely unrelated to the covered deposits, the target level does not automatically adjust with increased or decreased risks to the SRF. For example, since the publication of the study in 2015, covered deposits have increased significantly, leading to significantly higher target levels, while the changes in total liabilities including own funds, loss-absorption capacity and capital levels are likely to have slowed the increase in expected required funds. This means that the funds are now likely to be sufficient in an even wider range of circumstances. This might well be the opposite in the future, weakening the SRF. To reduce the fluctuation in strength of the SRF due to changes in the target level, it would be wise to assess whether or not other indicators more closely linked to the expected payout of the SRF would be more appropriate (total liabilities including own funds, cumulative size component, etc.).

The calculation of the annual target level remains largely the same. The overall target amount must be spread evenly over eight years and adjusted for expected growth in covered deposits (see Figure 18). Moreover, the target would have to be adjusted for contributions already received under the BRRD. In the estimations for the alternative contribution methodology

presented in this chapter, BRRD contributions are not considered, in line with the replication of the current contributions above.

Figure 18 Calculation of annual target level (risk-adjusted contributions)



Source: Authors (2021).

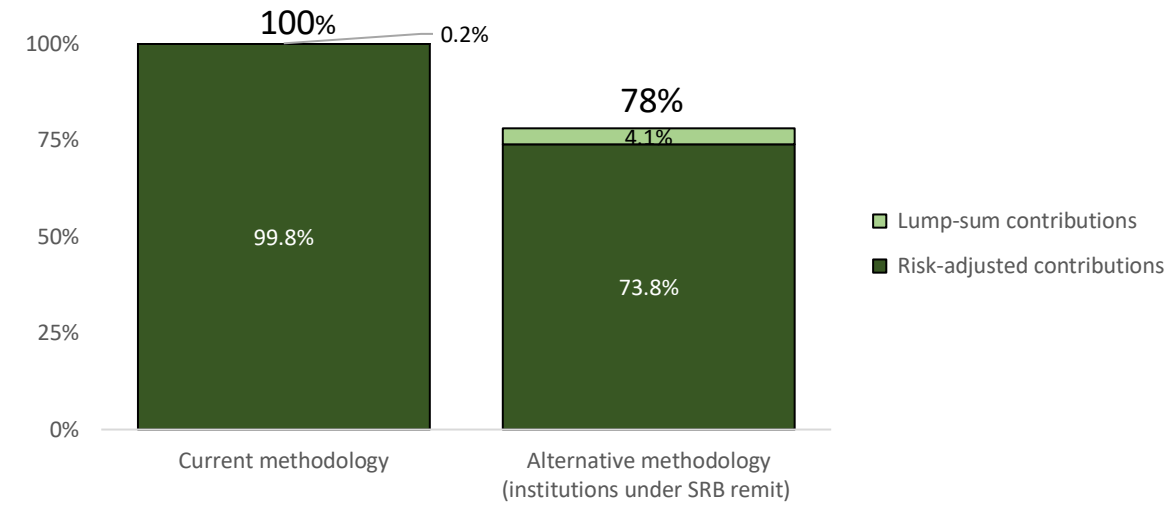
For the reference year 2021, the annual target level is set as one eighth of 1% of the average amount of covered deposits held by institutions under the remit of the SRB. The covered deposits are adjusted for expected growth (15% over eight years). For comparison reasons, the assumption on the expected growth of covered deposits is aligned to the *expected* growth of the SRB used to replicate the current SRF methodology, rather than the *actual* growth which is higher.

Covered deposits of individual institutions under the remit of the SRB are not publicly disclosed. These are therefore estimated for the replication of the current SRF methodology. For estimations under the alternative methodology, the same estimation methodology is used, whereby covered deposits are consolidated for the resolution groups[26].

Considering covered deposits of institutions under the remit of the SRB plus lump-sum contributions results in a reduction of the annual target level. Under the alternative methodology, the estimated target is about a fifth (22%) lower than under the current SRF methodology. The reduction in risk-adjusted contributions (-26%) is partially offset by an increase in lump-sum contributions (+4%) (see Figure 19).

[26] At parent level for integrated groups following an SPE resolution approach, and at resolution group level for integrated groups following an MPE resolution approach.

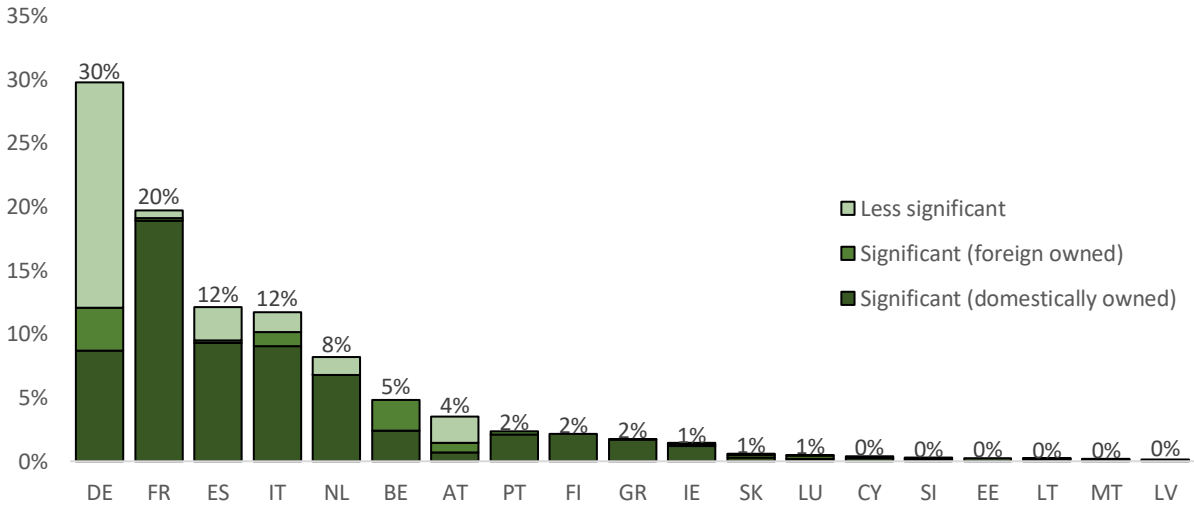
Figure 19 Annual target level under current and alternative methodologies



Source: Authors (2021).

Institutions under the SRB's remit hold most of the covered deposits in the Banking Union. Overall, an estimated three quarters (74%) of all covered deposits in the Banking Union are held by significant institutions (see Figure 20). This holds true for most countries. Only in Austria, Germany, Latvia and Malta are most covered deposits held by LSIs. For Austria and Germany this is primarily due to the market share of LSIs (local and regional cooperative and savings banks).

Figure 20 Estimated covered deposits by type of institution and country



Source: Authors (2021).

4.3 Types of contributions

The alternative methodology envisages two types of contributions:

- **Lump-sum contributions** are paid by LSIs (2,465 institutions, or 74% of all institutions), which are not among the parents and subsidiaries of banking groups under the remit of the SRB.
- **Risk-adjusted contributions** are paid by the resolution groups of significant institutions and cross-border groups that are under the remit of the SRB (125 institutions, or 4% of all institutions).

Overall, this means that the alternative methodology involves substantially fewer institutions than the current SRF methodology (see Table 3). The number of institutions having to pay a contribution is about 2,600, which is 725 (22%) fewer than under the current SRF methodology. This reduction is due to the inclusion of the contribution for subsidiaries in resolution groups in the contributions by the parents in the resolution groups.

The reduction in the number of institutions paying a more complex-to-calculate risk-adjusted contribution is more substantial. Restricting the risk-adjusted contribution to the resolution groups under the remit of the SRB reduces the number of institutions paying a risk-adjusted contribution to about 125, which is 1,450 (92%) fewer than under the current methodology.

In turn, the number of institutions paying a simpler-to-calculate lump-sum contribution increases to about 2,465, which is 804 (24%) more than under the current methodology. This increase is due to widening the scope from all small institutions (with a BAC of less than EUR 300 million and assets of less than EUR 1 billion) to all LSIs not under the remit of the SRB.

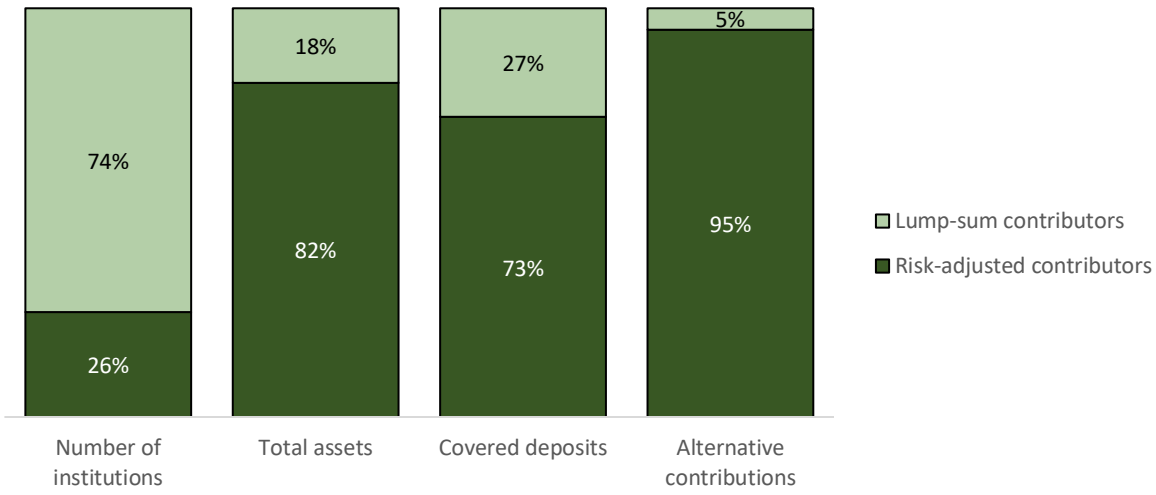
Table 3 Number of contributors under current and alternative methodologies

		Alternative methodology			
		Lump sum	Risk-adjusted contribution	No contributions (part of group/new)	Total
Current methodology	Lump sum	1,396	3	262	**1,661**
	Partial contribution	707	10	185	**902**
	Risk-adjusted contribution	322	106	245	**673**
	Other	40	6	33	**79**
	Total	**2,465**	**125**	**725**	**3,315**

Source: Authors (2021).

LSIs paying lump-sum contributions make up slightly less than three quarters (74%) of all institutions falling within the scope of the alternative methodology (see Figure 21). These institutions are responsible for slightly more than a quarter (26%) of estimated covered deposits. Though numerous, their lump-sum contributions amount to only a twentieth (5%) of total alternative contributions.

Figure 21 Number of institutions and share of total by type of alternative contribution



Note: Number of institutions, total assets, covered deposits and alternative contributions as estimated under alternative methodology for the purpose of this study.
Source: Authors (2021).

4.3.1 Lump-sum contributions

Lump-sum contributions are calculated for all institutions that are not part of the resolution groups under the remit of the SRB. In line with the logic for lump-sum contributions under the current methodology, these institutions do not pose a systemic risk and are more likely to be wound down by NRAs without resolution funds. Nevertheless, there is some chance that resolution funds would be needed, especially for the larger LSIs.

Therefore, under the alternative methodology, institutions under the remit of domestic NRAs are required to pay a simple flat-rate contribution based on their size (see Table 4). The size of the lump-sum contributions increases exponentially with increase in size (see size component). The size of the lump-sum contributions is set to ensure that they are below the average current risk-adjusted contributions. The maximum lump sum is set for total liabilities less own funds and covered deposits of more than EUR 24 billion, which is just below the equivalent of the size of a systemic institution without own funds, bail-in instruments and covered deposits (total assets above EUR 30 billion). This is to avoid LSIs contributing more than the main category of systemic institutions.

Table 4 Thresholds and contribution amounts for lump-sum contributors

Size component (EUR million)	Lump-sum contribution (EUR)	Size component (EUR million)	Lump-sum contribution (EUR)	Size component (EUR million)	Lump-sum contribution (EUR)
<250	500	≥2,750 and <3,000	100,000	≥9,500 and <10,000	1,150,000
≥250 and <300	750	≥3,000 and <3,250	120,000	≥10,000 and <11,000	1,300,000
≥300 and <350	1,250	≥3,250 and <3,500	140,000	≥11,000 and <12,000	1,500,000
≥350 and <400	1,750	≥3,500 and <3,750	160,000	≥12,000 and <13,000	1,800,000
≥400 and <450	2,250	≥3,750 and <4,000	180,000	≥13,000 and <14,000	2,100,000
≥450 and <500	2,750	≥4,000 and <4,250	200,000	≥14,000 and <15,000	2,500,000
≥500 and <600	3,500	≥4,250 and <4,500	230,000	≥15,000 and <16,000	2,900,000
≥600 and <700	4,500	≥4,500 and <4,750	260,000	≥16,000 and <17,000	3,300,000
≥700 and <800	6,000	≥4,750 and <5,000	290,000	≥17,000 and <18,000	3,700,000
≥800 and <900	7,500	≥5,000 and <5,500	330,000	≥18,000 and <19,000	4,100,000
≥900 and <1,000	10,000	≥5,500 and <6,000	400,000	≥19,000 and <20,000	4,500,000
≥1,000 and <1,250	15,000	≥6,000 and <6,500	475,000	≥20,000 and <21,000	5,000,000
≥1,250 and <1,500	22,500	≥6,500 and <7,000	550,000	≥21,000 and <22,000	5,500,000
≥1,500 and <1,750	30,000	≥7,000 and <7,500	625,000	≥22,000 and <23,000	6,000,000
≥1,750 and <2,000	40,000	≥7,500 and <8,000	700,000	≥23,000 and <24,000	6,500,000
≥2,000 and <2,250	50,000	≥8,000 and <8,500	800,000	≥24,000	7,250,000
≥2,250 and <2,500	65,000	≥8,500 and <9,000	900,000		
≥2,500 and <2,750	80,000	≥9,000 and <9,500	1,025,000		

Source: Authors (2021).

