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The Deutsche Bundesbank's Large Credit Database (*BAKIS-M* and *MiMiK*)[1]

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1. Introduction

Given the importance of credit risk for the stability of the financial system[3], many countries (e.g. France[4], Belgium[5] and Spain[6]) centrally collect indebtedness information in order to provide both financial institutions and regulators with information about the distribution of the indebtedness of their current or potential borrowers.[7] Particularly the collection of information about large credits, which are natural candidates to be a major threat to financial stability, has been a long-standing matter of interest.

The origins of the idea of setting up credit registers date back to the mid-1930s following the Great Depression (see Deutsche Bundesbank, 1998b). In Germany, for example, a credit register was set up in 1934, when reporting requirements were introduced to monitor the total indebtedness of large borrowers in order to avoid, in the case of insolvency of major enterprises, the

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1 "Large credits" ("Millionenkredite") are understood as credit exposures equal to or exceeding € 1.5m per borrower or single borrower unit (i.e. groups). BAKIS-M is an abbreviation for "Bankenaufsichtliches Informationssystem für Millionenkredite und Großkredite". "MiMiK" is an abbreviation for "Mikrodatenbank Millionenkredite", a subset database of BAKIS-M that is being used for research purposes.

2 This article represents the author's personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank. I thank Ingrid Seitz, Björn Wehlert and Michael Ritter from the Deutsche Bundesbank's credit register section for their invaluable support in putting together accurate information, and Thilo Liebig, Klaus Duellmann and Christoph Memmel for providing me with valuable comments.

3 The continued fundamental importance of credit concentration for banks' solvency, for example, is addressed by the Basel Committee on Banking Supervision in the "International Convergence of Capital Measurement and Capital Standards: A Revised Framework", more commonly known as Basel II.

4 See http: // www.banque-france.fr / gb / instit / telechar / services / i115gb.pdf.

5 See http: // www.bnb.be / pub / 04_00_00_00_00 / 04_01_00_00_00 / 04_01_01_00_00.htm?l=en&t=ho.

6 See http: // www.bde.es / servicio / cirbe / cirbee.htm.

7 However, in the US, for example, there is no credit register comparable with those of many European countries.

collapse of a single bank with a loss of confidence in the whole banking system. Credit registers in other European countries were set up mostly in the aftermath of the Second World War.[8] As a rule, all data are collected electronically nowadays, providing many opportunities for more in-depth and systematic analyses with often very extensive datasets.

In general, credit registers with data on individual lending relationships between borrowers and lenders can serve many purposes. Yet, most credit registers serve a dual role of being prudential and informative[9], thereby affecting both credit business and bank regulation (see, e.g., Bundesbank, 1998b). During the last few years, their information set has been extended to include new, often complex financing products, and the international exchange of data has also been stepped up in order to take into account the growing market integration.

The German credit register was established to give supervisors a better insight into credit concentration of individual credit institutions.[10] For this reason, "small" loans have not been and are currently not included in these statistics. However, it can be shown that the German credit register gives quite an accurate reflection of all credit relationships and is potentially very useful for many other purposes.

Credit registers have internationally been extensively used for research projects (see, for example, Sapienza 2002; Saurina and Trucharte 2004). In recent years, research based on credit register data has also started in Germany (see, for example, Heid et al. 2004). For this purpose, a research database (*MiMiK*) was created as a subset of the large credit database (*BAKIS-M*). This database is more helpful to researchers because it exhibits a panel data structure for two hierarchical levels: the borrower level and the borrower unit level.[11] In general, the MiMiK database can be used by researchers. However, for confidentiality reasons the data may only be used on the Bundesbank's premises and is subject to restrictions.

In the following, I will first provide an overview of the legal framework underlying the German credit register in section 2. Section 3 gives an insight into the structure and composition of the data used for research purposes based on straightforward examples and briefly highlights potential research questions. Section 4 concludes.

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8 France introduced its credit register in 1946, Belgium in 1944 and Spain in 1962.

9 In Germany, reporting institutions have been regularly notified about the total indebtedness of their borrowers since 1962. Additionally, reporting institutions have been allowed to ask for credit information on *potential* borrowers since 1998 (advanced inquiries).

