Exports and productivity – comparable evidence for 14 countries

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Abstract

Consisting of teams working with firm level data, the International Study Group on Exports and Productivity has used comparable micro level panel data for 14 countries and a set of identically specified empirical models to investigate the relationship between exports and productivity. The overall results are in line with the big picture that is by now familiar from the literature: Exporters are more productive than non-exporters when observed and unobserved heterogeneity are controlled for, and these exporter productivity premia tend to increase with the share of exports in total sales; there is strong evidence in favour of self-selection of more productive firms into export markets, but nearly no evidence in favour of the learning-by-exporting hypothesis. The authors document that the exporter premia differ considerably across countries in identically specified empirical models. In a meta-analysis of the results they find that countries that are more open and have more effective government report higher productivity premia. However, the level of development *per se* does not appear to be an explanation for the observed cross-country differences.

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Key-words: Exports, productivity, micro data, international comparison.

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The International Study Group on Exports and Productivity consists of teams working with firm (establishment or enterprise) level data from 14 countries. Substantial contributions to the results reported in this paper were made by the following members of the teams: Austria (Leonhard Pertl, Stefano Schiavo), **Belgium (Mirabelle Muuls, Mauro Pisu),** Chile (Roberto Álvarez, Patricio Jaramillo, Ricardo A. López), China (Johannes Van Biesebroeck, Loren Brandt, Yifan Zhang), Colombia (Ana M. Fernandes, Alberto Isgut), Denmark (Rasmus Jørgensen, Ulrich Kaiser), France (Flora Bellone, Liza Jabbour, Patrick Musso, Lionel Nesta), Germany (Helmut Fryges, Joachim Wagner), Italy (Davide Castellani, Francesco Serti, Chiara Tomasi, Antonello Zanfei), Republic of Ireland (Stefanie Haller, Frances Ruane), Slovenia (Joze P. Damijan, Crt Kostevc, Saso Polanec), Spain (Jose C. Fariñas, Liza Jabbour, Juan A. Máñez, Ana Martin, Maria E. Rochina, Juan A. Sanchis), Sweden (Martin Andersson, Sara Johansson), and the United Kingdom (David Greenaway, Richard Kneller, Mauro Pisu). Ana Fernandes, Holger Görg and Alberto Isgut contributed to the meta-analysis. Joachim Wagner (wagner@uni-lueneburg.de) co-ordinates the group and serves as the corresponding author for this international comparison paper. Special thanks go to Brigitte Scheiter who took care of collecting all the results and preparing the voluminous Tables in an excellent way. Switzerland, and the International Conference on Business, Management and Economics 2007 in Izmir, Turkey, for very helpful comments and discussion on earlier drafts of this article.

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1. MOTIVATION

In 1995 Bernard and Jensen published the first of series of papers that use large comprehensive longitudinal data from surveys performed regularly by official statistics in the United States to look at differences between exporters and non-exporters in various dimensions of firm performance, including productivity (see Bernard and Jensen 1995, 1999, 2004). These papers started a new strand of economic literature, as researchers all over the world began to use the rich data sets collected by the statistical offices to study the export activity of firms, its causes, and its consequences. The extent and causes of productivity differentials between exporters and their counterparts which sell on the domestic market only is one of the core topics addressed.

In this literature two alternative but not mutually exclusive hypotheses about why exporters can be expected to be more productive than non-exporting firms are discussed and investigated empirically (see Bernard and Jensen 1999; Bernard and Wagner 1997): The first hypothesis points to self-selection of the more productive firms into export markets. The reason for this is that there exist additional costs of selling goods in foreign countries. The range of extra costs include transportation costs, distribution or marketing costs, personnel with skills to manage foreign networks, or production costs in modifying current domestic products for foreign consumption. These costs provide an entry barrier that less productive firms cannot overcome. Furthermore, the behaviour of firms might be forward-looking in the sense that the desire to export tomorrow may lead a firm to improve performance today to be competitive in the foreign market. Cross-section differences between exporters and non-exporters, therefore, may in part be explained by ex-ante differences between firms: The more productive firms become exporters. The second hypothesis points to the role of learning-by-exporting. Knowledge flows from international buyers and competitors help to improve the post-entry performance of export starters. Furthermore, firms participating in international markets are exposed to more intense competition and must improve faster than firms who sell their products domestically only. Exporting makes firms more productive.

Summarizing the results from a comprehensive survey of the empirical literature that covers 45 studies with data from 33 countries published between 1995 and 2006 Wagner (2007) argues that, details aside, the big picture that emerges after some ten years of micro-econometric research in the relationship between exporting and productivity is that exporters are more productive than non-exporters, and that the more productive firms self-select into export markets, while exporting does not necessarily improve productivity.[1] However, this big picture hides a lot of heterogeneity. Cross-country comparisons, and even cross-study comparisons for one country, are difficult because the studies differ in details of the approach used. Therefore, the jury is still out on many of the issues regarding the relationship between exporting and productivity, including the absolute size of the productivity advantage needed to clear the export market hurdle and the reasons for differences in this size between countries, the reasons for the existence or not of learning-by-exporting effects in some countries, the determinants of ex-ante productivity premia of export starters, and the mechanisms by which learning from exporting occurs.

One promising approach to generate stylised facts in a more convincing way suggested in Wagner (2007) is to co-ordinate micro-econometric studies for many countries ex-ante, and to agree on a common approach and on the specification of the empirical models estimated. The outcome of such a joint effort would be a set of results that could be compared not only qualitatively (i.e. with regard to the signs and the statistical significance of the estimated coefficients) but with a view on the magnitude of the estimated effects, too.

[1] For contemporaneous but less comprehensive surveys of this literature with a partly different focus see López (2005) and Greenaway and Kneller (2007).

This paper reports the results of an effort to proceed just like this. Teams working with micro level data for 14 countries joined to form The International Study Group on Exports and Productivity, with the aim of producing a set of internationally comparable results based on identically specified empirical models and using the same computer programmes. The paper reports the results of this exercise and also provides an attempt to explain cross-country differences in the productivity premia using meta-analysis techniques.

The rest of the paper is organised as follows: Section 2 provides information on the countries included, the data used, and descriptive statistics on export participation. Section 3 reports the so-called exporter productivity premia, defined as the ceteris paribus percentage difference of productivity between exporters and non-exporters. Section 4 and Section 5 present the results of empirical investigations of the two hypotheses mentioned above, namely self-selection of more productive firms into export markets, and learning-by-exporting. Section 6 performs robustness checks of the results. Section 7 concludes.

2. COUNTRIES, DATA SETS, AND DESCRIPTIVE EVIDENCE ON EXPORT PARTICIPATION

A list of the 14 countries involved in this international comparison study, and some information on the data sets used, are given in Table 1. While most of the countries come from the European Union, Chile and Colombia from South America and China from Asia are included, too.[2]

[Table 1 near here]

The data are either at the level of the establishment (the plant, the local production unit) or at the level of the firm (the legal unit). Unfortunately, it was neither possible to aggregate all establishment level data to the firm level, nor was it possible to split up firm level information to the establishment level. This different level of aggregation is one dimension in which the results reported in this study are not truly comparable across all countries. The other dimension is due to the different years covered. If we had limited the data used to years that are covered in all data sets, we would have ended up with a reduced set of countries and a small number of years. Therefore, we decided to use all the information at hand, and to control for the different years covered in the estimation of the empirical models. For any details of the data sets used, and how to access them, readers may contact the persons listed in Table 1.

Some of the data sets cover units with at least 20 employees, some with at least 10 employees, and some have information on all units. Results reported in this paper are for units with at least 20 employees; for those countries whose data sets cover units with at least 10 employees, comparable results are shown in a set of Tables in Appendix III. Furthermore, all computations are limited to units from manufacturing industries with NACE 2 letters code DA to DN (or ISIC code 15 to 36); a list of these industries is given in Appendix I.1.

[2] The composition of the sample of countries included is the result of a call for participation sent out by Joachim Wagner early in 2005 to all authors of studies covered in Wagner (2007). Unfortunately, not all of them agreed to participate, but, fortunately, others joined later when they heard of the project. Researchers from countries not yet represented in the group are cordially invited to join – please contact Joachim Wagner by mailing to wagner@uni-lueneburg.de.

The exporter participation rate (defined as the percentage of exporting firms) and the export intensity rate (defined as the average share of exports in total sales for exporting firms) in the 14 countries[3] are reported for both the first and the last year covered in the data set used here for all units and for units from four size classes (20 – 49 employees; 50 – 249 employees; 250 – 499 employees; 500 and more employees) in Table 2.

[Table 2 near here]

Table 2 documents that both the exporter participation rate and the export intensity differ widely across the countries covered in this study. Looking at the figure for all firms,[4] and the most recent year covered, the exporter participation rate ranges from 26.6 percent for Colombia to 83 percent for Sweden. Note that this participation rate is loosely decreasing in the size of the domestic markets of the countries (with China and Germany being outliers here). Furthermore, it did not increase over the period covered for all countries; for instance, the share of manufacturing firms active in exporting did not grow for Belgium, Denmark, Slovenia, and the UK. The export participation rate tends to be higher among firms from the larger size classes, although there is no strict relationship in this for Denmark, Italy, the Republic of Ireland, Slovenia, and Sweden. Looking at export intensity, there are again remarkable cross-country differences. While exports cover only a small share of all sales of exporters from Colombia (18 percent), France and East Germany (24 percent), this share is rather high in Austria, Belgium and Sweden (44 percent), the Republic of Ireland (53 percent), and especially China (60 percent), and it increases with firm size in more than half of the countries covered.[5]

[3] Given that there are still large differences between West Germany and the former communist East Germany, results are reported for both parts of Germany individually.

[4] From now on we will use the term 'firm' to refer to the unit of analysis irrespective of whether the data are collected at the establishment or the enterprise level.

[5] Appendix I.2 documents that both the exporter participation rate and the export intensity differ widely between industries in a country, and between countries in an industry.

3. EMPIRICAL RESULTS I: EXPORTER PRODUCTIVITY PREMIA

To investigate differences in productivity between exporters and non-exporters we start with the computation of the so-called exporter productivity premia, defined as the ceteris paribus percentage difference of productivity between exporters and non-exporters. Productivity is measured in a number of different ways in the literature, including labour productivity (defined as sales, or value added, per employee, or per hour worked) and several variants of total factor productivity. Given that information on value added, hours worked, and the capital stock used in the firm is available for some of the countries included in this international comparison project only, we have to rely on the simplest measure of productivity, i.e. sales per employee (measured in constant prices).[6]

The exporter labour productivity premia are computed from a regression of log labour productivity on the current export status dummy and a set of control variables

$$(1) \qquad \ln LP_{it} = a + ß\ Export_{it} + c\ Control_{it} + e_{it}$$

where *i* is the index of the firm, *t* is the index of the year, *LP* is labour productivity, *Export* is a dummy variable for current export status (1 if the firm exports in year t, 0 else), *Control* is a vector of control variables that includes the log of number of employees and its squared value to measure firm size, the log of wages and salaries per employee (in constant prices) to proxy for human capital, and a full set of interaction terms of 4-digit industry-dummies[7] and year dummies to control for industry-specific differences in capital intensity and shocks, and *e* is an error term. The exporter productivity premium, computed from the estimated coefficient ß as 100*(exp(ß)-1), shows the average percentage difference in labour productivity between exporters and non-exporters controlling for the characteristics included in the vector Control. To control for unobserved plant heterogeneity due to time-invariant firm characteristics which might be correlated with the variables included in the empirical model and which might lead to a biased estimate of the exporter productivity premia, a variant of (1) is estimated including fixed firm effects, also.

Results for the estimated exporter productivity premia from empirical models with and without fixed firm effects for each of the 14 countries are reported in Table 3 for samples covering all firms with more than 20 employees, and firms from the four size classes.[8]

[Table 3 near here]

[6] For a robustness check of the results based on different measures of productivity for some countries see Section 6 below. Note that value added is not necessarily a better basis to measure productivity than sales, turnover or gross output. The reason is that value added does not track production in a year as closely as gross output or turnover would do (cf. Oulton and O'Mahony (1994, pp. 25ff.)). Bartelsman and Doms (2000, p. 575) point to the fact that heterogeneity in labour productivity has been found to be accompanied by similar heterogeneity in total factor productivity. Furthermore, Foster, Haltiwanger and Syverson (2005) show that productivity measures that are based on sales (i.e., quantities multiplied by prices) and measures that are based on quantities only are highly positively correlated.

[7] 3-digit industry-dummies had to be used in the case of Italy and Spain.

[8] To control for the effects of extreme observations that are often found in these data from official statistics due to reporting errors or idiosyncratic events, the firms with the bottom / top one percent labour productivity in a year are excluded from all computations for this and all following Tables in this study. Furthermore, firms are classified into size classes according to the median of the number of employees over the years covered.

Looking at the results for all firms we find that the estimated premia are always statistically significantly different from zero, and often rather large, for pooled data. If fixed firm effects are added to control for unobserved heterogeneity the estimated premia are still statistically significant in all countries but Sweden,[9] but the point estimates are much smaller compared to the results based on pooled data only. Unobserved firm heterogeneity does matter, and, therefore, we will concentrate on the results from the model including fixed effects.

Table 3 gives new insights on the relative magnitude of the export premia across countries. For a large majority of countries (6 over the 13 for which export premia are found statistically significant), the premia lie in a range of 6.6 to 8.1 percent. Two subgroups of countries emerge however which display relatively high and relatively low export premia. The first subgroup includes Colombia (16.4 percent) and Belgium (9.8 percent) while the second subgroup includes Austria (5.3 percent), UK (3.9 percent), Italy (3.6 percent), Slovenia (5 percent), and East Germany (5.6 percent). Interestingly, the size of the premia seems to be unrelated to the degree of economic development of the countries - the order of magnitude is the same for Chile and China on the one hand, and France, West Germany, the Republic of Ireland and Spain on the other hand. This is illustrated in Figure 1 where the estimated exporter premia are plotted against GDP per capita. If Colombia and Sweden (where the exporter premium is not statistically different from zero) are disregarded, the scatterplot reveals a rather flat structure.[10]

[Figure 1 near here]

Looking at results by size class we do not find a clear-cut pattern for the magnitude of the premia. For some countries, including Austria, Belgium, Italy, the Republic of Ireland, Slovenia and the UK, the point estimates are statistically insignificant at the usual confidence level of five percent for the largest size class, and sometimes for the firms from the second largest size class, too.[11] This is not the case for the least developed countries in our sample (China, and Colombia), but it is also not the case for Denmark, France, Germany, and Spain. Again, there is no apparent link between the size of the premia and the degree of economic development of the countries. Note, furthermore, that the exporter participation rate in the size classes does not appear to be related to the statistical significance or otherwise to the estimated exporter premia – a case in point are Austria and France that have rather similar participation rates among the firms from the highest size class (see Table 2) but totally different results for the estimated exporter productivity premia.

To investigate how the premia vary with export intensity, a modified version of the empirical model (1) is used where the dummy variable indicating the export status is replaced by the share of exports in total sales and its squared value. The results are reported in Table 4.

[Table 4 near here]

[9] There is no definite reason for the insignificance of the productivity premia in the Swedish case. One plausible explanation is that Sweden has a limited domestic market and entry costs to the neighboring countries (Denmark, Norway and Finland) are supposedly low (cf. Andersson 2007). Another is that many Swedish firms belong to multinational corporations with established trading networks to foreign countries. Andersson, Johansson and Lööf (2007) show that about 35 % of Swedish manufacturing firms belong to MNEs and that MNEs are responsible for over 90 % of the total value of Sweden's exports.

[10] Using firm-level data for 5 East Asian countries, Hallward-Driemeier et al. (2002) find that the magnitude of the export premia is larger in countries with lower per capita income. They argue that developed countries have less-integrated markets, which allows non-exporters with low levels of productivity to survive. In contrast, in more developed economies domestic markets are more integrated, making more difficult for low-productivity non-exporting firms to survive. The meta-analysis presented later in this paper confirms that more open economies have higher export premia.

[11] This is likely caused by the fact that most large firms do export, so that there is not enough variation in the sample to yield a statistically significant coefficient; see Table 2.

Given that the results differ considerably when fixed firm effects are added to the model estimated with pooled data, we again focus on the results from the empirical model controlling for unobserved firm heterogeneity. From the results reported in Table 4 for all firms we conclude that the share of exports in total sales matters for the size of the exporter productivity premia in all countries but Slovenia[12] because at least one of the two estimated coefficients (for the share of exports in total sales, and for its squared value) is statistically different from zero at the five percent level. Looking at the pattern of the signs of the estimated coefficients, and focusing on point estimates that are statistically different from zero at the five percent level, we find that the exporter productivity premium varies with the share of exports in total sales as follows:

- it increases (either both estimated coefficients have a positive sign, or the coefficient with a negative sign is statistically insignificant) in Austria, West Germany, East Germany, Italy, Republic of Ireland, and the UK;[13]

- it increases at a decreasing rate (the coefficient of the share of exports in total sales is positive, the coefficient of the squared value is negative, and the estimated maximum is reached for a value of the share of exports that is either higher than 100 percent, or very high compared to the average share of exports in total sales of the exporting firms according to Table 2) in Belgium, Chile, Colombia, Denmark, France, and Spain;

- it increases, reaches a maximum at around 50 percent, and decreases afterwards in China; and

- it decreases (the positive coefficient of the squared term is statistically insignificant) in Sweden.

