How the Bundesbank analyses enterprises' creditworthiness

In fulfilment of its monetary policy mandate as part of the Eurosystem, the Bundesbank grants temporary refinancing loans and intraday credit to domestic credit institutions. For the necessary collateralisation, the banks may pledge, among other assets, loans and bill-based loans to domestic (non-bank) enterprises.

Before the Bundesbank accepts a business loan as collateral, it applies its credit assessment system to examine whether the enterprise in question meets the eligibility requirements for central bank refinancing. This article describes the improvements in the methodology which have been introduced since the launch of monetary union in 1999 and explains what credit standards are set by the Bundesbank for accepting business loans as collateral.

A central bank's interest in a systematic balance-sheet-based corporate analysis goes beyond the issue of collateralisation. The knowledge gained in credit analysis is also relevant to the monetary transmission mechanism, for example. Moreover, the resulting insights into enterprises' financial position and profitability provide important information for assessing the stability of the financial system.

Underlying assets fulfilling the eligibility criteria

Changeover from two asset categories ...

Article 18.1 of the Statute of the European System of Central Banks (ESCB) stipulates that credit operations of the national central banks, such as the Bundesbank, be based on adequate collateral. At present, the eligible assets are still divided into two categories: tier one assets, ie bonds issued by public sector borrowers, banks or enterprises which fulfil uniform eligibility criteria specified by the European Central Bank (ECB), and tier two assets, which include non-marketable debt instruments (in Germany, trade bills and bank loans), which are defined by the national central banks in accordance with the minimum eligibility criteria of the ECB.

... to a single list of assets in future

On 29 August 2002, the Governing Council of the ECB made a decision to phase in a single list to replace the two-tier system. On 5 August 2004, there was a press release stating that the Governing Council had agreed to include bank loans in (as well as to exclude equities from) the single list but that further preparatory work was needed to settle the precise arrangements, including the date when the single list would enter into force. This decision permits a considerable expansion of the collateral base. In particular, the decision takes account of the underlying conditions in the German banking system and is also consistent with the tradition in the German central banking system that debt instruments vis-à-vis business enterprises can also be used for central bank lending. Until the changeover to monetary union, this had been the case for rediscount credit.[1] For credit institutions, the inclusion of bank loans means that their securities portfolio is more available for purposes of collateralisation in the money market and in payments. For that reason, in 2003 during a Europe-wide ECB consultation on the gradual introduction of a single list, the credit institutions were very much in favour of including bank loans.

Credit standards

Measure of creditworthiness: undoubted solvency

The quality criteria for the assets and their suitability for the monetary policy operations of the Eurosystem (and for the collateralisation of payment transactions) are already identical in both lists of the present two-tier system. The credit standards for tier one assets are those which lead to a rating in the upper to first-class range when classified by a rating agency. Business loans meet these criteria if such a rating exists in the case of liable enterprises or if the loans are classified as eligible assets by a national central bank. This means that the minimum standard for eligible enterprises in the Eurosystem is higher than it was for the Bundesbank's rediscount business prior to monetary union. Up to the end of 1998, an enterprise was deemed to be eligible if it was judged to be viable. The group of eligible enterprises has been restricted to viable enterprises which achieve a high to first-class credit rating. Even so, it is by no means the case that there is now a narrower range of enterprises whose bank loans are eligible for refinancing purposes. As before, eli-

1 Trade bills were not included, however. These had been becoming much less important and, for a number of years, had been listed only as tier two assets anyway.

gible enterprises are of widely varying size, from many different sectors and have a wide variety of legal forms (see the adjacent chart).

