Empirical Studies with New German Firm Level Data from Official Statistics

Edited by

Anja Malchin
Ramona Voshage
Joachim Wagner

With Contributions by

Boneberg, Franziska, Lueneburg
Braakmann, Nils, Newcastle upon Tyne, U.K.
Jeßberger, Christoph, Munich
Kilian, Stefan, Freising
Petrick, Sebastian, Kiel
Rehdanz, Katrin, Kiel
Röder, Norbert, Braunschweig
Schiersch, Alexander, Berlin
Schmidt-Ehmcke, Jens, Berlin
Sindram, Maximilian, Munich
Wagner, Joachim, Lueneburg
Wagner, Ulrich J., Madrid
Zimmer, Markus, Munich

Lucius & Lucius · Stuttgart 2011

Anschriften der Herausgeber des Themenheftes

Anja Malchin
Amt für Statistik Berlin-Brandenburg
Forschungsdatenzentrum
Alt-Friedrichsfelde 60
10315 Berlin, Germany
anja.malchin@statistik-bbb.de

Ramona Voshage
Amt für Statistik Berlin-Brandenburg
Forschungsdatenzentrum
Alt-Friedrichsfelde 60
10315 Berlin, Germany
ramona.voshage@statistik-bbb.de

Prof. Dr. Joachim Wagner
Leuphana Universität Lüneburg
P.O. Box 2440
21314 Lueneburg, Germany
wagner@uni.leuphana.de

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar

ISBN 978-3-8282-0541-3

Satz: Mitterweger & Partner Kommunikationsgesellschaft mbH, Plankstadt
Druck und Bindung: Neumann Druck, Heidelberg
Printed in Germany

Inhalt / Contents

Guest Editorial

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. 2007) in 2001 and 2002. This started a new era for researchers working in empirical economics. Access to confidential individual and firm data for individuals and firms that were collected in surveys performed by the statistical offices became easy (and available at low costs) by using these research data centres (RDC). The number and variety of data sets provided by the RDC increased steadily (see Kaiser/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 (or from external sources) that could not 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*. *AFiD* is an acronym for the German *A*mtliche *Fi*rmendaten für *D*eutschland (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.

In the *AFiD* project, which is in detail described in Malchin and Voshage (2009), several different panel data sets are provided in the RDC, including the *AFiD-Panels Agriculture, Industrial Units, Industrial Enterprises, Energy Units, Services* and *Business Register*. For some of these panels the information potential can be enlarged even further by adding variables from the so-called *AFID-Modules* Earnings, Use of Energy, and the environmental moduls.[2]

The RDC of the statistical offices of the German federal states hosted a workshop in Berlin in May 2010 to offer researchers who are working with different AFiD-Panels an opportunity to present first results generated with this new type of firm level data and to discuss them with participants from universities, research institutes, statistical offices and policy makers. Selected contributions to this workshop are published in this special issue of the *Jahrbücher für Nationalökonomie und Statistik*.[3] We hope that these papers not only provide important new insights in the fields they are dealing with but also motivate interested researchers that did not work with AFiD data before to do so in the future.

---

[1] For partial surveys, see Wagner (2007a, 2008). Recent contributions to this journal based on these data include Görzig et al. (2007), Ronning (2008) and Wagner (2007b, 2009).

[2] Note that tailor made variants that combine data from various surveys according to a wish-list provided by a researcher can be prepared on request.

[3] All papers went through the usual referee process and were revised accordingly.

References

Görzig, B., M. Gornig, A. Werwatz (2007), Produktdiversifizierung: Konvergenz zwischen ost- und westdeutschen Unternehmen? Jahrbücher für Nationalökonomie und Statistik 227: 168-208.

Kaiser, U., J. Wagner (2008), Neue Möglichkeiten zur Nutzung vertraulicher amtlicher Personen- und Firmendaten. Perspektiven der Wirtschaftspolitik 9: 329-349.