As in the case of the exporter productivity premia estimated from the exporter status dummy variable, the degree of economic development of the countries does not appear to matter for the pattern of the relationship between export intensity and productivity when eyeballing the data. Note that the sign pattern often differs between the size classes, and that for some size classes the results point to no relationship between export intensity and productivity at all even when there is a statistically significant relationship for all firms taken together.

While eyeballing the results gives us some idea of what may or may not drive the differences, we also pursue a more rigorous approach by conducting a meta-regression analysis based on the coefficient estimates reported in Tables 3 and 4. Meta-analysis is a tool that can be fruitfully used to summarise, and explain variations in results of a number of similar empirical studies concerned with one research topic.[14] To be more precise, we estimate an equation of the form

$$(2) \qquad \text{coefficient}_j = \beta X_j + \varepsilon_j$$

where the dependent variable is the coefficient reported in Tables 3 or 4 and X is a vector of potential explanatory variables, including both variables relating to the estimation method and country characteristics. We allow the error term to be correlated within but not across countries. A detailed list of variables included in our analysis is provided in Appendix II.

The results for a meta-regression analysis on the results from Tables 3 and 4 are provided in Table 5. Columns (1) to (3) provide results based on the coefficients in Table 3. In the first column we use as

[12] This is in line with findings from other studies using Slovenian firm data; for a discussion see Damijan, Polanec and Prasnicar (2004) and Damijan and Kostevc (2006).

[13] In the UK data the sign pattern is "- / +", but the estimated minimum of the parabola is 8.3 percent, so this indicates that the exporter premium is increasing in the share of exports in total sales in general.

[14] Görg and Strobl (2001) is a recent example of a meta-analysis in the international economics literature.

explanatory variables some characteristics of the estimation method, i.e., whether the estimation is fixed effects or not, the number of observations used, and dummy variables for the size class for which the estimation was carried out.[15] Also, we include a full set of country dummy variables with Slovenia being the baseline country. The results show that the estimation technique matters – unsurprisingly, fixed effects estimates are, on average, lower than those obtained from OLS. The number of observations and size class does not seem to matter, however. As for the country dummies, we find that all countries except Sweden have a positive and statistically significant coefficient, i.e., the export premium is, all other things equal, higher in these countries than in Slovenia. However, the point estimates vary substantially, from 1 (UK) to 21 (Belgium).

[Table 5 near here]

We then try to explain the strong differences across countries that were indicated by the dummies. In a first step (column 2) we replace the dummies by two characteristics of the different datasets: a dummy to proxy whether or not the data is at establishment (vs. firm) level and the midpoint year of the country's sample. However, neither of these two variables returns a statistically significant coefficient.

In column (3) we include a host of other country characteristics that may potentially explain differences in export premia. These include the size of the economy, proxied by the GDP, its level of development, proxied by GDP per capita, the overall openness of the economy, and institutional characteristics. The latter are proxied using indices on the ease of doing business, the effectiveness of government and regulatory quality. We can justify the inclusion of these variables based on recent models of firm heterogeneity (Melitz 2003), where the existence of trade costs explains why only some firm export. We expect more open economies and those with better institutional characteristics to have lower trade costs. In such a case, the productivity differential between exporters and non-exporter would tend to be lower.

Including these variables in the regression shows that, once we control for a number of observable country characteristics and other attributes of the data and estimation technique, estimates from establishment level data are systematically higher than those from firm level data. The meta-regression analysis verifies the lack of a statistically significant relationship between export premia and GDP per capita reported in Figure 1. However, we find that other country-specific variables matter. For instance, we find that country size, proxied by the country's GDP, is positively related to the export premia, although the effect is small. Furthermore, we find that in more open economies exporting firms display larger differentials vis-á-vis non exporters. As for the indicators on institutional quality we find that countries with a more business friendly environment, and countries with more effective government also show, ceteris paribus, higher exporting premia.

In columns (4) to (6) we show the results from similar estimations based on the coefficients in Table 4. There are some differences compared to the meta-analysis for the coefficients in Table 3. Firstly, we now find that "size matters", with estimates of how the premia vary with export intensity obtained from the samples of small firms (less than 250 employees) being significantly higher than those obtained from the samples of larger firms. Secondly, in column (4) we find that only the dummies for the UK, Ireland and West Germany return statistically significant negative coefficients, while the coefficients for all other country dummies are positive, suggesting that Slovenia – the baseline country – has relative

[15] The baseline category is large firms with more than 500 employees. Note that we do not include as dependent variables in the meta-analysis regressions the coefficients obtained based on all firms, we only include the coefficients obtained by size class.

low export intensity premia.[16] Thirdly, in the fully specified model with observable country characteristics we no longer find statistically significant differences between estimates obtained from establishment or firm level data. Fourthly, we find a significantly negative relationship between the effect of export intensity on productivity and level of development, proxied by GDP per capita. Fifthly, of the additional country variables, only government effectiveness remains positive and statistically significant at the five percent level.

4. EMPIRICAL RESULTS II: EX-ANTE EXPORTER PRODUCTIVITY PREMIA

The empirical results reported and discussed in Section 3 relate to the correlation between labour productivity and exports. Regarding the direction of causality between these two dimensions of firm performance, there are two not mutually exclusive hypotheses mentioned in the introduction. To shed light on the empirical validity of the first hypothesis – namely, that the more productive firms sell abroad – the pre-entry differences in labour productivity between export starters and non-exporters are investigated next. If good firms become exporters then we should expect to find significant differences in performance measures between future export starters and future non-starters several years before some of them begin to export. To test whether today's export starters were more productive than today's non-exporters several years back when all of them did not export, all firms that did not export between year t-3 and t-1 are selected, and the average difference in labour productivity in year t-3 between those firms who did export in year t and those who did not is computed. More formally, we estimate the empirical model

$$(3) \qquad \ln LP_{it-3} = a + ß\ Export_{it} + c\ Control_{it-3} + e_{it}$$

where *i* is the index of the firm, *t* is the index of the year, *LP* is labour productivity in year t-3, *Export* is a dummy variable for current export status (1 if the firm exports in year t, 0 else), *Control* is a vector of control variables that includes the log of the number of employees and its squared value to measure firm size, the log of wages and salaries per employee (in constant prices) to proxy human capital, and a set of 4-digit industry-dummies[17] to control for industry-specific differences in capital intensity and industry specific shocks, and *e* is an error term. The pre-entry premium, computed from the estimated coefficient ß as 100*(exp(ß)-1), shows the average percentage difference between today's exporters and today's non-exporters three years before starting to export, controlling for the characteristics included in the vector Control.

[Table 6 near here]

Results are reported in Table 6. As can be seen from the last column of this Table the number of export starters in the data sets used is often rather small. Therefore, it comes as no surprise that the point estimates for the ex-ante labour productivity premia of export starters are nearly always statistically insignificant at a usual error level for Austria, Belgium, Denmark, the Republic of Ireland, Slovenia, Spain, Sweden, and the UK. When the estimated ex-ante premia in these countries are statistically different from zero, however, they are positive.

Convincing evidence for positive and large ex-ante labour productivity premia of export starters is found for Chile (at least before 1998), China, and Colombia (after 1988), the three less developed countries covered in our study. Results for France, Germany, and Italy – the EU-countries with large

[16] Notice, however, that the country dummies from the regressions in Columns (1) and (4) are positively correlated (r= 0.65).

[17] 3-digit industry-dummies had to be used in the case of Italy and Spain.

numbers of export starters in the data sets used here – show that the ex-ante premia are positive and (nearly) always statistically significant in Italy and France, pointing to self-selection of good firms into export markets like in Chile, China and Colombia. Evidence for such a selection process is considerably weaker in West-Germany, and more or less missing in East-Germany (although, again, all statistically significant point estimates for the premia are positive).

To summarize, we find strong evidence in favour of the self-selection hypothesis for the less developed countries in our sample, and for EU-countries with suitable data sets including a large enough number of export starters to investigate this issue – with the exception of the "export world champion" Germany.[18]

Table 7 presents a meta analysis of the results in Table 6, similar to the one carried out for Tables 3 and 4 above. We now include an additional variable, namely the share of export starters over the total number of firms in the sample. Regression results show that, countries for which we have a large number of observations in the estimations also report higher premia. Note, however, that the distinction between establishment and firm level data does not matter for the size of the premium.

[Table 7 near here]

Furthermore, we find that relative to Slovenia (our baseline category) all other countries, with the exception of Austria, report higher ex-ante premia, all other things being equal. Looking at observable country characteristics in column (3) shows that, on average, countries with a higher share of export starters relative to the total number of firms in the sample report higher ex-ante premia. Also, countries with lower levels of GDP, i.e., smaller countries, countries that are less open, and those with business regulations that are less business friendly have higher ex-ante premia for exporters.

5. EMPIRICAL RESULTS III: EX-POST EXPORTER PRODUCTIVITY PREMIA

To test the second hypothesis mentioned in the introduction – namely, that exporting fosters productivity - the post-entry differences in productivity growth between export starters and non-exporters are investigated. This test is based on a comparison of firms that did not export in years t-3 to t-1, but that exported in year t and in at least two years between the years t+1 and t+3 – these are the export starters – with firms from a control group that did not export in any year between t-3 and t+3. The empirical model used is

$$(4) \qquad \ln LP_{it+3} - \ln LP_{it+1} = a + ß\ Export_{it} + c\ Control_{it} + e_{it}$$

where *i* is the index of the firm, *t* is the index of the year, *LP* is labour productivity, *Export* is a dummy variable that takes the value 1 for export starters and the value zero for the firms from the control group, *Control* is a vector of control variables that includes the log of number of employees and its squared value to measure firm size, the log of wages and salaries per employee (in constant prices) to proxy human capital, and a set of 4-digit industry-dummies[19] to control for industry-specific differences in capital intensity and industry specific shocks, and *e* is an error term. The post-entry premium, computed from the estimated coefficient ß as 100*(exp(ß)-1), shows the average percentage

[18] The reason for this somewhat strange result for Germany might be related to the unit of analysis. While the data for France and Italy are for firms, the German data are measured at the establishment level. The extra costs of selling goods on foreign markets that provide an entry barrier for less productive units might be covered in part, or even completely, by the enterprise for an establishment starting to export in the case of a multi-establishment enterprise.

[19] 3-digit industry-dummies had to be used in the case of Italy and Spain.

difference in the growth of labour productivity between the export starters and non-exporters over the three years after the start, controlling for the characteristics included in the vector Control.

[Table 8 near here]

Results are reported in Table 8. Again, the numbers of export starters that can be monitored with the data sets available for this study are too small for most countries to offer a solid basis for a reliable empirical investigation. Overall, the results are mixed, with positive and negative statistically significant estimates for some years in some countries. Looking at the results for France, West Germany, and Italy, where the numbers of starters seem to be large enough for our purpose, we find evidence in favour of the learning-by-exporting hypothesis for Italy only.

Table 9 reports a meta-analysis of the results in Table 8. Unfortunately, this analysis does not prove very fruitful in this case. Apart from a handful of country dummy variables all other variables are statistically insignificant. This may at least be partly due to the small number of observations available for this analysis.

[Table 9 near here]

6. Robustness Checks

To check the robustness of our results we repeat our empirical analysis with different measures of productivity, and with firms having at least 10 employees included in the samples, for the countries where the data needed are available to us.

6.1 Results for different productivity measures

As a first robustness check, we repeat the calculations in Tables 3, 6, and 8 using two different dependent variables. Subtracting intermediate inputs (which include raw materials and energy where possible) from total sales, we construct value added and divide it by employment as before to obtain a more customary measure of labour productivity (*VA/L*). Subtracting $(1-s_j)^* \ln (K/L)$ from value added per worker, where s_j is the wage share in value added for industry *j*, we obtain an estimate of total factor productivity (*TFP*) which is our third dependent variable.

In Tables 10, 11, and 12, we report results for these two new dependent variables. For data availability reasons, the results can be obtained only for a subset of the countries. As the sample size is often reduced due to missing value added or capital information, we report results using all three dependent variables on the same sub-sample for which we observe *TFP*. As before, we drop the 1% outliers at the top and bottom of the productivity distributions. The reported statistics are calculated exactly as before in Tables 3, 6, and 8, respectively.

The results prove remarkably robust for the new dependent variables. The exporter productivity premia on the full sample, in Table 10, remain positive and significantly different from zero for all countries if we use value added per worker instead of sales per worker. The magnitudes of the effects are uniformly smaller, and the declines range from a factor of seven for Belgium to less than 10% decline for Colombia. Using *TFP* as dependent variable, some coefficients become insignificant and some of the OLS estimates even turn negative. The preferred fixed effects results remain positive in each case and significantly different from zero at the 1% level in three of the seven cases. The magnitudes of the export premia are on average 40% lower if *TFP* is used as dependent variable rather than sales per worker.

[Table 10 near here]

Comparing export starters to non-starters three years before they enter the export market, results in Table 11, we find a similar pattern. Most coefficient estimates remain positive using *VA/L* as dependent variable, but their size and significance are lower. The same is true for Belgium, China, and Italy if we use *TFP* as dependent variable. For Colombia, France, and the U.K., negative effects dominate but most of them are not statistically significant.[20]

[Table 11 near here]

Finally, results in Table 12 revisit the learning-by-exporting question by looking at productivity premia three years after new exporters entered the export market. The flimsy support using sales per worker as dependent variable is mirrored by the estimates in the first column, and support is not overwhelming for the other two dependent variables either. Still, for some countries the support gets slightly stronger using *VA/L* or *TFP* as dependent variable, although the significance tends to be quite low. Positive and marginally significant results remain for Italy most years and weak support gets a tad stronger for Belgium, France, Ireland and the UK. The negative coefficient estimates for China for *S/L* become much smaller for *TFP* and even turn positive in one year. Results for Colombia are never significant. In contrast with the results in the previous two Tables, the *TFP* results are not uniformly weaker. A caveat is in order though. We measure *TFP* assuming the same importance of capital for all firms in an industry.[21] If exporters and non-exporters operate with a different technology, as Van Biesebroeck (2006) argues, they would face a different capital-labour trade-off. Especially in countries or industries where the majority of firms do not export this will lead to an overestimate of productivity for exporters as they accumulate capital.

[Table 12 near here]

6.2 Results for units with at least 10 employees

In order to ensure comparability across countries the main results had to be restricted to units – firms or establishments – with 20 and more employees. For those countries with a small average unit size this means that up to 50% of their firm population is outside the analysis. Appendix III presents results from repeating the analysis for those countries where information on units with 10 or more employees is available as a second robustness check. The Tables are organised and numbered so that they can be compared directly to those in the main part of the paper. With some qualifications the main results continue to hold.

The descriptive statistics in Appendix III Table 2 indicate that export participation is increasing in unit size, thus when the group of units with 10-19 employees are included the rate of export participation for all units decreases somewhat. The same observation is true in most cases for export intensity, with the exceptions of Colombia where export intensity decreases with firm size as well as Belgium and Sweden where close to 50% and in some years more of the units with 10-19 employees are exporters.

The results for exporter productivity premia measured by export status in Appendix III Table 3 also indicate that exporters have significantly higher labour productivity than non-exporters. The size of the

[20] Negative estimates would suggest that firms invest in new capital equipment prior to entering the export market, as shown by Van Biesebroeck (2005) using data on African firms. The exercise in this paper does not allow examining this idea as we do not follow the same groups of entrants over time.

[21] Estimating productivity econometrically would require the same assumption.

overall coefficient from the fixed effect regression is slightly larger for almost all countries when compared to the results for units with 20 and more employees. Exceptions here are Colombia where the coefficients are nearly unchanged and Denmark where the premium for exporters is lower in the sample with 10 or more employees.

The relationship between the exporter productivity premium and the share of exports in total sales as described in Section 3 is somewhat more pronounced for most countries when estimated from the sample with 10 or more employees (Appendix III Table 4). It remains insignificant for the UK and Slovenia in the fixed effect regressions. In the case of Belgium the linear term becomes negative and the squared term for export intensity remains statistically significant, but loses its economic significance. For Colombia the size of the coefficient on export intensity is nearly unchanged while the size of the coefficient on export intensity squared is almost halved in absolute value terms.