ECB examines compliance with credit standard

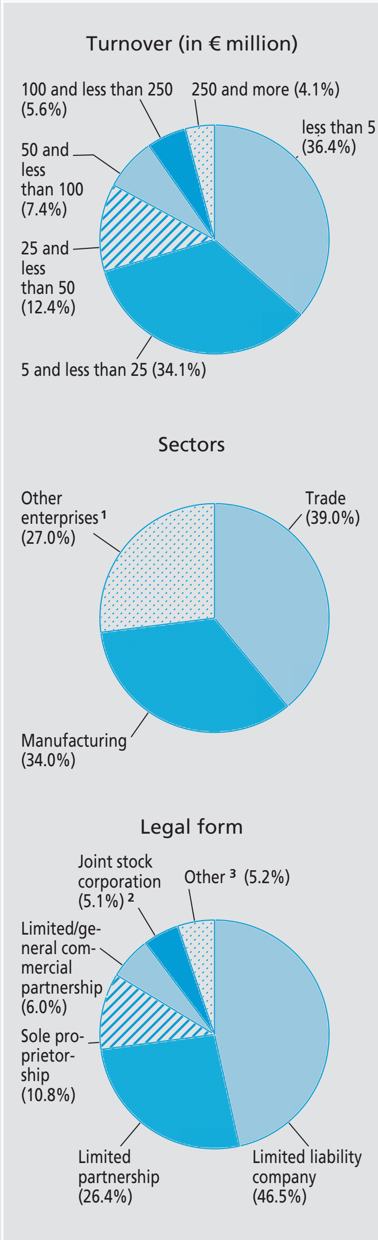
In the interests of a level playing field for banks and enterprises, the Bundesbank's credit risk assessment system is bound by guidelines which apply to all the national central banks in the Eurosystem that employ their own credit risks assessment systems for rating the eligibility of business enterprises.[2] Compliance with the minimum creditworthiness standard is verified by comparing the annually determined default rate[3] of the enterprises classified as eligible using a standard benchmark. This benchmark is based on empirical default rates of tier one assets. An application for court insolvency proceedings against the enterprise is in itself deemed to be the default of an asset.

Adapting the methods to ECB requirements

In order to comply with the more stringent benchmark set by the Governing Council of the ECB, it became necessary last year to apply a stricter criterion when determining the eligibility of the enterprises assessed by the Bundesbank. Otherwise, there would have been a risk of the quality of our central bank credit risk assessment system being below the standards agreed by the Eurosystem. The comparatively high default rates were a reflection of a deteriorating economic setting for German enterprises over an extended period, particularly of a growing ag-

2 At present, these are the Bundesbank, Banco de España, Banque de France and Oesterreichische Nationalbank.
3 Eligible enterprises which have become insolvent during the course of a given year expressed as a percentage of the total number of enterprises certified as eligible at the start of the year (one-year default rate).

Structures of eligible enterprises



1 *Of which* Real estate enterprises (17.1 %), construction enterprises (2.7 %), agricultural enterprises (2.5 %) and transport and telecommunication enterprises (1.9 %). — **2** Including commercial partnership limited by shares, limited liability company & Co limited by shares as well as mining companies under mining law. — **3** Other legal forms, eg cooperatives, associations under civil law, associations and foundations.

Deutsche Bundesbank

gregate output gap, ie the gap between real performance and potential. This led to an increasing percentage of the debtors deemed to be eligible for central bank refinancing actually not displaying the requisite viability. Changes to the insolvency law, which came into effect on 1 January 1999, were an additional factor. The new insolvency procedure means that enterprises, by means of restructuring, have a better chance to overcome economic difficulties that threaten their existence than was the case under the old law, when insolvency often led to the disintegration of the company. For that reason, petitions for insolvency were often made when economic difficulties are at a comparatively early stage. Both factors played a part in a doubling of the default rate of all the enterprises assessed by the Bundesbank. Given that situation, it was imperative that we adapted our credit risk classification system to the changed underlying economic conditions.

The Bundesbank's credit risk assessment system

Uniform systematic assessment

The system applied by the Bundesbank ensures that credit assessments are derived in a uniform and systematic assessment process which is transparent for the enterprises being assessed and which reflects the particular needs of refinancing operations. The system consists of two modules: a standardised part, which is a combination of discriminant analysis and an expert system, and the formation of the credit assessment, which ultimately determines eligibility for central bank refinancing.

