Schmollers Jahrbuch 134 (2014), 477 – 486
Duncker & Humblot, Berlin

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.

Deutsche Bundesbank's Statistics on International Trade in Services: the Dataset and its Potential

By Elena Biewen and Simone Schultz[1]

1. Introduction

In recent decades the importance of services as well as international service trade has increased tremendously. Worldwide cross-border trade in services as a fraction of GDP rose from about 7% in 1975 to 12% of worldwide GDP in 2013.[2] For Germany – the third largest exporter (after the United States and the

[1] This paper represents the authors' personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank.

[2] See http://data.worldbank.org/indicator/BG.GSR.NFSV.GD.ZS (accessed in January 2015).

United Kingdom) and importer (after the United States and China) of commercial services (WTO, 2014) – the increase was even larger, from 6% to about 16% of GDP. In Germany, the service sector contributed 70% to total value added and employed 75% of all employees in 2013.[3] As recent empirical evidence shows, trade in services is not limited to firms in the service sector itself but spreads across firms from all industrial sectors (Breinlich/Criscuolo, 2011; Kelle/Kleinert, 2010). Furthermore, aggregate trade in services showed a different response to the financial crisis in 2007/2008. Compared to the goods trade, the decline in service trade was rather small – particularly in services that are not directly related to goods trade (Borchert/Mattoo, 2010) – indicating substantial differences between goods and services trade.

Despite the increasing importance of services and service trade, the empirical evidence on this research topic remains rather small. Furthermore, in the past most of the analyses were carried out using aggregate data. One of the main reasons for this was the lack of appropriate firm-level data.

In this paper, we introduce a unique micro dataset on German international services trade that has recently been made available for research purposes at the Deutsche Bundesbank and allows to analyze research questions regarding service trade in greater detail.

The structure of the paper is as follows. Section 2 describes the main characteristics of the database and presents its variables. Section 3 illustrates some descriptive statistics regarding the service trading activities of German firms. The possibilities of linking with other microdata of the Deutsche Bundesbank are described in Section 4. Section 5 gives an overview of the existing studies using the SITS. Finally, Section 6 gives information on the data access and Section 7 concludes.

A more comprehensive description of the dataset is given in Biewen/Blank/Lohner (2013). It also describes main patterns of cross-border service trade at the firm-level.

2. The Dataset: Main Characteristics

2.1 Main Information

The Deutsche Bundesbank recently began providing the research community with a unique dataset on German firms that are involved in international service trade: the Statistics on International Trade in Services, or SITS for short.

The SITS are collected by the Deutsche Bundesbank in order to compile Germany's Balance of Payments (BoP) Statistics. According to legal regula-

[3] See http://www.bmwi.de (accessed in January 2015).

tions, German residents have to report to the Deutsche Bundesbank service transactions with non-residents that exceed € 12,500 or its equivalent in another currency. The reporting requirement applies not only to non-financial firms but also to banks, public institutions, households and individuals. Furthermore, the Deutsche Bundesbank supplements the data with estimates for transactions that are below the reporting threshold and for some service categories for which the required methodology cannot be reported (e.g., transportation).

As the reporting threshold of € 12,500 is rather low, the dataset covers almost the entire population of German service traders and contains information regarding three out of the four modes of supplying services defined in the General Agreement on Trade in Services (GATS):[4]

- Mode 1 (*cross-border trade*): a supplier provides a service to a consumer from the country of his/her residence, e.g., via internet or telephone, while the consumer stays in his/her own country.
- Mode 2 (*consumption abroad*): a consumer moves to the country of the supplier to consume the respective service, e.g., travel, education abroad.
- Mode 4 (*presence of natural persons*): a supplier temporarily moves to the country of the consumer to provide the respective service.

As the definition of a service transaction in the SITS is based on the residence principle, mode 3 (*commercial presence*)[5] is not covered by the statistics because, in this case, both the supplier and the consumer of the service are residents of the foreign country.

2.2 The Data for Research

The SITS are available for research purposes as a panel dataset, currently covering the time period 2001–2012 at a monthly frequency.

The dataset provides detailed information on service transactions at the firm-level and contains the following variables:

- Year and month of the service transaction;
- Exported and imported values in thousand EUR;
- Types of the exported and imported services according to the classification of the Balance of Payments Manual (fifth edition)[6], e.g., transport services

4 However, the SITS do not allow the precise assignment of a service transaction to a certain GATS mode. For example, it is not possible to distinguish whether a service provided by a firm took place e.g., via mode 1 or mode 4.

5 e.g., services provided by a German-based firm through its affiliate abroad.

6 Since 2014 the classification of service types has changed due to conversion to the sixth edition of Balance of Payments Manual (BPM6).

with a very detailed breakdown of transport types, financial services, construction services, postal and communication services, patents and licences, R&D, IT services, etc.;

- Countries of destination or origin of services exports or imports;
- Industrial sector of firms according to NACE Rev. 1 and NACE Rev. 2 (available since 2008).

The transactions are generally reported according to the gross coverage principle, i.e., if firms undertake mutual transactions and then offset payments, they must report the values of the individual transactions rather than netted values payable to the trading partner. Taxes are also included in the reported transaction values.

The SITS that can be used for research purposes almost reflect the underlying raw data as collected by the Deutsche Bundesbank; only some minor changes were made. Estimated values as well as collective reports – i.e., several small reports of firms or individuals are bundled – were removed from the dataset. Therefore, the mere addition of individual service exports or imports of the SITS will not reproduce official aggregate statistics on international service trade provided by the Deutsche Bundesbank.

Furthermore, if both exports and imports had value zero, they were also excluded from the dataset. This is done in the case of cancellations of payments. Even though service transactions above € 12,500 must be reported, the data include some observations below this threshold. This may occur if firms / individuals voluntarily report transactions or if transaction values that had been mistakenly reported are corrected. The report of corrections is possible using two different procedures: 1) The total sum of the initial payment is cancelled, and the new correct amount then has to be reported as a new observation, or 2) It is also possible to report only the difference by which the initial payment is increased or reduced. Cancellations and corrections of incorrect payments may lead to negative exported or imported values. In order to correct this, exports and imports for each firm-year-month-service type-country observation have to be aggregated.

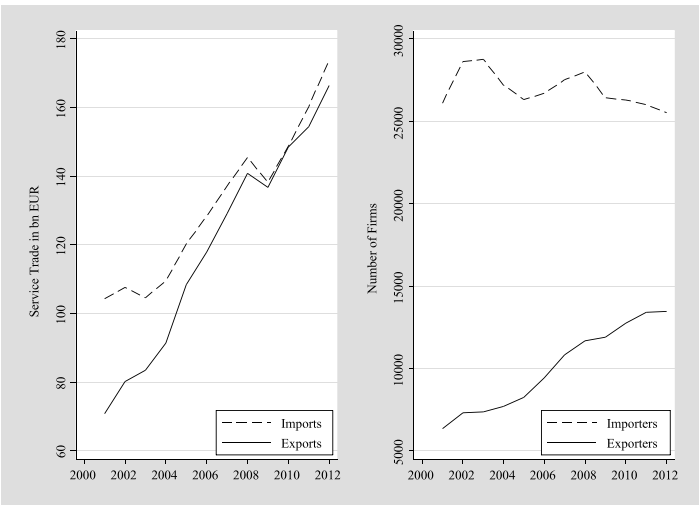
Activities of households, government services, private transfers, some items related to goods trade have still remained in the data and have to be excluded by removing the appropriate service types or industrial sectors if the researcher is interested in firms' activities only.

3. Some Descriptive Insights

In the following we present some descriptive statistics in order to give a first impression of the data. In this context we consider only firm activities.

Figure 1 confirms the increase and growing importance of service trade in general. Between 2001 and 2012, exports and imports of services increased by

about 140% and 70%, respectively. After a decline in 2008/2009 as a result of the great trade collapse, service trade growth continued to expand and exceeded the pre-crisis level. Starting at a lower point in 2001, exports increased to catch up with imports. Considering importing versus exporting firms, the dataset reveals a great difference in firm numbers. There are more importers than exporters of services. While the number of exporters constantly increases over the considered time period and doubles in ten years, the number of importing firms remains relatively stable and is even slightly declining since the crisis in 2008/2009. However, the number of importers is still nearly twice the number of exporters in 2012.

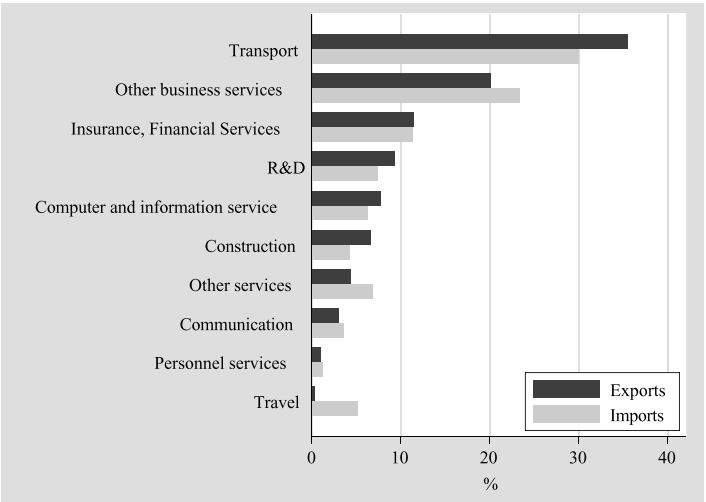


Database: SITS 2001–2012, authors' own calculations.

Figure 1: Imports vs. Exports of Services, Importers vs. Exporters of Services

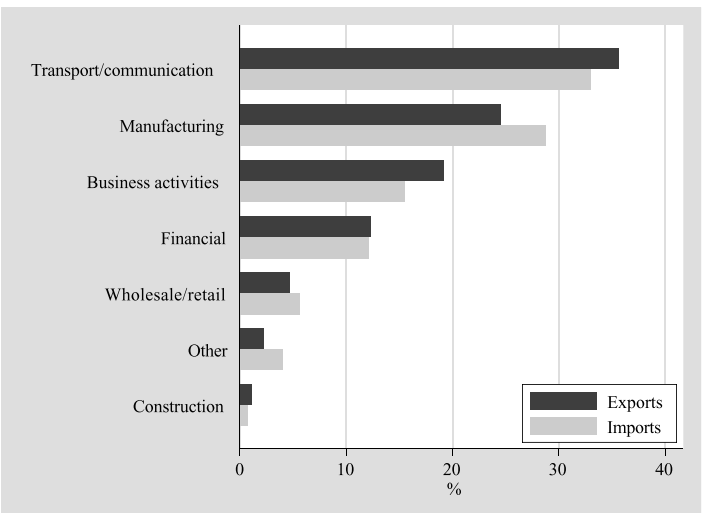
Figure 2 gives insight into the extent of the different service types that are exported or imported by firms. Transportation services account for the largest share of both exports and imports (about 35% of service exports and 30% of service imports documented in the SITS) followed by other business services (like engineering and other technical services, advertising, rents, commercial and administrative services) and insurance/financial services.

Figure 3 shows that firms from almost all industrial sectors are engaged in cross-border service trade. With a share of more than 30% in service exports as well as in service imports, the transportation and communication sector is most important. Remarkably, the manufacturing sector turns out to be one of the



Database: SITS 2001 – 2012, authors' own calculations.

Figure 2: Exports / Imports by Service Type



Database: SITS 2001 – 2012, authors' own calculations.

Figure 3: Exports / Imports by Industrial Sector

most important service traders and accounts for about a quarter of all service exports and 28 % of all service imports. This high share of imports of the manufacturing sector is possibly driven by the need for services as inputs in the production. A high share of exports by manufacturing firms may probably be explained by the fact that services like installation, maintenance, consulting or technical support complement sales of goods.

4. Matches with Other Microdata

As previously mentioned, the SITS mainly provide information on service transactions. Yet the firm information is limited to the industrial sector of the firm. In order to increase the research potential of the data, the SITS can be matched with other firm-level databases of the Deutsche Bundesbank. First of all, the SITS and the Microdatabase Direct Investment (MiDi)[7] use the same firms' reporting number and thus can be merged via this identifier. Therefore, the addition of the firm information, such as turnover, balance sheet total, number of employees, legal form of the German investor as well as detailed information on foreign direct investments enables more detailed analysis of multinational service traders. However, it should be noted that both datasets are not completely compatible and differ in reporting limits as well as in time dimensions. The MiDi reports annual FDI stock data and the SITS contain transaction data collected on a monthly basis.

The SITS may be enriched by balance sheet information as well as items of the profit and loss statements of German firms from the USTAN data.[8] However, contrary to the MiDi data the firm identification number in both datasets is not the same and the match can be realized by comparing firms' names and addresses. Since this task is very work-intensive for individual researchers, the staff of the Deutsche Bundesbank in cooperation with some visiting researchers carried out the matching of firm names and addresses from SITS / MiDi and USTAN. The match is available for the years 1996 to 2009. By providing the key of the matched identifiers of the databases, the match can be further customized by researchers according to their research interest.

5. Studies Using the SITS

In recent years, the increased availability of microdata on international trade in services allowed to analyze research questions regarding service trade in greater detail. First studies are focused on the general patterns of service trade

7 For more information on MiDi, see Lipponer (2003) and Lipponer (2011).

8 For more information on USTAN, see Stöss (2001).

and differences to trade in goods. Using a survey conducted among UK firms, Breinlich/Criscuolo (2011) report stylized facts on firm-level service trade. Analogous to evidence in studies for goods trade, they find that only a small number of UK firms are involved in international service trade and that those firms are generally larger, more productive and pay higher wages than non-traders. Furthermore, the differences among service traders in terms of traded values, number of services and partner countries are very pronounced. Thus, the description of service trade based on the behavior of an average firm can be misleading and does not give an adequate picture of firm-level service trade. Other studies include analyses for different countries, e.g., for Belgian firms (Ariu, 2012), for Italy (Federico/Tosti, 2012) and trading patterns of Austrian firms (Walter/Dell'mour, 2010). Some of these contributions study the importance of the intensive (e.g., exported or imported volumes per service type and country) and the extensive margin (e.g., the number of services and countries traded per firm) as drivers for the variation in aggregate service trade.

There is a small but growing number of empirical studies for Germany. Kelle/Kleinert (2010) use Germany's International Trade in Services Statistics for the year 2005 and confirm the findings for other countries that service trade is highly concentrated on a few large firms and is very heterogeneous across firms. Using the SITS for 2001–2012, Biewen/Blank (2014) look at the main drivers of variation in service trade across three dimensions: cross-sectional variation, variation over time and variation in growth rate. The authors also analyze the determinants of service trade volatility. In order to obtain comprehensive information on service traders that is not available in the SITS, researchers use the combined micro datasets SITS and MiDi. Kelle (2012) complemented these data by goods trade data at the industry-level and analyzes service exports of German manufacturing firms in service trade. Biewen/Harsch/Spies (2012) – using combined SITS-MiDi data complemented by information on cross-country and cross-sectoral occupational wages datasets – assess the determinants of service imports and examine the effects of internal cost pressure and external financial constraints on service imports. Kelle/Kleinert/Raff/Toubal (2013) examine the decisions of firms to export commercial services, in particular the channel (cross-border or through foreign affiliates) through which firms are likely to export services.

