



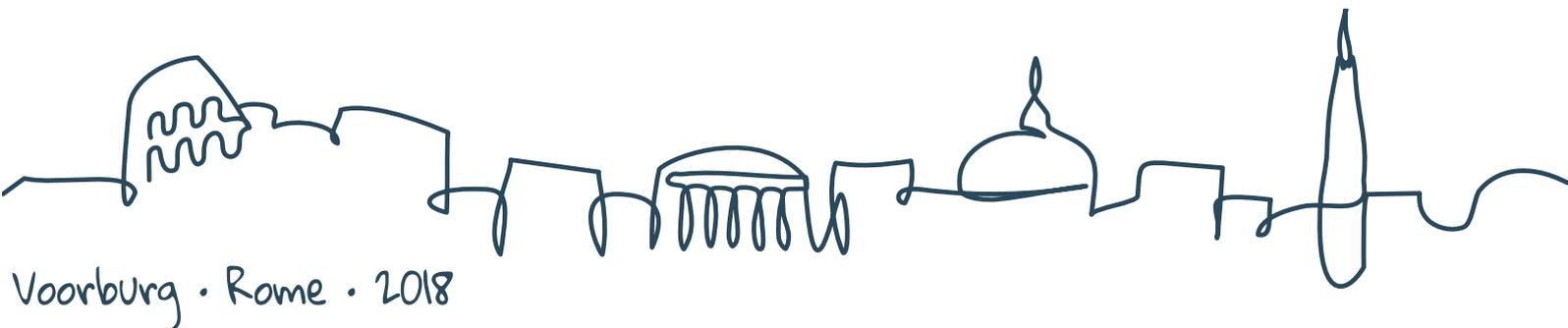
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## **Mini-presentation on “Export of services (SPPI)”**

**Cross-cutting topic**

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# MINI-PRESENTATION ON “EXPORT OF SERVICES (SPPI)”

## Cross-cutting topic

### Introduction

Since May 2013, the French Statistical Office (INSEE) disaggregates services producer price indices (SPPIs) by destination of output:

- Domestic business to business SPPIs (BtoB) measure transaction price changes for services sold by national producers to national businesses (and general government);
- Domestic business to consumer SPPIs (BtoC) measure transaction price changes for services sold by national producers to households in the national territory;
- Domestic business to export SPPIs (BtoX) measure transaction price changes for services sold by national producers to foreign markets.

INSEE obtains BtoAll SPPIs by “horizontal aggregation” (at each CPA-4digit classification level) of BtoB, BtoC and BtoX indices.

The disaggregation of SPPIs by destination of output is of particular relevance to both the deflation of production figures derived from structural business statistics and also for distinguishing between changes in the volume of activity and changes in the prices of activity (“volume-price breakdown”).

This paper will highlight the particular issues of collecting and aggregating export prices series. It contains a brief summary of the methodology used in France to collect export prices, as part of the mandatory French PPI survey. Then, it focuses on specific industries chosen as examples of particular interest for measuring BtoX indices.

## 1. General aspects of services exports

### 1.1 General definition of export in the case of services

According to the European system of accounts (ESA) 2010, “exports of services consist of all services rendered by residents to non-residents”.

Considering exports as transactions of services crossing the country’s borders does not strictly correspond to that definition. Exports can include expenditure by non-residents in the domestic territory; exports exclude deliveries to non-residents by non-resident affiliates of resident enterprises, like sales by foreign affiliates of a multinational owned or controlled by residents.

In the second part of this paper, the implications of that definition will be explained in further details for some specific industries.

### 1.2 Importance of services exports in the whole economy

In France, exports of services in the scope of INSEE SPPIs (merchant services excluding financial and insurance services) weigh 93.9 billion € in 2015. France is one of the main exporting countries. International trade has been strongly developing since the year 2000: exports have been increasing at an average pace of 7.3% a year, from 2.0 to 4.2% of the gross domestic product (GDP).

However, France still runs an increasing trade deficit in services, as imports of services now total 4.5% of the GDP. For imports of services, no SPPI can be calculated yet, because there is no sampling framework.