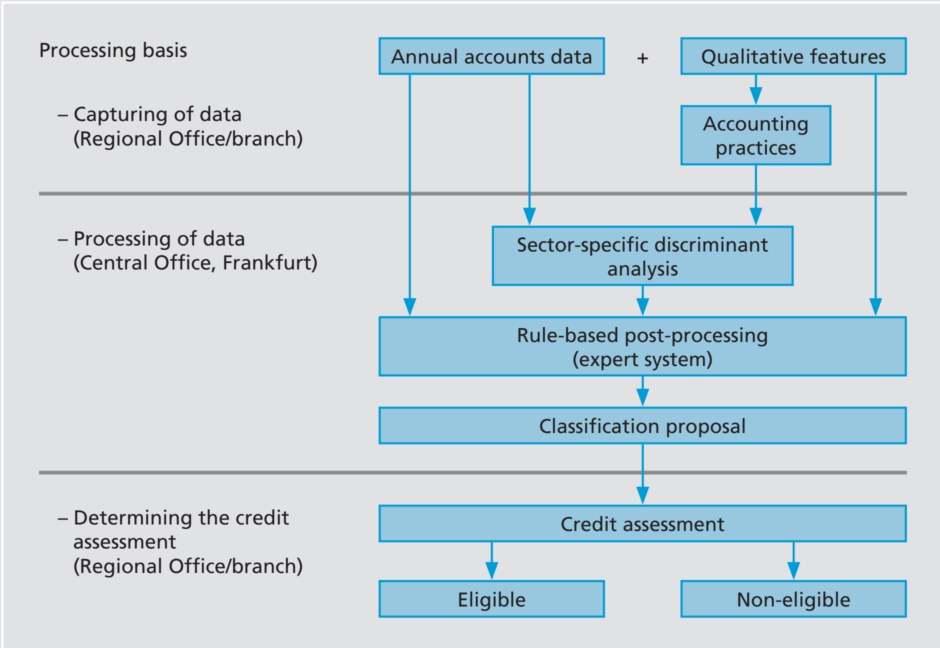
Use of discriminant analysis plus expert system

The method used by the Bundesbank (see the chart on p 63) is based on the annual accounts as the key source of financial information on enterprises. It employs a model-based processing of quantitative and qualitative data (discriminant analysis supplemented by an expert system). The system establishes a classification proposal for each enterprise that is to be assessed. This proposal serves as the basis for the binary credit assessment, ie eligible or ineligible. In establishing the credit assessment, the relevant bodies – Regional Office or Bundesbank branch – make use of additional information that cannot be included systematically in our standardised model-based processing.

Suitable model-based methods

Several of the risk assessment methods known in theory and in practice were examined by the Bundesbank to ascertain their suitability for central bank lending business. Some of these methods were unsuitable on account of various set objectives and data requirements, especially the large number of enterprises to be assessed (currently around 22,000 annually) and the necessity of individual assessment. For example, portfolio-oriented credit risk models cannot be used because they do not aim to measure individual credit risks but rather the effect of these risks in relation to a given formation of assets, such as the assets side of a balance sheet.

Flow chart of the credit assessment method



Deutsche Bundesbank

Methods based on market data[4] or external ratings do not meet the requirements of the Bundesbank. The methodology used would mean the virtual exclusion of nearly all small and medium-sized enterprises (SMEs) since SMEs do not have an external rating and are not listed on the stock exchange – and the associated market data are therefore unavailable. From the central bank's perspective, this would mean ruling out – owing to the chosen method – collateral assets which do indeed meet strict requirements.

Models based on annual accounts

However, models based on annual accounts data are, by their very nature, suitable for the Bundesbank's purposes because such data are widely available for the enterprises which are to be assessed. The aim is to arrive at a binary assessment, ie either yes or no. Differentiating between more than two rating classes, modelling credit risk changes (rating migrations) or analytical modelling of satisfaction quotients in the event of insolvency would go beyond the scope of assessing borrowers' eligibility as it is practised at present.

The (balance-sheet-based) credit risk assessment methods which are of relevance to the Bundesbank are essentially confined to parametric models. The approaches in question are characterised by the fact that more than

4 See, for example, the model of R Merton (1974), On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, *The Journal of Finance*, Vol 29, pp 449-470. In this very influential article, the borrowing of funds is interpreted from the perspective of the debt issuer as a purchase option on the enterprise with the capital as the premium and the value of the enterprise as the strike price. In this approach, the level of debt and the volatility of the corporate value are the crucial variables for determining the risk premium.

one factor is established on the basis of available variables (such as coefficients) from a sample and quantified assuming a distribution function. If necessary, they can be supplemented by elements of non-parametric approaches which do not depend on the availability of a frequency distribution of a given mathematical form for their application.

