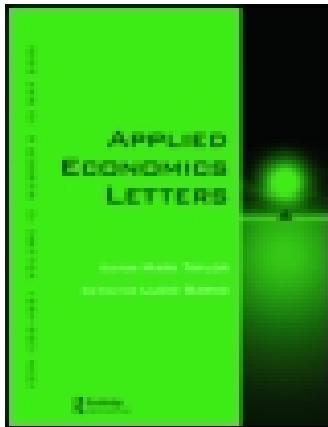


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Publisher: Routledge

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Applied Economics Letters

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rael20>

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Published online: 08 Dec 2014.



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To cite this article: Martin Falk & Eva Hagsten (2014): Exporter productivity premium for European SMEs, *Applied Economics Letters*, DOI: [10.1080/13504851.2014.987914](https://doi.org/10.1080/13504851.2014.987914)

To link to this article: <http://dx.doi.org/10.1080/13504851.2014.987914>

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Exporter productivity premium for European SMEs

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Estimates based on robust regression methods show that the level of labour productivity of exporting small- and medium-sized enterprises (SMEs) is 13 percentage points higher than that of nonexporting ones in a given industry and country. The data are based on the Community Innovation Survey (CIS) for 19 European countries with about 110 000 firms for the year 2010. The exporter productivity premium is highest in manufacturing, and professional and business services. Furthermore, SMEs that export to both the European and non-European markets exhibit a 19% higher level of labour productivity than nonexporting firms.

Keywords: exporter productivity premium; SMEs; Community Innovation Survey (CIS); destination market

JEL Classification: F14

I. Introduction

Several studies have investigated the exporter productivity premium of firms. A robust finding of studies is that exporting firms are more productive than those that sell products or services on the domestic market only (see Wagner, 2007, 2012 for surveys). However, few studies are available that explicitly investigate the exporter productivity premium itself for small- and medium-sized enterprises (SMEs) using internationally comparable data. Likewise, little is known about to what extent the exporter productivity premium varies across industries and across destination markets.

This article investigates the exporter productivity premium of SMEs relative to large firms using firm level drawn from the Community Innovation Survey (CIS) 2010. Results are provided for broad industry groups (at the NACE rev. 2 one-digit level). Another

focus of the study is to investigate whether the exporter productivity premiums of SMEs differ between those that serve only the EU/EFTA/EU candidate, only non-EU/EFTA/EU candidate markets or both markets. The analysis is based on data from the CIS 2010, which contains information on productivity and export status taken from more than 110 000 SMEs.

II. Empirical Model

The starting point of this analysis is the estimation of the so-called exporter productivity premium, defined as the percentage difference in the labour or total factor productivity level between exporter and non-exporters (ISGEP, 2008). In order to account for differences in production technology and capital intensity across countries and industries, the level

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of labour productivity of SMEs relative to large firms in a given industry and country is calculated. Next the relative productivity level is regressed on the export status, country dummy variables and industry dummy variables. The productivity equation is specified as follows:

$$\text{RELPROM}_{ijct} = \beta_0 + \beta_1 \text{EX}_{ijct,t-2} + \gamma \text{DCO}_{ijct} + \eta \text{DSEC}_{ijct} + \varepsilon_{ijct} \quad (1)$$

where i denotes firm, j industry, c country and t time. The dependent variable is the relative productivity level RELPROM_{ijct} defined as output (turnover) per employee of SMEs $Y_{ijct}^{\text{SMEs}} / L_{ijct}^{\text{SMEs}}$ in 2010 to that of the average of large firms, $\bar{Y}_{jet}^{\text{large}} / \bar{L}_{jet}^{\text{large}}$, in the same industry group (NACE rev. 2 one-digit level) and country in 2010. Thus, the relative productivity level of SMEs is an index going from zero to one for the majority of industries and countries considered. On average across industries and countries, the productivity level of SMEs is about 66% of that of large firms (250+). The independent variables are defined as follows:

$\text{EX}_{ijct,t-2}$: Export status (goods and/or services) between 2008 and 2010,

DCO_{ijct} and DSEC_{ijct} : country and industry dummy variables (the latter are only included in the full sample).