### 1.3 Industries covered by BtoX SPPIs

The most exporting services industries in France (list based on the rank of export turnover by CPA4-industries among our SPPI scope) are the following:

- 5020 Freight water transport (14.9 billion €)
- 8299 Other business support service activities n.e.c. (14.2 billion €)
- 7740 Leasing of intellectual property and similar products, except copyrighted works (10.1 billion €)
- 7022 Business and other management consultancy activities (9.2 billion €)
- 7112 Engineering activities and related technical consultancy (6.8 billion €)
- 4941 Freight transport by road (4.7 billion €)
- 6202 Computer consultancy activities (4.4 billion €)
- 5110 Passenger air transport (4.1 billion €)
- 7311 Advertising agencies (3.6 billion €)
- 6120 Wireless telecommunications activities (2.6 billion €)

These industries, among 50 other industries that have significant export turnover, are covered by a BtoX SPPI index.

### 1.4 Purposes and dissemination

According to the current Short-Term Statistics European regulation, for SPPIs, “the output price variable (No 310) covers services delivered to customers that are enterprises or persons representing enterprises”, that is to say the only required indicator is BtoB.

With the next STS regulation deriving from FRIBS (Framework regulation integrating business statistics) general implementing Act, the perimeter for SPPIs should henceforth cover producer prices, that is to say BtoAll.

So, for countries already implementing BtoB indices, their data collection should be extended to BtoC and BtoX, so as to both assess BtoAll by “horizontal aggregation” and allow SPPIs to be published without breaks. For most SPPIs, BtoC can be duplicated from CPIs, so the only thing to do to be in accordance to next STS regulation is to collect BtoX indices.

France began to adapt to the new regulation years ago, so that all BtoX indices in the field of STS regulation are already gathered.

French BtoX SPPIs are “basic prices”: these SPPIs include intra-group transactions, subsidies but exclude taxes; both business and household customers are taken into account for BtoX.

Our BtoX price indices are also dissociated in two destination markets: E1 (Eurozone excluding France) and E9 (rest of the world). This distinction is requested by Eurostat. For each CPA4 industry, the BtoX index is obtained by aggregating E1 and E9.

Most of BtoX indices calculated for exporting industries are disseminated at CPA4 level (with the notable exception of the industry 8299 “Other business support service activities n.e.c.”, which is concerned with many misclassifications of enterprises: a BtoX index is under development for this industry, calculated but not released yet).

For other industries, without sufficient weight at export, their export prices are not followed. In that case, a BtoB proxy is generally used for calculation of BtoX. But the proxy can also be a BtoC or CPI index, when the sales to households are predominant.

### 1.5 The weights for BtoX

For establishing BtoX weights, structural business statistics (SBS) survey is used.

The following information is available in this survey, at firm level:

- the output of the firm split between the nationality of customers: national customers, foreign customers inside European Union (EU), foreign customers outside EU
- the output split between kinds of customers: households and enterprises (including civil service and local and regional authorities).

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- the output split between industries, at NACE 4 level.

Two steps are necessary to assess weights by use of these data.

First, at the firm level, exports are estimated because of a cartesian product (figures below are fictitious):

| Turnover by industry (k€) |         |
|---------------------------|---------|
| 5811Z                     | 150 000 |
| 5812Z                     | 20 000  |
| 5813Z                     | 30 000  |
| 5814Z                     | 10 000  |
| 5819Z                     | 10 000  |

|                |      |
|----------------|------|
| Household      | 20%  |
| Enterprise     | 80%  |
| Total turnover | 100% |

|                        |      |
|------------------------|------|
| France                 | 50%  |
| European Union         | 30%  |
| Outside European Union | 20%  |
| Total turnover         | 100% |

BtoX weights

| 5811Z                  | Household | Enterprise | Total   |
|------------------------|-----------|------------|---------|
| France                 | 15 000    | 60 000     | 75 000  |
| European Union         | 9 000     | 36 000     | 45 000  |
| Outside European Union | 6 000     | 24 000     | 30 000  |
| Total turnover         | 30 000    | 120 000    | 150 000 |

and then by aggregation of the results among firms.

