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European Data Watch

This section offers descriptions as well as discussions of data sources that are of interest to social scientists engaged in empirical research or teaching courses that include empirical investigations performed by students. The purpose is to describe the information in the data source, to give examples of questions tackled with the data and to tell how to access the data for research and teaching. We focus on data from German speaking countries that allow international comparative research. While most of the data are at the micro level (individuals, households, or firms), more aggregate data and meta data (for regions, industries, or nations) are included as well. Suggestions for data sources to be described in future columns (or comments on past columns) should be send to: Joachim Wagner, Leuphana University of Lueneburg, Institute of Economics, Campus 4.210, 21332 Lueneburg, Germany, or e-mailed to ⟨wagner@leuphana.de⟩. Past "European Data Watch" articles can be downloaded free of charge from the homepage of the German Council for Social and Economic Data (RatSWD) at: http://www.ratswd.de.

New Data from Official Statistics for Imports and Exports of Goods by German Enterprises

By Joachim Wagner

1. Introduction

Germany is one of the leading actors on the international markets for goods. According to the *World Trade Report 2013* published by the World Trade Organization it was number three (after China and the United States) in the ranking of countries by the value of both exports and imports in merchandise trade in 2012 (see Word Trade Organization, 2013, Appendix Table 1.2). International trade is of high relevance for the German economy as a whole, for its regions, industries, and firms. Reliable information on international trade activities, therefore, is important for empirical analyses in many areas of economics

including business cycles, structural change, and economic growth. Data on total exports and imports, and on exports and imports by goods traded and countries trades with, are published on a regular basis by the German Statistical Office.

While these published aggregate data from official statistics are important for a birds-eye view of international activities, disaggregated data for the actors on international markets – the firms trading goods with partners in foreign countries – are needed for any in-depth analyses of the causes and consequences of exports and imports. For firms from manufacturing industries data on exports are available in the research data centers of the Statistical Office (see Malchin/Voshage, 2009). These data identify firms that export and have information about the value of total exports in a year, but they do not have any information about the goods exported and the countries of destination of the exports. Information about imports is even more scarce in these data. From the turnover tax statistics firms that imported in a year can be identified, but there is no information about the amount of imports, the goods imported and the countries of origin of the imports (see Vogel/Dittrich, 2008). In other words, we know from these data *who* trades, and in case of exports, *how much*, but not *what* and *with whom*.[1]

Information on the goods traded internationally and on the countries with which these goods are traded[2] is available from the statistic on foreign trade (*Außenhandelsstatistik*). This statistic is based on two sources. One source is the reports by German firms on transactions with firms from countries that are members of the European Union (EU); these reports are used to compile the so-called *Intrahandelsstatistik* on intra-EU trade. The other source is transaction-level data collected by the customs on trade with countries outside the EU (the so-called *Extrahandelsstatistik*).[3] Data in the statistic of foreign trade are transaction-level data, i.e., they relate to one transaction of a German firm with a firm located outside Germany at a time. Published data from this statistic report exports or imports aggregated at the level of goods traded and by country of destination or origin.

For the reporting year 2009 these transaction-level data have been aggregated at the level of the exporting or importing firm for the first time. As of

[1] For surveys of empirical studies on exports and imports based on these firm-level data see Wagner (2011, 2012a).

[2] Note that in Germany information on international trade in services is compiled by the German Central Bank (*Deutsche Bundesbank*) to build the balance of services trade (*Dienstleistungsbilanz*).

[3] Note that firms with a value of exports to and imports from EU-countries that does not exceed 400,000 Euro in 2009 do not have to report to the statistic on intra-EU trade. For trade with firms from non-member countries all transactions that exceed 1,000 Euro are registered. For details see Statistisches Bundesamt (2011).

today, these data are available for the reporting years 2009 to 2011. This paper describes the information that is in these new firm level data on exports and imports in section 2. Section 3 summarizes results from selected empirical investigations that have used these data to give an impression of the value of these data for research on the structure, determinants and consequences of merchandise trade. Section 4 describes how these confidential firm level data can be accessed by researchers.

2. Information in the data

For each exporting or importing firm that reported in a year either to the statistic on intra-EU trade,[4] or to the statistic on trade with countries outside the EU, the data include the following information for exports and imports in trade with EU-member countries and other countries:

- Number of traded goods
- Total value of traded goods
- Product number of each traded good
- Value of each traded good
- Quantity of each traded good
- Number of countries traded with
- Name of countries traded with

Note that these data have no further information about the trading firm. Using the firms' registration number for turnover tax statistics these data were matched with the enterprise register system (*Unternehmensregister-System*, or URS). From this register information on the detailed industry affiliation of the firm, the German federal state where the firm is located, and the number of employees in the firm is matched with the data on exports and imports.

Based on the enterprise identification number in the register system it is possible to match the data described above with data from other surveys from official statistics. A case in point is the firm level data from the so-called AFiD panel industrial enterprises (described in detail in Malchin / Voshage, 2009). These data have information about, among others, total sales, investment, spending on research and development, and turnover profitability.