Where the ex-ante exporter productivity premium was estimated to be positive and significant in the sample with 20 or more employees, this is confirmed by larger and more precise estimates for nearly all cases in the samples with 10 or more employees depicted in Appendix III Table 6. An exception here is Sweden; in the sample with 20 or more employees none of the ex-ante exporter productivity premia are significant. In turn, when the units with 10 or more employees are added the ex-ante exporter productivity premia are negative for all years and nearly all of them are significant at the 5% level.

Finally, the results from Appendix III Table 8 do not provide any more evidence of ex-post exporter productivity premia than in the samples with 20 or more employees apart from the occasional cohort. This is despite the fact that the number of export starters and controls is somewhat larger in this more comprehensive set of units with 10 and more employees.

7. CONCLUDING REMARKS

The overall results from our study that uses comparable micro level panel data for 14 countries to look at the relationships between exports and productivity using identically specified empirical models are in line with the big picture that is by now familiar from the literature: Exporters are more productive than non-exporters when observed and unobserved heterogeneity is controlled for, and these exporter productivity premia tend to increase with the share of exports in total sales. Furthermore, we find strong evidence in favour of the self-selection hypothesis for the less developed countries in our sample, and for all EU-countries with data sets including a large enough number of export starters to investigate this issue but Germany. On the other hand, we find evidence in favour of the learning-by-exporting hypothesis for Italy only.

However, the paucity of evidence on learning-by-exporting found on this paper should be qualified, as it might be dependent on the specific methodology utilized. For instance, a number of recent works find positive effect of export experience on productivity using more sophisticated estimation techniques and controlling for the bias caused by the self-selection of the most productive plants into exporting (see e.g. Van Biesebrock, 2005; Isgut and Fernandes, 2007; Lileeva and Trefler, 2007; and De Loecker, 2007). Moreover, the positive results on Italy are robust to the use of more sophisticated techniques such as propensity score matching and difference-in-differences (Serti and Tomasi, 2007). More research is needed on this area.

The main contribution to the literature added by this study is to document that the magnitude of exporter premia differs considerably across countries even in the identically specified empirical models that are used here. We also find that the size of the premia is unrelated to the degree of economic development of the countries – the order of magnitude is the same for Chile and China on the one hand, and France, West Germany, the Republic of Ireland and Spain on the other hand. Conducting a meta-regression analysis of our results we find that this is true even when controlling for other country and sample characteristics. We also find that countries that are more open and have more effective government report higher productivity premia.

Furthermore, although the exporter productivity premia tend to increase with the share of exports in total sales, this pattern is far from identical for the countries covered in our study. And the ex-ante productivity premia for export starters that might be interpreted as the productivity advantage that future export starters must at least have to cover the extra costs associated with becoming an exporter, seem to differ by an order of magnitude between countries as exemplified by the results for France and Italy reported in Table 6.

A next step in the analysis of the relation between exports and productivity should closely focus on these cross-country differences that were shown by our study not to be related to the use of different types of data nor to the application of differently specified empirical models in the econometric investigations. A solid understanding of the nature and the causes of these differences across countries is a pre-requisite for any sound policy-oriented conclusions that might help to foster export-driven growth.

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Table 1: Countries included in the international comparison and data sets used

Country	Unit of analysis	Coverage	Years	Contact
Austria	Firm	Manufacturing firms with at least 20 employees	1999 – 2005	Stefano Schiavo stefano.schiavo@ofce.sciences-po.fr
Belgium	Firm	All firms	1996 – 2005	Mauro Pisu mauro.pisu@nbb.be
Chile	Establishment	All establishments with at least 10 workers	1990 – 1999	Roberto Alvarez ralvarez@bcentral.cl
China	Firm	All state firms and all non-state firms with sales above RMB 5 million	1998 – 2005	Jo Van Biesebroeck jovb@chass.utoronto.ca
Colombia	Establishment	All establishments with at least 10 workers.	1981 – 1991	Alberto Isgut isgut@un.org
Denmark	Firm	Universe of firms with minimum economic activity	1999 – 2002	Ulrich Kaiser uka@sam.sdu.dk
France	Firm	All firms (not establishments) with at least 20 active persons	1990 – 2004	Lionel Nesta lionel.nesta@ofce.sciences-po.fr
Germany	Establishment	All establishments with at least 20 active persons (including owners) plus smaller establishments that are part of a multi-establishment enterprise with at least 20 active persons	1995 – 2004	Joachim Wagner wagner@uni-lueneburg.de
Italy	Firm	Universe of firms with 20 or more workers	1989-1997	Chiara Tomasi c.tomasi@sssup.it

Country	Unit of analysis	Coverage	Years	Contact
Republic of Ireland	Establishment	Census of Industrial Production includes all plants with 3 or more employees in NACE Rev 1.1 manufacturing sectors 10-41. Plants are not necessarily dropped if they fall below 3 employees.	1996-2004	Stefanie Haller stefanie.haller@esri.ie
Slovenia	Establishment	All establishments, including firms with less than 10 employees	1994 – 2002	Črt Kostevc crt.kostevc@ef.uni-lj.si
Spain	Firm	All firms with more than 200 employees plus a sample of firms employing between 10 and 200 employees selected according to a stratified random sampling procedure.	1990 – 1999	Jose C. Fariñas farinas@ccee.ucm.es
Sweden	Firm	All firms	1997 – 2004	Martin Andersson martin.andersson@ihh.hj.se
United Kingdom	Firm	All firms operating in the UK; over representation of large firms because of missing value problems	1995 -- 2004	Mauro Pisu mauro.pisu@nbb.be

Table 2: Exporter participation rate and export intensity by size class

Country	Year	Variable	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Austria	1999	Participation rate	69.2	53.1	82.2	95.0	95.9
		Export intensity	40.2	28.2	42.9	57.5	68.0
		Number of firms	3,868	1,922	1,515	260	171
	2005	Participation rate	71.4	56.1	84.6	95.0	97.0
		Export intensity	44.1	32.0	47.4	63.3	71.3
		Number of firms	3,840	1,949	1,465	261	165
Belgium	1996	Participation rate	83.6	74.3	89.4	96.4	98.1
		Export intensity	39.8	33.0	43.0	45.3	53.1
		Number of firms	3,110	1,387	1,368	195	160
	2005	Participation rate	80.3	68.1	87.5	92.9	97.2
		Export intensity	44.3	37.8	47.8	45.1	51.8
		Number of firms	2,403	1,014	1,076	168	145
Chile	1990	Participation rate	22.4	7.6	32.1	54.6	66.7
		Export intensity	30.2	25.9	32.1	28.6	28.8
		Number of firms	3,230	1,610	1,304	220	96
	1999	Participation rate	30.9	15.3	42.4	68.8	85.7
		Export intensity	27.4	25.0	27.2	29.9	33.0
		Number of firms	2,709	1,428	1,041	170	70
China	1998	Participation rate	24.4	10.8	20.4	32.1	45.2
		Export intensity	59.9	67.3	65.4	62.3	46.5
		Number of firms	131,499	19,376	71,615	21,997	18,511
	2005	Participation rate	30.4	15.5	28.8	44.9	56.9
		Export intensity	60.3	54.5	61.1	65.0	56.0
		Number of firms	241,326	48,089	144,034	29,110	20,093

Country	Year	Variable	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Colombia	1981	Participation rate	17.4	6.5	23.1	47.1	61.8
		Export intensity	13.1	42.3	19.7	9.0	10.4
		Number of firms	3,900	1,960	1,594	210	136
	1991	Participation rate	26.6	14.2	36.9	59.1	71.9
		Export intensity	17.8	33.8	22.8	14.5	14.5
		Number of firms	4,348	2,379	1,636	198	135
Denmark	1999	Participation rate	77.3	68.9	88.1	92.5	97.5
		Export intensity	29.3	21.4	33.8	50.5	54.8
		Number of firms	3,888	2,277	1,331	161	119
	2002	Participation rate	77.2	68.9	88.1	90.2	87.3
		Export intensity	30.5	22.1	39.6	50.3	52.4
		Number of firms	3,326	1,902	1,161	153	110
France	1990	Participation rate	69.4	60.5	78.0	90.4	95.3
		Export intensity	17.6	14.5	18.8	24.7	28.6
		Number of firms	22,220	12,542	7,749	1,078	851
	2004	Participation rate	74.8	66.0	84.0	92.2	96.1
		Export intensity	23.8	18.3	26.6	35.1	39.8
		Number of firms	18,124	10,203	6,184	958	779
West Germany	1995	Participation rate	66.0	52.9	72.1	87.6	92.3
		Export intensity	22.8	17.7	23.0	29.1	36.6
		Number of firms	34,682	15,038	15,263	2,495	1,886
	2004	Participation rate	69.3	56.0	77.4	90.0	92.0
		Export intensity	29.6	22.8	30.4	40.7	47.5
		Number of firms	33,668	15,218	14,583	2,322	1,545

Country	Year	Variable	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
East Germany	1995	Participation rate	40.3	28.4	49.8	65.2	66.5
		Export intensity	17.5	15.1	17.5	22.4	27.5
		Number of firms	6,609	3,294	2,828	302	185
	2004	Participation rate	50.9	40.3	60.9	74.5	80.1
		Export intensity	24.3	19.5	26.6	34.0	45.7
		Number of firms	7,570	4,017	3,113	294	146
Italy	1989	Participation rate	64.3	55.1	75.7	83.4	88.5
		Export intensity	28.4	27.4	29.4	28.8	29.2
		Number of firms	19,916	11,705	6,909	772	530
	1997	Participation rate	69.3	63.2	78.5	84.2	81.1
		Export intensity	33.1	30.8	35.4	40.2	36.8
		Number of firms	15,516	9,585	4,983	545	403
Rep. of Ireland	1991	Participation rate	67.7	55.7	76.1	89.6	91.5
		Export intensity	58.2	47.8	60.9	82.5	82.2
		Number of firms	1,844	866	825	106	47
	2004	Participation rate	69.5	57.6	83.0	95.5	91.1
		Export intensity	53.1	41.1	58.8	82.3	84.3
		Number of firms	1,775	1,001	640	89	45
Slovenia	1994	Participation rate	85.8	74.1	91.3	94.9	98.7
		Export intensity	50.9	42.7	52.6	58.2	62.9
		Number of firms	1,020	321	506	118	75
	2002	Participation rate	81.3	71.7	86.5	97.1	95.2
		Export intensity	54.7	47.0	56.9	66.6	64.6
		Number of firms	1,185	428	570	103	84

Country	Year	Variable	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Spain	1990	Participation rate	61.7	35.3	65.6	83.7	85.6
		Export intensity	22.1	19.7	24.5	22.4	20.1
		Number of firms	1,396	487	413	295	201
	1999	Participation rate	74.7	50.8	80.2	95.6	96.8
		Export intensity	30.8	19.6	32.6	36.0	36.0
		Number of firms	1,165	415	388	204	158
Sweden	1997	Participation rate	82.0	75.0	90.0	97.0	100.0
		Export intensity	43.0	26.0	37.0	46.0	50.0
		Number of firms	4,009	2,178	1,437	185	209.0
	2004	Participation rate	83.0	75.0	91.0	98.0	98.0
		Export intensity	44.0	28.0	40.0	44.0	52.0
		Number of firms	3,907	2,129	1,408	200	170
UK	1995	Participation rate	76.0	66.2	75.2	80.4	83.7
		Export intensity	31.0	34.2	28.8	30.3	36.0
		Number of firms	4,593	671	2,513	673	736
	2004	Participation rate	69.5	63.6	70.5	71.6	72.5
		Export intensity	32.1	34.6	31.5	31.7	31.4
		Number of firms	4,225	848	2,362	542	473

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees. Participation rate is the percentage share of exporting firms. Export intensity is the average percentage share of exports in total sales for exporting firms. See table 1 for more information on the samples.

Table 3: Exporter productivity premia (percentage) I: Exporter dummy

Country	Model	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Austria	Pooled ß	17.5	18.6	15.8	23.2	6.8
1999 - 2005	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.26]
	Fixed ß	5.3	4.9	5.6	8.9	1.3
	effects p	[0.00]	[0.00]	[0.001]	[0.17]	[0.90]
	N	5,176	2,910	1,785	295	186
	NxT	26,404	13,308	10,171	1,778	1,147
Belgium	Pooled ß	57.8	59.5	58.7	22.1	54.7
1996-2005	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	9.8	5.8	17.8	8.1	-10.8
	effects p	[0.00]	[0.00]	[0.00]	[0.09]	[0.22]
	N	4,708	1,746	1,754	242	184
	NxT	29,035	12,861	13,283	1,876	1,563
Chile	Pooled ß	21.7	23.7	15.7	16.6	29.9
1990 - 1999	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	7.3	8.3	8.4	7.2	22.0
	effects p	[0.00]	[0.00]	[0.00]	[0.005]	[0.001]
	N	5,977	4,226	2,757	562	216
	NxT	33,869	17,160	13,558	2,133	1,018

Country	Model	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
China	Pooled ß	15.7	15.6	13.1	17.6	22.1
1998 - 2005	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	10.9	11.2	9.7	12.1	13.4
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	N	391,126	86,457	228,722	45,177	30,770
	NxT	1310,771	214,465	760,482	189,673	146,151
Colombia	Pooled ß	26.9	38.8	18.9	22.6	15.7
1981 – 1991	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	16.4	16.5	12.0	13.2	11.0
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	N	5,930	3,468	2,098	221	143
	NxT	46,142	24,882	17,592	2,230	1,438
Denmark	Pooled ß	38.5	37.7	31.5	16.1	39.4
1999 - 2002	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	6.6	5.2	10.6	7.9	12.8
	effects p	[0.00]	[0.00]	[0.00]	[0.06]	[0.01]
	N	5,070	3,015	1,678	221	156
	NxT	29,161	16,955	9,980	1,332	894

Country	Model	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
France	Pooled ß	20.0	18.8	20.8	33.6	18.0
1990 - 2004	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	7.6	6.9	8.5	8.3	17.3
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	N	41,513	26,646	12,058	1,576	1,233
	NxT	297,393	165,636	104,464	15,215	12,078
West Germany	Pooled ß	15.4	14.1	15.3	14.5	24.9
1995 - 2004	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	7.2	5.7	7.9	13.7	19.0
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	N	44,634	23,285	17,017	2,569	1,763
	NxT	311,625	138,036	135,261	22,571	15,757
East Germany	Pooled ß	14.3	14.0	14.4	29.8	35.8
1995 - 2004	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	5.6	5.6	4.5	11.7	29.4
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]
	N	10,724	6,375	3,852	345	152
	NxT	61,140	30,998	26,308	2,620	1,215

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Italy	Pooled	ß	40.3	44.1	33.5	24.7	12.2
1989 - 1997		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]
	Fixed	ß	3.6	3.8	3.4	2.9	1.7
	effects	p	[0.00]	[0.00]	[0.00]	[0.07]	[0.36]
	N		38,089	26,296	10,093	1,030	670
	NxT		175,032	107,842	56,526	6,217	4,447
Republic of Ireland	Pooled	ß	14.6	12.5	19.2	0.7	49.7
1991 - 2004		p	[0.00]	[0.00]	[0.00]	[0.93]	[0.00]
	Fixed	ß	7.3	7.0	7.9	-1.7	8.6
	effects	p	[0.00]	[0.00]	[0.00]	[0.81]	[0.37]
	N		3,680	2,244	1,218	148	70
	NxT		27,232	14,004	11,094	1,441	693
Slovenia	Pooled	ß	9.6	12.2	8.7	10.8	-0.7
1994 - 2002		p	[0.00]	[0.00]	[0.00]	[0.05]	[0.91]
	Fixed	ß	5.0	6.7	4.3	8.0	-3.2
	effects	p	[0.00]	[0.00]	[0.06]	[0.10]	[0.58]
	N		1,566	581	746	138	97
	NxT		9,909	3,389	4,841	966	701

Country	Model	All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Spain	Pooled ß	27.5	31.0	29.3	22.0	6.5
1990 - 1999	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.07]
	Fixed ß	8.1	7.1	6.0	14.2	7.8
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.02]
	N	2,123	809	652	385	277
	NxT	12,806	4,256	3,930	2,644	1,976
Sweden	Pooled ß	6.7	6.8	9.00	-6.8	3.9
1997 - 2004	p	[0.00]	[0.00]	[0.00]	[0.93]	[0.68]
	Fixed ß	-0.1	-0.5	-0.6	4.1	7.3
	effects p	[0.85]	[0.61]	[0.70]	[0.44]	[0.50]
	N (median)	4,035	2,193	1,471	190	178
	NxT	31,838	17,381	11,530	1,510	1,417
UK	Pooled ß	9,9	9,2	10,6	8,7	10,3
1995 - 2004	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed ß	3,9	7,5	4,0	6,9	-3,4
	effects p	[0.00]	[0.00]	[0.00]	[0.00]	[0.08]
	N	9,450	2,060	5,211	1,073	1,106
	NxT	52,593	9,200	29,367	7,114	6,912

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labor productivity (defined as total sales per employee) in a year are excluded from all computations. Firms are classified into size classes according to the median of the number of employees over the years covered. ß is the estimated regression coefficient from an OLS-regression of log (labor productivity) on a dummy variable for exporting firms, controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and a full set of interaction terms of 4digit industry-dummies and year dummies; the fixed effects model adds firm fixed effects. To facilitate interpretation the estimated coefficients for the exporter dummy variable have been transformed by 100(exp(ß)-1). p is the prob-value. N ist the number of firms, NxT is the number of observations.