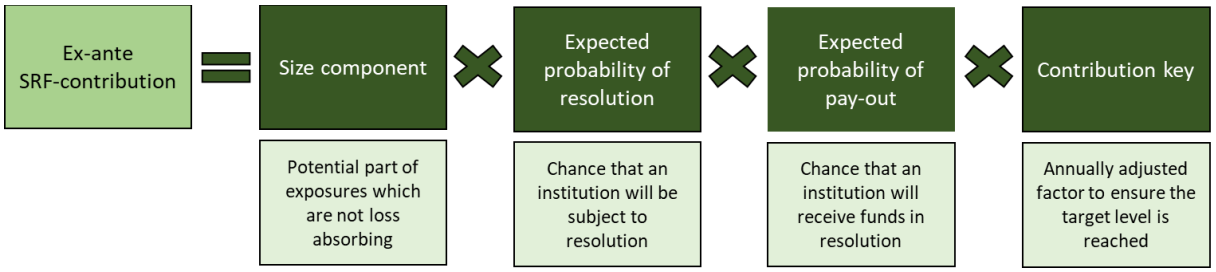
4.3.2 Risk-adjusted contributions

Risk-adjusted contributions are calculated for all resolution groups of banking groups under the remit of the SRB. The contributions are paid at parent institution or main institution level within the resolution groups, which can be one or more institutions for each banking group. For resolution groups with activities in both the Banking Union and non-Banking Union EU countries, with the parent institution in non-Banking Union EU countries, only the institutions in the Banking Union are considered for the calculations. This to avoid potential double contributions for these activities.

The calculation of risk-adjusted contributions relies on several elements: individual size component, and individual expected probability of resolution and payout (this in relation to the contribution of others, i.e. contribution key) (see Figure 22)[27]. By relying on the estimated probability of resolution and payout, the alternative methodology aims to capture the actual risk that institutions pose to the SRF and calculate a contribution in proportion to the size.

[27] Final contributions to the SRF might also take into account individual contributions to the BRRD. This element was omitted from this study due to lack of data.

Figure 22 Calculation of SRF contributions according to alternative methodology

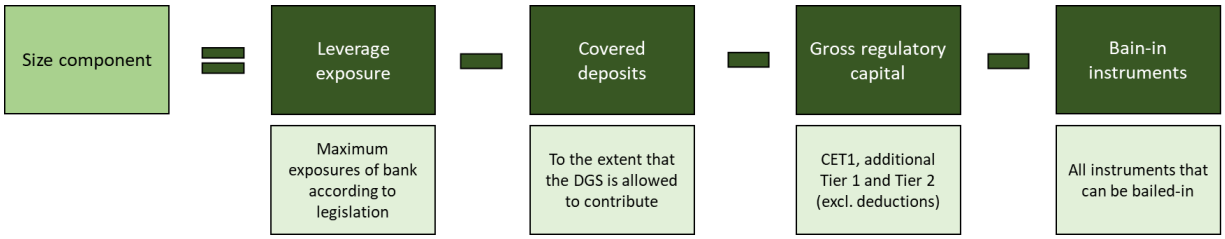


Source: Authors (2021).

4.3.2.1 Size component

The size component aims to measure all exposures that are not loss-absorbing or guaranteed in resolution. The size component is calculated as leverage exposure less covered deposits, gross regulatory capital and all instruments that are eligible for bail-in (see Figure 23). This calculation allows us to account for maximum potential exposure of the SRF.

Figure 23 Calculation of size component according to alternative methodology



Source: Authors (2021).

The leverage exposure is measured as maximum exposure of an institution according to Article 429 of Regulation (EU) No 575/2013. Using leverage exposure instead of total liabilities including own funds allows us to take off-balance sheet exposures and netting agreements into account. Other components of the calculation are:

- **Covered deposits**[28] are total covered deposits held by the institution to the extent that the DGS is required to contribute to resolution (maximum 50% of the DGS target level). For this calculation, the covered deposits held by the member institutions and target levels of the DGS as provided by the European Banking Authority (EBA) are used. This allows us to account for the exact amount the DGS can contribute to funding the resolution by absorbing the losses of the institution. The covered deposits of the national DGS at the end of the year are used to calculate the potential coverage. If the national DGS is converted to a mutualised DGS (e.g. the European Deposit Insurance Scheme (EDIS)), the EDIS coverage rather than the current DGS could be applied, increasing the potential deduction due to covered deposits.
- **Gross regulatory capital** is the sum of CET1 capital, additional Tier 1 capital and Tier 2 capital before regulatory and goodwill deductions. Gross regulatory capital contributes to the loss absorption directly, as gross regulatory capital is the first capital buffer to be

[28] Lower of national DGS funds available for resolution [covered deposits of DGS * target level *0.5] and covered deposits of the institution.

bailed-in if an institution fails. Given that accessing SRF resolution financing arrangements is conditional on a bail-in of at least 8%, gross regulatory capital should be excluded from the size component.

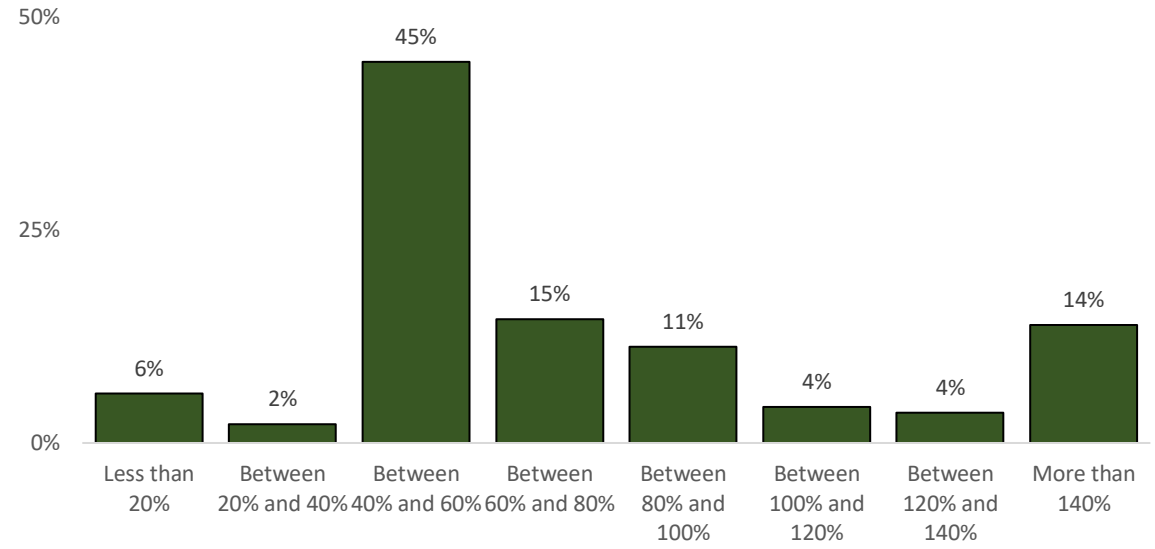
- Bail-in instruments consist of other liabilities eligible for bail-in that are not included in gross regulatory capital, such as senior non-preferred and preferred debt issued by the institution. These instruments are bailed-in or converted to capital if gross regulatory capital is not sufficient to cover the losses and recapitalisation. Because bail-in instruments contribute to loss-absorption they should also be deducted from the size component. Bail-in instruments are defined as instruments eligible for MREL.

Potentially there are other liabilities that could qualify as sensible reductions from the size component (e.g. liabilities with government guarantee). These liabilities should meet similar conditions as the liabilities currently deducted, meaning: potentially absorbing losses in case of resolution, not being secured by assets, and the amounts should be subject to independent external validation (national competent authority, auditor, etc.).

All data for the calculation of the size component are regulated and publicly available, or at least available to the contributing institutions and supervisory authorities. Covered deposits of individual institutions are estimated based on the covered deposits estimated for the replication of the current SRF methodology, and consolidated at the level corresponding to the institutions' resolution approach. Covered deposits are adjusted for growth in total covered deposits by country.

For most resolution groups (45%) falling within the scope of the alternative methodology, the size component ranges between 40% and 60% of total assets (see Figure 24). Additionally, more than a tenth (15%) of all institutions in scope have non-covered exposures of between 60% and 80% of total assets, and another tenth (11%) of all resolution groups contributing a risk-adjusted contribution have non-covered exposures of between 80% and 100% of total assets. The remaining resolution groups have a size component of either less than 40% (8%) or more than 100% (22%).

Figure 24 Share of resolution group by size component over total assets



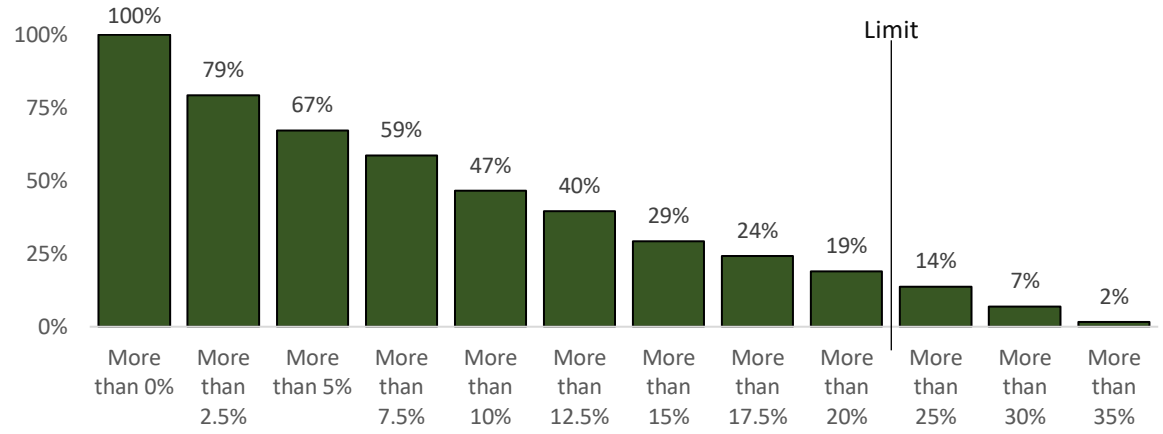
Note: The size component can be larger than the total assets as the leverage exposures can be larger than the total assets.
Source: Authors (2021).

4.3.2.2 Expected probability of resolution

In general, institutions with more excess capital are likely to have a lower chance of failing. The expected probability of resolution or FOLTF is based on the excess capital to harmonised or corrected RWAs[29]. Excess capital is compared to the historic peak losses of failing institutions to obtain the likelihood of failing or likely to fail. More specifically, the excess capital is defined as the difference between own funds and capital requirements including buffers as a share of corrected RWAs. Historic peak losses cover all bank failures in the Banking Union since 2008 and are calculated as the maximum cumulative losses as a share of corrected RWAs per institution (see Figure 25). A limit is introduced at 20% of excess capital to corrected RWAs to limit the variance of final contributions, disproportionately advantaged to banks with artificially low risk weights (e.g. banks with large government exposures) and take potential tail risks into account.

[29] The use of corrected RWAs (capital requirements incl. buffers times 12.5) is required to make the excess capital levels comparable across institutions.

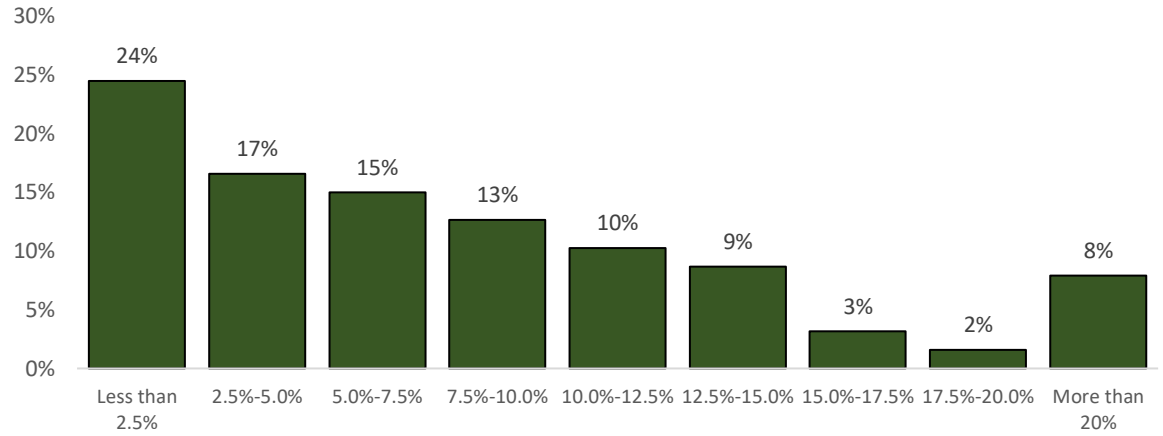
Figure 25 Historic cumulative peak losses (% of corrected RWAs)



Source: Authors (2021).

