

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).

New Possibilities for Economic Research through Integration of Establishment-level Panel Data of German Official Statistics

By Michael Konold

1. Introduction

For many economic analyses micro-data on the level of establishments of enterprises is needed. The reason for this is that structures and developments in economic branches or regions can only be analysed in detail on the basis of data that gives information about local units. For quite a lot of analyses, there is also the requirement that establishment-level data is available for at least two points in time. The micro-dynamics behind changes in the number of economically active persons or the amount of investments in a region can – for instance – only be depicted with such longitudinal data. Longitudinal data on the level of establishments of enterprises is also needed in order to analyse the formation and closure of establishments or the effect that certain properties of establishments exert over the course of time. An example is the evaluation of the question whether establishments with economic activities in foreign coun-

tries are – in the long run – doing better than establishments with turnover in Germany only. Finally, there is the aspect that longitudinal data allows the estimation of models which are superior to models estimated on the basis of cross-sectional data, for example with regard to their explanatory power (cf. Hsiao, 1986; Engel/Reinecke, 1994, 5 ff.).

Taking all this into account, it is not surprising that for quite some time scientists have been pushing German official statistics to provide establishment-level data from official surveys for economic research. As for cross-sectional data, this has already been done several years ago. Longitudinal data (panel data) however, has – until recently – only been available for single German *Länder*. Due to work that has been done within a joint project, the situation has now changed.¹ During the course of the last year, a panel has been established that currently comprises establishment-level data from the period 1995 up to 2004. The project has also prepared enterprise-level panel data. Data from the cost structure survey (*Kostenstrukturerhebung*) and from turnover tax statistics (*Umsatzsteuerstatistik*) has been made available.

As a basis for the establishment panel, which will be in the spotlight here, data from three official surveys in the field of manufacturing, mining, and quarrying has been used. That is to say that the panel currently covers establishments from sections C and D of the Classification of Economic Activities of the EU (NACE). The data provides information about the economic branch, the number of employees, the domestic turnover, the turnover abroad, investments, hours worked, salaries, wages and further items, and can be requested by scientists via the research data centres of the Federal Statistical Office and the statistical offices of the *Länder*. A distinctive feature of the panel is that the data comes from surveys, in which all establishments of enterprises matching certain criteria mandatorily have to answer certain questions. For that reason, even for small economic branches and small regional units detailed evaluations are possible. However, there may be limitations to the level of detail available in order to preserve the anonymity of the establishments included.

In the following, an overview of the newly established panel data will be given. At first, the integrated data and the information it offers will be described (section two). Section three highlights the research potential of the panel and discusses some methodological problems. Section four informs about how interested scientists can get access to the panel via the research data centres of the Federal Statistical Office and the statistical offices of the *Länder* and which possibilities for data use currently exist. Finally, possible and already envisaged supplements and extensions are explicated.

¹ The project is funded by the Federal Ministry of Education and Research (BMBF) and carried out by the research data centres of the Federal Statistical Office and the statistical offices of the *Länder*, the Institute for Employment Research (IAB) in Nürnberg and the Institute for Applied Economic Research (IAW) in Tübingen.

2. Integrated Data Sets and Covered Information

Most of the official surveys that are carried out in Germany in the field of economy exhibit the following features: On the one hand, they comprise a large number of elementary units (enterprises, establishments of enterprises respectively).² On the other hand, the number of questions asked is relatively small. That is to say that the information available is limited to a few topics. In order to establish panel data that can be used to pursue a wide range of research questions, it is therefore a useful strategy to integrate data from two or more surveys – whenever possible. Because in official statistics enterprises and their establishments have unique identifiers and as enterprises and their establishments usually have to give particulars in the context of more than one statistic, such integration can be realized in a variety of cases.³

In order to create a high potential for economic analyses, data from three official surveys has been combined in the case on hand:

1. Data from the monthly report on establishments of enterprises in the field of manufacturing, mining, and quarrying.⁴
2. Data from the annual survey on investments in the German industry.⁵
3. Data from the annual report on small industrial firms in the field of manufacturing, mining, and quarrying.⁶

The first two surveys (more or less) cover the same establishments but differ from each other with regard to the information they provide. Data from the report on small industrial firms has been included, because the report covers establishments which – due to their small size – were not obligated to give information in the context of the monthly report and the survey of investments. As for the monthly report on establishments of enterprises and the annual survey of investments, the data covers the period 1995 up to 2004. The included data from the annual report on small firms extends from 1995 up to 2002.⁷ In

² Most of the surveys are complete surveys or surveys in which a relatively large sample is drawn.

