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Risk-based contributions in EU Deposit Guarantee Schemes: current practices

F. Campolongo, J. Cariboni, A. Uboldi

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European Commission
Joint Research Centre
Institute for the Protection and Security of the Citizen

Contact information
Address: Unit G-09, Action FINECON
E-mail: adamo.uboldi@jrc.it
Tel.: +39-0332-785287
Fax: +39-0332-785733

http://ipsc.jrc.ec.europa.eu/
http://www.jrc.ec.europa.eu/

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Risk-based contributions in EU Deposit Guarantee Schemes: current practices

European Commission, Joint Research Centre, Unit G09, Ispra (Italy)

Executive summary

One of the self-regulatory issues identified by the European Commission Communication on Deposit Guarantee Schemes (DGS) published in November 2006 is the voluntary introduction of risk-based contributions in EU DGS. With the objective of developing potential models for adjusting DGS contributions, the European Commission Directorate-General for Internal Market and Services asked the Joint Research Centre to investigate current practices across EU Member States (MS). This report, produced with the cooperation of the European Forum of Deposit Insurers (EFDI), is intended to lay the foundation for future developments on this subject.

This report describes the risk-based models and monitoring systems applied across the EU MS. On the one hand, it broadly illustrates systems currently applied across the EU to highlight the fundamental principles underlying risk determination; on the other, it provides more technical details of each method, including a description of the mathematical tools employed. Moreover, a numerical example of each risk-based methodology is discussed in order to reproduce the individual steps of the calculation.

In general, risk-based systems and mere monitoring systems use one or more indicators reflecting different aspects of their members' activities. Although the ratios currently applied across MS are quite heterogeneous and the variables taken into account to define them are not identical, they are built in terms of ratios using balance-sheet data, financial statement data or other types of accounting data. Indicators can be grouped into three main classes, each related to one particular aspect of banks' activities. The first class reflects their capital structure and solvency profile; the indicators in the second class measure the riskiness and/or exposure of the banks; finally, the third set of indicators covers the profitability/income profile of the DGS members.

Eight EU DGS adjust the contributions of all their members, taking into account information obtained by means of indicators (only one scheme adopts an ex-post funded system). Concerning monitoring systems, nine DGS currently monitor the activities of their members, by collecting quantitative and qualitative information on their financial situation and trends.

Some of the approaches taken by risk-based schemes to adjust their contributions are quite simple, but others can be more technical. However, a common principle can be seen behind the various adjustment procedures: the contributions are adjusted by decreasing or increasing them by a percentage obtained by classifying DGS members into rating classes, linked to scores from a set of indicators. The variation ranges from a minimum contribution of 75% to a maximum of 140% of the standard amount.

Following the recommendation made in the Commission Communication to employ information already available to the schemes, the report also gives details of which data are currently accessible to the schemes and from which sources. Notably, one third of the schemes have access only to data referring to deposits. Around half can retrieve information on financial statements, capital adequacy ratios and risk-weighted assets. Further information, such as full balance sheets, income statements and/or other supervisory reports, is disclosed to only a few schemes.

Finally, for comparison, the last part of this report describes the risk-based system applied by the US Federal Deposit Insurance Corporation, where contributions are adjusted by means of both quantitative indicators of the capital structure of the members and qualitative information aggregated by a composite indicator.

Table of contents

List of figures

List of tables

1. Introduction

In 2006 the European Commission (EC) completed its review of Directive 94/19/EC on Deposit Guarantee Schemes (DGS). The Commission Communication of November 2006, COM (2006) 729[1], raised a number of self-regulatory issues with the aim of improving the functioning of DGS in the EU and defining EC policy on DGS. One of these issues is introduction of risk-based contributions in DGS across the EU on a voluntary basis. The Commission highlighted that introduction of risk-based adjustments to DGS contributions *"could be a desirable enhancement to the existing framework and could facilitate the transferability of contributions between schemes".* In practice, by increasing the contribution for credit institutions that bear more risk and by reducing it for those at less risk, risk-based adjustments would provide an incentive for sound management. Moreover, the Communication highlighted that, in the opinion of some stakeholders, *"risk-based schemes could increase the effectiveness of DGS with regard to their ability to deal with potential failures*". Finally, the Commission recommended that *"the determination of risk should be based on already available and harmonised tools (e.g. such as those within the Capital Requirements Directives framework)[2]".* This is relevant to all DGS, whether funded "*ex-ante"* or "*ex-post"*, since in both cases contributions have to be determined.

In the light of the Communication, the Unit of Econometrics and Applied Statistics[3] of the EC Joint Research Centre (JRC) was asked to analyse possible methods of incorporating risk-based adjustments to DGS contributions and to investigate approaches to monitor the soundness of DGS members. The project, carried out with the cooperation of a dedicated Working Group of the European Forum of Deposit Insurers[4] (EFDI), has been organised into two successive steps. The first was to describe current practices for risk-based contributions in the EU. Based on further discussions within the EFDI, in the second step the JRC will consider proposals for risk-based models and assess the impact of alternative approaches.

This report focuses on the first step and describes the risk-based models and monitoring systems applied across the EU MS. The approaches are compared by discussing and classifying which indicators are employed. For risk-based systems, the report describes in detail the ways indicators are used to estimate the contributions. A separate section provides technical details of each risk-based system, including numerical examples of how adjustments are calculated in practice.

As regards the monitoring systems, although both the quantity and quality of the information available is lower, their main characteristics are outlined and a brief description is given of the action taken as a consequence of the monitoring assessment.

Another section of the report describes the US risk-based system and compares it with the methods applied in the EU.

The main sources of information for this report, listed separately for each DGS, are the statutes, laws and by-laws governing the DGS along with technical reports publicly available on DGS websites. For the EU MS, some of the information was also collected by two surveys conducted by the JRC and targeting EU DGS in 2006[5] and 2007. The contents of the report have also been verified with the DGS concerned.

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[1] http://ec.europa.eu/internal_market/bank/guarantee/index_en.htm.

[2] Directive 2006/48/EC, OJ L 177, 30.6.2006, p. 1 and Directive 2006/49/EC, OJ L 177, 30.6.2006, p. 201.

[3] http://finecon.jrc.it and http://farmweb.jrc.cec.eu.int/ESAF.

[4] http://www.efdi.net/; the JRC would like to thank all the EFDI members for their cooperation and, in particular, the Italian FITD for its useful comments.

[5] The 2006 survey is available at:
http://finecon.jrc.ec.europa.eu/projects_deposit_guarantee_schemes.htm.

The report is organised as follows: Section 2 presents a general overview of risk-based and monitoring systems. In particular, it describes and compares the indicators applied by the schemes, with the ultimate goal of building classes of indicators reflecting different aspects of the financial situation of DGS members. Section 3 focuses on the eight DGS which have adopted a risk-based system to adjust the contributions of all their members. The first part of this section gives a general, non-technical description of how the DGS use indicators to adjust their contributions. A more technical description of each system is given in the second part of Section 3, followed by an attempt at comparison in the last part. Section 4 briefly summarises the information collected on the monitoring systems. Section 5 contains a description of the risk-based system applied in the US. The last section draws conclusions. Annex I provides a table comparing the main characteristics of the risk-based systems and indicating the data necessary for calculating the contributions and the involvement of other competent authorities in gathering data. Annex II presents the questionnaire used for the 2007 survey on risk-based approaches.

This report has been circulated to members of the EFDI Working Group to collect their comments and suggestions[6].

This report is intended to serve as a basis for further discussions. It neither commits the Commission nor limits the Commission's discretion with regard to any current or future action or policies.

[6] The JRC would like to thank all the members of the EFDI Working Group for their cooperation and fruitful comments.

2. Overview

Directive 94/19/EC stipulates that the costs of funding DGS should be borne by the members (i.e. the credit institutions), but gives no details of calculation of DGS contributions nor of risk-based information or of monitoring the risks borne by DGS members. Currently few DGS adjust their contributions to take account of risk-based information on their members. A few others have set up a system to monitor their members' conduct in order to recognise any potential need for intervention, to decide on possible preventive measures or to assess the soundness of the banking system.

Table 1 depicts the current situation. As indicated by the "X" in the second column, only eight DGS (DE3, DE4, FR, IT1, PT1, PT2, FI and SE) adjust the contributions of all their members, taking into account information on their risk profile. Among the MS applying a risk-based adjustment, only IT1 adopts an ex-post system.

The two DGS marked "X*" (HU and RO) make slightly different use of risk-based information. These DGS do not correct the contributions of every member, but may increase just some of them on the basis of the members' risk profile. In HU[7] the DGS may increase the contribution if a member institution fails to comply with the prescribed capital adequacy ratio and/or pays its required contribution or advance contribution more than 30 days late. In RO[8] the Fund is authorised to increase the annual contribution by up to double if the relevant credit institution has engaged in risky and unsound policies. The assessment is made using a rating system based on five indicators provided by the National Bank of Romania (see Section 4.2.3). Romania is in the process of introducing a new risk assessment system, which will probably be finalised in the course of 2008.

On the other hand, the Polish system (marked "X**" in Table 1) does not adjust contributions using risk-based indicators, but the contribution base includes risk-related variables, such as risk-weighted total balance-sheet assets, guarantees and endorsements and the remaining risk-weighted off-balance sheet liabilities.

The third column in Table 1 lists the ten DGS monitoring the conduct of their members (DE4[9], IT2, the five DGS in AT, PL and RO). In most cases, the DGS make use of quantitative information on the financial health of their members in order, for instance, to forecast possible interventions, prevent banking crises or impose sanctions on members involved in risky activities. Currently, little information is available on most of the monitoring systems.

[7] See Section 121(6) of Act CXII of 1996 on Credit Institutions and Financial Enterprises, available at: http://www.oba.hu/.

[8] See Article 9(5) of Government Ordinance No 39/1996 on the establishment and functioning of the Deposit Guarantee Fund in the banking system, republished, as subsequently amended and supplemented.

[9] DE4 did not reply to the survey. The information on an active risk-based monitoring system is from the 2006 survey.

Table 1: EU DGS applying a risk-based or monitoring system; n.a. = not available; FS = financial statement; CAR = capital adequacy ratio; RWA = risk-weighted assets; CB = central bank; BSA = banking supervisory authority

	Risk-based system	Monitoring system	Data available to DGS	Data sources
BE			Total and eligible deposits	DGS members
BG			Total, eligible and covered deposits	DGS members and CB
CZ			Eligible deposits	CB
DK			Total and covered deposits	n.a.
DE1		X	Total deposits and financial statement	BSA, CB and DGS members
DE2	n.a.	n.a.	n.a.	n.a.
DE3	X	X	Total, eligible and covered deposits, FS and primarily lending to customers	Regional auditing assoc.
DE4	X		n.a.	n.a.
EE			Total, eligible and covered deposits, FS, CAR and RWA	CB
GR			Total and eligible deposits	DGS members
ES1			Eligible deposits	CB
ES2			Eligible deposits	CB
ES3			Eligible deposits	CB
FR	X		The CB calculates the contribution to be collected	BSA
IE			Total deposits, FS, CAR and RWA	CB and BSA
IT1	X		Total, eligible and covered deposits. Information for the indicators	CB
IT2		X	Contribution base + 20% of deposits + 40% of cash loans – 40% of supervisory capital	n.a.
CY1			Total, eligible and covered deposits, FS, CAR and RWA	CB
CY2			Total, eligible and covered deposits, FS, CAR and RWA	DGS members
LV			Eligible and covered deposits, FS, CAR and RWA	DGS members and CB
LT			Eligible and covered deposits, CAR, RWA, balance sheet, income statement and capital adequacy report	DGS members
LU			Covered deposits	BSA
HU	X*		Total, eligible and covered deposits. Balance sheet	DGS members and BSA
MT			Total and eligible deposits	BSA
NL			Total deposits, CAR and RWA	DGS members
AT1		X	Total, eligible and covered deposits, CAR, RWA, balance sheet, external auditor's yearly report and report from BSA	CB
AT2		X	Total and covered deposits, CAR, RWA, FS and monthly records	DGS members and BSA
AT3		X	Total and covered deposits, CAR, RWA, FS and monthly records	DGS members and BSA
AT4		X	Total and covered deposits, CAR, RWA, FS and monthly records	DGS members and BSA
AT5		X	Total, eligible and covered deposits, CAR, RWA, balance sheet, profit and loss accounts, external auditor's report and report from BSA	CB
PL	X**	X	Total, eligible and covered deposits, CAR, RWA and FS	DGS members and CB
PT1	X		Total, eligible and covered deposits, CAR and RWA	DGS members and BSA
PT2	X		Total and eligible deposits, CAR and RWA	DGS members
RO	X*	X	Total, eligible and covered deposits, CAR and RWA	DGS members and CB
SI			Total, eligible and covered deposits, CAR, RWA, FS and all supervisory reports	DGS members and CB
SK			Total and eligible deposits	DGS members and CB
FI	X		Total, eligible and covered deposits and RWA	DGS members
SE	X		Total and covered deposits, CAR and FS	DGS members and BSA
UK			Covered deposits	n.a.

Source: 2007 survey data.

In order to understand the current practices of EU MS and to gain a picture of the data currently available to each DGS, the fourth column of the table lists all the information available to DGS, including data not used for estimating DGS contributions. The situation is extremely heterogeneous, ranging from DGS with (often incomplete) information on deposits only (BE, BG, CZ, DK, GR, ES, LU, MT, SK and UK) to countries where all supervisory reports are available to the DGS (SI). The last column lists the authority/entity responsible for providing data to the DGS.

DGS adjusting their contribution on the basis of risk-based information or monitoring the riskiness of their members adopt one or more indicators with the aim of establishing the banks' profile. The indicators applied in the MS are generally built around ratios using balance-sheet data and/or financial statement data and/or other types of accounting data. The ratios applied are currently fairly heterogeneous, resulting in wide fragmentation of the information employed. In order to form classes of indicators, it is necessary to relax the definitions of the ratios used by the various DGS to identify the different aspects of bank conduct that the ratios aim to assess. In this way, indicators can be clustered into three main classes[10], each describing a particular profile to be assessed. The first class reflects the capital structure and/or solvency profile of the DGS members, the second measures the riskiness and/or exposure of the banks and the third covers their profitability/income profile. Moreover, the French DGS also applies an indicator characterizing the maturity of the instruments in the portfolio of the DGS members. A similar indicator was also used in Italy up to 2006.

Table 2 shows, for each class of indicator (first column), the definition of the ratios (second column) and the DGS applying them (third column) and, finally, specifies whether the scheme uses the ratio to monitor its members (M) or to make a risk-based adjustment of contributions (RB). The table clearly shows that the variables included in the definitions can be rather different from one DGS to another. A significant improvement towards reducing the heterogeneity of the indicators could be achieved by using common accounting standards, such as the International Accounting Standards (IAS), since a large proportion of the variables listed in Table 2 are linked to data managed, stored and published by members themselves based on these standards[11].

[10] The JRC would like to thank the Italian Interbank Deposit Protection Fund for the fruitful discussion on the classification of the indicators.

