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Product Diversification and Stability of Employment and Sales: First Evidence from German Manufacturing Firms*

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Abstract:

We use a unique rich newly built data set for German manufacturing enterprises to investigate the relationship between product diversification and the stability of sales and employment. We find that contrary to portfolio theoretic considerations more diversified firms exhibit a higher variability of sales and employment. However, the effects are negligibly small from an economics point of view.

Keywords: Product diversification, stability, variability, Germany

JEL Classification: D21, L60

* All computations were done in the research data centre of the Statistical Office in Berlin using Stata 10.1. 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). All do-Files are available from Nils Braakmann on request. Many thanks to Ramona Pohl for building the data set and her help in many ways.

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1. Motivation

A common explanation for the existence of multi-product firms is the reduction of risk and uncertainty that can be reached by diversification across product markets (Lipczynski and Wilson 2001: 324f.). This reasoning implies a negative relationship between the extent of product diversification and the variability of sales or employment at the firm level. We test this prediction using rich and newly built data for the population of German Manufacturing firms with 20 or more employees from 1995 to 2004. Our results suggest that higher levels of product diversification lead to a higher variability of both sales and employment which can be explained by firms diversifying across very similar products for which market risks are correlated. This behaviour may be explained by a firm's wish to use intangible assets or to profit from economies of scale. However, the effects of product diversification are negligibly small from an economic perspective which suggests that product diversification does not matter much for the stability of either sales or employment.

It is a common empirical observation that a large number of firms in an economy produce more than one good. In Germany, about 60 percent of all manufacturing enterprises with more than 20 employees are multi-product firms with on average 4.4 products. Additionally, as multi-product enterprises are often larger than single-product firms, their share at total sales and total exports is as high as 81 percent and 85 percent respectively (see Wagner 2008 for detailed descriptive evidence for Germany).

On a theoretical level, the existence of multi-product enterprises has been explained by two broad views. One line of reasoning points to the reduction of risk and uncertainty that can be reached by diversification across product markets (Jovanovic and Gilbert 1993: 199f., Lipczynski and Wilson 2001: 324f.; a formal model motivated by firm mergers can be found in Koutsoyiannis 1982: 239-241).

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, at least if the risks on the various product markets are randomly distributed or negatively correlated. Consequently, we would expect that, other things equal, higher levels of product diversification are positively related to a higher stability of sales or employment. Note that this line of reasoning implies that firms have an incentive to invest into products that are likely to face different shocks in demand (for instance alcoholic beverages and automobiles) to minimize the impact of unexpected shocks.

While this idea can be traced back to at least the 1950s (see Penrose (1959)/1995, p. 138ff.), it has to the best of our knowledge never been tested empirically. In fact, the only study we are aware of that tests a relationship between some aspect of corporate diversification and stability of sales is Hirsch and Lev (1971) who show that diversification across markets in different countries is associated with higher stability of sales.

The other line of reasoning that explains the existence of multi-product firms, the resource view (Montgomery 1994:167f.), links diversification to firm performance by the following arguments: If firms have an excess capacity in productive factors, they can reap economies of scope by expanding into different product markets. An example for such a productive factor might be 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. While it is theoretically possible that the firm may sell this specific asset to another firm active in this market, there is typically no market for intangible assets like knowledge which provides an incentive to internalize the use of these assets. Furthermore, productive factors of this type are often closely linked to persons who cannot simultaneously work for several firms producing different products. As diversification allows firms to use their productive capacities to a greater extent, this line of reasoning generally suggests a positive relationship between diversification and firm performance. However, as there are usually costs associated with the serving of different markets, e.g. for developing and advertising a new product, the effects of product diversification might be smaller than expected or even negative. Note at this point that this line of reasoning makes it more likely that multi-product firms produce various similar products as the intangible assets, e.g. special knowledge, are likely to be tied to specific factors in the production process.

The literature focusing on the relationship between product diversification and firm performance is large, but provides very mixed results (see Hall 1995 and Montgomery 1994 for reviews of the literature). Evidence from Germany is sparse: Using panel estimators on a different version of the data set used in this study, Braakmann and Wagner (2009) find evidence for a negative and economically large relationship between various measures of product diversification and profitability for German manufacturing firms from 1999 to 2003. Görzig, Gornig and Werwatz (2007) who focus on firms in the information and communication technology sector find that firms that change the level of diversification exhibit higher positive changes in productivity than firms without changes. Finally, a series of descriptive studies (Görzig, Gornig and Pohl 2007; Görzig and Pohl 2007; Gornig and Görzig 2007) provide evidence that is broadly consistent with the econometric results by Braakmann and Wagner (2009).