In fact, the weights are assessed at the CPF4 level and no service industries includes only goods at this level, so that it would be difficult to use customs data (see 4.6).

## 2. Collecting export prices as part of the SPPI survey: practical aspects

### 2.1 Sample of firms and services

For French SPPIs in general, the sampling is determined at two different levels: first, firms and secondly, service products.

For firms, the sampling is the result of a two-step process:

- first, a statistical “cut-off” sampling,
- secondly, a “well-informed choice” method, that tries to determine firms that would be forgotten with the first process.

With the “cut-off” sampling, firms are ranked according to their turnover in the industry, known because of French structural business statistics (SBS) survey, or extrapolated. Main firms are chosen, up to a certain rate of the total turnover of the industry, but without exceeding a maximum number of firms. French SBS results are available by category of destination: BtoB, BtoC and BtoX, but not for all industries. Although there is no specific sample or sub-sample for BtoX, we

can choose, at this step, to increase the number of firms in the sample, in order to guarantee a minimal coverage rate for BtoX, by the presence of the leading exporting firms, even if they are not the ones with the highest total turnover (which seems in fact to be quite rare).

Secondly, a “well-informed choice” method is applied. First, a research carried out on the Internet aims at identifying firms that have been forgotten with the first process. This is possible because firms may be misclassified. Besides, meetings with one or several industry federation of employers are organised so as to discuss about industry concerns, and in particular about sampling. During this discussion, exports issues will be highlighted and the leading exporting firms identified.

The “cut-off” sampling allows this two-step method to determine the sample of firms: there is no need to determine weights. With a “pure” PPS sampling, it would not be possible to “add” firms because there would be no way to determine weights for these firms.

### **Sample of service products**

Once the sampling of firms is complete, the updating of the services whose prices are followed can begin. Each firm’s questionnaire is customized, reflecting the specific range of services it provides. This is allowed by our survey process which includes an initial phase with engineers of our institute, specialized in services, visiting the firm.

“Field surveyors” from our institute visit the sample of enterprises to define or re-define services that will be followed in a customized quarterly questionnaire. During this process, field surveyors select price indicators that can reflect the realizations of the firms, without being too complex, so that they can be provided in a quarterly basis. Field surveyors choose the appropriate price method according to the situation of the firm.

The services have to be representative of the price variation of a product family (kind of product x kind of market). In practice, the products with the biggest turnover within each family are most often chosen.

## **2.2 Export prices in the customized quarterly questionnaire**

During the initialization visit, field surveyors usually begin their interview with the turnover part, comparing the data we may have from structural business statistics, with the actual activities of the enterprise. In that part of the visit, export activities are reported as precisely as domestic activities.

Then, when identifying representative services that could be part of the quarterly questionnaire, exported services are requested as soon as export weigh is significant (which means significant in the total turnover of the firm, or significant at the level of the industry).

Within the industry level (CPA4), transactions prices are weighted by the corresponding turnover according to the distribution of the turnover collected by the INSEE surveyor in the firm, dissociated by destination (BtoB / BtoC / BtoX in eurozone / BtoX with the rest of the world).

Sometimes, just an estimation is available for this distribution of the turnover, especially for isolating the Eurozone.

### 2.3 Export prices by duplication of national prices or indices

Sometimes, prices for foreigners have no reason for being different from prices for national customers.

This is true in particular when services are delivered on the French territory, and considered as export because they are sold to non-residents. Then, tariffs are public, so there is no way to “discriminate” between both kinds of customers. For instance, accommodation, food and beverage service activities, passenger transport activities enter this category.

There are different ways to use this property so as to appraise SPPIs, according to firms are able to split their turnover between residents and non-residents.

#### When specific weights for BtoX can be picked up

We can choose to pick only one “representative product” for both kind of customers: foreign (BtoX) or national (BtoC) households, foreign (BtoX) or national (BtoB) firms. For instance, for accommodation activities, the standard of the hotel and the kind of service (accommodation or lecture hall services) allows to choose between BtoX BtoB or BtoX BtoC.

This requires that field surveyors pick up weights specific to BtoX and to BtoB or BtoC for representative products.. So, BtoX aggregated index could be different from BtoB (or BtoC) index.