10 The following article concentrates very much on topics related to banking supervision.

11 The difference between the two is explained in section 3 and specifically section 3.1.

2. Description of the Large Credit Database (BAKIS-M)[12]

This section presents a brief overview of the legal requirements on which the German credit register is based, with a focus on issues that are relevant for research purposes.

2.1 General Remarks

In order to regularly monitor the risk in credit portfolios of banks based in Germany, the Deutsche Bundesbank maintains a credit register for credit exposures exceeding a threshold that is considered to be material for the solvency of banks. The threshold for credit exposures to be reported[13] (*"Millionenkredite"*) is currently set at a nominal level[14] of € 1.5m according to section 14 of the German Banking Act (*Kreditwesengesetz*) (see Deutsche Bundesbank, 2002).[15] This threshold is applied to borrowers and single borrower units alike, in order to account for contagion.[16] In addition, the Deutsche Bundesbank constantly monitors large exposures (*"Großkredite"*), where the exposure size is based on regulatory capital consumption according to section 13 of the Banking Act.[17] In the following, I will focus on section 14 information only, as this forms the basis of the MiMiK database and research activities.

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12 Further information on the German credit register can be found on the Deutsche Bundesbank's website at http: // www.bundesbank.de / bankenaufsicht / bankenaufsicht_kredit.en.php?print=no&.

13 The details of the reporting procedure are laid down in the Regulation governing large exposures and loans of € 1.5m or more. See Deutsche Bundesbank (2000).

14 For credit derivatives, the "credit equivalent amount" has to be considered.

15 The legal basis for large credit reporting in Germany is constituted by section 14 read in conjunction with sections 2 (2), 19 and 20 of the German Banking Act. The Sixth Act Amending the Bank Act came into force on 22 October 1997. See Deutsche Bundesbank (2002).

16 The Deutsche Bundesbank asks the banks to provide information about single borrowers in order to "ascertain whether a borrower, together with other persons and / or enterprises, constitutes a single borrower unit as defined in section 19 (2) of the Banking Act" (Deutsche Bundesbank 1998a). Borrower units are mutually dependent legal entities, which are supposed to be likely to encounter financial problems given that one of the other dependent firms faces distress. Further information can be found in section 19 (2) of the Banking Act, see Deutsche Bundesbank (2002).

17 For large exposures, the reporting threshold is at 10 % of the total regulatory capital of a bank. Large exposures to a single borrower / single borrower unit must not exceed 25% of the total regulatory capital of a bank. These regulations aim at *restricting* concentration risk and are based on EU law.

2.2 Reporting Requirements

Pursuant to section 14 of the German Banking Act, banking institutions[18] have to report their exposures[19] of € 1.5m or more to individual borrowers or single borrower units to the Deutsche Bundesbank on a quarterly basis.[20] Over time, some reporting requirements have been adapted to new developments in the banking industry, examples being the emergence of new financing techniques and increasing international economic integration as shown below.

First, the regulatory reporting threshold was adjusted for inflation.[21] Second, the definition of "credit exposure" itself and the set of financial institutions that have to comply with section 14 have been changed over time. From 1948 until 1993, the reporting threshold was DEM 1m. Starting in mid-1993, the threshold was raised to DEM 3m and then set to € 1.5m following the introduction of the euro. By 1998, substantial changes to the definition of credit exposure and reporting institutions had been made; for example, credit derivatives were added to the definition.[22] These reforms more than offset the sharp drop in the volume of reported loans originated by the 1993 threshold

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[18] More specifically, the following firms fall under this category (Deutsche Bundesbank, 1998a, 11–12):

- Domestic credit institutions,
- Financial services institutions within the meaning of section 1 (1a) sentence 2 no. 4 of the Banking Act (own-account traders),
- Branches (section 53 of the Banking Act) of foreign credit institutions or own account traders in Germany provided they are not subject to the regulations of the European passport,
  - Pursuant to section 2 (2) of the Banking Act
  - The Reconstruction Loan Corporation *("Kreditanstalt für Wiederaufbau")*
  - Social Security funds,
  - The Federal Labour Office (*"Bundesanstalt für Arbeit"*) and
  - Insurance enterprises,
- Risk capital investment companies,
- Branches of credit institutions and own-account traders domiciled in another state of the European Economic Area even if they are subject to the regulations of the European passport,
- Financial enterprises within the meaning of section 1 (3) sentence 1 no. 2 of the Banking Act (factoring companies).