This paper contributes to the literature by testing for the fist time the relationship between product diversification and the stability of sales and employment. Using a unique newly built data set for German manufacturing enterprises, we rely on panel (instrumental variable) estimators to control for unobserved heterogeneity and simultaneity and also control for industry and firm specific trends.

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

2. Data and empirical approach

In Germany data on the number of different products produced by a firm[1] and on the turnover realized with each product is collected in the survey of products produced (*Produktionsstatistik*) which was recently made available to researchers from outside the statistical offices. As a first step the so-called producer-product-panel was built that merged information from the cost structure survey (see Fritsch et al. 2004) and from the survey of products produced for a sample of manufacturing enterprises and for the years from 1995 to 2001 (see Görzig, Bömermann and Pohl 2005).

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, see Wagner 2000 for a short description of the data) is added; and the time frame has been extended to cover the years 1995 to 2004. Note that we cannot use the information from the cost structure surveys as these do not cover the whole period as new samples are drawn every four years.

[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.

As the focus of this paper requires variation of the respective outcome measures over time, we restrict the sample to those firms who are observed in each year from 1995 to 2004 forming a balanced panel of 17,666 firms with 176,660 firm-year-observations.[2] Note that there is (almost) no item or unit non-response in the data as firms are legally obliged to respond to the surveys by the statistical agencies.

In our econometric investigation, we are interested in the relationship between product diversification and the variability of sales or employment over time. If the hypothesis holds that higher levels of diversification protect a firm against shocks in demand, we would expect the relationship between our measure of product diversification and some measure of variability of the respective outcome to be negative. A crucial point in this investigation is the measurement of variability.

Clearly, seasonal variations or the fluctuations caused by (industry specific) business cycles are predictable by a firm and can be alleviated by savings or reserve funds (see e.g. Penrose 1995: 140). Additionally, as the descriptive evidence presented by Wagner (2008: 11) suggests that there are usually single- and multi-product firms in the same industry in the same year, it seems unlikely that industry specific trends explain the existence of multi-product firms.

Similarly, there might be firm specific trends that are predictable by the firm, for instance caused by different product life cycles or similar firm-specific factors. This point is made by Hirsch and Lev (1971) who account for that argument by first fitting a firm specific trend to the data and subsequently using deviations from this trend as their measure of unexpected variability.

Our econometric investigation builds on their approach and is conducted in three steps. First, it seems safe to assume that firms generally know about systematic patterns on the industry level. To account for that fact, we transform the

[2] We are well aware of the possibilities of survivor bias. However, as the data cover only firms with 20 or more employees there is no possibility to distinguish firm closures from firms shrinking below 20 employees.

observed outcome into the percentage deviation from the industry mean in the respective year. More formally, let y_{ijt} be the observed outcome of firm *i* in industry *j* in year *t* and let $y_{\circ jt}$ be the year-specific industry mean of y_{ijt}. Our transformed outcome $\acute{y}_{it}$ is defined as (y_{ijt} *100)/$y_{\circ jt}$. This measure is adjusted for industry differences in outcome levels and a nonparametric estimate of the industry trend; it can easily be compared across industries.

In the second step we fit a firm-specific trend function to the transformed data using linear, squared and cubic trend functions by the following estimating equation

$$\acute{y}_{it} = \alpha + \beta^* g(t_i) + \varepsilon_{i,} \qquad (1)$$

where $g(t_i)$, is a first, second or third order polynomial in t. This part of the analysis that is similar to the approach by Hirsch and Lev (1971) can be seen as a simulation of the firm's planning behaviour and accounts for systematic trends at the firm level that are different from the industry trends. We then use the yearly deviations from that firm specific trend, the residuals in equation (1) denoted by e_{it}, as the measure of unexpected variation in the third step of our analysis. Figure 1 displays the distribution of these deviations. Note that for each trend function and outcome the distribution of deviations is symmetric around zero which makes it likely that this measure indeed represents unexpected shocks.