Table 4: Exporter productivity premia II: Share of exports in total sales and its squared value

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Austria	Pooled	ß1	0.579	0.688	0.510	0.461	0.302
1999-2005		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.07]
		ß2	-0.295	-0.401	-0.270	-0.079	-0.054
		p	[0.00]	[0.00]	[0.00]	[0.45]	[0.72]
	Fixed	ß1	0.229	0.305	0.136	0.036	-0.234
	effects	p	[0.00]	[0.001]	[0.13]	[0.87]	[0.57]
		ß2	0.117	0.167	0.151	0.118	0.470
		p	[0.06]	[0.09]	[0.10]	[0.59]	[0.20]
	N		5,176	2,910	1,785	295	186
	NxT		26,404	13,308	10,171	1,778	1,147
Belgium	Pooled	ß1	1.397	1.456	1.328	1.235	1.296
1996-2005		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-1.000	-0.970	-1.000	-0.970	-0.772
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed	ß1	0.576	0.235	0.799	1.106	0.673
	effects	p	[0.00]	[0.002]	[0.00]	[0.00]	[0.01]
		ß2	-0.365	-0.071	-0.560	-0.795	-0.473
		p	[0.00]	[0.33]	[0.00]	[0.00]	[0.02]
	N		4,709	1,746	1,754	242	184
	NxT		29,035	12,861	13,283	1,876	1,563

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Chile	Pooled	ß1	0.882	0.762	0.931	0.175	0.129
1990 – 1999		p	[0.00]	[0.007]	[0.00]	[0.00]	[0.00]
		ß2	-0.911	-0.479	-1.122	-0.274	-0.701
		p	[0.00]	[0.02]	[0.00]	[0.00]	[0.00]
	Fixed	ß1	0.329	0.421	0.454	0.294	-0.405
	effects	p	[0.00]	[0.00]	[0.00]	[0.07]	[0.25]
		ß2	-0.223	-0.340	-0.300	-0.167	0.210
		p	[0.001]	[0.03]	[0.001]	[0.36]	[0.58]
	N		5,977	4,226	2,757	562	216
	NxT		33,869	17,160	13,558	2,133	1,018
China	Pooled	ß1	0.912	0.582	0.784	1.095	1.140
1998-2005		p	[0.00]	[0.00]	[0.09]	[0.00]	[0.00]
		ß2	-0.914	-0.480	-0.778	-1.114	-1.182
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed	ß1	0.436	0.469	0.406	0.484	0.429
	effects	p	[0.00]	[0.26]	[0.00]	[0.00]	[0.00]
		ß2	-0.432	-0.425	-0.399	-0.473	-0.473
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	N		370,605	78,235	218,214	44,089	30,067
	NxT		1,076,087	167,280	620,962	161,382	126,463

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Colombia	Pooled	ß1	0.540	0.904	0.361	-0.113	0.469
1981 - 1991		p	[0.00]	[0.00]	[0.00]	[0.36]	[0.002]
		ß2	-0.122	-0.110	-0.056	-0.349	-0.140
		p	[0.002]	[0.13]	[0.26]	[0.002]	[0.28]
	Fixed	ß1	0.620	0.720	0.616	0.053	0.048
	effects	p	[0.00]	[0.00]	[0.00]	[0.62]	[0.82]
		ß2	-0.081	-0.064	-0.072	-0.123	-0.063
		p	[0.00]	[0.07]	[0.00]	[0.00]	[0.14]
	N		5,930	3,468	2,098	221	143
	NxT		46,142	24,882	17,592	2,230	1,438
Denmark	Pooled	ß1	0.97	1.19	0.57	0.37	-0.18
1999 - 2002		p	[0.00]	[0.00]	[0.00]	[0.02]	[0.45]
		ß2	-0.64	-0.78	-0.35	-0.29	0.07
		p	[0.00]	[0.00]	[0.00]	[0.04]	[0.74]
	Fixed	ß1	0.38	0.43	0.36	0.56	0.46
	effects	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.35	-0.46	-0.28	-0.52	-0.47
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	N		5,070	3,015	1,678	221	156
	NxT		29,161	16,955	9,980	1,332	894

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
France	Pooled	ß1	0.734	0.910	0.626	0.477	0.223
1990 - 2004		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.565	-0.831	-0.404	-0.225	-0.007
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.92]
	Fixed	ß1	0.331	0.354	0.331	0.132	0.150
	effects	p	[0.00]	[0.00]	[0.00]	[0.02]	[0.05]
		ß2	-0.120	-0.153	-0.119	0.065	0.092
		p	[0.00]	[0.00]	[0.00]	[0.36]	[0.34]
	N		41,513	26,646	12,058	1,576	1,233
	NxT		297,393	165,636	104,464	15,215	12,078
West Germany	Pooled	ß1	0.006	0.007	0.006	0.004	0.004
1995 - 2004		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.00004	-0.00005	-0.00004	-0.00003	-0.00002
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed	ß1	0.003	0.002	0.002	0.004	0.005
	effects	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.000002	0.00001	0.000003	-0.00003	-0.00004
		p	[0.30]	[0.00]	[0.30]	[0.00]	[0.00]
	N		311,625	138,036	135,261	22,571	15,757
	NxT		44,634	23,285	17,017	2,569	1,763

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
East Germany	Pooled	ß1	0.007	0.008	0.006	0.02	0.009
1995 - 2004		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.00006	-0.00008	-0.00004	-0.00002	-0.00007
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]
	Fixed	ß1	0.0031	0.0026	0.002	0.005	0.01
	effects	p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.0000007	0.00002	-0.00005	-0.00004	-0.00007
		p	[0.20]	[0.10]	[0.60]	[0.10]	[0.00]
	N		10,724	6,375	3,852	345	152
	NxT		61,140	30,998	26,307	2,620	1,215
Italy	Pooled	ß1	0.927	1.085	0.709	0.687	0.110
1989 - 1997		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.52]
		ß2	-0.552	-0.626	-0.436	-0.593	0.013
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.95]
	Fixed	ß1	0.090	0.139	0.053	-0.590	-0.129
	effects	p	[0.00]	[0.00]	[0.06]	[0.43]	[0.13]
		ß2	0.036	0.019	0.047	0.076	0.159
		p	[0.05]	[0.46]	[0.11]	[0.34]	[0.08]
	N		38,089	26,296	10,093	1,030	670
	NxT		175,032	107,842	56,526	6,217	4,447

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Republic of Ireland 1991 - 2004	Pooled	ß1	0.097	0.104	0.307	-0.920	-0.498
		p	[0.01]	[0.03]	[0.00]	[0.00]	[0.17]
		ß2	0.134	0.100	-0.094	1.129	1.457
		p	[0.00]	[0.06]	[0.17]	[0.00]	[0.00]
	Fixed effects	ß1	0.220	0.229	0.279	-0.415	-0.240
		p	[0.00]	[0.00]	[0.00]	[0.12]	[0.47]
		ß2	0.011	0.051	-0.104	0.621	0.356
		p	[0.82]	[0.48]	[0.16]	[0.02]	[0.28]
	N		3,680	2,244	1,218	148	70
	NxT		27,232	14,004	11,094	1,441	693
Slovenia 1994 - 2002	Pooled	ß1	0.052	0.122	0.149	0.259	0.065
		p	[0.83]	[0.01]	[0.00]	[0.01]	[0.51]
		ß2	0.001	0.006	0.001	0.008	0.002
		p	[0.06]	[0.15]	[0.08]	[0.01]	[0.33]
	Fixed effects	ß1	0.009	0.011	0.043	0.179	-0.088
		p	[0.34]	[0.77]	[0.10]	[0.02]	[0.17]
		ß2	-0.0004	0.007	-0.001	-0.004	0.005
		p	[0.07]	[0.11]	[0.19]	[0.33]	[0.15]
	N		1,566	581	746	138	97
	NxT		9,909	3,389	4,841	966	701

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Spain	Pooled	ß1	0.430	1.453	0.479	0.511	0.330
1990 - 1999		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		ß2	-0.283	-1.325	-0.437	-0.605	-0.161
		p	[0.003]	[0.00]	[0.00]	[0.00]	[0.00]
	Fixed	ß1	0.354	0.724	0.086	0.221	0.275
	effects	p	[0.00]	[0.00]	[0.55]	[0.11]	[0.00]
		ß2	-0.179	-0.555	0.128	-0.051	-0.164
		p	[0.00]	[0.00]	[0.49]	[0.74]	[0.00]
	N		2,123	809	652	385	277
	NxT		12,806	4,256	3,930	2,644	1,976
Sweden	Pooled	ß1	0.151	0.138	0.155	0.492	0.177
1997 - 2004		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]
		ß2	-0.016	-0.015	-0.015	-0.199	-0.077
		p	[0.00]	[0.00]	[0.00]	[0.05]	[0.08]
	Fixed	ß1	-0.08	-0.11	-0.06	0.28	0.06
	effects	p	[0.00]	[0.00]	[0.00]	[0.07]	[0.74]
		ß2	0.001	0.003	0.004	-0.17	-0.03
		p	[0.38]	[0.16]	[0.21]	[0.07]	[0.77]
	N (median)		4,035	2,193	1,471	190	178
	NxT		31,838	17,381	11,530	1,510	1,417

Country	Model		All firms	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
UK	Pooled	ß1	0.025	-0.315	0.115	-0.101	0.182
1995 - 2004		p	[0.37]	0.00]	[0.002]	[0.16]	[0.01]
		ß2	0.034	0.430	-0.065	0.095	-0.110
		p	[0.33]	[0.00]	[0.17]	[0.28]	[0.18]
	Fixed	ß1	-0.015	0.011	0.054	-0.124	-0.127
	effects	p	[0.71]	[0.91]	[0.30]	[0.26]	[0.19]
		ß2	0.090	0.230	0.015	0.118	0.151
		p	[0.05]	[0.04]	[0.81]	[0.31]	[0.20]
	N		9,450	2,060	5,211	1,073	1,106
	NxT		52,593	9,200	29,367	7,114	6,912

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labour productivity (defined as total sales per employee) in a year are excluded from all computations. Firms are classified into size classes according to the median of the number of employees over the years covered. ß1 and ß2 are the estimated regression coefficients from an OLS-regression of log (labour productivity) on the share of exports in total sales and its squared value, respectively, controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and a full set of interaction terms of 4-digit industry-dummies and year dummies; the fixed effects model adds firm fixed effects. p is the prob-value, N is the number of firms, NxT is the number of observations.

Table 5: Meta analysis of results in Tables 3 and 4

	(1)	(2)	(3)	(4)	(5)	(6)
	Table 3	Table 3	Table 3	Table 4	Table 4	Table 4
Dummy FE regression	-13.085	-13.085	-13.085	-0.231	-0.234	-0.231
	(3.011)***	(2.845)***	(2.924)***	(0.076)***	(0.072)***	(0.074)***
Dummy size =20-49	0.274	-0.130	0.164	0.293	0.260	0.292
	(3.559)	(3.348)	(3.398)	(0.107)**	(0.102)**	(0.103)**
Dummy size = 50-249	-0.540	-1.229	-0.728	0.220	0.165	0.218
	(3.308)	(3.140)	(3.155)	(0.082)**	(0.089)*	(0.081)**
Dummy size =250-499	-2.677	-2.719	-2.688	0.076	0.072	0.076
	(3.336)	(3.143)	(3.236)	(0.057)	(0.055)	(0.055)
No. of observations	-0.000	-0.000	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dummy Austria	4.834			0.184		
	(0.029)***			(0.001)***		
Dummy Belgium	21.193			0.925		
	(0.035)***			(0.001)***		
Dummy Chile	10.692			0.255		
	(0.042)***			(0.002)***		
Dummy China	12.152			0.681		
	(2.294)***			(0.075)***		
Dummy Colombia	12.839			0.293		
	(0.064)***			(0.002)***		
Dummy Denmark	14.354			0.379		
	(0.034)***			(0.001)***		
Dummy East Germany	12.444			-0.080		
	(0.090)***			(0.003)***		
Dummy France	11.482			0.332		
	(0.507)***			(0.018)***		
Dummy Ireland	7.186			-0.235		
	(0.031)***			(0.001)***		
Dummy Italy	10.401			0.179		
	(0.291)***			(0.010)***		
Dummy Spain	9.646			0.418		
	(0.005)***			(0.000)***		
Dummy Sweden	-2.888			0.051		
	(0.039)***			(0.001)***		
Dummy UK	0.995			-0.127		
	(0.075)***			(0.003)***		
Dummy West Germany	9.385			-0.063		
	(0.532)***			(0.019)***		
Dummy establishment level data		-0.600	3.203		-0.212	-0.147
		(2.982)	(2.633)		(0.120)*	(0.106)
Average year		-0.320	-3.032		-0.011	-0.074
		(0.259)	(1.028)**		(0.012)	(0.052)
GDP			0.000			0.000
			(0.000)**			(0.000)
GDP per capita			0.000			-0.000
			(0.000)			(0.000)**
Openness			0.164			0.004
			(0.073)**			(0.004)
Ease of doing business			11.777			0.917
			(13.120)			(0.563)
Government effectiveness			21.202			1.146
			(8.862)**			(0.562)*
Regulatory quality			-5.260			-0.496
			(5.331)			(0.286)
Observations	120	120	120	120	120	120
R-squared	0.50	0.29	0.37	0.62	0.20	0.41

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Regression includes constant term

Table 6: Export starters and non-starters three years before the start

Country	Year of start	Labor productivity premia of export-starters (percent) [p-value]		No. of observ.	No. of starters
Austria	2002	-0.01	[0.94]	811	40
	2003	0.04	[0.60]	801	59
	2004	0.17	[0.01]	742	38
	2005	0.11	[0.18]	725	28
Belgium	1999	31.49	[0.04]	215	14
	2000	-1.53	[0.94]	245	18
	2001	8.50	[0.55]	303	30
	2002	8.63	[0.47]	282	34
	2003	2.81	[0.83]	289	36
	2004	3.51	[0.82]	280	29
	2005	9.70	[0.43]	254	19
Chile	1993	20.25	[0.01]	1,840	81
	1994	12.28	[0.06]	1,867	84
	1995	20.28	[0.03]	1,829	62
	1996	6.23	[0.30]	1,812	76
	1997	33.61	[0.00]	1,702	49
	1998	11.55	[0.24]	1,606	45
	1999	12.55	[0.29]	1,538	33
China	2001	21.34	[0.00]	43,430	1,012
	2002	28.71	[0.00]	46,454	1,182
	2003	24.47	[0.00]	46,322	1,178
	2004	17.18	[0.00]	52,060	3,325
	2005	12.65	[0.00]	57,210	3,441
Colombia	1984	-0.59	[0.93]	2,478	53
	1985	-3.07	[0.62]	2,571	68
	1986	7.23	[0.22]	2,690	77
	1987	16.18	[0.03]	2,733	55
	1988	11.73	[0.16]	2,826	59
	1989	18.08	[0.02]	2,916	88
	1990	13.61	[0.01]	2,985	125
	1991	20.97	[0.00]	2,877	204
Denmark	1998	2.09	[0.95]	15	2
	1999	-5.01	[0.70]	15	2
	2000	-23.18	[0.11]	16	3
	2001	14.25	[0.62]	15	1
	2002	807.1	[0.01]	14	4
France	1993	4.52	[0.01]	2,915	602
	1994	4.98	[0.02]	2,778	538
	1995	4.53	[0.02]	2,620	450
	1996	3.48	[0.16]	2,406	337
	1997	3.33	[0.15]	2,466	328
	1998	6.38	[0.01]	2,543	334
	1999	6.97	[0.00]	2,664	355
	2000	7.20	[0.00]	2,690	356
	2001	8.55	[0.00]	2,656	325
	2002	7.29	[0.00]	2,643	296
	2003	7.73	[0.00]	2,592	289
	2004	7.25	[0.00]	2,593	304