[19] Exposure is defined in sections 19 and 20 of the Banking Act. It is important to notice that securities in the trading portfolio are not included. Moreover, bonds are incorporated in the database, while stocks are not.

[20] See Deutsche Bundesbank (1998a, 11 et seq.; the reporting dates are 31 March, 30 June, 30 September and 31 December).

[21] This was also a particular consequence of the increasing number of reported loans. After the threshold was adjusted, the percentage of loans decreased roughly to one-half, while overall credit exposure did not decline noticeably. The latter outcome was seen as a justification for the adjustment of the threshold.

[22] See Deutsche Bundesbank (1998b). However, in contrast to the other EU countries, credit lines do not have to be reported. See European Central Bank (2003).

Table 1

Reporting of large credit exposures pursuant to section 14 of the Banking Act[23]

Changes		
From reporting year	**Credit definition, financial institutions, other**	**Exposure threshold**
1948[24]		DEM 1m
1993[25]	–	DEM 3m
December 1995[26]	• Expansion of the exposure definition • Expansion of the "single borrower unit" definition[27]	–
December 1998[28]	• Extension of financial institutions addressed • Simplification of the reporting procedure	–
July 2002	–	€ 1.5m
June 2005	Data exchange with six EU countries[29]	–

reform. To account for the increasing internationalisation of banking business, a seven-country agreement on the cross-country exchange of data on the indebtedness of borrowers was reached in 2005.[30] The set of information provided by the credit registers of these countries is relatively similar concerning the liable reporting institutions and the borrowers that are covered. As regards the reported items, however, there are some differences. While credit lines are not reported in Germany as opposed to the other countries, for example, replacement costs on derivatives are only reported in Germany. Furthermore, some

23 Further information can be found in Deutsche Bundesbank (1998b), for example.

24 More specifically, a reporting requirement for large credits has existed since the mid-1930s (Deutsche Bundesbank 1998b).

25 Entry into force of the Fourth Act Amending the Banking Act regarding large credit reporting.

26 Entry into force of the Fifth Act Amending the Banking Act regarding large credit reporting.

27 The borrower units were extended to risk units, i.e. if any mutual dependence exists which may cause a domino effect.

28 Entry into force of the Sixth Act Amending the Banking Act regarding large credit reporting.

29 The six countries are Austria, Belgium, France, Italy, Portugal and Spain. See Deutsche Bundesbank (2005).

30 These countries agreed a Memorandum of Understanding in 2003, in effect since mid-2005, on monitoring cross-border credit concentration, which is more vital than ever now that financial institutions are increasingly operating EU- and world-wide (ECB, 2003).

countries (notably Spain and Italy) require information about credit terms, e.g. the maturity, currency and loan quality, while most other countries including Germany do not.[31]

One of the most vital functions of the German credit register is to dynamically administer the borrower unit system. Within the group of the seven cooperating European countries, it is only Austria who also requires borrower unit based reporting.[32] This is a major reason why a considerable portion of credit is below € 1.5m. The implications of the BAKIS-M reporting threshold for research purposes are illustrated below for the MiMiK database.

3. Structure and Composition of the MiMiK Database

3.1 Structure and Composition[33]

The MiMiK database based on section 14 credit currently spans the time period from the third quarter of 1993 to the present.[34] The credit exposure is stored for two hierarchical levels based on a sophisticated BAKIS-M procedure.[35] At the lowest, most disaggregated level, the database provides the exposure of each lender to a borrower (*borrower level*). Credits of all lenders to a certain borrower are added up to form the total indebtedness of this borrower to the national financial system. In addition, credits of all borrowers belonging to the same borrower unit are aggregated to form the total indebtedness of the borrower unit (*borrower unit level*).[36] Table 2 presents a stylised example to distinguish between the two levels, showing the credit amounts at the end of the respective quarter. In the stylised example, a firm (Borrower 1) owes 2000 units to Bank A and 3000 units to Bank B, while another firm (Borrower 2) belonging to the same borrower unit (Borrower unit 1) owes 1000 units to Bank B at the borrower level. Analogously, the Borrower unit 1

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31 Detailed information about the major differences can be found in European Central Bank (2003), p. 12 et seq.