[Figure 1 near here]

Finally, we regress our measure of variability e_{it} for both sales and employment on a variety of control variables and the measure of product diversification. In this step, we use three different estimators: Cross-sectional OLS, fixed effects estimators that account for unobserved heterogeneity and finally panel instrumental variables estimators that use first differences to purge unobserved heterogeneity and first and second lags of the measure of diversification as instruments in a 2SLS-estimation to get rid of simultaneity bias.

Note that instrumenting is necessary, especially when looking at stability of sales, as the outcome and the measures of product diversification suffer from simultaneity bias by construction as all three variables contain sales. Specification tests for the instrumental variable estimates are reported in tables A.1 and A.2 in the appendix. Note that these generally indicate no problems with underidentification, weak instruments or a lack of exogeneity of the instruments.

3. Descriptive evidence on product diversification in German manufacturing enterprises

To give a first impression on the evidence of product diversification in German manufacturing enterprises, some information is given below. Focussing on the year 2000[3] we see that 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. It comes as a surprise (at least, for us) that nearly 40 percent of all manufacturing enterprises with at least 20 employees are single-product firms according to this detailed classification. 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

[3] Detailed descriptive results for 1995 to 2004 are reported in Wagner (2008).

for 1995 to 2004 56.4 (30.9) percent were a multi-product (single-product) enterprise in each year.

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.

To illustrate the distribution of the measures of product diversification in the sample of enterprises used in our econometric investigation figure 2 and figure 3 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.[4]

[Figure 2 and figure 3 near here]

Table 1 presents descriptive statistics for the sample used in the analysis. Note that all measures of deviation have a mean of (practically) zero and exhibit almost no variation across firms which again points to the validity of this variable for the measurement of unexpected firm-specific shocks.

[Table 1 near here]

[4] Both measures of diversification are highly positively correlated over time (see Wagner 2008, 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 2008, 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.

4. Results

Consider first the evidence for the stability of sales shown in table 2. Here, we obtain significant results only for the OLS and fixed effects results without control variables in the specification using a linear trend and for all instrumental variable results. Note that the latter are more reliable than the OLS and fixed effects as these may be influenced by simultaneity bias introduced by the fact that both the measures of product diversification and the outcome contain sales.

[Table 2 near here]

Focusing on the instrumental variable estimates, we obtain a remarkably similar picture: Higher levels of product diversification always lead to lower stability of sales. However, these effects are rather small. A change in the measure of product diversification by 0.1 which roughly equals one within-standard deviation changes the variability of sales by 4.0 to 6.4. Compared with the respective standard deviations of 48.8 to 65.0, this effect seems rather small.

Table 3 displays the estimation results for the stability of employment. While endogeneity concerns are less severe for employment variability, we again focus on the instrumental variable estimates. Note, however, that the pattern of results is practically identical for the OLS and fixed effects estimates. Similar to the previous results for employment, higher levels of product diversification lead to a higher volatility of employment. Looking again at a 0.1 change in the measure of product diversification, we see that this leads to changes in variability by 3.6 to 5.9 which is again small compared to the respective standard deviation lying between 34.0 and 47.2.

[Table 3 near here]

Taken together, our results provide not much support for the idea that firms may diversify their production across markets as a way to insure against unexpected shocks in one market – or at least not for the idea that product diversification actually results in a higher stability of either sales or employment. If anything, our results in fact suggest that higher levels of product diversification lead to higher volatility of the respective outcome. While this observation may suggest that firms primarily diversify across similar products and markets, the effects of diversification are actually quite small from an economic perspective: A 0.1 change in the measure of diversification which equals a reduction of the most important product's share in total sales by 10 percentage points leads to an increase in volatility by at most 1/6 of a standard deviation.

5. Concluding remarks

We use a unique rich newly built data set for German manufacturing enterprises to investigate the relationship between product diversification and the stability of sales and employment. We find that an increase in the degree of product diversification has either none or a negative impact on the stability of outcomes when observed and unobserved firm characteristics are controlled for. When using (panel) instrumental variables we obtain statistically significant effects for both outcomes. However, the effects are rather small from an economic point of view which suggests a negligible influence of product diversification on the stability of sales and employment.

