



Banc Ceannais na hÉireann
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Risk-Based Contributions to the Irish Deposit Guarantee Scheme



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Abbreviations

ARS	Aggregate Risk Score
ARW	Aggregate Risk Weight
CET1	Common Equity Tier 1
CR	Contribution Rate
DGS	Deposit Guarantee Scheme
EBA	European Banking Authority
IRS	Individual Risk Scores
LCR	Liquidity Coverage Ratio
NSFR	Net Stable Funding Ratio
NPL	Non-Performing Loan
RoA	Return on Assets
RWA	Risk Weighted Assets

1. Introduction

Following the introduction of the EU Directive on Deposit Insurance (Directive 2014/49/EU), member states that did not have pre-financed deposit insurance schemes are required to devise a risk-based methodology to calculate risk-based deposit insurance contributions. The Directive was transposed into Irish law through the European Union (Deposit Guarantee Schemes) Regulations 2015 which came into effect on 20 November 2015.¹

The Central Bank of Ireland (**Central Bank**) as the 'designated authority' is required to calculate risk-based deposit insurance contributions in accordance with the European Banking Authority's (**EBA**) guidelines "on methods for calculating contributions to deposit guarantee schemes" (EBA guidelines).² The EBA guidelines set out various methods of calculating risk indicators for members of the deposit guarantee scheme (**DGS**), for aggregating risk scores, and determining their risk-based contributions.

This document outlines the methodology employed by the Central Bank to calculate DGS contributions from member institutions. There are several key steps involved in calculating the annual DGS contributions as outlined in Annex 4 of the EBA guidelines. The rest of this document explains the calculation process referring to these steps. Section 2 describes annual target level requirements; Section 3 outlines aggregate risk-score calculations; Section 4 explains the process of assigning aggregate risk-weights to member institutions; and Section 5 outlines how the final contributions due are calculated.

¹ <http://www.irishstatutebook.ie/eli/2015/si/516/made/en/pdf>

² https://www.eba.europa.eu/documents/10180/1089322/EBA-GL-2015-10+GL+on+methods+for+calculating+contributions+to+DGS_EN

2. Annual Target Level Requirements

Define the annual target level

The first step in the process of calculating the contributions due in a given year is to determine the annual target level required for the DGS to reach its target of 0.8% of covered deposits by July 2024, taking into consideration the level of funds already available to the DGS.^{3,4} To calculate the annual target level for a given year, the level of funds required to be collected to meet the target level is divided by the number of years remaining to reach that level. In exceptional circumstances, the Central Bank can adjust the annual target level upwards or downwards if deemed necessary to do so, having regard to economic conditions and the cyclical impact that contributions may have on member institutions.⁵

Define the contribution rate (CR) applicable to all member institutions in a given year

The contribution rate (CR) is calculated by the DGS by dividing the annual target level by the sum of covered deposits of all member institutions.⁶ The CR is identical for all member institutions in a given year.

³ Paragraph 37 of the EBA guidelines.

⁴ Section 19 (2) of the European Union (Deposit Guarantee Schemes) Regulations 2015.

⁵ Paragraph 38 of the EBA guidelines.

⁶ Paragraph 39 of the EBA guidelines.

3. Aggregate Risk Score Calculations

An aggregate risk score (**ARS**) must be calculated for all member institutions based on a range of risk indicators. This is done in a series of steps. First, values are calculated for each member institution using data for a number of risk indicators (capital, liquidity and funding, asset quality, business model and management, and potential losses for the DGS). Second, the risk indicator values for each institution are then mapped to an individual risk score (**IRS**) ranging from 0 to 100 where 0 indicates low risk and 100 indicates high risk. Third, an institution specific ARS is then calculated by using a weighted average of the IRSs.

The risk indicators utilised in the calculation of the ARS differ depending on the category of institution (see Table 1). Banks and credit unions have separate peer groups for the purposes of calculating their IRS and ARS. In practice, this means that credit unions are compared against credit unions while banks are compared against banks. These calculations are detailed in sections 3.2 and 3.3 respectively. At present, there are no branches of non-European Economic Area credit institutions participating in the DGS. The risk indicators and their associated weights for banks and credit unions are shown in Tables 2 and 10 respectively.