32 However, the reporting threshold in the other EU countries is substantially lower than in Germany. Portugal has the lowest threshold, at € 50, with that of Spain at € 6,000, Belgium at € 25,000, Italy at € 75,000, France at € 76,000 and Austria at € 350,000. Moreover, the reporting frequency and the regular frequency of feedback to reporting institutions is monthly for all countries except Germany. See European Central Bank (2003).

33 Further information can be found in Deutsche Bundesbank (1998a).

34 In BAKIS-M, credit data are currently available online for regulators and banks for the last six years. Older data are on file and can be provided on request. The latest available data in electronic form date back to June 1993.

35 This procedure accounts for double-counting if the exposure of aggregated from the borrower to the borrower level, for example.

36 The difference between borrower and borrower units was explained in footnote 16.

is exposed by 2000 units to Bank A and 4000 units to Bank B at borrower unit level. The total indebtedness of Borrower 1 to the national financial system amounts to 5000 units, that of Borrower 2 to 1000 units and that of Borrower unit 1 to 6000 units.

Table 2

Credit exposure at the borrower level and borrower unit level

	Borrower unit ID	Bank A	Bank B	Total indebtedness	Level
Borrower 1	1	2000	3000	5000	Borrower
Borrower 2	1	–	1000	1000	Borrower
Borrower unit 1	1	2000	4000	6000	Borrower unit

Under the current methodological regime, the aggregation of credit exposure in the MiMiK database beyond the available figures, such as an aggregation within industry sectors, can result in a double-counting of exposure,[37] as the BAKIS-M regime does not provide for a straightforward aggregation.[38] It is therefore vital to carefully take the respective caveats for exposure aggregation into account. However, there are future plans to develop an adequate additive regime in BAKIS-M also for other hierarchical levels, for example also for industry sectors.

Moreover, it is vital to account for the implications of the reporting threshold for research purposes. Given that the threshold is applied at the borrower unit level, single exposures may also be considerably below € 1.5m. Besides, another meaningful rule is that reporting includes all exposures that exceeded € 1.5m once during the respective quarter (case 1 in the graph below), so the reported exposure may even be zero. Furthermore, as a significant number of the credit loans in Germany are permanently below the € 1.5m threshold, some lending relationships are not recorded at all (case 2), while others enter and exit the database over time (case 3). Specific examples for the three cases are presented below for clarification. In case 1, the indebtedness at the beginning of the quarter exceeded the € 1.5m reporting threshold; the credit would therefore be reported at its final balance of € 0.3m, although the amount is far below the reporting threshold. In case 2, the indebtedness is permanently below € 1.5m. Consequently, the credit relationship is not entered into the MiMiK database. In the third case, the credit exposure would not enter the statistics in the first period, while for the second period the balance would be € 1.25m.

[37] This is especially the case if guarantees are netted against indebtedness and in the case of joint liabilities.

[38] Rather, its strength lies in an appropriate and broad data representation at certain hierarchical levels.

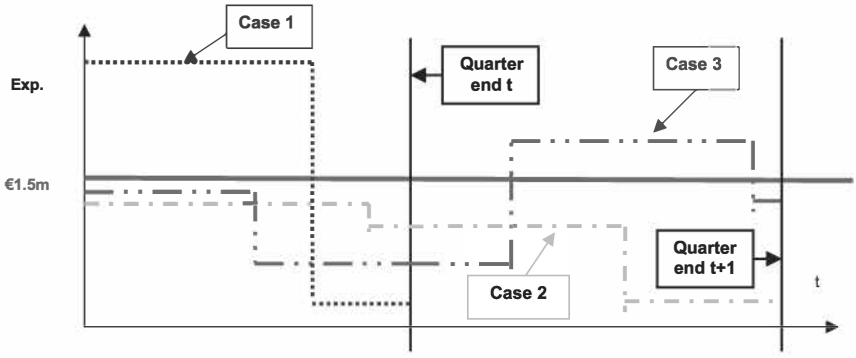

Figure 1: Reporting of large credit and size threshold

The total indebtedness of each lending relationship is subdivided into on-balance sheet credit and off-balance sheet transactions.[39] The total credit is further disaggregated into derivatives, guarantees for derivatives, securities, guarantees and warranties, lease receivables, mortgage loans, publicly guaranteed loans and interbank loans.[40] In this context, the credit reports also provide information on the extent to which a bank's loan to a given borrower is guaranteed by another bank.[41]

