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#### Measuring Global Production

### Data collection of Manufacturing Services in Germany<sup>1</sup>

Prepared by Deutsche Bundesbank<sup>2</sup>

#### *Summary*

With the changeover from BPM5 to BPM6 and its strict application of the change of ownership principle the item “goods for processing” under the goods account has been replaced by the new item “manufacturing services on physical inputs owned by others” as a sub-item of the services account. According to the new methodology the value of the service provided by the manufacturer contains only the fee charged instead the gross values of the import-ed/exported goods for/after processing. Since the processing fee cannot be calculated simply as the difference between the values of the goods before processing and after processing, data from customs declarations has become unsuitable as a source for the estimation of manufacturing services. Therefore, Balance of Payments (BOP) compilers had to develop new collection strategies in order to adequately comply with the new international requirements. The paper briefly describes on how the respective data on fees for “manufacturing services on physical inputs owned by others” is collected from German manufacturers and owners of the processed goods on a monthly basis as part of the national direct reporting system. Furthermore, it debates the adjustments to International Merchandise Trade Statistics (IMTS) data, and elaborates on how purchases of raw materials and sales of final goods abroad are collected in order to compile the goods account in line with the new BPM6 requirements of processing.

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<sup>1</sup> This paper is focuses on the data collection for processing fees abroad. The data collection for processing transactions in Germany is collected similarly.

<sup>2</sup> Prepared by Jens Walter/Simon Lohner, Deutsche Bundesbank. The views expressed here do not necessarily reflect the opinion of the Deutsche Bundesbank

## I. Background

1. In the last decades, a more and more globalized economy has created new opportunities but also new challenges for producers to compete in the world market. It has become increasingly necessary for manufactures to rearrange their production of goods and services, and to develop new strategies to organise the production chain more efficiently in the globalized economy. The outsourcing of individual parts of the production process, or even the whole production process to related or unrelated manufactures within the country or to countries abroad is one of the answers given by the industry to face these new challenges. The most basic form of international outsourcing implies a domestic principal who sends goods abroad to a foreign manufacturer for processing. After processing, these goods either return to the home country of the principal or are sold abroad.

2. The corresponding flows of goods are recorded (import/export of goods for/after processing) in the IMTS while the corresponding fees for “manufacturing services of goods owned by others” are recorded in services in the BOP of the countries involved. The “different” recording in the two statistics – e.g. as merchandise trade in IMTS, and as services in BOP is a consequence of the introduction of the 6<sup>th</sup> edition of the Balance of Payments Manual released in 2009. Until then, a uniform treatment of these flows in both statistics was applied, e.g. the goods sent abroad were recorded as exports for processing in the economy of the owner, and the goods received after processing were recorded as imports. The import value of the processed goods was calculated as the value of the goods sent plus the value of the fee charged by the processor which included also material purchased by the latter. As a source to capture these movements most countries used (and still use for IMTS) customs data.

3. With the introduction of the new BPM6 manual the change of ownership principle is applied strictly, and now encompasses also goods under processing. This confronts BOP compilers with the new challenge of how to measure the processing fee. The fee paid to the processor cannot be calculated simply as the difference between the value of the goods before processing and after processing, because this may include material acquired by the domestic principal in the country of the processor, or holding gains / losses, or overheads such as financing or marketing<sup>3</sup>.

4. Furthermore, the goods account has to be reconciled with IMTS source data by eliminating all movements of goods under processing, and adding all materials bought by the domestic principal abroad which are then used by the processor, as well as the processed goods sold abroad.

5. The following chapter describes briefly how Germany – since the implementation of BPM6 in 2014 – collects the value of the manufacturing services directly from the principals or the processors as part of the current direct reporting system. It also explains which information used to reconcile IMTS data with the goods account of the BOP.

## II. The collection of the manufacturing services

6. As explained above, the service fee charged by the processor cannot be estimated simply as the difference of the value of goods before and after processing. In Germany, it

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<sup>3</sup> International Monetary Fund, Balance of Payments and International Investment Position Manual, 6<sup>th</sup> Edition, § 10.70

was therefore decided to collect this fee directly from the parties involved, e.g. either by the processor or the owner of the goods – depending on who resides in the domestic economic territory – by integrating it as a new item in the current reporting system for services. This approach is also recommended by the BPM6 Compilation Guide as the most efficient method to collect the information needed<sup>4</sup>.

7. In general, Germany collects all BOP relevant service transactions via a cut-off survey directly from enterprises, public authorities and natural persons on a monthly basis. A generic questionnaire has to be used by the respondents to submit all their service transactions to the Deutsche Bundesbank as long as the value of a single payment is above the reporting threshold of 12.500 Euros.