For most resolution groups under the SRB's remit, the excess capital expressed as a share of corrected RWAs was 7.5% or less in 2019 (see Figure 26). About a quarter (24%) of the resolution groups had excess capital of less than 2.5%. About a third (32%) of the resolution groups had excess capital between 2.5% and 7.5%. Less than a quarter (23%) of resolution groups had excess capital between 7.5% and 12.5%. Another about 14% of the resolution groups has excess capital between 12.5% and 20%. The remaining 8% of the resolution groups had excess capital above the limit of 20%.

Figure 26 Share of resolution groups under SRB remit by excess capital (% of corrected RWAs)



Source: Authors (2021).

The probability of resolution factors for the different levels of excess capital is based on historic peak losses (see Table 5). For example, institutions with less than 2.5% excess capital will pay the full contribution (1.00x) and institutions with more than 20% excess capital will only pay about a fifth of the contribution (0.19x).

Table 5 Excess capital and corresponding resolution probabilities

Excess capital (% of corrected RWAs)	Probability of resolution
≤2.50%	1.00
2.51-5.00%	0.79
5.01-7.50%	0.67
7.51-10.00%	0.59
10.01-12.50%	0.47
12.51-15.00%	0.40
15.01-17.50%	0.29
17.51-20.00%	0.24
>20.00%	0.19

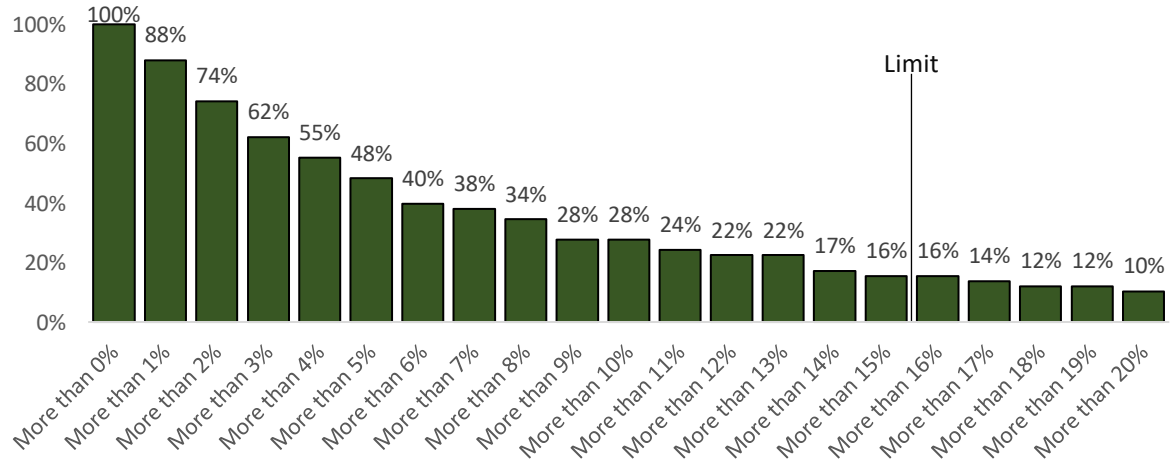
Source: Authors (2021).

4.3.2.3 Expected probability of payout

Institutions with greater loss-absorption capacity are less likely to require funds from the SRF, and if they do require funds the amount that they received is likely to be lower. The expected probability of payout is determined by comparing the loss-absorption capacity to historic peak losses. Loss-absorption capacity is determined based on MREL-eligible instruments in excess of half of the MREL requirement (standard MREL anticipates 50% for recapitalisation and 50% loss absorption). Moreover, the calculation considers the maximum 5% of total liabilities and own funds (TLOF) contribution by taking the average at the indicated probability and the same probability plus 5% TLOF. The limit is introduced at 15% of loss-absorption capacity to TLOF in order to limit the variance of final contributions and to account for potential tail risks.

For the calculation, the actual MREL requirement is used where available, while for the other institutions the approach developed by De Groen (2016) based on the EBA's MREL technical standards is followed to estimate the MREL requirement. Cumulative peak losses are collected for institutions in the eurozone that have failed since 2008, and are expressed as a share of TLOF (see Figure 27).

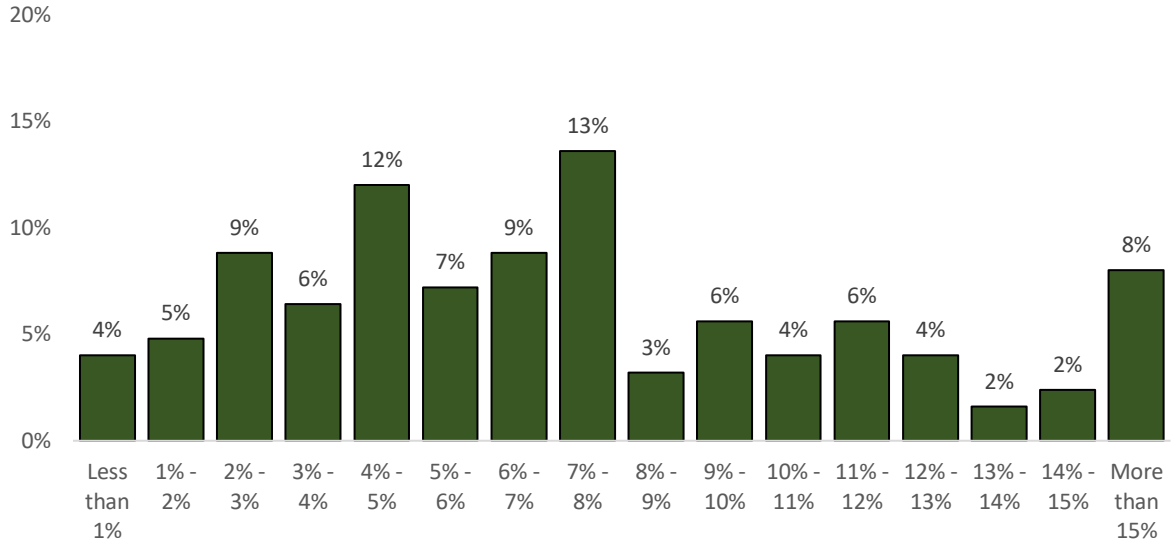
Figure 27 Historic cumulative peak losses as share of TLOF (%)



Source: Authors (2021).

Most of the resolution groups (41%) under the remit of the SRB have a loss-absorption capacity of between 4% and 8% of TLOF (see Figure 28). Nevertheless, in 2019 about a quarter (24%) of the resolution groups had a loss-absorption capacity below 4% of TLOF, and about a quarter (27%) had a loss-absorption capacity of between 8% and 15%. The remaining approximate tenth (8%) of the resolution groups had a loss-absorption capacity above 15%.

Figure 28 Share of institutions under SRB remit by loss-absorption capacity as share of TLOF (%)



Source: CEPS (2021).

The probability of payout factors under the alternative contribution methodology is based on historic peak losses (see Table 6). The probability of payout is based on the average loss probability for the loss-absorption capacity of the group plus 5% of TLOF (i.e. maximum contribution of the SRF). For example, resolution groups with less than 1.00% of loss-absorption capacity (MREL-eligible instruments – [0.5*MREL] ≤ 1% TLOF) will pay just over three quarters of the contribution (0.76x), while resolution groups with more than 15% loss-absorption capacity will pay only about a fifth of the contribution (0.16x).

Table 6 Loss-absorption capacity and corresponding payout probability

Loss-absorption capacity (% of TLOF)	Probability of payout	Loss-absorption capacity (% of TLOF)	Probability of payout
≤1.00%	0.76	8.01-9.00%	0.27
1.00-2.00%	0.65	9.01-10.00%	0.25
2.01-3.00%	0.56	10.01-11.00%	0.23
3.01-4.00%	0.49	11.01-12.00%	0.20
4.01-5.00%	0.43	12.01-13.00%	0.19
5.01-6.00%	0.38	13.01-14.00%	0.17
6.01-7.00%	0.34	14.01-15.00%	0.16
7.01-8.00%	0.30	>15.00%	0.16

Source: Authors (2021).

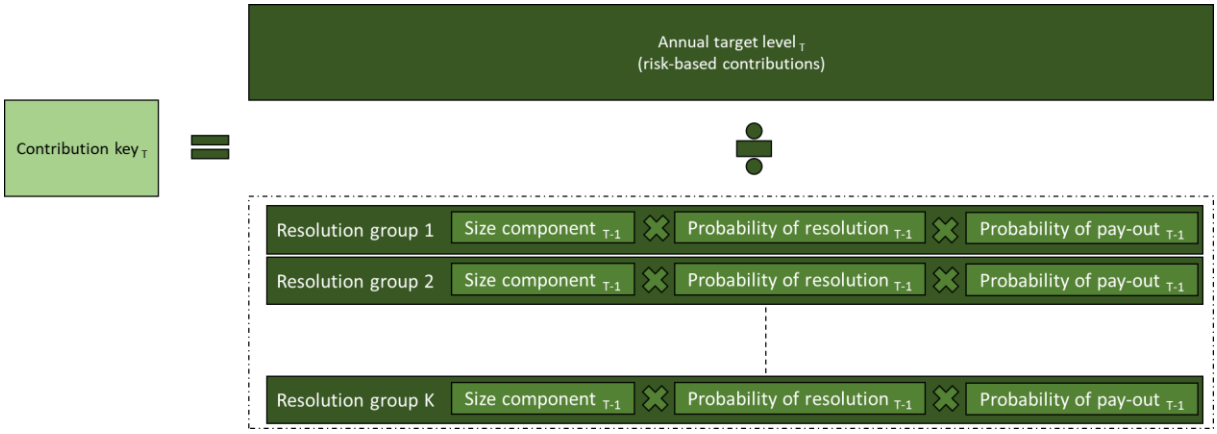
The resolution and payout factors combined allow for a deviation of about five times the contribution. This means that under the proposed alternative methodology, the difference in contribution between resolution groups of the same size is a maximum of 25 times. Indeed, an institution with the same size component but excess capital below 2.5% and loss-absorption capacity below 1% can pays 25 times as much in contribution as an institution with excess capital above 20% and loss-absorption capacity above 15%. The variance in contributions and thus risk sensitivity can be reduced by lowering the limits.

4.3.2.4 Contribution key

The contribution key needs to ensure that the contributions of the resolution groups under the remit of the SRB add up to the annual target level. Contributions are calculated by dividing the annual target level for the risk-adjusted contributors (i.e. resolution groups under the SRB's remit) by the sum of the resolution group-specific elements of the previous year (see Figure 29). The resolution group-specific elements consist of the size component times the probability of resolution and probability of payout. The contribution key for a given year is the same for all resolution groups under the remit of the SRB.

The information required on the resolution groups will in principle be retrievable from publicly available information, except for the covered deposits for the calculation of the size component. Moreover, the aggregates of the different components, as well as the contribution key, can be published by the SRB when the payment requests are sent. In this sense, the approach is transparent and replicable.

Figure 29 Calculation of contribution key according to alternative methodology



Source: Authors (2021).

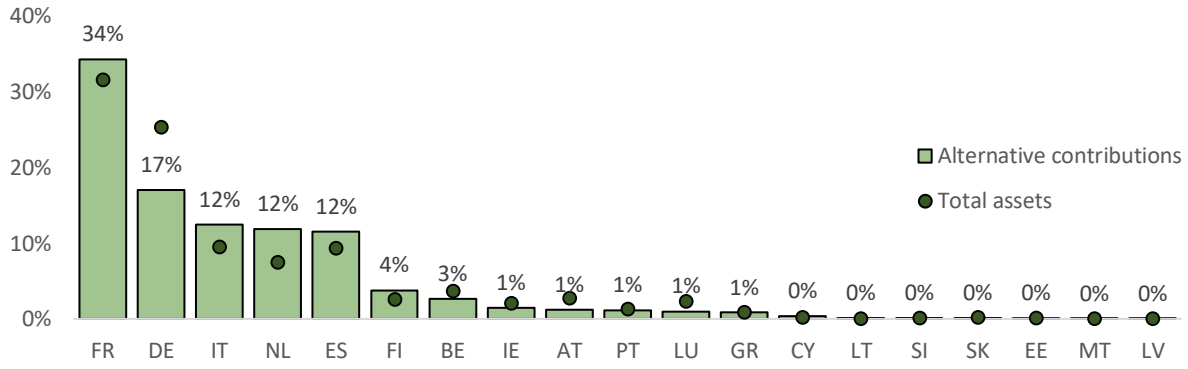
The methodology could be extended with an additional 'growth' factor to correct for expected changes in the size component, probability of resolutions and probability of payouts between the current year and the previous year.