[11] Regulation (EC) No 1606/2002 states that: *"This Regulation has as its objective the adoption and use of international accounting standards in the Community with a view to harmonising the financial information presented by the companies referred to in Article 4 in order to ensure a high degree of transparency and comparability of financial statements and hence an efficient functioning of the Community capital market and of the Internal Market."*

Table 2: List of indicators applied by the DGS to adjust their contributions or to monitor the behaviour of their members (RB means a risk-based system, M a monitoring system)

Class	Indicator	Country	Type of system
Capital structure/ Solvency profile	$\frac{\text{Retained capital}}{\text{Total assets}}$	DE3	RB
	$\frac{\text{Tier I - Capital}}{\text{Risk - weighted assets}}$	DE3	RB
	$\frac{\text{Own funds - Equity holdings - Subordinated claims}}{\text{Assets + Off - balance sheet items}}$	FR	RB
	$\frac{\text{Supervisory capital}}{\text{Supervisory capital requirements}}$	IT1	RB
	$\frac{\text{Capital for supervisory purposes}}{\text{Supervisory capital}}$	IT2	M
	$\frac{\text{Capital and reserves (including loan losses provisions) + Subordinated liabilities}}{\text{Funding (ordinary customers)}}$	IT2	M
	$\frac{\text{Tier1}}{\text{Repayable deposits}}$	AT1	M
	$\frac{\text{Own funds}}{\text{Capital requirements} \cdot 12.5}$	PT	RB
	$\frac{\text{Own funds}}{\text{Risk - weighted assets (including off - balance sheet items)}}$	RO	M
	$\frac{\text{Total amount of consolidated own funds to cover risk}}{\text{Total amount of consolidated own funds}}$	FI	RB
Riskiness/ Exposure	$\frac{\text{Unsecured portion of not prime loans}}{\text{Retained capital}}$	DE3	RB
	$\frac{\text{Unsecured portion of not prime loans}}{\text{Earnings before risk adjustments}}$	DE3	RB
	$\frac{\text{Largest credit volume to a business sector}}{\text{Client credit volume}}$	DE3	RB
	$\frac{\text{Sum of 10 largest non - eligible exposures}}{\text{Own funds}}$	FR	RB
	$\frac{\text{Non - performing loans}}{\text{Shareholders' equity + Subordinated loans}}$	IT1	RB
	$\frac{\text{Net loan losses}}{\text{Capital and reserves}}$	IT2	M
	$\frac{\text{Net loan losses}}{\text{Outstanding loans}}$	IT2	M
	$\frac{\text{Risk}}{\text{Earnings}}$	AT1	M
	$\frac{\text{Risk}}{\text{Risk equivalent}}$	AT1	M
	$\frac{\text{Unadjusted exposure related to loans and interbank investments (classified doubtful and loss)}}{\text{Total loans + interbank investments}}$	RO	M
	$\frac{\text{Risk - weighted assets}}{\text{Total assets at book - keeping value}}$	RO	M

Class	Indicator	Country	Type of system
Profitability/ Income	$\frac{\text{Operating income - Unrealised trading losses}}{\text{Average business volume}}$	DE3	RB
	$\frac{\text{Personnel and admin expenses}}{\text{Gross profits}}$	DE3	RB
	$\frac{\text{Net risk result of credit business}}{\text{Gross profits}}$	DE3	RB
	$\frac{\text{Overheads + depreciation provisions + net provisions}}{\text{Income from bank operations + other income - charges from bank operations}}$	FR	RB
	$\frac{\text{Operating expenses}}{\text{Gross income}}$	IT1	RB
	$\frac{\text{Loan losses (net of recoveries)}}{\text{Profit before tax}}$	IT1	RB
	$\frac{\text{General and administrative expenses}}{\text{Net income}}$	IT2	M
	$\frac{\text{Loan losses (net of recoveries)}}{\text{Gross income}}$	IT2	M
	$\frac{\text{Cost}}{\text{Earnings}}$	AT1	M
	$\frac{\text{Net profit}}{\text{Tier1}}$	AT1	M
	$\frac{\text{Operations income - Income from provisions}}{\text{Expense from operations - Provisions expense}}$	RO	M

Source: 2007 survey data.

3. Risk-based systems

3.1 General description

Typically, in the DGS which adjust their contributions using risk-based information about their members, the annual contribution for each bank (c_i) is defined in terms of a contribution base (x_i), usually the total amount of eligible or covered deposits, plus or minus a percentage (β_i) proportional to the risk attitude of the members and a percentage (α) reflecting the overall conditions in the banking system in the country:

$$c_i = \alpha \beta_i x_i \,. \qquad (1)$$

Coefficient α is often set in the statutes or by-laws governing the DGS and/or revised on a regular basis by the board of the scheme, for instance to reflect any improvement or deterioration in the soundness of the banking sector and consequent need to increase or decrease the resources collected. Coefficient α is equal for all DGS members, irrespective of their risk profiles, and is designed to set the aggregate contributions required to face potential crises.

On the other hand, coefficient β_i explicitly takes into account the riskiness of the members of the DGS: a lower risk leads to a lower contribution and a higher risk to a higher one. β_i is determined using the indicators described in the previous section to rate the DGS members into risk classes, each corresponding to a different adjustment β_i. Figure 1 plots the most common effect of adjustment β_i: for a given contribution base (x axis), instead of having a single value for the contribution (y axis), there are a range of values depending on the percentage increase/decrease applied. For instance, for a contribution base of around €68bn, the contributions range from around €15m to around €25m. In the case of a sound bank, coefficient β_i will be low, thus producing a contribution of €15m; conversely, in the case of a member classified as very risky, the contribution will be close to the maximum of €25m.

Among the DGS applying a risk-based adjustment to their contribution, DE3, PT1, PT2 and FI apply exactly the model presented above. With some slight adjustments, the same principles can be found behind the systems applied in FR, IT and SE, despite the fact that their approaches are more technical and sophisticated. The remainder of this section describes all these systems in general terms. A more technical description of each of them follows in Section 3.2.

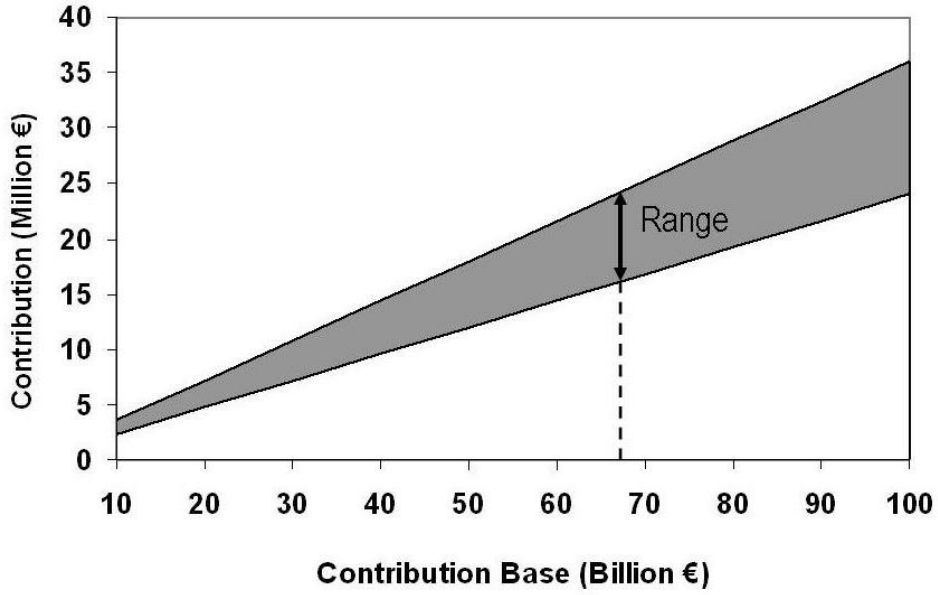

Figure 1: Possible effect of adjustment β_i on contributions

In the German scheme protecting cooperative banks (DE3) the contribution base x_i is defined on the basis of the lending to customers and contingent liabilities resulting from collateral and guarantee agreements. Coefficient β_i ranges from 90% to 140%. The adjustments are based on classifying the scheme members into eight rating classes which reflect their financial standing based on eight key indicators. The classification method relies on quantitative ratios taken primarily from the banks' audited annual financial statements and audit reports; in particular, two ratios relate to the capital structure/solvency of the members, three to their risk structure and the last three to their income/profitability profile (see also Table 2). Coefficient α is equal for all DGS members; in DE3 it can vary between 0.05% and 0.2%.

The are two DGS in Portugal, one protecting mutual agricultural credit institutions (FGCAM) in the Integrated Mutual Agricultural Credit System (SICAM), the other insuring all other types of credit institutions authorised to receive deposits (Deposit Guarantee Fund, DGF): both adopt almost the same system for calculating their members' contributions. The annual contribution from each member is calculated as a percentage of its contribution base, defined as the average monthly eligible deposits over the previous year (deposits at the end of each month)[12]. Both DGS obtain the risk-based adjustment by classifying their members into five different risk classes, depending on their solvency ratio. Each class corresponds to a different risk-based adjustment β_i, ranging from a maximum reduction to 80% to a maximum increase to 120%. The fixed rate α differs between the two schemes: in the Deposit Guarantee Fund it is set by an instruction from the Banco de Portugal, at up to 0.2% on an annual basis[13]; in the Mutual Agricultural Credit Guarantee Fund it depends on the total funds and eligible deposits in the previous year.

Another similar approach is the Finnish scheme, in which the contribution base x_i is the amount of covered deposits, the fixed percentage α is 0.175% and the risk-based adjustment β_i is the ratio between the minimum consolidated own funds required to cover risks and the actual consolidated own funds.

[12] Deposits denominated in foreign currency must be converted into euros at the exchange rate prevailing on the last working day of the month.

[13] For 2006, an annual rate of 0.03% was applied.

A slightly different approach is followed in France, where the system is based on annual collection of a set amount (€150m for 2003-2006). This amount is apportioned to the DGS members in proportion to their contribution base corrected by a risk factor. The contribution base takes account of the total eligible deposits and of a fraction of the outstanding loans of the member, when relevant. The risk adjustment increases or decreases the contribution base from a minimum of 75% to a maximum of 125%, depending on four risk indicators which reflect the financial situation of the DGS members. For the purposes of Equation (1), the values of β_i range from 75% to 125%, whereas general adjustment α is not applied directly since the total amount of money to be collected is set in advance. The indicators used to obtain β_i include a solvency indicator, a riskiness indicator, a profitability indicator and an indicator based on the maturity of the assets in the members' portfolios. Depending on the values of the indicators, each member is assigned a set of scores whose average value determines β_i.

Also in one of the Italian DGS (the Interbank Deposit Protection Fund) any contributions (the scheme is ex-post funded) are obtained by an approach somewhat differing from Equation (1). The amount of resources to be collected is divided between the DGS members on the basis of *"proportional quotas*": these are defined as 1 000 times the ratio of each member's covered deposits over the aggregate deposits insured by the whole scheme. The term *"proportional quota"* reflects the goal of measuring the relative weight of each member in the scheme itself. The proportional quotas are corrected twice in order to include information on the size of the members and on their profile. The first adjustment is a regressive correction, based on the *"too big to fail"*[14] approach, which increases/decreases a member's contribution by a percentage inversely linked to the size of the bank. Under this mechanism, the biggest banks benefit from a reduction in their proportional quota (the amount of which is divided between the banks with a lower contribution base), whereas the smallest suffer from an increase. The percentage of the increase or decrease in the proportional quotas varies from +7.5% to -7.5%. The second adjustment is based on a set of indicators, including a riskiness profile ratio, a solvency ratio and two profitability profile ratios. Depending on the values of the ratios, members are assigned a series of scores which provide a basis for their classification. To correct contributions, three observations of each ratio (one every six months) are aggregated in order to obtain a single indicator for each member, reflecting its overall risk attitude. Depending on the value of their aggregate indicator, members' proportional quotas are either increased in proportion to their risk indicators or left unchanged or decreased to counter-balance the higher contributions.

The mechanism applied in Sweden is somewhat different from the others since it uses a mathematical model to determine the risk-based coefficients β_i. However, it could be reduced to a version similar to the one described by Equation (1) by making a few technical adjustments. As in France, the scheme collects from members an aggregate annual contribution set at between 0.1% and 0.3% of the amount of covered deposits by the DGS. The aggregate contribution is divided between the DGS members using a mathematical model in which the main input variable is the capital adequacy ratios of the DGS members and the relative amount of covered deposits. In this model higher ratios lead to lower contributions and vice versa. The Swedish DGS is currently revising its method for adjusting contributions; a new system is expected to be adopted in 2009 at the latest.

[14] Under the *"too big to fail"* principle, the biggest banks are considered less risky than the others, because the competent authority would act to avoid any failure which would undermine the stability of the financial market.

3.2 Technical details

3.2.1 Germany: Protection scheme of the Association of German Cooperative Banks

The Association of German Cooperative Banks introduced the current contributions system (DE3) in 2002/2003 when it developed a classification process aimed at identifying, at an early stage, any economically undesirable behaviour by any individual member bank.

Using this system, the scheme has applied its independent management for preventive intervention. Thanks also to this tool, the scheme has avoided any failure amongst its members since 1934: it must be remarked that it is an institutional protection scheme, whose main institutional aim is to protect members, and this action automatically provides the coverage of depositors indicated by Directive 94/19/EC.

To finance preventive intervention, annual contributions are collected, defined as a set percentage of the contributions base x_i which is determined by the lending to customers and contingent liabilities resulting from collateral and guarantee agreements (see Articles 4(1) and 4(2) of the statutes). The procedure for adjusting the contribution follows Equation (1), where the adjustment coefficient β_i is a risk-based percentage ranging from 90% to 140%. The value of β_i is assigned to each bank in accordance with a rating ranging from A+ to D. The contributions of the DGS members in the first two classes (A+ and A) are decreased, whereas for members in classes A-, B+ and B the contributions remain unchanged and, finally, for the last three classes (B-, C and D) the contributions are increased: the lower the rating, the higher the increase, as illustrated in Table 3.

Table 3: Rating classes and corresponding risk adjustments for the Association of German Cooperative Banks

Rating classes	A+, A	A-, B+, B	B-	C	D
β_i	90%	100%	110%	120%	140%

In order to categorise members into the above-mentioned rating classes, the system uses eight ratios, which cover the capital structure of the members, their income and their risk structure. The ratios are described in

Table 4. These ratios are used to assign each member a score for each indicator. The scores are subsequently aggregated, applying the weightings indicated in the last column of the table. The two capital structure ratios account for 35% of the total, the three ratios relating to income for 45% and the remaining 20% is covered by the three ratios reflecting the risk structure of the DGS members.