Malchin, A., R. Voshage (2009), Official Firm Data for Germany. Schmollers Jahrbuch / Journal of Applied Social Science Studies 129: 501-513.

Ronning, G. (2008), Measuring Research Intensity from Anonymized Data: Does Multiplicative Noise with Factor Structure Save Results Regarding Quotients? Jahrbücher für Nationalökonomie und Statistik 228: 644-653.

Wagner, J. (2007a), Politikrelevante Folgerungen aus Analysen mit Firmendaten der amtlichen Statistik. Schmollers Jahrbuch / Journal of Applied Social Science Studies 126: 359-374.

Wagner, J. (2007b), Productivity and Size of the Export Market. Jahrbücher für Nationalökonomie und Statistik 227: 403-408.

Wagner, J. (2008), Die Forschungspotenziale der Betriebspaneldaten des Monatsberichts im Verarbeitenden Gewerbe. AStA – Wirtschafts- und Sozialstatistisches Archiv 2: 209-221.

Wagner, J. (2009), Produktdifferenzierung in deutschen Industrieunternehmen 1995 – 2004: Ausmaß und Bestimmungsgründe. Jahrbücher für Nationalökonomie und Statistik 229: 615-642.

Zühlke, S., H. Christians, K. Cramer (2007), Das Forschungsdatenzentrum der Statistischen Landesämter – eine Serviceeinrichtung für die Wissenschaft. AStA Wirtschafts- und Sozialstatistisches Archiv 1: 169-178.

Anja Malchin
Ramona Voshage
Joachim Wagner

Jahrbücher f. Nationalökonomie u. Statistik (Lucius & Lucius, Stuttgart 2011) Bd. (Vol.) 231/3

Product Diversification and Profitability in German Manufacturing Firms

By Nils Braakmann, Newcastle upon Tyne, and Joachim Wagner, Lueneburg*

JEL D21; L60

Product diversification; profitability; Germany.

Summary

We use unique rich data for German manufacturing enterprises to investigate the product diversification – firm performance relationship. We find that an increase in the degree of product diversification has a negative impact on profitability when observed and unobserved firm characteristics are controlled for. The effects are statistically significant and large from an economic point of view. This helps to understand the fact that nearly 40 percent of all enterprises with at least 20 employees are single-product firms according to a detailed classification of products, and that multi-product enterprises with a large number of goods are a rare species.

1 Motivation

A cartoon published in *The New Yorker* shows a manager sitting at his desk when his secretary enters the office saying „Your mother called to remind you to diversify". Mothers' advices, as we all know, are too often ignored („Boy, don't drink that much at the party tonight", etc.). Manufacturing enterprises in Germany are a case in point. Nearly 40 percent of all manufacturing enterprises with at least 20 employees in Germany are single-product firms according to a detailed classification of products, and they do not diversify in product-space. Multi-product enterprises producing a large number of goods are a rare species (Wagner 2009). Mothers' advices, however, are usually derived from life experience, and following these advices might be expected to pay. So why should a firm diversify, i.e. why should a firm produce more than one good and spread activities across markets when it goes for a better performance?

According to the resource view (Montgomery 1994: 167 f.) firms that have an excess capacity in productive factors – for example, special knowledge the firm has accumulated through time, and that can be used in other markets without reducing the use in the market the firm is already active in – can reap economies of scope by expanding into different product markets. Alternatively, the firm may sell this specific asset to another firm active in this market. However, it is reasonable to expect that market failure does exist when it comes to trade in intangible assets like knowledge, and this is an incentive to internalize the use of the assets. Furthermore, productive factors of this type are often closely linked to persons who can not simultaneously work for several firms producing

* All computations were done in the research data centre of the Statistical Office in Berlin. Many thanks to Ramona Voshage for building the data set and her help in many ways. Helpful comments from two referees and workshop participants are gratefully acknowledged.

different products. If a firm owns intangible assets of this type that make it successful in one market, and if these assets can be used in other markets, too, one would expect diversification into other product markets to be positive for firm performance. However, there are extra costs to be considered, too, because producing for a new market usually is connected to costs for developing and introducing the new product, including costs for market research and marketing.

