

Wagner, Joachim

Working Paper

The quality of the KombiFiD-sample of enterprises from manufacturing industries: Evidence from a replication study

Working Paper Series in Economics, No. 217

Provided in Cooperation with:

Institute of Economics, Leuphana Universität Lüneburg

Suggested Citation: Wagner, Joachim (2011) : The quality of the KombiFiD-sample of enterprises from manufacturing industries: Evidence from a replication study, Working Paper Series in Economics, No. 217, Leuphana Universität Lüneburg, Institut für Volkswirtschaftslehre, Lüneburg

This Version is available at:

<https://hdl.handle.net/10419/57169>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

**The Quality of the KombiFiD-Sample
of Enterprises from Manufacturing Industries:
Evidence from a Replication Study**

by
Joachim Wagner

University of Lüneburg
Working Paper Series in Economics

No. 217

November 2011

www.leuphana.de/institute/ivwl/publikationen/working-papers.html

ISSN 1860 - 5508

The Quality of the *KombiFiD*-Sample of Enterprises from Manufacturing Industries: Evidence from a Replication Study*

Joachim Wagner

Leuphana University Lueneburg, and IZA, Bonn

wagner@leuphana.de

[This version: October 31, 2011]

Abstract:

This study tests whether the KombiFiD sample can be regarded as a high quality data set for empirical research on enterprises from manufacturing industries. It performs an empirical investigation using the original data in a first step and replicates exactly this investigation using the KombiFiD sample in a second step. For West Germany a comparison of the results based the original data and on the KombiFiD sample points to by and large highly similar results. Contrary to this the big picture is not in favour of the quality of the KombiFiD sample for East Germany where the KombiFiD sample is too small and differences between the results based on this sample and the original data are too large to suggest the use of the KombiFiD data in empirical investigations.

Keywords: KombiFiD, firm level data, Germany

JEL classification: C81

* This paper is part of the project *KombiFiD – Kombinierte Firmendaten für Deutschland* that is financially supported by the German Ministry for Education and Research (BMBF). It is a joint project of the Institute of Economics of Leuphana University Lueneburg, the research data centres of the German Federal Statistical Office and the statistical offices of the German federal states, the Institute of Employment Research of the Federal Employment Agency and the research department of the German Central Bank. While members of the KombiFiD-team from all institutions contributed to the construction of the data sets used in this paper I alone are responsible for the quality study presented here and the conclusions drawn.

2. Motivation

Micro data at the level of the firm – the establishment (local production unit) or the enterprise (legal unit) – are an indispensable tool for empirical research in a wide range of economic fields including industrial economics, labour economics and international economics. In Germany most high-quality firm level data are collected in surveys conducted by the statistical offices. The German Federal Statistical Office and the statistical offices of the German federal states opened research data centres (described in detail in Zühlke et al. 2004) in 2001 and 2002. This started a new era for researchers working in empirical economics. Access to confidential data for firms that were collected in surveys performed by the statistical offices became easy by using these research data centres (RDC). The number and variety of data sets provided by the RDC increased steadily (see Kaiser and Wagner (2008) for an overview), and so did the use of it by researchers. The high potential of these data as a basis to generate new stylized facts, to motivate assumptions used in formal theoretical models, to test theoretical hypotheses econometrically, and to be used in policy consultation and evaluation is documented in a large and growing number of publications.¹

From their start the RDC offered access to micro level panel data that linked information from various waves of a survey over time. These panel data enormously extended the research potential of data from official statistics by allowing dynamic analyses and control for unobserved heterogeneity via panel econometric methods. Compared to this first generation of firm panel data sets, a second generation of data sets which became available recently has an even higher research potential. These new data combine information for firms gathered in different surveys that could not

¹ For partial surveys, see Wagner (2006, 2008).

be analyzed jointly before. Merging firm level data from different surveys to construct data sets that cover information on a wider range of variables than the ones collected in any of these surveys, one at a time, is the basic idea of the project *AFiD* which is in detail described in Malchin and Voshage (2009). *AFiD* is an acronym for the German *Amtliche Firmendaten für Deutschland* (official firm data for Germany). Merging of firm data from different sources of official statistics is legal according to §13a BStatG (Bundesstatistikgesetz, or federal statistics law), and it is technically feasible because an identical firm identifier is used in the different surveys. Furthermore, it is legal to add firm level data from other sources (e.g. from data bases offered by commercial providers of firm level information) to the data from official statistics provided that these data are publicly available (see Wagner 2010a).

The latest generation of firm panel data that includes information from various surveys conducted by the statistical offices over time and firm level information from external publicly available sources offers rich potential for empirical research. The information provided in these data sets, however, is still far from complete. To mention only two important points in these data sets there is no information available on foreign direct investment (FDI) of the firms and on the structure of the employees with regard to age, level of qualification etc. This information is available from data sets prepared by other data producers – FDI data at the firm level are offered by the German central bank and detailed information on the employees in a firm are offered by the Institute for Employment Research (IAB) of the Federal Employment Agency. Obviously merging firm level data from various producers would increase the value of the data enormously.