4.4 Estimation of alternative methodology (institutions under SRB remit)

Overall, in most countries the share of alternative contributions is largely similar to their share of total assets (see Figure 30). The notable exceptions are Germany, Italy, the Netherlands and Spain. For Germany, the share of alternative contributions is lower than the share of total assets. This is mostly due to the low concentration within the German banking system, where most assets are spread out across resolution groups with a lower risk profile. The opposite situation is observed for Italy, the Netherlands and Spain, where the shares of total alternative contributions are higher than the shares of total assets, indicating that the resolution groups in these countries have a relatively higher risk profile.

Resolution groups with their parent located in France remain the largest contributor under the alternative methodology, making up around a third (34%) of the alternative contributions. These are followed by resolution groups with their parent institutions in Germany (17%), Italy (12%), the Netherlands (12%) and Spain (12%). Together, institutions from these five countries account for 87% of the total replicated contributions to the SRF. Resolution groups in the remaining countries collectively contribute up to 4% of the alternative contributions.

Figure 30 Alternative contributions by country (% of total)

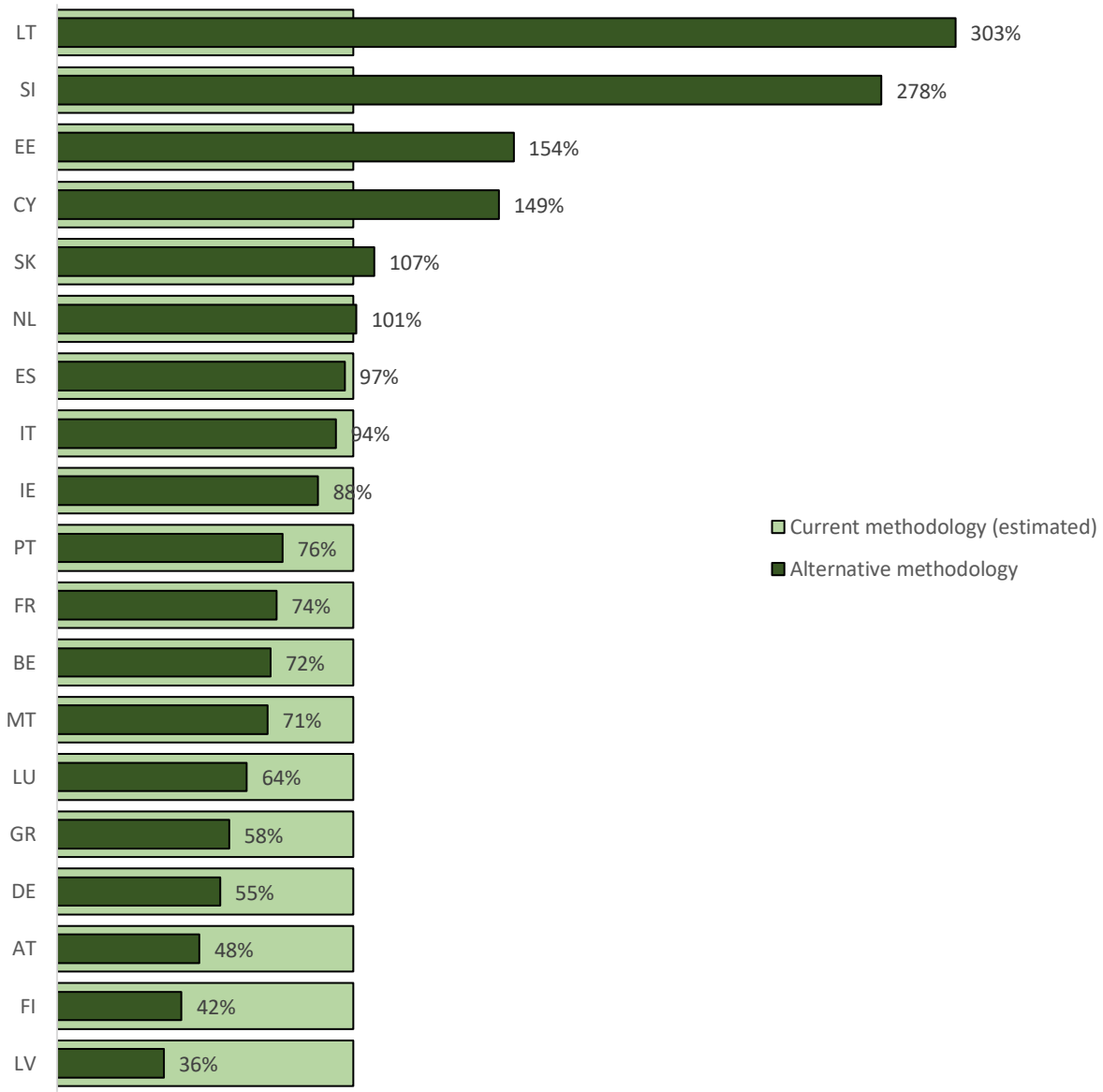


Note: Alternative contributions shown in the figure above include both lump-sum and risk-adjusted contributions.
Source: Authors (2021).

Comparing the contributions under the alternative methodology with those under the current methodology (see Figure 31), Lithuania (+203%) and Slovenia (+178%) would experience the largest increase relative to their current contributions. Resolution groups in Estonia (+54%) and Cyprus (+49%) would pay about 1.5 times as much under the alternative methodology. For resolution groups in Italy (-6%), the Netherlands (+1%), Slovakia (+7%) and Spain (-3%) contributions would remain about the same under the alternative methodology. In the remaining countries the average contributions would likely decrease.

The large increases are primarily due to the covered deposits adjustment and thus relatively larger size component. In small countries with highly concentrated banking sectors, most covered deposits are held by a few institutions, which lowers the relative potential contribution of the DGS to absorb losses of the resolution group in resolution. The remaining increases are primarily due to relatively limited loss-absorption capacity. This might change in the coming years as many resolution groups are still building up their loss-absorption capacity.

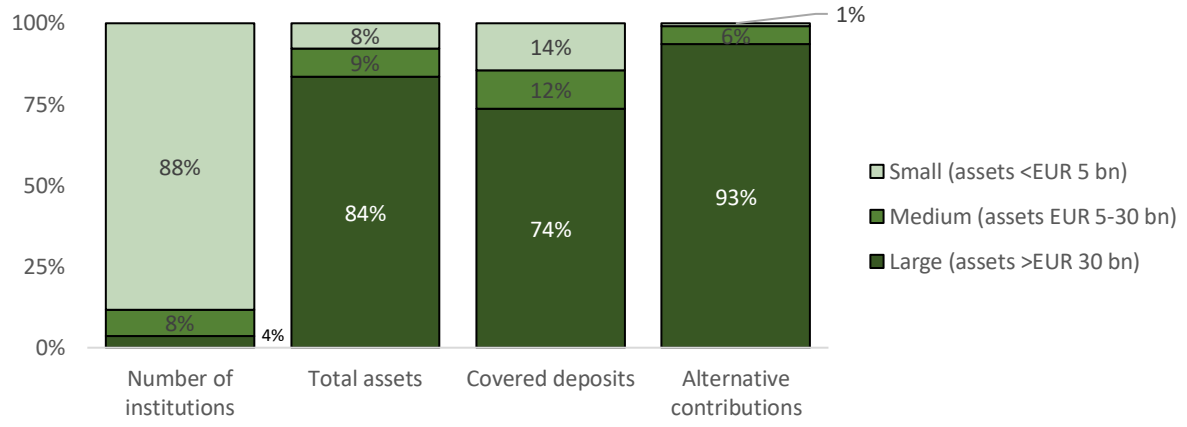
Figure 31 Comparison contributions by country under current and alternative SRF methodologies (% of current SRF contributions)



Note: The sample of institutions making alternative contributions was adjusted to match the institutions for which contributions were estimated.
Source: Authors (2021).

Looking at the alternative contributions by size (see Figure 32), the approximate 4% of institutions classed as larger institutions (i.e. with total assets above EUR 30 billion) pay more than 90% of the contributions. This is more than their share of total assets (84%) and covered deposits (74%). In turn, small (less than EUR 5 billion in assets) and medium-sized institutions (between EUR 5 billion and EUR 30 billion in assets) contribute a smaller share than their share of total assets and covered deposits. Small and medium-sized institutions combined account for 96% of the institutions.

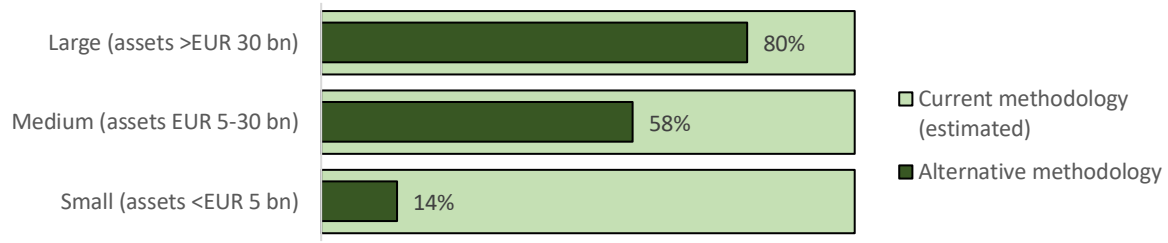
Figure 32 Alternative contributions by institution size (% of total)



Source: Authors (2021).

In comparison to the current SRF methodology, contributions under the alternative methodology are lower for all size categories (see Figure 33). Total alternative risk-adjusted contributions of large institutions are about a fifth (-20%) lower than under the current methodology, mostly due to the change in the calculation of the target level. However, the difference is most pronounced for small (-86%) and medium-sized (-42%) institutions, which more frequently pay lump-sum contributions.

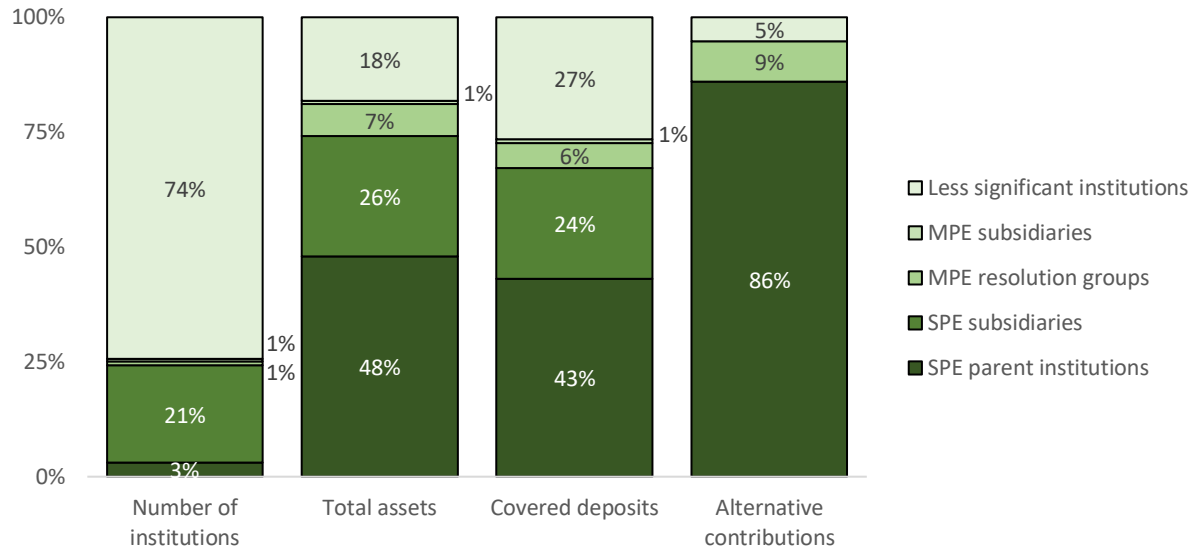
Figure 33 Comparison of contributions by size under current and alternative SRF methodologies (% of current SRF contributions)



Note: The sample of institutions making alternative contributions was adjusted to match the institutions for which contributions were estimated.
Source: Authors (2021).

Turning to the distribution across resolution approach, the parent institutions of SPE banking groups under the remit of the SRB are the main contributors under the alternative methodology. Together with their subsidiaries, they only account for about a quarter (24%) of the institutions, but almost three quarters of total assets (74%) and more than four fifths of replicated contributions (86%) (see Figure 34). Banking groups following the MPE resolution approach account for less than 2% of the institutions, and less than one tenth of total assets (8%), covered deposits (7%) and alternative contributions (9%). Finally, the other LSIs account for about three quarters of the institutions (74%) and also a significant share of total assets (18%) and covered deposits (27%), but only a limited part of the contributions under the alternative SRF methodology (5%).