Country	Year of start	Labor productivity premia of export-starters (percent) [p-value]		No. of observ.	No. of starters
West Germany	1998	3.82	[0.10]	8,057	334
	1999	2.32	[0.35]	7,869	352
	2000	2.90	[0.21]	8,722	362
	2001	5.65	[0.02]	8,465	338
	2002	3.80	[0.11]	8,575	337
	2003	9.54	[0.00]	8,413	669
	2004	0.42	[0.87]	7,744	296
East Germany	1998	1.84	[0.67]	2,272	103
	1999	-1.30	[0.78]	2,345	117
	2000	5.95	[0.19]	2,590	94
	2001	-2.34	[0.60]	2,628	103
	2002	7.14	[0.14]	2,651	126
	2003	7.30	[0.04]	2,632	185
	2004	4.06	[0.40]	2,490	109
Italy	1992	18.72	[0.00]	2,967	353
	1993	21.01	[0.00]	2,855	353
	1994	13.84	[0.00]	2,455	261
	1995	21.47	[0.00]	2,380	249
	1996	21.03	[0.00]	2,150	283
	1997	10.66	[0.02]	1,641	144
Republic of Ireland	1994	15.04	[0.22]	306	26
	1995	4.86	[0.71]	308	24
	1996	2.31	[0.83]	319	32
	1997	15.30	[0.22]	314	32
	1998	-6.17	[0.67]	315	22
	1999	9.08	[0.26]	326	30
	2000	-7.94	[0.28]	321	31
	2001	24.14	[0.09]	318	31
	2002	17.58	[0.22]	327	20
	2003	14.58	[0.24]	334	26
	2004	-6.89	[0.64]	296	9
Slovenia	1997	11.97	[0.01]	69	6
	1998	-3.83	[0.88]	85	7
	1999	-16.71	[0.36]	100	18
	2000	4.03	[0.66]	95	15
	2001	-6.50	[0.62]	90	10
	2002	22.10	[0.21]	84	14
Spain	1993	16.71	[0.07]	282	32
	1994	8.62	[0.47]	268	29
	1995	23.54	[0.06]	236	22
	1996	20.85	[0.09]	234	28
	1997	27.73	[0.07]	220	35
	1998	8.59	[0.60]	178	24
	1999	27.29	[0.28]	173	10

Country	Year of start	Labor productivity premia of export-starters (percent) [p-value]		No. of observ.	No. of starters
Sweden	2000	6.29	[0.15]	4,207	64
	2001	-0.70	[0.88]	4,227	48
	2002	-1.78	[0.75]	4,180	42
	2003	-1.88	[0.75]	4,146	37
	2004	5.65	[0.42]	4,091	39
UK	1998	14.65	[0.12]	597	29
	1999	4.941	[0.70]	663	22
	2000	10.54	[0.39]	722	23
	2001	6.17	[0.53]	793	48
	2002	15.05	[0.36]	852	32
	2003	23.47	[0.05]	863	34
	2004	6.76	[0.63]	694	28

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labour productivity (defined as total sales per employee) in a year are excluded from all computations. The labour productivity premia are estimated in an OLS-regression of log (labor productivity) on a dummy variable for export starters controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and dummy variables for 4-digit-industries, all measured three years before the start. To facilitate interpretation the estimated coefficients for the exporter dummy variable have been transformed by 100(exp(ß)-1).

Table 7: Meta analysis of results in Table 6

	(1)	(2)	(3)
No. of observations	-0.001	0.001	0.004
	(0.000)***	(0.000)	(0.002)**
Dummy Austria	-1.265		
	(0.156)***		
Dummy Belgium	7.751		
	(0.041)***		
Dummy Chile	16.049		
	(0.378)***		
Dummy China	54.978		
	(11.182)***		
Dummy Colombia	10.635		
	(0.610)***		
Dummy Denmark	157.154		
	(0.016)***		
Dummy East Germany	3.174		
	(0.554)***		
Dummy France	6.040		
	(0.580)***		
Dummy Ireland	5.770		
	(0.052)***		
Dummy Italy	17.648		
	(0.530)***		
Dummy Spain	17.307		
	(0.032)***		
Dummy Sweden	2.668		
	(0.932)**		
Dummy UK	10.290		
	(0.149)***		
Dummy West Germany	8.219		
	(1.866)***		
Share export starters		6.584	10.911
		(5.768)	(5.644)*
Dummy establishment level data		14.094	16.908
		(25.715)	(15.951)
Average year		1.159	5.555
		(2.167)	(5.036)
GDP			-0.000
			(0.000)*
GDP per capita			0.001
			(0.001)
Openness			-0.827
			(0.416)*
Ease of doing business			-273.886
			(123.165)**
Government effectiveness			-73.798
			(62.936)
Regulatory quality			-19.140
			(22.208)
Observations	104	104	104
R-squared	0.17	0.16	0.34

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Regression includes constant term

Table 8: Export starters and non-starters three years after the start

Country	Year of start	Labor productivity growth premia of export-starters (percent) [p-value]		No. of observ.	No. of starters
Austria	2002	0.06	[0.11]	551	16
Belgium	1999	38.27	[0.02]	116	5
	2000	-18.61	[0.04]	130	7
	2001	18.22	[0.08]	167	15
	2002	20.29	[0.15]	157	17
Chile	1993	2.10	[0.526]	1,366	50
	1994	1.92	[0.657]	1,355	50
	1995	1.85	[0.577]	1,250	24
	1996	1.59	[0.759]	1,158	34
China	2001	-4.65	[0.00]	24,923	475
	2002	-4.37	[0.00]	24,918	602
Colombia	1984	-9.96	[0.03]	2,053	27
	1985	-0.06	[0.99]	2,164	36
	1986	-5.10	[0.37]	2,254	28
	1987	3.42	[0.46]	2,263	40
	1988	4.60	[0.36]	2,188	41
Denmark	1998	NA		2	1
	1999	NA		2	1
France	1993	0.08	[0.94]	1,385	204
	1994	0.02	[0.99]	1,427	211
	1995	0.38	[0.67]	1,423	194
	1996	-0.64	[0.51]	1,350	149
	1997	-1.12	[0.33]	1,409	143
	1998	-2.30	[0.05]	1,464	173
	1999	-0.22	[0.86]	1,532	167
	2000	-0.05	[0.96]	1,526	157
	2001	-1.60	[0.11]	1,550	183
Germany (West)	1998	-0.46	[0.80]	6,517	194
	1999	-0.32	[0.87]	6,180	171
	2000	0.24	[0.90]	6,719	195
	2001	1.15	[0.53]	6,524	180
Germany (East)	1998	-0.76	[0.75]	1,764	60
	1999	7.94	[0.02]	1,866	69
	2000	-7.13	[0.02]	1,968	61
	2001	-3.71	[0.19]	1,981	55
Italy	1992	4.15	[0.03]	1,279	147
	1993	4.32	[0.05]	1,128	144
	1994	6.06	[0.06]	889	85

Country	Year of start	Labor productivity growth premia of export-starters (percent) [p-value]		No. of observ.	No. of starters
Republic of Ireland	1994	-5.12	[0.33]	196	19
	1995	2.41	[0.57]	205	19
	1996	-6.75	[0.07]	212	16
	1997	8.88	[0.02]	201	18
	1998	4.07	[0.53]	204	12
	1999	3.85	[0.47]	225	16
	2000	-6.03	[0.03]	228	18
	2001	-10.03	[0.03]	207	18
Slovenia	1997	-6.85	[0.47]	42	2
	1998	6.17	[0.72]	45	4
	1999	21.81	[0.18]	50	8
Spain	1993	5.23	[0.14]	159	17
	1994	5.15	[0.17]	155	21
	1995	5.56	[0.32]	133	12
	1996	-1.07	[0.66]	132	15
Sweden	2000	-1.39	[0.80]	3,525	57
	2001	5.65	[0.33]	3,314	46
UK	1998	-3.10	[0.63]	370	20
	1999	-13.06	[0.37]	425	12
	2000	22.60	[0.001]	452	17
	2001	10.90	[0.14]	407	24

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labour productivity (defined as total sales per employee) in a year are excluded from all computations. The labour productivity growth premia are estimated in an OLS-regression of the growth rate of labour productivity (computed as the difference of the log of labour productivity in t+3 and t+1) on a dummy variable for export starters controlling for the log of number of employees and its squared value, log wages and salaries per employee, and dummy variables for 4-digit-industries, all measured at the start year t. To facilitate interpretation the estimated coefficients for the exporter dummy variable have been transformed by 100(exp(ß)-1).

Table 9: Meta analysis of results in Table 8

	(1)	(2)	(3)
No. of observations	0.000	-0.000	-0.000
	(0.006)	(0.000)*	(0.001)
Dummy Austria	-7.165		
	(3.105)**		
Dummy Belgium	7.470		
	(0.595)***		
Dummy Chile	-5.549		
	(7.598)		
Dummy China	-19.002		
	(152.837)		
Dummy Colombia	-9.104		
	(13.141)		
Dummy Denmark			
Dummy East Germany	-8.512		
	(11.361)		
Dummy France	-8.070		
	(8.639)		
Dummy Ireland	-8.182		
	(1.008)***		
Dummy Italy	-2.515		
	(6.470)		
Dummy Spain	-3.356		
	(0.609)***		
Dummy Sweden	-5.924		
	(20.730)		
Dummy UK	-2.818		
	(2.260)		
Dummy West Germany	-8.819		
	(39.565)		
Share export starters		0.322	0.361
		(0.384)	(0.763)
Dummy establishment level data		1.217	0.927
		(2.720)	(2.863)
Average year		0.351	0.612
		(0.213)	(0.665)
GDP			-0.000
			(0.000)
GDP per capita			-0.000
			(0.000)
Openness			0.015
			(0.078)
Ease of doing business			-0.761
			(21.434)
Government effectiveness			1.504
			(10.343)
Regulatory quality			-3.493
			(7.312)
Observations	57	57	57
R-squared	0.24	0.07	0.10

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Regression includes constant term

Table 10: Exporter productivity premia (percentage) I: Exporter dummy

Country	Model		Sales/worker	p-value	VA/worker	p-value	TFP	p-value	N / NxT
Belgium	Pooled	ß	60.2	[0.00]	8.9	[0.00]	-0.7	[0.31]	4707
1996-2005	FE	ß	10.1	[0.00]	1.1	[0.07]	2.2	[0.21]	28426
China	Pooled	ß	11.7	[0.00]	1.3	[0.00]	-2.4	[0.00]	351,501
1998 - 2005	FE	ß	8.8	[0.00]	6.6	[0.00]	5.2	[0.00]	1,138,350
Colombia	Pooled	ß	23.7	[0.00]	23.7	[0.00]	1.9	[0.00]	5,837
1981 - 1991	FE	ß	12.9	[0.00]	11.7	[0.00]	9.5	[0.00]	44,425
France	Pooled	ß	19.8	[0.00]	5.0	[0.00]	1.9	[0.00]	41,230
1990 - 2004	FE	ß	7.4	[0.00]	2.6	[0.00]	2.1	[0.00]	293,196
Republic of Ireland	Pooled	ß	13.7	[0.00]	8.8	[0.00]			3,640
1991 – 2004	FE	ß	6.8	[0.00]	4.1	[0.00]			26,472
Italy	Pooled	ß	38.4	[0.00]	10.1	[0.00]	5.6	[0.00]	37,443
1989 - 1997	FE	ß	3.2	[0.00]	0.7	[0.00]	0.3	[0.10]	169,778
Slovenia	Pooled	ß	25.6	[0.00]	9.6	[0.00]	-1.5	[0.32]	1,519
1994 - 2002	FE	ß	4.3	[0.01]	5.0	[0.00]	2.9	[0.22]	9,807
UK	Pooled	ß	10.4	[0.00]	5.3	[0.00]	-0.6	[0.37]	8,411
1995 - 2004	FE	ß	5.5	[0.00]	2.0	[0.00]	0.4	[0.68]	4,4475

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of productivity in a year are excluded from all computations. Firms are classified into size classes according to the median of the number of employees over the years covered. ß is the estimated regression coefficient from an OLS-regression of log (productivity) on a dummy variable for exporting firms, controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and a full set of interaction terms of 4digit industry-dummies and year dummies; the fixed effects model adds firm fixed effects. To facilitate interpretation the estimated coefficients for the exporter dummy variable has been transformed by 100(exp(ß)-1). p is the prob-value. N ist the number of firms, NxT is the number of observations.

Table 11: Export starters and non-starters three years before the start

Country	Year of start	Productivity premia of export starters [p-values] Sales/worker		Value added/worker		TFP		No. of observ.	No. of starters
Belgium	All years	7.5	[0.14]	3.7	[0.18]	-1.0	[0.83]	1684	160
	1999	29.2	[0.04]	13.2	[0.10]	9.7	[0.14]	202	13
	2000	6.6	[0.68]	22.1	[0.01]	2.2	[0.84]	223	16
	2001	13.1	[0.38]	9.9	[0.38]	5.4	[0.48]	283	26
	2002	-1.0	[0.91]	5.9	[0.36]	13.6	[0.14]	267	32
	2003	3.0	[0.83]	-8.2	[0.24]	2.0	[0.78]	253	33
	2004	2.7	[0.86]	7.3	[0.14]	-8.0	[0.12]	234	24
	2005	6.1	[0.65]	3.1	[0.83]	-0.7	[0.96]	222	16
China	All Years	14.7	[0.00]	12.6	[0.00]	7.9	[0.00]	202,498	8,738
	2001	17.1	[0.00]	13.6	[0.00]	3.4	[0.22]	34,714	863
	2002	21.8	[0.00]	14.4	[0.00]	7.4	[0.01]	36,446	999
	2003	19.9	[0.00]	12.5	[0.00]	4.9	[0.07]	38,420	999
	2004	13.8	[0.00]	11.6	[0.00]	5.3	[0.00]	44,058	2,878
	2005	9.4	[0.00]	11.4	[0.00]	12.7	[0.00]	48,860	2,999
Colombia	All Years	12.3	[0.00]	11.4	[0.00]	-10.2	[0.00]	20,504	696
	1984	-1.9	[0.80]	5.4	[0.46]	-37.4	[0.00]	2,275	47
	1985	-3.3	[0.58]	3.5	[0.56]	-20.3	[0.05]	2,375	65
	1986	6.3	[0.30]	10.9	[0.07]	-27.5	[0.00]	2,497	74
	1987	8.2	[0.27]	8.0	[0.27]	7.5	[0.56]	2,537	54
	1988	11.2	[0.12]	12.8	[0.06]	-16.8	[0.10]	2,636	59
	1989	21.7	[0.00]	14.6	[0.01]	-7.4	[0.39]	2,711	84
	1990	8.8	[0.11]	11.9	[0.03]	-5.2	[0.48]	2,777	119
	1991	21.9	[0.00]	12.6	[0.00]	3.0	[0.61]	2,696	194

Country	Year of start	Productivity premia of export starters [p-values] Sales/worker		Value added/worker		TFP		No. of observ.	No. of starters
France	All Years	6.3		1.0		-1.3		29,428	4,033
	1993	5.8	[0.00]	1.6	[0.12]	-0.6	[0.59]	2,678	522
	1994	7.0	[0.00]	1.3	[0.25]	-1.1	[0.37]	2,579	476
	1995	3.9	[0.04]	-1.2	[0.34]	-3.0	[0.05]	2,447	421
	1996	2.9	[0.21]	1.1	[0.41]	-0.5	[0.72]	2,220	291
	1997	4.7	[0.05]	-0.4	[0.80]	-1.6	[0.31]	2,291	284
	1998	7.3	[0.00]	0.4	[0.78]	-1.2	[0.43]	2,370	304
	1999	8.5	[0.00]	3.4	[0.01]	0.7	[0.57]	2,475	297
	2000	7.8	[0.00]	2.4	[0.05]	-1.8	[0.19]	2,522	319
	2001	8.8	[0.00]	3.2	[0.02]	0.4	[0.79]	2,483	295
	2002	7.5	[0.00]	-1.0	[0.52]	-3.1	[0.06]	2,462	259
	2003	6.7	[0.01]	-1.3	[0.43]	-3.9	[0.02]	2,443	278
	2004	6.2	[0.01]	3.0	[0.06]	0.3	[0.89]	2,458	287
Republic of Ireland	All years	8.9	[0.00]	5.3	[0.09]			3,337	269
	1994	13.6	[0.26]	15.5	[0.20]			288	24
	1995	0.3	[0.98]	10.2	[0.56]			287	21
	1996	1.8	[0.87]	-1.0	[0.94]			302	30
	1997	12.3	[0.31]	8.0	[0.42]			306	32
	1998	-5.1	[0.73]	-7.4	[0.48]			305	22
	1999	11.0	[0.18]	11.9	[0.23]			317	29
	2000	-8.5	[0.26]	-21.3	[0.11]			311	29
	2001	23.7	[0.10]	30.8	[0.04]			309	30
	2002	27.2	[0.06]	28.9	[0.04]			312	18
	2003	14.4	[0.25]	8.7	[0.43]			320	25
	2004	-2.6	[0.87]	-4.1	[0.74]			280	9

Country	Year of start	Productivity premia of export starters [p-values] Sales/worker		Value added/worker		TFP		No. of observ.	No. of starters
Italy	All Years	18.3		4.5		3.0		14,345	1,612
	1992	17.6	[0.00]	4.0	[0.01]	3.1	[0.03]	2,920	346
	1993	21.5	[0.00]	4.4	[0.00]	2.9	[0.04]	2,819	344
	1994	15.3	[0.00]	2.8	[0.09]	2.1	[0.20]	2,433	258
	1995	21.6	[0.00]	5.7	[0.00]	2.8	[0.10]	2,370	243
	1996	20.4	[0.00]	6.9	[0.00]	5.1	[0.00]	2,145	278
	1997	8.8	[0.04]	2.4	[0.29]	0.8	[0.68]	1,658	143
UK	All Years	4.2	[0.30]	-0.6	[0.82]	-2.0	[0.67]	4080	162
	1998	31.9	[0.03]	-3.4	[0.60]	-20.0	[0.01]	465	24
	1999	-4.9	[0.64]	-2.1	[0.83]	-11.2	[0.42]	509	15
	2000	13.9	[0.17]	5.9	[0.49]	-8.5	[0.60]	561	18
	2001	-5.5	[0.55]	-7.7	[0.31]	-6.3	[0.58]	621	37
	2002	-11.4	[0.18]	-1.6	[0.80]	-13.7	[0.38]	679	24
	2003	19.4	[0.08]	11.6	[0.09]	38.6	[0.02]	696	25
	2004	23.9	[0.12]	9.6	[0.28]	14.7	[0.24]	549	19

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of productivity in a year are excluded from all computations. The productivity premia are estimated in an OLS-regression of log (productivity) on a dummy variable for export starters controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and dummy variables for 4-digit-industries, all measured three years before the start. To facilitate interpretation the estimated coefficients for the exporter dummy variable has been transformed by 100(exp(ß)-1).