A second line of reasoning points to the reduction of risk and uncertainty that can be reached by diversification across product markets (Lipczynski/Wilson 2001: 324 f.). Demand shocks or new competitors may have a negative impact on sales and profits in a product market in an unpredictable manner. A single-product firm, therefore, is highly vulnerable to adverse shocks that hit their market. A multi-product firm can substantially reduce this vulnerability, especially if the risks on the various product markets are randomly distributed or negatively correlated (for a formal model see Hirsch/Lev 1971). Risk reduction will lead to more stable profits. More stable profits may be positively related to growth because they can secure the funds for investment at lower costs, and this may have a positive influence on the level of profits. Again, there are extra costs associated with the serving of different product markets that have to be considered, too.

Whether product diversification is good or bad for firm performance, and to which extent, therefore, is an empirical question. Results so far are mixed. Hall (1995: 26) summarizes the findings of a number of studies as follows: „The relationship between diversification and organisational performance has been the subject of numerous studies over the years ..., with results suggesting: negative relationships ..., positive relationships ..., and lack of relationship .... Regardless of how diversification is measured ..., the corporate diversification literature has failed to reach consensus about the relationship between firm diversification and performance." Similarly, Montgomery (1994: 172) argues that the literature surveyed by her „clearly shows that diversification is not a guaranteed route to success."

In Germany data on the number of different products produced by a firm[1] and on the turnover realized with each product became available for researchers who are not working inside the statistical agencies only recently. As a first step the so-called producer-product-panel was built that merged information from the cost structure survey and from the survey of products produced for a sample of manufacturing enterprises and for the years from 1995 to 2001 (see Görzig et al. 2005). This data set has been used to compute various measures of diversification for manufacturing industries in the years covered and for comparisons over time (see Zloczysti/Faber 2007; Görzig et al. 2007a, 2007b). Furthermore, descriptive studies investigated the relationship between the expansion and the reduction of the number of goods produced and changes in the profitability of enterprises (see Görzig et al. 2007; Görzig/Pohl 2007; Gornig/Görzig 2007). Görzig et al. (2007) and Görzig and Pohl (2007) find that enterprises that reduce the degree of product diversification show the largest improvement in profitability. Note, however, that these studies do not control for unobserved firm heterogeneity.

This paper contributes to the literature by using a unique rich newly built data set for German manufacturing enterprises to investigate the product diversification – firm performance relationship. We find that an increase in the degree of product diversification

[1] The expression „firm" is used here to describe either an enterprise (a legal unit) or an establishment (a local production unit). In the empirical investigations data at the enterprise level are used; some of these data were collected at the establishment level and aggregated to the enterprise level.

has a negative impact on profitability when observed and unobserved firm characteristics are controlled for. These effects are statistically significant and large from an economic point of view.

The rest of the paper is organized as follows: Section 2 introduces the data used. Section 3 presents some stylized facts for product diversification in German manufacturing firms. Section 4 reports the results of our econometric investigation. Section 5 concludes.

2 Data

This study uses a data set that extends the producer-product-panel in three ways: All manufacturing enterprises with at least 20 employees are covered; information from the so-called monthly report of manufacturing establishments (aggregated over all months, and all establishments belonging to an enterprise) is added; and the time frame has been extended to cover the years 1995 to 2004.[2]

The focus of this study is on the relationships between product diversification and profitability. Given that information on profitability is available from the cost structure surveys only, the sample of firms used here is limited to the enterprises that took part in these surveys. The annual cost structure survey covers all enterprises from manufacturing industries with 500 and more employees. Smaller enterprises, however, are sampled, and as a rule the samples are replaced after four waves, leading to a rotating panel design. Different from this rule in the period covered by the data set used in this study new samples were drawn in 1995, 1997, 1999 and 2003. Because longitudinal data are needed to investigate the consequences of product diversification for firm performance in the econometric investigations this study uses data from a panel of enterprises that participated in the cost structure survey from 1999 to 2002.[3]

