The Exporter Productivity Premium along the Productivity Distribution

Powell, David; Wagner, Joachim

Publication date:
2010

Document Version
Publisher's PDF, also known as Version of record

WORKING PAPER

The Exporter Productivity Premium along the Productivity Distribution: First Evidence from a Quantile Regression Approach for Fixed Effects Panel Data Models

by
David Powell and Joachim Wagner

University of Lüneburg
Working Paper Series in Economics

No. 182

August 2010

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

ISSN 1860 - 5508

The Exporter Productivity Premium along the Productivity Distribution: First Evidence from a Quantile Regression Approach for Fixed Effects Panel Data Models*

David Powell and Joachim Wagner

[This version: August 5, 2010]

Abstract

An emerging literature on international activities of heterogeneous firms documents that exporting firms are more productive than firms that only sell on the national market. This positive exporter productivity premium shows up in a large number of empirical studies after controlling for observed and unobserved firm characteristics in regression models including firm fixed effects. These studies test for a difference in productivity between exporters and non-exporters at the conditional mean of the productivity distribution. However, if firms are heterogeneous, it is possible that the size of the premium varies over the productivity distribution. In this paper we apply a newly developed estimator for fixed-effects quantile regression models to estimate the exporter productivity premium at quantiles of the productivity distribution for manufacturing enterprises in Germany, one of the leading actors in the world market for goods. We show that the premium decreases over the quantiles – a dimension of firm heterogeneity that cannot be detected through mean regression.

Keywords: Exporter productivity premium, quantile regression, fixed effects
JEL Classification: F14, C21, C23

* All computations were done in the research data centre of the Statistical Office in Berlin. The data used are confidential but not exclusive; information how to access the data is provided in Zühlke et al. (2004). To facilitate replication and extensions Stata code for quantile regression for fixed effects panel data models is available from the first author, and the Stata do-files used to compute the empirical results in the application are available from the second author on request.

David Powell
RAND Corporation
1776 Main St.
Santa Monica, CA 90407

e-mail: dpowell@rand.org

Joachim Wagner
Leuphana University Lueneburg
P.O.Box 2440
D-21314 Lueneburg, Germany

e-mail: wagner@leupahan.de

1. Motivation

Heterogeneous firms are at the heart of both the *New New International Trade Theory*[1] and the *Micro-econometrics of International Firm Activities*.[2] The implications of firm heterogeneity for empirical analyses, however, are not always fully taken into account. Usually, conditional means for different groups of firms – say, exporters and firms selling on the national market only – are the basis for comparisons. In almost all countries and periods examined exporters are significantly more productive than non-exporters on average (see Wagner 2007). This fact is documented by performing a test for the statistical significance of the estimated regression coefficient of a dummy-variable indicating the exporter status of a firm in an empirical model that controls for industry affiliation and firm size (i.e. the difference in the conditional mean of productivity).

As Moshe Buchinsky (1994: 453) states, "`On the average' has never been a satisfactory statement with which to conclude a study on heterogeneous populations." If we acknowledge that firms are heterogeneous, we have reasons to suspect that the conditional difference in productivity between exporting and non-exporting firms does not need to be the same for all firms. For example, it might be the case that the productivity difference between exporters and non-exporters of the same size and from the same industry is higher for firms at the lower end of the productivity distribution. If we regress the log of productivity on an exporter dummy variable and a set of control variables using ordinary least squares (OLS), there is no

[1] The canonical paper in this literature is Melitz (2003) who explicitly motivates his theoretical model by referring to findings in the micro-econometric literature; see Helpman (2006) for a survey.

[2] Pioneering papers in this field include Bernard and Jensen (1995) and Wagner (1995). For partial surveys of this empirical literature see Greenaway and Kneller (2007), López (2005), and Wagner (2007).

room for firm heterogeneity of this kind. OLS estimates the average effect over the entire distribution. This summary statistic, however, may not be representative of the impact at any part of the outcome distribution.