These findings provide no support for the idea that firms may successfully use product diversification as a way to reduce risks from unexpected shocks. Given previous evidence, e.g. by Braakmann and Wager (2009), that suggests more concentrated firms are also more profitable, it seems safe to conclude that concentration on a core market pays. This might help to understand the – at least, at a first glance – surprising 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.

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Table 1: Descriptive statistics

Variable	Mean	Standard deviation[a]		
		Overall	Between	Within
Outcomes (industry-year-demeaned)				
Sales, deviations from linear trend	-1.02e-08	64.959	3.07e-06	64.959
Sales, deviations from quadratic trend	-7.05e-09	56.707	2.14e-06	56.707
Sales, deviations from cubic trend	-2.94e-08	48.811	2.79e-06	48.811
Employment, deviations from linear trend	1.53e-08	47.164	2.25e-06	47.164
Employment, deviations from quadratic trend	-1.25e-08	39.988	1.74e-06	39.988
Employment, deviations from cubic trend	3.05e-08	33.982	2.36e-06	33.982
Control Variables				
Share of sales of most important product in total sales	0.788	0.230	0.218	0.073
Berry-Index	0.278	0.277	0.265	0.080
Number of employees	213.71	1,928.48	1,915.33	225.27
Share of sales in Germany in total sales (percentage)	80.88	22.90	21.88	6.74
Labour productivity (sales per employee; Euro)	140,199.7	177,670.1	157,300.3	82,610.8
Human capital intensity (wages and salaries per employee, Euro)	29,139.74	8,536.47	7,913.10	3,202.71
Number of firms		17,666		
Number of firm-year-observations		176,660		

[a] 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.

Table 2: Regression results for stability of sales in German manufacturing enterprises, 1995 – 2004

Model	**OLS**		**Fixed Effects**		**Panel-IV**	
	No Controls	Controls	No Controls	Controls	No Controls	Controls
			Deviations from firm-specific linear trend			
Share of most important product in total sales	-.5367**	-.9874	-5.3584**	-1.6708	-51.7077**	-52.0689**
	(.2471)	(.9999)	(2.4652)	(2.4355)	(22.2461)	(21.4262)
Berry-Index	.4467***	.8171	5.3755***	1.7231	40.2449*	42.4147*
	(.1712)	(.8387)	(2.0581)	(2.1874)	(23.2037)	(22.9900)
			Deviations from firm-specific quadratic trend			
Share of most important product in total sales	-.1500	-.2415	-1.4964	1.3434	-63.6910***	-63.2362***
	(.1209)	(.4395)	(1.2066)	(1.4912)	(24.2837)	(23.9448)
Berry-Index	.1362	.2111	1.6389	-1.1688	54.3213**	55.4678**
	(09265)	(.3687)	(1.1140)	(1.3983)	(25.1138)	(25.4348)
			Deviations from firm-specific cubic trend			
Share of most important product in total sales	-.1465	-.3155	-1.4628	.2392	-51.4471**	-51.3772**
	(.1048)	(.3869)	(1.0449)	(1.1862)	(21.058)	(20.6334)
Berry-Index	.1196	.2589	1.4396	-.2471	41.8942*	43.2721*
	(.0749)	(.3355)	(.8997)	(1.0510)	(22.1231)	(22.3642)

Coefficients, standard errors in parentheses. Standard errors are adjusted for clustering on the firm level. ***/**/* denote significance on the 1percent, 5percent and 10percent level respectively. Included control variables are firm size (including a squared term), the share of sales in Germany in total sales, sales per head as a proxy for labour productivity, the average wage per workers as a proxy for human capital intensity and yearly fixed-effects.