[4] Note that information for firms with a value of exports to and imports from EU-countries that does not exceed the threshold value for reporting is not covered in the data (see footnote 3). Small exporters and importers that trade with EU-countries only are therefore underrepresented in the sample. Presumably, many of these are firms that trade only one good (or a very small number of goods) with one country (or a very small number of countries).

Furthermore, information from the enterprise register system can be used to match the data on exports and imports with information on the enterprises that is taken from other publicly available sources. A case in point here is information about the credit worthiness of firms that are supplied by a commercial credit rating agency.[5]

3. Results from selected empirical investigations

These newly available data have been used to uncover new facts and to test theoretical hypotheses of the relationship between different export and import activities on the one hand and various dimensions of firm performance on the other hand.

Some studies use the data described here to uncover hitherto unknown empirical facts on exports and imports. Using data for 2009 Wagner (2012b) shows that in German manufacturing industries many firms export and import simultaneously; that many firms trade only a small number of different goods, but many firms trade a large number of different goods; that many firms trade only with firms from a small number of countries, but many firms trade with a large number of countries; that both exports and imports are highly concentrated – a small share of firms is responsible for the lion's share of international trade; and that both exports and imports are dominated by firms that trade many goods with many countries.

Wagner (2013a) documents for the first time the contribution of adding (and dropping) goods and countries of origin to the sharp increase in imports of goods in the German economy as a whole during the Great Import Recovery in 2009/2010. The empirical investigation finds that firms that imported in both 2009 and 2010 are much more important for the import dynamics than import starters and import stoppers. Firms that increased their imports (and that were the drivers of the import boom) imported on average more goods and from more countries of origin in 2009 than firms that decreased their imports, and they increased both extensive margins of imports on average while firms with decreased imports reduced both the number of goods exported and the number of countries of origin.

A stylized fact from the emerging literature on the micro-econometrics of international trade and a central implication of the heterogeneous firm models from the new new trade theory is that exporters are more productive than non-exporters. It is argued that this exporter-productivity premium is due to extra cost of exporting that can be covered profitably by more productive firms only.

[5] For a discussion of how to combine firm level data from official statistics and firm level data from external sources see Wagner (2010).

Germany is a case in point – exporting firms from manufacturing industries are more productive than non-exporting firms from the same 4-digit industry both on average and over the whole productivity distribution. However, many firms from the lower end of this distribution are exporters. Wagner (2013b) uses data on exports of German manufacturing firms to document that these low-productivity exporters are not marginal exporters defined according to the share of exports in total sales, or export participation over time, or the number of goods exported, or the number of countries exported to.

Other studies go beyond descriptive analyses and use the data for empirical tests of theoretical hypotheses. Bernard / Redding / Schott (2011) present a general equilibrium model of multi-product, multi-destination firms that has the following testable implications: In a firm both the number of products exported and the number of export destinations are positively related with total exports, exports of the largest product across all markets, and productivity. Wagner (2012c) uses the data on exports for manufacturing firms from Germany to test these implications empirically. Results are fully in line with the theoretical hypotheses and with the findings reported by Bernard / Redding / Schott (2011) for the U. S.

Raff / Wagner (2014) examine how foreign ownership of a firm affects the variety of goods that a firm exports and the number of countries it trades with. They construct a theoretical model of how foreign ownership may affect these extensive margins of export and take this model to the data described here in this paper. In line with theoretical predictions they find that foreign-owned firms do export more goods to more countries after controlling for firm size, productivity and industry affiliation, with foreign-owned firms exporting up to 39 percent more goods to up to 31 percent more countries.

Several papers use the data for econometric analyses of the links between export and import activities on the one hand and various dimensions of firm performance on the other hand. Wagner (2015) finds that a better credit rating score is positively related to extensive margins of import – firms with a better score have a higher probability to import, they import more goods and they source from more countries of origin. Wagner (2014) reports that profits tend to be larger in firms with less diversified export sales over goods and in firms with more diversified export sales over destination countries.

The empirical studies summarized here, and a couple of other papers that use these data,[6] demonstrate that the newly available detailed data on exports and imports of German firms can be used to uncover new facts and to enhance our understanding of the causes and consequences of international trade considerably.

[6] A synopsis of papers that used these data until mid-2014 is published as an appendix to the working paper version that is available at http://www.leuphana.de/institute/ivwl/publikationen/working-papers.html (see No. 306).

4. Data access

The newly available data on exports and imports of enterprises that are based on information from transaction level data collected for the statistics on foreign trade are not yet available as a standardized product in the research data centers of the Statistical Offices. Researchers who want to work with these data instead have to send an application to the research data center with a detailed description of the variables needed for their research project.[7] Based on this application a tailor-made data set will be build by the staff of the center that can be accessed by researchers either inside the research data center or via remote data processing.[8]

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[7] For further information (including information on the costs of the data access) contact the research data center of the German Federal Statistical Office at <forschungsdatenzentrum@destatis.de>.

[8] Note that a so-called Campus File of these data that can be used for teaching purposes is not yet available.

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