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Ownership of intellectual property products (IPPs)**Measuring global production in the National Accounts in Sweden. Swedish case studies****Prepared by Statistics Sweden¹***Summary*

This document discusses the work on multinational enterprises at Statistic Sweden. The National Accounts unit in Sweden has been working with globalization related issues already since late 1990s. A special large cases unit was established in 2004 to discover new cases of global production activities among the Swedish largest enterprises. Today, the senior advisors group consisting members from primary statistics, the large cases unit and the national accounts regularly discusses issues related to globalization.

Further, this document presents case studies illustrating different challenges that have arisen in connection with global production arrangement in Sweden and which solutions, when possible, have been applied at Statistics Sweden.

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I. Background

1. The National Accounts (NA) unit in Sweden has been working with globalization related issues since the late 90:s, when the first cases of merchanting related to offshoring and manufacturing localization decisions were discovered. At that time, working with globalization questions at the NA unit was mostly about a very limited number of companies. As time went by, the number of companies involved in global production arrangements grew, as did the complexity of these arrangements.

2. A Large Cases Unit (LCU) was created in 2004. This was a fundamental step that deeply contributed to discover new cases of global production activities among the Swedish largest enterprises. The creation of LCU also allowed implementing solutions when needed and getting a better understanding of the subject at the National Statistics Office (NSO).

II. The work on Multinational Enterprises (MNEs) at Statistic Sweden today

3. Nowadays, discussions about globalization are held on a regular basis through a Senior Advisers group at Statistics Sweden. The group consists of members from both the primary statistics, the LCU and the NA.

4. The fundamental problem is still there. The different treatment of similar transactions in the primary statistics and in the NA, due to the lack of harmonization in the different international manuals, makes it difficult to adapt the primary statistics to the ENS 2010 (SNA 2008) recommendations and creates discrepancies and imbalances between different components of the GDP.

5. Until a better harmonization of the international manuals is achieved, the ways of recording properly globalization arrangements in Sweden have been two.

6. The first way has been introducing or adjusting the questions stated in the primary statistics. For instance, questions about merchanting incomes and costs were introduced in the International Trade in Services Statistics (ITSS) in 2003 and in the Structural Business Statistics (SBS) in 2004 whereas questions regarding the imports and export of processing fees in connection to goods sent abroad for processing were introduced in the ITSS in 2013.

7. The second methodology for dealing with globalization has been a case-by-case approach. As soon as different problems related with companies engaged in global production arose, consultations between different Units at the NSO were held in order to solve them. It is in the context of this case-by-case approach that the members of the Senior Advisers group at the NSO started to work in a more standardized way. The way to do it is to collect information regarding globalization key variables for companies engaged in global production arrangements in a single document. The idea is very simple. The document is a spread-sheet where the columns are different characteristics of the company including some globalization key variables such as industry classification, whether the company has production abroad or not, ownership of the Immaterial Property Products (IPP) and more. Each row then is a company where information about the different relevant aspects is filled in. This information is not numerical, but rather a description of the economic flows and stocks related to the companies engaged in global production arrangements. The table 1 in the annex 1 shows how the spread-sheet looks like.

8. As mentioned before, the document allows working in a more standardized way in the case-by-case approach. The information and understanding of the different challenges spreads faster between several Units at the NSO and previous solutions can be applied to similar new cases.

9. It can be worth to mention that this compilation file is a complement to the LCU database which is the tool used by the LCU where data from the primary statistics is collected and compiled for the largest enterprises in Sweden.

10. The work that has been done in Sweden when it comes to globalization in the case-by-case approach can be seen as temporary solution. Working with this approach is time demanding and it covers just the cases where inconsistencies have been found. In order to work in a more efficient way and from a total perspective other solutions are needed. In this respect, the key aspect is a better harmonization of the primary statistics international manuals and the SNA.

III. Case studies from the compilation file

11. The following case studies illustrate different challenges that have arisen in connection with global production arrangement in Sweden and which solutions, when possible, have been applied at Statistics Sweden.