Values used to determine risk indicators are sourced from regulatory data and are calculated on a solo, i.e., unconsolidated basis unless otherwise stated.⁷ Given the experience of the recent crisis affecting both banks and credit unions, no low risk sectors have been designated.⁸

Table 1 – Risk Categories and Core Risk Indicators Utilised⁹	
Institution Category	Description
Banks	Credit institutions licensed pursuant to Section 9 of the Central Bank Act, 1971 or Banks licensed pursuant to Section 9 of the Central Bank Act, 1971, and registered as designated credit institutions under Section 14 of the Asset Covered Securities Act, 2001.
Credit Unions	Credit unions as registered by the Central Bank of Ireland as credit unions pursuant to the Credit Union Act, 1997 (as amended).
Third Country Branches	Branches of non-European Economic Area credit institutions authorised under section 9A of the Central Bank Act, 1971

⁷ Paragraph 63 of the EBA guidelines.

⁸ Paragraph 74 of the EBA guidelines.

⁹ The list of institutions covered by the DGS is available at <http://www.depositguarantee.ie/en/what-we-cover/protected-depositors-covered-institutions>.

3.2 Banks

Calculate values of all risk indicators

Table 2 outlines the core risk indicators used by the Central Bank in the calculation of the aggregate ARS for each bank. The contributions have been calculated using the standard set of core risk indicators from the EBA guidelines. The weights for the various risk indicators are also outlined in Table 2 and are the standard weights as set out in the EBA guidelines.

For all indicators, the average value of the indicator at 31 December of the two preceding years is used. For example, for the calculating the 2016 contributions, data from December 2014 and December 2015 has been used. For certain institutions whose financial year end is October, October data has been utilised.

Table 2 – Risk Categories and Core Risk Indicators Utilised for Banks		
Risk Category	Core Risk Indicator	Weights
Capital	Leverage Ratio	12%
	Common Equity Tier 1 (CET1)	12%
Liquidity and Funding	National Liquidity Ratio	24%
Asset Quality	Non-Performing Loan (NPL) Ratio	18%
Business Model and Management	Risk Weighted Assets (RWA) / Total Assets	8.5%
	Return on Assets (RoA)	8.5%
Potential Losses for the DGS	Unencumbered Assets / Covered Deposits	17%

Assign individual risk scores to all risk indicators for each member institution

To convert risk indicator values to IRS, the Central Bank has utilised the “bucket” method. The Central Bank has set the boundaries of the buckets based on either a relative (percentile) or absolute basis depending on the indicator. The Central Bank regards this approach as adequately differentiating the risk profile of member institutions for each risk indicator. The risk indicators and the corresponding IRS are detailed in Tables 3 to 9.

Table 3 - Leverage Ratio		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

Table 4 – CET1		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

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Table 5 – Liquidity Ratio		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

Table 6 – NPL Ratio		
Bucket	Boundaries	IRS
1	≤ 0% – 5% <	0
2	≤ 5% – 10% <	33
3	≤ 10% – 15% <	66
4	≥ 15	100

Table 7 – RWA / Total Assets		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	0
2	25 th – 50 th	33
3	50 th to 75 th	66
4	75 th to 100 th	100

Table 8 – Return on Assets		
Bucket	Boundaries	IRS
1	< 0%	100
2	≤ 0% – 0.5% <	66
3	≤ 0.5% – 1.5% <	33
4	≥ 1.5%	0

Table 9 – Unencumbered Assets / Covered Deposits		
Bucket	Boundaries	IRS
1	< 1	100
2	≥ 1 – 2 <	66
3	≥ 2 – 3.5 <	33
4	≥ 3.5	0

National Liquidity Ratio

Regarding the Liquidity and Funding risk category, the Central Bank is using a national liquidity ratio as a proxy for the Liquidity Coverage Ratio (**LCR**) and the Net Stable Funding Ratio (**NSFR**).¹⁰ When the LCR and the NSFR come into effect and two years of information is available, they will be incorporated into the calculations, replacing the national liquidity ratio.¹¹

Certain institutions have received a waiver from meeting liquidity requirements on a solo basis pursuant to Articles 7, 8 or 21 of Regulation (EU) 575/2013. In such cases, the solo entity is assigned IRS of the group for the liquidity indicator.¹²

Risk-Weighted Assets

Institutions using the standardised approach for calculating minimum own funds requirements are calibrated separately from institutions using advanced methods (or a combination of advanced and

¹⁰ Paragraphs 50 and 60 of the EBA guidelines. The national liquidity ratio utilised is the Sight to 8 days ratio.