Linking confidential firm level information across the borders of the data producers, however, is difficult. Details aside, it is technically not easy (but not

impossible either) and it is legal only if the firm agreed in written form. The basic idea of the project *KombiFiD* (an acronym that stands for *Kombinierte Firmendaten für Deutschland*, or combined firm level data for Germany) that is in detail described on the web (see www.kombifid.de) is to ask a large sample of firms from all parts of the German economy to agree to match confidential micro data for these firms that are kept separately by these three data producers in one data set. These matched data will then be made available for scientific research while strictly obeying the data protection law, i.e. without revealing micro level information to researchers outside the data producing agencies. In *KombiFiD* 54,960 firms were asked to agree in written form to merge firm level information kept inside the statistical offices, the IAB and the German central bank. 30,944 firms replied and 16,571 agreed. These 16,571 firms are in the *KombiFiD Agreement Sample*. This data set is used here, and the term *KombiFiD sample* is used for it.

While the firm level data from the three data producing institutions are high quality data that are either a census of the respective population of firms or a representative sample of this population the *KombiFiD* sample is the result of self-selection of firms into this data set because participation in *KombiFiD* was voluntary. A crucial question is whether the *KombiFiD* sample can be regarded as a high quality data set that can be used as a solid basis for empirical research. One way to shed light on this² is to perform an empirical investigation using data for all firms available from the respective data producer (the original data) in a first step and to replicate

² An alternative way is to compare means and correlations of variables from the original data and the *KombiFiD* sample. Note that it is illegal to pool the original data and the *KombiFiD* sample. Therefore, a direct comparison of both data sets and an investigation of non-respondents or firms that refused to agree to merge their data are not feasible.

exactly this investigation using the KombiFiD sample in a second step. This is done in this paper using data for enterprises from manufacturing industries.

2. Exports and firm characteristics in German manufacturing industries

In a recent paper Wagner (2010b) reports results of a comprehensive empirical study on the links between firm characteristics and export performance. This study uses firm level data from the AFiD panel industry enterprises (see Malchin and Voshage 2009) provided by the RDC of the statistical offices of the German federal states. All variables used in this study are available in the KombiFiD sample for the firms from manufacturing industries.³ The basic idea explored here is to replicate the study from Wagner (2010b) using the KombiFiD sample made of all firms that agreed to the matching of their data across the boundaries of the data producers and to compare the results to shed light on the question whether the KombiFiD data are a reliable basis for empirical investigations for manufacturing enterprises.⁴

Table 1 indicates that about one third of the enterprises that are covered by the original data set can be found in the KombiFiD sample. For East Germany, this results in a fairly small sample. Given that even today a separate analysis of

³ This statement is not exactly true. The information on the number of employees in a firm used in Wagner (2010b) is computed from the number of employees reported in the monthly survey of establishments in manufacturing. This information is not available in the KombiFiD sample. The number of employees reported in the cost structure survey is used instead. The correlation between these two variables is +0.9954 in 2003, indicating that both variables are nearly identical. Although the correlation is nearly perfect all computations were performed here with the new variable for the number of employees for both the original data and the KombiFiD sample. This explains the small differences between some of the results based on the original data reported in Wagner (2010b) and in the replication study here.

⁴ The focus of this paper is on the quality of the data from the KombiFiD sample. Therefore, neither the theoretical background of the empirical models estimated nor the economic conclusions drawn from the results are discussed; see Wagner (2010b) for economic flesh to the bones.

enterprises from East and West Germany is necessary due to large differences in the economic performance in both parts of Germany this might cast doubts on the usefulness of the KombiFiD sample for analyses of manufacturing firms from East Germany.

Furthermore, Table 1 demonstrates that firms that never exported (over the four years investigated in the study) are underrepresented in the KombiFiD sample while firms that exported every year are oversampled. These differences are larger for East Germany than for West Germany.

[Table 1 near here]

Table 2 reports the distribution of characteristics of exporters and non-exporters from both parts of Germany in the original data set and in the KombiFiD sample in 2003, the first year of the study. The distributions are fairly similar⁵ in the original data and in the KombiFiD sample. Note, however, that the average number of employees in the firms tends to be somewhat larger in the KombiFiD sample. This fits with the observation mentioned above that the share of firms that exported in every year (in no year) is larger (smaller) in the KombiFiD sample than in the original data.

[Table 2 near here]

⁵ Note that it is not possible to test for the equality of distribution across samples because it is illegal to pool data from the original sample and the KombiFiD sample.

A comparison of the firm characteristics among exporters and non-exporters based on the original data and on the KombiFiD sample leads to identical conclusions when the distributions of characteristics in both groups of firms are compared using a Kolmogorov-Smirnov test for first-order stochastic dominance (see Table 3): Exporters are larger, employ more physical capital per employee, pay higher wages per employee and spend a higher share of total sales for R&D expenditures than non-exporters in both parts of Germany.

