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PPI, XMPI and UVI

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PPI, XMPI and UVI

*new sharing between volume
and price in goods trade*

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Structure of the presentation

1 – The international recommendations on XMPI, the European framework for PPI...
How does it fit for industrial products?

2 – The combination with UVI for agricultural products and backcasting, and the new indices of French foreign trade (in goods)

3 – The perspectives in short and long term (end of UVI or “pure UVI” in XMPI, services...)

1) Eurostat handbook on price and volume measures in national accounts (2001)

3.8. Exports and imports of goods and services

3.8.2 Goods

Actual export and import prices

.....

Unit value indices (UVIs)

UVIs are readily available from trade statistics being derived as the ratio of value to volume (weight or quantity). They do not generally control for changes in the product mix within one item, leading to quality changes mistakenly included in the price component. Their coverage of products is generally complete, but even at the most detailed level of trade classification can often include a range of different products. Where the products within an item of the trade classification may appear to be homogeneous this may in reality not be the case as products of similar description may be of very different quality. It may be possible to construct more homogeneous UVIs if the country of origin (or destination) is also taken into account. UVIs are clearly unsuitable for products that are unique or change quickly in specification.

Adjusted PPIs

.....

1) Eurostat handbook on price and volume measures in national accounts (2001)

3.8. Exports and imports of goods and services

A, B and C methods

In striking a balance between the cost of price indices and the availability of UVIs, the suitability of the existing UVIs could be explored first. [...] it has not been possible to clearly identify types of products where these differences are limited, making UVIs acceptable. [...]

A methods should be based on the use of quality adjusted price indices for all exports and imports. The price indices should be consistent with the product classification used in the value data being deflated. Their valuation should correspond to the valuation used for the current price data, i.e. f.o.b. for exports and either f.o.b. or c.i.f. for imports. [...]

For product groups that are sufficiently homogeneous over time, UVIs can also be considered B methods. The volatility of the UVIs should be examined as a test for suitability rather than simply relying on the understanding of the content of any particular trade group.

The suitability of PPIs, whether adjusted in some way or not, needs to be assessed on a case by case basis [...] before they can be considered suitable as B methods. [...]

1) IMF manual on Export and Import Price Index Methodology (XMPI) (2008)

Chapter 2: Unit Value indices

B. International Recommendations

2.7 The potential limitations of unit-value indices were recognized in both the United Nations (1979) manual on producer price indices (PPI index) and United Nations (1981). [...]

2.8 [...] Thus, countries with “tight budgets” were advised to use the unit values compiled by customs authorities to construct price relatives, provided that such unit values are defined for commodities in the narrowest sense possible (using customs documentation). [...]

2.10 Two variants were suggested for the strategy of a statistical authority endowed with considerable budgetary resources. The first option was to pursue a dual strategy, according to which a comprehensive price survey of importers and exporters is conducted while keeping track of unit values from customs authorities. Alternatively, a hybrid strategy might be followed, in which the price relatives from establishment surveys and unit value indices from customs data complement each other. [...]

1) System of National Accounts (2008)

Chapter 15: Price and volume measures

Volume, quantity, price and unit value indices

15.14 [...] Unit value indices measure the change in the average value of units that are not necessarily homogeneous and may be affected by changes in the mix of items as well as by changes in their prices. Unit value indices cannot therefore be expected to provide good measures of average price changes over time for groups of non-homogeneous items.

15.164 [...] Unit value indices may suffer further in recent times due to an increasing lack of comprehensiveness of the source data with increasing proportions of trade being in services and by e-commerce and hence not covered by merchandise trade data. Further, countries in customs and monetary unions are unlikely to have intra-union trade data as a by-product of customs documentation. [...]

15.165 [...] If MPIS and XPIs are available for exports and imports of services they can be readily used to derive the required volume estimates. If they are not, volume estimates of exports of services can be mostly derived using an assortment of PPIs and CPIs. [...]

PPI, XMPI and UVI – new sharing between volume and price in goods trade

1) European regulation STS asks for import prices and “output prices of the non-domestic market”

European regulation (EC) n° 1165/98 revised 1158/2005 asks for some “PPI” :

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

2. The information on output prices for non-domestic markets (No 312) and import prices (No 340) may be compiled using unit values for products originating from foreign trade or other sources only if there is no significant deterioration in quality compared to specific price information. ► **M7** The Commission shall determine the conditions for assuring the necessary data quality. Those measures, designed to amend non-essential elements of this Regulation by supplementing it, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 18(3). ◀

Note the more and more restrictive acceptation of UVI in place of output prices or import prices.

