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## Getting the facts right on born globals

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IFN Working Paper No. 1210, 2018

## **Getting the Facts Right on Born Globals**

Shon Ferguson, Magnus Henrekson and Louise Johannesson

# Getting the Facts Right on Born Globals\*

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*Abstract:* Policymakers in several countries have recently taken steps to promote the rapid export expansion of small- and medium-sized enterprises (SMEs). The goal of these policies has been to create successful export-intensive firms, which are often referred to as born globals. These measures are motivated by studies claiming that born global firms are disproportionately important for job creation and economic growth. Using detailed register data on the universe of Swedish manufacturing firms born between 2001 and 2008, we find that born globals are a very small group of firms whose long-run size and growth do not outperform other exporting firms. Thus, the notion that born globals are superior to firms that follow a more gradual internationalization process, a conclusion largely based on case studies and surveys, does not withstand scrutiny. Policymakers must therefore be aware that encouraging more born globals need not necessarily lead to large benefits for the overall economy, especially in terms of employment.

*JEL Codes:* F14 F23, L25, M13.

*Keywords:* Born globals, Exporting, Firm growth, Globalization, Job creation.

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# 1. Introduction

The forces of globalization present both a market opportunity and a competitive challenge for new firms. Policymakers have thus become interested in encouraging and accelerating firms' export activity in order to promote economic growth and boost job creation. This has led many countries to adopt policies that assist small and medium-sized enterprises (SMEs) and startups to expand into export markets. The goal of these policies has been to create successful export-intensive firms, which are often referred to as *born globals*.

The term born globals was first coined in a report by McKinsey (Rennie, 1993) to describe enterprises that are able to quickly and successfully engage in foreign exports. Born globals are characterized by an ability to overcome the initial barriers and risks that are associated with entry into foreign markets without first establishing a strong home market presence. The ability of these firms to circumvent a more lengthy process before taking steps to become internationally competitive has piqued the interest of many governments in both developed and developing countries.<sup>1</sup> For example, in 2015 the Swedish government published an export strategy that specifically emphasized the importance of encouraging born global firms.<sup>2</sup> One part states that: "There are many successful examples of Swedish companies that have been international from the start, but there could be even more of these so called born globals", implying that born globals can be created through government support. There are few studies, however, that rigorously investigate the performance advantages typically associated with born globals compared to other exporting firms.

Policymakers' interest in born globals is driven by several studies by academics and think tanks from the 1990's and onward. These studies claimed that born globals were growing in numbers throughout the world (Rennie, 1993; UNCTAD, 1993; OECD, 1997). A study by Eurofound (2012), the European Union agency for the improvement of living and working conditions, claimed that as much as one fifth of all new firms in Europe are born globals and concluded from survey data that such businesses are characterized by higher employment growth. The OECD (2013) claimed that such firms played a pivotal role in mitigating the economic downturn of the great recession. If these claims are true it would be difficult not to concur with Eurofound's (2012, p. 3) conclusion:

Bearing in mind that born globals' effect on the economy and labour market is not limited to a single country but, due to their international activities and the knock-on effects of these, become apparent at European level, it is not only up to national, but also to EU policymakers to enhance their potential.

However, the surveys and case studies on which these strong statements and policy conclusions are based often focus on a highly selective group of successful born globals that

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<sup>1</sup> Initiatives to promote born global firms currently exist in, inter alia, Japan, South Korea, China, the Netherlands, Brazil and Canada (Growth Analysis, 2016)

<sup>2</sup> Government Communication 2015/16:48, "Regeringens exportstrategi".

may not be fully reflective of the behavior of born globals in general. Cavusgil and Knight (2015) and Zander et al. (2015) have thus called for a more rigorous approach to study born globals, namely using longitudinal data on all exporters in an economy in order to obtain a proper control group of other startups. In this study, we use detailed annual data covering all Swedish manufacturing firms during the period 2001–2014. This data allows us to follow born globals and other exporting firms in the data for up to 14 years. As a small open economy with many export-oriented firms, Sweden is the ideal testing ground for evaluating the performance of born globals.

We examine the long-run performance outcomes of born globals compared to other exporters in terms of employment, sales and value added, and how removing spinouts affects the results. While testing the robustness of different definitions of born globals is common in the literature, our focus on capturing new firms in register data is a novel contribution.

Our results suggest no clear long-run performance advantage associated with born global firms in terms of firm-level employment and value added, and a very small and weakly significant advantage in terms of sales. The lack of robust performance advantages for born globals can be rationalized by the fact that international expansion is both costly and risky, a conclusion based on several studies in the strategic management and international business literature.

We contribute to a growing literature in the fields of strategic management and international business that studies the causes and consequences of born globals' export-intensive strategy (Knight and Cavusgil, 1996, 2004). The relationship between export intensity and firm performance has received less attention in the international economics literature, which has mainly focused on the performance advantages of exporting compared to not exporting at all (Bernard and Jensen, 1999; Mayer and Ottaviano, 2008). A notable exception is Andersson and Lööf (2009), who find learning effects among small and persistent Swedish exporters with high export intensity.

Our work is most similar to a small number of studies that measure the performance of born globals using register data on manufacturing firms, which cover the universe of firms in a particular country. Choquette et al. (2017) find that Danish born globals in manufacturing have higher sales and employment compared to other exporters. Halldin (2012) finds that Swedish born globals in the manufacturing sector have higher employment levels and sales five years after establishment of a born global firm compared to other similarly-aged exporting firms. In contrast, we find that Swedish born globals in the manufacturing sector do not have higher employment or sales. We compare our results to these two studies and show that differences in the definition of new firms can explain our differing results.

## 2. Defining Born Globals

The definition of born globals aims to capture a unique type of export firm with an accelerated export process, in contrast the traditional internationalization process whereby firms build up a customer base in the domestic market and then gradually expand internationally (Bilkey and Tesar, 1977; Cavusgil, 1980; Johanson and Vahlne, 1977).

