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Cross-cutting issues part 2 “Institutional sectoring – turnover and prices for various sectors”

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Introduction

The purpose of this paper is to provide a conceptual framework for the extension of services producer price indices to “B to All” (of which “B to B”) indicators and to more products, consecutively to the “Short Term Statistics package 2017” of Eurostat, in consistency with National Accounts purposes. According to the view of the author, the usual distinction between “B to B” and “B to C” has to be completed with the introduction of “B to E”, and these “sectoring” expressions have to be interpreted with the definition of “uses” in National Accounts.

1 The lack of guidance on exported services in SPPI and the ambiguity on exported goods in industrial PPI

1.1 The lack of guidance on exported services in SPPI

The binary distinction between “B to B” and “B to C” price indices is traditional in international manuals because of the pre-existence of Consumer Price Indices (CPI), but the inclusion or exclusion of exports in “B to B” indicators is never explicit, and the “B to B” or “B to All” definition of the prices to collect was even ambiguous or contradictory in the past.

1.1.1 The Eurostat-OECD manual of 2005

For example of the implicit binary distinction “B to B” / “B to C”, the Eurostat-OECD manual “*Methodological guide for developing producer price indices for services*” mentions in page 13:

“The aim of this guide is to aid countries to develop producer price indices for ‘business services’, i.e., those services that are mainly aimed at uses other than household consumption. Services predominantly for household consumption are expected to be covered by the consumer price index (CPI) and are outside the scope of this guide.”

For example of the ambiguity between “B to B” and “B to All”, the same guide says page 15:

“An SPPI is defined here as [...] The index covers services provided for all uses, intermediate and final consumption, and for exports. However, the use in intermediate consumption dominates because this guide restricts itself to discussing only those service industries that are mainly aimed at business use.”

Some lines afterward, a more complete breakdown of “B to All” indicators between institutional sectors of destination is suggested, in line with NA concepts, but this idea is not developed any longer:

“The coverage of all output means that SPPI comprise prices in the provision of services to all institutional sectors, financial and non-financial corporations, government units, non-profit institutions (NPISH), households and the rest of the world. However, services provided for different markets are not necessarily the same, and their price development can be different. Subdivision of an SPPI by destination of output can therefore be desirable and would enhance its use, particularly for purposes of deflation in national accounts.”

In conclusion, the scope of SPPI is recognized as wider than “B to B” (with the case of government units for instance) but not strictly defined. Implicitly, one can understand them as “B to All”, for a selection of services mainly concerned by “B to B”.

1.1.2 The European STS regulation and STS methodological manual

In “annex D – other services” of European STS regulation, we can read this strict “B to B” requirement:

“3. The output price variable (No 310) covers services delivered to customers that are enterprises or persons representing enterprises.”

The scope of products concerned is limited, clearly complementary to “B to C” products:

“5. The output price variable (No 310) is to be transmitted according to the following activities and groupings of NACE Rev. 2:

49.4, 51, 52.1, 52.24, 53.1, 53.2, 61, 62, 63.1, 63.9, 71, 73, 78, 80, 81.2; sum of (50.1 and 50.2); sum of (69.1, 69.2 and 70.2).

NACE Rev. 2 Division 78 covers the total price of labour recruited and personnel provided.”

The SPPI part of the “*methodology of short term business statistics*” manual is clearly inspired by the Eurostat-OECD one, of which some sentences are quoted, but does not mention anything on exports.

1.1.3 The European countries practice in 2009

A Eurostat task force took place on May 2009, in order to clarify the Members States practice about “B to B” and “B to All” SPPI. The “B to All” SPPI could be wider because of the activities included, or because of the destination of the output. The practice was recognized as heterogenous:

According to the information provided in summer 2008, a majority of countries calculate B2B indices according to the Regulation. Some countries calculate only B2All indices and a few could provide both indices.