³ Some legal problems that existed within the context of integration of data from official surveys in the field of economy have been removed with an amendment to the Federal Statistics Law (*Bundesstatistikgesetz*) in 2005.

⁴ The German title of the survey is “Monatsbericht für Betriebe des Verarbeitenden Gewerbes sowie des Bergbaus und der Gewinnung von Steinen und Erden”.

⁵ The German title of the survey is “Investitionserhebung bei Unternehmen und Betrieben des Verarbeitenden Gewerbes sowie des Bergbaus und der Gewinnung von Steinen und Erden”.

⁶ The German title of the survey is “Erhebung für industrielle Kleinbetriebe im Verarbeitenden Gewerbe sowie im Bergbau und der Gewinnung von Steinen und Erden”.

⁷ In the case of the monthly report and the survey of investments, the year 2004 currently is the last year for which data is available in the panel. The data of further

the following, a short description of the surveys and the integrated information will be given. For a summary see overview 1.

2.1 Monthly Report on Establishments of Enterprises

The monthly report on establishments of enterprises in the field of manufacturing, mining, and quarrying is an official survey in which all establishments of enterprises in Germany with at least 20 employees have to give information on certain topics. Establishments with less than 20 employees are included, if they belong to an enterprise from a production industry, which employs 20 persons or more.⁸ Simplified in some way, one could say that the monthly report is a complete survey that covers all establishments having a certain minimum size. Whether an establishment is considered to be in the field of manufacturing, mining, and quarrying depends on its main economic activity. As for the term “production industry”, it has to be pointed out that besides manufacturing, mining, and quarrying, the term applies to construction and the field of energy and water supply.

In addition to the monthly results, each year an annual result is calculated, giving annual sums, mean values respectively. Only the annual results have been integrated into the panel. The main reason for this is that the survey on investments and the report on small industrial firms have been carried out annually. Among the information available from the monthly report are

- the total number of employees,
- the number of manual workers,
- the domestic and foreign turnover,⁹
- the number of hours worked,
- the total amount of salaries, and
- the total amount of wages.

It is also worth mentioning that certain data is available not only for the establishments as a whole but also for certain of their parts. Furthermore, variables like branch of industry, *Bundesland* or type of establishment give basic information about the establishments included. A comprehensive overview is part of the documentation of the established panel.

years can and will be added successively. In case of the annual report on small firms, an extension is not possible, because this survey has been discontinued in 2002.

⁸ There are some exceptions from these general stipulations. For details cf. Statistisches Bundesamt (2005a) and the metadata available on www.forschungsdatenzentrum.de.

⁹ Since 2002 the monthly report also covers the turnover in non-EU-countries.

Overview 1: Establishment-level Panel Data for Establishments of Enterprises in the Field of Manufacturing, Mining, and Quarrying: Overview of the Integrated Data

Survey	Included units ¹⁾	Included years of report	Variables (selection) ²⁾	Comment
Monthly report on establishments of enterprises (annual result)	Local production units, generally with 20 employees or more (including crafts)	1995 – 2004	<ul style="list-style-type: none"> ● Number of employees ● Domestic turnover ● Turnover abroad ● Turnover abroad in non-EU-countries³⁾ ● Hours worked ● Total amount of wages ● Total amount of salaries 	For the establishment panel, annual (not monthly) results have been used. The annual results give annual sums, mean values respectively
Annual survey on investments in the German industry	Enterprises in the field of manufacturing, mining, and quarrying, generally with 20 employees or more and those of their local establishments, which have their economic focus in the aforementioned branches of industry	1995 – 2004	<ul style="list-style-type: none"> ● Investments in tangible goods (broken down by categories) ● Value of newly rented or leased tangible goods (broken down by categories) 	For the panel, only the data about the establishments has been used
Annual report on small industrial firms	Small industrial firms, generally with less than 20 employees	1995 – 2002	<ul style="list-style-type: none"> ● Number of Employees (September) ● Turnover (September) ● Turnover (previous year) 	The survey has been discontinued 2002

1) For details and exceptions see Statistisches Bundesamt (2005a) and Statistisches Bundesamt (2005b).
 2) Basic variables like branch of industry, *Bundesland* or type of establishment, which are available in all three surveys, are not listed in the overview.
 3) Available since 2002.