Research on born globals has mainly focused on documenting their characteristics and understand the underlying trends that give rise to these types of firms (Moen and Servais, 2002). These studies found that born globals are typically innovation-intensive (Andersson and Wictor, 2003; Cavusgil and Knight, 2015), human capital-intensive (Knight, 2001; McDougall et al., 1994, 2003; Melén and Nordman, 2007), and are characterized by a production process that is easily scalable (Kudina et al., 2008; Cannone and Ughetto, 2014)

There is a lack of a harmonized definition of born globals in the literature, although many efforts have been made to define them, both qualitatively and quantitatively. The quantitative definition of born globals is usually defined along two dimensions: the degree of export intensity (exports as a share of total sales must exceed a certain value) and the age of the firm at which this export intensity criteria is met.<sup>3</sup> In the literature, numerous definitions have been applied (see, e.g., Halldin, 2012; Gabrielsson and Kirpalani, 2004; Oviatt and McDougall 1994; Rennie, 1993), such as export activity within 2–10 years and a minimum export share of total sales ranging between 20 to 80 percent. In a literature review by Bader and Mazzarol (2009), they found 12 different definitions across 126 studies, where the most referenced definition was Oviatt and McDougall (1994). They defined born global firms as an extreme version of “international new ventures” that are international from inception and derive “significant competitive advantage from the sales from multiple countries”.<sup>4</sup> Born globals are startups by definition and are thus not established as a spinout of an existing firm. This important distinction is an important difference compared to many international new ventures (Oviatt and McDougall, 1994) that begin life as spinouts.

In this study, we define born globals as startups with at least 25 percent of their sales in exports within three years of founding. This definition stems from Moen and Servais (2002) and Knight et al. (2004), and is used in studies of Swedish born globals by Nordman and Melén (2008), Melén and Nordman (2009) and Halldin (2012). Choquette et al. (2017) also use this definition in their study of Danish born globals.

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<sup>3</sup> Born globals can also be defined qualitatively as certain types of businesses, typically high-tech- and IT-firms.

<sup>4</sup> International new ventures share born globals’ focus on export markets, but in contrast to born globals they may emerge as a spinout from an existing firm and can also pursue a more gradual and region-based export strategy. Oviatt and McDougall (1994) use the term “global startups”, and McAuley (1999) uses the term “instant exporters”. Knight and Cavusgil (1996) were among the first in the academic literature to refer to such firms as born globals.

### 3. Explaining the Size and Growth of Born Globals

The notion that exporting firms in general may have beneficial effects on employment and growth is often motivated from a vast international economics literature, which has found that exporters tend to outperform their non-exporting peers in terms of productivity, employment, capital intensity, financial resources, and spending on R&D and investments (Bernard and Jensen, 1999; Mayer and Ottaviano, 2008). These same studies show that very few firms export, and even fewer firms are export-intensive.

The relative performance advantage of exporters can be explained by the mechanisms of “selection into exporting” and “learning by exporting”. The learning by exporting hypothesis claims that firms can improve their performance as a consequence of exporting due to a learning process. In a related vein, Aw et al. (2000) posit that firms can become more productive after expanding to export markets by obtaining economies of scale in production. Empirical support for the learning by exporting hypothesis has been mixed. Using German data, Wagner (2002) finds positive effects on the growth of employment, labor productivity and wages, and De Loecker (2013) finds positive learning by exporting effects on productivity using data on Belgian firms. However, Clerides et al. (1998) find no productivity effects for Columbian, Mexican and Moroccan firms, and Aw et al. (2000) find no evidence of learning by exporting among firms in Korea and Taiwan. In contrast, there has been broad empirical support for the “selection into exporting” hypothesis, which asserts that only firms that are sufficiently productive self-select into exporting, and that the source of this productivity advantage predates their entry into export markets (Bernard and Wagner, 1997; Bernard and Jensen, 1999, 2004).

While both the learning by exporting and the selection into exporting hypotheses would suggest that born globals will be relatively larger in terms of employment, sales and value added compared to more traditional exporters, studies from the business literature suggest that born globals tend to be smaller than traditional exporters. Many studies characterize born globals as small, yet fast-growing exporters (Knight and Cavusgil, 1996; Moen and Servais, 2002; Knight, 2015). Moreover, evidence suggests that firm size and export intensity are negatively correlated (Bonaccorsi, 1992). The research on born globals in strategic management and international business has suggested a rich array of management- and strategy-related explanations for the success of born global firms. Hagen and Zucchella (2014) discuss the long-term growth of born global firms and reason that the “openness” of the founders and the early preparation for growth determine both the extent and speed of organizational learning, which in turn drives long-run growth.

Although exporting may lead to higher revenues, it is seen by many firms as a risky strategy (Bonaccorsi, 1992; Knight and Cavusgil, 2004), which may lead to a survival bias among studies that employ case studies and surveys to examine successful born globals.

Exposure to the risks associated with foreign exposure can lead to negative effects on employment and growth (Luostarinen and Gabrielsson, 2006). Moreover, firms with an aggressive international expansion may face a disadvantage of “foreignness” (Zaheer and Mosakowski, 1997; Rugman and Verbeke, 2007) and “newness” (Stinchcombe and March, 1965; Zahra, 2005) compared to foreign incumbents, which may adversely affect the performance of some firms.

Another factor to consider is that the relative ease of scalability, which is a common attribute among born globals, (Kudina et al., 2008; Cannone and Ughetto, 2014), can imply that employment growth does not rise proportionately with output growth among these firms. The ease of scalability often associated with the presence of economies of scale, whereby fixed production costs are a large component of total costs compared to the variable cost of production. If labor costs are primarily a fixed production cost, then employment growth will lag behind growth in sales and value added as firms’ output expands.

## 4. Data and empirical approach

### 4.1 Data description

We use firm-level register data covering all limited liability companies for the years 2001–2014 in manufacturing (NACE rev.1.1 industries 15-37), obtained from Statistics Sweden. Firm accounting variables such as sales, value added and the number of employees are collected by Statistics Sweden directly from firms’ tax returns. We match the accounting data with detailed firm-level data on firms’ exports, which is derived from Swedish customs records. In order to avoid erroneously classifying continuing firms that change their organizational number as new firms we use a system developed by Statistics Sweden. Firms are classified as continuing firms even if they change their organizational number as long as a majority of their workers continue to be employed at the same establishment.

Instead of comparing born globals with all other new firms, an approach that would entail the complex task of controlling for selection into exporting in the subsequent analysis, we opt to compare born globals with other exporting firms. Other exporting firms are also more comparable to born globals in terms of size, which makes them a more suitable control group.