Instead, it is potentially interesting to estimate the size of the exporter premium at different points of the productivity distribution using quantile estimation. Canonical references for a discussion of technical details of quantile regression are the pioneering paper by Koenker and Bassett (1978), the survey by Buchinsky (1998) and the monograph by Koenker (2005), while Koenker and Hallock (2001) provide a non-technical introduction. In contrast to OLS (that gives information about the effects of the regressors at the conditional mean of the dependent variable only) quantile regression can provide parameter estimates at different quantiles. Therefore, it gives information on heterogeneity in the effect of independent variables on the dependent variable. The estimated regression coefficients can be interpreted as the partial derivative of the conditional quantile of the dependent variable (here: productivity) with respect to a particular regressor (e.g., being an exporter or not), i.e. the marginal change in productivity at the k^{th} conditional quantile due to a change in exporter status. For each quantile, it can be shown whether the effect of a particular independent variable is positive or negative, and how large this effect is compared to other quantiles. This provides information about heterogeneity in plant behavior. Note that quantile regression is not the same as applying OLS to subsets of the data produced by dividing the complete data set into different percentiles of the dependent variable. This technique would introduce sample selection bias.

Estimation results for the exporter productivity premium from quantile regressions[3] based on data for a representative sample of manufacturing establishments from one German federal state (Lower Saxony) for 1995 are reported in Wagner (2010). The estimated exporter premium is statistically different from zero, positive, and large from an economic point of view for all quantiles. The premium varies across the different quantiles, and there seems to be a U-shaped pattern, showing a higher premium at both ends of the conditional productivity distribution than at the median. According to the results of tests for coefficient equality between pairwise quantiles and across all quantiles reported, however, these differences between the estimated exporter premia are never statistically different from zero.

The bottom line is that the relationship between exporting and labour productivity is similar throughout the conditional productivity distribution. Bellone, Guillou and Nesta (2010) report a similar finding for a sample of firms from France. Obviously, this does not have to be the case with other data sets from other times or other countries. For example, Yasar, Nelson and Rejesus (2006) find that the exporter productivity premium increases as one moves from the lower tail to the upper tail of the distribution for Turkish firm level data. Serti and Tomasi (2009) report that the respective coefficients are much larger at the lower quantiles, especially for firms selling goods to European and low income countries.

We have discussed the consequences of observed firm heterogeneity for micro-econometric studies of international firm activities. Firm heterogeneity, however, might be caused by factors that are not observed by the researcher. A case

[3] Micro-econometric studies on international firm activities using quantile regression include Dimelis and Louri (2002), Falzoni and Grasseni (2005), Wagner (2006), Yasar, Nelson and Rejesus (2006), Yasar and Morrison Paul (2007), Trofimenko (2008), Serti and Tomasi (2009), Bellone, Guillou and Nesta (2010), and Haller (2010)

in point with regard to the exporter productivity premium is management quality. Although management quality has been considered an important source of performance differences between firms for a very long time – Syverson (2010, p. 14) mentions a study published in 1887 that made this point – empirical evidence is scarce due to data limitations. As Syverson (2010, p. 14) puts it, “The identity, much less the characteristics, practices, or time allocation of individual managers are rarely known. Furthermore, managerial inputs can be very abstract. It’s not just time allocation that matters, but what the manager does with their time, like how they incentivize workers or deal with suppliers.” A recent study by Bloom and Van Reenen (2010) relates management practices to productivity and shows that firms that export (but do not produce) overseas are better-managed than domestic non-exporters, but are worse-managed than multinationals.

In the data sets used to empirically investigate international firm activities variables that measure management quality are missing. This would not pose a big problem if management quality were uncorrelated with the other variables included in the empirical model (e.g., exporter status). Of course it would not be possible to investigate the role of management quality for productivity differences between firms empirically, but the estimated coefficient for the exporter dummy variable would be an unbiased estimate of the exporter productivity premium. However, one would not expect that management quality is uncorrelated with either exporter status or other variables like firm size. Not controlling for management quality then leads to biased estimates of the exporter premium.

A standard solution for this problem that is widely used in the literature on the micro-econometrics of international firm activities is conditioning on firm-specific fixed effects.[4] Using pooled cross-section time-series data for firms and including fixed firm effects in the empirical model controls for time invariant unobserved firm heterogeneity. The coefficients for the time variant variables can be estimated without any bias caused by the non-inclusion of the unobserved variables that are correlated with these included variables. A case in point is the paper by the International Study Group on Exports and Productivity (ISGEP) (2008). In Table 4, exporter productivity premia are reported based on empirical models with and without fixed effects. If fixed firm effects are added to control for time invariant unobserved heterogeneity, the point estimates of the exporter productivity premia are much smaller compared to the results based on pooled data only. Thus, unobserved firm heterogeneity does matter.