The MiMiK database collects other information about the borrower besides credit exposures. This information set features the borrower's name, post code, domicile, ISO country code, legal form, assignment to a borrower unit and industry sector. As for the lender, the name and banking group are recorded.[42]

Each borrower is assigned a unique serial number upon entry into the credit register. In the case of an acquisition, the acquiring borrower's ID remains unchanged, while a firm created by a merger is treated as a new borrower. If a borrower becomes insolvent, the date of the legal insolvency is stored as soon as a report is published in the Federal Gazette (*Bundesanzeiger*).

It has been suggested that, within the next few years and in the context of the forthcoming implementation of Basel II, additional borrower information, such as borrowers' creditworthiness, should be collected in the German credit

39 According to section 19 (1) sentences 2 and 3 of the Banking Act, respectively.

40 Further information can be found in Bundesbank (1998a, 58 ff.).

41 The Bundesbank's large credit database ensures that, when calculating the total indebtedness, the loan and the respective guarantee are netted so that no double counting occurs on the borrower level (Bundesbank 1998a, 98 f., example on 101 f.).

42 Further information about the borrower and lender information collected can be found in Bundesbank (1998a, 48 ff.).

register.[43] From a regulatory viewpoint, this would enable a link to be established between the exposure size and the probability of default, thereby clearly improving large credit monitoring. In addition, cross-border credit data exchange has been used to enrich the national credit register since mid-2005, thus giving an added boost to the monitoring of the total indebtedness of internationally active borrowers.

3.2 Descriptive Statistics

The German credit register has taken on enormous dimensions; for example, there were over 500,000 firm-bank relationships in the fourth quarter of 2005. The volume of the large credit exposures in the database at the end of December 2005 totalled roughly € 7.8 trillion, or nearly 70 % of the total credit volume in Germany.[44] While the coverage of interbank credit is generally almost 100 %, the coverage of corporate credit is roughly 60 % and for household debt around 20 %. The average total indebtedness is € 13.5m and the median is roughly € 1.8m, i.e. for almost 43% of the borrower-lender relationships the exposure is below € 1.5m. These figures suggest overall that, despite the relatively high reporting threshold compared to other countries, the MiMiK database covers a broad subset of the market and allows for comprehensive research approaches.

3.3 Research with the MiMiK Database

The MiMiK database as a subset of the German large credit database (BAKIS-M) represents an important instrument for future research projects on financial stability issues as a complement to ongoing credit concentration monitoring.[45] Besides, the MiMiK database may be merged with banks' and firms' balance sheet data. This will create an extensive range of research opportunities, such as analysing the determinants of lending relationships and SME financing.

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[43] Other variables of interest that are partly available in some of the other six EU countries would be information on the maturity of credit, price information and the purpose of a loan, for example. However, the incorporation of additional items ultimately requires cost-benefit considerations based on national preferences.

[44] The figures on the coverage of the database are based on own calculations.

[45] The MiMiK database served as a database for a study on the German bank lending during emerging market crises by Heid et al. (2004), for example. Besides, Buch et al. (2006) use the database to investigate the heterogeneity in lending and sectoral growth.

4. Outlook and Concluding Remarks

The German large credit database (BAKIS-M), created in the mid-1930s in the aftermath of the Great Depression, represents a valuable source of data for the monitoring of credit, thereby protecting financial stability. Moreover, the database allows regulators to study credit portfolio diversification and the transmission of macroeconomic shocks to the banking sector, for example. More recently, a subset database (MiMiK) which is suited to research projects has been created. Despite the relatively high reporting threshold in Germany, the database has a broad market coverage given that the threshold applies for borrower units. Thereby, the MiMiK database offers a wide range of research topics.

However, the current dynamic development in the credit markets and ongoing improvements in banks' IT systems may make it vital and feasible to include additional information in the future, e.g. information about the borrowers' creditworthiness. This would be desirable from a prudential, informative and scholarly perspective, in order to maintain the current richness of the dataset and thereby enable it to serve its intended purpose.

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