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Dissecting the German export miracle: Plant-level evidence

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ABSTRACT

Wage moderation in Germany is often cited as a major cause of its recent export success. We construct competitiveness measures at both industry and plant level using OECD STAN data in order to confront this hypothesis with empirical evidence. Our results show that plants' export intensity is positively correlated with German competitiveness. Exploiting a plant-level competitiveness measure, we use a corner solution model that enables us to decompose the total effect into its component effects at the intensive and extensive margins. Our results indicate a positive and significant effect of competitiveness at both margins, but this turns out to be insignificant before the introduction of the Euro. A one standard deviation increase in a plant's competitiveness (about 70%) is associated with a 2% higher probability to become an exporter. At the intensive margin, the same increase in competitiveness leads to a 0.49 percentage point increase in export intensity.

1. Introduction

The recent surge of German exports is surrounded by a heated debate on the causes and consequences of this so-called "export miracle". Opponents argue that Germany has enforced a series of policy reforms that have led to wage moderation and thus increased international competitiveness

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at the expense of its trading partners, especially within the Eurozone (cf. Lagarde, 2010).[1] While the broader political debate focused on the role of diverging unit labor costs for growing current account imbalances, the "export miracle" also provokes questions about the driving forces of export activity. It is commonly acknowledged that exporting firms are distinctly different from their non-exporting competitors. Bernard et al. (1995) and Bernard and Jensen (1999) documented for the US manufacturing industry that exporting firms are larger, more productive and pay higher wages than their national counterparts.[2] The seminal work by Melitz (2003) provides a tractable theoretical model that is able to explain these stylized facts by allowing for firm heterogeneity due to firm-specific productivity levels. While there is broad empirical support for this mechanism,[3] the economic profession is surprisingly quiet about the role of competitiveness for sorting into exporting.

It is the purpose of this paper to fill this gap by investigating the role of unit labor costs as a measure of competitiveness for the export activity of German plants. Therefore, we construct a proxy for competitiveness that comprises both productivity and labor costs. Higher productivity and/or lower labor costs make plants more efficient, indicated by a higher level of competitiveness. Moreover, we argue that the export promoting effect of competitiveness may be driven at two different margins. A rise in competitiveness may increase the probability of a plant to switch from the sole domestic supply regime to the exporter regime (extensive margin), or it may be associated with a surge in the export intensity of already exporting plants (intensive margin). In our view, German plants are highly interesting for analyzing these questions mainly for two reasons. First, German firms and plants have been particularly active in exporting in the recent past. In the period 2000–2010, the German export volume has increased by about 60% and surpassed the level of one trillion Euro for the first time in 2012 (cf. Statistisches Bundesamt, 2012). Secondly, at the same time, a number of structural reforms has been initiated on the German labor market. It is therefore often argued that these labor market reforms have increased the competitiveness of German firms and plants on international markets relative to their competitors from abroad.

In the first step of our analysis, we construct two measures of competitiveness. We compute unit labor costs per plant based on the information in the IAB establishment panel. Similarly, we derive a measure of competitiveness at the sectoral level by using OECD STAN data. Our analysis is closely linked to two recent studies by Davis and Harrigan (2011) and Harrigan and Reshef (2011), who extend the Melitz framework by modeling sorting into export according to productivity and labor costs, both drawn from a joint distribution. We regress the export share of German plants on our two measures of competitiveness. Since our endogenous variable is a fractional variable with a probability mass at zero it is not appropriate to model this variable by OLS or a variant of it. This issue is extensively discussed in Papke and Wooldridge (1996) and has been applied to international trade by Wagner (2001). These papers suggest using a fractional Logit/Probit model. On the other hand, the existence of a corner solution problem suggests the use of a Tobit model. We chose to follow both approaches and compare the results, which are remarkably similar. Irrespective of the choice of model, our results show a positive and significant relationship between plant-level competitiveness and export activity. Plants that are characterized by lower unit labor costs relative to their average foreign competitors export more. To the best of our knowledge, our paper provides the first plant-level evidence on the role of both productivity and average wages as export determinants. Moreover, we use Tobit regressions in the spirit of Felbermayr and Kohler (2006), which allow us to decompose the total effect into its component effects at the extensive and intensive margins of trade. The Tobit model has the crucial advantage that both effects can be estimated simultaneously. Of course, the Tobit model is appropriate only if we believe that the data generating process is the same at both margins. Put differently, we are postulating that the forces that drive firms' exporting behavior at both margins are identical. Following this approach we are able to report robust evidence on the export-promoting

[1] During an interview with the Financial Times, Lagarde stated: "The issue at hand is really one of competitiveness. Clearly Germany has done an awfully good job in the last 10 years or so, improving competitiveness, putting a very high pressure on its labor costs. When you look at unit labor costs to Germany, they have done a tremendous job in that respect. I'm not sure it is a sustainable model for the long term and for the whole of the group."

[2] Similar results were found for other countries like Germany (cf. Bernard and Wagner, 1997) and Taiwan (cf. Aw and Hwang, 1995).

[3] For an excellent survey on this topic, see e.g. Bernard et al. (2011).