European Data Watch

This section will offer descriptions as well as discussions of data sources that may be of interest to social scientists engaged in empirical research or teaching courses that include empirical investigations performed by students. The purpose is to describe the information in the data source, to give examples of questions tackled with the data and to tell how to access the data for research and teaching. We will start with data from German speaking countries that allow international comparative research. While most of the data will be at the micro level (individuals, households, or firms), more aggregate data and meta data (for regions, industries, or nations) will be included, too. Suggestions for data sources to be described in future columns (or comments on past columns) should be send to: Joachim Wagner, University of Lueneburg, Institute of Economics, Campus 4.210, 21332 Lueneburg, Germany, or e-mailed to ⟨wagner@uni-lueneburg.de⟩.

The RWI Data Base on the Globalisation of German Companies[1]

By Roland Döhrn

Introduction

Foreign Direct Investment (FDI) increasingly attracts the attention of politicians and researchers, not least due to the impressing development it has taken since the mid 1980s. However, quality and scope of statistics on FDI have not kept pace with this interest. Initially, statistics have been designed for balance of payments purposes only. Therefore, they mainly mirror financial relations. In most industrialised countries, two sources of information are available: data on flows that are part of the balance of payments, and data on stocks, originally deemed to supplement flow statistics

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with information on reinvested earnings, but now increasingly developed towards an instrument to observe economic activities of direct investors. In recent years, OECD and EUROSTAT pushed data collection this direction, e.g. by disseminating a questionnaire in their member countries on the activities of multinational firms, requesting the national institutions in charge of collecting FDI data to report 18 indicators on a sectoral base (Hatzichronoglou 2000). Among others, shares of foreign affiliates in the number of companies, turnover, value added, gross fixed capital formation, employment, exports, and research and development can be found. The OECD members covered this request in a somewhat uneven manner, no country gave data on all 18 indicators, 13 members were not able to give any data at all.

Hence, the empirical foundations for analysing FDI are still limited. However, even if the OECD / EUROSTAT will be successful, one important aspect of FDI will still not be covered by any official statistic at all: There are no links recorded between FDI and the economic characteristics of the investing enterprise in the home country. Therefore, official sources do not provide data that allow to analyse two important issues. Firstly, they give no answer to the question: Who invests abroad? Secondly, the impact of FDI on the investor's country cannot be traced.

The first question is of special interest for the theoretical perspective. As *Dunning* (1980) points out three conditions must be met to lead companies to invest abroad: In the investing company *ownership advantages* must be on hand, in terms of managerial skills, technology available, or financial means enabling a company to finance investments. From the perspective of the host country of the investment, *localisation advantages* must be given, e.g. stemming from favourable production conditions, low taxation, or a well developed infrastructure. Finally, *internalisation advantages* must exist, saying that it must be favourable for the investor to keep the entire production chain under control instead of using licenses, outward processing or trade as ways to internationalise. In particular, ownership advantages exclusively and internalisation advantages to some extent, too, originate from factors specific to the investing company. Hence, information on the investor is required to understand the factors driving FDI.

The second question is a highly political one: It is often argued that FDI in the end leads to a shift of workplaces from the investor's to the host country of the investment. Without going into detail, discussing this subject surely is burdensome as no information is available, how employment develops in companies that have invested abroad.

To sum up, there is more than one argument for having a data base which combines data on foreign activities of companies on a micro level with information about their overall and domestic economic situation. This article

presents an approach that was developed by the *Rheinisch-Westfälisches Institut für Wirtschaftsforschung* (http//www.rwi-essen.de) which provides data of this type. In a first section the conception of the data base is described. Section 2 explains the characteristics recorded. The third section sketches some empirical features and gives examples for using the data. In the last section information is given on data access.

1. Conception of the data base

The RWI data base on the globalisation of German companies is based on annual reports the enterprises provide for the public (for a more detailed documentation see Döhrn / Radmacher-Nottelmann 2000). It, thus, exploits a source that is on hand anyway, which reduces the costs of data collection substantially, and at the same time does not burden companies with the costs of providing additional information e.g. by filling in a questionnaire. This conception allows to build up a panel-like data set of time series for individual companies. As we could include nearly all large German companies, the data set is representative at least in macroeconomic terms, i.e large shares in terms of total employment, production or FDI are covered. Furthermore, 'panel mortality' is very low. However, this approach also has its limitations, the most important one being that the information has to be taken as it is provided by the companies, and no demand for data of special interest can be met. Moreover, the selection of firms included is biased in favour of large companies, mostly listed at the stock exchange. Even if some progress has been made to include small and medium sized companies, large enterprises account for a good deal of the recorded activities.