The number of firms included in the analysis under various sample restrictions is given in Table 1. The base sample consists of 37,719 firms in the manufacturing sector that appear as a new firm between 2001 and 2008. Once we remove spinouts we are left with 27,073 startups that were born between 2001 and 2008. 3,451 of these firms survive and engage in export for at least one year. Of these, only 649 qualify as born globals, as at least 25 percent of their sales are exports by their third year of existence.



Once we impose the restriction that firms are domestically-owned and employ less than 20 workers in their first year, the sample is reduced to 3,289 exporters. Only 602 of this most restrictive sample are classified as born globals using the 25 percent-three-year rule. The domestic-ownership and employee restrictions help to ensure that spinouts are not erroneously included as born globals despite implementing Statistics Sweden’s approach to removing spinouts. The results in Table 1 emphasize that only 2.3 percent of manufacturing firms are born globals once spinouts are removed. Traditional exporters are far more common, exceeding the number of born globals by a factor of five. Moreover, removing spinouts from the sample reduced the total number of startups by 28 percent and the number of born globals by 61 percent, while the other restrictions had little effect on the total number of born globals (merely reducing the share of born globals by 0.1 percent).

*Table 1* Total number of firms, exporters and born globals under various sample restrictions, Swedish manufacturing firms born 2001–2008.

Sample restriction	Total number of firms	Total number of exporters	Total number and share of born globals
1. No restriction	37,719	7,501	4.4% (1,671)
2. (1) + not spinout	27,073	3,451	2.4% (649)
3. (2) + not foreign-owned	26,848	3,340	2.3% (608)
4. (3) + less than 50 employees	26,832	3,330	2.3% (607)
5. (3) + less than 20 employees	26,739	3,289	2.3% (602)

*Notes:* Sample restriction criteria use information for the year that the firm is founded.

*Table 2* Descriptive statistics for six-year-old exporting firms under various sample restrictions, Swedish manufacturing firms born 2001–2008.

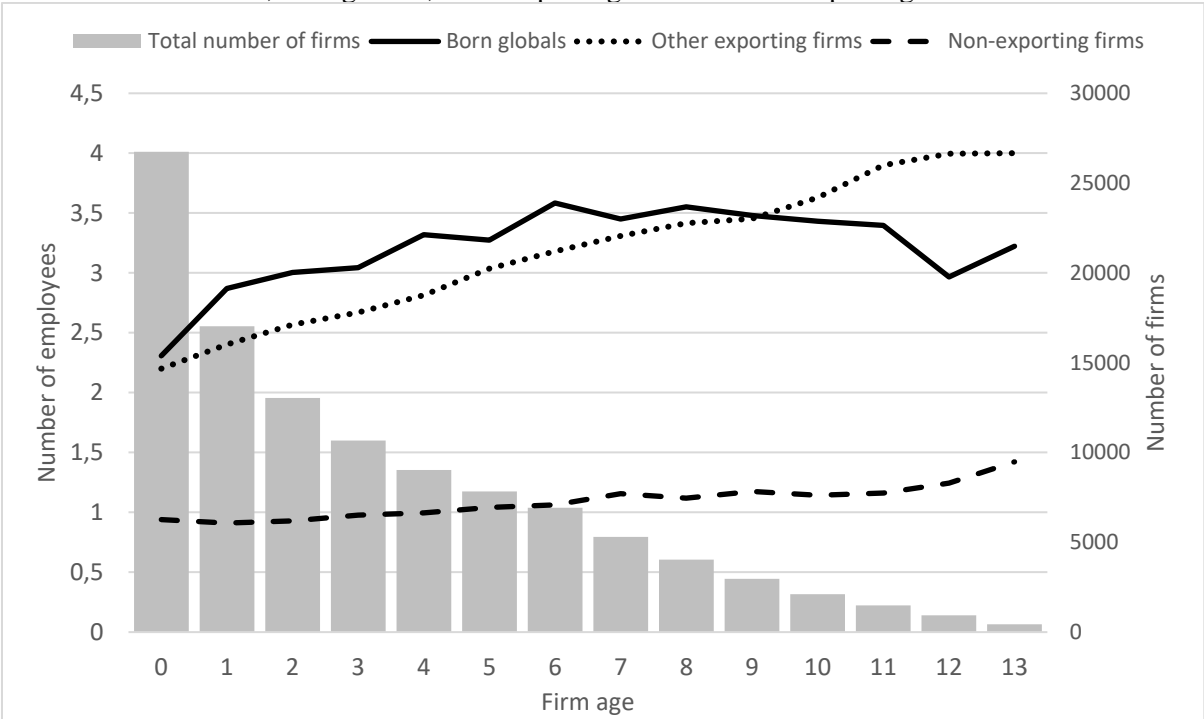
Variable (Averages)	No restriction	+ remove spinouts	+ not foreign-owned	+ < 50 employees	+ < 20 employees
Employees	35.2	3.6	3.5	3.5	3.3
Sales (million SEK)	89.0	6.7	6.3	6.3	5.9
Value added (million SEK)	25.4	2.1	2.0	2.0	1.9
Share educated workers	0.16	0.18	0.18	0.18	0.18
Capital stock (million SEK)	19.1	1.1	1.0	1.0	0.9

*Notes:* Sample based on firms included in column (5) of Table 3. Workers are defined as college-educated if they have completed at least two years of post-secondary education. Sample restriction criteria use information for the year that the firm is founded.

Descriptive statistics are presented in Table 2, where we report the sample averages for the firm size measures and control variables under different sample restrictions for six-year-old exporting firms born 2001–2008 in the manufacturing sector. Table 2 highlights the importance of removing spinouts from the population of born globals in order to avoid erroneous conclusions. When spinouts are removed the average number of employees falls by

90 percent, and average sales and value added falls even more. Firm size in terms of employees, value added and sales suggest that new Swedish manufacturing exporters are small, averaging less than four employees, and value added and sales of around SEK 2 and 6 million, respectively, once spinouts are removed.<sup>5</sup> The firm size measures and capital stock decrease only marginally as more restrictions are applied to the sample despite that foreign-owned firms and spinouts tend to be larger than new firms. The share of college-educated employees remains stable across different sample restrictions.

Figure 1 Average employment and number of firms by firm age, Swedish manufacturing firms born 2001–2008, born globals, other exporting firms and non-exporting firms.