Is it possible to tackle the two problems – different effects at different quantiles of the distribution of a variable under consideration, and unobserved heterogeneity - simultaneously? A small literature suggests different estimation techniques. For motivation purposes, we model the traditional, cross-sectional quantile estimator (introduced by Koenker and Bassett (1978)) as estimating equations of the form:

$$y_i = x_i'\beta(\alpha_i + \varepsilon_i)$$

[4] As an aside, note that although in the theoretical models from the *New New International Trade Theory* productivity differentials between firms are modeled as the results of a random draw from a productivity distribution (see e.g. Melitz 2003) it is not appropriate to use random effects models instead of fixed effects models in the empirical investigations. Random effects models assume that the observed variables in the empirical model and the unobserved variables not included in the model are uncorrelated – an assumption that makes no sense here.

where the coefficient of interest (β) is a function of the total residual, $(\alpha + \varepsilon)$. In a cross-sectional format, it is unnecessary to distinguish α and ε, but this framework will be helpful later.

With panel data, we want to condition on fixed effects for the purposes of identification but, typically, we do not want to change the interpretation of the coefficients. Many quantile panel data estimators, however, do not estimate parameters that can be interpreted in the same manner as cross-sectional estimates. For example, Koenker (2004) suggests estimating a fixed effect which is constant for all quantiles. The implicit equation of interest can be modelled as:

$$y_{it} = \alpha_i + x_{it}'\beta(\varepsilon_{it})$$

Notice that the coefficient of interest now only varies based on ε, not the total residual. The underlying equation has changed. Similarly, Harding and Lamarche (2009) introduce an IV version for the estimation of equations such as:

$$y_{it} = \alpha_i(\varepsilon_{it}) + x_{it}'\beta(\varepsilon_{it})$$

Again, the coefficient of interest is solely a function of ε. These estimators are useful in situations where we want to define the quantiles by the firm's productivity *relative to its fixed level of productivity*. However, we are primarily interested in the effect of the covariates on high productivity firms and, separately, low productivity firms. For illustrative purposes, assume that α is known and supplied to the econometrician. The Koenker (2004) estimator is equivalent to a traditional quantile regression of $(y - \alpha)$ on x. In other words, the fixed effect has been differenced out.

This paper uses an unconditional quantile regression estimator for panel data introduced by Powell (2009). The estimator conditions on fixed effects for estimation purposes, but the resulting estimates can be interpreted in the same manner as traditional cross-sectional quantile estimates. The implicit underlying equation is:

$$y_{it} = x_{it}'\beta(\alpha_i + \varepsilon_{it})$$

Notice that this is equivalent to the cross-sectional equation $y_i = x_i'\beta(\alpha_i + \varepsilon_i)$ since the quantiles are defined by the "total residual." In our context, this is important. Differencing out a fixed effect "loses" each firm's placement in the cross-sectional distribution.

2. Estimation

Powell (2009) discusses the estimation method in detail. The estimator conditions on fixed effects, but the quantiles themselves are not defined by the fixed effects. The Structural Quantile Function (SQF) is

$$S_y(\tau \mid x) = x'\beta(\tau)$$

The SQF defines the quantile of the latent outcome variable $y_d = x'\beta(u)$ for a fixed *x* and a randomly selected $u \sim U(0,1)$.

The estimator uses two moment conditions:

1) $E\left\{\frac{1}{N}\sum_i \mathbf{1}\left(y_{it} - x_{it}'\beta(\tau) \le 0\right)\right\} = \tau$ for all t.

2) $E\left\{\sum_i \sum_t \sum_{s<t} (x_{it} - x_{is})\left[\mathbf{1}\left(y_{it} - x_{it}'\beta(\tau) \le 0\right) - \mathbf{1}\left(y_{is} - x_{is}'\beta(\tau) \le 0\right)\right]\right\} = 0$

The first condition defines the quantile. This equation implicitly assumes the inclusion of year fixed effects by forcing the condition to hold for all t. In our context, we will actually include interactions based on firm size and year. Thus, the "high productivity" firms are firms with high productivity given their firm size and year.