1) Eurostat manual on methodology of short-term business statistics

[...] The unit value index nevertheless offers three benefits vis-à-vis output price indices for the non-domestic market: they use an (almost) exhaustive source since the basic data are from external trade data; they are very cheap to produce, and the mean values are calculated from prices invoiced in real transactions. For this reason, the UVI can give a good estimate for an index of non-domestic output prices in as much as the product/service is relatively stable in both quality and volume of sales.

If the indicator of import prices is not available, the STS-Regulations permit this to be approximated by an indicator of the unit value, only if this does not imply any significant deterioration in quality compared to specific price information. [...] Changes in unit value thus reflect both specific price changes, changes in the composition of products within the group and changes in quality. Monthly changes in the product composition of the group may lead to erratic movements of the unit value index. Quality improvements make the unit value index systematically over-estimate the specific price index.

1) First attempt of a conclusion

UVI are never or quite never homogeneous, they lead to mistakes in “pure” price changes because of the “quality mix”, and it is supposed to result in a systematic over-estimation of price indices.

XMPI should be the ideal indicators: pure “export price indices” and “import price indices” of the “PPI” family, only “A method” possible according to Eurostat manual.

Even “adjusted” (or not) domestic PPI could be accepted as “B method”, like UVI at their best.

Hence, UVI are recommended only for tight budgets, richer budgets should explore XMPI, including for services.

European countries are supposed to develop import price indices (=MPI) and “output prices of the non-domestic market” (~XPI), then to drop UVI...

1) But do “output prices of the non-domestic market” and export prices really fit?

European task force “PPI methodology” met in January 2010 in Luxembourg and examined the contradiction of the STS methodological manual between the “FOB” valuation of exports (ideal according to traditional customs conventions) and the basic price valuation of output (consistent with turnover, excluding for instance any transport margin until the national border).

It concluded that the “true” transaction prices were to follow, i.e. the “invoice values” rather than the “statistical values”.

Of course, the incoterms are to report and keep constant (for each elementary serie), and the closer they are with “FOB” (or “CIF”), the better they are for the consistency of economic statistics.

Intra-firm exchanges prices are to include and not to correct, in order to remain consistent with NA aggregates.

1) But do “output prices of the non-domestic market” and export prices really fit? (2)

“Export prices” are then restricted (for the sake of STS regulation) to “direct export prices”.

Also, the target of optimal “output prices” means that the sampling and the classification of the products observed will be more influenced by output surveys (~ ProdCom) than by customs statistics, and they can differ (it is not a point for import prices, where the sampling is normally provided by customs statistics).

In some occasions and/or for some countries, a choice can also be operated between a logic by “activity” (STS is by KAU) and a logic by “product”.

2) UVI are still necessary for agricultural products and backcasting

European regulation on STS does not concern agricultural products (neither forestry and fishing products). European regulation on agricultural statistics includes producer prices but not external trade prices. Hence, UVI remain compiled on section “A – *products of agriculture, forestry and fishing*” for the needs of national Accounts.

It is only since 2005 that most French (and European) price indices have been compiled. Hence, UVI are the only possibility to backcast these “XMPI” for Eurostat STS database for instance, as well as for any long term “foreign trade indices” database.

UVI were to recompile in CPA 2008 and reference year 2005 for this purpose.

- industrial goods UVI have been recompiled for 1999-2004;
- agricultural products UVI have been recompiled since 1999.

2) UVI: 4 steps of calculation

- UVI is first calculated by CN8 for a given country (of origin or destination). This UVI is immediately considered as a “*link*” index, relatively to previous (or following) year (in average), as base and reference year = 100.
- Outliers within monthly CN8 x country “*link*” indices are imputed by the average of the non-outliers, inside the same zone. 17 zones are so defined, among which most important EU partners, US, Japan, other non-EU OECD countries, etc.
- These “*link*” indices are then aggregated according to Paasche techniques n/n-1 into CPA6 x zone “*link*” indices, then CPA4 x zone, at last into more aggregated products and zones (euro zone, non-euro zone, rest of the World).
- Finally, the “*link*” indices are chained so as to be expressed in reference year 2005 = 100 (yearly chained Paasche indices, reference year 2005), at each level.