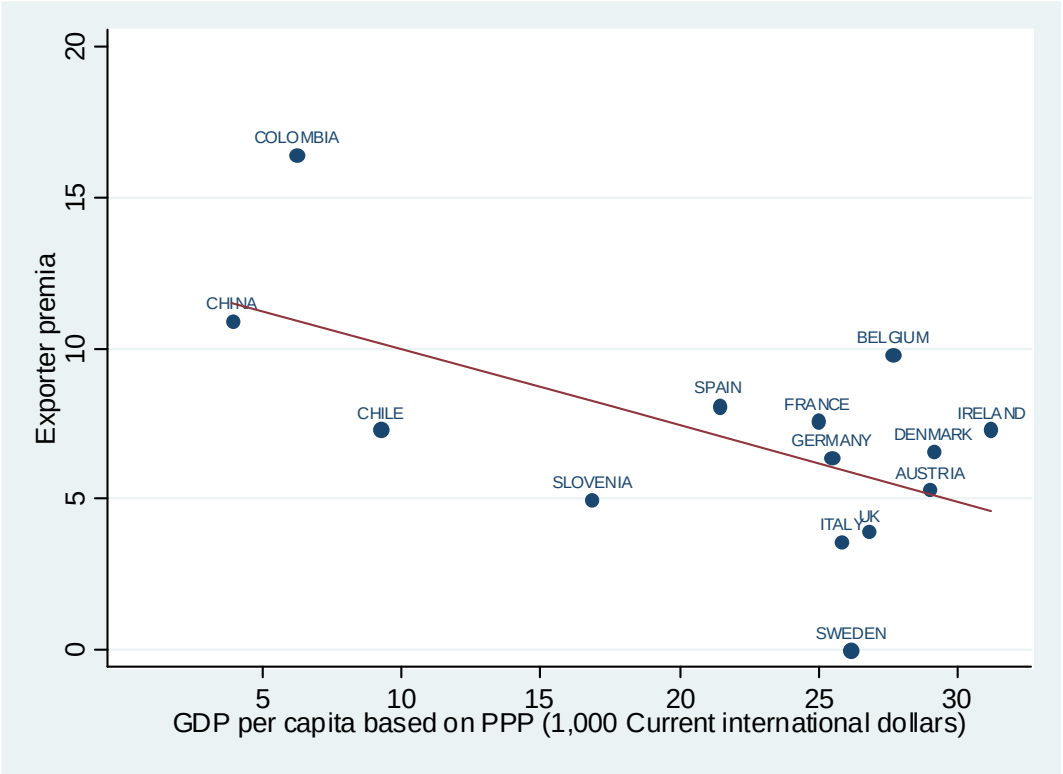
Table 12: Export starters and non-starters three years after the start

Country	Year of start	Labor productivity growth premia of export-starters (percent) [p-value] Sales/worker		Value added/worker		TFP		No. of observ.	No. of starters
Belgium	All Years	8.8	[0.23]	11.5	[0.14]	-13.4	[0.37]	457	39
	1999	6.7	[0.80]	26.5	[0.42]	16.0	[0.66]	97	6
	2000	-8.2	[0.72]	-9.8	[0.34]	-14.5	[0.28]	104	6
	2001	24.0	[0.05]	13.4	[0.01]	15.8	[0.11]	132	12
	2002	22.0	[0.15]	23.6	[0.11]	38.4	[0.07]	124	15
China	All Years	-3.4	[0.00]	-2.1	[0.14]	-1.2	[0.51]	37,723	893
	2001	-3.8	[0.01]	-4.2	[0.04]	0.2	[0.94]	18,476	390
	2002	-3.1	[0.04]	-0.9	[0.66]	-1.2	[0.57]	19,247	503
Colombia	All Years	0.7	[0.66]	-1.0	[0.61]	1.1	[0.58]	9,705	157
	1981	2.8	[0.49]	4.7	[0.36]	0.9	[0.85]	1,805	26
	1982	2.0	[0.60]	-4.7	[0.30]	1.6	[0.69]	1,910	33
	1983	-2.0	[0.59]	0.2	[0.97]	0.4	[0.94]	1,997	26
	1984	0.8	[0.83]	-1.7	[0.70]	-3.4	[0.42]	2,024	37
	1985	0.4	[0.92]	-2.4	[0.57]	5.7	[0.25]	1,969	35
France	All Years	-0.4		-0.7		-0.6		12,496	1,529
	1993	0.3	[0.76]	-0.9	[0.37]	-0.9	[0.36]	1,268	189
	1994	-0.1	[0.95]	2.1	[0.03]	1.8	[0.06]	1,338	201
	1995	1.0	[0.29]	-0.5	[0.64]	-0.7	[0.51]	1,348	189
	1996	-0.1	[0.91]	0.1	[0.94]	0.1	[0.89]	1,313	151
	1997	-1.0	[0.37]	-1.9	[0.10]	-1.3	[0.29]	1,358	138
	1998	-2.0	[0.08]	-1.4	[0.20]	-1.7	[0.13]	1,418	165
	1999	-0.6	[0.64]	-1.2	[0.37]	-0.4	[0.75]	1,481	163
	2000	-0.4	[0.67]	-1.9	[0.05]	-0.3	[0.77]	1,482	150
	2001	-0.9	[0.33]	-1.5	[0.12]	-1.9	[0.10]	1,490	183

Country	Year of start	Labor productivity growth premia of export-starters (percent) [p-value] Sales/worker		Value added/worker		TFP		No. of observ.	No. of starters
Republic of Ireland	All Years	0.7	[0.61]	-0.4	[0.83]			1,604	131
	1994	-4.6	[0.38]	-6.8	[0.34]			184	17
	1995	3.2	[0.46]	8.6	[0.23]			197	18
	1996	-6.7	[0.07]	-11.0	[0.32]			206	16
	1997	7.5	[0.07]	6.9	[0.15]			195	18
	1998	4.0	[0.54]	4.2	[0.47]			193	12
	1999	2.8	[0.56]	4.1	[0.42]			212	15
	2000	-5.5	[0.04]	-4.8	[0.13]			221	18
	2001	-7.2	[0.02]	-2.5	[0.62]			196	17
Italy	All Years	4.7		1.0		1.3		8,172	948
	1992	4.1	[0.03]	1.2	[0.07]	2.1	[0.05]	1,276	144
	1993	4.3	[0.05]	0.5	[0.09]	0.5	[0.23]	1,126	143
	1994	6.1	[0.07]	1.9	[0.08]	1.5	[0.09]	826	79
UK	All Years	3.2	[0.51]	1.7	[0.75]	4.6	[0.39]	1,222	56
	1998	2.5	[0.77]	1.2	[0.87]	13.7	[0.12]	264	16
	1999	-30.1	[0.19]	-35.1	[0.15]	-37.4	[0.07]	311	7
	2000	24.1	[0.01]	17.6	[0.13]	17.4	[0.13]	338	14
	2001	9.2	[0.33]	9.5	[0.29]	4.8	[0.40]	309	19

Note: Results are for firms from ISIC industries 15 – 36 with at least 20 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of productivity in a year are excluded from all computations. The productivity growth premia are estimated in an OLS-regression of the growth rate of productivity (computed as the difference of the log of productivity in t+3 and t+1) on a dummy variable for export starters controlling for the log of number of employees and its squared value, log wages and salaries per employee, and dummy variables for 4-digit-industries, all measured at the start year t. To facilitate interpretation the estimated coefficients for the exporter dummy variable has been transformed by 100(exp(ß)-1).

Figure 1
Exporter premia and GDP per capita



Footnote:

The exporter productivity premium shows the average percentage difference in labour productivity between exporters and non-exporters. It is computed for each country from the β coefficient estimated of model (1) in the text, including a whole set of fixed firm effects. The estimate of Germany is the simple average of the estimates of East and West Germany. Gross Domestic Product per capita (GDPpc) corresponds to year 2000. It is based on purchasing-power-parity (PPP) values and expressed in 1,000 current international dollar. It has been obtained from: International Monetary Fund, World Economic Outlook Database, April 2007. The estimated equation of the fitted regression line is:

$$\text{Export Premia} = \underset{(0.00)}{12.48} - \underset{(0.03)}{0.25}\ \text{GDPpc};\ R^2 = 0.35 \quad \text{(p-value in parenthesis)}$$

If Colombia and Sweden are excluded, the estimated equation is:

$$\text{Export Premia} = \underset{(0.00)}{9.34} - \underset{(0.16)}{0.11}\ \text{GDPpc};\ R^2 = 0.18 \quad \text{(p-value in parenthesis)}$$

Appendix I.1: Definition of Industries

NACE 2 letters code	ISIC code	Industry
DA	15, 16	Manufacture of food products, beverage and tobacco
DB	17, 18	Manufacture of textile and textile products
DC	19	Manufacture of leather and leather products
DD	20	Manufacture of wood and wood products
DE	21, 22	Manufacture of pulp, paper and paper products, printing and publishing
DF	23	Manufacture of coke, refined petroleum products and nuclear fuel
DG	24	Manufacture of chemicals, chemical products and man-made fibres
DH	25	Manufacture of rubber and plastic products
DI	26	Manufacture of other non-metallic products
DJ	27, 28	Manufacture of basic metal and fabricated metal products
DK	29	Manufacture of machinery and equipment n. e. c.
DL	30, 31, 32, 33	Manufacture of electrical and optical equipment
DM	34, 35	Manufacture of transport equipment
DN	36	Manufacture n. e . c. excluding recycling

Appendix I.2: Exporter participation rate and export intensity by industry

Country	Year	Variable	Industry												
			DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN
Austria	1999	Participation rate	36.0	89.3	83.8	60.5	77.1	NA	92.7	89.1	53.6	71.6	90.7	82.1	87.5	63.1
		Export intensity	16.2	50.2	63.3	36.6	24.0	NA	44.1	43.6	26.3	40.0	54.7	54.6	56.5	31.5
		Number of firms	626	224	37	319	310	NA	109	193	239	612	440	273	88	398
	2005	Participation rate	38.8	93.4	91.3	67.1	79.2	NA	91.7	89.4	55.4	71.3	91.2	84.3	90.3	67.9
		Export intensity	22.5	56.6	61.9	41.5	26.1	NA	54.6	50.4	32.4	41.8	58.3	56.9	58.4	32.6
		Number of firms	662	152	23	283	284	NA	108	208	224	669	489	299	103	336
Belgium	1996	Participation rate	82.9	84.3	81.8	78.1	75.3	66.7	96.2	95.8	80.9	75.9	88.4	84.9	89.7	85.9
		Export intensity	37.5	56.7	43.8	33.2	29.7	16.7	44.3	45.8	28.3	34.6	42.0	39.2	35.7	42.0
		Number of firms	480	383	11	96	299	12	239	167	209	494	242	186	107	185
	2005	Participation rate	79.8	88.0	85.7	85.9	71.1	73.3	96.0	94.7	72.0	66.9	83.9	84.5	88.1	83.2
		Number of firms	43.7	62.0	55.6	39.4	31.9	32.1	46.8	52.3	38.1	41.5	46.5	43.5	41.5	42.5
		Export intensity	371	183	7	71	235	15	224	152	186	441	168	148	101	101
Chile	1990	Participation rate	16.7	12.0	22.4	20.8	18.0	47.1	41.0	23.3	18.0	41.9	11.8	20.6	9.1	17.6
		Export intensity	34.5	3.7	10.5	18.5	3.3	1.3	9.3	1.7	1.6	36.0	2.8	4.4	16.4	15.7
		Number of firms	1,509	591	156	409	178	17	205	206	122	62	490	63	88	34
	1999	Participation rate	18.9	20.9	24.5	23.5	29.4	53.8	55.4	32.5	20.8	47.2	17.4	40.6	29.1	23.3
		Export intensity	34.2	6.0	2.9	24.0	4.2	2.3	14.0	4.8	3.2	27.7	7.4	7.0	26.6	19.2
		Number of firms	1,410	421	94	387	170	13	166	212	130	53	534	64	55	30
China	1998	Participation rate	13.1	49.2	56.2	20.4	9.8	8.1	20.2	28.4	10.1	21.4	21.0	33.3	14.7	46.2
		Export intensity	55.1	73.1	81.8	66.3	50.6	30.2	41.1	64.2	51.4	57.7	36.0	60.3	36.9	72.7
		Number of firms	18,060	16,846	3,023	2,149	7,591	939	13,835	7,084	13,347	12,372	14,854	10,853	5,995	4,551
	2005	Participation rate	22.1	44.8	59.8	25.7	13.4	7.6	22.0	31.2	19.0	23.2	27.5	49.2	23.9	61.3
		Export intensity	47.9	71.7	81.7	67.2	42.4	19.6	37.7	62.5	46.8	57.2	50.4	65.7	44.6	80.5
		Number of firms	22,232	33,758	6,127	5,235	11,822	1,796	23,440	14,451	19,643	24,363	43,953	12,160	10,990	11,356

Country	Year	Variable	Industry												
			DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN
Colombia	1981	Participation rate	9.9	13.3	20.5	12.2	17.1	5.3	33.2	18.8	15.9	19.1	30.6	28.3	19.7	17.9
		Export intensity	17.4	15.8	18.8	12.2	9.3	39.5	5.7	7.1	15.8	9.0	13.9	7.8	15.0	16.3
		Number of firms	739	882	171	74	257	19	262	218	245	382	173	173	132	173
	1991	Participation rate	13.2	26.1	54.4	18.1	24.4	26.1	38.5	35.6	21.3	27.6	33.5	34.5	22.3	24.8
		Export intensity	25.5	20.8	33.7	13.9	9.4	14.9	12.3	8.8	18.8	25.0	18.2	11.2	5.0	23.3
		Number of firms	828	923	204	83	287	23	322	270	249	391	200	194	148	226
Denmark	1999	Participation rate	60.4	83.1	100.0	72.8	69.4	66.7	92.6	89.9	71.7	71.6	86.1	84.5	87.6	84.8
		Export intensity	18.1	35.0	38.1	23.7	11.8	21.2	41.6	31.1	20.1	20.3	41.0	44.0	48.7	37.9
		Number of firms	578	242	19	180	399	3	108	198	145	571	567	368	129	381
	2002	Participation rate	56.5	91.9	100.0	69.6	61.4	100.0	90.8	92.4	61.1	72.4	92.4	87.3	91.8	85.0
		Export intensity	20.3	41.8	52.0	16.0	10.0	17.5	46.7	35.7	15.0	20.1	46.5	46.6	54.2	38.6
		Number of firm	476	124	6	148	345	4	98	198	126	588	525	324	97	267
France	1990	Participation rate	NA	66.6	78.7	58.4	61.1	80.0	87.6	78.3	54.8	63.1	79.4	73.1	76.4	75.7
		Export intensity	NA	22.2	18.5	14.8	8.9	11.7	23.5	14.0	17.5	13.9	22.1	20.7	21.1	16.2
		Number of firms	NA	3,240	587	765	2,565	50	1,094	1,270	928	4,934	2,338	2,287	842	1,320
	2004	Participation rate	NA	77.5	79.3	54.9	68.6	88.0	90.5	81.8	58.7	67.9	82.7	78.6	81.9	81.2
		Export intensity	NA	27.2	24.6	18.6	11.8	19.0	34.8	20.5	22.9	18.7	30.3	31.7	28.1	19.5
		Number of firms	NA	1,646	276	607	2,016	25	1,092	1,482	767	4,498	2,038	1,935	803	939
West Germany	1995	Participation rate	33.7	74.4	89.1	48.6	56.4	74.6	89.3	80.0	46.7	64.5	82.6	70.4	76.9	74.7
		Export intensity	14.6	20.2	19.9	13.2	12.8	21.1	29.9	18.9	18.9	19.3	32.6	28.1	26.9	18.7
		Number of firms	3,717	1,988	294	1,319	3,354	67	1,322	2,424	2,030	5,898	5,383	3,897	1,050	1,939
	2004	Participation rate	32.0	85.3	91.7	58.0	60.9	76.3	92.0	82.6	58.2	68.8	83.7	72.0	81.7	79.4
		Export intensity	17.9	30.1	33.0	22.8	15.9	25.5	41.5	26.4	25.4	23.8	39.1	35.8	32.3	26.6
		Number of firms	4,117	1,134	168	892	3,123	59	1,417	2,465	1,549	6,140	5,645	4,347	1,233	1,379