#### When specific weights for BtoX can not be picked up

In this case, the previous method cannot be applied because there is no way to aggregate BtoX representative products in a specific BtoX index.

Nevertheless, BtoX indices should be close to BtoB / BtoC indices, so that BtoX index can simply be duplicated.

For instance, BtoX 4932 Taxi operation index is duplicated from BtoC index, which is itself duplicated from CPI.

57 BtoX CPA-4 indices are estimated by duplication from a BtoB/BtoC index.

## 3. Export prices mechanisms

### 3.1 Exchange rate variations

According to the French approach, export prices can be directly affected by currency fluctuations, in one situation: when the export services revenue is known to be received by the producer directly in the foreign currency, so that it is up to him to take on the exchange cost. In contrast, the producer price is not directly affected by exchange rate variations when the transaction is explicitly charged in euros to the customer (but it may be affected indirectly if the producer adjusts its own price to avoid the resultant cost fluctuation for the customer).

### 3.2 Intra-group exports; transfer prices

When a legal unit of a multinational group sells a good or a service to another legal unit of the same group, the transaction is called “intra-group transaction” and the price of the transaction is called a “transfer price”.

Sometimes, a transfer price is close to a market price and sometimes not, in particular when both legal units are located in two different countries and when the multinational uses transfer prices to send profit from one country to the other, where business taxes are lower.

A frequent discussion about transfer prices is whether these prices should be kept or not for establishing (S)PPIs. The answer is not clear but may depend on what is requested from (S)PPI.

(S)PPIs have three main uses: first, to analyze the direction and the magnitude of price movements; secondly, as a deflator for national accounts; at last, to escalate contracts between firms, or between a firm and local or regional authorities.

In order to analyze price changes, transfer prices seem quite dubious when they do not reflect an economic transaction.

For national accounts, the first question is to determine whether intra-group transactions should be considered as exports or not. According to point 3.171 of the European system of accounts, “exports of services consist of all services rendered by residents to non-residents”. With this definition, intra-group transactions between legal units of two different countries have to be considered as exports.

According to point 3.132 of System of National Accounts, “replacing book values (transfer prices) with market-value equivalents is desirable in principle, when the distortions are large and when availability of data (such as adjustments by customs or tax officials or from partner economies) makes it feasible to do so”. In practice, it is clearly difficult to do so, in particular for exports because custom data only hold the identity of the national part of the transaction (that is to say the seller side for exports), so customs data are useless to identify intra-group transactions.

Then, the appraisal of exports in national accounts, which uses customs database, takes most often into account intra-group transactions, and these transactions are assessed with their

effective price. So, for this use, SPPIs should also take into account transfer prices so as to assess a correct volume from exports in value.

At last, for escalating contracts, transfer prices should not be taken into account because they are not market prices. But this concerns mainly BtoB SPPIs rather than BtoX because BtoX indices are not usually used to escalate contracts.

In conclusion, it seems it is not clear whether considering or not transfer prices when compiling SPPI. That could explain why the conclusion may differ according to sources.

In France, SPPIs are valued including intra-group transactions, even if this method hampers the analysis of price change, because the use for national accounts is considered as the main use for SPPIs. This concerns BtoAll, BtoB, BtoC and BtoX “basic prices” SPPIs. Nevertheless, for escalating contracts, SPPIs are also valued at “market prices”, but this only concerns BtoB.

### 3.3 The digital economy

Online platforms enable direct access to consumers abroad. The development of cloud computing also facilitates the crossing of borders, offering access to customers all around the world.

## 4. Collecting export prices for some particular industries

### 4.1 Freight transportation

The definition of an export taken from the European system of accounts (transactions from residents to non-residents) needs further clarifications for transportation industries.

According to ESA 2010, the exports of services include the following cases:

“a) transportation of exported goods after they have left the frontier of the exporting country when provided by a resident carrier,

b) transportation of imported goods by a resident carrier:

(1) up to the frontier of the exporting country when goods are valued free on board (FOB) to offset the transportation value included in the FOB-value,

(2) up to the frontier of the importing country when goods are valued cost insurance freight (CIF) to offset the transportation value included in the CIF-value,

c) transportation of goods by residents on behalf of non-residents which does not involve imports or exports of the goods (e.g. the transport of goods that do not leave the country as exports or the transport of goods outside the domestic territory).”