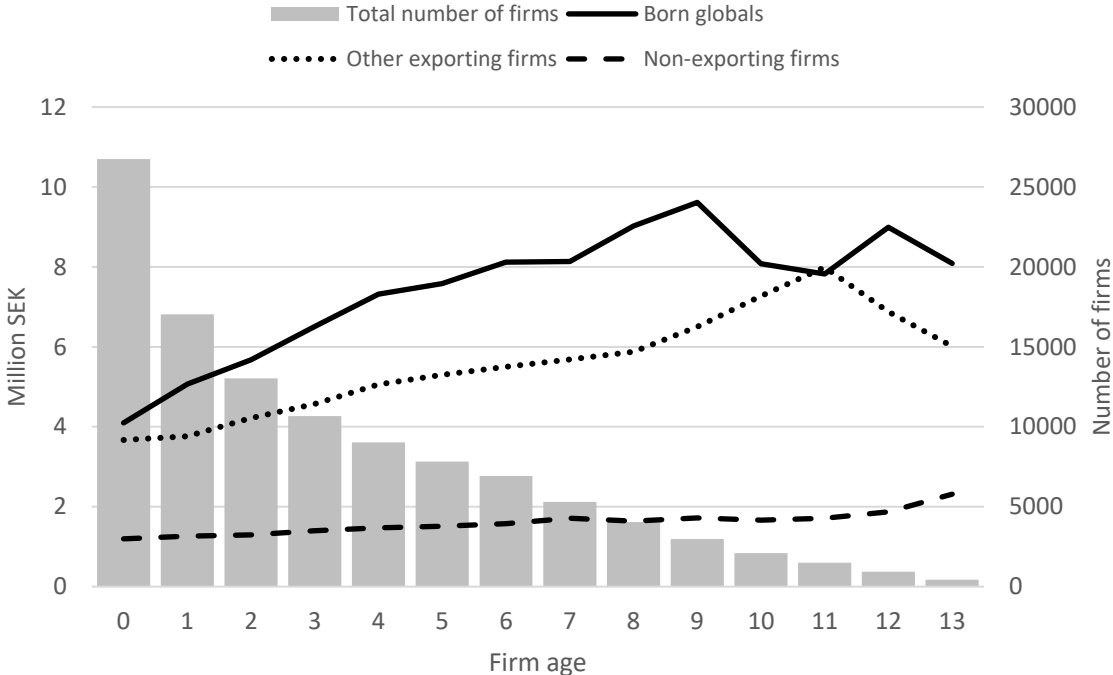
The average number of employees per firm among born globals, other exporting firms and non-exporting firms in our final sample is illustrated in Figure 1. The figure suggests that born globals employ slightly more workers compared to other exporting firms early in life, but employment growth becomes stagnant among born globals that are six years old or more. In contrast, employment among other exporting firms grows continually and surpasses born globals after nine years. Employment among non-exporting firms is much lower, suggesting that other exporting firms are a more relevant control group than non-exporting firms. The bars in Figure 1 show that the number of firms in the sample decreases with firm age, which is due to a combination of exits and truncation due to the fact that we only observe firms until 2014, regardless of age. These results are at odds with Grazzi and Moshella (2018), who find

<sup>5</sup> The differential between average sales and value added indicates that as much as two thirds of sales by exporting firms consists of purchased inputs, some of which may be imported. To the extent that this is true, net exports by born globals is commensurately lower.

that young firms and born globals in Italy grow faster than older and larger firms in terms of employment.

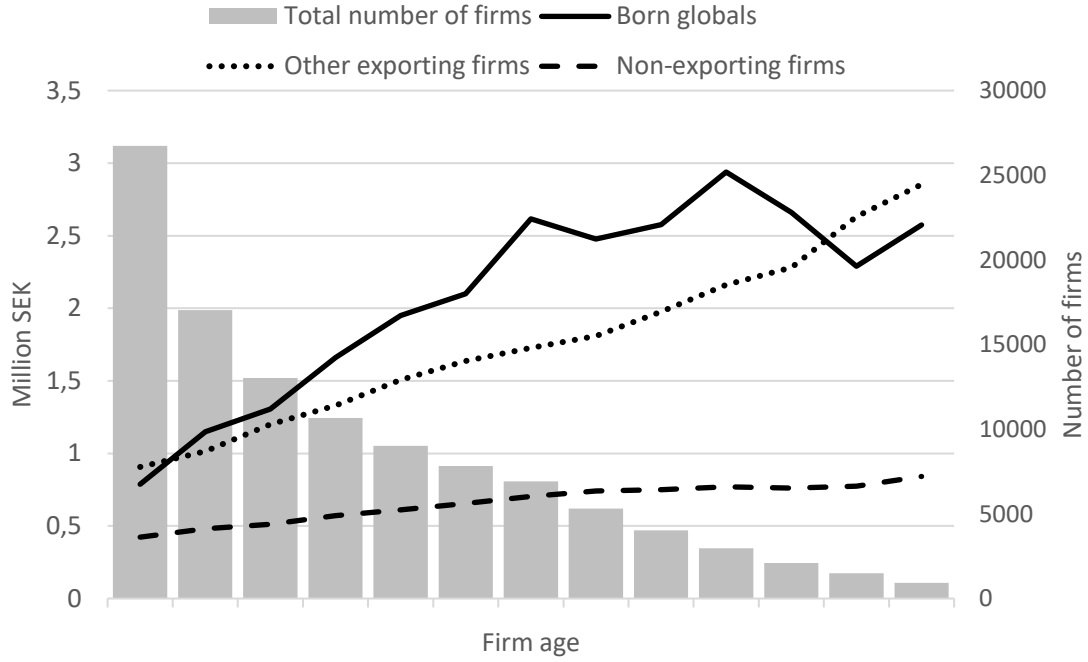
The average sales and value added among born globals, other exporters and non-exporting firms under our final sample is presented in Figures 2 and 3, respectively. We find that born globals’ sales and value added is initially higher than other exporting firms, but other exporters grow faster in the long run and eventually catch up to born globals by the age of 10.

*Figure 2* Average sales and number of firms by firm age, Swedish manufacturing firms born 2001–2008, born globals, other exporting firms and non-exporting firms.



Note: USD 1 ≈ SEK 8.

Figure 3 Average value added and number of firms by firm age, Swedish manufacturing firms born 2001–2008, born globals, other exporting firms and non-exporting firms.