Country	Year	Variable	Industry												
			DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN
East Germany	1995	Participation rate	21.5	58.8	54.7	15.6	39.0	63.6	74.4	42.4	23.1	32.8	54.1	49.6	47.4	54.1
		Export intensity	15.5	14.6	18.4	15.8	17.0	15.5	26.1	11.3	20.8	11.0	21.3	20.6	18.1	15.4
		Number of firms	912	374	53	256	410	11	234	384	588	1,126	845	750	287	380
	2004	Participation rate	20.8	67.7	61.5	46.0	45.2	62.5	79.8	66.5	41.9	47.6	63.6	55.1	68.9	61.8
		Export intensity	16.9	24.9	29.9	21.0	18.5	40.6	37.2	23.4	26.1	17.6	25.9	31.5	26.1	20.2
		Number of firms	1,144	269	26	224	465	8	282	525	506	1,462	977	1,039	360	283
Italy	1989	Participation rate	52.0	56.6	77.1	45.4	51.1	29.1	78.6	74.3	54.8	57.8	83.8	66.3	68.4	71.9
		Export intensity	16.1	26.2	48.5	21.0	12.8	9.8	20.0	25.7	33.0	23.0	37.2	26.8	28.7	30.8
		Number of firms	1,418	3,361	1,077	526	1,105	86	796	1,018	1,418	2,925	2,562	1,452	684	1,488
	1997	Participation rate	65.3	59.3	72.3	59.6	61.7	44.8	83.6	79.3	60.9	63.1	82.5	70.3	71.3	79.3
		Export intensity	19.0	34.1	51.3	22.4	14.7	17.1	26.7	28.5	34.6	27.6	45.6	34.4	34.9	38.4
		Number of firms	1,066	2,158	611	413	931	67	639	922	963	2,561	2,120	1,331	526	1,208
Rep. of Ireland	1991	Participation rate	53.3	71.4	76.5	58.9	56.8	NA	86.8	81.9	54.1	67.8	72.6	84.5	62.5	71.3
		Export intensity	48.3	61.0	55.5	27.6	34.1	NA	72.0	54.3	39.8	50.8	69.1	81.8	70.2	56.0
		Number of firms	392	227	17	56	185	NA	129	105	98	143	124	226	48	94
	2004	Participation rate	71.9	87.9		44.6	59.5	NA	90.4	72.4	43.3	52.6	84.3	88.9	76.6	65.4
		Export intensity	47.0	60.0		27.2	30.3	NA	72.4	50.3	28.5	36.2	60.4	79.1	77.1	43.1
		Number of firms	331	69		92	205	NA	136	127	120	209	115	217	47	107
Slovenia	1994	Participation rate	48.8	59.5	68.4	75.1	34.0	100.0	85.9	71.7	64.2	60.8	78.0	59.3	82.1	63.2
		Export intensity	16.9	88.3	90.6	39.6	16.0	19.3	38.8	36.2	25.9	52.6	41.4	34.4	50.6	45.8
		Number of firms	160	232	38	173	297	3	71	145	95	424	205	371	56	163
	2002	Participation rate	65.0	77.6	87.0	79.5	72.2	100.0	90.1	95.9	80.6	83.4	90.5	88.7	90.2	94.4
		Export intensity	15.2	95.1	69.7	50.6	20.5	45.9	52.0	44.8	37.3	49.4	58.6	60.2	76.1	54.4
		Number of firms	100	147	23	78	101	3	55	74	62	223	126	150	41	89

Country	Year	Variable	Industry												
			DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN
Spain	1990	Participation rate	40.9	53.1	71.1	54.2	49.5	NA	79.2	64.6	54.8	63.3	83.3	78.4	76.9	55.0
		Export intensity	19.8	18.2	40.2	21.0	14.2	NA	17.5	13.7	21.5	24.7	27.1	22.6	27.0	22.0
		Number of firms	225	145	38	24	99	NA	120	48	104	158	102	125	108	100
	1999	Participation rate	63.5	66.1	64.7	71.4	67.5	NA	92.1	73.9	60.7	75.4	85.1	84.7	86.9	76.3
		Export intensity	19.2	24.6	35.8	19.0	20.8	NA	31.0	29.1	35.0	32.2	37.0	34.3	46.7	26.3
		Number of firms	159	112	34	21	83	NA	89	69	84	142	87	98	107	80
Sweden	1997	Participation rate	57	95	78	91	75	100	99	95	86	73	87	88	90	93
		Export intensity	10	47	38	43	40	29	58	45	30	48	44	59	55	33
		Number of firms	299	113	18	337	504	8	147	215	117	792	611	395	244	209
	2004	Participation rate	58	100	80	84	74	100	97	95	87	76	90	90	91	90
		Export intensity	15	59	73	40	48	67	65	42	18	52	50	62	43	27
		Number of firms	329	75	10	309	451	11	145	222	101	859	574	366	273	182
UK	1995	Participation rate	57.7	80.2	84.8	64.3	47.5	80.0	90.2	82.7	70.3	80.0	88.4	87.1	80.7	77.8
		Export intensity	20.1	28.2	31.9	33.4	26.5	14.1	35.9	22.5	34.1	28.0	39.2	38.9	34.3	25.7
		Number of firms	366	258	33	14	632	15	386	260	145	799	380	667	192	446
	2004	Participation rate	46.9	78.8	81.3	25.0	43.0	69.6	86.2	74.5	57.9	77.4	85.8	83.2	67.1	68.9
		Export intensity	14.0	26.6	47.7	3.9	24.3	35.5	40.3	25.7	32.0	30.5	38.8	41.4	32.0	28.8
		Number of firms	392	189	16	8	632	23	348	267	133	646	324	625	213	4

Note: Results are for firms with at least 20 employees. For a definition of industries see appendix 1. Participation rate is the percentage share of exporting firms.
Export intensity is the average percentage share of exports in total sales for exporting firms. See table 1 for more information on the samples.

Appendix II: Variables Used in Meta-Analysis Regressions

The regressors included in the meta-analysis regressions are defined as follows:

1) Dummy FE regression: dummy variable indicating that the method of estimation of the coefficient used as the dependent variable in the meta-analysis regression is firm fixed effects.

2) Dummy size =20-49, Dummy size = 50-249, Dummy size =250-499: dummy variables indicating that the coefficient used as the dependent variable in the meta-analysis regression is obtained for a sub-sample of firms in one of the three size classes: 20-49 workers, 50-249 workers, or 250-499 workers.

3) No. of observations: total number of observations used in the regression that produced the coefficient used as the dependent variable in the meta-analysis regression.

4) Dummy establishment level data: dummy variable indicating that the coefficient used as the dependent variable in the meta-analysis regression was obtained based on a sample whose unit of observation is an establishment (rather than a firm).

5) Average year: midpoint of a country's sample period.

6) GDP: average of GDP at Purchasing Power Parity in constant 2000 international USD during each country's sample period [*Source: World Development Indicators database*].

7) GDP per capita: verage of GDP per capita at Purchasing Power Parity in constant 2000 international USD during each country's sample period [*Source: World Development Indicators database*].

8) Openness: average trade (exports plus imports of goods and services) share in GDP during each country's sample period. [*Source: World Development Indicators database*].

9) Ease of doing business: aggregate index measuring the quality of business regulations. Higher values represent more business-friendly regulations. The index is obtained as the simple average of country rankings in each of the 10 topics in the Doing Business database (starting a business, dealing with licenses, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, closing a business). These country rankings are based on a total of 135 countries and the simple average is normalized by the largest value, so the aggregate index varies between 0 and 1. [*Source: Doing Business 2005 database*].

10) Government effectiveness: normally distributed index with mean 0 and standard-deviation of 1 (across a total of 207 countries) whose higher values imply a better institutional

framework. The index measures the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. [*Source: Governance Indicators of Kaufmann, Kraay, and Mastruzzi (2007*)].

11) Regulatory quality: normally distributed index with mean 0 and standard-deviation of 1 (across a total of 207 countries) whose higher values imply a better institutional framework. The index measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. [*Source: Governance Indicators of Kaufmann, Kraay, and Mastruzzi (2007*)].

General note: for all the country characteristics, values for West Germany were used for East Germany also.

Table III.2: Exporter participation rate and export intensity by size class

Country	Year	Variable	All firms	10-19 employees	20-49 employees	50-249 employees	250-400 employees	500 and more employees
Belgium	1996	Participation rate	76.1	53.2	73.8	89.7	96.4	98.2
		Export intensity	43.6	32.8	36.8	52.4	46.2	55.1
		Number of firms	4,290	1,017	1,500	1,411	197	165
	2005	Participation rate	74.6	46.8	70.6	88.5	93.5	97.5
		Export intensity	66.2	61.0	63.6	70.2	62.3	67.7
		Number of firms	3,332	690	1,105	1,193	185	159
Chile	1990	Participation rate	17.1	2.8	7.6	32.1	54.5	66.7
		Export intensity	29.8	22.2	25.9	32.1	28.6	28.8
		Number of firms	4,442	1,212	1,610	1,304	220	96
	1999	Participation rate	21.9	4.8	15.3	42.4	68.8	85.7
		Export intensity	27.0	22.2	25.0	27.2	29.9	33.0
		Number of firms	4,125	1,416	1,428	1,041	170	70
China	1998	Participation rate	23.9	8.1	10.8	20.4	32.1	45.2
		Export intensity	60.1	71.8	67.3	65.4	62.3	46.5
		Number of firms	136,289	4,790	19,376	71,615	21,997	18,511
	2005	Participation rate	29.9	10.6	15.5	28.8	44.9	56.9
		Export intensity	60.3	56.5	54.5	61.1	65.0	56.0
		Number of firms	248,576	7,250	48,089	144,034	29,110	20,093
Colombia	1981	Participation rate	11.1	2.5	6.5	23.1	47.1	61.8
		Export intensity	14.1	81.5	42.3	19.7	9.0	10.4
		Number of firms	6,792	2,892	1,960	1,594	210	136
	1991	Participation rate	18.2	6.0	14.2	36.9	59.1	71.9
		Export intensity	19.6	82.7	33.8	22.8	14.5	14.5
		Number of firms	7,304	2,956	2,379	1,636	198	135

Country	Year	Variable	All firms	10-19 employees	20-49 employees	50-249 employees	250-400 employees	500 and more employees
Denmark	1995	Participation rate	65.2	49.4	68.9	88.1	92.5	97.5
		Export intensity	22.1	12.7	21.4	38.1	50.5	54.8
		Number of firms	6,859	2,971	2,277	1,331	161	119
	2002	Participation rate	66.2	50.3	68.9	88.1	90.2	87.3
		Export intensity	23.3	12.9	22.1	39.6	50.3	52.4
		Number of firms	5,604	2,304	1,902	1,161	153	110
Rep. of Ireland	1991	Participation rate	60.2	45.8	54.8	76.0	88.8	91.7
		Export intensity	51.5	34.7	44.8	61.0	82.5	82.6
		Number of firms	2,859	832	1,044	828	107	48
	2004	Participation rate	59.2	38.1	61.4	83.5	95.5	91.1
		Export intensity	47.6	29.6	42.1	59.1	82.3	84.3
		Number of firms	2,803	1,056	983	630	89	45
Slovenia	1994	Participation rate	61.2	57.8	74.1	91.3	94.9	98.7
		Export intensity	47.6	32.7	42.7	52.6	58.2	62.9
		Number of firms	2,433	301	321	506	118	75
	2002	Participation rate	54.8	66.4	71.7	86.5	97.1	95.2
		Export intensity	39.0	28.3	47.0	56.9	66.6	64.6
		Number of firms	4,130	515	428	570	103	84
Spain	1990	Participation rate	49.2	17.6	35.3	65.6	83.7	85.6
		Export intensity	21.6	17.9	19.7	24.5	22.4	20.1
		Number of firms	1,952	556	487	413	295	201
	1999	Participation rate	63.8	32.1	50.8	80.2	95.6	96.8
		Export intensity	29.3	19.4	19.6	32.6	36.0	36.0
		Number of firms	1,564	399	415	388	204	158

Country	Year	Variable	All firms	10-19 employees	20-49 employees	50-249 employees	250-400 employees	500 and more employees
Sweden	1997	Participation rate	71	54	74	88	91	99
		Export intensity	45	19	26	38	45	50
		Number of firms	7,001	2,794	2,296	1,506	200	205
	2004	Participation rate	71	56	76	91	98	98
		Export intensity	46	21	28	40	43	52
		Number of firms	6,704	2,981	2,007	1,352	186	178
UK	1995	Participation rate	75.1	58.7	66.4	74.9	80.4	83.7
		Export intensity	31.1	36.4	33.8	28.7	30.3	36.0
		Number of firms	4,824	172	729	2,517	672	734
	2004	Participation rate	68.8	55.1	64.0	70.5	71.8	72.4
		Export intensity	32.3	36.1	34.9	31.5	31.6	31.4
		Number of firms	4,490	247	862	2,364	543	474

Note: Results are for firms from ISIC industries 15 – 36 with at least 10 employees. Participation rate is the percentage share of exporting firms. Export intensity is the average percentage share of exports in total sales for exporting firms. See Table 1 for more information on the samples.

Table III.3: Exporter productivity premia (percentage) I: Exporter dummy

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Belgium	Pooled	ß	58.548	51.886	66.571	59.656	23.110	54.586
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed effects	ß	10.174	6.697	8.059	19.164	9.210	-10.850
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.046]	[0.220]
	N		6,661	2,270	2,235	1,730	241	185
	NxT		39,292	9,013	13,453	13,281	1,924	1,621
Chile 1990 - 1999	Pooled	ß	31.402	38.262	35.378	18.898	9.158	29.683
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]
	Fixed effects	ß	9.294	10.285	13.763	8.937	4.206	7.681
		p	[0.00]	[0.00]	[0.00]	[0.00]	[0.12]	[0.23]
	N		7,745	2,643	2,710	1,993	280	119
	NxT		47,820	13,810	17,109	13,828	2,084	989
China 1998 - 2005	Pooled	ß	15.658	17.969	15.553	13.098	17.510	22.130
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed effects	ß	10.924	14.500	11.235	9.676	12.085	13.406
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	N		408,723	17,597	86,457	228,722	45,177	30,770
	NxT		1,347,097	36,326	214,465	760,482	189,673	146,151
Colombia 1981 – 1991	Pooled	ß	31.653	51.740	38.819	18.887	22.630	15.720
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed effects	ß	16.416	28.018	16.532	11.963	13.202	10.960
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]
	N		11,434	5,504	3,468	2,098	221	143
	NxT		75,212	29,070	24,882	17,592	2,230	1,438

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Denmark	Pooled	ß	33.754	27.744	37.334	32.691	17.350	39.459
1999 - 2002		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]	[0.000]
	Fixed	ß	5.954	5.459	4.981	9.618	7.380	7.761
	effects	p	[0.000]	[0.000]	[0.000]	[0.000]	[0.072]	[0.122]
	N		9,050	3,968	3,026	1,680	221	155
	NxT		50,162	20,938	17,017	9,973	1,333	901
Republic of Ireland	Pooled	ß	11.282	6.691	12.679	16.450	-7.635	55.993
1991 - 2004		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.248]	[0.000]
	Fixed	ß	7.677	6.755	8.002	6.939	-3.495	19.923
	effects	p	[0.000]	[0.000]	[0.000]	[0.000]	[0.623]	[0.067]
	N		5,645	2,484	1,762	1,182	147	70
	NxT		40,973	12,890	15,016	10,945	1,434	688
Slovenia	Pooled	ß	8.379	9.571	12.214	8.665	10.781	-0.672
1994 - 2002		p	[0.000]	[0.001]	[0.000]	[0.000]	[0.045]	[0.911]
	Fixed	ß	5.074	9.186	6.707	4.297	8.044	-3.214
	effects	p	[0.001]	[0.007]	[0.036]	[0.056]	[0.100]	[0.578]
	N		2,204	629	581	746	138	97
	NxT		13,755	3,795	3,389	4,841	966	701
Spain	Pooled	ß	31.467	42.194	31.035	29.310	21.994	6.465
1990 - 1999		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.070]
	Fixed	ß	9.274	11.535	7.071	6.014	14.169	7.830
	effects	p	[0.000]	[0.000]	[0.000]	[0.002]	[0.000]	[0.022]
	N		3,001	878	809	652	385	277
	NxT		17,418	4,612	4,256	3,930	2,644	1,976

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Sweden	Pooled	ß	25.734	25.609	26.617	26.871	30.604	-2.955
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.517]
	Fixed effects	ß	3.458	2.327	2.327	5.760	11.628	5.866
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.214]
	N		11,446	6,726	4,514	2,451	403	312
	NxT		55,015	23,548	17,171	11,385	1,526	1,385
UK 1995 - 2004	Pooled	ß	11.271	27.950	9.173	11.056	8.724	10.317
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed effects	ß	4.873	14.527	8.557	4.338	7.957	-3.511
		p	[0.000]	[0.009]	[0.000]	[0.000]	[0.000]	[0.072]
	N		9,903	600	1,950	5,180	1,070	1,103
	NxT		55,286	2,228	9,594	29,421	7,122	6,921

Note: Results are for firms from ISIC industries 15 – 36 with at least 10 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labor productivity (defined as total sales per employee) in a year are excluded from all computations. Firms are classified into size classes according to the median of the number of employees over the years covered. ß is the estimated regression coefficient from an OLS-regression of log (labor productivity) on a dummy variable for exporting firms, controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and a full set of interaction terms of 4digit industry-dummies and year dummies; the fixed effects model adds firm fixed effects. To facilitate interpretation the estimated coefficients for the exporter dummy variable have been transformed by 100(exp(ß)-1). p is the prob-value. N ist the number of firms, NxT is the number of observations.