Assuming that we only collect the SPPI prices of resident carriers, an essential step is to determine which transportation services are BtoB and which are BtoX. It is possible to summarize the above rules in the following table:

|  |                      | <i>Domestic territory</i>  | <i>Territory in-between</i> | <i>Territory of the “third party” country</i> |
|--|----------------------|--|-----------------------------|---|
| <i>Exported goods</i>  |                      |  | BtoX                        | BtoX  |
| <i>Imported goods</i>  | <i>If valued FOB</i> | BtoX   |                             |   |
|  | <i>If valued CIF</i> | BtoX   | BtoX                        |   |
| <i>Transportation without import nor export of the goods</i> |                      | BtoB in case of transportation on behalf of residents<br><br>BtoX in case of transportation on behalf of non-residents |                             |   |

In practice, the carrier does not always know if the goods transported are imported, exported, or neither; on the other hand, the information always available is the territory of departure and the territory of arrival, and the nationality of the purchaser of the transportation service is always known. We may assume that:

- a route from the domestic territory to the domestic territory (including: mainland France to Corsica, mainland France to a French Overseas Department, or vice versa) is most often for the transportation of not exported or imported goods,
- a route from the domestic territory to another country is most often for exported goods,
- a route from another country to the domestic territory is most often for imported goods.

These assumptions lead to the following simplified grid, which is used in practice by field surveyors to identify BtoB / BtoX transactions:

|  | <b><i>Assumed nature of goods transported</i></b> | <b><i>Indicator</i></b>                                   |
|--|---|---|
| <i>Inland, mainland to Corsica, mainland to overseas departments</i> | Not imported nor exported                         | BtoB in case of transportation on behalf of residents     |
| <i>Corsica or overseas departments to mainland</i>                   |   | BtoX in case of transportation on behalf of non-residents |
| <i>France to another country</i>                                     | Exported  | BtoX  |
| <i>Another country to France</i>                                     | Imported  | BtoX  |

## 4.2 Passenger air transportation

The general definition for exports of services can be applied to passenger transportation; services rendered by residents to non-residents. (3.171 in ESA 2010).

In consequence, the classification of the service between export, import or national transaction depends on the nationality of the air transport company, the nationality (or rather his/her country of residence) of the customer, but does not depend on the points of departure and arrival of the flight.

Nevertheless, as indicated in 3.173 d, exports of services include passenger transportation on behalf of non-residents by resident carriers.

The following table summarizes these different cases:

|                 |                       | Resident | Non-resident |
|-----------------|-----------------------|----------|--------------|
| French company  | Departure from France | National | Export       |
|                 | Departure from abroad | National | Export       |
| Foreign company | Departure from France | Import   |              |
|                 | Departure from abroad | Import   |              |

In France, statistics for flights that take off from France are gathered by the General Directorate of Civil Aviation (DGAC). Statistics for other flights (that do not take off from France) are not gathered.

In practice, SPPIs for passenger air transportation are still under development in France, and no passenger air transportation index is released. Nevertheless, DGAC releases a passenger air transportation price index on the perimeter of flights taking off from France (including French and foreign companies, and both residents and non-residents).

## 4.3 Accommodation

For the accommodation industry, export transactions are formed by the expenditure of non-residents tourists and business travelers for their accommodation in the domestic territory. Export transactions may also come from prepaid reservations (for instance: made on websites) by non-residents before their arrival in the country.

For accommodation, the French SPPI survey aims at calculating BtoB and BtoX indices; the BtoC index is based on its equivalent consumer price index (CPI).

The BtoX index considers both business and household purchasers. Since there is a different seasonality between BtoB and BtoC prices, distinct services for “export to business” and “export to households” have to be followed for an accurate appraisal of the BtoX index.

However, the information of customer origin may not systematically be available from hotels accounting.