[Table 3 near here]

By and large, empirical models for the determinants of participation of firms in the export market lead to identical results when estimated with the original data or with the KombiFiD sample. The one exception is the estimated coefficient for the physical capital per employee. As can be seen from Table 4 based on the original data the physical capital intensity is unrelated to the probability of exporting for firms from West Germany, while the estimated coefficient is statistically highly significant when the KombiFiD sample is used. Note, however, that the physical capital per employee is not computed from information collected in the survey by the statistical office directly. Instead it is estimated from information on the amount of depreciation reported by the firms, information on the composition of the capital stock into buildings and equipments at the industry level and information on the economic lives of buildings and equipments for the economy as a whole (for details see Wagner 2010c). Therefore, the quality of the capital intensity variable itself is doubtful, and the different results based on the original data and the KombiFiD sample should not be viewed as a convincing argument against the quality of the KombiFiD sample.

[Table 4 near here]

Table 5 demonstrates that similar conclusions hold for empirical models for the share of exports in total sales. Results are rather similar for both the original data and the KombiFiD sample except for the estimated coefficients for physical capital per employee. The estimated coefficient for physical capital intensity is statistically highly significant when the original data are used, but not significant at any conventional error level when the KombiFiD data are used.

[Table 5 near here]

Using pooled data for the years 2003 to 2006 a decomposition of the overall variation of firm characteristics into variation between firms and variation within firms over time shows similar results for both data sets.

[Table 6 near here]

When fixed enterprise effects are included in the empirical models for export participation and the share of exports in total sales to control for time invariant unobserved firm specific characteristics (like the quality and the strategy of management) results for West Germany do not differ much between the two data sets (see Table 7). The only exception is the different sign for the coefficient estimated for the share of R&D expenditures in total sales in the two samples – this coefficient, however, is not statistically different from zero at a conventional error

level in both cases. For East Germany, however, we get a completely different picture. Firm size is no longer statistically significant when the KombiFiD sample is used, and the wage per employee (the proxy variable for human capital intensity) is positively related to export participation at an error level of five percent while the estimated coefficient is insignificant with $p = 0.217$ when the model is estimated with the original data.

[Table 7 near here]

The bottom line, then, is that a comparison of the estimations using the original data and the KombiFiD sample points to highly similar results for West Germany (with the exception of the results related to the physical capital intensity). Contrary to this the big picture is not in favour of the quality of the KombiFiD sample for East Germany where the KombiFiD sample is too small and differences between the results based on this sample and the original data are too large to suggest the use of the KombiFiD data in empirical investigations.

3. Conclusion

This paper shows that results from empirical investigations for enterprises from West German manufacturing industries based on the KombiFiD sample are very similar to results computed with the original data. Therefore, the KombiFiD sample can be regarded as a sound data base for empirical studies on West German firms from manufacturing industries. Further research is needed to investigate whether this

holds for other data from other parts of the economy (service industries, trade, buildings and construction), too.

References

- Kaiser, Ulrich and Joachim Wagner (2008), Neue Möglichkeiten zur Nutzung vertraulicher amtlicher Personen- und Firmendaten. *Perspektiven der Wirtschaftspolitik* 9 (3): 329-349.
- Malchin, Anja and Ramona Voshage (2009), Official Firm Data for Germany. *Schmollers Jahrbuch / Journal of Applied Social Science Studies* 129 (3): 501-513.
- Wagner, Joachim (2006), Politikrelevante Folgerungen aus Analysen mit Firmendaten der amtlichen Statistik. *Schmollers Jahrbuch / Journal of Applied Social Science Studies* 126 (3): 359-374.
- Wagner, Joachim (2008), Die Forschungspotenziale der Betriebspaneldaten des Monatsberichts im Verarbeitenden Gewerbe. *AStA – Wirtschafts- und Sozialstatistisches Archiv* 2 (2): 209-221.
- Wagner, Joachim (2010a), The Research Potential of New Types of Enterprise Data based on Surveys from Official Statistics in Germany. *Schmollers Jahrbuch / Journal of Applied Social Science Studies* 130 (1): 133-142.
- Wagner, Joachim (2010b), Exports and Firm Characteristics in German Manufacturing Industries. University of Lüneburg Working Paper Series in Economics No. 188, October. (Forthcoming, *Applied Economics Quarterly*)
- Wagner, Joachim (2010c), Estimated Capital Stock Values for German Manufacturing Enterprises Covered by the Cost Structure Surveys. *Schmollers Jahrbuch / Journal of Applied Social Science Studies* 130 (3): 403-408.

Zühlke, Sylvia, Markus Zwick, Sebastian Scharnhorst and Thomas Wende (2004),
The reserach data centres of the Federal Statistical Office and the statistical
offices of the *Länder*. *Schmollers Jahrbuch / Journal of Applied Social
Science Studies* 129 (4): 501-513.