2.2 Annual Survey on Investments in the German Industry

In the annual survey on investments in the German industry, establishments and enterprises have to give information on investments and the total value of certain rented or leased goods. Enterprises are included under two conditions: First, their economic focus has to be in manufacturing, mining, or quarrying. Secondly, there have to be at least 20 employees. Establishments have to give particulars, if they belong to an included enterprise and if their main economic activity is in the field of manufacturing or in the field of mining and quarrying.¹⁰

The establishment data from the survey is an important supplement to the data from the monthly report, because information on investments is needed for many economic analyses. Details aside, one can say that the data gives information on

- the amount of investments in tangible goods and
- the value of newly rented or leased tangible goods,

broken down by categories. Besides, there are variables like branch of industry, *Bundesland* or type of establishment, which – likewise those in the monthly report – provide information about basic issues. A comprehensive overview is part of the documentation of the established panel.

2.3 Annual Report on Small Industrial Firms

The annual report on small industrial firms has been discontinued in 2002. Firstly, in order to relieve small firms of a duty. Secondly, because it became apparent that in the near future it would be possible to substitute the report by evaluations of the German business register. Until 2002, the report delivered information on

- the number of employed persons (by the end of September),
- the turnover in September, and
- the turnover in the previous year.¹¹

The data is significant for the following reasons: First of all, it allows scientists to study small industrial firms. A second important aspect is that

¹⁰ As can be inferred from these stipulations (and the fact that an annual survey on investments has to be carried out when the year is over), there is a small group of establishments for which – in a given year – information is only available either from the monthly report or from the survey on investments. Because of the small size of this group, the effect on analyses with data from both surveys is negligible.

¹¹ As the enumeration shows, there are only three variables (in addition to variables like economic branch or type of establishment). The reason for this is the established agreement that time and effort for small firms should be kept to a minimum.

through combination of data from the monthly report and data from the report on small industrial firms, a data set emerges that comprises almost all establishments of enterprises in the field of manufacturing, mining, and quarrying.¹² Finally, it has to be pointed out that the data from the report on small firms creates the possibility to detect establishments which – due to a change in the number of employees – “migrated” from the monthly report to the report on small industrial firms (and vice versa). For demographic analyses (formation and closure of establishments) this aspect is of great importance.¹³

3. Research Potential of the Established Panel Data

The potential of establishment data of German official statistics has been demonstrated in several research projects. These however, could only draw on data from single German *Länder*. Wagner has analysed the micro-structure of investment and job dynamics with data from Lower Saxony (cf. Wagner, 2003a; Wagner, 2004; Wagner, 2005). He has also carried out analyses of the connection between firm size and exports, the job growth effect of firm formations and other subjects (cf. Wagner, 2003b; Wagner, 2003a; Wagner, 2006). Similar studies, which in many cases build on work of Wagner from the 1990s, have been published for North Rhine-Westphalia, Baden-Württemberg, Berlin and some *Länder* in eastern Germany (cf. Bulmahn/Kräkel, 1999; Fritsch/Niese, 1999a; Fritsch/Niese, 1999b; Pohl, 2001; Strotmann, 2002; Fischer et al., 2004; Strotmann, 2005).¹⁴

One striking finding of several of these studies is that on the micro-level of establishments one often finds a lot of dynamic processes and/or a high degree of heterogeneity. These developments and structures might not become (or cannot be made) visible, if only aggregated data is available for analysis. That is to say data on the level of regional units or economic branches. Data on this level would – for instance – also be insufficient to evaluate the role establishments of a certain size class play in a certain context. Moreover, it has to be emphasized that the abovementioned studies would not have been possible on the basis of cross-sectional data. For economic theory as well as for economic policy the availability of longitudinal micro-data on the level of establishments therefore is of great importance.

¹² Small craftsman’s establishments constitute the main exception.

¹³ For 2003 and 2004, there is the possibility to use data from the German business register (*Unternehmensregister*) in order to detect at least some of the establishments which emerged in or disappeared from the monthly report due to a change in the number of persons employed.