#### 4.4 Postal services

Like for transportation, the definition of exports for postal services in national accounts has to be explained: exports of postal services correspond to cross-border post entering the domestic territory. Indeed, once entering the country, cross-border post is distributed on behalf of foreign postal services by the domestic postal service.

The latter will charge foreign postal services for the distribution of post entering the country. The charges, called “terminal dues”, are regulated by international agreements regularly adopted by the Universal Postal Union (UPU) in which many national postal services are represented.

Up to now, we have used a “BtoB+BtoC” proxy for assessing these terminal dues: most part of these dues were acknowledged to be close to percentages of domestic fees. A real BtoX index will probably be needed to take into account new recommendations from the UPU or specific agreements between national postal services.

#### 4.5 Telecommunications

For telecommunications industries, there are three different kinds of exports, from the national accounts point of view:

- when a foreigner subscribes to an IT service (for instance buy a prepaid card) in France, if he/she is considered as a non-resident, the purchase is considered as an export
- international calls entering the domestic territory: a French operator handles the end of calls emitted by foreign customers, and is remunerated for this interconnection service
- “roaming in” charges: these charges appear when non-residents staying in the host country call with a mobile whose contract was subscribed in their country of origin: operators of this country have to pay roaming charges to the French operator for the roaming service.

For instance, in French SPPIs:

- If a German consumer in Germany calls in France (international entering call): the transaction is BtoX;
- If a German consumer in France calls with his/her “foreign mobile” (roaming in charges): the transaction is BtoX;
- If a French consumer in Germany calls in France (roaming out charges): the retail transaction can be seen as BtoC, because the French consumer pays its French operator for the interconnection, but the termination charge paid by the French operator to a German operator is considered as import price;

International regulations and agreements can have a strong impact on export prices, on roaming charges and international interconnection charges above all. In the European Union, international roaming in extra-charges were abolished in June 2017 by a Community settlement. This is an explanation of the tumble of the BtoX curve (see graphs in the conclusion to the paper).

#### 4.6 Publishing

Publishing activities have the particularity, in many cases, that physical goods can be identified for the services provided. Like for export of goods, we might think of customs declarations data to assess the export turnover for physical (non-digital) publishing.

One difficulty in using customs data is that the goods crossing the national borders can correspond to “printing and reproduction” manufacturing activities rather than publishing activities. For instance, a foreign software company ordering CD-ROMs may not be purchasing a software publishing service, depending on whether this company owns the original copies. If the original copies already belong to the purchaser, the transaction corresponds to reproduction of software (18.20) and not software publishing. This example shows that we have to focus on the transactions concerning royalties and license fees paid by non-resident companies, rather than the goods exported, and we should probably not use customs data for this industry.

#### 4.7 Engineering services and related technical consultancy

Engineering is, among other industries like management consultancy or human resource provision, an industry for which international movements of person abroad regularly occur. The leading engineering companies hire a lot of specialized mobile workers who can be sent abroad for missions in the framework of engineering projects. Europe-wide competition for engineering services has developed, while exempting companies from establishing affiliates in all countries.

In France, the importance of engineering exports has also been reinforced because of the recent drop in the public demand, which has urged many engineering firms to prospect new markets. In the last five years, it is confirmed that engineering prices have evolved quite differently between domestic market and export: export prices seem to be more dynamic than domestic prices.

#### 4.8 Leasing of intellectual property and similar products

The 77.40 industry (leasing of intellectual property and similar products, except copyrighted works) includes royalties and license fees for patented entities, trademarks and brand names, and franchise agreements.

The rise in international trade tends to increase the use of royalties. With an intensifying global competition, companies tend to use intellectual property rules to increase the value of their intellectual capital, as a result of their research and development efforts.

The first issue in the calculation of this industry index is sampling. Usually, we select enterprises by a cut-off technique (see 2.1), based on SBS. For the leasing of licenses, relevant actors are mostly industrial global companies, which do not record them systematically in their turnover. More often, licenses are declared as “other operating revenues including royalties” in fiscal declarations. Hence, we have selected firms with the biggest amounts for the two items (turnover

in 77.40 in SBS + “other operating revenues including royalties” in fiscal data). Eventually, we obtained relevant data from the on-site visits to the enterprises in question.