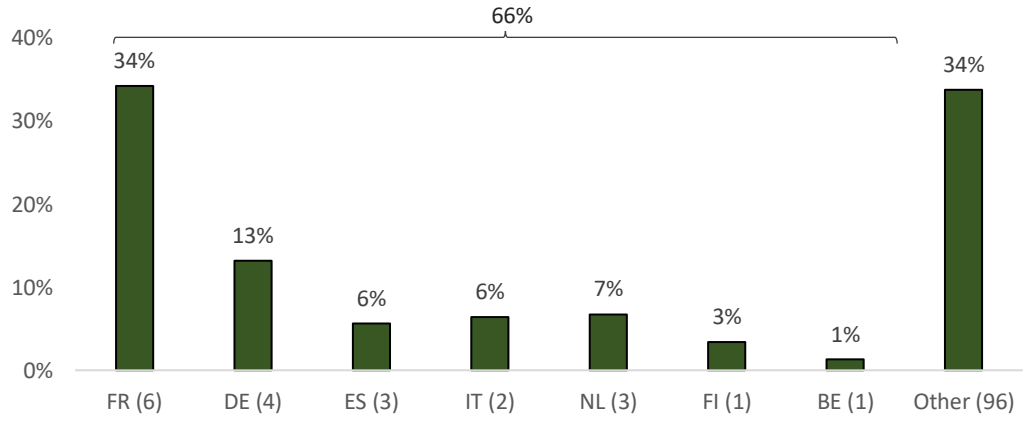
Figure 34 Alternative contributions by resolution strategy (% of total)



Source: Authors (2021).

The contributions under the alternative methodology are fairly concentrated. The top 20 largest banking groups together account for almost two thirds (66%) of total risk-adjusted contributions (see Figure 35), of which most are located in France (6 groups), Germany (4), the Netherlands (3) and Spain (3). The six largest French banking groups are responsible for about a third (34%) of all risk-adjusted contributions, which is similar to all 14 other large banking groups combined.

Figure 35 Alternative contributions of 20 largest groups by country (% of total)

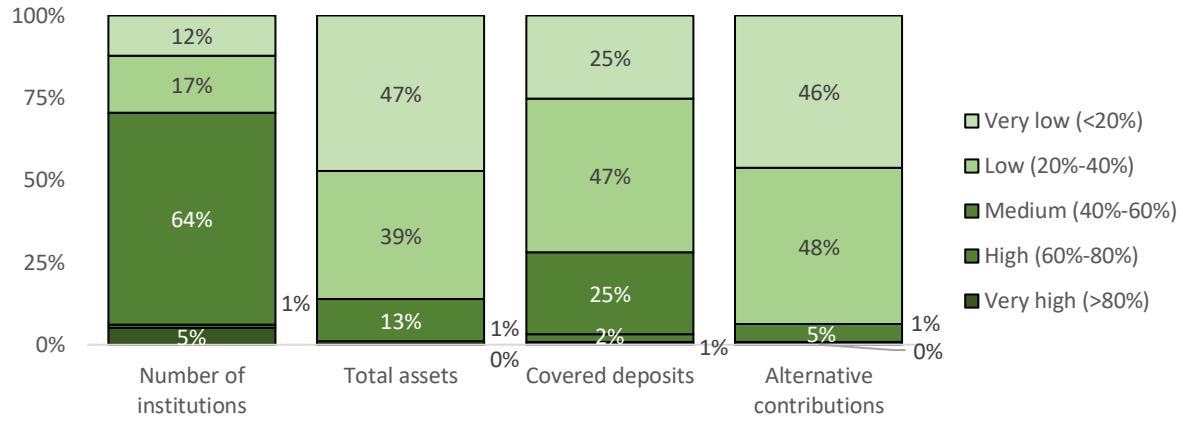


Source: Authors (2021).

The inverse relationship between the size of contributions and covered deposits intensity remains under the alternative methodology, albeit more pronounced if compared to the current methodology (see Figure 36). The large majority of the alternative contributions (94%) would be paid by institutions with a very low or low share of covered deposits in total liabilities, as most of the risk-adjusted contributors are in these categories. The institutions with very low

and low covered deposit intensity account for the large majority of total assets (86%) and covered deposits (72%), and represent a minority of the institutions (29%). The institutions with a medium, high or very high deposit intensity (71%) predominantly pay a lump-sum contribution, which is represented by just 6% of alternative contributions.

Figure 36 Alternative contributions by covered deposits intensity (% of total)



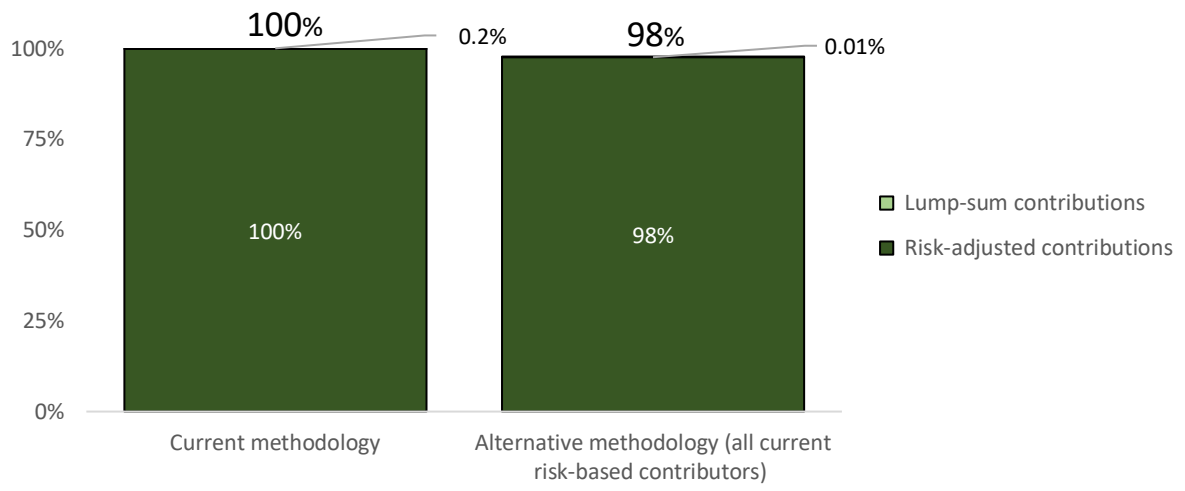
Source: Authors (2021).

4.5 Estimation of alternative methodology (all risk-adjusted contributors)

The alternative methodology only envisages risk-adjusted contributions for significant and cross-border institutions that are directly under the remit of the SRB. Considering the ongoing discussions on whether resolution should not become quasi-standard for banks of any relevant size, this section provides estimations for alternative contributions for a broader scope. More specifically, this section assumes that risk-adjusted contributions are paid by a similar set of institutions as those paying a mixed or risk-adjusted contribution under the current SRF methodology, i.e. all resolution groups with a size component above EUR 300 million and/or leverage exposure above EUR 1 billion are assumed to pay a risk-adjusted contribution. The other smaller institutions pay a lump-sum contribution.

The broadening of the scope results in a substantial increase in the annual target level compared to the alternative methodology (from 78% to 98% of the current SRF contribution). The annual target level under the broader scope is slightly below the current SRF methodology (see Figure 37). As the risk-adjusted contributions are higher, the lump-sum contributions are marginalised under the alternative methodology covering all risk-adjusted contributors.

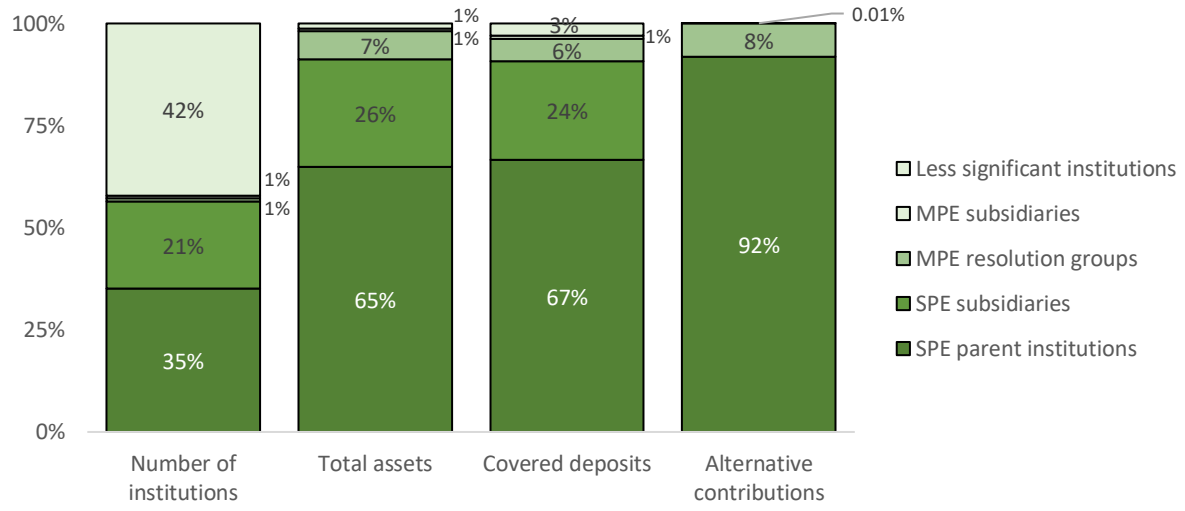
Figure 37 Annual target level under current and modified alternative methodologies



Source: Authors (2021).

Due to the modification in scope, the number of SPE parent institutions would increase from 3% to 35% of all institutions (see Figure 38). SPE parent institutions are responsible for the large majority (92%) of alternative contributions. Together with subsidiaries, they account for nearly all (91%) total assets and covered deposits in the Banking Union. The share of contributions from MPE banking groups would remain about the same (8% of total alternative contributions). The remaining institutions (42%) in scope would qualify for a lump-sum contribution, with their contributions making up less than 1% (0.01%) of the annual target level.

Figure 38 Alternative modified contributions by resolution strategy

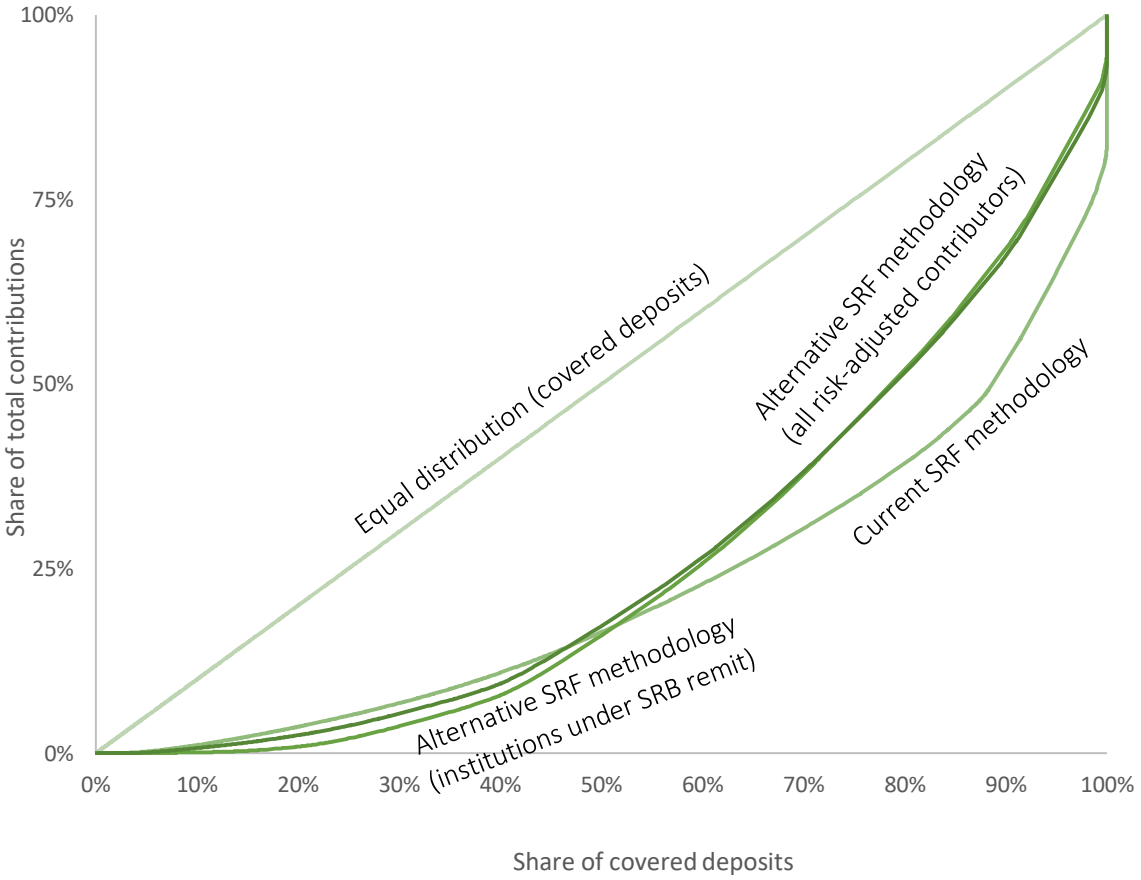


Source: Authors (2021).