Table 1: Export participation patterns 2003 – 2006

West Germany: Original data

Pattern	Frequency	Percent	Cumulated
0000	1,658	16.52	16.52
0001	99	0.99	17.50
0010	23	0.23	17.73
0011	56	0.56	18.29
0100	25	0.25	18.54
0101	10	0.10	18.64
0110	12	0.12	18.76
0111	80	0.80	19.56
1000	74	0.74	20.29
1001	11	0.11	20.40
1010	7	0.07	20.47
1011	19	0.19	20.66
1100	31	0.31	20.97
1101	12	0.12	21.09
1110	41	0.41	21.50
1111	7,880	78.50	100.00
Total	10,038	100.00	

West Germany: KombiFiD data – Agreement sample

Pattern	Frequency	Percent	Cumulated
0000	576	14.45	14.45
0001	32	0.80	15.25
0010	8	0.20	15.45
0011	26	0.65	16.10
0100	6	0.15	16.25
0101	6	0.15	16.40
0110	3	0.08	16.48
0111	36	0.90	17.38
1000	22	0.55	17.93
1001	XXX	XXX	XXX
1010	XXX	XXX	XXX
1011	10	0.25	18.38
1100	11	0.28	18.66
1101	5	0.13	18.79
1110	12	0.30	19.09
1111	3,222	80.91	100.00
Total	3,987	100.00	

East Germany: Original data

Pattern	Frequency	Percent	Cumulated
0000	565	30.51	30.51
0001	45	2.43	32.94
0010	8	0.43	33.37
0011	26	1.40	34.77
0100	8	0.43	35.21
0101	7	0.38	35.58
0110	8	0.43	36.02
0111	28	1.51	37.53
1000	25	1.35	38.88
1001	5	0.27	39.15
1010	3	0.16	39.31
1011	12	0.65	39.96
1100	12	0.65	40.60
1101	6	0.32	40.93
1110	17	0.92	41.85
1111	1,077	58.15	100.00
Total	1,852	100.00	

East Germany: KombiFiD data – Agreement sample

Pattern	Frequency	Percent	Cumulated
0000	180	26.32	26.32
0001	11	1.61	27.92
0010	3	0.44	28.36
0011	8	1.17	29.53
0100	XXX	XXX	XXX
0101	XXX	XXX	XXX
0110	XXX	XXX	XXX
0111	5	0.73	31.14
1000	10	1.46	32.60
1001	XXX	XXX	XXX
1010	XXX	XXX	XXX
1011	5	0.73	33.63
1100	4	0.58	34.21
1101	XXX	XXX	XXX
1110	4	0.58	34.94
1111	445	65.06	100.00
Total	684	100.00	

Note: Frequency is the number of enterprises with a pattern. A zero indicates that an enterprise did not export in a year, a one indicates that it did export. A firm with the pattern 0000 did never export between 2003 and 2006, a firm with the pattern 0001 exported only in the last year (2006), etc. XXX indicates that there are between one and three cases; this number has to be treated as confidential.

Table 2: Distribution of characteristics of exporters and non-exporters in 2003

		Share of exports in total sales (percent)	Number of employees	Physical capital per employee (Euro)	Wage per employee per year (Euro)	Share of R&D expend. in total sales (percent)
West Germany						
Original data						
Exporters (N = 8,075)	mean	31.62	412.46	89,047.93	33,225.46	1.25
	sd	24.79	2,951.78	102,511.2	10,273.19	2.97
	p1	0.11	22	1,788.25	10,978.35	0
	p5	0.97	28	10,085.77	18,065.56	0
	p25	10.39	55	35,216.2	26,911.46	0
	p50	26.89	118	63,453.77	32,885.24	0
	p75	49.54	298	109,589.5	38,847.5	1.20
	p95	78.98	1,252	243,676.4	49,405.31	6.45
	p99	93.46	3,656	457,971.1	59,956.52	13.81
Non-exporters (N = 1,963)	mean	0	132.92	73,771.79	26,652.00	0.18
	sd	0	238.03	108,221.0	11,955.45	1.22
	p1	0	21	881.34	3,596.30	0
	p5	0	24	4,549.22	7,060.43	0
	p25	0	36	20,290.49	19,401.84	0
	p50	0	59	41,792.13	26,463.31	0
	p75	0	120	87,254.01	33,336.76	0
	p95	0	525	233,180.7	45,037.39	0.43
	p99	0	1,187	545,217.6	59,168.65	5.76