#### 4.2 Empirical approach

We test whether born global firms born between 2001 and 2008 are larger than other exporting firms six years after birth. We thus perform a cross section regression analysis at the firm-level using OLS, which takes the following form:

$$\log(Size_{i,t+6}) = \alpha + \beta(BornGlobal_i) + \delta_t + \delta_s + \varepsilon_{it}, \quad (1)$$

where  $Size_{i,t+6}$  is the size proxy for firm  $i$  six years after birth. We regress equation (1) separately using employees, sales and value added as measures of firm size. The main explanatory variable of interest is the born global indicator variable,  $BornGlobal_i$ , which equals one if firm  $i$  meets the born global criteria and takes a value of zero otherwise. We include a set of calendar year indicators,  $\delta_t$ , which control for the impact of year-specific factors on firm size, such as the business cycle. We also include a set of 2-digit NACE rev.1.1 industry fixed effects,  $\delta_s$ , which control for the fact that certain industries were more likely to grow than others during the 2001–2014 period.

Since we log the firm size measures, a positive point estimate for the born global indicator variable indicates that born globals are  $(e^\beta - 1) \cdot 100$  percent larger in size compared to other exporters. The null hypothesis is that there is no size difference in terms of employment, sales or value added compared to other exporting firms.

## 5. Results

Our estimations of the size premium of born globals compared to other exporters in manufacturing are presented in Table 3. All specifications include year fixed effects and 2-digit NACE rev1.1 industry fixed effects.

Table 3 Regression results, born globals versus other exporting firms.

Panel A: log(employees)					
	No restriction (1)	+ remove spinouts (2)	+ not foreign-owned (3)	+ < 50 employees (4)	+ < 20 Employees (5)
<i>BornGlobal<sub>i</sub></i>	0.634*** (0.0697)	0.0117 (0.0785)	-0.00501 (0.0792)	-0.00501 (0.0792)	0.0113 (0.0793)
Observations	2,695	955	930	930	923
<i>R</i> <sup>2</sup>	0.091	0.058	0.055	0.055	0.056
Panel B: log(sales)					
	No restriction (1)	+ remove spinouts (2)	+ not foreign-owned (3)	+ < 50 employees (4)	+ < 20 Employees (5)
<i>BornGlobal<sub>i</sub></i>	0.933*** (0.0912)	0.248* (0.129)	0.229* (0.128)	0.229* (0.128)	0.242* (0.128)
Observations	3,016	1,206	1,180	1,180	1,173
<i>R</i> <sup>2</sup>	0.131	0.105	0.101	0.101	0.104
Panel C: log(value added)					
	No restriction (1)	+ remove spinouts (2)	+ not foreign-owned (3)	+ < 50 employees (4)	+ < 20 Employees (5)
<i>BornGlobal<sub>i</sub></i>	0.815*** (0.0882)	0.168 (0.130)	0.163 (0.127)	0.163 (0.127)	0.176 (0.128)
Observations	2,935	1,163	1,137	1,137	1,130
<i>R</i> <sup>2</sup>	0.126	0.114	0.107	0.107	0.108

Notes: Age fixed effects and 2-digit NACE rev1.1 fixed effects included in all specifications. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Panels A, B and C in Table 3 present the results using logged employees, sales and value added, respectively, as measures of firm size. In column (1) we estimate the size premium associated with born globals without any sample restrictions. In column (2) we estimate the size premium of born globals after removing spinouts so that the sample includes only true startups. In column (3) we present the regression results after removing firms that are foreign-owned in order to ensure that our results are not driven by foreign-owned affiliates.

In columns (4) and (5) we present the regression results after further restricting the sample to include only firms with less than 50 employees and 20 employees in their first year, respectively. We perform the employment restrictions in order to further ensure that our analysis is focused on true startups.

Panel A of Table 3 presents the results for employment. In column (1), prior to removing spinouts, we find a large and statistically significant employment premium associated with born globals. However, the premium vanishes once we remove spinouts from the analysis in column (2). This non-significant result persists across columns (3), (4) and (5) as we remove foreign-owned firms and firms with unusually high employment in their first year.

In Panel B of Table 3 we find a positive and statistically significant size premium in terms of sales, yet the degree of statistical significance and the magnitude of the point estimates hinge critically on the exclusion of spinouts. In column (1) we find that the sales of firms satisfying the born global export criteria are 170 percent  $((e^{0.933} - 1) \cdot 100 \approx 170)$  higher than other exporting firms, but once spinouts are removed the point estimates fall by three-quarters. The point estimates in column (5) suggest that born globals are only 27 percent  $((e^{0.242} - 1) \cdot 100 \approx 27)$  larger than other exporters in terms of sales. Moreover, statistical significance falls from the one percent level in column (1) to the ten percent level in columns (2)–(5). Keeping in mind the small average size of born globals shown in Table 2, it is clear that although the difference is weakly significant, it is economically marginal.

In Panel C of Table 3 we find a positive and statistically significant size premium in terms of value added before removing spinouts. However, we again find no statistically significant born global size advantage in terms of value added once spinouts are removed. Overall, the results of Table 3 suggest that born globals have no size advantage whatsoever in terms of employment and value added, and a slight and weakly significant size advantage in terms of terms of sales.

In Figures 4, 5 and 6 we present the results of the regression analysis by firm age. The results are based on regression equation (1), and each column illustrates the point estimate for the  $BornGlobal_i$  indicator variable and the corresponding 95 percent confidence interval. The first column of Figure 4 illustrates the regression results when the dependent variable is logged employment the year the firm is born (age = 0). We perform separate regressions for each age group in our data up to 13 years after birth. We perform these regressions by firm age in order to confirm that our results for the cohort of six-year-old firms are robust to varying the time horizon of our analysis. The gradient of these point estimates over firms' lifespans is also informative regarding the relative growth in employment, sales and value added for born globals versus other exporting firms in the long run.

Figure 4 Difference in employment by firm age, born globals versus other exporting firms.