The second condition makes within-group pairwise comparisons, implicitly conditioning on the firm fixed effect. Thus, identification originates from changes in *x* for the firm. Notice that α is never estimated or "differenced out."

Practically, we implement the Powell (2009) estimator by grid-searching over a range of values. Standard errors are derived from bootstrapping.

3. Data

The empirical investigation uses data from an unbalanced panel of enterprises that is built from cross section data collected in regular surveys of establishments by the Statistical Offices of the German federal states. Establishment data were aggregated to the enterprise level. The surveys cover all establishments from manufacturing industries that employ at least twenty persons in the local production unit or in the company that owns the unit. Participation of firms in the survey is mandated in official statistics law.[5]

In this data set, *export* refers to the amount of sales to a customer in a foreign country plus sales to a German export trading company; indirect exports (for example, tires produced in a plant in Germany that are delivered to a German manufacturer of cars who exports some of his products) are not covered by this definition. Given that the East German economy still differs in many respects, and

[5] For a description of the data see Malchin and Voshage (2009). Note that the micro level data are strictly confidential and for use inside the Statistical Office only, but not exclusive. Information how to access the data is given in Zühlke et al. (2004).

especially with regard to exporting, from the West German economy, this study looks at West German and East German manufacturing enterprises separately.[6]

Productivity is measured as total sales per employee, i.e. labour productivity. More appropriate measures of productivity such as value added per employee (or per hour worked), or total factor productivity, cannot be computed because of a lack of information on hours worked, value added, and the capital stock[7] in the surveys. Controlling for firm fixed effects, however, can be expected to absorb much of the differences in the degree of vertical integration and capital intensity.[8]

4. Productivity premia of exporters along the productivity distribution: Results from a quantile regression approach with fixed enterprise effects

In our empirical investigation we look for differences in the so-called exporter premia - the *ceteris paribus* percentage difference of labor productivity between exporters and non-exporters - between enterprises from different quantiles of the productivity distribution. We estimate the following specification to get the mean effect:

$$\ln LP_{ijt} = \alpha_i + \gamma_{jt} + \beta E_{ijt} + \eta$$

[6] For a discussion of the differences in exporting between West German and East German manufacturing firms see Wagner (2008).

[7] The survey has information about investment that might be used to approximate the capital stock. A close inspection of the investment data, however, reveals that many firms report no or only a very small amount of investment in many years, while others report huge values in one year. Any attempt to compute a capital stock measure based on these data would result in a proxy that seems to be useless.

[8] Note that Bartelsman and Doms (2000, p. 575) point to the fact that heterogeneity in labor productivity has been found to be accompanied by similar heterogeneity in total factor productivity in the reviewed research where both concepts are measured. Furthermore, Foster, Haltiwanger and Syverson (2008) show that productivity measures that use sales (i.e. quantities multiplied by prices) and measures that use quantities only are highly positively correlated.

where LP_{ijt} is the labor productivity of firm *i* in firm size group *j* at time *t*. *E* is a dummy variable indicating whether or not an enterprise is an exporter.[9] We include firm-specific fixed effects plus interactions based on firm size and year.

Since we are also interested in how the exporter productivity premia differ throughout the distribution, we estimate the equivalent SQF using the Powell (2009) estimator:

$$S_{LP}(\tau \mid E) = \gamma_{jt}(\tau) + \beta(\tau)E$$

Again, we include interactions based on firm size and year so the quantiles refer to the placement in the distribution for a given firm size and year. Results[10] are reported in Table 1.

[9] Note that the regression equation specified in (1) is not meant to be an empirical model to explain labor productivity at the firm level; the data set at hand here is not rich enough for such an exercise. Equation (1) is just a vehicle to test for, and estimate the size of, exporter premia controlling for firm size, time, and unobserved fixed firm effects. Furthermore, note that productivity differences at the firm level are notoriously difficult to explain empirically. “At the micro level, productivity remains very much a measure of our ignorance.” (Bartelsman and Doms 2000, p. 586)

[10] All computations were done with Stata Release 11 (see Stata Corp 2009). For West Germany a random sample of 7,500 enterprises (from some 35,000) had to be drawn due to hardware constraints inside the research data centre; for East Germany information on all enterprises could be used. The do-files took 15 days each on a dedicated 64bit machine.