KombiFiD data - Agreement sample

Exporters (N = 3,294)	mean	32.63	505.43	91,776.13	33,706.79	1.40
	sd	24.73	4,056.61	107,014	10,565.01	3.01
	p1	0.16	22	2,172.43	11,977.87	0
	p5	1.22	28	11,134.62	18,598.14	0
	p25	11.10	60	37,471.35	27,759.82	0
	p50	28.60	133	66,052.25	33,335.38	0
	p75	51.14	330	114,548.7	39,080.59	1.56
	p95	79.40	1,323	244,822.7	49,701.05	6.97
	p99	94.17	4,522	431,836.00	60,340.57	14.29
	Non-exporters (N = 693)	mean	0	157.43	83,309.81	27,216.75
sd		0	280.80	131,834.3	12,288.36	1.29
p1		0	21	748	4,214.29	0
p5		0	24	6,615.73	7,846.15	0
p25		0	37	23,562.98	19,566.14	0
p50		0	66	47,890.77	27,134.58	0
p75		0	140	92,394.00	33,453.55	0
p95		0	641	248,462.9	46,201.14	0.69
p99		0	1,209	581,413.6	62,481.18	6.28

East Germany

Original data

Exporters (N = 1,157)	mean	25.78	201.27	147,509.9	24,350.37	1.63
	sd	24.87	542.68	244,110.3	8,401.32	4.74
	p1	0.03	22	2,549.01	8,212.23	0
	p5	0.35	25	14,161.62	13,208.97	0
	p25	5.04	44	44,917.57	18,921.51	0
	p50	17.83	83	89,609.07	23,149.81	0
	p75	40.43	173	159,656.4	28,643.04	1.04
	p95	77.43	634	460,087.3	39,819.79	9.35
	p99	96.51	2,070	980,751.9	49,494.31	21.08
Non-exporters (N = 695)	mean	0	126.07	127,668	20,765.25	0.28
	sd	0	363.74	434,151.9	10,022.81	1.26
	p1	0	20	1,913.78	3,613.04	0
	p5	0	23	8,814.00	9,609.26	0
	p25	0	35	27,986.15	15,207.94	0
	p50	0	56	57,968.74	19,332.38	0
	p75	0	107	126,857.1	24,283.16	0
	p95	0	371	402,719	35,590.24	1.48
	p99	0	1,107	865,491.4	46,278.13	7.37

KombiFiD data - Agreement sample

Exporters	mean	27.55	213.17	140,523.8	24,814.68	1.86
(N = 471)	sd	25.04	585.12	160,156.9	7,989.62	5.22
	p1	0.03	22	3,182.56	10,476.07	0
	p5	0.41	25	16,578.36	14,737.18	0
	p25	6.42	43	45,626.19	19,481.00	0
	p50	20.13	83	94,566.66	23,436.62	0
	p75	44.13	180	154,116.1	29,022.13	1.47
	p95	75.95	649	435,317.9	38,684.29	9.62
	p99	94.71	2,918	908,272.3	53,445.36	23.80
Non-exporters	mean	0	122.96	107,715.5	20,979.83	0.54
(N = 213)	sd	0	321.94	152,463.4	8,442.35	1.88
	p1	0	20	2,414.22	4,230.05	0
	p5	0	23	7,205.02	9,281.76	0
	p25	0	33	29,708.26	15,331.03	0
	p50	0	54	57,968.74	19,453.51	0
	p75	0	97	112,981.4	24,793.55	0
	p95	0	377	399,402.9	39,997.57	4.25
	p99	0	1107	640,933.1	46,278.13	10.03

Note: sd is the standard deviation; p1 is the first percentile, etc. The minima and maxima are confidential because they are information for single enterprises.

Table 3: Differences between exporters and non-exporters: Distributions of characteristics in 2003

	West Germany		East Germany	
	Original data	KombiFiD data - Agreement sample	Original data	KombiFiD data - Agreement sam.
Number of employees				
K-S-Test H0: equality of distributions (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for non-exporters (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for exporters (p-value)	1.000	1.000	1.000	1.000
Physical capital per employee (Euro)				
K-S-Test H0: equality of distributions (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for non-exporters (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for exporters (p-value)	0.898	0.817	0.994	0.994
Wage per employee per year(Euro)				
K-S-Test H0: equality of distributions (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for non-exporters (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for exporters (p-value)	0.969	0.967	0.997	0.920
Share of R&D expenditures in total sales (percent)				
K-S-Test H0: equality of distributions (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for non-exporters (p-value)	0.000	0.000	0.000	0.000
K-S-Test H0: differences favourable for exporters (p-value)	1.000	1.000	1.000	1.000

Note: K-S-Test is the Kolmogorov-Smirnov test for first-order stochastic dominance.

Table 4: Determinants of export participation: Probit-estimates

		West Germany		East Germany	
		Original data	KombiFiD data - Agreement sample	Original data	KombiFiD data - Agreement sample
Number of employees	β p	0.00015 0.000	0.00015 0.000	0.00044 0.000	0.00068 0.003
Number of employees (squared)	β p	-9.27e-10 0.000	-9.17e-10 0.000	-5.62e-8 0.001	-7.74e-8 0.004
Physical capital per employee (Euro)	β p	-4.32e-8 0.387	-1.53e-7 0.010	1.70e-9 0.979	1.19e-7 0.612
Wage per employee per year (Euro)	β p	5.86e-6 0.000	5.13e-6 0.000	7.06e-6 0.001	1.48e-5 0.002
Share of R&D expend. in total sales (%)	β p	0.012 0.009	0.015 0.024	0.039 0.000	0.017 0.091
Number of cases		9,410	3,294	1,597	448

Note: β is the estimated marginal effect at the mean of the independent variable; p is the prob-value. All models include a full set of 4digit industry-dummies plus a constant. The models are estimated for data from 2005.