¹⁴ Most of this research has been the result of cooperation between a university or a scientific research institute and a regional statistical office.

On the basis of the newly established panel, analyses are now possible for Germany as a whole. One can also systematically compare the German *Bundesländer* with each other. The fact that the data allows to combine information from the monthly report on establishments of enterprises with data from the survey on investments over a period of ten years will open up new possibilities for research, too.

The main comparative advantage of the panel over other available data sources is that it covers all establishments in the field of manufacturing, mining, and quarrying, matching certain criteria.¹⁵ In the case of the monthly report for instance, in the period 1995–2004 every year about 50.000 establishments have given information. Table 1 shows what economic branch the establishments from the monthly report had their economic focus in (in 1995). Table 2 informs about the most frequent patterns of inclusion. From table 1 it can be seen that on the federal level, even for relatively small economic branches an estimation of models is possible. However, due to the fact that at some point, the necessary anonymity of given particulars is at risk, it may not always be possible to make all results available. As for table 2, the last column shows that over 40 percent of those establishments reporting at least once to the official statistics' monthly report in the period 1995–2004 are in the panel in every year. This corresponds to about 30.000 units.¹⁶

In the context of a discussion of the research potential, it is necessary to address strengths as well as weaknesses. For that reason, attention here will also be paid to two problems. The first problem is a relatively minor one. It results from the fact that in the data variables giving information on mergers and split-ups do not exist. Therefore, it is difficult to identify the cases in which an establishment has been split up or merged with one or several others. Uncertainties in this context will always persist.

The second problem relates to the identification of formations and closures. The problem here is that an establishment can emerge in or disappear from the data for several reasons. For instance, an establishment can drop out of the panel because of a shift of the main economic activity to the field of construction or because of the fact that it was relocated to a foreign country (and vice versa). Demographic analyses that only base themselves on the panel data currently available therefore have to go on certain assumptions and have to be a bit cautious with regard to their conclusions. Fortunately, there are some possibilities to mitigate the problem by drawing on information from the German business register (*Unternehmensregister*). Fritsch and Niese are among those who have dealt with the question of what is (and what might not be) possible in this context. In a detailed study they show which economic and operational

¹⁵ The establishment panel of the Institute for Employment Research (IAB) for instance, which is a sample, offers a wider range of information instead.

¹⁶ For the survey of investments the results are – more or less – the same.

Table 1

Number of Establishments (Local Production Units) in the Available Panel Data Reporting in 1995, broken down by Economic Branch for Germany and two German Länder

Economic branch ^{1), 2)}	Number of units in the data		
	Germany	North Rhine-Westphalia	Saxony
(10) Mining of coal, extraction of peat	153	57	5
(11) Extraction of crude petroleum and natural gas	50	1	0
(12) Mining of uranium and thorium ores	0	0	0
(13) Mining of metal ores	5	4	1
(14) Other mining and quarrying	1 340	148	67
(15) Manufacture of food products and beverages	5 227	822	230
(16) Manufacture of tobacco products	41	6	1
(17) Manufacture of textiles	1 494	415	175
(18) Manufacture of cloths	1 294	237	87
(19) Tanning of leather, manufacture of leather products	397	47	26
(20) Manufacture of wood and of products of wood ³⁾	2 247	390	86
(21) Manufacture of pulp, paper and paper products	1 096	258	62
(22) Publishing, printing, reproduction of recorded media	3 037	594	69
(23) Manufacture of coke and refined petroleum products	87	20	2
(24) Manufacture of chemicals and chemical products	1 758	414	69
(25) Manufacture of rubber and plastic products	3 026	695	125
(26) Manufacture glass, glass and ceramic products etc.	3 861	639	232
(27) Manufacture of basic metals	1 151	517	60
(28) Manufacture of metal products	6 746	2 078	329
(29) Manufacture of machinery and equipment	6 836	1 624	382
(30) Manufacture of office machinery and computers	211	29	9
(31) Manufacture of electrical machinery and apparatus	2 400	563	133
(32) Radio, TV, communication equipment / apparatus	612	78	25
(33) Manufacture of medical and precision instruments ⁴⁾	2 068	295	79
(34) Manufacture of motor vehicles and trailers	1 079	191	70
(35) Manufacture of other transport vehicles / equipment	451	88	24
(36) Manufacture of furniture, toys, jewellery etc.	2 503	568	135
(37) Recycling	155	6	9
Total number of units	49 325	10 784	2 492

Source: Authors' calculations; Data base: Data from the monthly report on establishments of enterprises in the field of manufacturing, mining and quarrying from 1995 in the established panel data.