Royalties are usually defined as a percentage (called “commission rate”) of the turnover of the product under license, paid by the user of the license to the owner of the license. An appropriate measure for SPPI is not the level of royalties, because it is not homogeneous to a price, but rather the multiplication of the commission rate by the unit price of the product under license.

License fees are considered as exports when the owner of the license is resident and the user of the license non-resident. In this case, the owner of the license, which is surveyed for SPPI, does not necessarily know about the unit price of the product under license. Besides, there must be several products under license, so that it could be difficult to define a relevant unit price.

That’s why, from a practical point of view, price series we use in the calculation of the export index for this industry are most often the product of a commission rate (given by the enterprise) multiplied by an index (CPI, PPI or another price index of the countries where the user of the license can offer the products under license, usually the country of the “user”). If the royalties are charged in the foreign currency and not in euros, the commission rate must also be multiplied by the exchange rate (see also 3.4 exchange rate variations).

For instance:

- for a license service exported in country A by a French pharmaceutical firm, with the transaction charged in euros:

series 1: commission rate for the use of a pharmaceutical formula

series 2: pharmaceutical industry price production index in country A

series used for calculation = series1 x series2

- for a license service exported in country B by a French pharmaceutical firm, with the transaction charged in dollars:

series 1: commission rate for the use of a pharmaceutical formula

series 2: exchange rate, dollar to euro

series 3: pharmaceutical industry price production index in country B

series used for calculation = series1 x series2 x series3

This method involves the collection of many CPI and PPI indices published by other national statistical institutes. An operator collects on a quarterly basis the foreign indices on the NSI websites. It is nevertheless a long work to download all the foreign CPI and PPI and to combine them every quarter.

We can note that commission rates given by companies are very flat. Export prices calculated tend to reflect exchange rates variation and foreign prices variations.

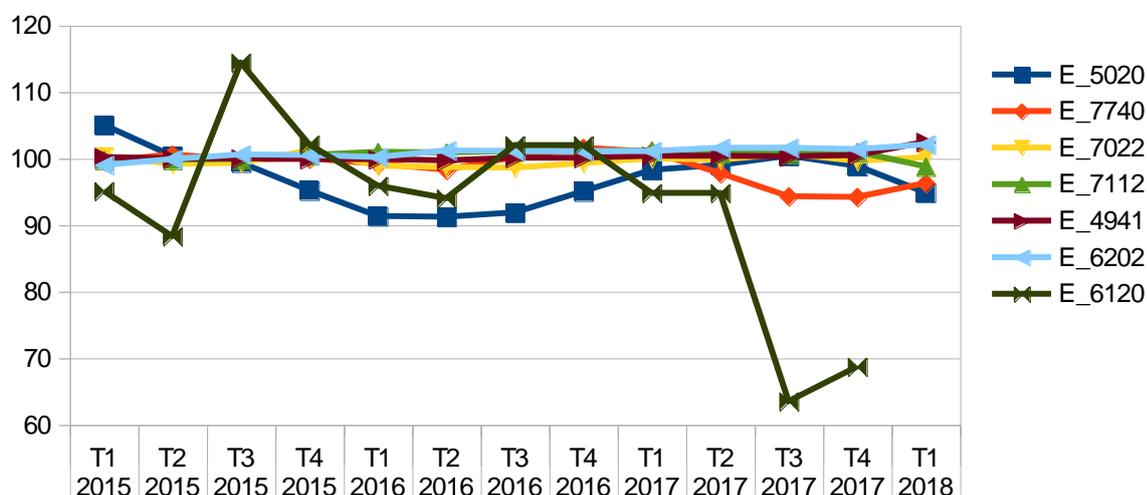
Conclusion; indices graphs

As we can observe on the graph below, the BtoX index level does not fall into line with BtoB and BtoC. To explain this differences, we have to remind that:

- the structure of exporting industries is not the same than the one of domestic industries,
- the economic environment differs between domestic and global markets,
- prices themselves can voluntarily be adjusted by enterprises according to the country of destination.

### Export prices production indices

Basis = 100 in 2015



### Services prices production indices by type of customer

Basis = 100 in 2015