Table 5: Determinants of the share of exports in total sales: Fractional logit estimates

		West Germany - 2003		West Germany - 2004	
		Original data	KombiFiD data - Agreement sample	Original data	KombiFiD data - Agreement sample
Number of employees	β p	0.000083 0.000	0.000064 0.003	0.000081 0.000	0.000061 0.004
Number of employees (squared)	β p	-5.39e-10 0.000	-3.92e-10 0.004	-5.15e-10 0.000	-3.57e-10 0.006
Physical capital per employee (Euro)	β p	6.56e-7 0.001	3.18e-7 0.251	6.95e-7 0.000	2.76e-7 0.274
Wage per employee per year (Euro)	β p	0.000030 0.000	0.000027 0.000	0.000032 0.000	0.000037 0.000
Share of R&D expend. in total sales (%)	β p	0.057 0.000	0.058 0.000	0.052 0.000	0.035 0.083
Number of cases		10,038	3,987	10,038	3,987

Note: β is the estimated regression coefficient; p is the prob-value. All models include a full set of 4digit industry-dummy variables plus a constant. The model cannot be estimated for East Germany; Stata reports that the variance matrix is non-symmetric or highly singular.

Table 6: Decomposition of overall variation into between and within variation

		West Germany		East Germany	
		Original data	KombiFiD data - Agreement sample	Original data	KombiFiD data - Agreement sample
Exporter (Dummy; 1 = yes)	overall	0.39	0.37	0.48	0.46
	between	0.38	0.36	0.46	0.44
	within	0.10	0.10	0.15	0.13
Share of exports in total sales	overall	26.10	26.17	23.87	24.64
	between	25.67	25.76	23.18	24.02
	within	4.72	4.64	5.71	5.57
Number of employees	overall	2,645.94	3,705.38	467.40	516.61
	between	2,642.66	3,700.91	465.37	515.09
	within	133.69	188.87	44.51	43.13
Physical capital per employee (€)	overall	105,417	115,620	259,887	155,722
	between	99,080	107,179	249,033	150,270
	within	36,009	43,394	74,489	41,146
Wage per employee per year (€)	overall	11,202	11,043	9,482	8,865
	between	10,668	10,436	9,161	8,557
	within	3,419	3,614	2,454	2,333
Share of R&D expend. in total sales (%)	overall	2.82	2.89	3.63	4.21
	between	2.60	2.73	3.33	3.81
	within	1.08	0.94	1.44	1.78
Number of observations		40,152	15,948	7,408	2,736
Number of firms		10,038	3,987	1,852	684

Table 7: Determinants of export participation and the share of exports in total sales: Fixed effects panel estimates

		Export participation (Fixed effects logit)		Share of exports in total sales (Fractional probit panel)	
		Original data	KombiFiD data - Agreement sample	Original data	KombiFiD data - Agreement sample
West Germany					
Number of employees	β	0.0033	0.0059	9.16e-6	1.40e-5
	p	0.097	0.095	0.488	0.455
Number of employees (squared)	β	-1.51e-7	-5.72e-7	-4.47e-11	-6.26e-11
	p	0.727	0.354	0.364	0.363
Physical capital per employee (Euro)	β	-2.62e-6	-4.92e-6	-1.86e-8	-3.56e-8
	p	0.031	0.027	0.347	0.142
Wage per employee per year (Euro)	β	0.000018	0.000013	9.82e-7	9.80e-7
	p	0.094	0.094	0.002	0.019
Share of R&D expend. in total sales (%)	β	-0.015	0.164	-0.00047	-0.00085
	p	0.792	0.330	0.806	0.537
Number of observations		2,000	740	40,152	15,948
Number of firms		500	185	10,038	3,987

East Germany

Number of employees	β	0.026	0.061	0.00057	0.00044
	p	0.001	0.169	0.000	0.073
Number of employees (squared)	β	-0.000014	0.000021	-3.28e-8	2.31e-8
	p	0.002	0.866	0.009	0.637
Physical capital per employee (Euro)	β	-2.17e-7	6.92e-7	-7.90e-8	-1.13e-8
	p	0.544	0.857	0.212	0.902
Wage per employee per year (Euro)	β	0.000035	0.00016	3.35e-6	6.87e-6
	p	0.217	0.027	0.034	0.003
Share of R&D expend. in total sales (%)	β	-0.013	-0.110	-0.0037	-0.0038
	p	0.879	0.447	0.049	0.111
Number of observations		840	236	7,408	2,736
Number of firms		210	59	1,852	684

Note: β is the estimated regression coefficient; p is the prob-value. All models include a full set of year-dummies; the fractional probit panel models include a full set of mean values of the exogenous variables plus a constant, too.