β_1 gives the differences in labour productivity of SME exporters to nonexporters relative to large firms. A potential extension is to disaggregate the export status by export participation in different destination markets. This makes it possible to investigate whether SMEs exporting to both within and outside Europe have a higher productivity level compared with those who are present in only one of the two destinations.

$$\text{RELPROM}_{ijct} = \beta_0 + \beta_1 \text{EXEU}_{ijct,t-2} + \beta_2 \text{EXNONEU}_{ijct,t-2} + \beta_3 \text{EXBOTH}_{ijct,t-2} + \gamma \text{DCO}_{ijct} + \eta \text{DSEC}_{ijct} + \varepsilon_{ijct} \quad (2)$$

$\text{EXEU}_{ijct,t-2}$: Dummy variable equal to one when exporting to only EU/EFTA/candidate countries between 2008 and 2010,

$\text{EXNONEU}_{ijct,t-2}$: Dummy variable equal to one when exporting to only non EU/EFTA/candidate countries between 2008 and 2010,

$\text{EXBOTH}_{ijct,t-2}$: Dummy variable equal to one when exporting to both markets between 2008 and 2010.

The regression equation is estimated by the robust regression method for broad industry groups. This is a weighted least-squares procedure that puts less weight on outliers. This is achieved using Cook's distance and then performing Huber iterations (StataCorp, 2013) (see Wagner, 2014 for an overview of alternative robust estimators).

The data are based on the CIS which is accessible at the Eurostat Safe Centre. It is a representative survey covering manufacturing and the main service industries with about 160 000 observations in 22 EU member states of which data for 19 EU countries can be used for the analysis. The CIS is a representative sample survey of firms, stratified by industry, firm size and region with 10 or more employees. CIS data exhibit a high degree of coherence with structural business statistics. Response rates are generally very high, exceeding 80% in most of the countries, except Germany. The survey contains firms in the business enterprise sector from a wide range of industries: mining (B), manufacturing (C), energy and water supply (D + E), wholesale trade (G), transportation (H), information and communication services (J), financial and insurance activities (K) and professional scientific and technical services (M). In addition, construction firms are included for a subset of countries (ES, FR, HR, IT, LT, NL, NO, PT and SK). Firms in remaining industries (retail sector, accommodation and food services, real estate, administrative and support services) are not or are only partially covered and are therefore not representative of the total population of firms in these industries. A limitation of the CIS data is that information on micro enterprises is generally not available. Therefore, the empirical analysis is limited to SMEs with between 10 and 249 employees (as compared to large firms with 250 or more employees). The key variable of interest is export status measured as whether or not firms sold goods or services during a 3-year period (2008–2010). Exporting is defined as when a firm sells either to European countries (European Union [EU], EFTA or EU candidate countries) or to countries outside Europe. Turnover is defined as the market sales of goods and services (except VAT) and is

Table 1. Robust regression estimates of the exporter productivity premium for SMEs (10–249) based on 19 EU countries

	Specification (1)			Specification (2)						# of obs.	
	Total exports			Exports to EU/ EFTA/candidate		Non EU/EFTA/ candidate		Both EU/EFTA/ candidate			
	Coeff.	t		Coeff.	t	Coeff.	t	Coeff.	t		
Total	0.12	***	69.79	0.08	***	36.73	0.08	***	15.60	0.17	*** 79.47 115741
Mining	0.02		1.27	0.00		0.12	-0.02		-0.39	0.06	*** 2.61 1353
Manufacturing	0.13	***	57.57	0.07	***	25.82	0.09	***	13.33	0.18	*** 72.02 53118
Energy and water supply	0.05	***	5.58	0.04	***	3.34	0.04		1.57	0.07	*** 5.07 4391
Construction	0.06	***	6.82	0.03	***	2.84	0.07	***	3.14	0.15	*** 8.31 9057
Distribution	0.10	***	22.34	0.08	***	13.60	0.06	***	4.32	0.14	*** 22.38 20010
Transportation	0.35	***	36.16	0.32	***	28.06	0.21	***	6.13	0.45	*** 32.87 8293
Information and communication	0.07	***	13.10	0.06	***	7.89	0.04	***	3.34	0.09	*** 13.34 7980
Financial sector	0.09	***	6.82	0.10	***	5.43	0.05		0.91	0.10	*** 4.90 3060
Professional and technical services	0.12	***	17.96	0.07	***	7.50	0.12	***	7.38	0.16	*** 19.22 8479