H501 and H502	Sea and coastal water transport	10 countries B2B; 5 countries B2All
H51	Air transport	7 countries B2B; 11 countries B2All
H53	Postal and courier activities	
H531	Postal activities under universal service obligation	10 countries B2B; 7 countries B2All
H532	Other postal and courier activities	11 countries B2B; 7 countries B2All
J61	Telecommunications	13 countries B2B ;7 countries B2All
M69 and M702	Legal, accounting and management consultancy activities	
M691	Legal activities	9 countries B2B; 6 countries B2All

The UK explained that “B to All” indicators were produced by combination of CPI for “B to C” and SPPI for “B to B”, with exports (to businesses) included in “B to B”. Some countries asked for the destination of the services, but it was unclear if some excluded exports from “B to B”. It was observed that no country was building a specific “B to E” indicator at that time. All countries concluded that “B to All” indicators were wishable in the future, without any further guidance on the treatment of exports (the SPPI task force was interrupted).

1.1.4 The “STS package 2017”

“B to B” and “B to All” price indicators are now requested, for a large panel of services, but nothing is said about the strict or large notion of “B to B”, neither on the case of exports:

Variable ⁽¹⁾	Reference period / Periodicity	Form	Country Group	Level of Detail	Deadlines ⁽²⁾
310 ⁽³⁾ Producer prices (PRON)	quarter or month / periodicity accordingly	indices: - unadjusted	S, M	N494, sum of (H501 and H502)(= H501_H502), H51, H521, H5224, H53 (= sum of (H531 and H532), H531, H532; J61, J62, J63; M69, M702 (= split of M69_M702), M71, M73, N78, N80, N812. In order to compile the European ISP, deflators will also be needed for the following activities: H49, H50, H52, I55, I56, J58, J59, J60, L68, M74, N77, N79, N81, N82. However, for some areas there will be alternative deflators so that the final list of new SPPIs is likely to be smaller than the proposed list. The appropriate scope of the SPPI, in terms of NACE and of coverage B2B / B2all, will be explored in the framework of the TF ISP.	3 months
			L	as Groups S, M. Additionally: J631, J639	

1.2 The ambiguity on exported goods in industrial PPI

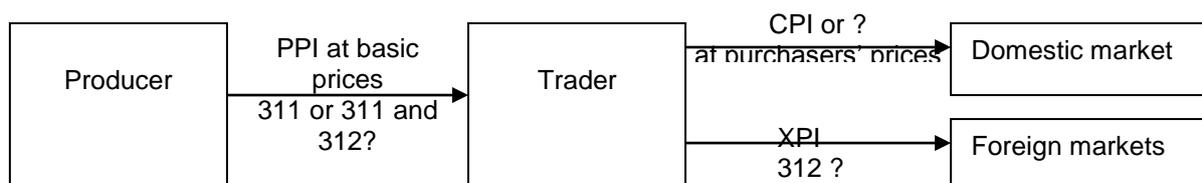
A similar ambiguity can be described on the binary distinction between “domestic market” and “non-domestic market(s)” for industrial products, exposed in “annex A – industry” of European STS regulation:

- 310 Output prices
- 311 Output prices of the domestic market
- 312 Output prices of the non-domestic market

“9. The variables on the non-domestic markets (No 122, 132 and 312) are to be transmitted according to the distinction into euro-zone and non-euro-zone.”

But what are we supposed to measure when an intermediary (trader) intervenes between the producer and the “real” but indirect destination?

Figure 1: differences between XPI and PPI for foreign markets



The “methodology of short term business statistics” manual opens the two interpretations, with a preference for an interpretation on the first customer, even intermediary:

“In practice, the flow of goods between the producer and the non-domestic customer may pass through an intermediary. This means that there may be some justification for measuring price changes in commercial transactions. In this case, the result is an index of non-domestic prices (rather than nondomestic output (producer) prices) since the observations are not restricted to producers. But the ideal indicator is still that which measures changes in output (producer) prices of products/services for delivery to non-domestic markets, and thus of the price of domestic production directly delivered to non-domestic markets.”