Table 4: Ratios applied by the Association of German Cooperative Banks to classify its members and corresponding weights

	Factor	Definition	Weight
Capital structure	Capital	$\frac{\text{Retained capital}}{\text{Total assets}}$	20%
	Tier I - Capital	$\frac{\text{Tier I - Capital}}{\text{Risk - weighted assets}}$	15%
Income structure	Operating income	$\frac{\text{Operating income - Unrealised trading losses}}{\text{Average business volume}}$	15%
	Cost income	$\frac{\text{Personnel and admin. expenses}}{\text{Gross profits}}$	10%
	Risk revenue/ expense	$\frac{\text{Net risk result of credit business}}{\text{Gross profits}}$	20%
Risk structure	Blank credit I	$\frac{\text{Unsecured portion of not - prime loans}}{\text{Retained capital}}$	7.5%
	Blank credit II	$\frac{\text{Unsecured portion of not - prime loans}}{\text{Earnings before risk adjustments}}$	7.5%
	Segment concentration	$\frac{\text{Largest credit volume to a business sector}}{\text{Client credit volume}}$	5%

Depending on the value of the aggregate ratio and a list of thresholds, members are assigned to one of the rating classes in Table 3[15]. Further information on the procedure used to assign scores, starting from the value of the ratios, and on the thresholds is confidential.

Figure 2 shows the range of variation of the contributions to the protection scheme of the Association of German Cooperative Banks as a function of the contribution base, considering that the minimum and maximum corrected annual percentages to be applied to the contribution bases are, respectively, 0.045% (α = 0.05%, β_1 = 90%) and 0.28% (α = 0.20%, β_1 = 140%).

[15] Under the BVR's by-laws, cooperative institutions that have a credit rating from an external rating agency are exempt from internal classification schemes. This includes, in particular, the cooperative central banks, the mortgage banks and the building society Bausparkasse Schwäbisch Hall AG.

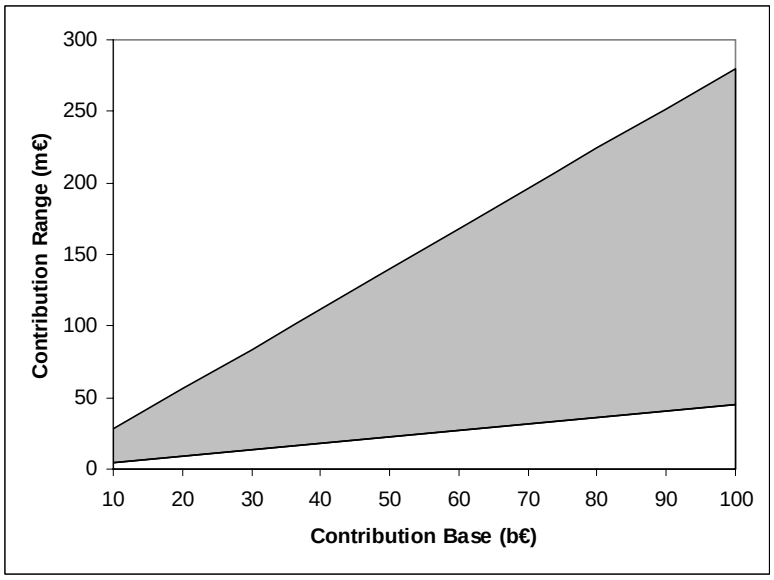

Figure 2: Range of variation of the contribution collected by the Association of German Cooperative Banks as a function of the contribution base

Table 5 presents an example illustrating the range of variation of the contributions when fixing parameter α and considering possible values of factor β_i. In this example the contribution base is €50bn and α is 0.125%, which was the value adopted by the scheme in 2007.

Table 5: Example of calculation of contribution for the Association of German Cooperative Banks

	Rating classes	x_i (b€)	α	β	Contribution (m€)
Member 1	D	50	0.125%	140%	87.5
Member 2	C	50	0.125%	120%	75
Member 3	B-	50	0.125%	110%	68.75
Member 4	A-, B+,B	50	0.125%	100%	62.5
Member 5	A+, A	50	0.125%	90%	56.25

The results of the internal rating process provide an early-warning indicator, which the protection scheme uses as the principal tool for deciding on preventive support to members. In the past, this process has proved a powerful instrument for identifying banks that could expose the protection scheme to a higher risk. In practice, so far the banks given an A+ rating have demonstrated the lowest probability of requiring a rescue and those given a D rating the highest.

Data sources and competent authorities

Data on the ratio are automatically supplied to the protection scheme in electronic form by the regional audit associations responsible for the individual member banks.

Sources

1) Bundesverband der Deutschen Volksbanken und Raiffeisenbanken, Association of German Cooperative Banks, *Rating as a basis for prevention and a risk-adjusted contribution*, Second EFDI bi-annual meeting, Padua, 8 November 2004.

2) Consolidated Annual Accounts of the Cooperative Financial Services Network, 2004.

3) *Statute of the Protection Scheme*, Bundesverband der Deutschen Volksbanken und Raiffeisenbanken (BVR), Association of German Cooperative Banks, available at: http://www.bvr.coop/coop/download/StatueoftheProtectionScheme_final.pdf.

3.2.2 France: Fonds de Garantie des Dépôts

The French DGS has been adjusting contributions to take account of risk-based information ever since it was established in 1999. The contribution (c_i) is calculated by multiplying the total amount of funds to be collected by the scheme (Overall Amount of Contribution, OAC, decided by the government) by the so called Net Share of Risk (NSR), which indicates the relative weight of each member in terms of its contribution base, adjusted by two risk factors:

$$c_i = \mathrm{OAC} \cdot \mathrm{NSR}_i ,$$

where *i* indicates the DGS members. The first adjustment corrects the contribution base to take account of the outstanding loans; the second is based on a set of indicators of different profiles of the member's conduct. The NSR is defined as the normalised Net Risk Amount (NRA_i):

$$\mathrm{NSR}_i = \frac{\mathrm{NRA}_i}{\left(\sum_j \mathrm{NRA}_j\right)} , \qquad (2)$$

where *j* sums up all the DGS members. Thus, the net share of risk gives the percentage to be paid by each member in order to collect the fixed amount decided by the government (currently €150m).

Figure 3 shows, in flowchart form, how the contribution is obtained. First, for each bank the system estimates the NRA using the adjusted contribution base and the indicators (lefthand side of the flowchart); then, the NRAs of the members are combined using Equation (2) in order to obtain the NSR. Finally, the contribution is calculated by multiplying the NSR by the OAC.

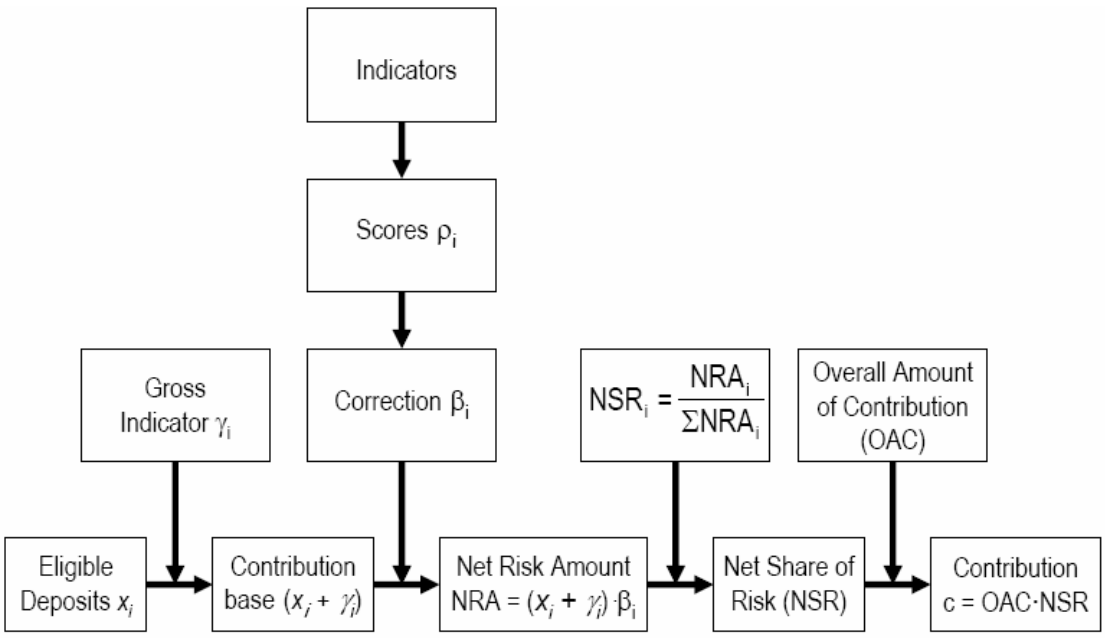

Figure 3: Flowchart of how contributions are estimated in the French DGS

In particular, the net risk amount is defined as:

$$\text{NRA}_i = (x_i + \gamma_i)\beta_i\,, \qquad (3)$$

where x_i is the amount of eligible deposits, γ_i is a gross risk indicator and β_i is a risk factor.

The gross risk indicator increases the contribution base to take account of the outstanding loans of each member:

γ_i = min {1/3 outstanding loans, contribution base}.

It is clear that at most the contribution base is doubled.

The risk factor (β_i) varies between 75% and 125% and is estimated by linear transformation (see Figure 4) of another variable, ρ_i, describing the overall conduct of the DGS members via a set of four indicators. In particular, variable ρ_i, known as the synthetic risk indicator, is defined as the average of four scores, each covering a different aspect of DGS behaviour:

$$\rho_i = \frac{1}{4}\left[\rho_i^{(1)} + \rho_i^{(2)} + \rho_i^{(3)} + \rho_i^{(4)}\right].$$

Each $\rho_i^{(j)}$ (j = 1, 2, 3, 4) is a score equal to 1, 2 or 3 indicating the quality of the DGS members: the higher the score, the lower the quality. More specifically, $\rho_i^{(1)}$ is a solvency indicator, $\rho_i^{(2)}$ is a risk diversification indicator, $\rho_i^{(3)}$ is an operating profitability indicator[16] and $\rho_i^{(4)}$ is a maturity transformation indicator. Table 6 and Table 7 explain how the scores to be assigned to each member are determined from four ratios and a series of thresholds. The ratios used by the French DGS are listed in Table 8.

Table 6: Ranges for three indicators used to assess the risk of members of the French DGS

	Ratio	Classes		
		$\rho_i^{(j)}$= 1	$\rho_i^{(j)}$ = 2	$\rho_i^{(j)}$ = 3
$\rho_i^{(1)}$	SR_i = Solvency Ratio	$SR_i \geq 9\%$ or	$6\% \leq SR_i < 9\%$ or	$SR_i \leq 6\%$ or
$\rho_i^{(2)}$	ER_i = uncovered Exposure Ratio	$ER_i < 30\%$	$30\% \leq ER_i < 60\%$	$ER_i \geq 60\%$
$\rho_i^{(4)}$	MR_i = Maturity transformation Ratio	$MR_i \leq 100\%$	$100\% < MR_i \leq 200\%$	$MR_i > 200\%$

Table 7: Ranges for the Operating Ratio (OR) used to assess the risk of members of the French DGS

	Ratio	Classes				
		$\rho_i^{(3)}$ = 1	$\rho_i^{(3)}$ = 1.5	$\rho_i^{(3)}$ = 2	$\rho_i^{(3)}$ = 2.5	$\rho_i^{(3)}$ = 3
$\rho_i^{(3)}$	OR_i	$OR_i < 65\%$	$65\% \leq OR_i < 70\%$	$70\% \leq OR_i < 75\%$	$70\% \leq OR_i < 75\%$	$OR_i \geq 85\%$

[16] The maturity transformation indicator has to be included only for members for which the assets and liabilities used to calculate the indicator account for at least 20% of their total assets.

Table 8: Definition of the ratios applied by the French DGS

Ratio	Data required
Solvency ratio	$SR = \frac{\text{Own funds - Equity holdings - Subordinated claims}}{\text{Assets + Off - balance sheet items}}$
Uncovered exposure ratio	$ER = \frac{\text{Sum of 10 largest non - eligible exposures}}{\text{Own funds}}$
Maturity transformation ratio	$MR = \frac{\text{Amount of assets with a residual maturity} > 1\text{y + bad debts and other capitalised securities}}{\text{Amount of liabilities with residual maturity} > 1\text{y + part of the sight deposits + part of own funds}}$
Operating ratio	$OR = \frac{\text{Overheads + depreciation provisions + net provisions}}{\text{Income from banking operation + other income - charges for banking operations}}$

Once they have been calculated for every DGS member, the synthetic risk indicators are used to obtain the risk adjustment (β_i) by a linear transformation, as shown in Figure 4. Taking the value of 75% for ρ_I = 1 and the final value of 125% for ρ_I = 3 as a starting point, all the members will be assigned β_i, values depending directly (that is, linearly) on their value of ρ_I. Table 9 shows an example of a contribution calculation, assuming that only five members are included. The second column shows, for each member, fictitious values of the contribution base corrected by the gross risk indicator. The third to sixth columns show hypothetical values for the scores of the members used to obtain the synthetic indicator ρ_I (average of the scores). The eighth column sets out the values of the risk adjustments β_i, obtained by linear transformation of the synthetic indicators.

NRA_i is obtained by multiplying the first column by the values of β_i. Finally, the last two columns show the normalised net shares of risk and the corresponding contributions, based on the assumption that the aggregate amount to be collected is €150m.

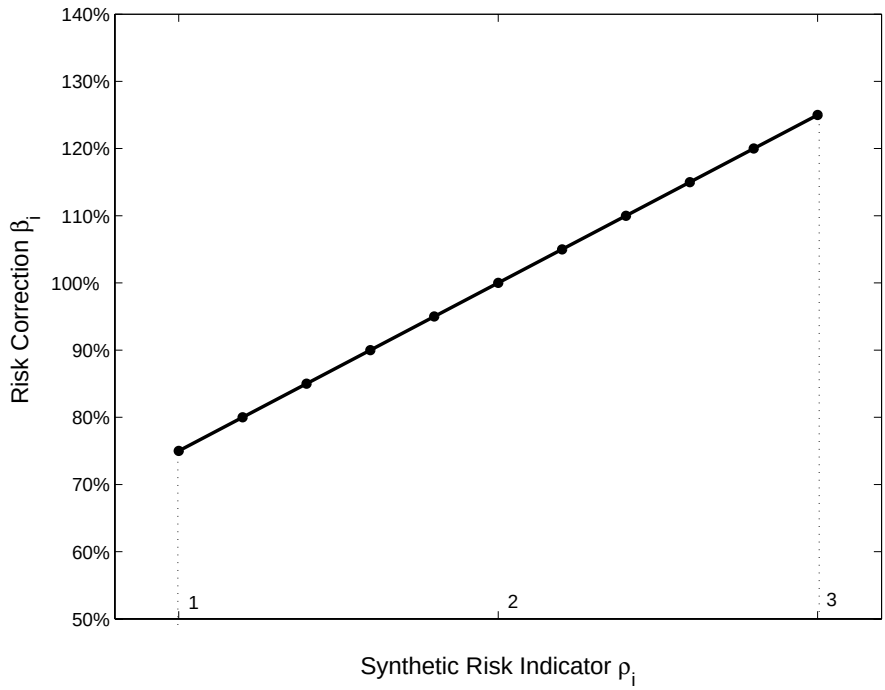

Figure 4: Linear transformation used by the French DGS to obtain the risk correction from the synthetic risk indicator

Table 9: Example of calculation of contribution to the French DGS

	$x_i + \gamma_i$ (b€)	$\rho_i^{(1)}$	$\rho_i^{(2)}$	$\rho_i^{(3)}$	$\rho_i^{(4)}$	ρ_i	β_i	NRA_i	NSR_i	c_i (m€)
Member 1	20	3	1	1	1.0	1.500	87.50%	17 500	23.09%	34.64
Member 2	10	1	1	3	1.5	1.625	90.63%	9 063	11.96%	17.94
Member 3	5	3	1	1	2.0	1.750	93.75%	4 688	6.19%	9.28
Member 4	30	2	2	2	1.5	1.875	96.88%	29 063	38.35%	57.53
Member 5	15	1	3	2	2.5	2.125	103.13%	15 469	20.41%	30.62
	80								100.00%	150.00

Data sources and competent authorities

Yearly contributions are not calculated by the DGS but directly by the banking supervisory authority.