Discriminant analysis

The widely used parametric approach of discriminant analysis, which the Bundesbank has been using since the early 1970s, divides borrowers into two risk categories (eg high or low default risk) with the cut-off point being determined by the underlying overall ratio (Z score). In this model, the probabilities of default are established *ex post* by means of backtesting.

In respect of assessing a large number of enterprises with regard to their eligibility, parametric methods, such as logit and probit models,[5] do produce comparable results. In contrast to discriminant analysis, which postulates a linear connection between the dependent and explanatory variables and supplies a credit rating index, logit/probit models[6] also make it possible to estimate a probability of default which can be translated into a differentiating rating scale. This also provides some possibilities for improving the methodology, which are currently being studied, not least in view of new requirements in connection with the introduction of the single list.

Expert systems

Non-parametric methods, such as neuronal networks and expert systems,[7] are appropriate mainly for including "soft "qualitative factors. Even though these models can process a large amount and variety of data, the results are verifiable only to a limited extent, not very consistent and difficult to interpret.

Combination of models

An obvious pragmatic middle course is a combination of parametric and non-parametric elements, such as in the Bundesbank model with the use of an expert system downstream of the discriminant analysis. There is an advantage in combining both methods because they retain the transparency of the parametric methods and enhance flexibility by incorporating "imprecise" information, thereby improving the "hit accuracy" of the method.

Ongoing exchange of information

The Bundesbank monitors theoretical developments in order to continuously assess and improve the quality of the method it uses.[8] This is done through an ongoing exchange of information and expertise with various institutions. For instance, the practical implementation of a logit approach for Eurosystem pur-

5 See D Martin (1977), Early Warning of Bank Failure: A Logit Regression Approach, *Journal of Banking and Finance,* pp 249-276, and J Ohlson (1980), Financial Ratios and the Probabilistic Prediction of Bankruptcy, *Journal of Accounting Research,* pp 109-131.
6 Probit and logit methods represent non-linear regression models (ie non-linear in the parameters) for explaining either-or variables. As a rule, probit and logit regressions are estimated using a method which maximises the probability that the unknown coefficients would have produced precisely the distribution function to be modelled. While the cumulative standard normal distribution supplies the non-linear relationship in the probit approach, the estimate in the logit method is based on the cumulative standard logistical function.
7 If it is a matter of a combination of a discrete and continuous distribution of the variables to be explained, the model developed in 1958 by James Tobin and named after him (Tobit model) can, of course, also be used.
8 For a good overview on the current state of the debate, see, for example, A Oehler and M Unser (2001), *Finanzwirtschaftliches Risikomanagement,* Springer, Berlin *et al,* p 189 ff and A Saunders (1999), Credit Risk Measurement: New Approaches to Value at Risk and Other Paradigms, John Wiley, New York.

poses is currently being studied in a project of the European Committee of Central Balance Sheet Data Offices. The Bundesbank has been represented on this European committee consisting of experts from European central banks and statistics institutions since the end of the 1980s. One of the committee's key tasks is to look into the methods and workings of the credit risk assessment methods applied by the national central banks within the context of the standard requirements of the Eurosystem. Additionally, the incorporation of non-linear approaches to the optimisation of discriminant functions is being investigated in cooperation with university institutions.

Corporate data relevant to creditworthiness

Data collection

The data relevant to creditworthiness for the model-based processing from the annual accounts documentation are captured by the responsible Bundesbank regional offices or branches and adopted largely unchanged. However, various adjustments to the equity are taken into consideration, a step which sometimes has a considerable influence on the standardised credit assessment.

Inclusion of balance sheet reporting options

Not only quantitative data but also qualitative data on the enterprises are collected with particular attention being paid to accounting practices. This is because the analysis of the permissible valuation options pursuant to the German Commercial Code may change the informative value of the acquired quantitative annual accounts data. Guidance on this may be gained, for example, from the annex to the annual report pursuant to section 284 of the Commercial Code or from talks with the management. Factors that come into consideration are the amounts reported for provisions and the valuation of balance sheet items as a function of the incorporated production costs and the depreciations and writedowns that have been made. Additional points to consider are other determinants such as significant transactions in extraordinary income or the use of sale and lease back transactions. These factors are incorporated with varying weights in line with the importance of the accounting policy measures. Application thresholds are also applied to determine whether the measures in question are of significance in terms of their amount. When combined, a numerically expressed evaluation of the accounting practices is produced. These are deemed to be neutral if an enterprise exercises the options like the majority of the enterprises under assessment. Otherwise, given a profit-reducing accounting policy, they are to be rated as conservative and, given a profit-boosting accounting policy, as progressive. The result of this is that, after the discriminant analysis, the creditworthiness index is raised or lowered accordingly. The transition points in the evaluation of these three forms of behaviour are fluid.