Table 1: Exporter Productivity Premia in German Manufacturing Quantile Regression Results, 1995-2006		
Quantile	Effect of "Exporter"	
	West Germany	East Germany
10	0.145*** (0.026)	0.145*** (0.011)
20	0.060*** (0.013)	0.080*** (0.013)
30	0.050*** (0.013)	0.060*** (0.012)
40	0.040*** (0.014)	0.050*** (0.010)
50	0.025** (0.012)	0.045*** (0.010)
60	0.035*** (0.013)	0.050*** (0.010)
70	0.025 (0.016)	0.055*** (0.014)
80	0.015 (0.020)	0.075*** (0.019)
90	0.050 (0.034)	0.025 (0.021)
N	65,052	57,610
Significance Levels: * 10%, ** 5%, *** 1%. Standard errors are bootstrapped and clustered by firm. Specifications include year*size fixed effects.		

Results for West Germany show that the exporter productivity premium declines over the productivity distribution. The premium is highly statistically significant, and very large from an economic point of view, at the lower end. The estimated coefficient for the ten percent quantile shows a productivity premium of exporting over non-exporting firms of 15.6 percent.[11] The premium is statistically significantly different from zero at a conventional level in the first two-thirds of the productivity distribution only. This clearly demonstrates that the premium is not constant among enterprises from different parts of the productivity distribution. The estimated coefficient from an OLS fixed-effects regression using the same empirical model and the same sample of enterprises is 0.118 (which translates to a productivity

[11] The percentage value is computed from the estimated regression coefficient ß by (exp(ß)-1)*100.

premium of 12.5 percent) – this premium at the conditional mean, therefore, is much less informative with regard to the relation between productivity and exporting than the results for the various quantiles reported in Table 1.

Results for East Germany show a higher premium at the lower end of the productivity distribution, too. The estimated coefficient for the ten percent quantile indicates a productivity premium of exporting over non-exporting firms of 15.6 percent, identical to the results for West Germany. Contrary to what we find for West Germany, in East Germany the exporter productivity premium is statistically different from zero at a conventional error level over nearly the complete productivity distribution, and the estimated premia do not differ significantly between the 20 percent quantile and the 80 percent quantile. The estimated coefficient from an OLS fixed-effects regression using the same empirical model and the same sample of enterprises is 0.120 (which translates to a productivity premium of 12.7 percent) – like in the case of West Germany this premium at the conditional mean is much less informative with regard to the relation between productivity and exporting than the results for the various quantiles.

Note that the point estimate of the exporter productivity premium at the conditional mean is virtually identical for West and East Germany, and the difference between the two estimated premia is not statistically significant.[12] Looking at the conditional mean only, therefore, leads to the wrong conclusion that the relation between productivity and exports is identical in enterprises from West and East Germany when unobserved time invariant firm heterogeneity is controlled for by fixed

[12] The 95% confidence interval for the estimated coefficient is [0.089, 0.147] for West Germany and [0.099, 0.141] for East Germany.

enterprise effects – a statement that is clearly demonstrated to be wrong by applying quantile regression with fixed effects.

5. Concluding remarks

One of the stylized facts from the emerging literature on international activities of heterogeneous firms is the existence of a positive exporter productivity premium - exporting firms are more productive than firms that sell on the national market only. A large number of empirical studies document this premium after controlling for observed and unobserved firm characteristics in regression models including fixed firm effects. These studies test for a difference in productivity between exporters and non-exporters at the conditional mean of the productivity distribution. However, if firms are heterogeneous, there is no reason to assume that this productivity premium is the same for all firms. It might well be the case that the size of the premium varies over the productivity distribution. In this paper we use a newly developed estimator for fixed-effects quantile regression models to estimate the exporter productivity premium at quantiles of the productivity distribution for manufacturing enterprises in Germany, one of the leading actors in the world market for goods. We find that the premium decreases over the quantiles, and that the pattern is different for firms from East and West Germany. This dimension of firm heterogeneity remains undetected if only the estimates for the premium at the conditional mean of the productivity distribution are looked at. Our results demonstrate that quantile fixed effects regression is a powerful method for the empirical analysis of heterogeneous firms that should be added to the box of tools of researchers active in the field of micro-econometrics of international firm activities.