Sources

1) Regulation 99-06 of 9 July 1999 relating to the resources and operation of the deposit guarantee fund, as amended by Regulation 2000-07 of 6 September 2000.

2) Regulation CRBF No 2002-12 of 21 November 2002.

3) Regulation 91-05 of 15 February 1991 relating to the solvency ratio.

4) Regulation 95–02 of 21 July 1995 relating to prudential monitoring of market risks.

3.2.3 Italy: Interbank Deposit Protection Fund

The Interbank Deposit Protection Fund (FITD, Fondo Interbancario di Tutela dei Depositanti) is the only scheme in the EU which is ex-post funded and adopts a risk-based system. Besides the potential amount necessary to cover interventions, the

Fund collects a small annual contribution to cover the administrative expenses of managing the scheme. Risk-based contributions were set up when the scheme was established in 1987. The statutes of the scheme itself provide for establishment of a virtual fund which varies between 0.4% and 0.8% of the total covered deposits by the scheme.

As mentioned earlier, the contribution base is defined in terms of the amount of covered deposits x_i, which is used to obtain the "*proportional quotas*" q_i for each member:

$$q_i = \frac{x_i}{\sum_i x_i} \cdot 1\,000 .$$

Proportional quotas reflect the relative weight of each member in terms of covered deposits.

As shown in Figure 5, in order to estimate contributions the proportional quotas are adjusted twice: first the size of the members is considered in order to obtain the "*regressive quotas*", then the final "*contribution quotas*" are calculated using a set of weighted indicators at different points in time (the WAAI, Weighted Average Aggregated Indicator).

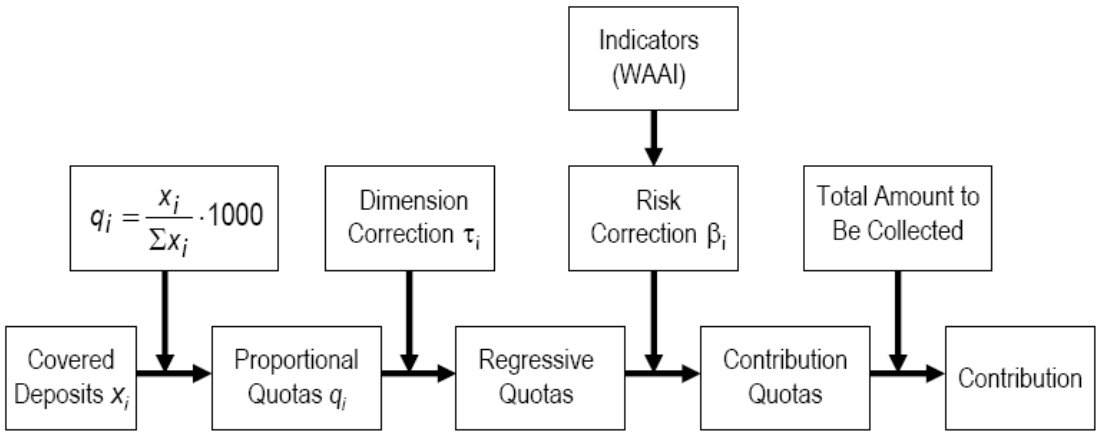

Figure 5: Flowchart of how contributions are estimated in the Italian FITD

The FITD constantly monitors the overall situation of all its member banks with the aid of a balance-sheet indicators system, consisting of four ratios referring to three profiles: risk, solvency and profitability.

1) Risk profile: balance-sheet ratio A1 measures the capacity of a bank to face possible losses without becoming insolvent. Indicator A1 is defined as follows:

$$\text{A1} = \frac{\text{Non - performing loans}}{\text{Shareholders' equity (including estimate of loan losses) + Subordinated loans}}$$

The amount of non-performing loans (numerator of A1) is calculated net of the estimate for doubtful results.

2) Solvency profile: the aim of indicator B1 is to provide a measure of the bank's capital, reflecting the minimum supervisory capital requirements for development of its banking activity:

$$\text{B1} = \frac{\text{Supervisory capital}}{\text{Supervisory capital requirements}}$$

3) Profitability profile: the third profile consists of two ratios based on the financial statement. Indicator D1 underlines one aspect of the ordinary activity of the bank, while indicator D2 measures the impact of loan losses on profit before tax:

$$D1 = \frac{\text{Operating expenses}}{\text{Gross income}}, \; D2 = \frac{\text{Loan losses (net of recoveries)}}{\text{Profit before tax}}$$

Three thresholds are set per indicator, as shown in Table 10. Depending on the value of the ratio, the behaviour of the member is classified as "Normal", "Attention", "Warning" or "Violation"[17].

Table 10: Ratios and thresholds for classification of members of the FITD for each indicator

	Normal	Attention	Warning	Violation
A1	Up to 20%	From 20% to 30%	From 30% to 50%	More than 50%
B1	More than 110%	From 100% to 110%	From 90% to 100%	Under 90%
D1	Up to 70%	Up to 80%	Up to 90%	More than 90%
D2	Up to 40% or loan losses < 0	Up to 50%	Up to 60%	More than 60% or profit before tax < 0

As explained above, in case of intervention each member has to contribute in line with its proportional quota, first increased/decreased by a factor (τ_i) linked to the size of the bank and then corrected on the basis of coefficient β_i, known as the Weighted Average Aggregate Indicator (WAAI), reflecting the overall conduct of the members and depending on the above-mentioned indicators.

Specifically, the dimension adjustment τ_i varies from +7.5% to -7.5%; the highest increase is applied to the member of the DGS with the lowest proportional quota and the highest decrease to the one with the highest. All other members are assigned intermediate values by means of a linear system, so that the sum of the increases in quotas equals the sum of the decreases. The approach is based on an iterative procedure seeking the "equilibrium quota" which is subject to no adjustments. All the quotas below the equilibrium quota are increased, while those above it are decreased, as shown in Figure 6. Once the equilibrium point has been determined, the adjustments are obtained by linear interpolation of the three available points (maximum increase, maximum reduction and zero correction). The quotas corrected by this procedure are called *"regressive quotas"*. Suppose, for instance, that a member has a proportional quota of 13 and that the adjustment obtained is an increase of 2.5%. Then its regressive quota is 13 x (1 + 2.5%) = 13.33.

[17] Member banks whose balance-sheet indicators are in the "Violation" class are liable to the following sanctions:
1) increase in the quotas paid both for contributions and for operating expenses;
2) other financial and administrative sanctions, from suspension of voting rights to exclusion from the Fund (the latter is subject to authorisation by the Bank of Italy).

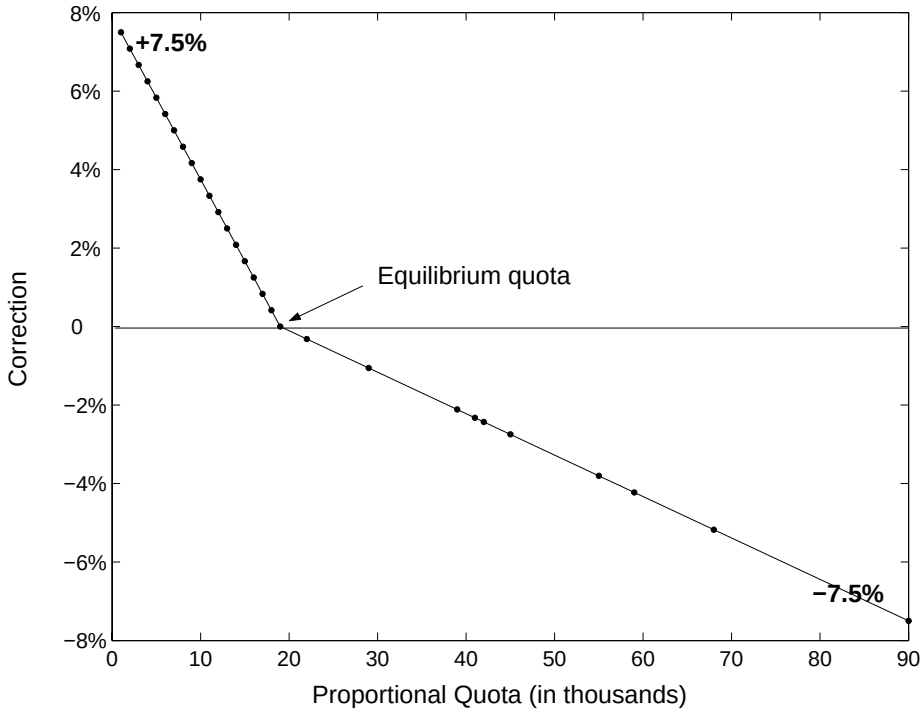

Figure 6: Curve for the *"too big to fail"* adjustment

The regressive quotas are further corrected to take account of the ratios described in the previous section as follows: Depending on the values of their ratios, members are assigned a series of scores, as described in Table 11. The sum of the scores of each member gives the Aggregate Indicator (AI).

For instance, for a member with A1 = 0, B1 = 1, D1 = 1 and D2 = 0, the aggregate indicator is AI = 2. The aggregate indicator makes it possible to assign each member to a class reflecting its overall risk behaviour, called its "*statutory position*", as shown in Table 12.

Table 11: Coefficients applied to calculate the aggregate indicator in the FITD system

Class	A1	B1	D1	D2
Normal	0	0	0	0
Attention	2	1	1	1
Warning	4	2	2	2
Violation	8	4	4	4

Table 12: Statutory position

Aggregate indicator	Statutory position
From 0 to 3	Normal
From 4 to 5	Attention
From 6 to 7	Warning
From 8 to 10	Penalty
From 11 to 12	Severe imbalance
More than 12	Expulsion

The adjustments to the regressive quotas, based on the risk behaviour of the members, are obtained using the last three values of its aggregate indicator, combined with a system of weights decreasing over time (equal to 4, 2 and 1), with the most recent observation given the greatest weight. Table 13 gives an example of aggregation. To obtain the WAAI, first the value of each indicator (AI_t) is multiplied by the corresponding weight (w_t), then the sum of the weighted indicators is divided by the sum of the weights. The WAAI is calculated for 30 June of each year for the purpose of adjusting the contribution quotas of member banks.

The WAAI is used to correct the proportional quotas as follows:

- if the WAAI is greater than 3, the contribution quota is increased, proportionally to the WAAI value;
- if the WAAI is greater than 0 but less than or equal to 3, the contribution quota is unchanged;
- if the WAAI equals 0, the bank qualifies for a reduction in its contribution quota, commensurate with the total amount of increases.

Table 13: Example of aggregation to obtain the weighted average aggregate indicator

Date	Aggregate indicator [AI_t]	Weight [w_t]	[AI_t][w_t]
30/6/2001	3	1	3
31/12/2001	5	2	10
30/6/2002	5	4	20
Sum		7	33
Weighted average aggregate indicator			33/7 = 4.71

In the case of the above-mentioned member, with a regressive quota of 13.33 and a WAAI of 4.71, its regressive quota will increase by 4.71%:

Contribution quota = Regressive quota x (1 + 0.0471) = 13.33 x 1.0471 = 13.96.

The increase in the regressive quotas for the members with a WAAI greater than 3 is compensated by an equal decrease in the regressive quotas for the members with a WAAI equal to zero. The decrease is proportional to the proportional quotas.

Suppose to consider only six members, with the amount of covered deposits shown in the first column of Table 14: the corresponding proportional quotas are obtained by dividing the amount of covered deposits by the aggregate amount (€336bn) and multiplying the result by 1 000. As shown in the table, the regressive quotas (column D) are obtained simply by multiplying the hypothetical adjustments (τ_i) shown in column C by the proportional quotas in column B. Given the values of the WAAI (column E), the regressive quota of member 1 will be increased, the quotas of members 4, 5 and 6 will remain unchanged and the quotas of members 2 and 3 will be decreased in order to compensate for the increase suffered by member 1.

More specifically, the first bank will suffer from an increase of 4% in its regressive quota. This equals a variation of 3.33 thousand in its quota (from 83.18 to 86.51). To compensate for this increase, a decrease of 3.33 thousand will be divided between the two members with a WAAI equal to zero (members 2 and 3), so that the sum of the contribution quotas will still be 1 000. Considering the proportional quotas of these members, the corresponding decreases in the regressive quotas will therefore be:

Decrease for member 2 = $3.33\frac{119.05}{(119.05+133.93)}$ = 1.57

Decrease for member 3 = $3.33\frac{133.93}{(119.05+133.93)}$ = 1.76

These variations are equivalent to around 1.23% of their regressive quotas, as shown in column F. Column G lists the final quotas applied to apportion the contributions. Based on the hypothesis that the amount of contributions to be collected is €1bn, the contribution from each member is listed in column H of the table.

Table 14: Example of calculation of contribution to the FITD

	A	B	C	D=B·(1+C)	E	F	G=D·(1+F)	H
	Covered deposits (€m)	Proport. quota	τ_i	Regress. quota	WAAI	β_i	Contrib. quota	Premium (€m)
Member 1	26 000	77.38	7.50%	83.18	4	4.00%	86.51	86.5
Member 2	40 000	119.05	7.30%	127.74	0	-1.23%	126.17	126. 2
Member 3	45 000	133.93	7.00%	143.30	0	-1.23%	141.54	141.5
Member 4	50 000	148.81	0.00%	148.81	3	0.00%	148.81	148.8
Member 5	75 000	223.21	-0.50%	222.10	2	0.00%	222.10	222.1
Member 6	100 000	297.62	-7.50%	275.30	1	0.00%	275.30	275.3
	336 000	1 000	-	1 000	-	-	1 000	1 000

Data sources and competent authorities

The data concerning the contribution base are sent directly by the members. On the other hand, ratios are calculated on the basis of a specific dataset, which the Bank of Italy sends to the Fund. Ratios are monitored on a semi-annual basis (on 31

December and 30 June), with the exception of the riskiest institutions whose ratios are checked quarterly (two additional observations on 30 March and 30 September).

Sources

"The FITD's monitoring system of bank riskiness and risk-based contribution", FITD technical document, January 2006, available at:

http://www.fitd.it/en/activities/documents/FITD_MSystem_012006.pdf

3.2.4 Portugal: Deposit Guarantee Fund and Mutual Agricultural Credit Guarantee Fund

The Deposit Guarantee Fund (DGF) adopted the current system in the year of its establishment in 1994. The other scheme (FGCAM, Mutual Agricultural Credit Guarantee Fund) was founded in 1984, but did not introduce the contribution adjustments system until 1999.