As a rule, in the case of conglomerate groups the annual reports of common parent companies are used. This way was chosen for two reasons: Firstly, they are most likely to be available and to show some continuity over time, also providing the most detailed information as a rule. Secondly, decisions on globalisation of companies often are made at this level. In many cases, it is not a domestic branch of a conglomerate group that establishes affiliates abroad, but it is the controlling company that acquires or founds new subsidiaries in foreign countries.

At an initial stage, only companies from the industry sector were included. Only recently, the scope has been extended to the service sector. However, data on the latter are not yet available to the public. In the manufacturing sector, almost all large German companies are covered. An exception are some foreign owned companies that had to be excluded from the survey. They apply a special regulation in the German Commercial Code (HGB) that allows them to report only on their activities in Germany,

neglecting their international consolidations, even if they are subsidiaries of the German branch in a legal sense.

To allow sectoral analyses, all companies are assigned to the sector of their main economic activity according to the NACE classification. The period covered in the data base starts 1990. It turned out to be difficult to collect a sufficient number of reports for earlier years. Furthermore, if they are available, the information they provide is often less detailed than in newer reports. Hence, our collection of data is limited to the period 1990 to 1999 at the time being.

2. Characteristics recorded

The annual reports offer several types of information that can be used to characterise the globalisation of German companies:

- As "hard" facts they contain data on the companies' activities abroad, especially measured in terms of employment, turnover, and fixed capital formation. In this context, foreign employment is the most important measure of globalisation for two reasons. Firstly, it is closely linked to the value added created at different locations and, therefore, may be used as an indicator of real economic activity. Furthermore, this information is available for almost all companies. As a minimum, this data differentiates between domestic and foreign affiliates; sometimes it is broken down according to broad regions (Europe, America, Rest of the World).

- Another type of data recorded is deemed to describe the overall economic situation of the companies in consideration, namely their total balance, own capital, cash flow, profits, value added, capital stocks, and R&D expenditure. These indicators play an important role in analysing the ownership advantages of the investor. However, as a rule they are available on an aggregate level only, not differentiating between regions.

- As a more qualitative piece of information, the number of consolidated entities and associated companies is provided. The listings attached to the reports would allow to collect data for individual host countries, but to limit the number of data sets, they are grouped into eight regions, so that shifts in the regional profile of foreign activities can be analysed.

- Finally, statements on so-called activities are collected, e. g. acquisitions of foreign companies, foundations of new companies abroad, or the start of joint ventures. In this context, information from annual reports is supplemented by other sources such as newspapers, internet pages etc. This data represents cases, not differentiating between minor (e.g. establishing a sales office) and major activities (e.g. the acquisition of an large foreign firm). For all cases, details on the country of activity, the economic func-

tion of the foreign affiliate (e.g. production, marketing, financing) and the supposed motivation of the investment (e.g. getting market access, cost reducing, diversifying production) are recorded.

Table 1

Structural characteristics of the companies surveyed in the "Data Bank Globalisation"

Number of surveyed companies

	Total	Companies with time-series[1] on foreign employment
Tota	155	119
	by number of employees in 1997	
more than 50.000	20	18
20.000 to 50.000	19	17
10.000 to 20.000	17	16
5.000 to 10.000	25	22
2.000 to 5.000	20	17
1.000 to 2.000	21	15
less than 1.000	33	14
	By industries	
Mechanical engineering, iron and steel, non-ferrous metals industry (NACE 27–29)	33	27
Electrical and instrument engineering, office and data processing machinery (NACE 30–33)	26	15
Chemical industry (NACE 23, 24)	20	16
Food, drink and tobacco (NACE 15–16)	14	10
Leather, textiles, footwear and clothing (NACE 17–19)	12	11
Vehicles (incl. Suppliers) (NACE 34,35)	12	10
Extraction of minerals other than metaliferous and energy-producing minerals, incl. building material suppliers (NACE 26,20)	10	8
Building and civil engineering (NACE 45)	8	8
Processing of rubbers and plastics (NACE 25)	7	5
Other consumer goods manufacturers (NACE 21,22,36)	6	5
Conglomerate groups (non-dividable)	6	4
Water and energy supply (NACE 40,41)	2	0
Mining (NACE 10–14)	1	0

Compiled in: December 2000 – [1] at least 5 years.

Altogether the data base contains about 25000 data sets of the different kinds described related to about 150 companies from the manufacturing sector. For about 120 companies time series information on employment is available, meaning that the data covers at least 5 consecutive years (Table 1). From a sectoral perspective, most companies can be found in the mechanical engineering sector, the electronics, and the chemical industry. Referring to firm size, large companies are dominant, with only about 30 having a total employment under 1000.