References

Bartelsman, Eric J. and Mark Doms (2000), Understanding Productivity: Lessons from Longitudinal Micro Data. *Journal of Economic Literature* XXXVIII (3), 569-594.

Bellone, Flora, Sarah Guillou and Linel Nesta (2010), To what extent Innovation accounts for firm export premia? University of Nice – Sophia Antipolis, mimeo, February.

Bernard, Andrew B. and J. Bradford Jensen (1995), Exporters, Jobs, and Wages in U.S. Manufacturing: 1976 – 1987. *Brookings Papers on Economic Activity, Microeconomics* 1, 67-119.

Bloom, Nicholas and John Van Reenen (2010), Why Do Management Practices Differ across Firms and Countries? *Journal of Economic Perspectives* 24 (1), 203-224.

Buchinsky, Moshe (1994), Changes in the U.S. Wage Structure 1963 – 1987: Application of Quantile Regression. *Econometrica* 62 (2), 405-458.

Buchinsky, Moshe (1998), Recent advances in quantile regression models. A practical guideline for empirical research. *Journal of Human Ressources* 33 (1), 88-126.

Chen, Songnian and Shakeeb Khan (2008), Semiparametric estimation of nonstationay censored panel data models with time varying factor loads. *Econometric Theory* 24 (5), 1149-1173.

Dimelis, Sophia and Helen Louri (2005), Foreign ownership and production efficiency: a quantile regression analysis. *Oxford Economic Papers* 54 (3), 449-469.

Falzoni, Anna Maria and Mara Grasseni (2005), Home Country Effects of Investing Abroad: Evidence from Quantile Regressions. Centre for Research on Innovation and Internationalisation, Universitá Bocconi, Milano, CESPRI Working Paper 170.

Foster, Lucia, John Haltiwanger and Chad Syverson (2008), Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability? *American Economic Review* 98 (1), 394-425.

Gamper-Rabindran, Shanti, Shakeeb Khan and Christopher Timmins (2010), The impact of piped water provision on infant mortality in Brazil: A quantile panel data approach. *Journal of Development Economics* 92 (2), 188-200.

Geraci, Marco and Matteo Bottai (2007), Quantile regression for longitudinal data using the asymmetric Laplace distribution. *Biostatistics* 8 (1), 140-154.

Greenaway, David and Richard Kneller (2007), Firm Heterogeneity, Exporting and Foreign Direct Investment. *Economic Journal* 117 (February), F134-F161.

Haller, Stefanie (2010), Exporting, Importing, Intra-Firm Trade and Firm Performance. ESRI Dublin, mimeo, March.

Harding, Matthew and Carlos Lamarche (2009), A quantile regression approach for estimating panel data models using instrumental variables. Economics Letters 104 (3), 133-135.

Helpman, Elhanan (2006), Trade, FDI, and the Organization of Firms. *Journal of Economic Literature* XLIV (September), 589-630.

International Study Group on Exports and Productivity (ISGEP) (2008), Understanding Cross-Country Differences in Exporter Premia: Comparable Evidence for 14 Countries. *Review of World Economics* 144 (4), 596-635.

Koenker, Roger (2004), Quantile regression for longitudinal data. *Journal of Multivariate Analysis* 91 (1), 74-89.

Koenker, Roger (2005), *Quantile Regression*. Cambridge etc.: Cambridge University Press.

Koenker, Roger and Gilbert Bassett (1978), Regression quantiles. *Econometrica* 46 (1), 33-50.

Koenker, Roger and Kevin F. Hallock (2001), Quantile regression. *Journal of Economic Perspectives* 15, Fall, 143-156.

López, Ricardo A. (2005), Trade and Growth: Reconciling the Macroeconomic and Microeconomic Evidence. *Journal of Economic Surveys* 19 (4), 623-648.

Malchin, Anja and Ramona Voshage (2009), Official Firm Data for Germany. *Schmollers Jahrbuch / Journal of Applied Social Science Studies* 129 (3), 501-513.

Melitz, Mark J. (2003), The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica* 71 (6), 1695-1725.

Powell, David (2009), Unconditional Quantile Regression for Panel Data with Exogenous or Endogenous Regressors. RAND Working Paper WR-710, October.