2) “Hybrid” indices for SITC sections

Finally, UVI and XMPI are combined, both in reference year 2005, but with a chained Paasche technique for UVI and with a fixed Laspeyres technique for XMPI. They are combined with a Paasche technique (weightings of the current year).

Not only the total of goods, but also each SITC section and some specific groupings (like agricultural and food products) are obtained by such a combination.

For SITC, a cross table CPA4 x SITC section has been elaborated, from an analysis relying on CN8 and amounts of year 2008.

CN 2008	HS 2007	CPA 2008	SITC Rev 4	CPA 2008	SITC Rev 4	Montants	Occurrence
0101 10 10	0101.10	01.43.10	001.5	01.43	0	95 650 193	1
0101 10 90	0101.10	01.43.10	001.5	01.43	0	561 714	1
0101 90 11	0101.90	01.43.10	001.5	01.43	0	9 478 793	1
0101 90 19	0101.90	01.43.10	001.5	01.43	0	73 544 757	1

2) New indices of French foreign trade

Insee - Databases - BDM - Foreign trade - Microsoft Internet Explorer

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2) New indices of French foreign trade (2)

Insee - Databases - BDM - Foreign trade indices in CPF rév.2, Base 2005, whole world, Euro zone - Microsoft Internet Explorer

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- 120 series are available ;
- You must select at least one item from each one of the lists below. You will get the series corresponding to your choice.

Nature of the transaction (Imports - Exports) (2 items)

French exports
French imports

Select all Deselect all

Products (10 items)

SITC Section 0 - Food and live animals
SITC Section 1 - Beverages and tobacco
SITC Section 2 - Crude materials, inedible, except fuels
SITC Section 3 - Mineral fuels, lubricants and related materials
SITC Section 4 - Animal and vegetable oils, fats and waxes
SITC Section 5 - Chemicals and related products, n.e.s.
SITC Section 6 - Manufactured goods classified chiefly by material
SITC Section 7 - Machinery and transport equipment
SITC Section 8 - Miscellaneous manufactured articles
SITC Section 9 - Commodities and transactions not classified elsewhere in the SITC

Select all Deselect all

Economic zones (3 items)

euro-zone
non-euro-zone
(total) rest of the World

Select all Deselect all

Nature of the index (2 items)

Volume index
Price index

Select all Deselect all

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3) Some perspectives for trade in goods

Import and export prices of agricultural products could rely on quotations (like standard wheat or colza in Rouen for exportation in €/tonne, maize or sunflower in Bordeaux or Bayonne for exportation in €/tonne, specific varieties of potatoes dedicated to exportation...) and no longer on UVI, until 50% (“*hybrid*” method for agricultural products).

A complementary sampling of “indirect exports” could be derived from customs statistics, in order to better cover some industrial products where “direct exports” do not make the large majority.

Some business softwares like CONEX, used to declare to customs, manage “part numbers” (finest detail of products, internal to each firm), CN8 (even TARIC), countries, values, quantities... so that “pure UVI” can be derived for statistics from big companies. Already used for Peugeot and Renault imports, could be extended...

3) Some perspectives for trade in industrial products (manufacturing services)

The Eurostat task force that met in Luxembourg in January 2010 on PPI methodology decided also that the net value of manufacturing services was to measure instead of the gross value of goods when sent abroad for processing, consistently with the new statistical rules on outsourcing.

French National Accounts are currently considering the possibility to isolate goods sent abroad for processing and bilateral exchanges (the goods are assumed to return to the Member State from where they have come), thanks to transaction codes 41, then 51. In this case, and consistently with the traditional needs of NA, foreign trade indicators could no longer focus on “goods” only but on all products issued from (agricultural and) industrial activities.

3) Some perspectives for trade in services

SNA 2008 seems to await XMPI for services too.

The joint OECD – Eurostat Task Force for the revision of the “*Methodological guide for developing producer price indices for services*” will advocate the compilation of S-PPI by destination of output, including export service prices (here called “BtoE”) :

4) SPPI by destination

TF members agreed to add specific guidance on designing SPPI by destination of output (BtoB, BtoC, BtoAll and BtoE) for the relevant industries.

France has just begun to collect systematically S-PPI for output sold on non-domestic market (they were previously eliminated). SBS surveys help to identify the firms and the amounts concerned.

Alas, import service prices are less easy to sample...

PPI, XMPI and UVI

Thank you for your attention!

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