A. Case study 1: different valuation of the production and the export figures.

12. Enterprise A is a manufacturer of goods located in Sweden. After the goods have been produced in the Enterprise A's factories in Sweden, these are sent to inventories placed in another EU country. There is no change in the ownership of the goods in connection with this delivery and there is no further transformation of the goods during the period in which these are stored in the inventories. Finally, Enterprise A sells the goods to customers located in other countries than Sweden from the inventories abroad (see figure 1 below).

13. The Enterprise A reports export of goods to the International Trade in Goods Statistics (ITGS, Intrastat), turnover to the Structural Business Statistics and Short Term Statistics (SBS and STS) and change in inventories in finished goods to the STS.

14. The NSO discovered that Enterprise A reports turnover and the inventories of finished goods valued at market prices whereas the exports of goods are systematically valued at a lower price than the basic prices (see table 1 below).

Table 1

Figures of Enterprise A in the available primary statistics

Source	Prodcom	SBS	SBS	Intrastat	VAT
Variabel	Industrial turnover	Industrial turnover	Export	Export	Export
Value in million SEK	70	70	69	20	68

15. However, the period the goods are stored in the inventories is relatively short and in theory, there should not be large differences between the values reported to the different statistical sources. The problem is that the reported export figures to the ITGS do not reflect

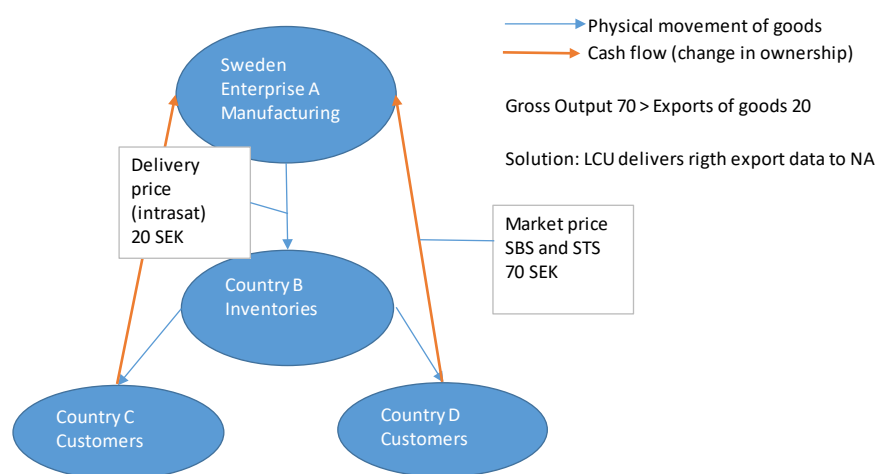
any change in ownership (generated turnover) but a valuation related to a delivery of a good abroad².

16. The NSO has been in contact with the company in order to change the valuation of the data reported to the ITGS but the company is not willing to change what the company calls the “delivery” prices in connection to the delivery.

17. The LCU has therefore started to transform the reported data to the Intrastat into market prices before the data is sent to the NA unit. The transformation is done using information on reported turnover to the STS by the company. The transformation allows a correct valuation of exports, which is in line with the reported production and change in inventories.

Figure 1

Enterprise A. Different valuation of production and export figures.



B. Case study 2: ownership of the IPP asset.

18. The multinational enterprise (MNE) “ABC” produces and sells goods worldwide and has its headquarters located in “Country A” and subsidiary companies in several countries. One of these subsidiary companies, Enterprise D, is located in Sweden.

19. Almost all the employees in Enterprise D work with research and development (R&D). This enterprise is therefore classified in the Research and development industry.

20. Nevertheless, Enterprise D reports to the SBS that it has turnover only from trade activities, more concrete from merchanting. This is confirmed by the merchanting flows reported to the ITSS. Apparently, Enterprise D buys the goods from a manufacturer in a third country and then it sells the products in other countries in its market region.