¹⁾ The number in brackets denotes the code according to the official classification of economic activities, edition 1993 (WZ 93).

²⁾ A more detailed breakdown is possible. It should also be mentioned that there are additional possibilities of categorization: Establishments of enterprises could be assigned to producer groups (producers of intermediate goods, investment goods, durable goods, non-durable goods) or to categories that group units according to the technological sophistication of their products.

³⁾ Except furniture.

⁴⁾ This category also includes manufacture of optical instruments and the manufacture of watches and clocks.

Table 2

Survey of the Ten Most Frequent Patterns of Inclusion that Apply to Establishments of Enterprises¹⁾ Reporting at least once to the Official Statistics' Monthly Report in the Field of Manufacturing, Mining, and Quarrying in the Period 1995 – 2004

No.	Reporting year										% of cases
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
1	X	X	X	X	X	X	X	X	X	X	40,8
2								X	X	X	3,8
3	X										3,6
4			X	X	X	X	X	X	X	X	3,5
5	X	X									3,5
6										X	3,1
7	X	X	X								2,7
8					X	X	X	X	X	X	2,6
9	X	X	X	X	X	X	X	X			2,6
10									X	X	2,4

Source: Authors' calculations; Data base: Data from the monthly report on establishments of enterprises in the field of manufacturing, mining and quarrying from 1995 up to 2004 in the established panel data.

¹⁾ Local production units (factories etc.) of enterprises, companies or firms.

level events lead to an emergence of an establishment in the data, a drop-out of an establishment from the data respectively (Fritsch/Niese, 1999). They also empirically show how frequent certain events occurred in Saxony in the middle of the 1990s.

As for some analyses a reliable identification of formations and closures is of vital importance, efforts are currently being made to integrate data from the German business register into the established panel. At least for recent years, it seems to be possible to identify at least some of those cases in which an emergence or a drop-out of an establishment cannot be interpreted as a formation, a closure respectively. Particularly, shifts with regard to the focus of economic activity are often traceable.

4. Ways of Data Access

With the establishment of the research data centres of the Federal Statistical Office and the statistical offices of the *Länder* in 2001 and 2002, access to official statistical micro-data has become much easier. In many cases it is only

because of the research data centres that certain micro-data is available for scientific analyses at all. The established panel is a case in point. Over the course of the last years, data of more than 50 statistics has been prepared, documented and centrally stored. Moreover, it is now accessible via a standardized procedure in which a scientist only has to get in contact with one statistical office of his or her choice.¹⁷ With regard to data access, there are currently the following options:

First of all, micro-data is accessible via remote data processing. In this case a command file (syntax script) is forwarded to a statistical office, where it is applied to the data set that the researcher wants to analyse. After the output has been checked in order to ensure that a deanonymisation of elementary units (persons, households, enterprises, establishment of enterprises respectively) is not possible, the results are made available to the researcher, who then can build on them in his or her ongoing work.

The second possibility for data access is on-site use of micro-data at safe scientific workstations in a statistical office. This option has got the advantage that a researcher can work with the data him-/herself and is available in almost all statistical offices in Germany. The disadvantage is that in this case it is usually necessary to anonymise the data to a certain degree, for instance by drawing a 70 percent sample or by pooling of certain categories.¹⁸ Therefore, a scientist might consider to work on-site first and to produce the final results via remote data processing afterwards.

Finally, for some statistics there is also the possibility to work with a Scientific or a Public Use File. A Scientific Use File can be used off-site at one's own workplace. The convenience of this way of access usually comes along with some limitations, that is to say further-reaching anonymisation measures. In some cases though, this might be irrelevant to the pursued research question. As for Public Use Files, the trade-off continues: Additional freedom with regard to what is allowed to do with the data means that there are limitations to the evaluation possibilities.