¹¹ The LCR has been a legal requirement since the delegated act which came into effect in Oct 2015, imposing a minimum LCR of 70%; while the NSFR is due some-time in 2018.

¹² Paragraph 65 of the EBA guidelines.

standardised) when calculating the IRS for Risk-Weighted Assets / Total Assets (Annex 2 of the EBA guidelines).

3.3 Credit Unions

Calculate values of all risk indicators

Table 10 outlines the core risk indicators and their weights used in the calculation of the ARW for each credit union. No additional risk indicators have been included in determining the risk profile of member institutions.

For four indicators (Capital, Liquidity and Funding, Asset Quality and Potential Losses for the DGS) the average value of the ratio at 30 September of the two preceding years will be used. For the Business Model and Management Indicator, the average value of the ratio at 30 September of the three preceding years will be used.

Table 10 – Risk Categories and Core Risk Indicators Utilised for Credit Unions		
Risk Category	Core Risk Indicator	Weights
Capital	Total Realised Reserves Ratio	24%
Liquidity and Funding	Liquidity Ratio	24%
Asset Quality	Arrears Ratio	18%
Business Model and Management	Return on Assets	17%
Potential Losses for the DGS	Unencumbered Assets / Covered Deposits	17%

Assign individual risk scores to all risk indicators for each member institution

The “bucket” method has also been used to assign the IRS for the credit union calculation and all the boundaries of the buckets have been set on a relative (percentile) basis. The risk indicators and the corresponding IRS are detailed in Tables 11 to 15.

Table 11 – Total Realised Reserve Ratio		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

Table 12 – Liquidity Ratio		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

Table 13 – Arrears Ratio		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	0
2	25 th – 50 th	33
3	50 th to 75 th	66
4	75 th to 100 th	100

Table 14 – Return on Assets Ratio		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

Table 15 – Unencumbered Assets / Covered Deposits		
Bucket	Boundaries (Percentile)	IRS
1	0 – 25 th	100
2	25 th – 50 th	66
3	50 th to 75 th	33
4	75 th to 100 th	0

3.4 Aggregate Risk Score

Calculate the aggregate risk score (ARS) for each institution by summing up all its IRSs

An ARS is calculated for each member institution by multiplying each IRS by its indicator weight (IW) and summing. Described in formula 2 as

$$ARS_i = \sum_{j=1}^n IW_j * IRS_j$$

Where

$$\sum_{j=1}^n IW_j = 100\%$$

$IRS_j = IRS_{Xj}$ for some X in $\{A, B, \dots, M\}$ (i.e. the bucket corresponding to indicator A_j)

Note: A_j refers to the indicators in Table 2 for banks and Table 10 for credit unions and n indexes the number of indicators.

For banks, the indicator weights are outlined in Table 2 and the IRSs are detailed in Tables 3 to 9. Credit union related information is contained in Tables 10 to 15. The ARS can range between 0 and 100, where 0 indicates low-risk and 100 indicates high-risk.

4. Assign Aggregate Risk Weights

Assign an aggregate risk weight (ARW) to each member institution based on its ARS

Each member institution's ARS must then be mapped to an ARW. The Central Bank has decided to translate the ARS into the ARW using the exponential method as outlined below.¹³ The effect of this formula is that riskier institutions, as defined by their ARS, pay proportionately more than less risky institutions.

Formula 3:

$$ARW_i = 75\% + (150\% - 75\%) * (1 - \log_{10}(10 - 9 * ARS_i/100))$$

The Central Bank has set the lowest ARW to 75% and the highest to 150%. This adequately reflects the differences in business models and risk profiles for member institutions currently in the DGS.¹⁴ This is the minimum range specified in the guidelines. 75% represents the lowest risk profile while 150% represents the highest.

¹³ See paragraph 21 of Annex 1 of the EBA guidelines.

¹⁴ See paragraph 46 of the EBA guidelines.

5. Calculate Risk-Based Contributions

Calculate unadjusted risk-based contributions for each member institution by multiplying the contribution rate by institution's covered deposits and its ARW

Each member institution's unadjusted risk-based annual contribution is calculated by applying the following formula:

Formula 3:

$$C_i = CR \times ARW_i \times CD_i$$

where

- C_i = Annual contribution from member institution 'i'
- CR = Contribution rate (identical for all member institutions in a given year)
- ARW_i = Aggregate risk weight for member institution 'i'
- CD_i = Covered deposits for member institution 'i'.