To give a first impression on the evidence of product diversification in German manufacturing enterprises, some information is given below. We focus on 2000, a year in the middle of the period considered in the econometric investigations.[4] In 2000 61.25 percent of all 30,955 enterprises covered in the survey of products reported that they produced more than one product. A product here is defined by the most detailed 9digit-level of the manual for the survey of products (*Güterverzeichnis für Produktionsstatistiken*) used by German official statistics. At this rather detailed level, for example, brandy, whisky, rum, and gin are different products, and the same holds for automobiles with a cubic centimetres stroke volume of up to 1,500, between 1,500 and 2,500, and more than 2,500. Nearly 40 percent of all manufacturing enterprises with at least 20 employees are single-product firms according to this detailed classification.[5] Multi-product enterprises on average produce 4.35 different goods; firms with a large number of goods, however, are rare – only 3.2 percent of all firms produce more than 10 different goods. Over time the pattern of diversification is rather stable. Among the 17,792 enterprises we have information for in the data set for 1995 to 2004 56.4 (30.9) percent were a multi-product (single-product) enterprise in each year.

---

[2] The data are confidential but not exclusive. They can be used by researchers on a contractual basis via remote data access in the research data centres of the statistical offices in Germany; for details, see Zühlke et al. (2004).

[3] See Fritsch et al. (2004) for a detailed description of the cost structure survey.

[4] Detailed descriptive results for 1995 to 2004 are reported in Wagner (2009).

[5] Note that a firm that produces different brands of a product (for example, a brewery that produces several brands of beer) is classified as a single product firm.

3 Descriptive evidence on product diversification and profitability in German manufacturing enterprises

Product diversification is measured in two ways, by the *share of sales of the most important product in total sales,* and by the *Berry-index* defined as one minus the sum of squared shares of sales of all products in total sales. By definition, for a single-product firm the share of sales of the most import product in total sales is One, and a decreasing value of this measure shows an increase in diversification. The Berry-index is by definition Zero for a single-product firm, and an increase in its value shows an increase in diversification.

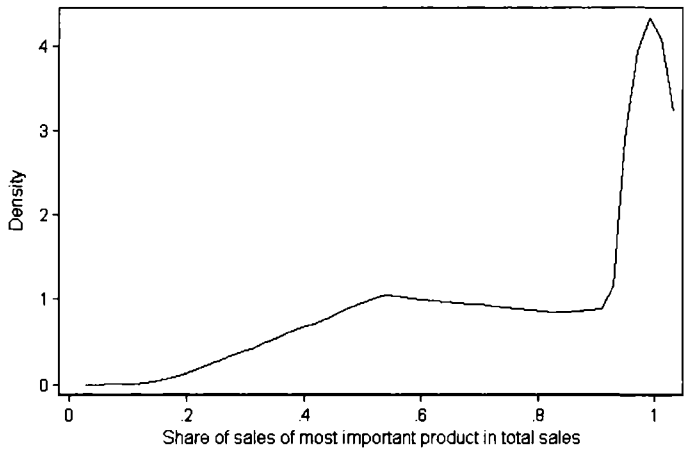

Figure 1 Share of sales of most important product in total sales, manufacturing enterprises in Germany, 2000[1]