Serti, Francesco and Chiara Tomasi (2009), Self-selection along different export and import markets. Laboratory of Economics and Management Sant'Anna School of Advanced Studies, Pisa, LEM Working Paper Series 2009/18, November.

StataCorp (2009), *Stata. Release 11. Statistical Software*. College Station, TX: StataCorp.

Syverson, Chad (2010), What determines productivity? National Bureau of Economic Research NBER Working Paper 15712, January.

Trofimenko, Natalia (2008), Learning by Exporting: Does It Matter Where One Learns? Evidence from Colombian Manufacturing Firms. *Economic Development and Cultural Change* 56 (July), 871-894.

Wagner, Joachim (1995), Exports, Firm Size, and Firm Dynamics. *Small Business Economics* 7 (1), 29 – 39.

Wagner, Joachim (2006), Export Intensity and Plant Characteristics: What Can We Learn From Quantile Regression? *Review of World Economics* 142 (1), 195-203.

Wagner, Joachim (2007), Exports and Productivity: A Survey of the Evidence from Firm-Level Data. *The World Economy* 30 (1), 60-82.

Wagner, Joachim (2008), A note on why more West than East German firms export. *International Economics and Economic Policy* 5 (4), 591-595.

Wagner, Joachim (2010), From estimation results to stylized facts. Twelve recommendations for empirical research in international activities of heterogeneous firms. Mimeo, Leuphana University Lueneburg.

Yasar, Mahmut and Catherine J. Morrison Paul (2007), International linkages and productivity at the plant level: Foreign direct investment, exports, imports and licensing. *Journal of International Economics* 71 (2), 373-388.

Yasar, Mahmut, Carl H. Nelson and Roderick Rejesus (2006), Productivity and Exporting Status of Manufacturing Firms: Evidence from Quantile Regressions. *Review of World Economics* 142 (4), 675-694.

Zühlke, Sylvia, Markus Zwick, Sebastian Scharnhorst und Thomas 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(4): 567-578.

Working Paper Series in Economics

(recent issues)

No.181: *Lena Koller, Claus Schnabel und Joachim Wagner:* Beschäftigungswirkungen arbeits- und sozialrechtlicher Schwellenwerte , August 2010

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

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

No.171: *Joachim Wagner:* Estimated capital stock values for German manufacturing enterprises covered by the cost structure surveys, May 2010

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

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

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

No.159: *Markus Groth:* Zur Relevanz von Bestandseffekten und der Fundamentalen Transformation in wiederholten Biodiversitätsschutz-Ausschreibungen, Januar 2010

No.158: *Franziska Boneberg:* Die gegen das Drittelbeteiligungsgesetz verstoßende Aufsichtsratslücke existiert. Replik zu „Das Fehlen eines Aufsichtsrates muss nicht rechtswidrig sein“ von Alexander Dilger, Januar 2010
[erschienen in: Zeitschrift für Industrielle Beziehungen, 1 (2010)]

No.157: *Institut für Volkswirtschaftslehre:* Forschungsbericht 2009, Januar 2010

No.156: *Alexander Vogel, Joachim Wagner, Kerstin Brunken und Arno Brandt:* Zur Beschäftigungsentwicklung in der Region Hannover - Ein Vergleich mit 12 deutschen Verdichtungsräumen, Dezember 2009

No.155: *Nils Braakmann and Joachim Wagner:* Labor market adjustments after a great import shock: Evidence from the German clothing industry and the Multi-Fibre Arrangement, December 2009

No.154: *Joachim Wagner:* Zehn Jahre *European Data Watch*: Dokumentation von Datensätzen für die empirische Wirtschafts- und Sozialforschung und Zugangswegen zu den Daten, Dezember 2009
[erschienen in: AStA - Wirtschafts- und Sozialstatistisches Archiv 4(2010), 2, 141-149]

No.153: *Joachim Wagner:* Offshoring and work performance: Self-Selection, effects on performance, or both? December 2009
[revised version forthcoming in: Review of Word Economics]

No.152: *Christian Pfeifer:* Effective Working Hours and Wages: The Case of Downward Adjustment via Paid Absenteeism, November 2009

No.151: *Christian Pfeifer:* Adjustment of Deferred Compensation Schemes, Fairness Concerns, and Hiring of Older Workers, November 2009

No.150: *Franziska Boneberg:* Recht und Realität von Mitbestimmung im westdeutschen Dienstleistungssektor: 11 Fallstudien, November 2009