8. Thus, the collection of data on “manufacturing services of goods owned by others” adds only one more item to the existing framework. Instead of asking explicitly if manufacturing services have been provided or used in the reporting period, respondents have to report only a transaction code indicating that such services have been provided/received.

9. The respondents have to report their transactions with non-residents via a (electronic) form which is part of the annex of Foreign Trade and Payments Regulation. This regulation is a major building block in the overall national legal framework for the BOP. The form itself is designed as a generic “questionnaire”, allowing reporters to transmit all their transactions (beside services also e.g. secondary income, direct investment, and other investment) with one single form (see below) in the reporting period.

10. In addition to the transaction code the following information has to be reported:

- identification of the reporter,
- date of the transaction (month and year),
- partner country,
- direction of payment (incoming or outgoing)
- amount (in 1.000 Euro)

<b>Payments relating to external transactions</b>				
<b>Report pursuant to section 59 et seq of the Foreign Trade and Payments Regulation (AWV)</b>				
	Month/Year:	<u>12/2015</u>	Bank code:	<u>01234567</u>
	Respondent:	<u>Company XYZ</u>		
	Branch of activity:	<u>Production</u>		
	Address:	<u>Road, City</u>		
	Phone (-extension):	<u>+49 (123) 456 789</u>		
	Contact:	<u>reporter</u>		
	E-mail-address:	<u>reporter@companyxyz.de</u>		

	Purpose of payment	Transaction Code	Country	Incoming payments	Outgoing payments
				Amounts in thousands of Euro	
1	Manufacturing service	567	France		27,861

<sup>4</sup>International Monetary Fund, Balance of Payments and International Investment Position Compilation Guide, § 12.21

11. The list of transaction codes which has to be used to fill out the forms is part of the law on the collection of BOP data. However, as the list might not always be self-explanatory enough, the Deutsche Bundesbank has additionally published for the respondents an explanatory note on the coding list<sup>5</sup>. As for other BOP items, the note describes for “manufacturing services on inputs owned by others” in an understandable way which kind of transactions correspond to which code, and explains differences between the codes.

12. The code for the manufacturing services is defined according to the BPM6:

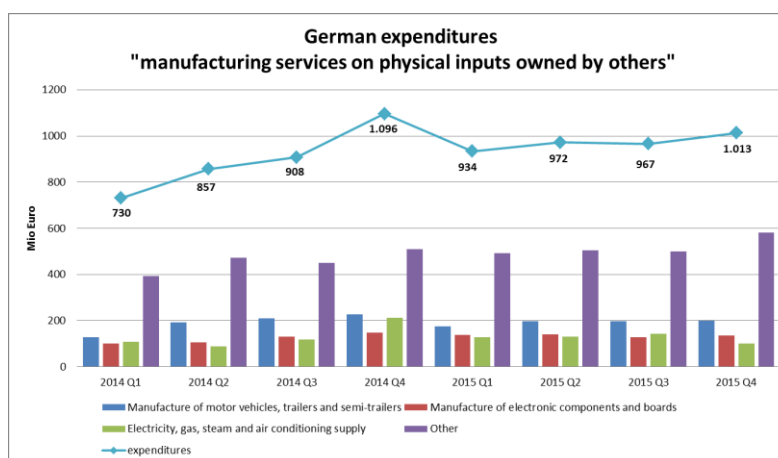
<b>567 Contract production</b>
<p>Charges for the manufacturing of goods that are not owned by the contract producer. The goods are provided by the principal. Also included in the charges are any components that the subcontractor itself procures and uses during the production process. The goods for processing do not have to leave the country.</p> <p>Typical cases of contract production include:</p> <ul style="list-style-type: none"> <li>• Refining of crude oil</li> <li>• Liquefaction of natural gas</li> <li>• Refilling and packing of goods supplied in bulk into retail packaging</li> <li>• Product assembly</li> <li>• Slaughtering and butchering of animals</li> <li>• Recycling of goods</li> </ul> <p>Special features</p> <p>997 Purchase of finished goods in Germany from foreign owners, acquisition of goods by the resident principal abroad and sale of finished goods abroad by the principal.</p>

13. As illustrated by the excerpt, transactions closely related to processing are addressed in a reference, e.g. the purchases and sales of the goods for or after processing.

14. The incoming reports are checked by staff members for plausibility and completeness mainly by cross-checking them with reports of former periods. In case of doubt about the correctness, declarants are contacted to clarify the transaction. In the event that an open request cannot be answered in due time by the respondent, imputations are made if important reporters are involved. The monthly values for the total and each partner country are then calculated by aggregating the transactions codes belonging to the item “manufacturing services of goods owned by others” of all individual reports.