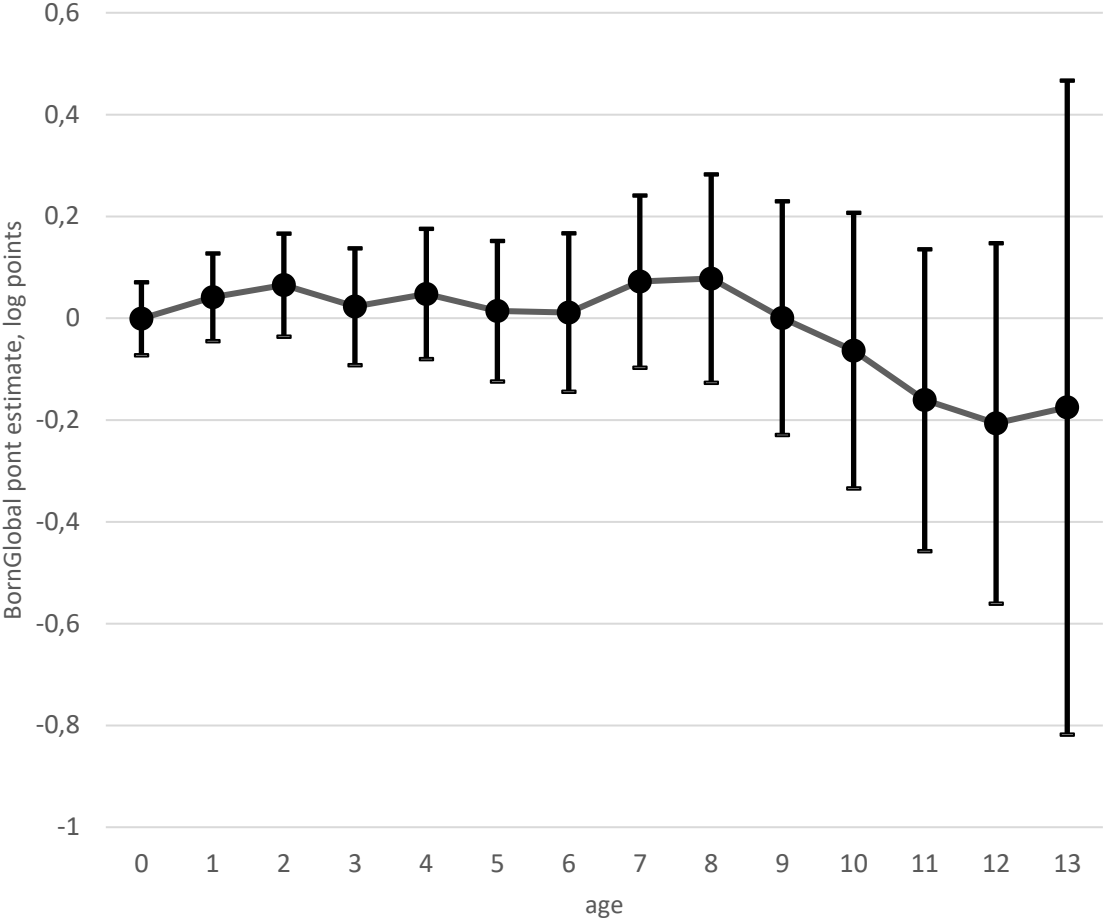
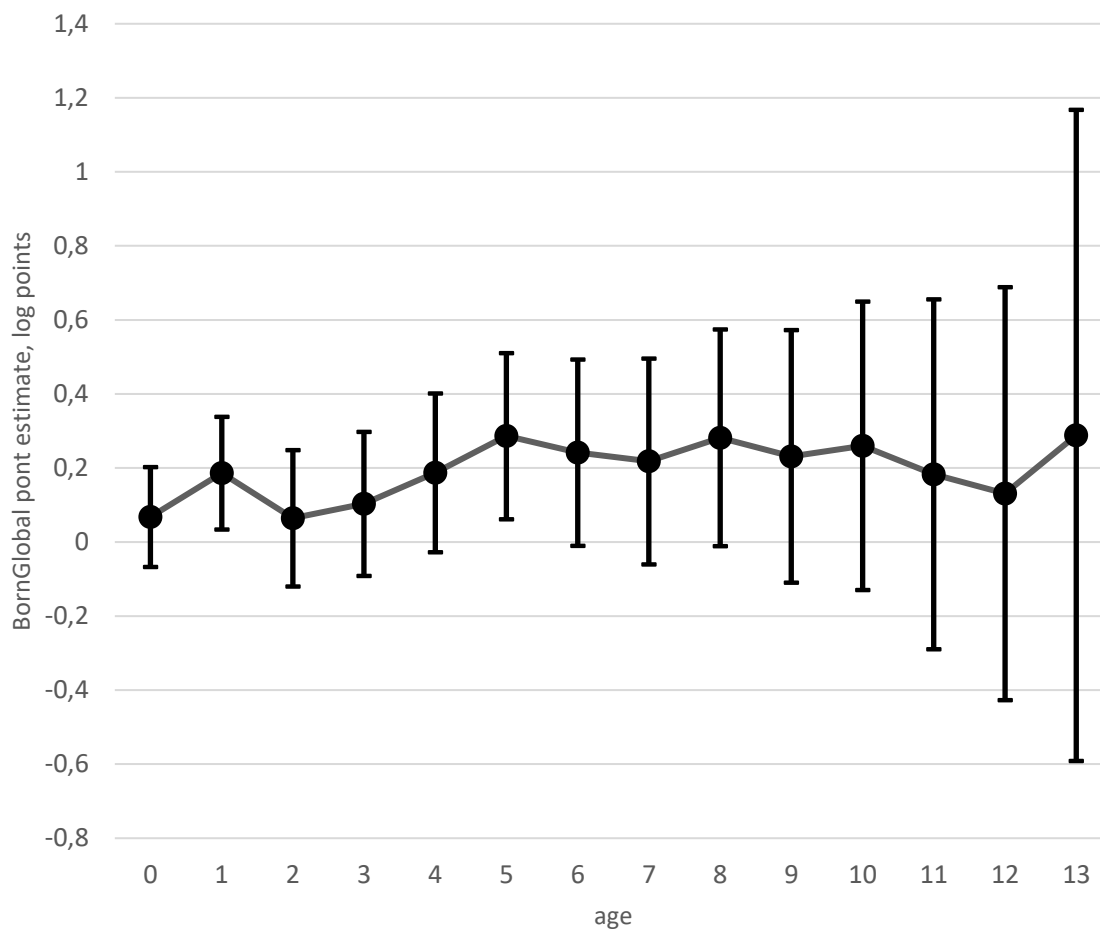


Figure 4 illustrates the regression results by firm age when logged employment is the dependent variable. The 95 percent confidence intervals spans zero in all specifications, which implies that the point estimate for the  $BornGlobal_i$  indicator variable is statistically insignificant at the five percent level across all age cohorts. The results in Figure 3 confirm that our earlier results for employment among six-year-old firms in Panel A of Table 3 are not sensitive to our choice of time horizon. The gradient of the point estimates suggests that employment growth among born globals is similar to other exporting firms in early stages and then falls behind in the long run, which corroborates our descriptive findings in Figure 1.