[1] Kernel density estimate with epanechnikov kernel

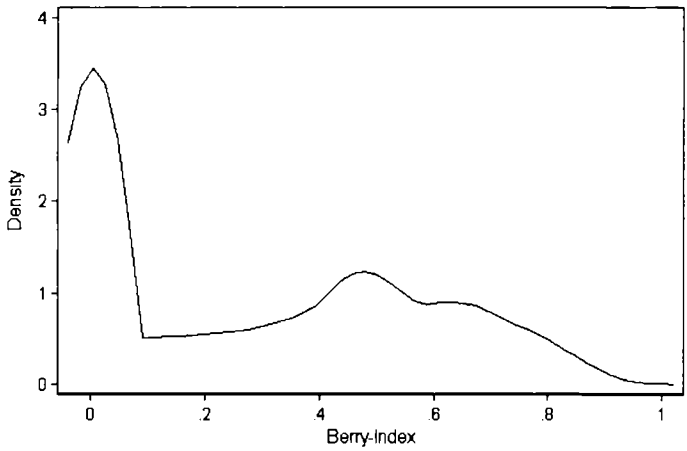

Figure 2 Berry-Index, manufacturing enterprises in Germany, 2000[1]

[1] Kernel density estimate with epanechnikov kernel

To illustrate the distribution of the measures of product diversification in the sample of enterprises used in our econometric investigation figure 1 and figure 2 show kernel density estimates of the share of sales of the most import product in total sales and of the Berry-Index in 2000. Due to the high share of single-product enterprises both distributions are highly skew, and it can be seen that only a small portion of all enterprises is very highly diversified according to both measures.[6]

Profitability is measured as a rate of return, defined as gross firm surplus (computed as gross value added at factor costs minus gross wages and salaries minus costs for social insurance paid by the firm) divided by total sales (net of VAT) minus net change of inventories, using information from the cost structure surveys.[7] Figure 3 shows a kernel density estimate of the rate of return (in percentages) for 2000.[8] The distribution is rather symmetric around the positive mean value, and extreme positive or negative values are rare.

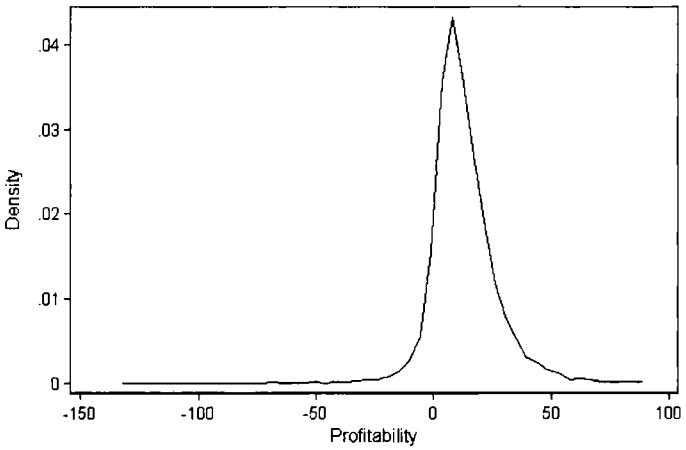

Figure 3 Profitability in manufacturing enterprises in Germany, 2000[1]

[1] Kernel density estimate with epanechnikov kernel

[6] Both measures of diversification are highly positively correlated over time (see Wagner 2009, Table 11), and, therefore, the kernel density estimates look identical for all the years covered. The correlation between the share of sales of the most important product in total sales and the Berry-Index is extremely high in each year; the value for 2000 is -0.986 (see Wagner 2009, Table 10). Note that the fact that the graph in Figure 1 shows values below one, and that the graph in Figure 2 shows values below zero and above one, for the measure of product diversification is caused by the smoothing technique used in the estimation of the kernel density estimates.

[7] The computation of gross firm surplus follows the suggestion of the European Commission (1998: 56). Note that the data set does not have any information on the capital stock, or the sum of assets or equity, of the firm, so that it is not possible to construct profit indicators based thereon like return on assets or return on equity.

[8] The kernel density estimates look identical for all the years covered in this study.

4 Econometric investigation

Our econometric investigation of the relationship between profitability and product diversification uses pooled data for the years 1999 to 2002 and fixed-effects estimators to control for unobserved time-invariant enterprise heterogeneity.[9] Table 1 reports mean values and standard deviations of the variables used in our empirical study. It can be seen that both the profitability and the degree of product diversification vary not only between enterprises (as shown in the figures above) but also over time within the enterprises. Note that the variation in profitability across enterprises is about twice as large as that observed within an enterprise over time, while the variation of both measures of the degree of product diversification across enterprises is more than four times larger than that observed within the enterprises over the four years.