Table III.4 Exporter productivity premia II: Share of exports in total sales and its squared value

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Belgium	Pooled	ß1	0.069	0.170	0.399	0.096	-0.069	0.410
1996-2005		p	[0.006]	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]
		ß2	0.000	-0.001	-0.002	-0.001	0.000	-0.002
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed	ß1	-0.040	-0.144	0.136	0.015	0.511	0.209
	effects	p	[0.003]	[0.000]	[0.003]	[0.405]	[0.000]	[0.044]
		ß2	0.000	0.003	-0.076	-0.001	-0.181	-0.051
		p	[0.296]	[0.639]	[0.000]	[0.021]	[0.000]	[0.049]
	N		6,661	2,270	2,235	1,730	241	185
	NxT		39,292	9,013	13,453	13,281	1,924	1,621
Chile	Pooled	ß1	1.422	0.743	1.071	1.011	0.150	-0.653
1990 - 1999		p	[0.000]	[0.112]	[0.000]	[0.000]	[0.504]	[0.043]
		ß2	-1.129	0.376	-0.787	-1.198	-0.255	0.209
		p	[0.000]	[0.546]	[0.011]	[0.000]	[0.360]	[0.598]
	Fixed	ß1	0.237	0.036	0.438	0.315	0.155	-0.309
	effects	p	[0.007]	[0.919]	[0.018]	[0.007]	[0.518]	[0.461]
		ß2	-0.145	0.578	-0.269	-0.241	-0.060	-0.004
		p	[0.184]	[0.170]	[0.331]	[0.078]	[0.821]	[0.991]
	N		7,745	2,643	2,710	1,993	280	119
	NxT		47,820	13,810	17,109	13,828	2,084	989
China	Pooled	ß1	0.848	0.211	0.517	0.725	1.034	1.136
1998-2005		p	[0.000]	[0.125]	[0.000]	[0.000]	[0.000]	[0.000]
		ß2	-0.865	-0.015	-0.440	-0.731	-1.080	-1.196
		p	[0.000]	[0.920]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed	ß1	0.411	0.745	0.404	0.378	0.467	0.414
	effects	p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
		ß2	-0.417	-0.693	-0.395	-0.381	-0.464	-0.465
		p	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]
	N		408,710	17,594	86,454	228,716	45,176	30,770
	NxT		1,347,038	36,321	214,456	760,454	189,662	146,145

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Colombia	Pooled	ß1	0.525	0.670	0.904	0.361	-0.113	0.469
1981 - 1991		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.362]	[0.002]
		ß2	-0.041	-0.048	-0.110	-0.056	-0.349	-0.140
		p	[0.000]	[0.000]	[0.129]	[0.262]	[0.002]	[0.278]
	Fixed	ß1	0.630	0.702	0.720	0.616	0.053	0.048
	effects	p	[0.000]	[0.000]	[0.000]	[0.000]	[0.620]	[0.815]
		ß2	-0.044	-0.047	-0.064	-0.072	-0.123	-0.063
		p	[0.000]	[0.000]	[0.070]	[0.000]	[0.000]	[0.144]
	N		11,434	5,504	3,468	2,098	221	143
	NxT		75,212	29,070	24,882	17,592	2,230	1,438
Denmark	Pooled	ß1	1.084	1.229	1.194	0.582	0.393	-0.084
1999 - 2002		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.009]	[0.723]
		ß2	-0.755	-0.910	-0.802	-0.370	-0.313	0.031
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.896]
	Fixed	ß1	0.420	0.528	0.394	0.342	0.559	0.486
	effects	p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]
		ß2	-0.367	-0.397	-0.430	-0.271	-0.523	-0.483
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]
	N		9,050	3,968	3,026	1,680	221	155
	NxT		50,162	20,938	17,017	9,973	1,333	901
Republic of Ireland	Pooled	ß1	0.053	-0.010	0.155	0.226	-0.999	-0.264
1991 - 2004		p	[0.089]	[0.874]	[0.001]	[0.000]	[0.000]	[0.472]
		ß2	0.144	0.103	0.058	-0.036	1.129	1.183
		p	[0.000]	[0.144]	[0.265]	[0.549]	[0.000]	[0.000]
	Fixed	ß1	0.216	0.230	0.251	0.218	-0.559	-0.199
	effects	p	[0.000]	[0.003]	[0.000]	[0.005]	[0.041]	[0.576]
		ß2	-0.010	-0.160	0.057	-0.063	0.690	0.429
		p	[0.814]	[0.084]	[0.409]	[0.402]	[0.008]	[0.223]
	N		5,645	2,484	1,762	1,182	147	70
	NxT		40,973	12,890	15,016	10,945	1,434	688

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
Slovenia	Pooled	ß1	-0.040	0.503	0.122	0.149	0.259	0.065
1994 - 2002		p	[0.002]	[0.030]	[0.014]	[0.003]	[0.008]	[0.512]
		ß2	0.000	-0.006	0.006	0.001	0.008	0.002
		p	[0.419]	[0.004]	[0.150]	[0.081]	[0.005]	[0.334]
	Fixed	ß1	0.002	-0.006	0.011	0.043	0.179**	-0.088
	effects	p	[0.893]	[0.897]	[0.771]	[0.104]	[0.018]	[0.166]
		ß2	0.000	-0.007	0.007	-0.001	-0.004	0.005
		p	[0.882]	[0.050]	[0.109]	[0.189]	[0.332]	[0.151]
	N		2,204	629	581	746	138	97
	NxT		13,755	3,795	3,389	4,841	966	701
Spain	Pooled	ß1	0.520	1.321	1.453	0.479	0.511	0.330
1990 - 1999		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
		ß2	-0.328	-1.051	-1.325	-0.437	-0.605	-0.161
		p	[0.004]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Fixed	ß1	0.422	0.781	0.724	0.086	0.221	0.275
	effects	p	[0.000]	[0.000]	[0.000]	[0.551]	[0.109]	[0.000]
		ß2	-0.200	-0.333	-0.555	0.128	-0.051	-0.164
		p	[0.000]	[0.081]	[0.000]	[0.492]	[0.735]	[0.000]
	N		3,001	878	809	652	385	277
	NxT		17,418	4,612	4,256	3,930	2,644	1,976
Sweden	Pooled	ß1	0.375	0.469	0.409	0.262	0.214	0.473
1997-2004		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
		ß2	-0.041	-0.044	-0.064	-0.029	-0.040	-0.059
		p	[0.000]	[0.000]	[0.000]	[0.000]	[0.14]	[0.01]
	Fixed	ß1	-0.024	-0.063	-0.082	0.013	-0.036	0.056
	effects	p	[0.17]	[0.03]	[0.000]	[0.65]	[0.58]	[0.63]
		ß2	-0.008	-0.011	-0.006	-0.001	-0.017	0.056
		p	[0.000]	[0.000]	[0.04]	[0.59]	[0.39]	[0.03]
	N		11,446	6,726	4,514	2,451	403	312
	NxT		55,015	23,548	17,171	11,385	1,526	1,385

Country	Model		All firms	10 - 19 employees	20 – 49 employees	50 – 249 employees	250 – 499 employees	500 and more employees
UK	Pooled	ß1	0.052	0.490	-0.325	0.129	-0.069	0.170
1995 - 2004		p	[0.064]	[0.003]	[0.000]	[0.001]	[0.341]	[0.018]
		ß2	0.017	-0.330	0.450	-0.080	0.062	-0.110
		p	[0.638]	[0.085]	[0.000]	[0.098]	[0.487]	[0.213]
	Fixed	ß1	0.028	0.023	0.085	0.087	-0.098	-0.088
	effects	p	[0.488]	[0.919]	[0.410]	[0.110]	[0.371]	[0.367]
		ß2	0.050	0.196	0.115	-0.030	0.116	0.122
		p	[0.284]	[0.417]	[0.302]	[0.646]	[0.326]	[0.298]
	N		9,903	600	1,950	5,180	1,070	1,103
	NxT		55,286	2,228	9,594	29,421	7,122	6,921

Note: Results are for firms from ISIC industries 15 – 36 with at least 10 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labour productivity (defined as total sales per employee) in a year are excluded from all computations. Firms are classified into size classes according to the median of the number of employees over the years covered. ß1 and ß2 are the estimated regression coefficients from an OLS-regression of log (labour productivity) on the share of exports in total sales and its squared value, respectively, controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and a full set of interaction terms of 4-digit industry-dummies and year dummies; the fixed effects model adds firm fixed effects. p is the prob-value, N is the number of firms, NxT is the number of observations.

Table III.6: Export starters and non-starters three years before the start

Country	Year of start	Labor productivity premia of export-starters (percent)	[p-value]	No. of observ.	No. of starters
Belgium	1999	31.206	[0.051]	457	28
	2000	-1.438	[0.909]	476	31
	2001	10.256	[0.289]	568	54
	2002	16.299	[0.068]	545	50
	2003	15.923	[0.202]	526	45
	2004	22.569	[0.078]	511	39
	2005	12.044	[0.210]	451	23
Chile	1993	25.031	[0.001]	2,824	89
	1994	14.534	[0.020]	2,851	92
	1995	23.043	[0.014]	2,820	65
	1996	7.226	[0.220]	2,796	88
	1997	25.160	[0.012]	2,614	57
	1998	5.678	[0.528]	2,456	50
	1999	14.299	[0.234]	2,452	38
China	2001	22.624	[0.000]	44,272	1,017
	2002	29.353	[0.000]	47,268	1,186
	2003	24.892	[0.000]	47,017	1,183
	2004	17.308	[0.000]	52,745	3,339
	2005	13.123	[0.000]	58,019	3,476
Colombia	1984	-1.836	[0.779]	3,751	55
	1985	3.859	[0.553]	3,843	76
	1986	10.021	[0.091]	3,965	86
	1987	17.606	[0.014]	4,013	61
	1988	13.780	[0.090]	4,216	69
	1989	18.649	[0.011]	4,482	101
	1990	17.071	[0.002]	4,734	151
	1991	24.614	[0.000]	4,758	236
Denmark	1998	36.895	[0.185]	42	3
	1999	-6.543	[0.675]	45	4
	2000	-17.126	[0.189]	47	5
	2001	10.875	[0.490]	42	1
	2002	29.875	[0.672]	37	5
Republic of Ireland	1994	-11.311	[0.144]	643	42
	1995	11.612	[0.160]	645	44
	1996	14.770	[0.053]	677	56
	1997	22.119	[0.004]	664	53
	1998	-2.487	[0.758]	665	45
	1999	6.891	[0.355]	673	59
	2000	-1.919	[0.754]	666	70
	2001	6.211	[0.511]	626	55
	2002	-1.181	[0.901]	633	38
	2003	10.935	[0.152]	667	41
	2004	-2.753	[0.711]	641	25
Slovenia	1997	24.292	[0.345]	130	15
	1998	-6.778	[0.703]	160	17
	1999	-15.022	[0.143]	186	35
	2000	-0.572	[0.958]	193	31
	2001	25.961	[0.156]	186	23
	2002	23.140	[0.052]	202	31

Country	Year of start	Labor productivity premia of export-starters (percent)	[p-value]	No. of observ.	No. of starters
Spain	1993	13.119	[0.170]	536	43
	1994	25.713	[0.029]	529	42
	1995	26.407	[0.009]	477	36
	1996	30.361	[0.004]	471	41
	1997	25.976	[0.024]	439	49
	1998	21.451	[0.111]	369	30
	1999	41.481	[0.032]	349	21
Sweden	2000	-5.918	[0.072]	6,857	126
	2001	-7.133	[0.059]	7,171	110
	2002	-11.308	[0.001]	6,945	107
	2003	-9.787	[0.005]	7,097	120
	2004	-8.881	[0.014]	6,827	106
UK	1998	8.255	[0.467]	652	32
	1999	7.296	[0.571]	733	24
	2000	13.591	[0.371]	784	24
	2001	-9.412	[0.559]	851	49
	2002	10.749	[0.452]	917	34
	2003	25.458	[0.027]	932	36
	2004	5.646	[0.667]	767	28

Note: Results are for firms from ISIC industries 15 – 36 with at least 10 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labour productivity (defined as total sales per employee) in a year are excluded from all computations. The labour productivity premia are estimated in an OLS-regression of log (labor productivity) on a dummy variable for export starters controlling for the log of the number of employees and its squared value, the log of wages and salaries per employee, and dummy variables for 4-digit-industries, all measured three years before the start. To facilitate interpretation the estimated coefficients for the exporter dummy variable have been transformed by 100(exp(ß)-1).

Table III.8: Export starters and non-starters three years after the start

Country	Year of start	Labor productivity premia of export-starters (percent)	[p-value]	No. of observ.	No. of starters
Belgium	1999	9.248	[0.654]	231	8
	2000	1.447	[0.852]	245	10
	2001	7.415	[0.212]	294	22
	2002	12.928	[0.098]	274	18
Chile	1993	1.758	[0.600]	2,055	51
	1994	1.910	[0.675]	2,034	50
	1995	1.763	[0.585]	1,895	23
	1996	2.660	[0.576]	1,768	37
China	2001	-4.607	[0.002]	25,180	475
	2002	-4.383	[0.001]	25,137	603
Colombia	1984	-10.191	[0.020]	2,914	27
	1985	-0.856	[0.876]	3,062	36
	1986	-2.238	[0.735]	3,199	31
	1987	5.466	[0.219]	3,265	45
	1988	3.106	[0.495]	3,280	48
Denmark	1998	NA		3	2
	1999	NA		2	1
Republic of Ireland	1994	-4.619	[0.213]	442	30
	1995	4.691	[0.087]	447	31
	1996	-0.963	[0.799]	448	32
	1997	3.308	[0.345]	421	33
	1998	6.502	[0.162]	409	25
	1999	0.977	[0.777]	439	29
	2000	-2.116	[0.271]	447	32
	2001	-2.665	[0.461]	428	30
Slovenia	1997	1.489	[0.939]	82	8
	1998	6.168	[0.717]	89	10
	1999	21.813	[0.176]	95	13
Spain	1993	-1.673	[0.631]	320	23
	1994	2.217	[0.528]	316	27
	1995	3.081	[0.429]	293	20
	1996	-4.607	[0.174]	275	20
Sweden	2000	-0.001	[0.950]	5,214	119
	2001	0.016	[0.257]	5,201	107
UK	1998	-2.928	[0.594]	403	22
	1999	-15.397	[0.275]	461	12
	2000	16.024	[0.045]	489	18
	2001	10.327	[0.141]	441	24

Note: Results are for firms from ISIC industries 15 – 36 with at least 10 employees at the median over the years covered in the panel. The firms with the bottom / top one percent of labour productivity (defined as total sales per employee) in a year are excluded from all computations. The labour productivity growth premia are estimated in an OLS-regression of the growth rate of labour productivity (computed as the difference of the log of labour productivity in t+3 and t+1) on a dummy variable for export starters controlling for the log of number of employees and its squared value, log wages and salaries per employee, and dummy variables for 4-digit-industries, all measured at the start year t. To facilitate interpretation the estimated coefficients for the exporter dummy variable have been transformed by 100(exp(ß)-1).

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