Table 3: Regression results for stability of employment in German manufacturing enterprises, 1995 – 2004

Model	**OLS**		**Fixed Effects**		**Panel-IV**	
	No Controls	Controls	No Controls	Controls	No Controls	Controls
			Deviations from firm-specific linear trend			
Share of most important product in total sales	-.9002***	-1.4265	-8.9868***	-3.5840*	-37.6302***	-41.641***
	(.1700)	(.9302)	(1.6926)	(2.0163)	(13.3428)	(12.0913)
Berry-Index	.7537***	1.2063	9.0711***	3.8864**	36.1378***	43.6046***
	(.1229)	(.7843)	(1.4725)	(1.8954)	(13.5762)	(12.6405)
			Deviations from firm-specific quadratic trend			
Share of most important product in total sales	.4747***	-.5872	-4.7393***	-.7434	-50.7708***	-53.8532***
	(.0912)		(.3770)	(.9083)	(1.2098)	(14.2352)
Berry-Index	.4002***	.5040	4.8165***	.9697	53.0312***	59.2524***
	(.0718)		(.3178)	(.8615)	(1.1163)	(14.5630)
			Deviations from firm-specific cubic trend			
Share of most important product in total sales	-.3286***	-.5068	-3.2813***	-.7647	-48.1765***	-51.0480***
	(.0762)	(.3330)	(7589)	(.9704)	(12.7277)	(12.2436)
Berry-Index	.2688***	.4239	3.2349***	.8169	51.7037***	57.3559***
	(.0583)	(.2904)	(.6998)	(.8922)	(13.1799)	(13.3336)

Coefficients, standard errors in parentheses. Standard errors are adjusted for clustering on the firm level. ***/**/* denote significance on the 1percent, 5percent and 10percent level respectively. Included control variables are firm size (including a squared term), the share of sales in Germany in total sales, sales per head as a proxy for labour productivity, the average wage per workers as a proxy for human capital intensity and yearly fixed-effects.

Table A.1: Specification tests for instrumental-variable-estimates, sales equations

Model	Share of most important product in total sales		Berry Index	
	No Controls	Controls	No Controls	Controls
Outcome: deviations from linear trend				
Underidentification test				
Kleibergen-Paap rk LM statistic	740.834	745.772	455.344	461.834
P-value (Chi-sq(2))	0.0000	0.0000	0.0000	0.0000
Weak identification test				
Kleibergen-Paap rk Wald F statistic	462.759	468.658	267.760	273.544
Overidentification test of all instruments				
Hansen J statistic	1.511	2.306	0.545	0.538
P-value (Chi-sq(1))	0.2190	0.1289	0.4603	0.4631
Outcome: deviations from quadratic trend				
Underidentification test				
Kleibergen-Paap rk LM statistic	740.834	745.772	455.344	461.834
P-value (Chi-sq(2))	0.0000	0.0000	0.0000	0.0000
Weak identification test				
Kleibergen-Paap rk Wald F statistic	462.759	468.658	267.760	273.544
Overidentification test of all instruments				
Hansen J statistic	0.815	1.177	0.201	0.163
P-value (Chi-sq(1))	0.3667	0.2781	0.6541	0.6862
Outcome: deviations from cubic trend				
Underidentification test				
Kleibergen-Paap rk LM statistic	740.834	745.772	455.344	461.834
P-value (Chi-sq(2))	0.0000	0.0000	0.0000	0.0000
Weak identification test				
Kleibergen-Paap rk Wald F statistic	462.759	468.658	267.760	273.544
Overidentification test of all instruments				
Hansen J statistic	2.610	3.658	1.260	1.395
P-value (Chi-sq(1))	0.1062	0.0558	0.2616	0.2375