2 What National Accounts, Balance of Payments, private users and Eurostat STS unit should request

2.1 What National Accounts should request: B to All = B to B + B to C + B to E

National Accounts have to establish “balances” between resources and uses by products, both in current prices and in prices of previous year, and preferably by deflation for the latter. The commodity flow is written this way:

$$\begin{array}{cccccccc}
 P & + M & + TTM & + T-L & = & IC & + FC & + GFCF & + X \\
 \text{Production} & & \text{Transport} & \text{Taxes less} & & \text{Intermediate} & & \text{Gross fixed} & \\
 & \text{Imports} & \text{and trade} & \text{subsidies on} & & \text{Consumption} & & \text{capital formation} & \text{Exports} \\
 & & \text{margins} & \text{products} & & & & & \\
 & & & & & & \text{Final} & & \\
 & & & & & & \text{Consumption} & &
 \end{array}$$

This is the main “accounting identity” to consider for PPI. The left side of the equation provides the basis for “output prices” and the right side for “input prices”. National Accounts will necessarily consider identical concepts for the two sides, as they need to balance.

In services, the equation is even more simple, as transport and trade margins are not supposed to exist (or, formally, only negative transport margins that compensate the production for domestic uses in freight transport services), and we can name the respective output and input prices this way:

$$\begin{array}{cccccccc}
 P & + M & + T-L & = & IC & + FC & + GFCF & + X \\
 \text{B to All} & \text{Import} & \text{Implicit breakdown} & & \text{B to B} & \text{B to C} & \text{B to B} & \text{B to E} \\
 & \text{price ?} & \text{between volume} & & & & & \\
 & & \text{and price relying} & & & & & \\
 & & \text{on the uses side} & & & & &
 \end{array}$$

We can see that the distinction between financial and non-financial corporations, government units, non-profit institutions and even individual enterprises is almost useless, as far as Intermediate Consumption or Gross Fixed Capital Formation is concerned, but the rest of the world should not be confused.

Strictly speaking, B to B input prices could include imported services, but if domestic output is majority, and taxes less subsidies low and stable, a B to B output price could be enough for IC.

Difficult cases occur when pure households are concerned for other uses than final consumption, *i.e.* Intermediate Consumption or Gross Fixed Capital Formation of industry “68.20 - rental of dwellings” in product such as “69.10 – legal services”. We can suggest that “B to B” would then include “IC or GFCF of households”.

Also, in some services, IC and GFCF can exist together. NA would then appreciate two different “B to B” deflators, at fine product level.

The interest of National Accounts for “B to E” price indicators is unquestionable. SNA 2008 dedicates one page to export and import volume and price. The first paragraph on this topic is quite mysterious:

“15.160: Exports and imports consist of both goods and services. For both exports and imports, goods and services are expressed in volume terms using quite different deflators because of the very different sources available for goods and services. New initiatives are under way to improve price indices for external trade in services that should lead to improved data in this area.”

It is clear that the Voorburg Group was expected on this area.

2.2 What Balance of Payments should request: M to All and B to E

2.2.1 A general request for import and export prices (“B to E“)

Published in 2009, the Balance of Payments Manual 6th version (BPM6) includes a very short section on “*Price and volume data*”:

“10.12: *Goods and services have price and volume dimensions, so it is useful for analysis and data validation to have volume and price data, as well as current price values.*”

Published in 2009 too, the IMF manual on Exports and Imports Prices (XMPI) is supposed to provide guidance for prices in exported and imported services, as well as for exported and imported goods:

“*Introduction, 1.0: A price index is a summary measure of the proportionate, or percentage, changes in a set of prices over time. Export and Import Price Indices (XMPIs) measure the overall change in the prices of transactions in goods and services between the residents of an economic territory and residents of the rest of the world. The prices of different goods and services all do not change at the same rate. [...]*”

In chapter 3, the theoretical principle of the inclusion of services is repeated:

“*3.23: This current XMPI Manual also incorporates approaches to the measurement of prices of exports and imports for services.*”

In chapter 11 (“*Treatment of Specific Products and Issues*”), section H is dedicated to services (2 pages on 13), with an explicit contribution of the US BLS on freight or passenger transportation services. Travel and tourism are briefly described (although not exactly according to the NA point of view). Education is mentioned for future research.

2.2.1 The four modes of supply of GATS as help for definition of imports and exports

The first General Agreement on Tariffs and Trade (GATT) was negotiated in Geneva and signed in 1947, between 23 countries. It concerned only (customs) tariffs on goods. In 1995, the Uruguay round led to the creation of the World Trade Organization, where the GATT revised 1994 was joined by the General Agreement on Trade in Services (GATS), and by an agreement on intellectual property.