Source: CIS 2010 Safe Centre.

Notes: *** denotes significance at the 1% level. The table reports robust regression results of the relationship between the relative productivity level of SMEs (to that of large firms in a given industry and country). The export status (specification 1) and the destination specific export status (specification 2). The coefficient measures the exporter productivity premium of SMEs relative to nonexporting SMEs in percentage points (for small coefficient <0.10 see Halvorsen and Palmquist, 1980). Country coverage: BG, CY, CZ, EE, ES, FR, HR, HU, IT, LT, LU, LV, NL, NO, PT, RO, SE, SI and SK.

converted to euros. Employment is measured as average annual employment. The advantage of the data is that there is no minimum reporting threshold for exports unlike in trade statistics. The threshold for reporting of exports in the trade statistics is high for intra-EU exports, often exceeding €100 000.

Table 1 contains the results of the robust regression of the exporter productivity premium for the group of SMEs. The right panel of Table 1 shows the corresponding results distinguishing export participation by two destination regions. All regressions contain country dummy variables.

On average across the 19 European countries, the productivity level of exporting SMEs is 13 percentage points higher than nonexporting firms (as compared to large firms). It is interesting to note that the exporter productivity premium differs widely across industries. The gap in the relative productivity advantage of exporting SMEs is highest in manufacturing (+13 percentage points), and professional and business services (+12 percentage points) and lowest in mining (+2 percentage points), energy and

water supply (5 percentage points) and construction (+6 percentage points). The results for the transportation sector are difficult to interpret since the share of exporting SMEs in this industry is negligible.

Table 1 (right panel) shows that the relative productivity level is highest for SMEs that are present in both markets than for those that are only present in one of the two. This result can be observed for all industries. On average across the 19 European countries, SME exporters to both markets have a 19 percentage points higher level of labour productivity as compared to nonexporters. SME exporters that export to one of each market have an 8 percentage points higher productivity level.

This clearly indicates that the highest productivity premium of exporters can be observed when SMEs are present in both markets simultaneously. This premium varies across industries with a larger magnitude in transportation, manufacturing, and professional and business services and a lower magnitude in mining, energy and water supply and construction.

III. Conclusions

This study has provided first evidence on the exporter productivity premium of SMEs based on the CIS for 19 European countries. Productivity of SMEs is measured as the relative productivity level to that of large firms in a given country and industry. Using robust regression methods, we find that the level of labour productivity of exporting SMEs is 13 percentage points higher than that of nonexporting SMEs (as compared to large firms). The exporter productivity premium is highest in manufacturing and professional and technical services and lowest in mining, energy and water supply and construction. The highest productivity premium of exporters can be observed when SMEs are present in both the European market and beyond Europe with a productivity advantage of 19 percentage points.

Acknowledgements

We would like to thank the participants of the European Competitiveness Report 2014 workshop in Brussels for helpful comments. This work is carried out within the Framework Service Contract N° ENTR/2009/033.

The permission to publish the regression results has been obtained from Geneviève Villette (European Commission – DG Eurostat Unit G4:

Innovation and information society) on 13 March 2014 and from Tomas Brännström (European Commission – DG Enterprise) 23 October 2014. The views presented here are those of the authors solely and do not represent any institution.

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