21. At Statistics Sweden we find that the classification of the company is not 100 per cent clear. The activity carried out in Sweden is R&D but nor R&D neither licenses are sold according to the turnover figures. The generated income for the company is from trade instead. With reference to the outsourcing manual, it might be argued that the company

² The compilation of the ITGS relies principally on customs records complemented, as appropriate, by additional sources. These statistics essentially reflect the physical movement of goods across borders and not necessarily an actual change of ownership between a national and a foreign unit.

should be classified as a trader (or even as factoryless goods producer in the manufacturing industry!).

22. Another problem for the NA in Sweden is that it is unclear which unit in the MNE is the economic owner of the IPP produced by Enterprise D. The Research and development survey gives information on the costs to produce R&D and it is used, in combination with other sources, to calculate the production of R&D for own final use. Since there are no sales of R&D for enterprise D to withdraw with, all the salaries and most part of the costs of enterprise D become production of R&D for own final use. But, is it really Enterprise D who has the economic ownership of the IPP? Because Enterprise D does not sell any R&D it seems that it is actually this unit that owns the produced R&D.

Table 2

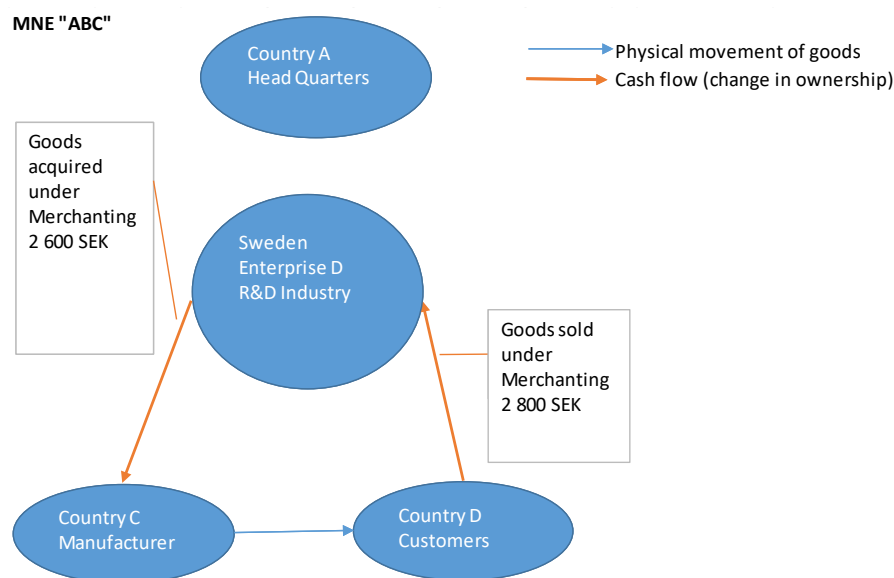
Figures of Enterprise D in the available primary statistics

Source	SBS	ITSS	R&D Survey
	Merchanting margins	Merchanting margins	Incurred cost for R&D*
Variabel			
Value in million SEK	200	200	87

*exclusive costs for material assets and before profits and capital depreciation addition to market valuation.

Figure 2

Enterprise D. Change in ownership and actual physical movement of goods



23. On the other hand, it might be argued that the headquarters located abroad are the economic owner of the IPP and that the headquarters pay for the R&D developed in Sweden by letting the Enterprise D get income through the sales in certain markets (merchanting). Something that supports this theory is that the Enterprise D does not seem to have any cost in merchandising the product in foreign markets or plays in general any role in the production process other than producing R&D. It is also very likely that the R&D produced in Sweden is used in the production process of the goods by different units of the MNE regardless their localization.

24. So properly attributing the ownership of the IPP is a key question that influences the outcome of the production, capital formation and industry classification among others. The information given in the decision tree in the UNECE's guide "to measuring global production"(chapter 4 "Ownership of IPP inside global production") does not completely cover this case³. So further guidance on how to deal with similar cases would be desirable.

25. In the meantime, and given the available information reported from the company, the NSO attributes the ownership of the IPP to Enterprise D in Sweden. This means that all the production of R&D according to the R&D survey becomes production for own final use and capital formation in this industry. Moreover, the Enterprise D is classified in the R&D industry even though no flows of sales of R&D or income from licenses and royalties are reported. This we think is the best solution out of two bad alternatives; 1) recording R&D investments in the wholesale industry or 2) recording merchanting in the R&D industry.