No.149: *Birgit Müller, Martin Quaas, Karin Frank and Stefan Baumgärtner:* Pitfalls and potential of institutional change: Rain-index insurance and the sustainability of rangeland management, November 2009

No.148: *Alexander Vogel, Florian Burg, Stefan Dittrich und Joachim Wagner:* Zur Dynamik der Export- und Importbeteiligung deutscher Industrieunternehmen – Empirische Befunde aus dem Umsatzsteuerpanel 2001-2006, Oktober 2009
[publiziert in: Wirtschaft und Statistik, Heft 11(2009), 1109-1116]

No.147: *Markus Groth:* Potentiale und Risiken der Nutzung von Methan aus Methanhydraten als Energieträger, Oktober 2009

No.146: *Sandra Derissen, Martin Quaas and Stefan Baumgärtner:* The relationship between resilience and sustainable development of ecological-economic systems, October 2009

No.145: *Anne-Kathrin Last und Heike Wetzel:* Effizienzmessverfahren – Eine Einführung, September 2009

No.144: *Horst Raff and Joachim Wagner:* Intra-Industry Adjustment to Import Competition: Theory and Application to the German Clothing Industry, September 2009
[published in: The World Economy 33 (2010), 8, 1006-1022]

No.143: *Nils Braakmann:* Are there social returns to both firm-level and regional human capital? – Evidence from German social security data. September 2009

No.142: *Nils Braakmann and Alexander Vogel:* How does economic integration influence employment and wages in border regions? The case of the EU-enlargement 2004 and Germany's eastern border, September 2009

No.141: *Stefanie Glotzbach and Stefan Baumgärtner:* The relationship between intra- and intergenerational ecological justice. Determinants of goal conflicts and synergies in sustainability policy. September 2009
[forthcoming in: Environmental Values]

No.140: *Alexander Vogel:* Exportprämien unternehmensnaher Dienstleister in Niedersachsen, September 2009

No.139: *Alexander Vogel:* Die Dynamik der Export- und Importbeteiligung niedersächsischer Industrieunternehmen im interregionalen Vergleich 2001-2006, September 2009

No.138: *Stefan Baumgärtner and Martin F. Quaas:* What is sustainability economics? September 2009
[published in: Ecological Economics 69 (2010), 3, , 445 - 450]

No.137: *Roland Olbrich, Martin F. Quaas and Stefan Baumgärtner:* Sustainable use of ecosystem services under multiple risks – a survey of commercial cattle farmers in semi-arid rangelands in Namibia, September 2009

No.136: *Joachim Wagner:* One-third codetermination at company supervisory boards and firm performance in German manufacturing industries: First direct evidence from a new type of enterprise data, August 2009

No.135: *Joachim Wagner:* The Reasearch Potential of New Types of Enterprise Data based on Surveys from Official Statistics in Germany, August 2009
[publiziert in: Schmollers Jahrbuch / Journal of Applied Social Science Studies 130 (2009), 1, 133-142]

No.134: *Anne-Kathrin Last and Heike Wetzel:* The Efficiency of German Public Theaters: A Stochastic Frontier Analysis Approach, July 2009
[revised version published in: Journal of Cultural Economics, 34(2), 89-110, 2010]

No.133: *Markus Groth:* Das Conservation Reserve Program: Erfahrungen und Perspektiven für die europäische Agrarumweltpolitik, Juli 2009
[published in: Zeitschrift für Umweltpolitik und Umweltrecht, Heft 4 (2009), 447-468]

No.132: *Stefan Baumgärtner and Sebastian Strunz:* The economic insurance value of ecosystem resilience, July 2009

No.131: *Matthias Schröter, Oliver Jakoby, Roland Olbrich, Marcus Eichhorn and Stefan Baumgärtner:* Remote sensing of bush encroachment on commercial cattle farms in semi-arid rangelands in Namibia, July 2009

No.130: *Nils Braakmann:* Other-regarding preferences, spousal disability and happiness: Evidence for German Couples, May 2009

No.129: *Alexander Vogel and Joachim Wagner:* Exports and Profitability – First Evidence for German Services Enterprises, May 2009
[published in: Applied Economics Quarterly 56 (2010), 1, 7-30]

(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