Sum up the unadjusted risk-based contributions of all member institutions and determine the adjustment coefficient (μ)

The sum of the unadjusted risk-based contributions can be above or below the annual target level. Therefore, an adjustment coefficient (μ) is used to ensure the total contributions raised equals the annual target level.¹⁵ The adjustment coefficient is identical for all member institutions in a given year.

Apply the adjustment coefficient (μ) to all member institutions and calculate adjusted risk-based contributions

The adjustment coefficient is applied to the level of unadjusted risk-based contributions for all member institutions to arrive at the final risk adjusted annual contribution. The final risk-adjusted annual contribution is arrived at using the formula below.

Formula 4:

$$C_i = CR \times ARW_i \times CD_i \times \mu$$

Where

¹⁵ Paragraph 44 of the EBA guidelines.

- μ = Adjustment coefficient (identical for all institutions in a given year).

The sum of all contributions in a given year should equal the annual target level.

A worked example is provided in Annex 2 for illustrative purposes.

Annex 1

Table 16 – Steps to Calculate Annual Contributions to the DGS¹⁶		
Step	Description	Relevant provisions from the guidelines
1	Define the annual target level	Paragraph 37 of the guidelines
2	Define the contribution rate (CR) applicable to all member institutions in a given year	Paragraphs 39 of the guidelines
3	Calculate values of all risk indicators	Paragraphs 48-77 of the guidelines (requirements for indicators); Annex 2 and Annex 3 (formulas for indicators)
4	Assign individual risk scores (IRSs) to all risk indicators for each member institution	Paragraphs 1-5 and 13-17 of Annex 1
5	Calculate the aggregate risk score (ARS) for each institution by summing up all its IRSs (using an arithmetic average)	Paragraphs 41, 54-56 of the guidelines (requirements for weights of indicators); Paragraphs 6-9 and 18 of Annex 1
6	Assign an aggregate risk weight (ARW) to each member institution (categorising the institution into a risk class) based on its ARS	Paragraphs 43-45 of the guidelines; Paragraphs 10-12, 19-21 of Annex 1
7	Calculate unadjusted risk-based contributions for each member institution by multiplying the contribution rate (CR) by institution's covered deposits (CD) and its ARW	Paragraphs 35 of the guidelines
8	Sum up the unadjusted risk-based contributions of all member institutions and determine the adjustment coefficient (μ)	Paragraphs 44 of the guidelines
9	Apply the adjustment coefficient (μ) to all member institutions and calculate adjusted risk-based contributions	Paragraphs 44 of the guidelines

¹⁶ As per Annex 4 of the EBA guidelines.

Annex 2

The following example is provided for illustrative purposes to demonstrate how the DGS final adjusted risk-based contributions are calculated. In this example there are 5 member institutions with €12.5 million in deposits covered by the DGS. The DGS wants to reach its target of 0.8% of covered deposits within 8 years. Therefore the annual target level for the current year is €12,500 while the contribution rate (CR) is 0.1% (calculated by annual target level / total covered deposits or €12,500/€12,500,000).

Table 17 outlines each of the member institution's covered deposits and aggregate risk weights. The unadjusted risk-based contributions are calculated using formula 3 from above which total €12,146. An adjustment coefficient (μ) of 0.9739 is used to ensure the final contribution matches the required annual target level. The unadjusted risk-based contribution is multiplied by μ to arrive at the final adjusted risk-based contribution (using formula 4 from the previous section). The total contributions levied in this example are €12,500 which is equivalent to the annual target level.

Table 17 - Example of Risk-Based Contribution Calculations					
Member Institution	Covered Deposits (CD _i)	ARW _i	Unadjusted Risk-Based Contributions	Adjustment Coefficient (μ)	Final Adjusted Risk-Based Contributions
Institution 1	€1,550,000	80%	€1,240	0.9739	€1,208
Institution 2	€2,200,000	90%	€1,980	0.9739	€1,928
Institution 3	€3,150,000	110%	€3,465	0.9739	€3,375
Institution 4	€2,850,000	100%	€2,850	0.9739	€2,776
Institution 5	€2,750,000	120%	€3,300	0.9739	€3,214
Total	€12,500,000		€12,835		€12,500