Figure 5 illustrates the regression results by firm age when logged sales is the dependent variable. We find that the 95 percent confidence intervals for the  $BornGlobal_i$  indicator variable spans zero in all specifications except for firms that are one and five years old. The gradient of the point estimates also suggests that sales growth among born globals is similar to that of other exporting firms over their lifespans.

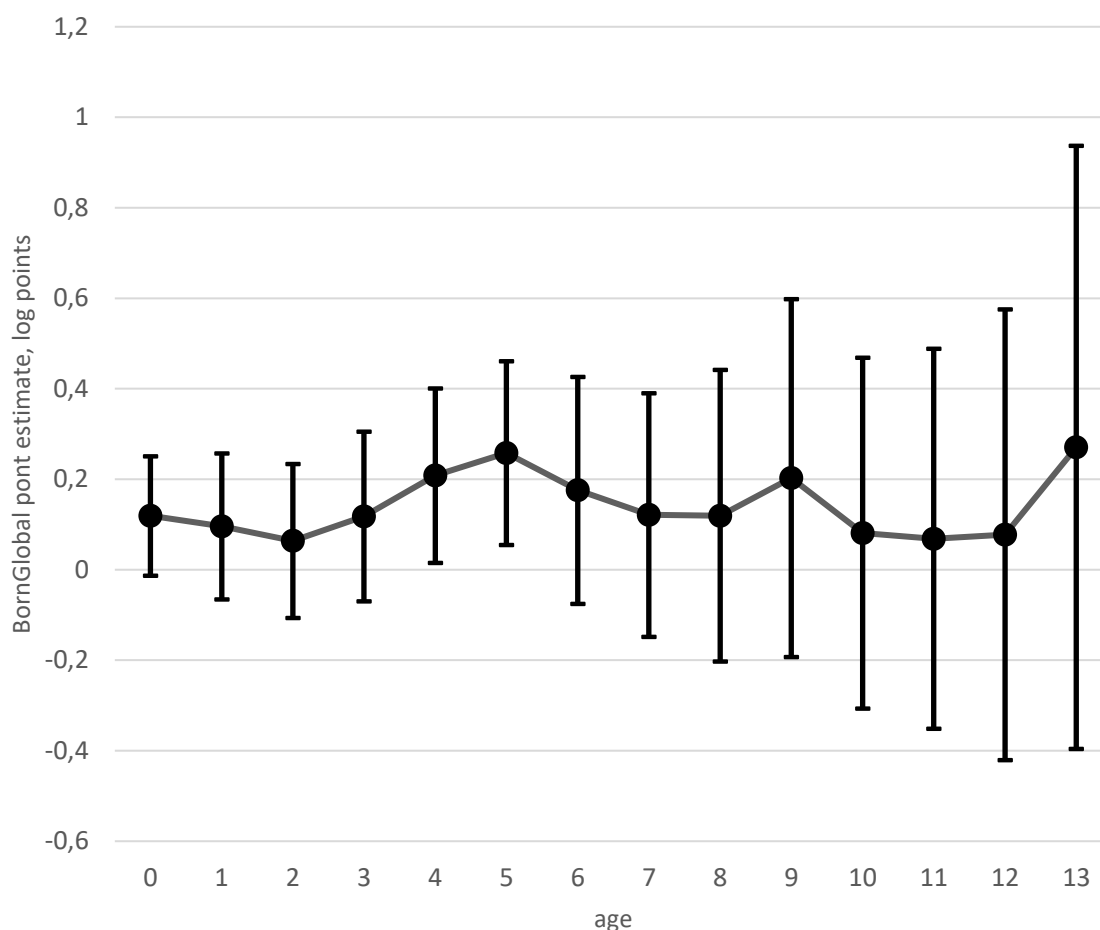
Figure 5 Difference in sales by firm age, born globals versus other exporting firms.



Finally, Figure 6 illustrates the regression results by firm age when logged value added is the dependent variable. We find that the estimate for the  $BornGlobal_i$  indicator variable is statistically different from zero only when firms are four and five years old, whereas the point estimates are statistically insignificant for all other firm ages. The evolution of the point estimates over time suggest that value added grows over time in a similar manner to other exporting firms. Overall, the results in Figures 3, 4 and 5 confirm that our earlier results for employment among six-year-old firms in Table 3 are not sensitive to our choice of time horizon.



Figure 6 Difference in value added by firm age, born globals versus other exporting firms.



In Figure A1 in the Appendix we check whether our results are robust to using a more export-intensive definition of born globals. In this robustness check we define born globals using a 50 percent-three-year rule, which is reasonable given that fact that Sweden is a relatively small economy. Approximately 300 exporters meet this stricter definition of born globals. The regression results by firm age, using logged employment as the size measure, are illustrated in Panel A. We once again find no statistically significant born global size advantage compared to other exporting firms among any age cohorts. The results using logged sales are illustrated in Panel B, where we find a statistically significant size advantage for born globals between eight and 10 years old. Finally, the regression results using value added are illustrated in Panel C, where we find a statistically significant size advantage among born globals aged, five, eight, 10 and 12. Overall, we find that the born global size advantage is highly sporadic using this stricter definition.

In Table A1 in the appendix we perform a panel regression similar to Choquette et al. (2017), where we include year, industry and firm age fixed effects. The point estimates for the born global indicator in the panel setting reflect percentage size advantage of born globals compared to other exporting firms over all ages. We find no statistically significant size

difference in terms of employees for born globals versus other exporting firms, regardless of whether we cluster standard errors at the firm level. We also find that born globals' size advantage is quantitatively small. Born globals are only 18 percent larger in terms of sales and 15 percent larger in terms of value added, with statistical significance dropping from the one percent to the five percent level when clustering standard errors at the firm level.

We draw two main conclusions from our results. First, if there is a born global size premium, it can be detected in terms of sales and value added but not in employment. Moreover, we find much smaller size premia compared to Halldin (2012) and Choquette et al. (2017). Halldin (2012) finds that born globals are between 98 and 122 percent larger than other exporting firms in terms of sales. Choquette et al. (2017) find that born globals are between 95 percent and 182 percent larger than other exporting firms in terms of sales. We thus fail to replicate the large born global size advantages found by Halldin (2012) and Choquette et al. (2017).