Typically, the GATS agreement describes and rules four modes of supply for the delivery of services in cross-border trade, but in two cases the National Accounts view does not consider them as imports or exports:

Table 1: the four modes of ITS according to GATS

Mode	Supplier presence	Criteria	Treatment in NA
Mode 1: Cross-border supply	Service supplier not present within the territory of the consumer	Service delivered within the territory of the consumer, from the territory of another country (of the supplier)	imports / exports
Mode 2: Consumption abroad		Service delivered outside the territory of the consumer, in the territory of another country (of the supplier)	Households: FC / tourism Others: imports / exports
Mode 3: Commercial presence	Service supplier present within the territory of the consumer	Service delivered within the territory of the consumer, through the commercial presence of the supplier	FATS revenue of property
Mode 4: Presence of a natural person	Service supplier present within the territory of the consumer	Service delivered within the territory of the consumer, with supplier present as a natural person	imports / exports

Out of scope for NA imports and exports

Note that in modes 1 and 4, exports can concern natural persons (not businesses), their final consumption is not recorded “in the territory” of the supplier and their prices are not covered by CPI (for instance in mode 1: passengers transport, e-commerce, financial services, in mode 4: some personal services). Hence, a formula $B \text{ to All} = B \text{ to B} + B \text{ to C}$ would miss these cases, or need that some foreign “B to C” are included in “B to B”.

The Manual on Statistics of International Trade in Services (MSITS) was updated in 2010. At a time (workshop in Kiev, October 2008), it was planned to introduce in MSITS 2010 a specific annex on service export and import prices. This idea was given up, but we can read:

“5.5. At a disaggregated level, it would be desirable to have information on flows by mode of supply and partner. This would allow analyses of the origin of the service or service supplier, and its territorial presence at the moment of the transaction. Ideally, statistics on the international supply of services should, therefore, be available by country of origin and destination, allowing identification of principal suppliers and consumers. A link between trade and output data, whether by activity or product, would enable a more complete and improved analysis of the international supply of services. Data at volume level would allow complementary analysis for constant price considerations in various statistical frameworks.”

Hence, ITS compilers would even request exports and imports prices by product and by mode.

2.3 What private users should request: B to B without B to E

The indexation in legal contracts should be the second main purpose of “B to B” SPPI, as for PPI. It is clear that domestic businesses are *a priori* not concerned by transactions and prices concerning exports, *i.e.* foreign customers. They should be interested by “B to B without B to E” SPPI. Nevertheless, the perception of the distinction between “domestic market” and “non-domestic market” can be different between National Accounts and private users (for instance, for freight transportation services, NA consider any transport outside the domestic border as export, where the private user would consider the residency of the customer).

2.4 What Eurostat STS unit should wish for consistency between industry and services

Services statisticians want to develop statistics on services in order to get the same wealth of information as in industry.

In industry, the basic breakdown of turnover (120, of which 121 and 122) and of producer prices (310, of which 311 and 312) relies on “domestic market” / “non domestic market”, not on “B to B” / “B to C”.

The same distinction could be operated on services, and joined to the traditional binary division between “B to B” and “B to C” should lead naturally onto a ternary partition “B to B” / “B to C” / “B to E”.

3 The French way of observation and calculation

3.1 The French way of turnover observation and SPPI weighting and sampling

3.1.1 Observation of the turnover by institutional sector

In most market services (excluding transports), the French Structural Business Survey asks for a breakdown of turnover between “businesses” and “households” on one side, and between France and foreign countries on the other side.