Data preparation: funds statement and individual ratios

Standardised data preparation

The preparation of the data is geared to revealing the enterprise's capacity to meet its financial obligations in a timely manner. A relevant question is whether an enterprise generates financial resources on a scale sufficient to regard the default risk of a business loan pledged to the Bundesbank as being very small. For such a payment-oriented analysis, a funds statement is an obvious choice. Since the maximum residual maturity of the pledged loans is two years and that of the trade bill is six months, the focus is on the assessment of insolvency over the medium term.

Funds statement

The system transposes the captured data into a funds statement. This shows the net receipts, ie the resources available from ongoing business activity (cash flow). The cash flow is available to the enterprise to finance investment, distribute profits, repay debts or raise the stock of liquid funds. The funds statement indicates how an enterprise uses the cash flow or how it covers excess expenditure. The financial transactions are broken down by short-term and long-term borrowed funds and own funds. As an overall view, the funds statement reflects a structured and compressed picture of the financial flows arising from turnover, investment and financing processes.

Individual and sectoral financial ratios

A series of individual ratios is calculated from the data to assess major financial features and to improve the comparability of one enterprise with another. In order to take account of sector-specific features, each enterprise is assigned to an economic sector according to its main line of business using the Federal Statistical Office methodology and the enterprise's ratios are shown with the quartile of the relevant sector. A subdivision into a maximum of three turnover size categories enhances comparability. If ratios are available for a number of years, there may be some indications of how an enterprise has performed in its market and/or competitive environment.

Among the large number of financial ratios, interest is centred on those which have proven to be especially well suited to assessing insolvency, ie those which are characterised by a high degree of discriminatory power in distinguishing enterprises as either "eligible" or "ineligible". Principally, these are the liquidity, financing and profitability ratios.

– The cash flow is the key variable for assessing the ability to generate disposable funds from operating activities. As an expression of internal financing capacity, it is incorporated into the calculation of three ratios: the cash flow ratio shows the percentage of turnover that remains at the future disposal of the enterprise. Debt repayment capability is a yardstick for the ability to repay debts from internally generated inflows of funds. The capital recovery rate states which part of restricted assets has become available again through the turnover process. Information on the liquidity conditions is also provided by receivables and payables turnover, which expresses debtors and creditors arising from trade as a ratio of the operating receipts. High figures in the receivables ratio signify a matching binding of liquidity. Payables ratio data that depart strikingly upward on an inter-company comparison indicate an unusual use of times allowed for payments, ie possible liquidity problems.

– A key variable of the financing structure is modelled by the capital or own funds ratio (own funds as capital plus long-term proprietors' or partners' loans). This is one of the crucial variables for assessing the ability to sustain risk and therefore also has an impact, in particular, on the possibilities of access to borrowing from commercial banks.

– Profitability is assessed on the basis of the return on turnover (before tax) and the operational return is the outcome of the actual business activity.

Characteristics of eligible enterprises

Eligible enterprises are generally characterised by a sufficiently large inflow of liquid funds from operational business, a very sound provision with own funds and adequate profitability. The results for the individual ratios do display a considerable range but eligible enterprises can offset a weakness in the case of one ratio with strengths in the case of others. In other words, there is no rigid pattern with regard to a list of demands for each particular ratio. This is illustrated by way of an example in the chart on page 68 using the ratios for three eligible enterprises.