Table 3

Current treatment of Enterprise D at the NA

	Million SEK
Output	
Merchanting margins	200
R&D for own use	100
Expenditure	
Export (merchanting income)	2 800
-Export(merchanting cost)	2 600
GFCF	100

C. Case study 3: export and import of goods within the borders of Sweden's in connection to inward processing.

26. The following case study is about inward processing in Sweden, that is, a Swedish company that carries out a processing service on a physical product on behalf of a foreign company.

27. Originally, the Swedish Enterprise E was a manufacturer classified in the "manufacture of goods and beverage" industry. Enterprise E used mostly material inputs from Sweden and they sold their final products to Swedish clients.

28. At some point in time, Enterprise E was acquired by a foreign MNE. Looking at the activity carried out in Sweden, it seemed that the acquisition of the Swedish unit by the MNE meant no significant change. The material inputs, the actual manufacturing process and the clients were the same. However, there was a fundamental change, the Enterprise E in Sweden did not anymore own the material inputs or the final products in the production process. Those were owned, from the moment the acquisition took place, by the headquarters abroad. This fact was clearly reported to the Prodcom and the SBS. The production figures reported to the Prodcom fell sharply and from that point in time, all production was reported as manufacturing services on material inputs owned by others. (The Prodcom in Sweden also gives information on whether the owner of the material inputs that order the processing service is a national or a foreign unit).

³ For this case study, it is possible to follow the decision tree until the point 1.1.2. However, there is no suitable alternative in the following questions (alternatives 1.1.2.1 and 1.1.2.2) to allocate the economic ownership of the IPP asset.

29. Thus, the new production figures for the Enterprise E automatically reflected the fact that this enterprise just produced a processing service from the moment the acquisition took place.

Table 4

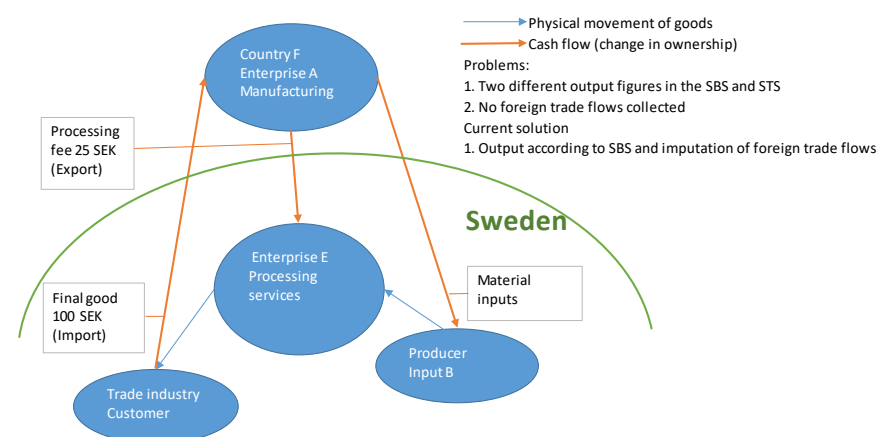
Figures of enterprise E in the available primary statistics

Source	SBS and Prodcom	SBS and Prodcom
Variabel	Industrial turnover	Industrial turnover (processing fee)
Value in million SEK (year y)	100	
Value in million SEK (year y +1)		25

30. But, what about the foreign trade statistics? The new production arrangement means that there are two changes in economic ownership between a national and a foreign unit, which did not exist before. The foreign unit buys the material inputs from Swedish producers and sells the final product to Swedish customers. Nevertheless, neither the material inputs nor the final products leave the Swedish territory. Because ITGS data are collected in connection to deliveries that cross Swedish borders, the export and imports of goods involved in this case of inward processing are missed.

31. In order to estimate the correct export and import figures according to ENS 2010, the NA unit in Sweden has therefore to make some additions to the ITGS delivered by the primary statistics⁴. An imputation of the value of the material inputs that are going to be processed is added to the export of goods. At the same time, the value of the final products that are sold to Swedish units is also added to the import of goods.