Working Paper Series in Economics

(recent issues)

- No.216: *John P. Weche Gelübcke*: The Performance of Foreign Affiliates in German Manufacturing: Evidence from a new Database, November 2011
- No.215: *Joachim Wagner*: Exports, Foreign Direct Investments and Productivity: Are services firms different?, September 2011
- No.214: *Stephan Humpert and Christian Pfeifer*: Explaining Age and Gender Differences in Employment Rates: A Labor Supply Side Perspective, August 2011
- No.213: *John P. Weche Gelübcke*: Foreign Ownership and Firm Performance in German Services: First Evidence based on Official Statistics, August 2011
- No.212: *John P. Weche Gelübcke*: Ownership Patterns and Enterprise Groups in German Structural Business Statistics, August 2011
- No.211: *Joachim Wagner*: Exports, Imports and Firm Survival: First Evidence for manufacturing enterprises in Germany, August 2011
- No.210: *Joachim Wagner*: International Trade and Firm Performance: A Survey of Empirical Studies since 2006, August 2011
- No.209: *Roland Olbrich, Martin F. Quaas, and Stefan Baumgärtner*: Personal norms of sustainability and their impact on management – The case of rangeland management in semi-arid regions, August 2011
- No.208: *Roland Olbrich, Martin F. Quaas, Andreas Haensler and Stefan Baumgärtner*: Risk preferences under heterogeneous environmental risk, August 2011
- No.207: *Alexander Vogel and Joachim Wagner*: Robust estimates of exporter productivity premia in German business services enterprises, July 2011 [forthcoming in: *Economic and Business Review*]
- No.206: *Joachim Wagner*: Exports, imports and profitability: First evidence for manufacturing enterprises, June 2011
- No.205: *Sebastian Strunz*: Is conceptual vagueness an asset? Resilience research from the perspective of philosophy of science, May 2011
- No.204: *Stefanie Glotzbach*: On the notion of ecological justice, May 2011
- No.203: *Christian Pfeifer*: The Heterogeneous Economic Consequences of Works Council Relations, April 2011
- No.202: *Christian Pfeifer, Simon Janssen, Philip Yang and Uschi Backes-Gellner*: Effects of Training on Employee Suggestions and Promotions in an Internal Labor Market, April 2011
- No.201: *Christian Pfeifer*: Physical Attractiveness, Employment, and Earnings, April 2011
- No.200: *Alexander Vogel*: Enthüllungsrisiko beim Remote Access: Die Schwerpunkteigenschaft der Regressionsgerade, März 2011
- No.199: *Thomas Wein*: Microeconomic Consequences of Exemptions from Value Added Taxation – The Case of Deutsche Post, February 2011
- No.198: *Nikolai Hoberg and Stefan Baumgärtner*: Irreversibility, ignorance, and the intergenerational equity-efficiency trade-off, February 2011
- No.197: *Sebastian Schuetz*: Determinants of Structured Finance Issuance – A Cross-Country Comparison, February 2011

- No.196: *Joachim Fünfgelt and Günther G. Schulze*: Endogenous Environmental Policy when Pollution is Transboundary, February 2011
- No.195: *Toufic M. El Masri*: Subadditivity and Contestability in the Postal Sector: Theory and Evidence, February 2011
- No.194: *Joachim Wagner*: Productivity and International Firm Activities: What do we know?, January 2011
- No.193: *Martin F. Quaas and Stefan Baumgärtner*: Optimal grazing management rules in semi-arid rangelands with uncertain rainfall, January 2011
- No.192: *Institut für Volkswirtschaftslehre*: Forschungsbericht 2010, Januar 2011
- No.191: *Natalia Lukomska, Martin F. Quaas and Stefan Baumgärtner*: Bush encroachment control and risk management in semi-arid rangelands, December 2010
- No.190: *Nils Braakmann*: The causal relationship between education, health and health related behaviour: Evidence from a natural experiment in England, November 2010
- No.189: *Dirk Oberschachtsiek and Britta Ulrich*: The link between career risk aversion and unemployment duration: Evidence of non-linear and time-depending pattern, October 2010
- No.188: *Joachim Wagner*: Exports and Firm Characteristics in German Manufacturing industries, October 2010
- No.187: *Joachim Wagner*: The post-entry performance of cohorts of export starters in German manufacturing industries, September 2010
- No.186: *Joachim Wagner*: From estimation results to stylized facts: Twelve recommendations for empirical research in international activities of heterogenous firms, September 2010 [forthcoming in: *De Economist*]
- No.185: *Franziska Dittmer and Markus Groth*: Towards an agri-environment index for biodiversity conservation payment schemes, August 2010
- No.184: *Markus Groth*: Die Relevanz von Ökobilanzen für die Umweltgesetzgebung am Beispiel der Verpackungsverordnung, August 2010
- No.183: *Yama Temouri, Alexander Vogel and Joachim Wagner*: Self-Selection into Export Markets by Business Services Firms – Evidence from France, Germany and the United Kingdom, August 2010
- No.182: *David Powell and Joachim Wagner*: The Exporter Productivity Premium along the Productivity Distribution: First Evidence from a Quantile Regression for Fixed Effects Panel Data Models, August 2010
- No.181: *Lena Koller, Claus Schnabel und Joachim Wagner*: Beschäftigungswirkungen arbeits- und sozialrechtlicher Schwellenwerte , August 2010 [publiziert in: *Zeitschrift für Arbeitsmarktforschung* 44(2011), 1-2, 173-180]
- No.180: *Matthias Schröter, Markus Groth und Stefan Baumgärtner*: Pigous Beitrag zur Nachhaltigkeitsökonomie, Juli 2010
- No.179: *Norbert Olah, Thomas Huth and Dirk Löhr*: Monetary policy with an optimal interest structure, July 2010
- No.178: *Sebastian A. Schütz*: Structured Finance Influence on Financial Market Stability – Evaluation of Current Regulatory Developments, June 2010