Results from fixed effects regressions for profitability are reported in Table 2. Two variants of empirical models are estimated, one that includes only the measure of the degree of product diversification (plus dummy variables for the years, and a constant), and one that adds a number of control variables.[10] In all models the fixed enterprise effects control for unobserved firm characteristics that do not vary over time. These fixed effects control for the industry affiliation of the enterprise, too, because only few enterprises tend to change industries between the years; this is important because profitability might be expected to vary between industries due to variation in the intensity of competition or regulation.

As can be seen from Table 2 the inclusion of the control variables does not change the results for the estimated link between profitability and product diversification substantially. The regression coefficients for both measures of product diversification are statistically highly significant, and they indicate a negative relationship – the higher the degree of product diversification (i.e., the lower the share of sales of the most important product in total sales, and the higher the value of the Berry-Index), the lower is the profitability, controlling for observed and unobserved enterprise heterogeneity.

These findings are in line with the results from descriptive studies using the producer-product panel (mentioned in section 1) by Görzig et al. (2007) and Görzig and Pohl (2007) who report that enterprises that reduce the degree of product diversification show the largest improvement in profitability. Note, however, that these studies do not control for unobserved firm heterogeneity. In a robustness check we tested for a non-linear relationship between the degree of product diversification and profitability by adding a squared term of the share of the most important product in total sales and of the Berry-Index to the empirical model used. All estimated coefficients for the measures

[9] We experimented with both a propensity score matching approach (that considers product diversification as a binary treatment, with diversified firms as the treatment group and single-product firms as the control group) and with a generalized propensity score matching approach (that considers product diversification as a continuous treatment). In both cases the approach turned out to be not computationally feasible. Matching was never successful, and the balancing property was not fulfilled.

[10] The selection of control variables is motivated by the empirical model used to explain the degree of product diversification applied in Wagner (2009) and by the empirical investigation of the link between exports and profitability in German manufacturing enterprises in Fryges and Wagner (2010). Given that the focus of this paper lies on the relationship between product diversification and profitability and that this relationship turns out to be not affected by the inclusion of control variables (see the results reported below) we do not discuss these control variables and related estimation results in detail.

Table 1 Descriptive statistics for profitability, product diversification, and control variables used in the empirical models

Variable	Mean	Standard Deviation[1]			Observations	
		Overall	Between	Within	Firms * Years	Firms
Profitablity (percentage)	12.360	12.817	11.590	5.664	47.699	12.387
Share of sales of most important product In total sales	0.777	0.236	0.231	0.051	47.699	12.387
Berry-Index	0.291	0.283	0.277	0.055	47.699	12.837
Number of employees	306.67	2348.88	2303.92	113.60	47.696	12.387
Share of sales in Germany in total sales (percentage)	78.915	23.947	23.438	4.667	47.693	12.387
Labour productivity (sales per employee; Euro)	158.100	266957	220492	146702	47.696	12.387
Human capital intensity (wages and salaries per employee, Euro)	29.828	8965.9	8776.7	2037.7	47.696	12.387
Research and development intensity (share of employees in R&D)	0.017	0.046	0.043	0.017	47.699	12.387

[1] The overall standard deviation (computed for all observations) is decomposed into a between (the standard deviation computed for the average values of the firms over the years) and a within (the standard deviation computed for the deviations of the values for individual years from the mean value over the years, plus the global mean over all observations to make results comparable) component. To illustrate the interpretation of these figures, note that the variation in profitability across enterprises is about twice as large as the that observed within an enterprise over time, while the variation in the Berry-Index across enterprises is more than four times larger than that observed within an enterprise over the four years.