It must be added that the main task of the FGCAM is to promote and carry out the action deemed necessary to ensure the solvency and liquidity of its members, targeted at protecting the members themselves in order to avoid failures: this automatically provides the depositors' protection required by Directive 94/19/EC.

As mentioned earlier, the annual contribution (c_i) is obtained by applying to the contribution base (x_i) a fixed percentage (α), established yearly and equal for all members, and a risk adjustment (β_i), which depends on the solvency ratio of the member:

$$c_i = \alpha \beta_i x_i .$$

In the case of the Deposit Guarantee Fund, α is set by the Banco de Portugal, at up to 0.2%, on an annual basis. For 2006, an annual rate of 0.03% was applied.

In the case of the Mutual Agricultural Credit Guarantee Fund, the rate for α depends on the coverage ratio (CR) of the previous year, defined as:

$$\mathrm{CR} = \frac{\text{Total amount of funds available}}{\text{Total amount of eligible deposits}} .$$

Table 15 shows the percentages applied, depending on the CR. For 2006 the rate is α = 0.20%.

Table 15: Ranges for the fixed parameter α for the Mutual Agricultural Credit Guarantee Fund

CR	α
CR < 0.4	0.27%
0.4 ≤ CR < 0.6	0.25%
CR ≥ 0.6	0.20%

Table 16: Ranges for the risk-based adjustment β_i for the Deposit Guarantee Fund

ASR_i	β_i
$ASR_i < 8$	120%
$8 \leq ASR_i < 10$	110%
$10 \leq ASR_i < 12$	100%
$12 \leq ASR_i < 14$	90%
$ASR_i \geq 14$	80%

The risk adjustment β_i for each member is based on its Average Solvency Ratio (ASR_i) over the previous year, in accordance with the ranges indicated in

Table 16.

The solvency ratio is defined as:

$$SR_i = \frac{\text{Own funds}}{\text{Capital requirements} \cdot 12.5}$$

where:

- own funds = Tier I + Tier II – regulatory deductions + Tier III;
- capital requirements = capital requirements for credit risks (solvency), for dealing positions, for exchange risks, for large exposures (dealing portfolio), for settlement and counterpart, and for commodities risk and other risks.

The ASR of each institution is based on the average of two solvency ratios, on 30 June and 31 December of the previous year. Table 17 gives an example of calculation of the contribution for 2006 for each ASR bracket, assuming a contribution base of €1bn. Figure 7 shows the range of variation of the contribution as a function of the contribution base. The left axis corresponds to the Deposit Guarantee Fund, the right to the Mutual Agricultural Credit Guarantee Fund. The bounds of the range correspond to the minimum (80%) and maximum (120%) percentage for β_i. The fixed percentage α is set at the 2006 value of 0.03% for the Deposit Guarantee Fund and at 0.2% for the Mutual Agricultural Credit Guarantee Fund. The difference between the two rates for α reflects the different types of institutions covered by the two schemes.

Table 17: Example of calculation of contribution to the Portuguese Deposit Guarantee Fund and the Mutual Agricultural Credit Guarantee Fund in 2006

Scheme		x_i (m€)	α	β_i	Contribution (m€)
DGF (PT1)	Member 1	1 000	0.03%	120%	0.36
	Member 2	1 000	0.03%	110%	0.33
	Member 3	1 000	0.03%	100%	0.30
	Member 4	1 000	0.03%	90%	0.27
	Member 5	1 000	0.03%	80%	0.24
FGCAM (PT2)	Member 1	1 000	0.2%	120%	2.4
	Member 2	1 000	0.2%	110%	2.2
	Member 3	1 000	0.2%	100%	2.0
	Member 4	1 000	0.2%	90%	1.8
	Member 5	1 000	0.2%	80%	1.6

Data sources and competent authorities

In both cases the Fund is responsible for estimating the contributions to be collected from each member. Concerning the sources of the data:

1) Deposit Guarantee Fund: data on the ratios are provided by the supervisory authority. However, in their returns of the calculations of the annual contributions members declare their capital ratios and the Fund carries out the reconciliation of the ratios declared by members with those stated by the supervisory authority.

2) Mutual Agricultural Credit Guarantee Fund: all data needed for calculating the contribution are provided by DGS members. For the capital adequacy ratio, each member provides the data.

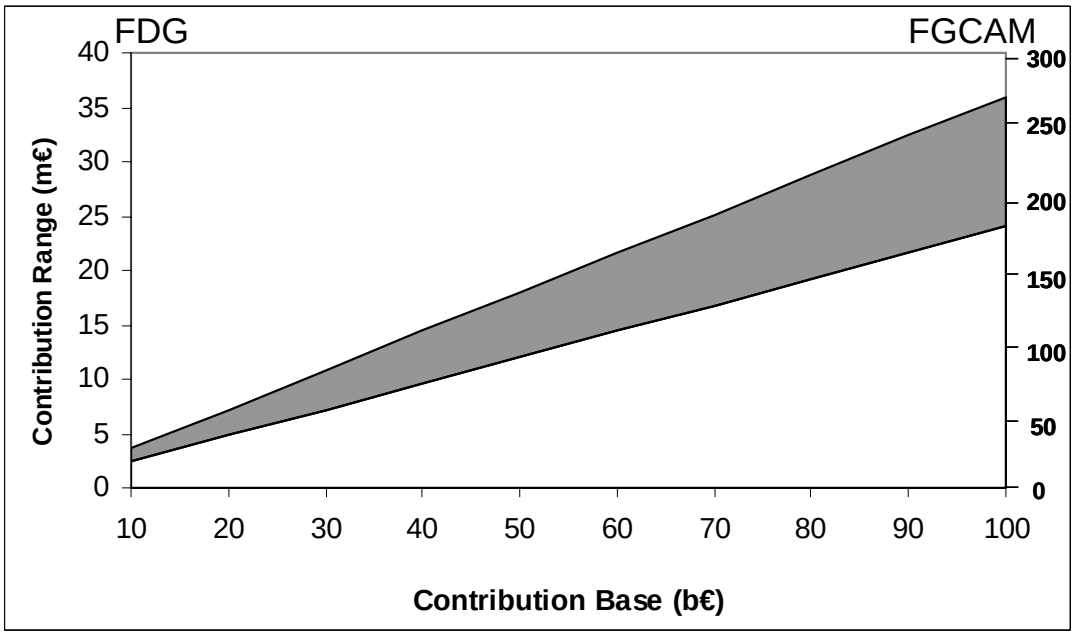

Figure 7: Range of variation of the amount of contribution for the Portuguese Deposit Guarantee Fund (left axis) and the Mutual Agricultural Credit Guarantee Fund (right axis) as a function of the contribution base

Sources

a) Deposit Guarantee Fund:

Notice No 11/94 incorporating all changes introduced by Notices No 9/95, 3/96, 4/96, 11/2003, 5/2004, 6/2004 and 7/2005, available at: http://www.fgd.bportugal.pt/default_e.htm.

b) Mutual Agricultural Credit Guarantee Fund:

1) Avisos do Banco de Portugal No 14/2003.

2) Decree-Law No 345/98 of the Ministry of Finance of 9 November 1998.

3.2.5 Finland: Deposit Guarantee Fund

The Finnish risk-based system was introduced when the DGS was established in 1997. The contribution base for this DGS is the amount of covered deposits by the scheme. The maximum annual contribution per member is set at 0.3% of the contribution base. If the Fund reaches 2% of the aggregate amount of covered deposits, contributions will be reduced to one third of the regular contributions; moreover, if the Fund reaches 10% of the aggregate amount of covered deposits, contributions may be suspended.

Coefficient α is fixed at 0.175%. Hence, the annual contribution obtained is:

$$c_i = 0.175\% \beta_i x_i ,$$

where x_i is the amount of covered deposits for the i members of the DGS and β_i is a risk factor defined as:

$$\beta_i = \frac{\text{Minimum amount of consolidated own funds to cover risk}}{\text{Total amount of consolidated own funds}}$$

The total amount of consolidated own funds and the total amount of consolidated own funds required to cover risks are calculated in accordance with Chapter 55 of the Act on Credit Institutions.

Data sources and competent authorities

DGS members must provide the information necessary for calculation of the contribution payment and for assessment of the risk directly to the Fund.

Sources

1) Act on Credit Institutions 9.2.2007/121, as amended.
2) Rules of the Deposit Guarantee Fund.

3.2.6 Sweden: Swedish Deposit Guarantee Board

The Swedish DGS has been adjusting members' contributions using risk-based information since the scheme was founded in 1996. The aggregate annual contributions to be collected must add up to a sum currently equivalent to 0.1% of the covered deposits by the scheme. The contribution from each institution must be between a minimum of 0.06% and a maximum of 0.14% of the sum of the covered deposits for that institution.

The contribution base is the amount of covered deposits. The distribution of the aggregate contribution between the members depends on their contribution base and their Capital Adequacy Ratio (CAR). Specifically, the adjustment procedure uses the mathematical function U, whose main input variable is the CAR (*z*):

$$U_i(z_i) = a + b \cdot \exp(-cz_i)\ ,$$

where *i* are the DGS members and *a*, *b* and *c* are three parameters chosen on the basis of the distribution of the CAR of all the DGS members.

For each member *U*(*z*) must be no higher than 1, which is the case when the CAR equals the lowest possible value (e.g. 8%) and no lower than the "convergence parameter" *a*, which is generated for institutions that have a very high CAR.

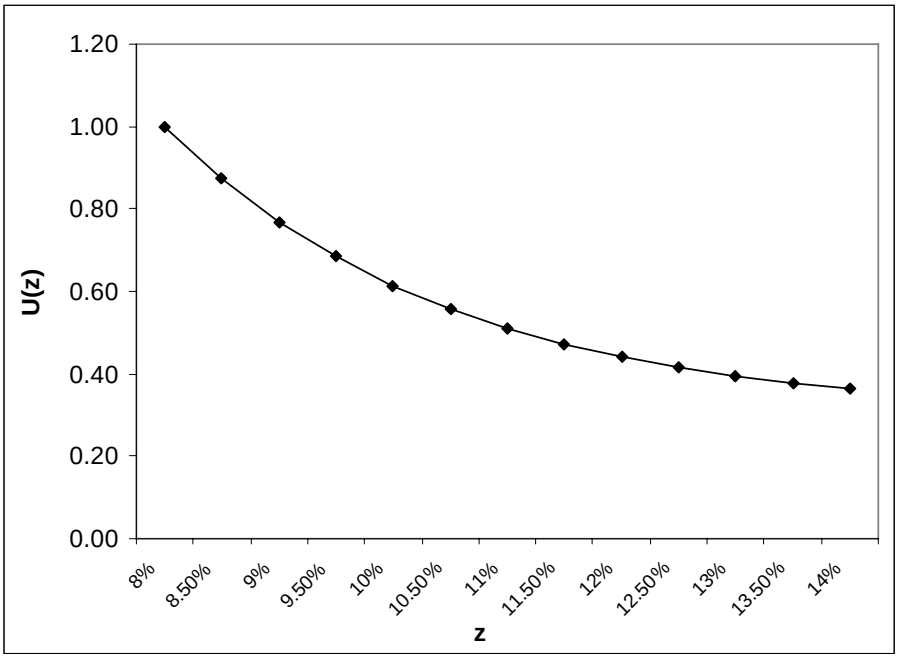

Figure 8: Example of the function U(z) used to correct the contribution on the basis of the capital adequacy ratio z. In this example a = 0.3, b = 17.2 and c = 40.

Figure 8 gives an example of the function $U(z)$ using the triplet of parameters a = 0.3, b = 17.2 and c = 40. The function $U(z)$ matches the following series of desired characteristics:

- The presence of the inverse exponential ensures that each bank's contribution is inversely proportional to its CAR, i.e. a higher CAR leads to a lower contribution, other things being equal.
- The shape of the function implies that a change in contribution caused by any given change in a low CAR is relatively high compared with that caused by a change in a high CAR.
- The use of the inverse exponential also helps to minimise the number of institutions that fall below the minimum contribution of 0.06% of the contribution base and hence to avoid many institutions with a low CAR paying the same contribution regardless of their adequacy ratio.
- The continuity of the function ensures that there are no large changes in contribution levels for arbitrarily small changes in capital adequacy ratios.

The choice of parameters allows arbitrary modelling of the shape of the function and balanced distribution of the contributions between the DGS members. For instance, the lower the curvature parameter c and/or the higher the convergence parameter a, the more "compact" the contribution pattern will be, which means that relatively few institutions fall outside the target interval. This might be convenient if there is a wide spread of CAR between institutions in the banking system. By contrast, when most of the institutions have similar capital adequacy ratios, it is best to increase the curvature by raising c. Parameter b is simply obtained by imposing the requirement that the maximum possible value of U (i.e. 1) will correspond to the members with the lowest CAR (e.g. 8%):

$$b = \frac{1-a}{\exp^{(-c \cdot 8\%)}} .$$

Once the parameters have been chosen, the contributions are calculated by the following steps:

1) Calculation of the aggregate amount of contribution C to be collected:

$$C = \alpha \sum_i x_i ,$$

where α is a fixed percentage (currently 0.1%) and x_i is the amount of covered deposits of the i members. The formula simply states that the total contribution to be collected is a fixed percentage of the total amount of covered deposits by the scheme.

2) Calculation of the amount of contribution to be paid by each institution (c_i), using coefficient U(z) and the contribution base (x_i) as follows:

$$c_i = \left(\frac{U_i(z_i)x_i}{\sum_i U_i(z_i)x_i} \right) \alpha \sum_i x_i ,$$

where the amount in brackets is simply the relative weight of the member.

If some of the members' estimated contributions fall outside the target interval (from a minimum of 0.06% to a maximum of 0.14% of the amount of covered deposits by each institution), they must be adjusted upwards or downwards, so that they fall on the lower or upper limit respectively. Such upward/downward correction will require downward/upward adjustment, on a "*pro rata*" basis, of the contributions paid by other institutions in order to obtain the fixed aggregate annual contribution.

Table 18 gives an example of a calculation based on seven institutions whose CAR is shown in the second column. The values of the ratios are randomly generated between 8% and 15%. The corresponding distribution coefficients $U(z)$ based on the curve in Figure 8 are listed in the third column. It is assumed that the total contribution to be collected adds up to €50m. The weights in the penultimate column are the percentage contributions to be paid by each credit institution. The last column lists the final contributions.

Table 18: Example of calculation of contribution to the Swedish DGS

	x (m€)	CAR	U(z)	$\frac{U(z)x}{\left[\sum U(z)x\right]}$	Contribution (m€)
Member 1	3 750	8%	0.907	15%	7.332
Member 2	2 500	9%	0.724	8%	3.901
Member 3	5 000	10%	0.572	12%	6.165
Member 4	7 500	11%	0.482	16%	7.797
Member 5	6 000	13%	0.413	11%	5.334
Member 6	12 250	14%	0.367	19%	9.695
Member 7	13 000	15%	0.349	20%	9.776
	50 000		3.815	100%	50

Data sources and competent authorities

The contribution is charged for the current year but is based on the previous year's capital adequacy ratios and guaranteed deposits. These figures are reported by the institutions and entered in the deposit guarantee system's register of institutions.