Figure 3

Enterprise E, exports and imports of goods within the Swedish borders

⁴ The NA unit analyses the foreign trade in goods associated to the companies that report production of processing services on material inputs owned by foreign companies to the Prodcom (Inward processing). When discrepancies between the ITGS and the change in ownership principle are discovered, the NA unit make adjustments so the export and import flows follow the ENS recommendations.

32. The estimation of the values for the imputation is done with information on the ratios between the value of final product, the value added (compensation of employees plus gross operating surplus) and the value of the material inputs reported from the company before the acquisition⁵. Assuming that the production of the processing fee equals the ratio of the former compensation of employees plus a part of the intermediate consumption and gross operating surplus and assuming constant ratios for the other variables are constant, the NA can estimate the value of the material inputs and the final products sold in Sweden.

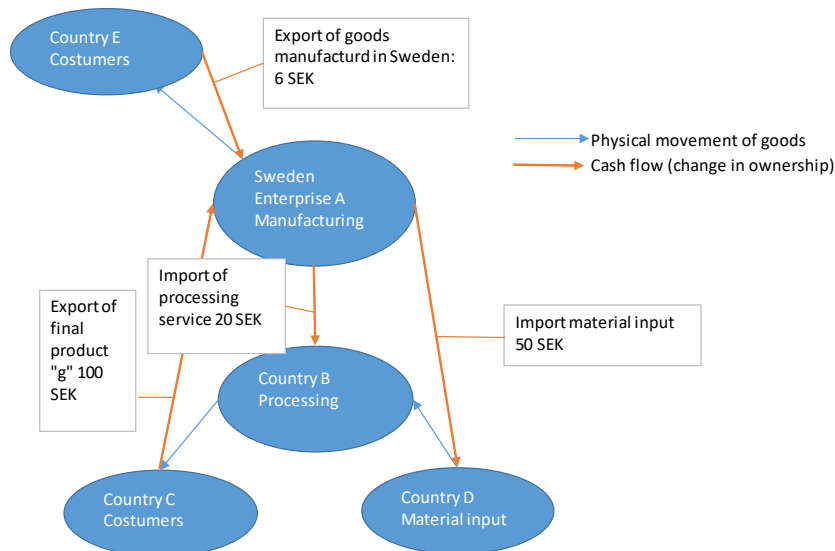
D. Case study 4: goods sent abroad for processing.

33. This final case illustrates how data on outward processing is usually collected by the SBS and how the NA registers these data.

34. Enterprise A is a producer of goods located in Sweden. Enterprise A has manufacturing factories in Sweden. A part of the manufacturing production in Sweden is exported to customers in country E. Besides manufacturing activities in Sweden, Enterprise A buys material inputs from country D and send them directly to factories in Country B. These material inputs, are then processed in the factories in Country B on behalf of Enterprise A. After the processing is carried out, Enterprise A sells the final product “g” mostly to customers in other countries than Sweden. The goods are delivered directly from Country B to the clients without crossing the Swedish borders. According to ENS, Enterprise A is a manufacturer that produces the final product “g”. In addition, Enterprise A buys material input from country D and orders a processing service from a manufacturer in country B. The figure 4 and the table 7 below show how these transactions should be recorded according to ENS.

Figure 4

Enterprise A, how economic flows should be recorded at the NA



⁵ For other cases, where there has not been any production on own material inputs before, information on the structure of the production broken down by IC, compensation of employees and gross operating surplus for the relevant industry is used in order to estimate export and import of goods based in the change in ownership principle.