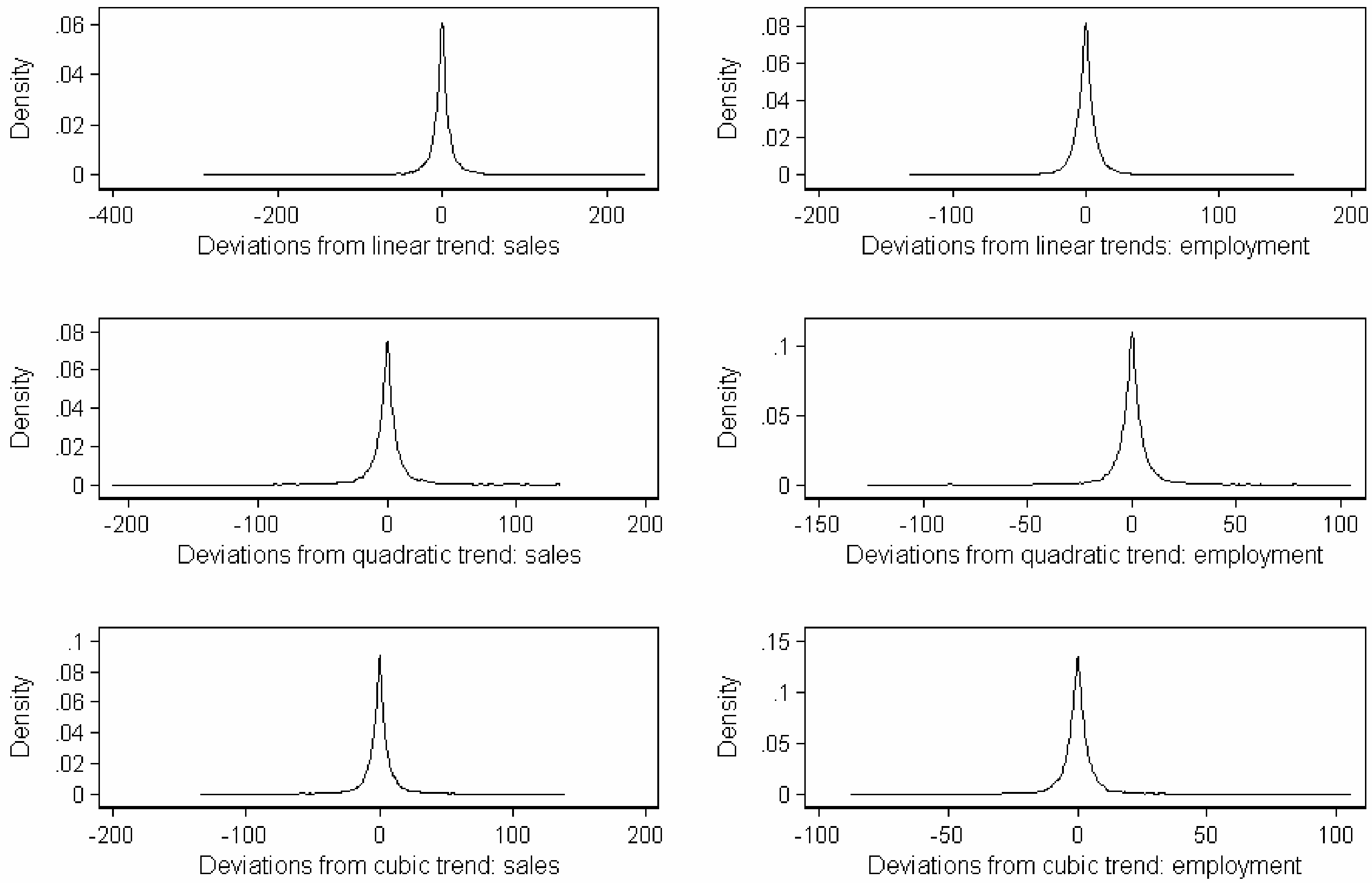
See tables 2 and 3 for coefficients and standard errors. All tests refer to a 2SLS-estimation on data in first-differences. Included control variables are firmsize (including a squared term), the share of inland sales on total sales, sales per head as a proxy for labour productivity, the average wage per workers as a proxy for human capital intensity and yearly fixed-effects.

Table A.2: Specification tests for instrumental-variable-estimates, employment equations

Model	**Share of most important product in total sales**		**Berry Index**	
	No Controls	Controls	No Controls	Controls
Outcome: deviations from linear trend				
Underidentification test				
Kleibergen-Paap rk LM statistic	740.834	745.772	455.344	461.834
P-value (Chi-sq(2))	0.0000	0.0000	0.0000	0.0000
Weak identification test				
Kleibergen-Paap rk Wald F statistic	462.759	468.658	267.760	273.544
Overidentification test of all instruments				
Hansen J statistic	0.096	0.067	0.754	1.952
P-value (Chi-sq(1))	0.7570	0.7957	0.3853	0.1623
Outcome: deviations from quadratic trend				
Underidentification test				
Kleibergen-Paap rk LM statistic	740.834	745.772	455.344	461.834
P-value (Chi-sq(2))	0.0000	0.0000	0.0000	0.0000
Weak identification test				
Kleibergen-Paap rk Wald F statistic	462.759	468.658	267.760	273.544
Overidentification test of all instruments				
Hansen J statistic	0.359	0.327	1.534	2.813
P-value (Chi-sq(1))	0.5489	0.5674	0.2156	0.0935
Outcome: deviations from cubic trend				
Underidentification test				
Kleibergen-Paap rk LM statistic	740.834	745.772	455.344	461.834
P-value (Chi-sq(2))	0.0000	0.0000	0.0000	0.0000
Weak identification test				
Kleibergen-Paap rk Wald F statistic	462.759	468.658	267.760	273.544
Overidentification test of all instruments				
Hansen J statistic	0.080	0.044	0.793	1.514
P-value (Chi-sq(1))	0.7773	0.8346	0.3731	0.2185