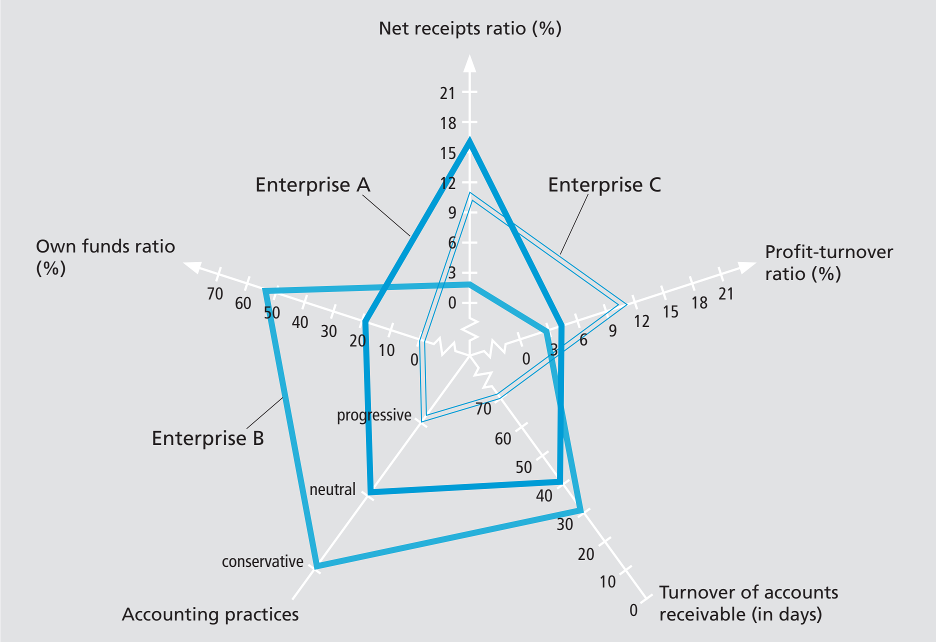
Enterprise A represents an eligible enterprise with largely balanced ratios and neutral accounting, corresponding roughly to the normal case. By contrast, the individual ratios of enterprises B and C present a more heterogeneous picture with regard to their creditworthiness information. For example, enterprise B more than compensates for its below-average return and its obviously weaker liquidity with its well above-average own funds ratio and more conservative accounting. In the case of enterprise C, the outstanding return and good liquidity offset the negative feature of progressive accounting, the fairly low provision with own funds and the weaker accounts receivable ratio. On the whole, the enterprises shown with their differing ratios display a comparable viability in terms of the Bundesbank's analysis. This approach, which departs from a rigid template, shows that the calculated creditworthiness index takes account of the many different determinants and is able to model the relevant compensation possibilities. The key factor for the credit assessment is, therefore, the overall picture presented by the financial circumstances, as is reflected by the overall ratio which is determined on the basis of the model.

Model-based classification proposal

Discriminant function provides initial credit assessment

The model-based analysis of the data is performed in two stages. The purpose of a discriminant function is to calculate an overall ratio for each enterprise, which provides an initial indication of an enterprise's creditworthiness (see notes on the methodology on page 70). The individual ratios are separated into three sectors (manufacturing, trade and other enterprises) and the ratios which have proved to be especially suited to classifying creditworthiness with regard to their plausibility and in statistical tests are processed in discriminant functions. The overall ratio is calculated from the aggregate weight-

Specimen ratio combinations (manufacturing)



Deutsche Bundesbank

ed individual ratios including the scaled accounting practices. If the overall ratio is above a discriminatory cut-off point, this provides an initial indication of the eligibility of the enterprise in question for central bank financing. The further the overall ratio lies above this minimum level, the more creditworthy the enterprise is generally likely to be. The further the overall ratio lies below the minimum level, the greater is the risk of default.

Expert system enhances discriminatory power...

To improve the accuracy of the system, an expert system is used downstream of the discriminant analysis (see explanatory notes on the methodology on p 70). Applying fixed rules, the expert system subjects a wealth of data to in-depth analysis. The data analysed are primarily financial information, but they also incorporate the legal form, the size and the age of an enterprise. The set of rules is divided into three parts. This means that almost 40 rules are applied separately to the enterprises combined in each of the manufacturing, trade and "other" groups. As a result, the expert system sets the value by which the overall ratio calculated by the discriminant function is to be changed. From this, it derives the classification proposal of "eligible" or "ineligible".