The weakly positive result for sales and value added may be due to the presence of economies of scale in production, whereby export growth leads to higher output among born globals but does not result in a corresponding increase in employment in these firms. Our results suggest that a less aggressive export strategy yields employment outcomes very similar to born globals.

## 6. Conclusion

Promoting the emergence and growth of born globals is seen in many circles as a desirable policy goal. Such advice is typically motivated by reference to studies claiming that born globals are disproportionately important for job creation and economic growth. As a result, such firms have become the target of policy interventions in many countries. We have analyzed whether born globals lead to higher employment, sales and value added in the long run. We study this question using detailed firm-level data on the universe of Swedish manufacturing firms born between 2001 and 2008, which allows us to follow firms for a period of up to 14 years.

Overall, our results do not suggest any evidence of a size or growth advantage associated with born globals in the Swedish manufacturing sector. Our results stand at odds with other studies using register data to study the performance outcomes of born globals. We show that the measured performance advantage of born globals hinges critically on restricting the sample to true startups, and excluding spinouts. Moreover, our results suggest that a born global export strategy is practiced by a small number of Swedish manufacturing firms; a mere 2.3 percent of all new manufacturing firms were born globals. Policymakers must therefore be aware that encouraging more born globals need not necessarily lead to large benefits for the overall economy, especially in terms of employment.

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# Appendix

Figure A1 Difference in employment, sales and value added by firm age, born globals defined using 50 percent three-year rule

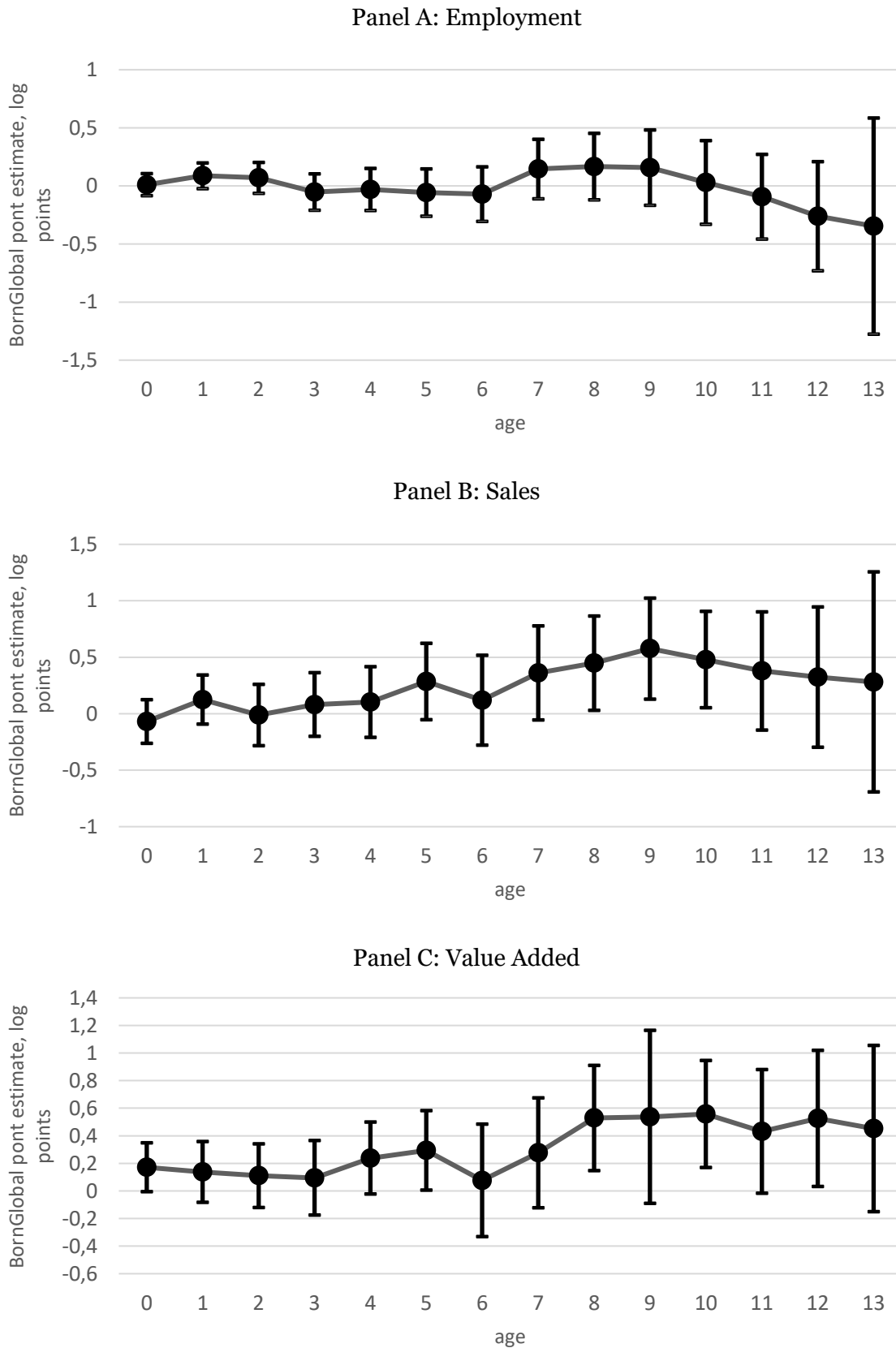


Table A1 Panel regression results, born globals versus other exporters.

	Log(employees)		Log(sales)		Log(value added)	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>BornGlobal<sub>i</sub></i>	0.0252 (0.0183)	0.0252 (0.0442)	0.163*** (0.0316)	0.163** (0.0736)	0.137*** (0.0308)	0.137** (0.0690)
Clustered standard errors	No	Yes	No	Yes	No	Yes
Observations	13,138	13,138	17,005	17,005	16,041	16,041
<i>R</i> <sup>2</sup>	0.046	0.046	0.090	0.090	0.113	0.113

Notes: Same sample restrictions as column (5) in Table 3. Age fixed effects, year fixed effects and 2-digit NACE rev1.1 fixed effects included in all specifications. Robust standard errors in parentheses, clustered at firm level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .