

Improving the measurement of manufacturing services in Germany

Deutsche Bundesbank and Destatis

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Motivation



- Identification of possible data gaps in the reporting of manufacturing services in Foreign Trade Statistics (FTS) and Balance of Payments (BOP) statistics
- In 2018 the Deutsche Bundesbank and Destatis launched a project that linked microdata in order to cross-check the respective reporting population
- The project was conducted in three phases
 1. Clarification of the legal situation and of methodological and technical aspects
 2. Linking test data to get an initial impression of the reporting population
 3. Deep dive into major companies which report manufacturing service fees to the Bundesbank

Legal Situation

- Exchange of microdata between members of the European Statistical System (ESS) and the European System of Central Banks (ESCB) is currently not symmetrically regulated
- BOP Statistics: Council Regulation (EC) No 2533/98 allows the transmission of microdata from the Bundesbank to Destatis
- Transmission of confidential information from Destatis to the Bundesbank lacks a corresponding legal basis (EU FTS regulations do not foresee an exchange of data → therefore national law applies → no allowance to share data
- Implications:
 1. Linking of microdata to reconcile the reporting population of both statistics could only be conducted within the FTS division
 2. Project focuses on (major) companies which report manufacturing service fees to the Bundesbank
 3. Secondment from the Deutsche Bundesbank to Destatis was necessary
 4. Information on identified reporting companies that report to BOP statistics but whose reports are incorrect cannot be transmitted to the BOP Division of the Bundesbank

Methodological and technical framework

- Cross border production is often carried out as “manufacturing services“ (BOP) or “processing” (FTS) arrangements
- The methodological concepts of “manufacturing services” and “processing” are very similar, yet there are some deviations
 1. **Definition of manufacturing services** is broader (any transformation vs. major transformation)
 2. **Territorial coverage** (any processing where the processor receives a fee from the owner vs. cross border movement)
 3. **Valuation** (invoice value vs. statistical value)
 4. **Coverage rates** (in terms of thresholds)

- The linkage exercise has been conducted on the basis of two data sources
 - FTS  companies' reports (Intrastat) on commodity flows to and from Germany with NoTCs ('41'/'42' and '51'/'52')
 - BOP  direct reports to the Bundesbank referring to "contract manufacturing"
- The analysis was restricted to EU partner countries (Intrastat) due to the fact that the invoice value within Extrastat, collected by customs is transmitted to FTS as an aggregated value for all imports included in one declaration

Data linkage

General assumption: it is expected that companies which report flows of goods to FTS also report the related manufacturing services to BOP statistics

- Linkage problems:
 - reporting agents submit their reports to the respective statistics under different identifiers
 - to link these identifiers the Business Register was used: namely the business register number or the name and address
 - particular feature: different statistical units report!
 - in BOP statistics the legal unit has to report,
 - whereas in FTS the legal unit **or** the head of the VAT group is obliged to report
 - further conceptual deviations in the population
 - factoryless good producers whose goods do not cross the national border
 - withdrawals i.e. goods do not return to the country of the owner

Therefore, the number of companies reporting to BOP > the number of companies reporting to FTS

Aggregated-level analysis

1. Investigation of the reporting population in BOP statistics and FTS
2. Comparison of invoice value (FTS) and manufacturing fees (BOP)

Case I

Goods leaves the country for processing and fully return

Number of reporting agents:

FTS = BOP

Reported values:

FTS \geq BOP

Case II

Goods are processed abroad and sold abroad and/or intermediate goods are bought abroad

Number of reporting agents:

FTS < BOP

Reported values:

FTS \leq BOP

Aggregated-level analysis

Results

Overall, total values fit quite well

- In Inward processing: invoice value (FTS) EUR 1,584 million > manufacturing fees (BOP) EUR 1,356 million
- Outward processing: invoice value (FTS) EUR 2,627 million > manufacturing fee (BOP) EUR 2,619 million

At first sight, results suggest that goods which cross the border for processing fully return to the member state of the owner

- Is this the reality? A closer look is needed!

2. Matching rates have been low

- Inward processing: 7 out of 43 companies (16%)
- Outward processing: 29 out of 63 companies (46%)

Enterprise-level analysis

- Reference value: match between FTS and BOP statistics

	invoice value (FTS) ≥ manufacturing service (BOP)		invoice value (FTS) < manufacturing service (BOP)	
	Good fit* 50 % - 60 %	Bad fit* > 60 %	Good fit* 40 % - 49 %	Bad fit* < 40 %
Inward processing	3 out of 7	2 out of 7	n.a.	2 out of 7
Outward processing	7 out of 29	7 out of 29	6 out of 29	9 out of 29

$$* \textit{fit} = \frac{\text{invoice value (FTS)}}{\text{manufacturing service (BOP)} + \text{invoice value (FTS)}}$$

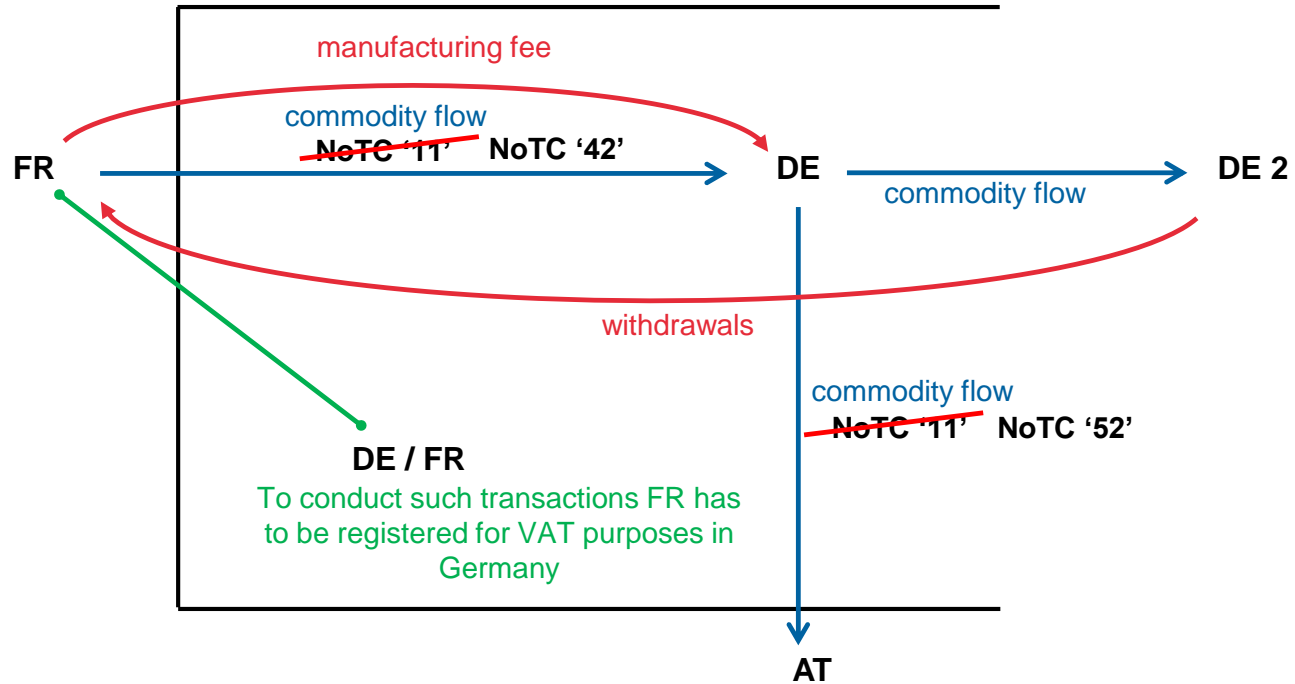
- Right hand site of the table shows that the original assumption - case I applies - must be rejected!

Contacting enterprises

- Finding technical, methodological or qualitative explanations for the low matching rates
- Focus on 20 major companies which report manufacturing service fees under the BOP system for each direction
- 18 out of 20 inward processors and 13 out of 20 outward processors were contacted via telephone

Inward processing		Outward processing	
Number of companies	Reason	Number of companies	Reason
17	methodological	2	False reporting FTS
1	couldn't be analysed	1	False reporting BOP
		1	BOP threshold
		9	methodological

Inward Processing

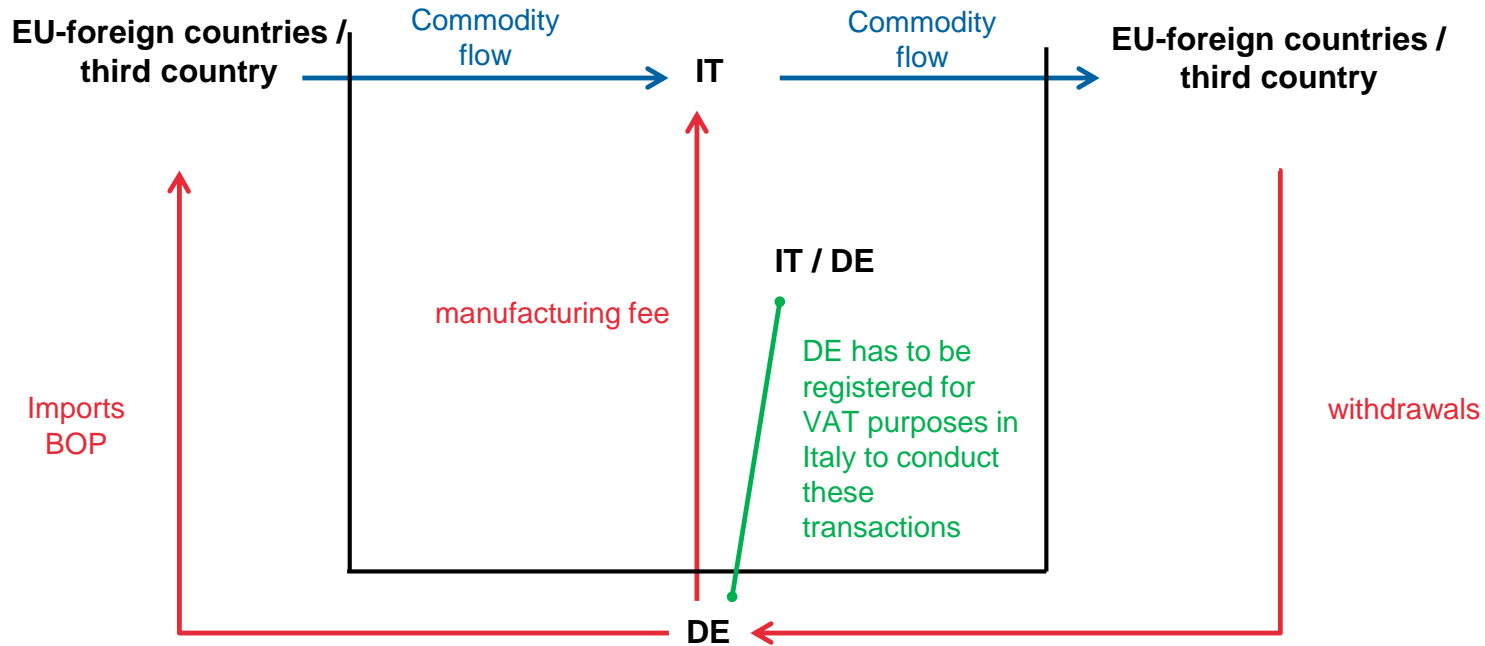


- Intrastat:**
- DE/FR
 - ~~NoTC '11'~~
 - NoTC '42/52'

- BOP Statistics:**
- for inward processing (manufacturing fee) (DE)
 - for withdrawals (DE2)

Goods returning to the initial Member State of dispatch **for** processing → NoTC '41'
 Goods not returning to the initial Member State of dispatch **for** processing → NoTC '42'
 Goods returning to the initial Member State of dispatch **after** processing → NoTC '51'
 Goods not returning to the initial Member State of dispatch **after** processing → NoTC '52'

Outward processing I



Intrastat:

DE

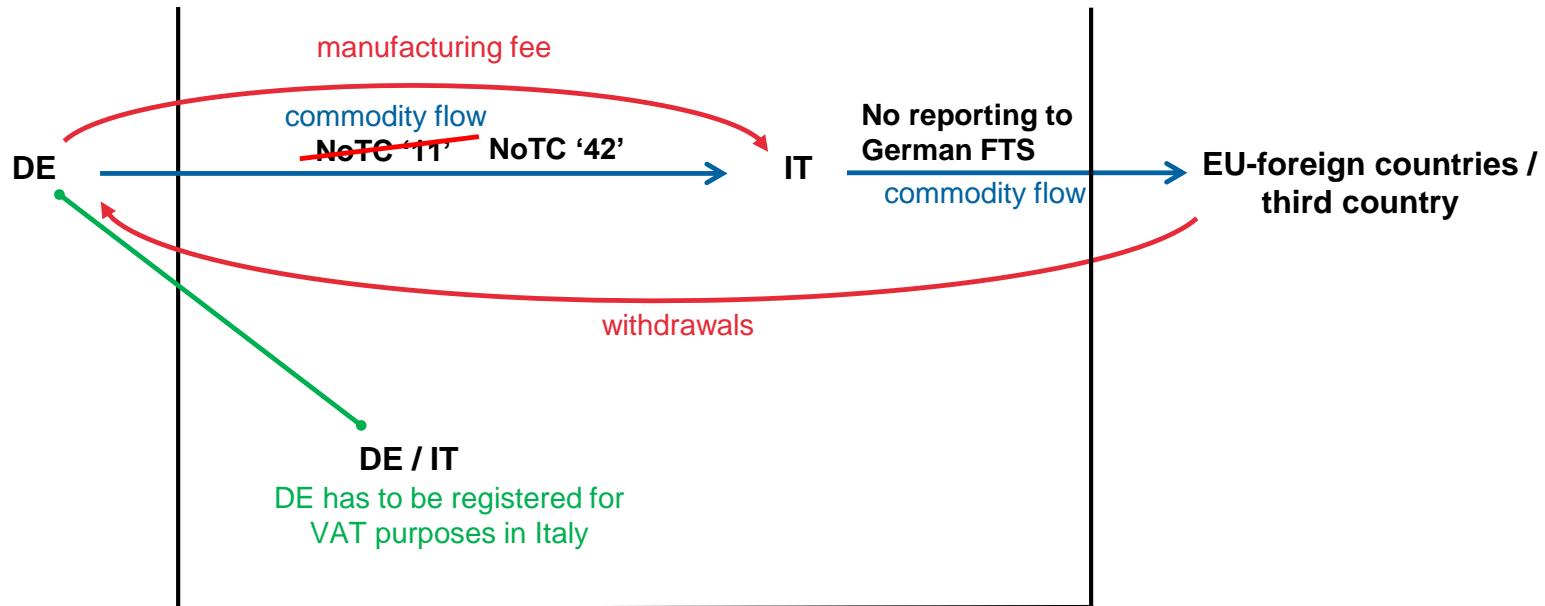
- no report

BOP Statistics:

- for outward processing (manufacturing fee)
- for withdrawals or sales to/from other countries

Goods returning to the initial Member State of dispatch **for** processing → NoTC '41'
 Goods not returning to the initial Member State of dispatch **for** processing → NoTC '42'
 Goods returning to the initial Member State of dispatch **after** processing → NoTC '51'
 Goods not returning to the initial Member State of dispatch **after** processing → NoTC '52'

Outward processing II



Intrastat:

DE/IT

- ~~NoTC '11'~~
- NoTC '42'

BOP Statistics:

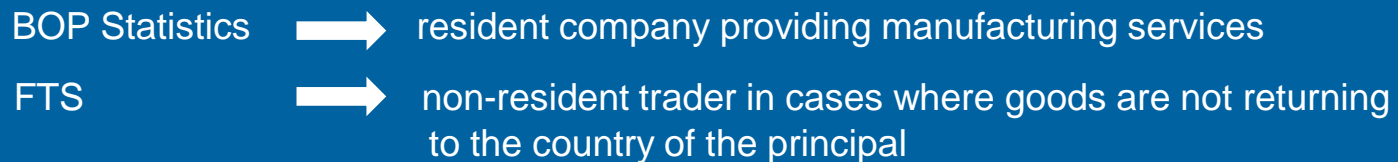
- expenses for outward processing
- receipts for withdrawals or sales to other countries

Goods returning to the initial Member State of dispatch **for** processing → NoTC '41'
 Goods not returning to the initial Member State of dispatch **for** processing → NoTC '42'
 Goods returning to the initial Member State of dispatch **after** processing → NoTC '51'
 Goods not returning to the initial Member State of dispatch **after** processing → NoTC '52'

Conclusion

- Given the short timeframe and the legal situation a full-fledged analysis of the reporting population was difficult
- The investigation revealed two major causes for differences:

1. The reporting population is not completely identical



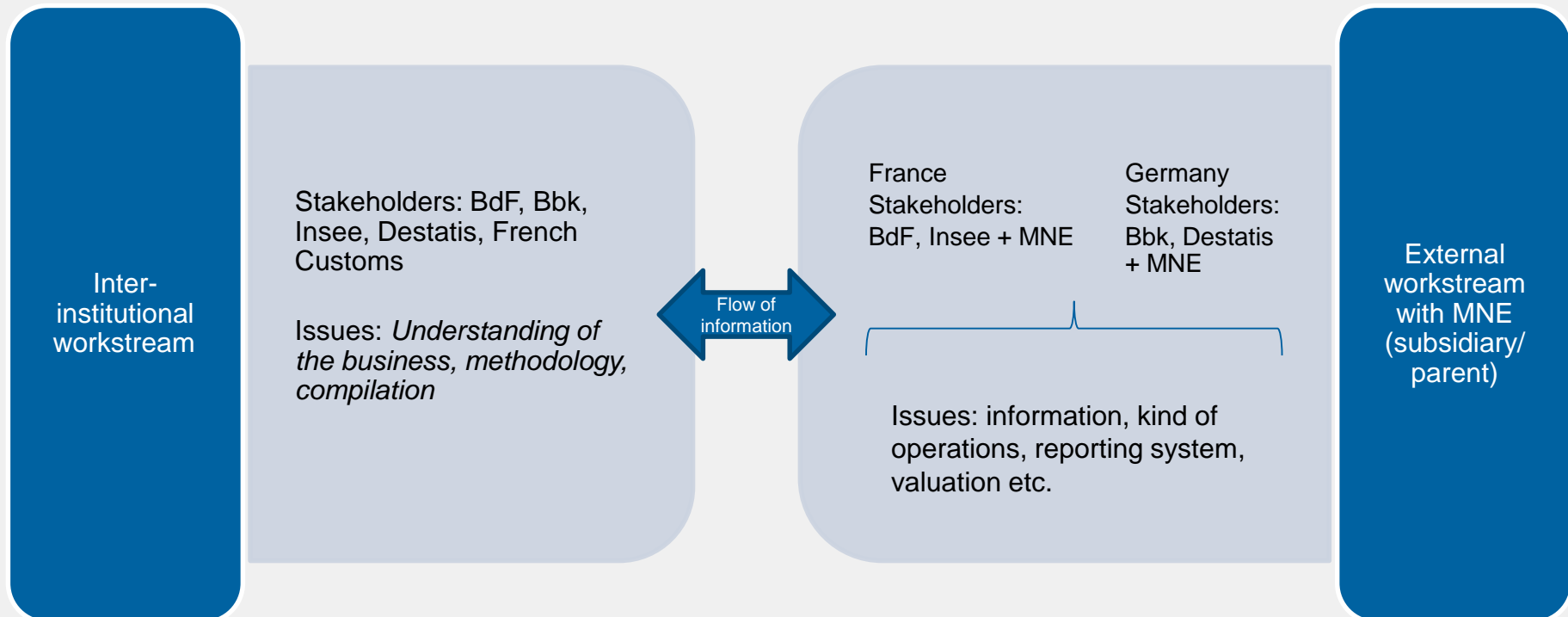
2. Resident traders as well as non-resident traders (VAT registered businesses) use incorrect transaction codes for purchases/sales instead of manufacturing services

- FTS reporting population and the quality of FTS data, in terms of reported transaction codes, could be enhanced
- processed goods typically do not return after processing but are sold to third countries / country of processing, thus processing in FTS < manufacturing services in BOP

International Cooperation between statistical stakeholders

Sharing data reported by complex multinational enterprises

- The project was set up by the Banque de France and the Bundesbank with all relevant national statistical stakeholders to better measure and understand intra group flows of MNEs
- Organization in two workstreams:



International Cooperation between statistical stakeholders

Sharing data reported by complex multinational enterprises

- Exchange of views between all statistical stakeholders and MNEs (parent, subsidiary) on national and international level fosters the understanding of MNEs' activities.
- Insights into the group's operations, its international production arrangements and internal pricing help to improve the statistical reporting in a common and coherent way in all statistics.
- A coordinated approach of statistical institutions across countries regarding reporting requirements of an MNE is of utmost importance also for the group entities.
- It improves the understanding about statistical needs and interdependencies between various statistics of the responsible units in the group. Furthermore, it fosters the internal communication between the group members in different countries.

International Cooperation between statistical stakeholders

Sharing data reported by complex multinational enterprises

- The work in “two work streams” has eased the communication between the experts (rapid conclusions on conceptual issues and methods) on the one hand and talks with national group members (simple communication without language barriers, openness to admit mistakes) on the other hand.
- However, even with an optimal cooperation between all stakeholders the process is very time consuming. From our experience at least two years are needed from the initial start to a full “harmonized” reporting in all countries.
- But it is all worth to produce statistics which reflect faithfully the volume of trade of MNEs’ complex global production arrangements.