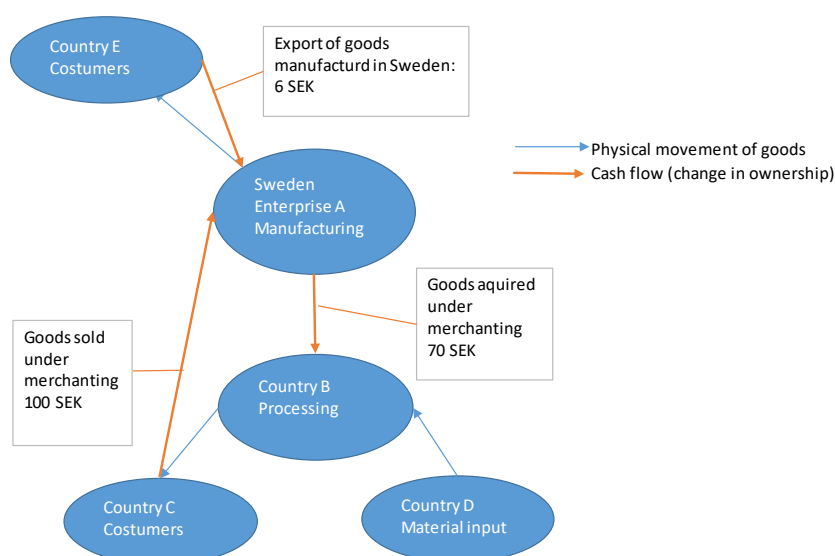
35. However, the SBS and STSS collect the transactions between Enterprise A and the foreign units (in countries C, B and D) as merchandising, even though the CSO knows that this particular enterprise is engaged in outwards processing. The reason is that when Swedish companies report to the SBS that they order a processing service from a foreign unit, it is not clear whether the Swedish enterprise owns the material inputs which are going to be processed or not⁶. In other words, there is not enough information to differentiate between merchandising and outward processing from the primary statistics. Therefore, the turnover generated by the sales of product “g” abroad is collected as merchandising income whereas the sum of the costs of the processing fee and the material inputs bought abroad delivered directly to country B are collected as merchandising costs. Enterprise A has also manufacturing production in Sweden and a part of this is exported. The table 6 below shows the collected economic flows by the primary statistics.

Table 6

Figures of enterprise A in the available primary statistics

Source	Prodcom and SBS	SBS and ITSS	SBS	SBS	SBS and ITSS	SBS	ITGS
Variabel	Industrial turnover	Merchandising income	Turnover from sales to Swedish Units	Turnover from sales to foreign Units	Merchandising costs	Material inputs and other costs	Export
Value in million SEK	15	100	9	106	70	10	6

Figure 5

Enterprise A, how transactions are actually recorded at the NA

⁶ See annex 2: Questions stated at the SBS. Reported amounts to questions 03 and 04 are both registered as merchandising. The reason question 03 is registered as merchandising and not as export and imports of good related to processing abroad is that there is no information on which unit owns the material inputs that are going to be processed.

36. Even though the economic flows are registered in the NA on a net basis as merchanting instead of gross flows (see figure 5 above), the current treatment does not affect the value added calculations or the net exports. This fact is reflected in the table 7 below.

Table 7

Registration of the transactions at the NA

Current treatment		Right treatment according to ESA 2010	
Transaction	Million SEK		Million SEK
Otuput		Otuput	
Industrial production Sweden	15	Industrial production Sweden	15
Merchanting margins	30	Industrial production "abroad"*	100
Intermediate consumption		Intermediate consumption	
Intermediate consumption	-10	Intermediate consumption	-10
		Material inputs bought abroad delivered directly to country B**	-50
		Processing fee**	-20
VA	35	VA	35
Expenditure		Expenditure	
Export (from manufac. in Swe)	6	Export (from manufac. in Swe)	6
Export (merchanting)	100	Export (merchanting)	100
-Export	-70	Import	-70
Net exports	36	Net exports	36

* Equals "goods sold under merchanting" according to current primary statistics

** Goods acquired under merchanting can be broken down in material inputs and processing fee

37. Nevertheless, the current treatment at the NA creates imbalances when international trade figures between the involved countries are compared with each other. For this reason, the NSO is looking into the possibility to identify the companies that own the input goods from all the companies that order a processing service from foreign companies in order to record these transactions as gross flows according to the ESA 2010. If the NSO is able to do so, the goal is to implement the new way to record the transactions in connection to the General Revision of the GDP calculations in 2019.