Table 2 Results from fixed effects regressions for profitability in German manufacturing enterprises, 1999 – 2002[1]

Model		1	2	3	4
Exogenous variable					
Share of sales of most important	ß	2.402	2.355		
product in total sales	p	0.002	0.003		
Berry-Index	ß			-2.370	-2.342
	p			0.001	0.001
Number of employees	ß		0.00045		0.00047
	p		.233		0.222
Number of employees (squared)	ß		6.20e-11		-3.01e-11
	p		0.977		0.989
Share of sales in Germany in	ß		-0.041		-0.041
total sales (percentage)	p		0.000		0.000
Labour productivity (sales per	ß		1.16e-6		1.15e-6
employee; €)	p		0.300		0.300
Human capital intensity (wages	ß		0.000069		0.000069
and salaries per employee; €)	p		0.001		0.001
Research and development	ß		-0.416		-0.431
intensity (share of employees in R&D)	p		0.865		0.860
Year 2000 (Dummy-variable)	ß	-0.186	-0.285	-0.188	-0.287
	p	0.013	0.000	0.012	0.000
Year 2001 (Dummy-variable)	ß	-1.034	-1.201	-1.036	-1.204
	p	0.000	0.000	0.000	0.000
Year 2002 (Dummy-variable)	ß	-1.822	-2.057	-1.822	-2.057
	p	0.000	0.000	0.000	0.000
Constant	ß	11.241	12.304	13.798	14.808
	p	0.000	0.000	0.000	0.000
Number of observations		47,699	47,693	47,699	47,693
Number of firms		12,387	12,387	12,387	12,387

[1] ß is the estimated regression coefficient, p is the prob-value; robust standard errors of the regression coefficients were adjusted for the firms as clusters.

Table 3 The estimated relation between profitability and product diversification

Share of sales of the most important product in total sales	Estimated change in the rate of profitability (percentage points) compared to a single-product enterprise[1]
.80	-0.471
.60	-0.942
.40	-1.413
.20	-1.884
Berry Index	
.20	-0.468
.40	-0.936
.60	-1.404
.80	-1.872

[1]The estimates are based on the results reported in column 2 and column 4 of Table 2

of product diversification in these augmented models turned out to be statistically insignificant at any conventional level.

To illustrate the economic importance of product diversification for profitability, single product enterprises (with a share of sales of the most important product in total sales on One, and a value for the Berry-Index of Zero by definition) are compared to firms with different degrees of product diversification using the estimated regression coefficients from the empirical models with the control variables. Results documented in Table 3 indicate that a growing degree of product diversification is accompanied by a substantial reduction in profitability. For example, for an average firm in our sample a decrease of the share of sales of the most important product from 100 to 60 percent means a reduction in the rate of profitability by nearly one percentage point, and the same holds when the Berry-Index increases from Zero to 0.40.

A question open for discussion is whether the negative ceteris paribus association between profitability and product diversification can be interpreted to indicate a causal negative impact of the degree of product diversification on profitability, or whether there is (instead of this, or additionally to this) a causal effect running from profitability to product diversification. While reverse causality can not be excluded *per se* in the fixed effects regression framework used in our study,[11] we argue that there are no economic arguments that can explain why the profitability of a firm should have any impact on the number of products produced, or the share of sales of a product in total sales, of an enterprise in the same year. Therefore, we argue that the negative association between profitability and degree of product diversification that results from the fixed effects panel regressions can be interpreted to indicate a negative impact of a higher degree of product diversification on profitability.

5 Concluding remarks

We use a unique rich newly built data set for German manufacturing enterprises to investigate the product diversification – firm performance relationship. We find that an increase in the degree of product diversification has a negative impact on profitability when observed and unobserved firm characteristics are controlled for. The effects are statistically significant and large from an economic point of view. These findings indicate that the extra costs associated with serving different product markets tend to be greater than the extra profits reaped from diversification across these markets. Concentration on a core market pays. This might help to understand the fact that nearly 40 percent of all manufacturing enterprises with at least 20 employees in Germany are single-product firms according to a detailed classification of products, and that multi-product enterprises with a large number of goods are a rare species.