Broadening the scope of the risk-adjusted contributions from institutions under the SRB's remit to all 'current' risk-adjusted contributors has a limited impact on the distribution of contributions in proportion to the covered deposits (see Figure 39). Hence, contributions under

the alternative methodology are only slightly more equally distributed among all risk-adjusted contributors than among the institutions under the SRB's remit. The limited difference is explained by the fact that in both instances the same group of banks covers the lion's share of the contributions. The current SRF methodology is clearly more skewed to institutions without covered deposits and institutions representing a smaller share of covered deposits.

Figure 39 Distribution of SRF contributions across covered deposits by methodology



Source: Authors (2021).

5. CONCLUDING REMARKS

The Single Resolution Fund forms an essential element of the crisis management framework in the Banking Union by limiting the possibility that taxpayers' money will be needed to rescue banks.

Most important is that the SRF has sufficient funds available to support resolution actions. In our previous work on the fund, we focused on its size. Based on a simulation, we found in 2015 that 1% of expected covered deposits by 2023 (EUR 55 billion ex-ante funds and EUR 21 billion ex-post funds) would be more than sufficient to provide the capital potentially needed under nearly all scenarios, while for temporary liquidity support the fund was not the most suitable option considering the potentially large amounts required and the limited time available to make the funds accessible (De Groen and Gros, 2015; De Groen, 2018).

This study focuses on the methodology for calculating contributions from credit institutions to the SRF, which is essential to gather the necessary means for the fund. The current SRF contribution methodology has some problems: First, the methodology is opaque, with many indicators unavailable to both the institutions concerned and the general public. Second, the methodology is overly complex, with data required on more than 3,300 institutions, for which up to about 80 questions and more than 20 quantitative financial variables need to be collected each year. The calculation is further complicated by rescaling based on flexible bins. Third, both the indicators and the methodology follow the logic of the remaining banking legislation only to a very limited extent. For example, banks with higher capital ratios are relatively less likely to fail, and greater loss-absorption capacity reduces the need for the use of resolution funds.

In an attempt to resolve these problems, this study proposes an alternative methodology to calculate individual SRF contributions. The alternative methodology has the further advantage of incentivising the contributing institutions to reduce their probability of failure and build up more loss-absorption capacity.

The alternative methodology is relatively simple, in the sense that all resolution groups under the remit of the SRB pay a risk-adjusted contribution, while the other LSIs pay a lump-sum contribution based on their size component. This decreases the overall number of contributors, as parents and subsidiaries of resolution groups no longer contribute separately. Most importantly, though, the number of risk-adjusted contributors decreases by more than 80%.

Risk-adjusted contributions are based on three variable components (size component, probability of resolution and probability of payout) and one fixed component (contribution key).

The *size component* aims to capture the maximum loss that might have to be addressed in resolution of the resolution group or institution concerned. In this sense, it has the same function as the BAC under the current SRF methodology. The main difference in the size component with the BAC is that the main exposure adjustments are rendered unnecessary by using the leverage exposure instead of total liabilities to determine the size (e.g. exposure adjustments in line with remaining financial framework), and by calculating the contribution at

resolution group rather than individual level (e.g. intragroup adjustments no longer relevant). Moreover, the other deductions for the size component are selected to reflect the actual loss-absorption capacity, with the covered deposit deduction maximised based on the share the DGS could cover in resolution, own funds and bail-inable liabilities. These figures are – or will in principle be – available to all institutions, as well as competent authorities based on the capital requirements and resolution legislation. With the exception of covered deposits, the indicators are also publicly disclosed.

The calculation of the equivalent to the risk factor under the alternative SRF methodology is significantly different from the existing calculation. The existing risk factor is calculated based on the relative rank on a multitude of indicators, which are all weighted according to their relative importance. Many of these indicators are not publicly disclosed, not regulated by other banking legislation (i.e. resolution and bank capital legislation) and reflect size rather than risk. Moreover, the risk sensitivity is limited, with high-risk institutions paying a maximum of almost twice as much as low-risk institutions.

The proposed alternative SRF methodology simplifies this approach by focusing on the main aspects that might determine the risks for the SRF, including probability of resolution and probability of payout.

The *probability of resolution* is determined based on the excess capital, in line with the rationale behind the Capital Requirements Directive and Regulation (CRD/CRR). The excess capital is translated into a probability of resolution or FOLTF based on historic bailouts, as there are not yet sufficient resolutions to estimate the probabilities of the various levels of excess capital.

Similarly, the *probability of payout* is determined based on loss-absorption capacity, in line with the rationale behind the MREL requirements. Loss-absorption capacity is defined as own funds plus other MREL-eligible instruments minus half of the MREL requirements as a share of TLOF. Loss-absorption capacity is translated into the probability of payout based on historic bailouts.

The proposed alternative SRF methodology allows for risk sensitivity, with high-risk institutions paying up to 25 times as much as low-risk institutions. This could potentially be reduced by lowering the limits applied to the probability of resolution and probability of payout. However, lowering the limits will reduce the incentive for resolution groups to hold more capital and build up more loss-absorption capacity.

In order to ensure that the individual total contribution is equal to the annual target level, a *contribution key* is introduced. The contribution key is calculated by dividing the annual target level for the risk-adjusted contributors by the sum of the size component times probability of resolution times probability of payout in the previous year. The contribution key is the same for all risk-adjusted contributors. Formulating the contribution key in this manner allows part of the interdependency under the current SRF contribution methodology to be dispensed with.

The target level is currently based on the covered deposits of all institutions in the Banking Union. This means that the target size is partially based on institutions that are very unlikely to receive funds from the SRF in the case of failure, and that risk-adjusted contributors contribute

to reaching the target size for the lump-sum contributors. To avoid this, the alternative methodology envisages calculating the annual target level based on the covered deposits of risk-adjusted contributors. The lump-sum contributors would be treated separately and would contribute additional funds to the SRF. The target level of the proposed alternative methodology would be equivalent to 78% of the current target. Due to the extraordinary increase in covered deposits during the COVID-19 pandemic, the different calculation of the target level would still result in an SRF of a larger than originally envisaged size (EUR 60 billion). Various discussions are ongoing about making resolution quasi standard for nearly all banks. If the scope of risk-adjusted contributions is broadened to all mid-sized and larger banks, the target size would become quite similar to the current target level (98%).

Looking at the potential implementation of the alternative methodology, all the necessary indicators from the end of 2019 are available, which means that it could be used for the calculation of contributions from 2021 onwards, in case contributions for 2020 and earlier are annulled by the court based on inappropriate methodology. If the proposed alternative methodology is used, only the probability of payout would have to be calculated based on alternative indicators. Indeed, the MREL requirement was not set by the SRB at that time. However, noting that the minimum bail-in of 8% of TLOF was required to access the SRF applicable then, the loss-absorption capacity could be calculated as own funds minus 4% of TLOF (50% of TLOF) expressed in TLOF.

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ANNEXES

Annex 1 Data and assumptions for replication of current SRF contributions

SRF ex-ante contributions are replicated for 2018, mostly based on data for 2016. This is in line with the current SRF contribution methodology. A total of 3,315 financial institutions from 19 euro area Member States contributed to the SRF in 2018. The complete list of institutions for this study was obtained from the SRB on a confidential basis. The cut-off date for the calculation of SRF contributions is 31 December 2016.

The table below provides an overview of the calculations, sources and assumptions used for the replication of the current SRF contributions.

Indicator	Calculation	Source	Assumption
Risk-adjusted contribution	Annual target level * ((basic annual contribution * risk factor) /(sum of basic annual contributions * risk factors))	*Annual target level*, *basic annual contribution* and *risk factor* are calculated using the sources indicated for each factor below.	
Annual target level			
Annual target level	(Covered deposits + expected growth of covered deposits) / remaining years	*Covered deposits, expected growth of covered deposits* and *remaining years* are calculated using the sources indicated for each indicator below.	
Covered deposits		*Covered deposits* are obtained from the SRB.	
Expected growth of covered deposits		*Expected growth of covered deposits* is based on the growth anticipated by the SRB.	
Number of years remaining		*Number of years remaining* is based on the number of years remaining between the reference year and 2024.	

Indicator	Calculation	Source	Assumption
Basic annual contribution (BAC)			
Basic annual contribution (BAC)	Total liabilities (incl. own funds) – own funds – covered deposits – derivative adjustment – intra-group/IPS deductions – institution-specific deduction	The BAC of each institution is calculated using the below. The final BAC considers an adjustment based on the total BAC at country level reported by the SRB.	*Basic annual contribution* is calculated and adjusted for the deviation from the total country-level BAC as reported by the SRB. For this purpose upper and lower bounds of confidence are defined. The upper bound consists of total liabilities as reported by the institutions, and the lower bound considers BAC with all adjustments and deductions. BAC indicators for each institution are rescaled to fit the total BAC.
Total liabilities (incl. own funds)	Total balance sheet	*Total balance sheets* are mostly obtained from Orbis and, where unavailable, directly from the financial statements of the banks.	Total balance sheets are a good proxy for total liabilities incl. own funds.
Own funds	Tier 1 + Tier 2 capital	*Tier 1 and Tier 2 capital* are obtained from Orbis and estimated where unavailable.	For those institutions where own funds are not available in Orbis, own funds are estimated based on total equity, which is available for nearly all institutions. Own funds for institutions without information are predicted based on the relation between own funds and total equity observed in a simple OLS-regression with data from institutions with information on both variables. The relation between own funds and total equity is very strong noting the very high explanatory power (95%) of the regression.

Indicator	Calculation	Source	Assumption
Covered deposits	Linear interpolation of covered deposits at national level	*Covered deposits* of each institution are estimated based on total covered deposits per country as reported by the SRB, and the share of customer deposits in total customer deposits based on information from Orbis.	The information on covered deposits is currently only provided at national level and is not available at institutional level. As covered deposits are not published at institutional level, the study assumes a proportionate distribution to the closest publicly available indicator (customer deposits).
Derivative adjustment	Difference between the accounting value of on-balance sheet derivatives[1] and the higher of 75% of accounting value of on- and off-balance sheet derivatives[1] or on-balance sheet derivatives[1] valued in accordance with the leverage ratio methodology	*On-balance sheet derivatives* are liabilities arising from derivatives (excl. credit derivatives) as reported by the institutions obtained from Orbis.	The derivatives are assumed to be zero when there is no information on derivatives available.
		Off-balance sheet derivatives	*Off-balance sheet derivatives* are approximated by multiplying on-balance sheet derivatives (excl. credit derivatives) by the ratio of total off-balance sheet items to the total balance sheet.
		Derivatives valued in accordance with the leverage ratio methodology are obtained from the European Central Bank (ECB) at country level and redistributed proportionally based on the *on-balance sheet derivatives.*	*Derivatives valued in accordance with the leverage ratio methodology* are not publicly available for most banks, and are therefore estimated. They are calculated as the sum of replacement costs (i.e. market value) and potential future credit exposure. Due to the latter being unavailable, only the sum of replacement costs is used for the estimations. For this, the total market value of derivatives is redistributed among institutions based on their shares in *on-balance sheet derivatives* in the country.

Indicator	Calculation	Source	Assumption
IPS and intra-group deductions	50% (qualifying intragroup liabilities not arising from derivatives + intragroup liabilities arising from derivatives[1] adjusted for derivative floor factor + qualifying intragroup assets[30])	*Intra-group/IPS assets and liabilities* are obtained from the ECB at country level and redistributed based on the share of assets considering the organisational structure dynamics observed from the confidential data provided by the Fédération Bancaire Française (FBF).	*Intra-group/IPS assets and liabilities* are only observable to a limited extent from publicly available information. Intra-group/IPS assets and liabilities are therefore estimated based on country-level information from the ECB. The distribution considers the organisational structure. Individual institutions not part of an IPS are assumed to have no intra-group/IPS assets. Furthermore, distinct factors are used for parent/central institutions and subsidiaries/IPS members based on aggregation of confidential data provided by FBF members.
Institution-specific deductions (only applicable to CCPs, CSDs, promotional banks and investment firms)	Sum of qualifying liabilities arising from derivatives[1] that arise from institution-specific activities adjusted for derivative floor factor and accounting value of liabilities that arise from institution-specific activities not arising from derivatives	*Liabilities arising from institution-specific activities* are estimated based on total liabilities obtained from Orbis.	*Liabilities arising from institution-specific activities* are assumed to be 70% of total liabilities based on the assessment of financial statements of a selection of non-bank financial institutions.
		Liabilities arising from derivatives that arise from institution-specific activities are based on the derivatives (excl. credit derivatives) and total liabilities obtained from Orbis.	*Liabilities arising from derivatives that arise from institution-specific activities* are only publicly available to a limited extent and are estimated by multiplying institution-specific liabilities by the ratio of total derivatives (excl. credit derivatives) to total liabilities.