15. The following charts show the total value of quarterly receipts/expenditures for the years 2014 and 2015 as well as the breakdown by industry of the reporting companies.

<sup>5</sup>[http://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Statistische\\_Sonderveroeffentlichungen/Statso\\_7/statso\\_7\\_notes\\_on\\_the\\_coding\\_list\\_for\\_the\\_balance\\_of\\_payments\\_statistics\\_2013.pdf?\\_\\_blob=publicationFile](http://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Statistische_Sonderveroeffentlichungen/Statso_7/statso_7_notes_on_the_coding_list_for_the_balance_of_payments_statistics_2013.pdf?__blob=publicationFile)



16. As the charts illustrate, the receipts and expenditures slightly increased over time. In 2015, total receipts of 4.3 billion Euros were recorded and expenditures of 3.8 billion Euros respectively. Manufacturing services are mainly exported by “manufactures of chemicals and chemical products” and “coke and refined products” while on the import side “manufactures of motor vehicles” and “manufactures of electronic components” play the most important role.

### III. The collection of the purchases and sales of goods

17. As mentioned above, manufacturing services are closely related with the goods account. To adjust the goods account in accordance with the BPM6-Manual compilers must differentiate between (1) goods, which are purchased by the principal abroad and sent directly to the processor to be used as an input, (2) the sale of the processed goods by the domestic principal to non-residents and (3) the cross border movements of inputs/final products exported/imported by the principal.

18. In the first case, these purchases and sales must be recorded as regular imports or exports of general merchandise in the economy where the principal resides. Since these goods are not captured by the IMTS, in Germany the related transactions have to be reported within the framework of the direct reporting system as described above. As with

“manufacturing services”, the respondents must declare these transactions using a specific code of the code list. This also applies for all other goods transactions that do not lead to a physical import or export of goods, or merchanting.

19. The transactions which have to be reported under this code are again described in detail in the explanatory note and recorded in the goods account.

**997 Other trade in goods**

This includes, for example, receipts from the sale of:

- **Goods that are produced for the seller abroad by means of contract production and that are not imported.**
- Goods located in Germany and that are not exported.
- Goods located abroad and that are not imported.
- Goods that companies in Germany make available for the production of other goods (tool costs).

and expenditures for the purchase of:

- **Goods that in conjunction with contract-production are purchased on-site abroad or from a third country.**
- Goods located in Germany that are acquired by non-residents in Germany or are produced in Germany on the basis of orders placed by non-residents.
- Goods produced in Germany as part of contract-production.
- Goods that are located abroad, not imported and intended primarily for the resident purchasers' own use.
- Goods that companies abroad are made available for the production of other goods (tool costs).

20. In the latter case, compilers must eliminate all goods flows from the IMTS source which are related with processing as no change of ownership took place (always owned by the principal).

21. In Germany, these flows can be identified in the IMTS source as the Federal Statistical Office (FSO) of Germany collects additional information on the reason of the export or import (the so-called Nature of Transaction (NoT)). E.g., the Bundesbank receives the monthly foreign trade broken down by the following codes:

NoT <sup>6</sup>	Content
1	Transactions involving actual or intended transfer of ownership from residents to non-residents against financial or other compensation
2	Return and replacement of goods free of charge after registration of the original transaction
3	Transactions involving transfer of ownership without financial or in kind compensation
<b>4</b>	<b>Operations with a view to processing under contract</b>
<b>5</b>	<b>Operations following processing under contract</b>
6	Repairs and maintenance
7	Operations under joint defence projects or other joint intergovernmental production programs
8	Transactions involving the supply of building materials and technical equipment under a general construction
9	Other transactions which cannot be classified under other codes

22. Therefore, exports and imports classified with the transaction code 4 and 5 are removed from the IMTS<sup>7</sup> data before it is used to compile the goods account.

#### IV. Example

23. A German company exports raw materials worth 100 to France for processing. The company also buys in addition raw materials for processing worth 25 from a Spanish company. The processing fee is 15. After processing goods worth 90 return to Germany and finished goods worth 60 are sold to a Belgium company<sup>8</sup>.

24. The German company has to report to the Bundesbank the transactions with non-residents (that are not related with the imports and exports of goods) as follows:

Payments relating to external transactions				
Report pursuant to section 59 et seq of the Foreign Trade and Payments Regulation (AWV)				
Month/Year:	12/2015	Bank code:	07654321	
Respondent:	Company abc			
Branch of activity:	Production			
Address:	Road, City			
Phone (-extension):	+49 (123) 456 789			
Contact:	reporter			
E-mail-address:	reporter@companyabc.de			
Purpose of payment	Transaction Code	Country	Incoming payments	Outgoing payments
Amounts in thousands of Euro				
1 Manufacturing service	567	France		15
2 Purchases of raw material	997	Spain		25
3 Sale of final goods	997	Belgium	60	

<sup>6</sup> The German FSO collects the Nature of Transactions on a 2-digit-level with more details. For the adjustment for the goods account related to processing according to BPM6 the 1-digit-level is, however, sufficient.