Sources

1) Act on the Deposit Guarantee Scheme (1995:1571).
2) Act on the Capital Adequacy and Large Exposures of Credit Institutions and Securities Companies (1994:2004).
3) Principles for determining fees for the deposit guarantee system (internal document, 2003).

3.3 Comparison of the risk-based systems

As explained earlier, a full comprehensive comparison between current approaches is not completely feasible. This section makes an attempt to provide comparative information. One particularly relevant variable is the elasticity of the system, that is the potential capability to extend the range of variation of the contributions.

In Figure 9 the bars express the percentage variations in the risk-based adjustments β_i currently in force in the schemes presented in the previous section. For all the schemes the reference value is taken as 100%. The upper end of the bar marks the maximum possible increase in the contribution (current maximum) due to the risk-based adjustment; at the other end, the lower bound gives the maximum possible reduction (current minimum). The widest range is registered in DE3 (90%-140%), whereas the narrowest is observed for IT1 (81.4%-120.4%).

In the case of Italy, the maximum is obtained assuming that for three consecutive semesters a bank scores an average indicator of 12 (the maximum possible score before expulsion) and, thus, its correction coefficient for calculating the contribution quotas from regressive quotas is (1 + 12%). The maximum increase is therefore obtained by multiplying the two maximum possible corrections (1 + 12% and 1 + 7.5%) related to the two adjustment procedures described in Section 3.2.3.

It is not possible to estimate the minimum level, because the reduction of the contribution quotas depends on the aggregate increase in the contribution quotas and on the number of banks entitled to decrease their contributions. To proxy the minimum, the following assumptions are made: a single bank suffers from an increase in its regressive quota; the increase is the maximum possible; a single bank benefits from a reduction in its quota; and, finally, this bank has the same regressive quota as the one suffering from the increase. In this way, the correction for this bank would be (1 - 12%). Under these assumptions the maximum reduction is therefore (1 - 12%)(1 - 7.5%). Without these somewhat theoretical assumptions, it is not possible to include the lower end of the bar, i.e. the maximum possible reduction of the quota, for the Italian scheme.

The whiskers in the graphs represent the impact of the variation of coefficient α. By allowing α to vary within the intervals declared in Section 3.2 for each country, wider ranges can be achieved, which are presented in Figure 9 by the solid lines from the potential minimum to the potential maximum. This is the case for DE3, PT1 and PT2. For example, the potential maximum in Germany would be achieved by combining the potential maximum value allowed for α (i.e. 0.2%) with the maximum possible risk-based adjustment (i.e. 140%).

FI and SE are missing from this figure because their approach to adjust contributions does not fit into this framework.

The same approach could not be replicated in Italy and France, where there is no coefficient α and the fixed amount is established before collecting contributions. For this reason, in the graph neither IT nor FR have any extra potential extension of the range.

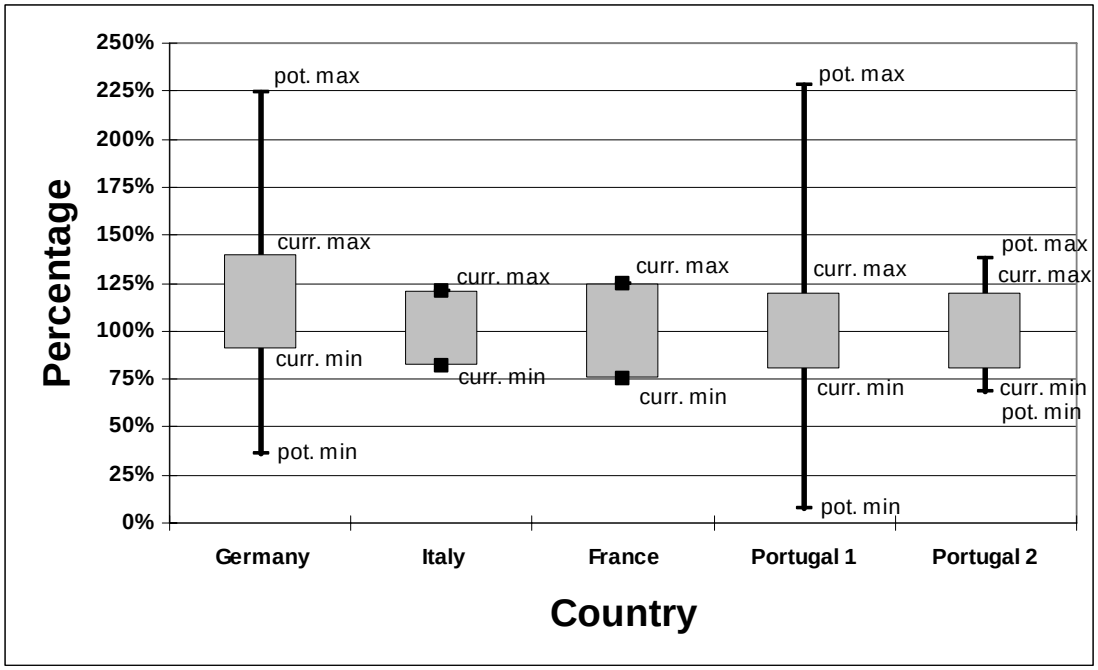

Figure 9: Elasticity of risk-based adjustments country by country

Besides the elasticity analysis in Figure 9, Table 19 summarises all the information collected on the risk-based systems described in Section 3.2. The top part of Table 19 covers several characteristics of the indicators adopted by the risk-based DGS: the number of classes obtained using the indicators, the number of indicators and the indicator profiles (see Table 2). Only three DGS (DE3, PT1 and PT2) classify their members into predetermined classes corresponding to a specific value of β. In the others the correction coefficient is the output of a calculation.

The middle part of Table 19 indicates the type of data necessary for the premium calculation and their public availability.

The bottom part of the table looks at the technical features of the methods, trying to give some insight into the mathematical tools applied in the models and issues like calibration procedures. As mentioned earlier, a pre-determined overall contribution is in force in two countries (FR and IT), while all the others apply coefficient α. Calibration procedures are included in the Italian approach to find the equilibrium quota and in Sweden to find the optimum parameters of the exponential function. All the functions applied by the schemes are relatively simple, being either linear (FR and IT) or exponential (SE). Finally, the Italian DGS is the only scheme including in the correction the time evolution (over three consecutive semesters) of the risk -attitude of the members (β_i).

Table 19: Comparison of available information.

	DE3	FR	IT	PT1-PT2	FI	SE
Number of classes	5	-	-	5	-	-
Number of indicators	8	4	4	1	1	1
Solvency indicators	2	1	1	1	1	1
Exposure indicators	3	1	1			
Profitability indicators	3	1	2			
Data from balance sheet	X	X	X	X	X	CAR
Data on deposits		Eligible	Covered	Eligible	Covered	Covered
Other data	Lendings, Contingent liabilities	Outstanding loans, Data on maturity transformation				
Pre-determined overall amount		X	X			
Calibration			X			X
Mathematical function		Linear	Linear			Exponential
Time evolution			X			

Source: DGS description and JRC analysis.

4. Monitoring systems

4.1 Brief description

The main purpose of the monitoring systems is to investigate if there are potential threats to the DGS. In some cases they can be used to decide when to intervene to avoid failure of a member or to reduce the impact of the action by the DGS. In other circumstances, a member of the scheme may be sanctioned if the system reveals an increase in its risk exposure or unsound risk management. As explained in the introduction, the information collected on the monitoring systems is less detailed than the data obtained on risk-based DGS. Normally, monitoring systems also make use of indicators defined in terms of financial data to evaluate the performance of their members. For this reason, whenever possible, the indicators adopted have been listed in Table 2 of the Overview (Section 2).

Among the DGS with an early-warning system, little information is available for DE1 and PL. The risk-scoring system adopted by the German DGS covering public banks (DE1) works on the basis of the yearly audit reports submitted by the members. On the one hand, it is a tool for monitoring their actual financial and risk situation and, on the other, a basis for special audits (Sonderprüfungen) conducted yearly in accordance with the BaFin (the German Federal Financial Supervisory Authority) on between two and four of the member banks. The risk-scoring system essentially evaluates the credit default risk, the interest rate risk, liquidity risks, the financial situation and the profit situation. These criteria are again subdivided into other (confidential) criteria. The system is currently being adapted to new reporting laws, but will remain essentially unchanged. The DGS in PL has developed a quantitative methodology based on a number of indicators aimed at assessing the following profiles of the members: solvency, profitability, types of assets and types of off-balance sheet obligations. These indicators are used to assess not only the financial situation of the banks, but also the variability of their conditions. For instance, the DGS systematically evaluates the variation over time (e.g. increase/decrease in performance) in the indicators applied. Some of the indicators[18] applied by this scheme are similar to those described in the Overview (Section 2), for instance costs and provisions are measured against the profits to assess the performance of the members and the capital adequacy ratio is used to evaluate their solvency profile. Off-balance sheet obligations are also evaluated, along with the Return On Assets (ROA).

The remainder of this section presents three monitoring systems applied by the Italian DGS covering cooperative credit banks, by the Austrian DGS covering private commercial banks and by the Romanian scheme.

The preventive risk-monitoring system applied by German cooperative banks (DE3) has already been described in Section 3.2.1 and is equivalent to the system adopted to adjust the contribution.

[18] The detailed list of indicators is not available for the Polish Bank Guarantee Fund. A qualitative description of some of the indicators was obtained by translating from Polish tables in an internal report describing the full monitoring method adopted by the scheme.

4.2 Technical details

4.2.1 Italy: Deposit Guarantee Fund of Cooperative Credit Banks

The Italian DGS for cooperative credit banks (CCB) assesses the overall situation of members by means of complementary monitoring systems. Banks identified by one of the early-warning tools are placed under direct monitoring by the Deposit Guarantee Fund.

Statutory indicators

Historically, the system employed is based on a set of balance-sheet ratio indicators, known as statutory indicators. The system is made up of two ratios related to the risk profile of the DGS members (A1 and A2), two ratios related to solvency (B1 and B2) and, finally, two indicators of the economic performance of the members (D1 and D2)[19]. The system of indicators is as follows:

$$A1 = \frac{\text{Non - performing loans}}{\text{Capital and reserves}}$$

$$A2 = \frac{\text{Non - performing loans}}{\text{Outstanding loans}}$$

$$B1 = \frac{\text{Capital for supervisory purposes}}{\text{Supervisory capital}}$$

$$B2 = \frac{\text{Capital and reserves (including loan losses provisions)} + \text{Subordinates liabilities}}{\text{Funding (ordinarycustomers)}}$$

$$D1 = \frac{\text{General and administrative expenses}}{\text{Gross income}}$$

$$D2 = \frac{\text{Loan losses (net of recoveries)}}{\text{Profit before tax}}.$$

Three thresholds are set for each indicator (see

[19] A maturity transformation indicator was also applied until 2006.

Table 20), identifying four classes, each corresponding to a coefficient, as indicated in Table 21. The sum of the coefficients for each member provides an aggregate indicator of the overall situation of the bank.

Aggregate indicators are calculated semi-annually, on the basis of the report of the balance-sheet ratios, and are used to promote a specific path (no more details are publicly available) to bring the value of the aggregate indicator back under the "Attention" threshold and to correct the critical situation.

Table 20: Thresholds for the indicators applied by the Italian DGS for cooperative credit banks

	Normal	Attention	Warning	Violation
A1	Under 40	From 40 to 60	From 60 to 100	Over 100
A2	Under 6	From 6 to 8	From 8 to 12	Over 12
B1	Over 120	From 120 to 100	From 100 to 80	Under 80
B2	Over 12	From 12 to 10	From 10 to 6	Under 6
D1	Under 70	From 70 to 75	From 75 to 85	Over 85
D2	Under 50	From 50 to 60	From 60 to 80	Over 80

Table 21: Scores assigned to members of the Italian DGS for cooperative credit banks, depending on their ratios

Situation	Coefficient
Normal	0
Attention	1
Warning	2

Conventional indicators

Besides the statutory approach, a complementary statistical analysis is performed: back-testing has found that the following are two good indicators of an impending crisis:

$$IC1 = \frac{\text{Non - performing loans}}{\text{Capital for supervisory purposes}}$$

$$IC2 = \frac{\text{Non - performing loans + Doubtful loans}}{\text{Capital for supervisory purposes}}.$$

A first sign is given by exceeding specific thresholds, set at 12% for IC1 and at 40% for IC2. A further sign is sent if the values of the indicators are increasing over time, within intervals which depend on the geographical zone where the cooperative bank is operating.

Statistical indicators

In addition, a more sophisticated statistical analysis has been put in place: three statistical indicators are used to provide an extra quantitative view of members' efficiency. In particular, a sign is sent to the central authority if at least two of the three following relations are detected:

$$IS1 = \frac{\text{Non - performing loans}}{\text{Own funds}} \geq 18.86\%$$

$$IS2 = \frac{\text{Operational income}}{\text{Total assets}} \geq 2.53\%$$

$$IS3 = \frac{\text{Employment costs}}{\text{General and administrative expenses}} \leq 43.93\%.$$

The specific values of the thresholds are obtained by an iterative, rather technical, procedure from the statistical literature.

Additional support interventions

Member banks which are subject to additional support intervention, decided by the Fund in previous years, are placed under monitoring by the Fund to assess correct, effective implementation of the solutions submitted in the recovery plan.

Specific solvency coefficient

The solvency coefficient imposed by the Central Bank is currently set at 8% of the risk-weighted assets. In some cases the Central Bank has decided to assign a specific solvency coefficient. The Fund has selected the member banks which are subject to a higher solvency coefficient.

Concentration of the risk (large exposures)

In 2007 the Fund conducted a survey on the concentration of:

- Loans (ordinary customers);
- Funding (ordinary customers);
- Ownership securities;
- Securities of a third party.

Banks which reported a deviation of 100% from the average recorded in the relevant local federation for each of the above-mentioned aspects have been placed under monitoring. Member banks selected in the previous action plan (2006-2007) but showing persisting signs of difficulties have been placed, once again, under the supervision of the Fund.

Newly constituted CCBs

Due to the high failure rate among newly constituted cooperative credit banks, all the CCBs established since 2005 have been selected for monitoring of correct and effective implementation of their industrial plan and to avoid the eventuality of default.

Sources

1) By-laws on the Deposit Guarantee Fund of cooperative credit banks.
2) Technical internal document: “Nota metodologica: piano attivita’ 2008”.

4.2.2 Austria: Deposit Guarantee Scheme for commercial banks

The early-warning system developed by the Austrian DGS for commercial banks is based on several assessments, performed with different frequency over the financial year. There are monthly, quarterly, semi-annual and yearly assessments. The monthly, quarterly and semi-annual assessments are qualitative and do not imply taking any measure. The yearly assessment serves to classify banks into seven classes (A, A/B, B, B/C, C, C/D and D) using six key performance indicators and a series of thresholds and criteria. For the banks in the three lowest classes, different types of measures are adopted, such as discussing the situation with the regulatory authority, informing the other member banks and the other Austrian deposit insurance schemes or preparing funds for intervention.

The monthly assessment is based on reports from the Austrian National Bank and focuses on the development of business activities. From these reports the following information on the member banks is analysed:

- Selected balance-sheet data in comparison with the month before and with the same month in the previous year;
- Equity and solvency data: amounts, structure, ratios and surplus (in comparison with the month before and with the same month in the previous year);
- Major investments: amount, in absolute terms and in relation to equity amounts (in comparison with the month before and with the same month in the previous year).