Of course, neither by its size nor by the way the data is collected, the data base can be considered as a representative sample in a statistical sense. Nevertheless, it claims at least some representativity in a macroeconomic sense, since about 16% of total employees in German manufacturing are affiliated with the companies considered, and even more than 40% of employment in foreign affiliates of German companies.

3. Some descriptive statistics and experiences

As already mentioned, the share of foreign employment is an important indicator of globalisation taken from the data base. Between 1990 and 1998, the average share has risen from about 24% to nearly 40%[2]. When differentiating according to company size, significant differences appear. Astonishingly, not the largest companies in the sample shows the highest share of foreign employment, but somewhat smaller companies with 10,000 to 20,000 employees. Turning to the low end, shares of foreign employment get considerably smaller with total employment declining. Nevertheless, over time the share of foreign employment is on the rise for all firm sizes.

In the same way, differences exist across sectors[3]. Highest shares can be found in the leather, textile, footwear, and clothings industry and in the chemical industry, lowest in the food industry. It can be shown that these differences do not merely reflect inter-sectoral differences in firm sizes, but they persist if the analysis is adjusted for the size of the company (Döhrn 1999: 213).

The data has already been used in several ways to analyse the determinants and the consequences of FDI.

– As to the determinants of the degree of a company's globalisation, it was shown that not only the firm size has a positive impact on the share of foreign employment, but it is also significantly larger in R&D intensive com-

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[2] To reduce a potential bias in the data due to the different size of firms considered, average share of foreign employment is calculated as an average of shares in the individual companies.

[3] In the table only sectors are included with at least 10 cases in the data base.

panies (Döhrn 2000: 5 – 7). Furthermore, labour intensive companies tend to produce more abroad than capital intensive companies. Concerning liquidity and profitability of the investing company, analyses painted no clear picture so far (Döhrn 1999: 216).

– As to the impact on domestic employment, analyses show that, other factors being equal, companies which increased the number of workplaces in foreign locations indeed reduced their workforce in Germany. This effect, however, was far outweighed by the increase of sales abroad linked to higher foreign investment (Döhrn forthcoming). Taking both effects together, the overall impact on employment in Germany is positive. This relation turned out to be quite stable over time. Nevertheless, further research is directed to analyse to what extent outliers in data may have influenced this result.

Table 2

Share of Foreign Employment[1]
% of total employment

	Companies with data for both years		All companies
	1990	1998	1998
Total	24,1	39,9	34,3
	by number of employees in 1997		
more than 50.000	29,3	45,4	43,4
20.000 to 50.000	33,7	49,1	47,5
10.000 to 20.000	32,6	51,4	51,4
5.000 to 10.000	21,7	39,6	40,9
2.000 to 5.000	24,2	37,0	37,9
1.000 to 2.000	12,0	25,0	23,5
less than 1.000	4,5	19,5	12,1
	By industries		
Chemical industry (NACE 23, 24)	40,9	53,1	45,7
Electrical and instrument engineering, office and data processing machinery (NACE 30 – 33)	24,2	48,9	33,0
Leather, textiles, footwear and clothing (NACE 17 – 19)	31,6	47,1	48,5
Vehicles (incl. Suppliers) (NACE 34,35)	23,8	36,2	37,8
Mechanical engineering, iron and steel, non-ferrous metals industry (NACE 27 – 29)	22,0	35,6	33,5
Food, drink and tobacco (NACE 15 – 16)	7,4	18,7	14,3

Compiled in: December 2000 – [1] Unweighted average of the shares of foreign employment in the companies of the groups.

The qualitative data collected can be used to complement the analyses with some additional information on the regional dimension of foreign production. An interesting point is the influence of firm size on the regional structure of foreign direct investment. The number of foreign entities consolidated as well as the foreign activities point out that smaller companies tend to invest at locations situated nearer to Germany, indicating that transaction costs may be more important to small compared to large companies (Döhrn and Radmacher-Nottelmann 2000: 24–25). However, intertemporal comparisons show, that the "average distance" of foreign activities from Germany has risen for all firm sizes during the 1990s.

4. Data access

In a technical sense, all data is integrated in a relational databank. This allows to analyse them in a very flexible way, e.g. it is possible to use almost each characteristic included for grouping or drawing sub-samples. On the other hand, this technique bears the disadvantage that retrieving data requires some experience in handling databanks of that type. A user friendly version, employing masks for retrieving data and thus allowing persons not familiar with the query language to extract data, is not available. Therefore, researchers as well as students interested in using the data for their work may direct their request to the RWI (doehrn@rwi-essen.de). Data can be provided to them – as a rule free of charge – as spreadsheets in electronic as well as printed form.

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