<sup>7</sup> For Balance of Payments additional adjustments in the IMTS - not related with processing - have to be made to publish a methodological correct goods account .

<sup>8</sup> In the selling price an overhead of 10 for marketing etc. is included.

25. The IMTS provides the data for total goods crossing the German border. The movements of goods between Germany and France with NoT 4 and 5 are then eliminated from the BOP data:

Direction	Country	Value	Nature of Transaction
exports	France	100	4
imports	France	90	5

26. In the German BOP only the following entries will be recorded:

- purchases of the raw material (25),
- sales of the final goods abroad (60) and
- processing fee (15):

	Credits	Debits
<b>1. Goods Account</b>	60	25
<b>2. Service Account</b>		15
<b>2.1 Manufacturing Services</b>		15

## V. Lessons Learned

27. The current data collection and compilation of “manufacturing services of goods owned by others” - including related goods transactions - follows the recommendations of the BPM6 and its Compilation Guide. Generally speaking, the system produces satisfactory data. Nevertheless, the experience with the German system has shown some weaknesses/room for improvements.

28. The reports for the purchase of raw materials abroad and sales of the final goods seem to be of good quality for processing abroad, as all the information are bundled in the company of the owner of the goods. For domestic processing, however, the domestic seller of the raw material or the domestic buyer of the processed goods within the country does not always know that the goods will be/have been processed in the country and therefore assumes a cross-border movement of goods with the consequence, that these transactions are not declared. To ensure better quality in this area is an ongoing task for the compiler. The Deutsche Bundesbank therefore seeks to build up close relations with reporters, e.g. by offering a hotline free-of-charge or offering additional information on contract production in a special note on its website<sup>9</sup>.

29. As in other countries, Germany started with the changeover from BPM5 to BPM6 in September 2013 with the direct collection of the processing fee. Since the reporting population was not known before the current population of reporters might not yet be exhaustive. Due to this, the current time series must be interpreted with care. To get a better idea on the quality of the data a close cooperation with the FSO as the producer of the IMTS seems to be a good way to cross check, which companies report imports and exports related with processing (NoT codes 4 and 5). However, due to confidentiality reasons we are currently not in the position to exchange such information between the two institutions

<sup>9</sup>

[https://www.bundesbank.de/Redaktion/EN/Downloads/Service/Meldewesen/Aussenwirtschaft/Schluesel/awvzl\\_2013.pdf?\\_\\_blob=publicationFile](https://www.bundesbank.de/Redaktion/EN/Downloads/Service/Meldewesen/Aussenwirtschaft/Schluesel/awvzl_2013.pdf?__blob=publicationFile)



on a micro level. This situation may improve when a new national statistical law will come into place during this year which allows such data exchanges under specific circumstances.

30. With the implementation of the new reporting rules in 2013, we resigned - for simplification reasons - that reporters involved in transactions with goods not crossing the border have to distinguish between transactions related to processing (purchase of raw material/final sale of processed goods) and other goods transactions. We therefore cannot conduct a quality check if the following assumption holds:

raw material purchased abroad		sales of final goods abroad
+ goods exported for processing	~	+ imports after processing
+ processing fee		

31. A separate identification of these transactions in the future would be helpful to ensure the quality at least on a global level. If this improvement justifies the additional reporting burden must still be discussed.

## VI. Conclusion

32. In Germany, the collection of data on “manufacturing services on physical inputs owned by others” is organised as a (cut off) survey where the principals and the processing companies report directly to the Deutsche Bundesbank on a monthly basis. In 2015, a total number of 1,100 companies reported processing fees paid/received with a value of 3.8 billion Euros/ 4.3 billion Euros.

33. Although the collection of manufacturing services directly from enterprises has proved to produce reasonable results, the “German model” cannot be seen as a blueprint for other countries. In Germany, the challenge for BOP compilers to adapt their collection system promptly to the new methodology was facilitated since the new requirement could fairly easily be integrated into a well-established direct reporting system, which over the decades has become well-known by resident companies involved in international transactions. Furthermore, the German BOP Division benefits from the fact, that the FSO can provide IMTS data in a breakdown which allows to eliminate all related cross border movements of goods to bring the goods account in line with the new requirements.

34. However, it has also become evident, that Germany still has to work on data quality. From the current perspective, the exchange of micro data between the FSO and the Bundesbank could be a major step in this direction but first results from such a data exchange will not be available in a very short time.