The quarterly assessment: is based on the members' income statements. The data received are compared with the figures for the preceding quarter and for the same quarter in the previous year and also on a year-on-year basis with the preceding year. Data are taken from the income statement, both in absolute terms and in the form of key performance indicators like the cost/income ratio, risk/earnings ratio, Return On Equity (ROE) and risk burden in relation to risk-weighted assets.

Based on their business characteristics, the member banks are allocated into six different groups, as shown in Table 22. Within each group members are ranked on the basis of several criteria, for instance the amount of guaranteed deposits, solvency ratios, ROE, net profit and internal rating scale. On request, each member institute can see how its performance compares with the average performance of the group to which it belongs.

The semi-annual data assessment evaluates the amount of guaranteed deposits to investigate, for instance how it has developed over several periods of time, and also the level of deposits in comparison with the amount of tier 1 capital or surplus of tier 1 capital or the percentage of all the liabilities to customers.

Table 22: Groups formed by the Austrian DGS for commercial banks in the quarterly assessment of the performance of its members

Group	Description
Group 1	Building societies
Group 2	Universal banks with a high amount of guaranteed deposits (> €20 million)
Group 3	Universal banks with a lower amount of guaranteed deposits
Group 4	Car-financing, credit-card, mobile-phone and lease-finance institutes
Group 5	Securities management and custodian business
Group 6	Special-purpose institutes, including own-investment vehicles

Annual data assessment:

In the annual assessment, the member banks are classified on an internal rating scale using six key performance indicators: net profit, risk burden, cost/income ratio, hidden reserves, non-performing assets, liabilities to customers and guaranteed customer deposits. The ratios used to evaluate the members are listed in the first column of Table 23.

Five rating classes are built using these indicators (A, A/B, B, C/D and D). Ranking class B serves as a basis for the classification of DGS members. Members are classified in this class if their key performance indicators are within the ranges indicated in the second column of Table 23.

An upgrade by one class (from B to A/B) is possible if R4 lies between 10% and 20% and R5 is higher than 100%. A further upgrade (to the top ranking A) is possible if R4 is higher than 20% and R5 is higher than 200%.

Members will be ranked lower than B if at least three of the six key performance indicators are worse than the base range.

If a DGS member is ranked in class C, a discussion will be held with the member and with the consultative board and the regulatory authority. A C/D ranking means a direct risk of insolvency and entails immediate discussions facilitating successful crisis management. At this stage, considering possible counter-productive effects (such as cancellation of credit lines), the other member banks and other Austrian deposit insurance schemes might be warned. Finally, a D ranking means that the member bank concerned has already failed to meet its financial obligations. The deposit insurance scheme is then in charge of repayment of depositors.

Table 23: Indicators and corresponding thresholds applied by the Austrian DGS for commercial banks DGS

Ratio	Thresholds for class B
$R1 = \frac{\text{Cost}}{\text{Earnings}}$	Between 55% and 65%
$R2 = \frac{\text{Risk}}{\text{Earnings}}$	Between 8% and 16%
$R3 = \frac{\text{Risk}}{\text{Risk equivalent}}$	Between 0.5% and 1.0%
$R4 = \frac{\text{Net profit}}{\text{Tier 1}}$	Between 5% and 10%
$R5 = \frac{\text{Tier 1}}{\text{Repayable deposits}}$	Between 50% and 100%
$R6 = \frac{\text{Tier 1}}{\text{Risk equivalent}}$	Between 5% and 10%

Data sources and competent authorities

The member banks are obliged to communicate to the deposit insurers all the information they need to perform their duties. In particular, member banks have to notify the DGS of the annual appointment of their auditors and deliver financial statements (including consolidated financial statements) and the separate supervision audit reports and hidden reserves report immediately. Monthly and quarterly reports have to be submitted to the regulatory bodies within four weeks and additional papers and data on request by the deposit insurer. Moreover, any auditors or special reviewers appointed by the board or by regulatory authorities have to present their reports and are exempt from confidentiality in relation to the DGS. Finally, any reports given to the Austrian National Bank can be requested by the DGS.

Sources

1) 2007 JRC survey.

2) "Risk monitoring within the Deposit Guarantee Scheme of the Austrian commercial banks", presentation at the EFDI meeting in Stockholm in September 2005.

4.2.3 Romania: Deposit Guarantee Fund in the banking system

The Romanian DGS uses a set of indicators to monitor members' risk conduct and determine whether a credit institution has been engaged in risky and unsound policies. The five indicators are defined as follows:

1) Solvency Ratio (SR):

$$SR = \frac{\text{Own funds}}{\text{Risk - weighted assets (including off - balance sheet items)}}$$

2) Credit Risk and interbank investments Ratio (CRR):

$$CRR = \frac{\text{Unadjusted exposure related to loans and interbank investments (classified doubtful and loss)}}{\text{Total loans} + \text{Interbank investments}}$$

The unadjusted exposure covers banking and non-banking loans and interbank investments plus the related interest. The denominator (total loans + interbank investments) also includes the interest. In addition, both numerator and denominator also include off-balance sheet items.

3) General Risk Ratio (GRR):

$$GRR = \frac{\text{Risk - weighted assets}}{\text{Total assets at book - keeping value}}$$

Both the risk-weighted assets and the total assets at book-keeping value also include off-balance sheet items.

4) Rate of Return on Basic Activities (RBA):

$$RBA = \frac{\text{Operations income - Income from provisions}}{\text{Expense from operations - Provisions expense}}$$

5) Liquidity Indicator (LI):

$$LI = \frac{\text{Effective liquidity}}{\text{Required liquidity}}$$

Depending on the values of these indicators, DGS members are assigned a series of five scores based on the thresholds set out in

Table 24. These scores are subsequently aggregated applying the weights indicated in the second and fifth columns of

Table 24.

The two most important indicators (weight equal to 2.00) are the solvency indicator and the credit risk and interbank investments indicator. The general risk ratio has a weight of 1.75 and the last two (rate of return on basic activities and liquidity indicator) 1.25 and 1.00 respectively.

The aggregate indicator of the overall riskiness of a member is obtained as the weighted average of the five scores:

$$S = \sum_i P_i K_i \ .$$

The aggregate indicator is used to monitor the behaviour of the DGS members and to increase the contribution from members with S < 7.5, which are liable to up to twice the annual contribution, as specified in Table 25.

Table 24: Thresholds for assigning P_i scores to members of the Romanian DGS; the scores are aggregated using weight K_i

	K_i	Thresholds	P_i		K_i	Thresholds	P_i
SR	2.00	≤ 0%	0.00	RBA	1.25	< 100%	0.00
		0.1% - 3.9%	0.25			100.0% - 107.9%	0.25
		4.0% - 7.9%	0.50			108.0% - 115.9%	0.50
		8.0% - 11.9%	0.75			116.0% - 124.9%	0.75
		12%	1.00			125%	1.00
		12.1% - 14.0%	1.25			125.1% - 133.0%	1.25
		14.1% - 16.0%	1.50			133.1% - 141.0%	1.50
		16.1% - 18.0%	1.75			141.1% - 150.0%	1.75
		> 18%	2.00			> 150%	2.00
CRR	2.00	≤ 2.0%	2.00	LI	1.00	< 0.70	0.00
		2.1% - 3%	1.75			0.70 - 0.79	0.25
		3.1% - 4%	1.50			0.80 - 0.89	0.50
		4.1% - 4.9%	1.25			0.90 - 0.99	0.75
		5%	1.00			1	1.00
		5.1% - 7.0%	0.75			1.01 - 1.10	1.25
		7.1% - 9.0%	0.50			1.11 - 1.20	1.50
		9.1% - 10.0%	0.25			1.21 - 1.30	1.75
		> 10.0%	0.00			> 1.30	2.00
GRR	1.75	≤ -50.1%	2.00				
		(-50.0%) - (-33.4%)	1.75				
		(-33.3%) - (-16.7%)	1.50				
		(-16.6%) - (members' average)	1.25				
		Members' average	1.00				
		(members' average) - (+16.6%)	0.75				
		(+16.7%) - (+33.3%)	0.50				
		(+33.4%) - (+50.0%)	0.25				
		≥ (+50.1%)	0.00				

Table 25: Annual contributions to the Romanian DGS (with S < 7.5), being "r" the standard contribution

S	Annual contribution
Minimum 7.5	r
5.00 – 7.49	1.25·r
3.00 – 4.99	1.50·r
2.00 – 2.99	1.75·r
< 2	2·r

Romania is in the process of introducing a new risk assessment system.

In the new system an exposure coverage ratio target will be set and, consequently, both the annual contribution rate and the amount of the stand-by lines of credit (which have to be granted yearly to the Romanian DGS by its members) will be established. The new system will probably be finalised in the course of 2008. It aims at decreasing the costs for the member credit institutions by taking into account the size of the Fund's financial resources and the current and future soundness of the Romanian banking system.

Sources

2007 JRC survey.

5. US DGS: Risk-based contributions

5.1. Introduction

This section presents the US ex-ante risk-based mechanism, applied by the Federal Deposit Insurance Corporation[20] (FDIC), an independent Federal agency that maintains the stability of and public confidence in the national financial system by insuring deposits, examining and supervising financial institutions and managing receiverships. The contributions collected in advance by the FDIC aim at reflecting the soundness and solidity of the financial institutions and at monitoring and providing an incentive to reduce risk-taking.

The 1991 Federal Deposit Insurance Corporation Improvement Act[21] introduced a requirement to apply a risk-based assessment system to US financial institutions. The FDIC has been implementing this requirement since 1993, classifying DGS members into four risk categories with a two-step process, based first on capital levels and then on supervisory ratings. The first step considers three capital ratios to investigate if the institution is adequately capitalised. The second was initially based on the Uniform Financial Institutions Rating System (UFIRS) adopted in 1979 by the Federal Financial Institutions Examination Council[22] (FFIEC) to monitor the soundness of the financial institutions and to identify if an FDIC member calls for special attention or concern. The UFIRS was amended in 1996 to include a new indicator and renamed "CAMELS", which is an acronym of the six financial indicators making up the rating.

Currently the rules adopted by the FDIC Board in November 2006 and in force since 2007 set a contribution for the four risk categories that varies between 5 and 43 cents per $100 of the member's assessable deposit, also known as total assessment base. The FDIC has to collect and maintain a minimum level of resources and may adjust rates upwards or downwards by 3 base points from the base rate schedule in case of need. The Fund, which by law[23] must be in the range of between 1.15% and 1.50% of the total amount of covered deposits held by members, is currently equal to nearly 1.22% of this amount.

The next section describes in detail both the system and the indicators adopted by the FDIC to assign the financial institutions to the risk categories.

5.2 The risk-based system

The general soundness of banks and thrift institutions is monitored by collecting information from on-site examinations and periodical surveys on balance-sheet data. This task is performed by the FDIC in cooperation with other Federal agencies. In particular, the Office of the Comptroller of the Currency[24] (OCC) contributes to the examinations of members and the FFIEC provides support for developing the risk-based method (see below for further details).

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[20] FDIC website: http://www.fdic.gov/index.html.

[21] The Federal Deposit Insurance Corporation Improvement Act is reported in FDIC law, page 8549 et seq.: http://www.fdic.gov/regulations/laws/rules/8000-120.html.

[22] The FFIEC is an interagency body with the aim of laying down uniform principles, standards and report forms for Federal examination of financial institutions. FFIEC website: http://www.ffiec.gov/.

[23] The Federal Deposit Insurance Reform Act[23] (FDIRA) of 2006 is available at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ171.109.pdf.

[24] OCC web-site: http://www.occ.treas.gov/.

The OCC, founded in 1863 as a bureau of the US Department of the Treasury, charters, regulates and supervises all national banks and also supervises the Federal branches and agencies of foreign banks. By law[25], a full on-site examination of the institutions has to be conducted at least once during each 12-month period, which may be extended to 18 months in special cases. Bank examinations are carried out periodically for a number of purposes: to maintain public confidence in the integrity of the banking system; to determine the bank's compliance with laws and regulations; to prevent problematic situations; and, in particular, to provide a sound factual foundation for corrective measures. The last point generally corresponds to the second step of the risk-based assessment system, when the supervisory rating is assigned to the financial institution.

The FFIEC sets the "CAMELS" indicators and regulates the reporting requirements for the Consolidated Reports of Condition and Income and the Thrift Financial Report, required every quarter from all US banks by the Federal Reserve Act of 1913. These quarterly reports collect basic financial data in the form of a balance sheet, an income statement and supporting schedules, providing details of assets, liabilities, capital accounts, income and expenses. Financial data collected from the reports are the primary source of information for supervision and regulation of US banks. In particular, they make it possible to assess the capital group (first step of the risk-based assessment system) and to determine the amount of the contributions.

The FDIC determines the institution's risk assessment after the end of each quarter and the contribution is collected at the end of the following quarter. For example, the amount established at the end of March is paid by members on the 30th day of June through the Federal Reserve's Automated Clearing House, the only payment system available.

As explained above, the FDIC applies a risk-differentiation system to its members which is based on two steps aimed at identifying the amount of risk borne by the financial institutions. In the first step each member is placed into one of three capital groups – well capitalised, adequately capitalised and undercapitalised – depending on a set of leverage ratios and capital ratios. In the second step three supervisory subgroups (A, B and C) are built using the "CAMELS" indicators. Specifically, at the end of the on-site bank examination the supervisor assigns a composite rating, obtained from the following six "CAMELS" indicators: Capital adequacy, Asset quality, Management capability, Earnings quantity and quality, Liquidity adequacy and Sensitivity to market risk.

After the risk assessment, the amount of the contribution is determined by allocating each DGS member to a risk class. The latest changes to the rules consolidated the nine risk categories obtainable with the two-step procedure into four risk classes, as shown in Table 26, class I being the least risky and class IV the riskiest.

Table 26: Risk classes

<table>
<tr><td></td><td colspan="3">Supervisory subgroup</td></tr>
<tr><td>Capital group</td><td>A</td><td>B</td><td>C</td></tr>
<tr><td>Well capitalised</td><td>I</td><td rowspan="2">II</td><td rowspan="2">III</td></tr>
<tr><td>Adequately capitalised</td></tr>
<tr><td>Undercapitalised</td><td colspan="2">III</td><td>IV</td></tr>
</table>

[25] Federal Deposit Insurance Act, Section 10/d.

Depending on the class to which it is allocated, each member is assigned a rate which determines the amount of contribution to be paid. The contribution is calculated by applying the rate to the total assessment base (total deposit liabilities – total allowable exclusions) declared by the FDIC members in the quarterly reports[26]. Common annual rates are set for all members in classes II, III and IV, respectively of 10 cents, 28 cents and 43 cents per $100 of assessable deposits held by the institution. In the case of class I, for each institution a specific rate in the range between 5 and 7 cents[27] is set by an additional procedure. Depending on the amount of assets and on the rating (if any) of long-term bonds, two different methods are used. For institutions with less than $10bn in assets or without long-term debt issuer ratings, the base assessment rate is determined by combining the "CAMELS" composite rating with other financial ratios ("financial ratio method"). For the other institutions in class I, rates are obtained by weighting the "CAMELS" indicators with a score reflecting the long-term debt issuer ratings ("debt rating method")[28].