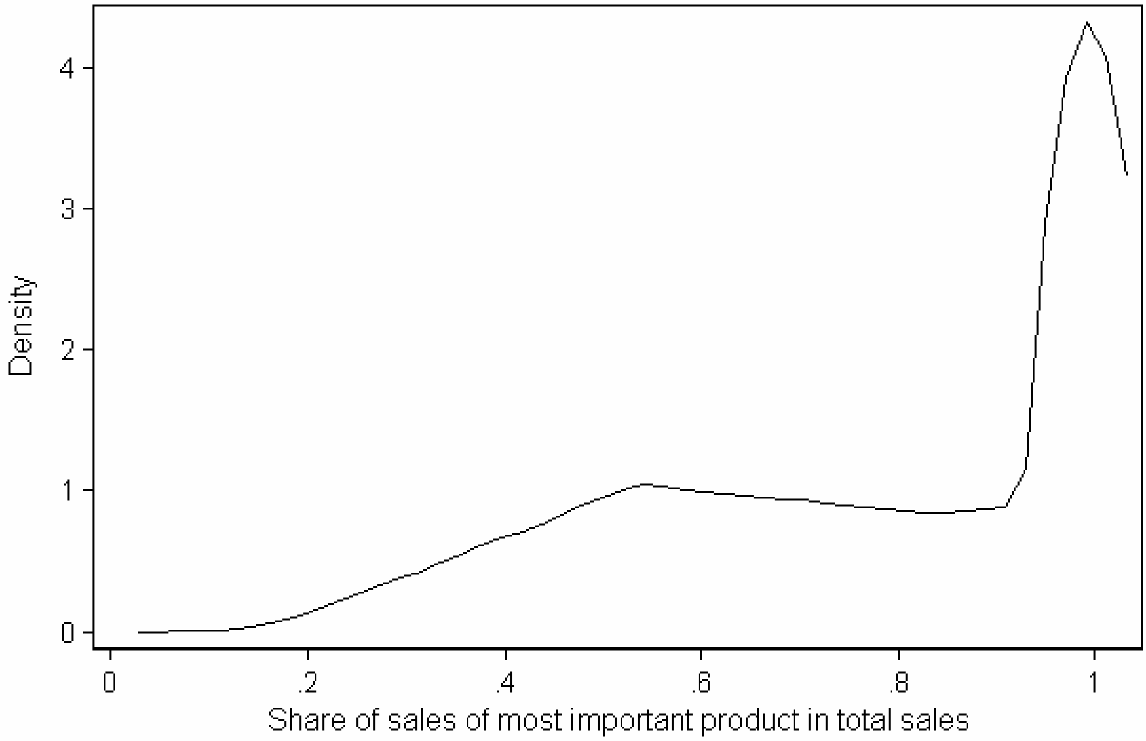
See tables 2 and 3 for coefficients and standard errors. All tests refer to a 2SLS-estimation on data in first-differences. Included control variables are firmsize (including a squared term), the share of inland sales on total sales, sales per head as a proxy for labour productivity, the average wage per workers as a proxy for human capital intensity and yearly fixed-effects.

Figure 1: Deviations of sales and employment from firm specific trends in manufacturing enterprises in Germany, 1995-2004[1]



[1] Kernel density estimate with epanechnikov kernel. Data pooled over the years 1995 to 2004. Single year graphs were practically identical.

Figure 2: Share of sales of most important product in total sales, manufacturing enterprises in Germany, 2000[1]



[1] Kernel density estimate with epanechnikov kernel

Figure 3: Berry-Index, manufacturing enterprises in Germany, 2000[1]

[1] Kernel density estimate with epanechnikov kernel

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