[11] Note that using lagged values of the degree of product diversification in the empirical models offers no solution here, since the measures of product diversification are nearly perfectly positively correlated between adjacent years.

References

European Commission (1998), Commission regulation (EC) no. 2700/98 of 17 December 1998 concerning the definitions of characteristics for structural business statistics. Official Journal of the European Communities L344, 18/12/1998, 4980.

Fritsch, M., B. Görzig, O. Hennchen, A. Stephan (2004), Cost Structure Surveys for Germany. Schmollers Jahrbuch / Journal of Applied Social Science Studies 124: 557-566.

Fryges, H., J. Wagner (2009), Exports and Profitability: First Evidence for German Manufacturing Firms. The World Economy 33: 399-423.

Görzig, B., H. Bömermann, R. Pohl (2005), Produktdiversifizierung und Unternehmenserfolg: Nutzung der Forschungsdatenzentren der Statistischen Ämter. Allgemeines Statistisches Archiv 89: 339-354.

Görzig, B., M. Gornig, R. Pohl (2007), Spezialisierung und Unternehmenserfolg im verarbeitenden Gewerbe Deutschlands. Vierteljahrshefte zur Wirtschaftsforschung 76: 43-58.

Görzig, B., M. Gornig, A. Werwatz (2007a), Produktvielfalt und Produktivität der IKT-Produzenten: Eine Analyse unter Nutzung verbundener amtlicher Unternehmensdaten. AStA – Wirtschafts- und Sozialstatistisches Archiv 1: 145-161.

Görzig, B., M. Gornig, A. Werwatz (2007b), Produktdiversifizierung: Konvergenz zwischen ost- und westdeutschen Unternehmen. Eine Dekomposition mit Mikrodaten der amtlichen Statistik. Jahrbücher für Nationalökonomie und Statistik 227: 168-186.

Görzig, B., R. Pohl (2007), Diversifizierungsstrategien deutscher Unternehmen. Auswertung eines Producer-Product-Panels der amtlichen Statistik. AStA – Wirtschafts- und Sozialstatistisches Archiv 1: 179-191.

Gornig, M., B. Görzig (2007), Verstärkte Spezialisierung deutscher Unternehmen. DIW-Wochenbericht 74: 333-335.

Hall, E.H. (1995), Corporate Diversification and Performance: An Investigation of Causality. Australian Journal of Management 20: 25-42.

Hirsch, S., B. Lev (1971), Sales Stabilization through Export Diversification. Review of Economics and Statistics 53: 270-277.

Lipczynski, J., J. Wilson (2001), Industrial Organisation. An Analysis of Competitive Markets. Harlow.

Montgomery, C.A. (1994), Corporate Diversification. Journal of Economic Perspectives 8: 163-178.

Wagner, J. (2009), Produktdifferenzierung in deutschen Industrieunternehmen 1995 – 2004: Ausmaß und Bestimmungsgründe. Jahrbücher für Nationalökonomie und Statistik 229: 615-642.

Zloczysti, P., C. Faber (2007), Diversifikationsmaße im Praxistest – Ergebnisse auf der Grundlage von amtlichen Mikrodaten für Deutschland. Vierteljahrshefte zur Wirtschaftsforschung 76: 29-42.

Zühlke, S., M. Zwick, S. Scharnhorst, T. Wende (2004), The research data centres of the Federal Statististical Office and the statistical offices of the Länder. Schmollers Jahrbuch / Journal of Applied Social Science Studies 124: 567-578.

Dr. Nils Braakmann, Newcastle University Business School, Newcastle University, Ridley Building, Newcastle upon Tyne, NE1 7RU, United Kingdom.
braakmann@leuphana.de

Prof. Dr. Joachim Wagner, Leuphana University Lueneburg, Institute of Economics, P.O. Box 2440, 21314 Lueneburg, Germany.
wagner@leuphana.de