[30] Derivative floor factor is the ratio of the higher of 75% of on- and off-balance sheet derivatives[1] or on-balance sheet derivatives[1] valued in accordance with the leverage ratio methodology to on-balance sheet derivatives[1] valued in accordance with the leverage ratio methodology.

Indicator	Calculation	Source	Assumption
		Liabilities arising from derivatives that arise from institution-specific activities are based on the derivatives (excl. credit derivatives) and total liabilities obtained from Orbis.	*Liabilities that arise from institution-specific activities not arising from derivatives* are only publicly available to a limited extent, and are estimated based on the difference between total institution-specific liabilities and institution-specific liabilities arising from derivatives (excl. credit derivatives).
Risk factor			
Risk factor	*See Section 2.3*	The sources for the various indicators are listed below.	
Pillar I: Risk exposure			
Leverage ratio	Tier 1 / total leverage exposure	*Leverage ratios* are obtained from Orbis, the financial statements of the institutions or estimated.	For those institutions where no leverage ratio was available in Orbis or in the annual reports that were also assessed, the ratio was estimated based on Tier 1 capital over total assets. The relation between leverage ratio and Tier 1 over total assets is very strong noting the high correlation.
Common Equity Tier 1 (CET1) capital		*CET1 capital* as reported by Orbis, financial statements of the institutions or estimated.	For those institutions where CET1 capital is not publicly available, the indicator is estimated based on total equity, which is available for nearly all institutions. CET1 for institutions without information is predicted based on the relation between CET1 and total equity in a simple OLS-regression with data from institutions with information on both variables.

Indicator	Calculation	Source	Assumption
			The relation between total equity and own funds is very strong noting the very high explanatory power of the regression.
Total risk exposure divided by total assets	*Risk-weighted assets (RWAs) / total assets*	*RWAs* as obtained from Orbis and, where unavailable, from the institution. *Total assets* are mostly obtained from Orbis and, where unavailable, directly from the financial statements of the institutions.	
Pillar II: Stability and variety of source of funding			
Liquidity coverage ratio	*Liquidity buffer / net liquidity outflows over a 30 calendar day stress period*	*Liquidity coverage ratio* is obtained from Orbis and based on estimations. The estimations are based on the loan-to-deposit ratio obtained from information in Orbis and the weighted average liquidity coverage ratios obtained from the ECB.	For those institutions where the liquidity coverage ratio is not publicly available, the ratio was estimated based on the regression analysis. The ratio is predicted based on a panel analysis covering all institutions between 2014 and 2017. More specifically, the log of liquidity coverage ratio is regressed over the loan-to-deposit ratio and log of total assets using a simple OLS-regression. The ratios were further rescaled to match the weighted average liquidity coverage ratio for the country.

Pillar IV: Additional risk indicators to be determined by the resolution authority			
Risk-weighted assets (RWAs) for market risk divided by total assets	Market risk / total assets	*RWAs for market risk* are obtained from Orbis and based on estimations. The estimations are based on the RWAs obtained from information in Orbis and the market risk per country obtained from the ECB.	For those institutions where the RWAs for market risk are not publicly available, the ratio was estimated based on the regression analysis. More specifically, the RWAs for market risk were regressed over the RWAs using a simple OLS regression. The ratios were further rescaled to match the average market risk per country.
		See *total assets* above.	
RWAs for market risk divided by CET1	Market risk / CET1 capital	See *RWAs for market risk* and *CET1 capital* above.	
RWAs for market risk divided by total risk exposure	Market risk / RWAs	See *RWAs for market risk* and *RWAs* above.	
Off-balance sheet nominal amount divided by total assets	Total exposures held off-balance sheet / total assets	*Off-balance sheet amount* as obtained from Orbis and based on estimations.	Few banks carry out significant off-balance sheet activities. Therefore, the off-balance sheet amounts zero for the institutions without information on their off-balance sheet exposures.
		See *total assets* above.	
Off-balance sheet nominal amount divided by CET1	Total exposures held off-balance sheet / CET1 capital	See *off-balance sheet amount* and *CET1 capital* above.	
Off-balance sheet nominal amount divided by total risk exposure	Total exposures held off-balance sheet / RWAs	See *off-balance sheet amount* and *RWAs* above.	
Derivatives exposure divided by total assets	Derivatives exposure / total assets	*Derivatives exposure* is obtained from Orbis and based on an assumption.	Derivatives are assumed to be zero where no information on derivatives is available.
		See *total assets* above.	
Derivatives exposure divided by CET1	Derivatives exposure / CET1 capital	See *derivatives exposure* and *CET1 capital* above.	

Derivatives exposure divided by total risk exposure	Derivatives exposure / RWAs	See *derivatives exposure and RWAs* above.	
Membership of an Institutional Protection Scheme		*Members of Institutional Protection Schemes* as listed in Choulet (2017) and ECB (2016).	
Extent of previous extraordinary public financial support		*Institutions that have received previous extraordinary public financial support* are identified from the European Commission (2018) and compared against three conditions: i) they are part of a group that has been put under restructuring after receiving any State or equivalent funds; ii) they are part of a group that is still within the restructuring or winding down or liquidation period; or iii) they are part of a group that is not in the last two years of implementation of the restructuring plan.	

Note: [1]Derivatives stand for liabilities arising from derivatives excluding credit derivatives, unless specified otherwise.

Annex 2 Validation of replication following current SRF methodology

The replication results were validated through a comparison of actual and replicated contributions across countries. The results of the replication for both basic annual contributions and risk-adjusted contributions across countries are very similar to the actual contributions as disclosed by the SRB. Differences between the actual and replicated contributions are marginal (0.1%) and entirely explained by rounding (0.1%).

The table below provides a comparison of the actual and replicated basic annual contributions and final SRF contributions across countries.

Country	Basic annual contributions (EUR million)			Final SRF contributions (EUR million)		
	Actual	Replicated	Difference	Actual	Replicated	Difference
AT	332,253	332,146	0.0%	185	185	0.0%
BE	473,937	473,532	0.1%	264	264	0.0%
CY	27,337	27,346	0.0%	15	15	0.0%
DE	3,657,196	3,654,158	0.1%	2,046	2,046	0.0%
EE	6,812	6,812	0.0%	3	3	0.0%
ES	1,333,898	1,333,216	0.1%	731	730	0.1%
FI	101,663	101,724	-0.1%	61	61	0.1%
FR	4,827,363	4,825,393	0.0%	2,848	2,848	0.0%
EL	139,916	139,889	0.0%	89	89	0.0%
IE	230,084	230,191	0.0%	115	115	0.0%
IT	1,389,563	1,388,887	0.0%	769	768	0.1%
LT	6,952	6,949	0.0%	3	3	0.0%
LU	338,253	338,352	0.0%	179	179	0.0%
LV	10,965	10,966	0.0%	6	6	0.0%
MT	9,023	9,020	0.0%	5	5	0.0%
NL	1,193,866	1,194,595	-0.1%	663	663	0.0%
PT	161,922	161,971	0.0%	100	100	0.0%
SI	9,481	9,469	0.1%	5	5	0.0%
SK	22,995	22,998	0.0%	12	12	0.0%
Total	**14,273,481**	**14,267,616**	**0.0%**	**8,099**	**8,098**	**0.0%**

Note: Difference is calculated as difference between estimated and actual contributions expressed as share of actual contributions.

Source: Authors (2021).

Annex 3 Correlation of risk indicators under current SRF methodology

The table below shows the correlation of various indicators used to calculate individual risk-based contributions under the current SRF methodology. The indicators were used to replicate SRF ex-ante contributions for 2018, mostly based on data for the financial year 2016.

Risk indicator	Pillar I			Pillar II	Pillar IV								
	Total risk exposure divided by total assets	CET1 capital ratio	Leverage ratio	Liquidity coverage ratio	RWAs for market risk divided by total assets	RWAs for market risk divided by CET1	RWAs for market risk divided by total risk exposure	Off-balance sheet nominal amount divided by total assets	Off-balance sheet nominal amount divided by CET1	Off-balance sheet nominal amount divided by total risk exposure	Derivatives exposure divided by total assets	Derivatives exposure divided by CET1	Derivatives exposure divided by total risk exposure
Total risk exposure divided by total assets	100%												
CET1 capital ratio	-26%	100%											
Leverage ratio	-5%	64%	100%										
Liquidity coverage ratio	-1%	1%	0%	100%									
RWAs for market risk divided by total assets	60%	-19%	-3%	-3%	100%								
RWAs for market risk divided by CET1	3%	-3%	0%	0%	-1%	100%							
RWAs for market risk divided by total risk exposure	23%	-10%	-4%	-1%	89%	-2%	100%						
Off-balance sheet nominal amount divided by total assets	-7%	6%	-1%	-1%	-6%	0%	-6%	100%					
Off-balance sheet nominal amount divided by CET1	-8%	1%	1%	-3%	-7%	1%	-7%	75%	100%				
Off-balance sheet nominal amount divided by total risk exposure	-8%	6%	0%	-1%	-5%	0%	-3%	99%	74%	100%			
Derivatives exposure divided by total assets	5%	-6%	-3%	4%	33%	-2%	39%	-4%	-2%	-3%	100%		
Derivatives exposure divided by CET1	-9%	-10%	-1%	0%	-3%	4%	1%	-1%	33%	-1%	22%	100%	
Derivatives exposure divided by total risk exposure	-26%	21%	-2%	2%	-1%	-1%	16%	-2%	-1%	-1%	51%	18%	100%

Source: Authors (2021).

Annex 4 List of institutions under SRB remit and their respective resolution strategies

Country	Bank	Qualifier for significance	Resolution strategy
AT	Bausparkasse Wüstenrot Aktiengesellschaft	Cross-border group	SPE
AT	Addiko Bank AG	Significant cross-border assets	SPE
AT	BAWAG Group AG	Size (total assets EUR 30-50 bn)	SPE
AT	Erste Group Bank AG	Size (total assets EUR 150-300 bn)	SPE
AT	Raiffeisen Bank International AG	Size (total assets EUR 100-150 bn)	SPE
AT	Raiffeisenbankengruppe OÖ Verbund eGen	Size (total assets EUR 30-50 bn)	SPE
AT	Sberbank Europe AG	Significant cross-border assets	SPE
AT	Volksbank Wien AG	Importance for the economy of the Union or any participating Member State	SPE
BE	Delen Private Bank SA	Cross-border group	SPE
BE	Dexia SA/NV	Cross-border group	SPE
BE	AXA Bank Belgium SA ; AXA Bank Belgium NV	Article 6(5)(b) of Regulation (EU) No 1024/2013	SPE
BE	Banque Degroof Petercam SA ; Bank Degroof Petercam NV	Significant cross-border assets	SPE
BE	Belfius Banque SA ; Belfius Bank NV ; Belfius Bank SA	Size (total assets EUR 100-150 bn)	SPE
BE	Investeringsmaatschappij Argenta NV ; Société d'investissements Argenta SA ; Investierungsgesellschaft Argenta AG	Size (total assets EUR 30-50 bn)	SPE
BE	KBC Group NV	Size (total assets EUR 150-300 bn)	SPE
BE	The Bank of New York Mellon SA	Size (total assets EUR 30-50 bn)	MPE
CY	Bank of Cyprus Holdings Public Limited Company	Total assets above 20% of GDP	SPE
CY	Hellenic Bank Public Company Limited	Total assets above 20% of GDP	SPE
CY	RCB Bank LTD	Total assets above 20% of GDP	SPE
DE	Aareal Bank AG	Size (total assets EUR 30-50 bn)	SPE
DE	Bayerische Landesbank	Size (total assets EUR 150-300 bn)	SPE
DE	COMMERZBANK Aktiengesellschaft	Size (total assets EUR 300-500 bn)	SPE
DE	DekaBank Deutsche Girozentrale	Size (total assets EUR 100-150 bn)	SPE
DE	Deutsche Apotheker- und Ärztebank eG	Size (total assets EUR 30-50 bn)	SPE
DE	Deutsche Bank AG	Size (total assets above EUR 1,000 bn)	SPE
DE	Deutsche Pfandbriefbank AG	Size (total assets EUR 50-75 bn)	SPE
DE	DZ BANK AG Deutsche Zentral-Genossenschaftsbank	Size (total assets EUR 300-500 bn)	SPE
DE	Erwerbsgesellschaft der S-Finanzgruppe mbH & Co. KG	Size (total assets EUR 50-75 bn)	SPE
DE	Goldman Sachs Bank Europe SE	Article 6(5)(b) of Regulation (EU) No 1024/2013	SPE
DE	HASPA Finanzholding	Size (total assets EUR 30-50 bn)	SPE
DE	Hamburg Commercial Bank AG	Size (total assets EUR 50-75 bn)	SPE
DE	J.P. Morgan AG	Article 6(5)(b) of Regulation (EU) No 1024/2013	MPE
DE	Landesbank Baden-Württemberg	Size (total assets EUR 150-300 bn)	MPE
DE	Landesbank Hessen-Thüringen Girozentrale	Size (total assets EUR 150-300 bn)	SPE
DE	Münchener Hypothekenbank eG	Size (total assets EUR 30-50 bn)	SPE
DE	Morgan Stanley Europe Holding SE	Article 6(5)(b) of Regulation (EU) No 1024/2013	MPE