... and classifies

In principle, subdivision into more than these two creditworthiness categories would be possible with the overall ratio as a measure of creditworthiness and would not require a significant workload. This is currently under examination but not being practised. The primary aim is to classify the enterprises in terms of their eligibility for central bank refinancing.

This specific objective is what, first and foremost, differentiates the Bundesbank's credit assessment system from those used by the credit institutions and rating agencies. The latter classify quality mainly to frame terms and conditions that are appropriate to the risk involved, and that requires a multi-stage credit rating. In the long term, however, a subdivision into several rating categories would make sense for the Bundesbank. This would allow a better comparison with the credit assessment methods used by other central banks or other rating sources.[9]

High standard of creditworthiness usually sustained

The enterprises classified as eligible display a high standard of creditworthiness. They generally prove to be quite "cyclically robust", ie they are largely in the "eligible" range even in difficult cyclical circumstances. It is possible to note migration patterns especially in the case of enterprises which have an overall ratio calculated by the expert system that moves nearer to the minimum level defined as eligible. In this threshold range, even minor fluctuations in the figures of the annual accounts may lead to a change in the classification proposal determined by the method.

However, if an enterprise's overall ratio fluctuates over the cycle in the upper eligible range, there will generally be no resulting change in the classification; the enterprise is still classified as eligible. The relative size of the determined creditworthiness index is therefore crucial in terms of the risk of downgrading.

An *ex post* analysis reveals that, of the enterprises classified as eligible under the current version of the method on the basis of their annual accounts for 1999, almost three-quarters achieve the same rating on the basis of the annual accounts for 2002 as well.

Decision on eligibility

Classification proposal is starting point for credit assessment

The classification proposal has a large binding effect for the credit assessment to be set at the end of the procedure. Even so, the bodies with responsibility locally at the regional offices and branches take the decision on the final credit assessment. This is designed to ensure that facts which are of relevance to creditworthiness and cannot be taken into account in model-based processing are given individual consideration. Such facts may relate to developments after the close of the annual accounts, the assessment of the durability of changes in major items of the balance sheet or profit and loss account, the inclusion of the credit standing of affiliated enterprises (group accounts) or particular sector-specific features of an enterprise, which cannot be given adequate consideration in the model. Furthermore, contact with the enterprises means that notable changes in market position or in the management can be incorporated. The sum of this kind of information that can be used to form an overall picture may result in the credit assessment deviating from the classification proposal produced by the system. With due regard to compliance with the credit standards of the Eurosystem, however, there are

9 See M Bardos (2001), *Développements récents de la méthode des scores de la Banque de France, in Bulletin de la Banque de France,* No 90, p 73 ff.

Model-based part of the credit risk assessment method

The discriminant analysis and expert system serve the purpose of modelling an enterprise's creditworthiness in a single number. The discriminant function combines individual ratios into an overall ratio, the expert system changes the overall ratio after processing further data relevant to creditworthiness and the resulting overall ratio is produced as the outcome of the standardised part of the credit risk assessment method.

Discriminant analysis

Discriminant analysis is a statistical method which can be used to select from the large number of commonly used corporate ratios the corporate ratios which are significant with respect to the risk assessment, to weight them and to combine them into a single ratio for each enterprise. For this purpose, a sample with two groups of enterprises is formed. These contrast in terms of their creditworthiness: one is solvent and one is already insolvent. On the basis of these data, a (linear) discriminant function is determined with those individual ratios which classify these enterprises as accurately as possible in terms of their creditworthiness. To which of the two groups an enterprise belongs is decided by a comparison of the enterprise's overall ratio with an overall ratio that separates solvent from insolvent enterprises. If the overall ratio of an enterprise lies above this cut-off point, it is to be assigned to the group of enterprises which, with a high degree of probability, are solvent. Otherwise, it is assigned to the group which is less markedly solvent. In the discriminant analysis, the parameters of the discriminant function can be defined so that the classification errors – (I) acceptance of an insolvent party or (II) rejection of a solvent party – are minimised.

Accurate classification and discriminatory power are vital to the efficiency of the discriminant function. Classification errors may occur in either direction although naturally the error of classifying insolvent enterprises as solvent should be as small as possible. Discriminatory power is geared to the following criterion: an enterprise should be grouped all the more readily with the solvent or insolvent enterprises, the further its overall ratio is above or below the cut-off point in either case. Statistical tests confirm the suitability of discriminant analysis for the credit risk assessment procedure. Nevertheless, the results can still be improved by employing an expert system.