Figure 2: French SBS information on turnover sectoring

Répartition du chiffre d'affaires	%	
Entreprises du groupe ¹ auquel vous appartenez	<input type="text"/>	Intra-group B to B
Entreprises hors du groupe auquel vous appartenez (y compris entreprises publiques : SNCF, EDF)	<input type="text"/>	Extra-group B to B
Administrations (y compris collectivités locales, hôpitaux...)	<input type="text"/>	General Government
Particuliers, hors services rendus à leur domicile (y compris associations, syndicats de copropriétés,...)	<input type="text"/>	B to C, excluding in their dwellings
Particuliers, services rendus à leur domicile	<input type="text"/>	B to C, in their dwellings
TOTAL	100%	

Répartition du chiffre d'affaires	%	
Clientèle nationale	<input type="text"/>	B to B or B to C
Union européenne	<input type="text"/>	B to E, European union
Hors Union européenne	<input type="text"/>	B to E, outside European union
TOTAL	100%	

Note that in the French annual tax declaration, a breakdown of turnover between France, European union, rest of the world outside European union is also available.

3.1.2 SPPI weighting and sampling by institutional sector

In order to calculate weights by fine products (CPA 4 digits level) below National Accounts aggregates, *a priori* turnover by institutional sectors are determined at enterprise x CPA 4 digits level with a cartesian product:

Household	20
Enterprise	80
Total turnover	100

	Household	Enterprise	Total
France	15	60	75
European Union	2	8	10
Outside the European Union	3	12	15
Total turnover	20	80	100

France	75
European Union	10
Outside the European Union	15
Total turnover	100

$15 = 20 * 75 / 100$

B to C B to E B to B

Figure 3: weighting at micro-level

The samples of SPPI are normally determined by total turnover only. But, if household final consumption is predominant:

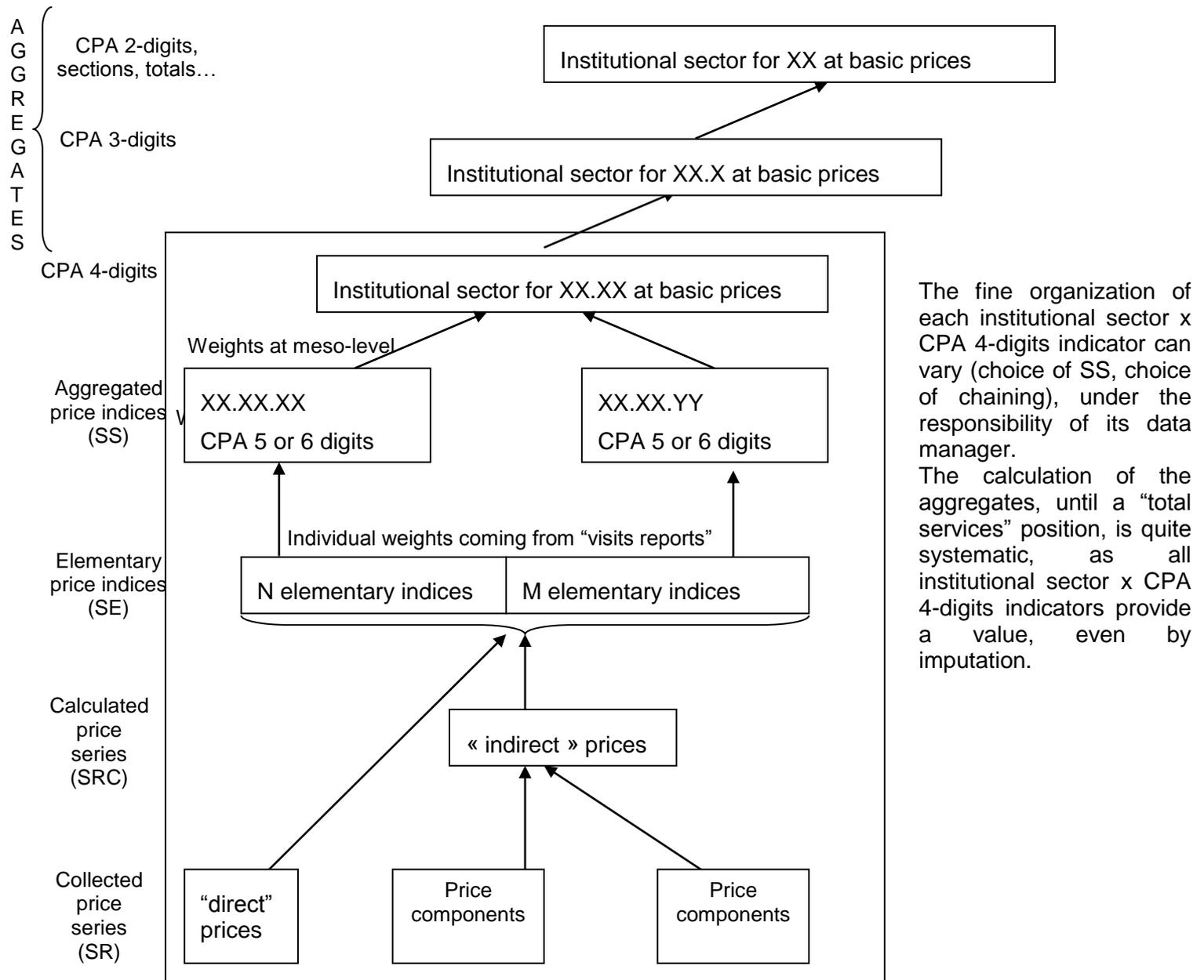
- if SPPI covers also B to C, the B to All sample is manually reinforced on B to B and B to E with the help of these micro-weights calculation;
- if SPPI is not supposed to cover B to C as CPI will be directly used, then the B to All sample is substituted by the merging of B to B and B to E samples relying on these micro-weights calculation.