6. Data Access

The SITS as well as the other micro databases MiDi, USTAN or the match of these three datasets may be accessed on the premises of the Deutsche Bundesbank during a research visit at the Research Data and Service Centre (RDSC). Researchers interested in working with the data on international trade in services of German firms are asked to submit an application including an application form, a research proposal of the planned project, a cover letter, a

curriculum vitae with a list of research activities and sent it to fdsz-data@bundesbank.de. The application form can be downloaded from the homepage of the RDSC of the Deutsche Bundesbank. After receiving approval of the research project and data security officers' instructions regarding data protection, and after signing a formal agreement to keep the data confidential, the researcher can use the dataset.

7. Summary

The growing importance of services and international service trade in the global economy leads to an increasing research interest in this area. However, until recently research was hampered by the lack of firm-level data on service activities. This contribution introduces a novel dataset – Germany's Statistics on International Trade in Services (SITS) –, gives a brief description of the data and stresses its possibilities for research.

The SITS are provided by the Deutsche Bundesbank at a monthly frequency and can be used for research as a panel dataset from the year 2001 onwards. They contain detailed information on German cross-border service trade at the firm-level. As the reporting limit is rather low – international service transactions above € 12,500 – the dataset comprises almost the entire population of German service exporters and importers. The statistics provide new possibilities for research and give insights into the service trade patterns at the firm-level. Furthermore, research potential may be increased by combining the SITS with other microdata of the Deutsche Bundesbank, e.g., micro database on direct investments (MiDi) or balance sheet information from the USTAN.

References

Ariu, A. (2012): Services versus Goods Trade: Are They the Same?, Working Paper Research 237, National Bank of Belgium.

Biewen, E. / *Blank*, S. (2014): Variations in Service Trade, *mimeo*.

Biewen, E. / *Blank*, S. / *Lohner*, S. (2013): Microdatabase: Statistics on International Trade in Services, Technical Documentation, Deutsche Bundesbank.

Biewen, E. / *Harsch*, D. / *Spies*, J. (2012): The Determinants of Service Imports: The Role of Cost Pressure and Financial Constraints, Discussion Paper, No. 31 / 2012, Deutsche Bundesbank.

Borchert, I. / *Mattoo*, A. (2012): The Crisis-Resilience of Services Trade, Service Industries Journal 30 (13), 2115 – 2136.

Breinlich, H. / *Criscuolo*, C. (2011): International Trade in Services: A Portrait of Importers and Exporters, Journal of International Economics 84(2), 188 – 206.

Federico, S. / *Tosti*, E. (2012): Exporters and Importers of Services: Firm-level Evidence on Italy, Temi di discussione (Economic working papers) 877, Bank of Italy, Economic Research and International Relations Area.

Kelle, M. (2012): Crossing Industrial Borders: German Manufacturers as Services Exporters, Development Working Papers 329, Centro Studi Luca d'Agliano, University of Milano, revised 27 Mar 2012.

Kelle, M. / *Kleinert*, J. (2010): German Firms in Service Trade, Applied Economics Quarterly 56(1), 51 – 71.

Kelle, M. / *Kleinert*, J. / *Raff*, H. / *Toubal*, F. (2013): Cross-border and Foreign Affiliate Sales of Services: Evidence from German Microdata, The World Economy, Wiley Blackwell, vol. 36(11), pages 1373 – 1392, November.

Lipponer, A. (2003): Deutsche Bundesbank's FDI Micro Database. European Data Watch-Articles Schmollers Jahrbuch / Journal of Applied Social Science Studies 123, 593 – 600.

Lipponer, A. (2011): Microdatabase Direct Investment– MiDi a Brief Guide, Deutsche Bundesbank.

Stöss, E. (2001): Deutsche Bundesbank's Corporate Balance Sheet Statistics and Areas of Application, European Data Watch-Articles Schmollers Jahrbuch / Journal of Applied Social Science Studies 121, 131 – 137.

Walter, P. / *Dell'mour*, R. (2010): Firm Level Analysis of International Trade in Services, IFC Working Papers No 4.

World Trade Organization (WTO): International Trade Statistics 2014, http://www.wto.org/english/res_e/statis_e/its2014_e/its14_toc_e.htm.