In the case of the established panel data, the only possibility for data use currently is remote data processing. Working with the data at a safe scientific workstation in a statistical office will probably be possible in summer 2007. A standardized Scientific Use File is in preparation and will probably be available in 2009.¹⁹ All options are (will be) available not only for German but also by foreign scientists. The only restriction for foreign scientists is that the

¹⁷ Detailed information about the research data centres and data access can be found in Zühlke et al. (2004) and on following internet site: www.forschungsdatenzentrum.de.

¹⁸ Data sets for remote data processing are also anonymised, but only formally. That is to say that clear names and the original identifiers are removed or altered.

¹⁹ In the case on hand, the creation of a Scientific Use File, that still offers some potential for research, is not easy. The main reason for that is the large amount of freely

Scientific Use File may only be analysed at a workplace in Germany, for example within a German university or a scientific research institute.

5. Prospects

The elaborations on the established panel data in the previous sections show that the data enables scientists to pursue a wide range of possible research questions. For the future, there are also possibilities to further enhance the potential of the panel by adding additional data, as will be shown in the following.

- The first possibility, which has already been mentioned above, is a link-up with data from the German business register (*Unternehmensregister*). The German business register is a regularly updated database. It gives basic information about economically active and inactive enterprises and establishments and can be used to depict economic structures and developments in Germany. Efforts are currently being made to match data from the register with the established panel data in order to enhance the evaluation possibilities in the field of formation and closure of local production units. The integrated demographic information will probably be available in autumn 2007.
- The monthly report on establishments of enterprises, the survey of investments in the German industry, and the report on small industrial firms have not been the only official surveys carried out in the field of manufacturing, mining, and quarrying in 1995 up to 2004. For that reason, data from further surveys could be integrated into the established panel. The main possibility here is the integration of information from the production surveys, which inform about the goods establishments produced within certain time periods. Provided that there is a demand for this data for scientific research, steps could be taken in this direction.
- As some of the official surveys carried out in the field of construction and in the field of energy and water supply are similar to some of those in the field of manufacturing, mining, and quarrying, there is – at least in principle – the possibility to establish panel data for all production industries.²⁰ Hence, additions are not only possible on the level of variables but also with regard to cases. Whether or not efforts will be made to realize an enlargement like this in the future largely depends on the demand for such data from the scientific community.

available information on enterprises and their establishments. The necessary degree of anonymisation has to be achieved without removing a lot of valuable information.

²⁰ One methodological problem in this context is that the surveys carried out in different production industries slightly differ from each other with regard to the collected information.

- The last possibility to which attention shall be drawn here is the integration of data informing about the regional context of economic activity. For instance, information about the rate of unemployment, wage levels, tax rates or the population density could be supplied for all establishments, either on the level of districts (*Kreise*) or on the level of states (*Bundesländer*).²¹ Information of that kind offers additional evaluation possibilities and generally enhances the research potential of the panel, because the regional context in which the establishments of enterprises pursued their economic goals might be considered to be a relevant causal or moderating factor in certain econometric models.

Finally, it also deserves to be mentioned that establishment-level data of German official statistics can also be matched with data from official statistics' enterprise surveys. That is to say that panels combining information about enterprises and information about certain establishments of those enterprises, or panels combining information about establishments and information about the enterprises to which those establishments belong, are also possible. Existing possibilities will be explored within a joint project between the research data centres of the Federal Statistical Office and the statistical offices of the *Länder*; the research data centre of the Federal Employment Agency and the University of Lüneburg, which will take up its work over the course of this year. The overall project aims at a broad integration of economic, environmental, and tax statistics data of German official statistics. In order to open up new possibilities for economic research, it will also work on the integration of data of official statistics and data of the Institute for Employment Research (IAB).

References

- Bulmahn, G./Kräkel, M.* (1999): Arbeitsplatzdynamik in Nordrhein-Westfalen im Vergleich zu Niedersachsen, in: U. Schasse/J. Wagner (eds.): Entwicklung von Arbeitsplätzen, Exporten und Produktivität im interregionalen Vergleich. Empirische Untersuchungen mit Betriebspaneldaten, NIW-Vortragsreihe, Band 13, Hannover: NIW, 49–68.
- Engel, U./Reinecke, J.* (1994): Panelanalyse. Grundlagen, Techniken, Beispiele, Berlin/New York.
- Fischer, J./Pohl, R./Semlinger, K.* (2004): Berlins Industrie nach der Wiedervereinigung. Was bringt die neue Gründerzeit?, Berlin.