3.2.2 Calculation of aggregated price series by institutional sectors

5 “institutional sectors” are directly calculated by “vertical” aggregation or chaining:

- two notions of “B to B” are distinguished as for industrial PPI, one for outputs at basic prices and one for inputs at market prices (most usually the second one is chained on the first one, but considerations on taxes and subsidies on products or on intra-group transactions or on different views between NA and private users can lead us to build two different aggregation trees, from most common elementary price series);
- one notion of “B to C”, as much as possible obtained from CPI with a trivial formal aggregation;
- two zones of “B to E”, *i.e.* Euro zone (E1) and non Euro zone (E9).

Figure 6: typical vertical aggregation tree, for B to B, B to C, B to E1 and B to E9



The fine organization of each institutional sector x CPA 4-digits indicator can vary (choice of SS, choice of chaining), under the responsibility of its data manager. The calculation of the aggregates, until a “total services” position, is quite systematic, as all institutional sector x CPA 4-digits indicators provide a value, even by imputation.

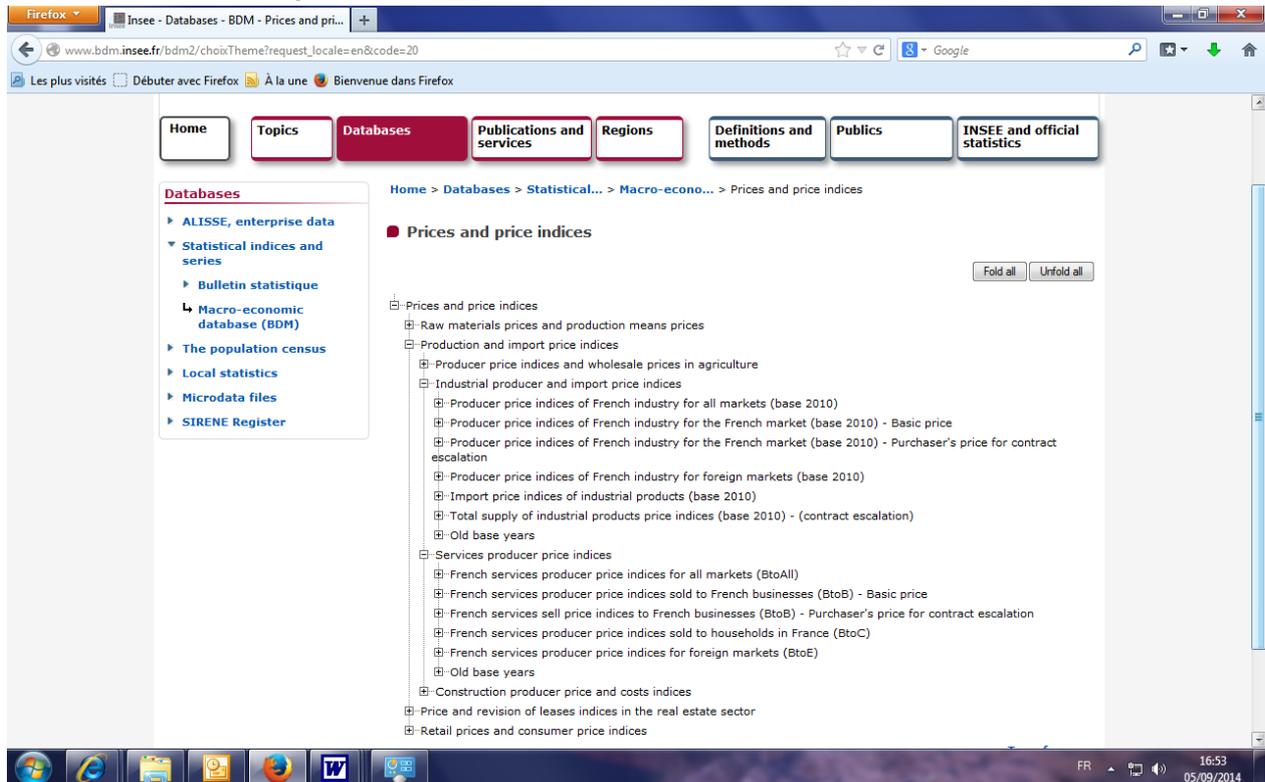
If no collected price series corresponds to an aggregated price index (at CPA 4 digits or below), the latter is “chained”, usually on the same product but for another institutional sector (for instance E9 on E1), or on another product.

