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Deutsche Bundesbank's Corporate Balance Sheet Statistics and Areas of Application*

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Introduction

When analyzing the German business enterprise sector the official data material mostly used are the national accounts and special reports of the manufacturing sector (including mining). These sources contain aggregated data. Even if the industry statistics now are in principle available for micro analysis (see Wagner 2000) the information will be restricted to a relatively small number of items. Much more details can be found in balance sheet statistics of non-financial enterprises. But in Germany the access to such a data base is difficult as no (longer) official balance sheet statistics are published. However, a few commercial and research institutions collect firm data. Their limitations are: Mainly very large enterprises (which have to publish their accounts), a small number of firms, short time series, etc. A positive outlier is the corporate balance sheet statistics prepared by the Deutsche Bundesbank which is the best and most comprehensive firm data set in Germany. Traditionally the analysis of the sample is done on a more or less aggregated level. Meanwhile a few projects have been finished using micro data and modern econometric techniques.

The structure of the paper is as follows: The first section gives some details about the origin and the representativeness of the Bundesbank's firm data base. Afterwards recently published studies using this material are surveyed. The next sections discuss the access to the data and the application to university courses. Finally an outlook is given with respect to an international dimension. A European firm data base is described where the Bundesbank's statistics play an important role and, furthermore, possible implications of the European Monetary Union (EMU) for the data set are mentioned.

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1. A few details about the data

The current Bundesbank's corporate balance sheet statistics which was created in the mid sixties are based on the annual (unconsolidated) accounts submitted in the context of the rediscount business.[1] These accounts are the basis of the prescribed examination of the creditworthiness of parties to bills of exchange. According to the Bundesbank Act (meanwhile modified due to EMU), the Bundesbank is required to purchase bills „backed by parties known to be solvent". As a result comprehensive source material in the form of detailed profit and loss accounts and balance sheets is available only for these economic sectors in which the trade bill is an important financing instrument. Therefore, the manufacturing and construction sectors as well as the wholesale and retail trade sectors are primarily included.

Although the west German base material of roughly 55,000 annual accounts represents only 4 % of the total number of enterprises, 60% of the total turnover of the corporate sector (compared to the official turnover tax statistics) are covered by the Bundesbank sample. In the case of manufacturing the coverage is even much better. For east Germany, however, the base material is less extensive. With 5,000 accounts it represents only 25% of total turnover. This sample is too small to allow for representative calculations of the enterprise sector's financial situation in the new Länder. The west German material varies greatly in the coverage of different sectors, size classes, and legal forms. While the coverage ratio within sectors varies from 25% to 70%, the differences with respect to size are larger. Small enterprises are clearly underrepresented whereas large enterprises come close to an overall survey.

Two aspects are of special interest. First the large firm bias which is described just above. The relatively poor representation is a crucial problem but one has to hold in mind that contrary to other data sets small firms are included at all and that this group even has the majority compared to the number of all firms. Second according to the collection mechanism a significant quality bias seems to exist. But the bias may be less dramatic than often thought. On the one hand a comparison with the official insolvency statistics shows that the difference of the insolvency ratios is surprisingly small. On the other hand the distribution of the own funds and profit ratio shows that also low quality firms are included. An explanation may be that beside the traditional collection mechanism accounts of other trade credit

[1] Here the data set and its origin before the beginning of the EMU are described. Such a procedure is justified as until now the enterprise data published and analyzed range in most cases at best to 1998. Further details about the Bundesbank's firm data are included in Deutsche Bundesbank (1998).

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parties are also requested, firms on which the rediscounting commercial bank often has no direct information.

2. Studies using the Bundesbank's corporate balance sheet statistics: a survey[2]

Two groups of studies must be distinguished: Those using more or less aggregated data and those analyzing micro data. The first group is based either on the method of expansion (here the representativeness of the sample is increased as the large firm bias is reduced) or on the cylindered (balanced) sample or a combination of both. The level of aggregation differs: All firms together or differentiated by industry, legal form and / or size class. First I want to mention studies of the Bundesbank and its research group, second recently published investigations from outside the Bundesbank. Afterwards available micro studies are summarized.

Traditionally the Bundesbank publishes a report on the profitability and financing of west German firms each year (e.g. Deutsche Bundesbank 2000). Meanwhile several articles on the same subject for east Germany are available, too. Additionally a lot of other firm-specific topics are (but not regularly) discussed in the Monthly Report; one prominent example is the analysis of economic recessions with respect to firm balance sheet data (Deutsche Bundesbank 1995). Based on a research project Stöss (1996) tried to check the existence of the credit channel in Germany as part of the monetary transmission mechanism by applying the Bundesbank's enterprise data.

The articles of the external data users Behr and Bellgardt (1998 and 2000) are interesting in several respect: First the authors test different specifications of investment equations including a sensivity analysis with respect to variables and classification of firm groups to detect hints for possible liquidity restrictions of west German enterprises; second they apply paneleconometric methods to the Bundesbank's data (from the beginning of the seventies to the nineties); third they exploit published data based on expansion and aggregated according to different sectors and branches. Größl et al (1999) try to find out whether the Bundesbank's firm data (aggregated by legal form and size class, time period from 1987 to 1996) provide indications whether the risk position of small- and medium-sized firms has worsened in the last few years. The methods applied are descriptive statistics and time-series regressions.