²¹ Note that analyses which draw on district-level-information are problematic in principle insofar as they bear a high risk of deanonymisation of local units. For that reason, researchers working with such data must accept some restrictions. The provision of the information, which district in Germany the establishments were located in, usually is not possible.

- Fritsch, M./Niese, M.* (1999a): Betriebsdynamik und Arbeitsplatzentwicklung in der sächsischen Industrie 1991 – 1998 – Analysen auf Grundlage der amtlichen Statistik, in: U. Schasse/J. Wagner (eds.): Entwicklung von Arbeitsplätzen, Exporten und Produktivität im interregionalen Vergleich. Empirische Untersuchungen mit Betriebspaneldaten, NIW-Vortragsreihe, Band 13. Hannover: NIW, 31 – 47.
- Fritsch, M./Niese, M.* (1999b): Identifikation von Betriebsgründungen und -schließungen aus der amtlichen Statistik des Bergbaus und Verarbeitenden Gewerbes, in: Statistisches Bundesamt (Hrsg.): Möglichkeiten einer wissenschaftlichen Nutzung von Unternehmensdaten aus der amtlichen Statistik, Spektrum Bundesstatistik, Band 14, 78 ff.
- Hsiao, C.* (1986): Analysis of Panel Data, Cambridge.
- Pohl, R.* (2001): Arbeitsplatzdynamik im Verarbeitenden Gewerbe in Berlin, in: U. Schasse/J. Wagner (eds.): Regionale Wirtschaftsanalysen mit Betriebspaneldaten. Ansätze und Ergebnisse, NIW-Vortragsreihe, Band 14. Hannover: Niedersächsisches Institut für Wirtschaftsforschung, 1–22.
- Statistisches Bundesamt* (2005a): Monatsbericht für Betriebe des Verarbeitenden Gewerbes sowie des Bergbaus und der Gewinnung von Steinen und Erden. Qualitätsbericht. Stand: Juli 2005 (available on www.destatis.de).
- Statistisches Bundesamt* (2005b): Investitionserhebung bei Unternehmen und Betrieben des Verarbeitenden Gewerbes sowie des Bergbaus und der Gewinnung von Steinen und Erden. Qualitätsbericht. Stand: August 2005 (available on www.destatis.de).
- Strotmann, H.* (2002): Arbeitsplatzdynamik in der Baden-Württembergischen Industrie. Eine Analyse mit amtlichen Betriebspaneldaten. Frankfurt am Main u. a.
- Strotmann, H.* (2005): Zur Gründungs- und Schließungsdynamik im Verarbeitenden Gewerbe. Erkenntnisse aus Betriebspaneldaten der Industriestatistik in Baden-Württemberg, Schmollers Jahrbuch 125 (4), 451 – 474.
- Wagner, J.* (2003a): Betriebs- und Arbeitsplatzdynamik in wissensintensiven Industrien Niedersachsens 1995 bis 2001, Statistische Monatshefte Niedersachsen 57 (4), 187 – 196.
- Wagner, J.* (2003b): Unobserved Firm Heterogeneity and the Size-Exports Nexus: Evidence from German Panel Data, Review of World Economics 139 (1), 161 – 172.
- Wagner, J.* (2004): On the Microstructure of the German Export Boom: Evidence from Establishment Panel Data, 1995 – 2002, Review of World Economics 140 (3), 496 – 509.
- Wagner, J.* (2005): Zur Mikrostruktur der Investitionsdynamik in der Industrie. Analysen mit Betriebspaneldaten aus Niedersachsen (1995 – 2002), Schmollers Jahrbuch 125 (4), 475 – 488.
- Wagner, J.* (2006): Exporte und Produktivität in mittelständischen Betrieben. Befunde aus der niedersächsischen Industrie (1995 – 2004), in: J. Merz (ed.): Fortschritte in der Mittelstandsforschung. Münster et al.
- Zühlke, S./Zwick, M./Scharnhorst, S./Wende, Th.* (2004): The research data centres of the Federal Statistics Office and the statistical offices of the Länder, Schmollers Jahrbuch 124 (4), 567 – 578.