Class I is particularly significant because it covers around 95% of the total number of financial institutions and around 98% of all US deposits. Moreover, starting from 2010, the rate assigned to institutions in class I will change. Instead of the full spectrum of rates between 5 and 7 cents, only two rates will be used: 2 cents for the less risky banks and 4 cents for the others.

The FDIC, as collection agent, also gathers an additional contribution to repay the 30-year non-callable thrift bonds issued by the Financial Corporation[29] (FICO) between 1987 and 1989, with principal totalling approximately $8.1bn. This corporation was created with the sole purpose of serving as a financial vehicle, in case of extraordinary need for resources to reimburse depositors. Since 1991, however, it is no longer responsible for this role. The additional contribution is calculated by applying a set rate to the amount of assessable deposits. The impact of the FICO, which is 118 cents per $100 of assessable deposits, is significantly higher than the above-mentioned rates based on the risk classes and will expire in 2019 when the final bonds mature. Table 27 shows three examples to allow a better understanding of how the payments by the FDIC members are calculated. The second to fourth columns cover the four classes and the last the FICO component. The first two rows list the rates to be applied, the third indicates the formulas for obtaining the contributions and the last three rows show the contributions to be paid for each class, considering three different assessment bases ($0.5bn, $2bn and $5bn). For class II both the minimum and maximum contributions possible are shown.

Table 27: Example of annual contribution for the FDIC

	Class I	Class II	Class III	Class IV	FICO#
Rate (cents per 100$)	(5 / 7)	10	28	43	118
Rate (dollars per 1$)	(0.0005 / 0.0007)	0.0010	0.0028	0.0043	1.18
Formula	X·(0.0005 / 0.0007)	X·0.0010	X·0.0028	X·0.0043	X·1.18
Contribution (X = $0.5bn)	250 000 / 350 000	500 000	1 400 000	2 150 000	6 150 000
Contribution (X = $2bn)	1 000 000 / 1 400 000	2 000 000	5 600 000	8 600 000	24 600 000
Contribution (X = $5bn)	2 500 000 / 3 500 000	5 000 000	14 000 000	21 500 000	61 500 000

X = total assessment base of the financial institution; # average rate for FICO in 2007

[26] Information about quarterly reports can be gathered from the FFIEC website at: http://www.ffiec.gov/forms041.htm.

[27] These assessment rates are three base points above the base rate schedule set in the final rule which will be applied in the US starting from 2010, thus lowering the rates to a minimum of 2 cents and a maximum of 40 cents per $100 of assessable deposits.

[28] Further technical details of the procedures currently applied by the FDIC to assign a rate to institutions in class I are available at: http://www.fdic.gov/deposit/insurance/risk/2007_01/fr_risk.html.
These methodologies will cease to be used from 2010 on.

[29] Further information on FICO is available at: http://www.fdic.gov/deposit/insurance/risk/assesrte.html.

To obtain the quarterly contribution to be paid by each member, the rate for the risk classes and the FICO rate are first multiplied by the total assessment base and then added up.

For instance, the quarterly contribution by an institution with a total assessment base of $2bn and classified in risk class II will be $6 650 000 ($2m + $24.6m divided by the number of quarters).

5.3 Indicators adopted

This section takes a closer look at the procedures applied to measure the risk borne by financial institutions and to determine the amount of contributions collected by the FDIC. First, the indicators necessary to determine the capital groups are presented and then the CAMELS rating system is briefly explained.

The capital group assignments are made quarterly by the method agreed by the FFIEC Surveillance Task Force for calculating the capital ratios, using only data transmitted by members in the reports. The capital groups (well capitalised, adequately capitalised and undercapitalised) are based on three ratios: the total risk-based capital ratio (r_1), the tier 1 risk-based capital ratio (r_2) and the tier 1 leverage capital ratio (r_3). These are defined as follows[30]:

$$r_1 = \frac{\text{Total capital}}{\text{Risk - weighted assets}} \quad r_2 = \frac{\text{Tier 1 capital}}{\text{Risk - weighted assets}} \quad r_3 = \frac{\text{Tier 1 capital}}{\text{Average assets}}.$$

For each ratio specific parameters are laid down by law to determine the group assessment, as shown in Table 28. To be allocated in a given class, the constraints on all the ratios have to be met. For example, an institution with r_1 = 10%, r_2 = 6% and r_3 = 4.5% will be assigned to the adequately capitalised class.

Table 28: Thresholds for the capital ratios to determine capital groups

	Capital ratio		
Capital group	Total risk-based	Tier 1 risk-based	Tier 1 leverage
Well capitalised	$r_1 \geq 10\%$	$r_2 \geq 6\%$	$r_3 \geq 5\%$
Adequately capitalised	$r_1 \geq 8\%$	$r_2 \geq 4\%$	$r_3 \geq 4\%$
Undercapitalised	$r_1 < 8\%$	$r_2 < 4\%$	$r_3 < 4\%$

The procedure to establish the supervisory subgroups is more complex than the capital group assessment. It is based on the "CAMELS" composite rating, which is set during the on-site examinations of members and generally does not change in the quarterly assessment. The composite indicator rating is a score from 1 (the best) to 5 (the worst), obtained by considering a set of qualitative scores based on the 6 "CAMELS" items (Capital adequacy, Asset quality, Management capability, Earnings quantity and quality, Liquidity adequacy and Sensitivity to market risk), each based on a number of factors. Specifically, depending on the values of the indicators, each member is assigned 6 grades from 1 to 5. There are no specific rules for aggregating "CAMELS" scores into the composite indicator, for instance one indicator may be given more weight than others, depending on the situation.

[30] More detailed definitions of the ratios are available at: http://www.fdic.gov/regulations/resources/directors_college/sfcb/capital/instruction2.html.

Once the "CAMELS" composite rating is set, the supervisory subgroups are formed: usually financial institutions with a rating of 1 or 2 are assigned to supervisory subgroup A, those with a rating of 3 are placed in supervisory subgroup B and the rest (with a rating of 4 or 5) are allocated to the last subgroup (C). Institutions with a rating of 1 (the least risky) are sound in every respect and any weaknesses are minor and can be handled in a routine manner by the board of directors and the management. These are the members which show the strongest performance and the best risk management practices and which are resistant to external economic and financial disturbances. Institutions with a "CAMELS" rating of 5 exhibit extremely unsafe and unsound practices and a critically deficient performance and often use inadequate risk measures not commensurate to their size, complexity and business position. Usually, this category is reserved for institutions with an extremely high immediate or near-term probability of failure that pose a significant risk to the deposit insurance fund. The other institutions show financial conditions in the middle, between extremely sound and near-to-failure.

The main goal of the "CAMELS" components is to investigate specific features of the DGS member and the relationship between them, with the aim of evaluating the sustainability of the business and measuring the risk of possible future negative effects on the fund collected by the FDIC. Each indicator is based on a number of evaluation factors and on the information that the examination authority considers relevant. Table 29 summarises the principal factors used to determine the "CAMELS" ratings.

Table 29: Principal factors taken into account to rate the "CAMELS" components

	Principal evaluation factors
Capital adequacy	- Level, quality and sources of capital, considering the general financial condition - Balance composition: nature of problem assets, concentration risk and non-traditional activities
Assets quality	- Diversification, quality and adequacy of allowance for loan and investment portfolios - Risk identification practices and credit risk exposure arising from off-balance sheet transactions
Management	- Impact on performance, risk profile, collection of information and risk monitoring system - The ability to respond to risks that may arise from changing business conditions.
Earnings	- Exposure to adverse changes in interest rates, foreign exchange rates and commodity prices - Level, quality and sources, including trends and stability
Liquidity	- The adequacy of sources and the availability of assets convertible to cash without loss - Diversification of funding sources, access to money markets, trend and stability of deposits
Sensitivity	- Method to identify, measure, monitor and control market risk exposure - Sensitivity of the soundness to market risks and economic risks.

The institution's "*capital adequacy*" is examined in relation to the volume of risky assets and to the possibility of capital deterioration due to the ability of measuring, monitoring and controlling financial risks.

The "*asset quality*" rating reflects the quantity of existing and potential credit risk associated with the loan and investment portfolios, also considering the diversification of credits held.

Special attention is paid to the "*management*" component when assigning the "CAMELS" composite rating, as the ability of directors to respond to changing conditions and to address the risks that may arise from changes in the market is perceived as very significant. The managers must provide clear guidance on acceptable risk exposure levels and ensure that appropriate policies, procedures and practices have been established.

The "*earnings*" rating measures their performance, but also evaluates factors that could affect the quality of the profits and their ability to cover losses and provide adequate capital protection.

The adequacy of *"liquidity"* is connected to two factors. On the one hand, the current and the prospective level of liquidity, compared with funding needs, must be considered. On the other, the rating reflects the ability of the institution to find new resources in case of need and to liquidate assets with minimal loss.

Finally, the "*sensitivity*" to market risk considers the possibility of deterioration of all the previous variables in the event of adverse changes in interest rates, foreign exchange rates or commodity and equity prices.

Sources

Information was gathered from:

FDIC website: http://www.fdic.gov/index.html.

FFIEC website: http://www.ffiec.gov/.

OCC website: http://www.occ.treas.gov/.

6. Conclusions

One of the self-regulatory issues raised by the European Commission Communication on Deposit Guarantee Schemes (DGS) is voluntary introduction of a common risk-based approach to adjust the contributions paid by DGS members. Increasing the contribution for credit institutions at more risk and reducing it for those at less provides incentives for better risk management and ensures fair treatment of banks and, thus, a level playing field.

This report has reviewed current approaches applied across the EU to adjust DGS contributions on the basis of information on the members' conduct, in order to investigate and compare the indicators applied and the methods used to adjust contributions. To complete the picture, the report has also described the methods applied by other DGS to monitor the conduct of their members, for instance to decide on support interventions or to apply one-off sanctions, even though their contributions are not adjusted to take account of risk-based data.

In general, DGS define contributions as a set percentage of a measure of exposure, generally related to the amount of covered deposits by the scheme. Risk-based systems adjust these contributions using one or more indicators of different aspects of their members' activities. In many cases, indicators are applied to classify DGS members into rating classes, each corresponding to a different adjustment to contributions. Only eight DGS (two in DE, FR, IT1, PT1, PT2, FI and SE) adjust the contributions of all their members, taking into account information on their risk profile, increasing the contributions of the members bearing a greater risk and reducing them for those at less risk. Among them, only IT1 has adopted an ex-post funded system. In two other MS (HU and RO) the DGS may increase members' contribution only if they are engaged in risky and unsound policies. Finally, although the Polish DGS has not adopted any indicator to adjust contributions, some risk-based information is included in the contribution base, such as the risk-weighted total balance sheet assets, the guarantees and endorsements and the remaining risk-weighted off-balance sheet liabilities.

Concerning monitoring systems, 9 DGS (DE1, IT2, PL, RO and the five Austrian DGS) currently supervise the activities of their members by collecting quantitative information on their financial soundness. Among them, the cooperative system in Germany (DE3) uses no qualitative data in the classification system, but adds quantitative information when a member bank is identified as "critical" and is placed under prevention management. In some cases observations are used to decide if/when to intervene in a preventive way to avoid failure of a member or to reduce the impact of the action by the DGS. In other circumstances, results are employed to sanction a member of the scheme in cases where the monitoring system has revealed an increase in its risk exposure or unsound risk management. Little information is available on some of these schemes. In some cases the activities of the members are monitored using quantitative information, such as balance-sheet data aggregated in indicators.

According to the information collected, the indicators applied by the DGS to adjust contributions or to monitor their members' activities generally take the form of ratios using balance-sheet data and/or financial statement data and/or other types of accounting data. Although the ratios applied across MS are currently rather heterogeneous and the variables taken into account to define them are not identical, they can be grouped into three main classes, each related to one particular aspect of the DGS members to be assessed. The first class aims at reflecting the capital structure and/or the solvency profile of the DGS members; the ratios in this class are quite similar across the DGS and are aimed at measuring, for instance, the capital set aside by the members for supervisory purposes or to cover their risk exposure. By contrast, the indicators in the second class measure the riskiness and/or exposure of the banks and are very different from one DGS to another; ratios in this group can be used, for instance, to investigate the volume/quality of the loans of the members or the granularity of their

exposure to specific sectors. The third set of indicators covers the profitability/income profile of the DGS members; many ratios in this class compare the income/profit of the schemes' members with their costs (for instance, their administrative/operating costs).

The report has also shown that the way indicators are used by the DGS to adjust contributions is somewhat similar. In general, the contribution base is first multiplied by a set percentage, reflecting the total annual contribution the scheme would like to collect, and is then decreased/increased by a risk-based percentage based on the indicators adopted by the DGS. Members are generally classified into rating classes, the best of which qualify for a decrease in their contribution and the worst for an increase. The reductions range, across the different DGS, from a minimum cutting the contribution to 90% to a maximum lowering it to 75%; the increases vary, taking the contribution up to between 120% and 140%.

The methods for obtaining the percentages are quite simple for some schemes, e.g. in PT and FI a single solvency/capital indicator is used. In others (FR, DE3 and IT1), more than one indicator is considered and they are subsequently aggregated, applying a weighting system, in order to obtain a final score/rating for each member. In some DGS the approach can be quite complex and include, for instance, a linear transformation which makes it possible to set the maximum reduction and increase and then obtain the adjustment for each member proportionally to their aggregate score.

One specific section of this report compared different approaches, identifying key factors in each system and illustrating the range of variation of the premium adjustment, DGS by DGS.

Moreover, since the Commission Communication recommended employing information already available to the schemes to build a common risk-based approach to DGS contributions, the report has also briefly discussed which data are currently accessible to the schemes and from which sources. For 12 DGS only information on deposits is available; for them voluntary application of a risk-based approach would imply collecting additional data. The remaining schemes have access to additional types of information, such as the financial statements of their members (14 DGS), their capital adequacy ratio (19 DGS) and the risk-weighted assets (18 DGS). Few DGS have access to other information, such as the entire balance sheets of their members, their income statements or other supervisory reports.

Most DGS collect data directly from their members (18 DGS) and/or receive information from the Central Bank (17 DGS). In the case of 9 DGS the Banking Supervisory Authority (BSA) is also involved.

Finally, the last part of the report described the risk-based system applied by the US DGS. The main features of the American approach concern the information available to the DGS and the procedure applied to determine the contribution to be paid by members. The general financial condition of the members is monitored by analysing quarterly reports to be transmitted by the institutions and periodic on-site examinations by a dedicated Federal agency. As regards the contributions, a two-step process, based on three quantitative capital ratios and on qualitative information, is used to assign the members to four risk categories, each corresponding to a different contribution rate. The objective of the ratios is to establish the institution's capital adequacy. The qualitative information, which is summarised in the form of the "CAMELS" composite indicator and obtained during the on-site examination, analyses the general situation and solidity of the members.

This report marks the first step towards proposing a possible risk-based approach for voluntary adoption by the EU MS: it lays the foundation for an open discussion guided by the EFDI WG dealing with this topic.

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