Even if the Bundesbank's data set is more than 30 years old the first study on individual firm data and using modern paneleconometric techniques was

[2] No completeness can be guaranteed.

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published in 1999. Kremp et al (1999) analyzed the determinants of the borrowing behavior of 2,900 French and almost 1,300 German firms (in both cases balanced panels from 1987 to 1995) as one part of a comprehensive comparative study on corporate finance in both countries. Meanwhile two other projects using the Bundesbank's micro data (unbalanced panels from 1987 to 1997) and concentrating on fixed capital investment of enterprises have been finished. The study of von Kalckreuth (2000) deals with the relationship between investment outlays and uncertainty (about 6,750 firms) whereas Harhoff and Ramb (2001) try to estimate the impact of the user cost of capital on the investment behavior of about 5,750 (above all small- and medium-sized) firms.

3. Access to the data

Due to its origin the micro firm balance sheet data are strictly confidential and can consequently not be published. The accounting data available outside the Bundesbank are on an aggregated level only where no detection of an individual firm is possible. Additional to all firms the information is separated by industry, size and legal form (see Deutsche Bundesbank 1999a and 1999b). As the demand of external researchers for micro data rapidly increased in the last years the Bundesbank found a way to start a pilot project with the Centre for European Economic Research (ZEW, Mannheim). The main point was that the analysis has to take place in the headquarter of the Bundesbank (Frankfurt am Main) by using a stand-alone PC where the econometric software and the firm-level data (no information of the name and other qualitative characteristics of the firms is available) have been installed. Additionally the responsible researchers (Harhoff and Ramb) had to sign a contract which includes mainly regulations on data protection and before publication the Bundesbank checks that the results cannot be used to identify individual information.

The individual firm data which are stored on the mainframe in DB2 can be transferred to a PC in the form of a SAS-file as well as in other data formats. The micro studies finished until now were performed by means of PC and by means of the software SAS, STATA or OX. As the research projects mentioned in section 2 have shown the PC is no restriction for analyzing very large samples by sophisticated microeconometric methods.

4. Useful for teachers ?

It is obvious that the micro data cannot be used for student courses. Nevertheless teachers can apply the published Bundesbank's corporate bal-

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ance sheet statistics for econometric purposes. As shown by Behr and Bellgardt (1998 and 2000) the data can be analyzed by using panel econometrics (on an industry level). Even time-series regressions are in principle possible as the information is available from 1971 onwards (see Größl et al 1999). The published data (see the references in section 3) are also available on a (free of charge) diskette which supports statistical work within university courses.

5. International perspective and outlook

The sections above concentrate on describing the Bundesbank's sample for German enterprises. But meanwhile more and more interest arises in international studies using firm balance sheet data. An adequate database is BACH (Bank for the Accounts of Companies Harmonised) which consists of data for eleven EU-countries and for US as well as Japanese firms. The corresponding information for Germany is provided by the Bundesbank (see Deutsche Bundesbank 1999c). The most important advantage of BACH is the relatively high (but not perfect) comparability of the country data which is a prerequisite for international projects as the national accounting rules often differ significantly. The samples are restricted to non-financial incorporated firms only and to an aggregated level (all firms, by size and by industry; available from the beginning of the eighties). BACH can in principal be received from the European Commission, DG II, for a fee. Special arrangements may be possible for external researchers.

Two studies based on BACH shall be mentioned to clarify the applicability of this European data set. The investigation of Delbreil et al (1997) deals in detail with the provision of own funds in five EU-countries (Austria, France, Germany, Italy, Spain) and especially with the situation of small firms. Vermeulen (2000) concentrates on the four largest countries in the EMU and shows that issues relevant for the single monetary policy can be picked up by using firm data and paneleconometric methods.

As already mentioned the Bundesbank's firm data described are available until the year 1998. With the beginning of the EMU the rediscount credit was abolished. Instead trade bills and other bank claims to enterprises (so called non-marketable or tiers-2-papers beside marketable securities) have been accepted as collateral in refinancing operations. As a creditworthiness check of the firms is obligatory in EMU (see Deutsche Bundesbank 1999d), in principle comparable to the period before 1999 in Germany, the Bundesbank will also receive balance sheet data in the future. But it cannot be excluded due to several reasons that the base material will decrease. This may imply that the expansion procedure and the analysis of representative data

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will no longer be viable. Therefore, the Bundesbank has started an initiative to establish a "data pool" which shall be based on merging the original Bundesbank data set with external sources (see Deutsche Bundesbank 2001). Independent of the final outcome of this project the existing data of the Bundesbank will without any doubt serve as a valuable source for structural- and micro-oriented studies also in the future and not much imagination is necessary to find further interesting topics for research.

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