- No.177: *Franziska Boneberg*: The Economic Consequences of One-third Co-determination in German Supervisory Boards: First Evidence from the German Service Sector from a New Source of Enterprise Data, June 2010
[forthcoming in: Schmollers Jahrbuch / Journal of Applied Social Science Studies]
- No.176: *Nils Braakmann*: A note on the causal link between education and health – Evidence from the German short school years, June 2010
- No.175: *Torben Zülsdorf, Ingrid Ott und Christian Papilloud*: Nanotechnologie in Deutschland – Eine Bestandsaufnahme aus Unternehmensperspektive, Juni 2010
- No.174: *Nils Braakmann*: An empirical note on imitative obesity and a puzzling result, June 2010
- No.173: *Anne-Kathrin Last and Heike Wetzel*: Baumol's Cost Disease, Efficiency, and Productivity in the Performing Arts: An Analysis of German Public Theaters, May 2010
- No.172: *Vincenzo Verardi and Joachim Wagner*: Productivity premia for German manufacturing firms exporting to the Euro-area and beyond: First evidence from robust fixed effects estimations, May 2010 [forthcoming in: The World Economy]
- No.171: *Joachim Wagner*: Estimated capital stock values for German manufacturing enterprises covered by the cost structure surveys, May 2010
[published in: Schmollers Jahrbuch / Journal of Applied Social Science Studies 130 (2010), 3, 403-408]
- No.170: *Christian Pfeifer, Simon Janssen, Philip Yang and Uschi Backes-Gellner*: Training Participation of an Aging Workforce in an Internal Labor Market, May 2010
- No.169: *Stefan Baumgärtner and Martin Quaas*: Sustainability Economics – general versus specific, and conceptual versus practical, May 2010
[forthcoming in: Ecological Economics]
- No.168: *Vincenzo Verardi and Joachim Wagner*: Robust Estimation of Linear Fixed Effects Panel Data Models with an Application to the Exporter Productivity Premium, April 2010
[published in: Jahrbücher für Nationalökonomie und Statistik 231 (2011), 4, 546-557]
- No.167: *Stephan Humpert*: Machen Kinder doch glücklich? April 2010
- No.166: *Joachim Wagner*: Produktivität und Rentabilität in der niedersächsischen Industrie im Bundesvergleich. Eine Benchmarking-Studie auf der Basis vertraulicher Firmendaten aus Erhebungen der amtlichen Statistik, April 2010
[erschienen in: Statistische Monatshefte Niedersachsen, Sonderausgabe "Kooperation Wissenschaft und Statistik - 20 Jahre Nutzung von amtlichen Mikrodaten", S. 30 - 42]
- No.165: *Nils Braakmann*: Neo-Nazism and discrimination against foreigners: A direct test of taste discrimination, March 2010
- No.164: *Amelie Boje, Ingrid Ott and Silvia Stiller*: Metropolitan Cities under Transition: The Example of Hamburg/ Germany, February 2010
- No.163: *Christian Pfeifer and Stefan Schneck*: Relative Wage Positions and Quit Behavior: New Evidence from Linked Employer-Employee-Data, February 2010
- No.162: *Anja Klaubert*: "Striving for Savings" – religion and individual economic behavior, January 2010
- No.161: *Nils Braakmann*: The consequences of own and spousal disability on labor market outcomes and objective well-being: Evidence from Germany, January 2010
- No.160: *Norbert Olah, Thomas Huth und Dirk Löhr*: Geldpolitik mit optimaler Zinsstruktur, Januar 2010

(see www.leuphana.de/institute/ivwl/publikationen/working-papers.html for a complete list)

Leuphana Universität Lüneburg
Institut für Volkswirtschaftslehre
Postfach 2440
D-21314 Lüneburg
Tel.: ++49 4131 677 2321
email: brodt@leuphana.de

www.leuphana.de/institute/ivwl/publikationen/working-papers.html