Country	Bank	Qualifier for significance	Resolution strategy
DE	Norddeutsche Landesbank -Girozentrale-	Size (total assets EUR 150-300 bn)	SPE
DE	State Street Europe Holdings Germany S.à.r.l. & Co. KG	Size (total assets EUR 30-50 bn)	SPE
DE	UBS Europe SE	Size (total assets EUR 30-50 bn)	SPE
DE	Volkswagen Bank GmbH	Size (total assets EUR 75-100 bn)	SPE
DE	MMV Bank GmbH	Size (total assets EUR 150-300 bn)	MPE
EE	AS SEB Pank	Total assets above 20% of GDP	MPE
EE	Luminor Holding AS	Total assets above 20% of GDP	SPE
EE	Swedbank AS	Total assets above 20% of GDP	MPE
ES	Allfunds Bank, S.A.U.	Cross-border group	SPE
ES	ABANCA Corporación Bancaria S.A.	Size (total assets EUR 50-75 bn)	SPE
ES	Banco Bilbao Vizcaya Argentaria, S.A.	Size (total assets EUR 500-1,000 bn)	MPE
ES	Banco de Crédito Social Cooperativo, S.A.	Size (total assets EUR 30-50 bn)	SPE
ES	Banco de Sabadell, S.A.	Size (total assets EUR 150-300 bn)	SPE
ES	Banco Santander, S.A.	Size (total assets above EUR 1,000 bn)	MPE
ES	Bankinter, S.A.	Size (total assets EUR 75-100 bn)	SPE
ES	BFA Tenedora De Acciones S.A.U.	Size (total assets EUR 150-300 bn)	SPE
ES	CaixaBank, S.A.	Size (total assets EUR 300-500 bn)	SPE
ES	Ibercaja Banco, S.A.	Size (total assets EUR 30-50 bn)	SPE
ES	Kutxabank, S.A.	Size (total assets EUR 50-75 bn)	SPE
ES	Liberbank, S.A.	Size (total assets EUR 30-50 bn)	SPE
ES	Unicaja Banco, S.A.	Size (total assets EUR 50-75 bn)	SPE
EL	Alpha Bank AE	Size (total assets EUR 50-75 bn)	SPE
EL	Eurobank Ergasias Services and Holdings S.A.	Size (total assets EUR 50-75 bn)	SPE
EL	National Bank of Greece S.A.	Size (total assets EUR 50-75 bn)	SPE
EL	Piraeus Bank S.A.	Size (total assets EUR 50-75 bn)	SPE
FI	Kuntarahoitus Oyj	Size (total assets EUR 30-50 bn)	SPE
FI	Nordea Bank Abp	Size (total assets EUR 500-1,000 bn)	SPE
FI	OP Osuuskunta	Size (total assets EUR 100-150 bn)	SPE
FR	Oddo BHF SCA	Cross-border group	SPE
FR	BNP Paribas S.A.	Size (total assets above EUR 1,000 bn)	SPE
FR	BPCE S.A.	Size (total assets above EUR 1,000 bn)	SPE
FR	Bpifrance S.A. (Banque Publique d'Investissement)	Size (total assets EUR 75-100 bn)	SPE
FR	C.R.H. - Caisse de Refinancement de l'Habitat	Size (total assets EUR 30-50 bn)	SPE
FR	Confédération Nationale du Crédit Mutuel	Size (total assets EUR 500-1,000 bn)	SPE
FR	Crédit Agricole S.A.	Size (total assets above EUR 1,000 bn)	SPE
FR	HSBC France	Size (total assets EUR 150-300 bn)	SPE
FR	La Banque Postale	Size (total assets EUR 150-300 bn)	SPE
FR	RCI Banque SA	Size (total assets EUR 50-75 bn)	SPE
FR	SFIL S.A.	Size (total assets EUR 50-75 bn)	SPE
FR	Société Générale S.A.	Size (total assets above EUR 1,000 bn)	SPE
IE	AIB Group plc	Size (total assets EUR 75-100 bn)	SPE

Country	Bank	Qualifier for significance	Resolution strategy
IE	Bank of America Merrill Lynch International Designated Activity Company	Size (total assets EUR 30-50 bn)	MPE
IE	Bank of Ireland Group plc	Size (total assets EUR 100-150 bn)	SPE
IE	Barclays Bank Ireland PLC	Size (total assets EUR 30-50 bn)	SPE
IE	Citibank Holdings Ireland Limited	Size (total assets EUR 30-50 bn)	SPE
IE	Ulster Bank Ireland Designated Activity Company	Size (total assets EUR 30-50 bn)	SPE
IT	Banca Mediolanum S.p.A.	Cross-border group	SPE
IT	Banca Carige S.p.A. - Cassa di Risparmio di Genova e Imperia	Article 6(5)(b) of Regulation (EU) No 1024/2013	SPE
IT	BANCA MONTE DEI PASCHI DI SIENA S.p.A.	Size (total assets EUR 100-150 bn)	SPE
IT	Banca Popolare di Sondrio, Società Cooperativa per Azioni	Size (total assets EUR 30-50 bn)	SPE
IT	Banco BPM S.p.A.	Size (total assets EUR 150-300 bn)	SPE
IT	BPER Banca S.p.A.	Size (total assets EUR 75-100 bn)	SPE
IT	Cassa Centrale Banca - Credito Cooperativo Italiano S.p.A.	Size (total assets EUR 50-75 bn)	SPE
IT	Credito Emiliano Holding S.p.A.	Size (total assets EUR 30-50 bn)	SPE
IT	Iccrea Banca S.p.A. - Istituto Centrale del Credito Cooperativo	Size (total assets EUR 150-300 bn)	SPE
IT	Intesa Sanpaolo S.p.A.	Size (total assets EUR 500-1,000 bn)	SPE
IT	Mediobanca - Banca di Credito Finanziario S.p.A.	Size (total assets EUR 75-100 bn)	SPE
IT	UniCredit S.p.A.	Size (total assets EUR 500-1,000 bn)	SPE
LT	AB SEB bankas	Among the three largest credit institutions in the Member State	MPE
LT	Swedbank AB	Total assets above 20% of GDP	MPE
LT	Akcinė bendrovė Šiaulių bankas	Among the three largest credit institutions in the Member State	SPE
LU	Banque et Caisse d'Epargne de l'Etat, Luxembourg	Size (total assets EUR 30-50 bn)	SPE
LU	Banque Internationale à Luxembourg S.A.	Total assets above 20% of GDP	SPE
LU	J.P. Morgan Bank Luxembourg S.A.	Total assets above 20% of GDP	MPE
LU	Precision Capital S.A.	Total assets above 20% of GDP	SPE
LU	RBC Investor Services Bank S.A.	Total assets above 20% of GDP	SPE
LV	AS SEB banka	Among the three largest credit institutions in the Member State	MPE
LV	AS Citadele banka	Among the three largest credit institutions in the Member State	SPE
LV	Swedbank AS	Among the three largest credit institutions in the Member State	MPE
MT	Bank of Valletta plc	Total assets above 20% of GDP	SPE
MT	HSBC Bank Malta p.l.c.	Total assets above 20% of GDP	SPE
MT	MDB Group Limited	Among the three largest credit institutions in the Member State	SPE
NL	ABN AMRO Bank N.V.	Size (total assets EUR 300-500 bn)	SPE
NL	BNG Bank N.V.	Size (total assets EUR 100-150 bn)	SPE
NL	Coöperatieve Rabobank U.A.	Size (total assets EUR 500-1,000 bn)	SPE
NL	de Volksbank N.V.	Size (total assets EUR 50-75 bn)	SPE
NL	ING Groep N.V.	Size (total assets EUR 500-1,000 bn)	SPE

Country	Bank	Qualifier for significance	Resolution strategy
NL	Nederlandse Waterschapsbank N.V.	Size (total assets EUR 75-100 bn)	SPE
PT	Banco Finantia SA	Cross-border group	SPE
PT	Banco Santander Totta S.A.	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE
PT	Banco Comercial Português, SA	Size (total assets EUR 75-100 bn)	SPE
PT	Caixa Geral de Depósitos, SA	Size (total assets EUR 75-100 bn)	SPE
PT	LSF Nani Investments S.à.r.l.	Size (total assets EUR 30-50 bn)	MPE
PT	BEST - Banco Electrónico de Serviço Total, SA	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE
PT	Nani Holdings, SGPS, S.A.	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE
PT	Novo Banco dos Açores, SA	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE
PT	NOVO BANCO, S.A.	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE
SI	Biser Topco S.à.r.l.	Among the three largest credit institutions in the Member State	SPE
SI	Nova Ljubljanska Banka d.d. Ljubljana	Total assets above 20% of GDP	SPE
SK	Slovenská sporiteľňa, a.s.	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE
SK	Tatra Banka	Part of the integrated group that adopted fully or partially MPE resolution approach	MPE

Note: SPE – Single Point of Entry and MPE – Multiple Points of Entry.

Source: Authors (2021) based on annual reports, resolution plans, Pillar III reports and investors' presentations.

Annex 5 Main assumptions alternative methodology

The alternative SRF methodology developed in this study relies on a number of important assumptions:

- **Institutions under the remit of the Single Resolution Board (SRB) are most likely to require funding from the Single Resolution Fund (SRF) in resolution**. In general, significant and cross-border institutions can be resolved by the SRB in accordance with the BRRD (Directive 2014/59/EU). These are all the significant institutions under the direct supervision of the European Central Bank plus other cross-border institutions. It is envisaged that other less significant institutions (LSIs) are to be resolved by domestic National Resolution Authorities (NRAs). Only in exceptional cases may NRAs request that the SRB exercise its resolution powers with respect to LSIs (SRB, 2021). This effectively means that significant and cross-border institutions have a substantially higher chance of being subject to resolution with SRF financing than other LSIs.
  - The alternative methodology reflects the different probability of accessing the SRF. Under the proposed alternative methodology, the institutions under the remit of the SRB with a higher probability of obtaining funds from the SRF pay higher risk-adjusted contributions, while the other LSIs pay a lump-sum contribution.
- **Regulatory capital levels provide a good indication of the risk of failure of institutions.** Regulatory capital requirements are widely used by the supervisory authorities to measure the relative riskiness of financial institutions. Capital requirements and capital levels are both available to the supervisory authorities and publicly reported by the institutions, which eases replication for third parties.
  - The alternative methodology aims to have a harmonised approach to measuring the riskiness of institutions that is coherent with the remaining bank policy framework. Risk of failure is based on excess capital as a share of harmonised risk-weighted assets (RWAs). Regulatory capital is chosen over leverage as it is the constraining capital requirement for the large majority of institutions.
- **Higher loss-absorption capacity reduces the need for resolution funding**. The minimum requirement for own funds and eligible liabilities (MREL) is used by resolution authorities to ensure that the institution has enough funds available for a potential bail-in, reducing the need to use alternative resolution tools. In general, the more bail-inable liabilities the institution has in excess of the MREL requirement, the less likely SRF funds will be required. From 2022, MREL eligible liabilities, as well as liabilities including own funds, will be reported by banks, as they were informed early in 2021 by the SRB.
  - The alternative methodology takes into account the importance of the excess in bail-in liabilities, while considering that part of the resolution funding is hard to predict ex-ante, such as no creditor worse off (NCWO) compensation and liquidity support. The alternative methodology maintains the combination of a fixed component and a risk-adjusted component.
- **Losses and contributions from the SRF are random for a given level of capital/bail-in capacity, adjusted RWAs and size**. The exact number of defaults and actual loss rate

cannot be known in advance; these vectors are random and can only be estimated (BIS, 2005). This implies that institutions with the same level of capital, adjusted RWAs and size can ultimately suffer different losses. The same rationale is applied to the contribution in resolution, given the limited number of actual resolutions.

  - The alternative methodology aims to ensure that contributions are proportionate to the risks and absorption capacity of the institutions. Considering the unpredictability of losses and contributions from the SRF, all institutions with the same risk profile and level of absorption capacity will be treated the same way in the calculation.

- Past losses provide an indication of future losses of institutions receiving funds from the SRF. Historical values are often used as benchmarks in the analysis of expected losses (BIS, 2015). Therefore, relying on historical performance provides a reasonable estimation of future losses.
  - Due to the scale of the calculation of the SRF contribution and objectives of the alternative methodology, a simple, model-free approach to determine expected losses of institutions is preferable.
- Similarly, past losses provide an indication of required needs for resolution funding, bearing in mind the limited number of institutions being resolved and that the SRF has not been used in practice.
  - The alternative methodology therefore relies on pre-BRRD/SRMR cases to come up with a reasonable estimation of future SRF contributions. In the future this could be complemented and ultimately replaced by actual contribution data for the SRF.

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