2 “institutional sectors” are indirectly calculated by “horizontal” aggregation, at each product level:

- “B to E” from “B to E1” and “B to E9” (euro-zone and non euro-zone);
- “B to All” from “B to B” at basic prices, “B to C” and “B to E”.

3.3 Dissemination

Figure 7: dissemination of SPPI on French NSI website



source: Insee, BDM (http://www.bdm.insee.fr/bdm2/choixTheme?request_locale=en&code=20)

Industrial PPI and Services PPI are organized in dissemination as much similarly as possible (B to All, domestic or B to B at basic price, domestic or B to B at market price for contract escalation, BtoE).

SPPI B to C are only disseminated for “Main aggregates”, in order not to repeat CPI dissemination.

Fine products infra CPA 4-digits are rather disseminated at market prices, for contract escalaton.

3.4 A proposal of methods A, B, C typology for SPPI by institutional sectors

The following methods for calculating SPPI by institutional sectors (B to B / B to C / B to E) at CPA 4-digits level are sorted by decreasing relevance, with a proposal of A / B / C score in the traditional Eurostat approach. Also, the corresponding proportions in French SPPI by institutional sectors at 2014Q1 are provided:

Table 2: relevance of SPPI by institutional sector at CPA 4-digits

Relevance	Kind of observation / calculation	B to B	B to C	B to E	B to All
A ⁺	“true” elementary price indices issued from transactions by a specific enterprise on a specific product toward a specific institutional sector (1 SE by SR).				
A ⁻	relevant elementary price indices issued from transactions by a specific enterprise on a specific product toward a broad set of institutional sectors (usually both domestic and non-domestic), with corresponding weights (several SE by SR).	83 %	15 %	57 %	65 %
	“B to C” obtained from CPI with relevant consistency COICOP function / CPA product and correction of taxes and subsidies on products influence on price development	NA	76 %	NA	19 %
B	price indices at CPA 4-digits level imputed from other institutional sector of same CPA 4-digits product.	5 %	6 %	29 %	6 %
C	price indices at CPA 4-digits level imputed from other CPA 4-digits product.	12 %	3 %	14 %	10 %

The proportions in B to All correspond to the aggregation of the proportions in B to B, B to C and B to E respectively.

Conclusion

The calculation of “B to E” SPPI is already well engaged in France and its dissemination has begun in May 2013. French National Accounts have already used some of them since the new base of NA implemented in 2014.

Some services import prices are currently experimented, especially in transport services, with a particular project on passenger air transport services.

Corresponding “total supply for businesses” will then constitute the “input price” variant for “B to B” with a contract escalation purpose.