Expert system

The expert system allows corporate features not (directly) taken into account in the discriminant function to be used for the risk assessment. Furthermore, depending on the criteria, the data are studied from a static or dynamic angle. The expert system determines by how much the overall ratio produced by the discriminant function is to be changed. Above all, the use of the expert system is particularly important wherever enterprises with an overall ratio close to the cut-off point are to be assigned to the eligible or ineligible group.

The expert system is an artificial intelligence method. It assesses corporate features using rules in the form of if-then relationships. An example of such a relationship is: “If overall performance remains more or less the same and the return on turnover rises, then the overall ratio will rise”. So that the system can compare a rule with the relevant numerical feature value of an enterprise, the feature value likewise has to be verbalised. The feature value is characterised using a so-called inclusion function, say, by one of the characteristics “risen – roughly identical – fallen”. The inclusion function also determines the degree to which the relevant characteristic is present. The degree to which a characteristic is met and the weight of the relevant rule determine their impact on the change in the overall ratio. The values of the relevant rules are combined in such a way that the overall ratio from the discriminant analysis does not increase or decrease by more than one set value for any enterprise. This is done to avoid “watering down” the discriminant analytical core of the method.

Deutsche Bundesbank

strict limitations on "upgrading", which is therefore possible only for good reasons.

Communicating the credit assessment

On grounds of confidentiality, the relevant regional office or branch informs only the assessed enterprise of the credit assessment, ie "eligible" or "ineligible", and, upon request, the credit institution that wishes to use the business loan as collateral. The bodies with local responsibility are available to the enterprise to explain the credit assessment and make it easier for them to understand. If requested, they will prepare an analytical overview showing how the corporate data have been converted into the financial statement and into individual ratios. The overview also contains a cross-comparison of individual ratios with enterprises in the same sector and of a similar size. The size of the overall ratio provides an indication of how secure eligibility is. Interested parties can find a detailed account of the evaluation procedure in the (German-language) booklet *Beurteilung der Bonität von Unternehmen durch die Deutsche Bundesbank im Rahmen der Refinanzierung deutscher Kreditinstitute.*[10]

The Bundesbank's credit assessment provides the enterprises with an independent outside evaluation of their economic circumstances and, if applicable, the credit classification "eligible". This may prove to be useful in their business dealings with credit institutions and other enterprises.

In terms of using the credit assessment as a basis for a decision on accepting collateral or not, a more differentiated scale of creditworthiness is, of course, superfluous. Nevertheless, the lack of such a differentiation – especially in the case of enterprises not classified as eligible – may raise questions about information on the enterprise's own creditworthiness. In actual fact, the range of creditworthiness in the case of ineligible enterprises is very broad. Owing to the fact that the credit standards for eligibility are very demanding in themselves, this is only to be expected and by no means implies that there are serious doubts about the viability of enterprises which are not given this certification. In the case of many of these enterprises, it may be assumed that they have orderly credit relations with their banks and are, therefore, creditworthy. Depending on their creditworthiness, the enterprises may post collateral as backing for the lending bank. By contrast, in a procedure involving the central bank – where the credit relationship is between the central bank and the commercial bank – there exists no safeguard other than the undoubted creditworthiness of the collateral asset that is the business loan. At most, an enterprise that is ineligible owing to its own economic circumstances can be upgraded only by means of a guarantee given by an eligible counterparty.

Reconciliation of critical issues

Critical issues with regard to eligibility for central bank refinancing can best be settled in talks between the enterprise and the responsible regional office or branch. The Bundesbank places particular value on such an exchange since – as indicated – not only the figures in the annual accounts but also the indi-

10 The booklet may also be downloaded from the internet at www.bundesbank.de/download/gm/gm_broschuere_bonitaetunternehmen.pdf

vidual circumstances of the enterprise are relevant to the credit assessment. The latter can best be discussed during a meeting on the balance sheet. Furthermore, the Bundesbank endeavours to communicate the results of its credit assessments to the enterprises in a transparent and intelligible manner. Especially in the event of a negative change to the credit assessment, this also means giving an account of the main reasons for the decision.