

Consumer utility approach for PPI and SPPI

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Structure of the presentation

- A) Is the fixed-input output price index theory universally admitted?
- B) The main purposes of PPI and SPPI use them as “input prices”
- C) National Accounts should have a preference for the user-value
- D) Some inconveniences of the FIOPI theory
- E) Conclusion

A) A brief history of an old American debate

Year	Event
1957	Edward Denison sets out the “ <i>production-cost criterion</i> ” for B.L.S. PPI
1972	Fisher and Shell write “ <i>the economic theory of price indices</i> ” where they distinguish the concepts of “output prices” and “input prices”
1983	Publication of “ <i>The U.S. National Income and Product Accounts – selected topics</i> ”, where Jack Triplett writes “ <i>Concepts of quality in input and output price measures: a resolution to the user-value resource-cost debate</i> ”. In same time he founds the new doctrine of B.L.S. PPI, he moves the reasoning from “goods space” to “characteristics space”. Output prices should be based on resource-cost, input prices on user-value.
1990	Robert J. Gordon, of the American National Bureau of Economic Research, publishes “ <i>the measurement of durable goods prices</i> ” in a user value view
2004	Jack Triplett publishes for OECD a “ <i>handbook on hedonic indexes and quality adjustments in price indexes: special application to information technology products</i> ”
2012	André Loranger presents his contribution on this debate to the Voorburg Group.
2013	Mary-Beth Garneau discusses André Loranger’s paper with the Ottawa group.

A) The opinion in 1983 of Triplett's colleagues in B.L.S.

Article of Early-Sinclair:

- *“The first [step] is identifying the physical changes in the item being priced. The second is characterizing each change as an improvement, deterioration, or no change in quality. The third is evaluating each change in dollar terms.”*

Comments of Zvi Griliches:

- *“The current practice is based on the assumption that quality change is to be valued by the difference in the cost of production that it induces. I have both conceptual and practical objections to this procedure. [...]. The appropriate measure is one based on the utility to the purchaser of the item. [...] I do not understand its elevation to dogma, to the status of a “desirable” definition of such indexes. [...]”*

A) The opinion in 1983 of Triplett's colleagues in B.L.S. (2)

Article of Gordon. He quotes Triplett (1972), tries to implement his views on PPI with the consideration of characteristics. Advocates a user-value for durable goods, including fuel-efficiency (input price).

Comments of Triplett:

- *“Gordon seems to have misunderstood what separability theory says about forming subindexes”*
- *“the effect of fuel efficiency improvement is again completely accounted for by the reduction in fuel quantities. No airplane price adjustment is called for”*

Reply of Gordon, in defence of a user-value out of the FOIPI concept.

A) Indirect support of IMF manual to FIOPI theory

Differences between output prices and input prices more focussed on valuation:

- *“2.43 - [...] Output proxies are often used to avoid having to collect input prices for manufacturers’ purchases from other parts of manufacturing—the assumption being that there is a stable profit margin. [...]”*

Advocates for a common approach between output prices and input prices, for consistency:

- *“7.69 - [...] Thus, basic price valuations should be used both for supply and use quality adjustments if the supply and use accounts are to balance in both value and volume terms”*

Hence, suggests the user-cost approach, because of the valuation:

- *“The Manual advises that quality adjustment methods should use basic price valuations”, to be linked with paragraph 7.43 on FIOPI theory for basic prices.*

A) Nothing on FIOPI or FOIPI theories in SNA 2008, Eurostat and OECD manuals

OECD-Eurostat manual on SPPI (2005):

- *“Model pricing attempts to price a constant quality output, but the aims of a Fixed Input/Output Price Index are hard to achieve as engineers change their work processes continuously and services are unique.” only quotation.*

Eurostat handbook on PPI (2012):

- *“The evaluation of the quality change [...] The value can either be estimated on the basis of the value to the user of the new quality, or the production costs from the producer”*

B) Main purposes of PPI

IMF manual on PPI (2004):

- “2.51 - Price instability introduces uncertainty into economic analysis and decision making, so the main uses of the PPI relate to efforts to minimize this uncertainty. The PPI therefore has the following main uses:
 - ⇒ Short-term indicator of inflationary trends;
 - ⇒ National accounts deflators;
 - ⇒ Indexation in legal contracts in both the public and private sectors, particularly for more detailed PPI components;
 - ⇒ Required by international organizations such as Eurostat, the OECD, IMF, and European Central Bank (ECB) for economic monitoring and comparison;
 - ⇒ Current cost accounting;
 - ⇒ Compilation of other inflation measure such as the final expenditure price index (FEPI); and
 - ⇒ Analytical tool for businesses / researchers”

B) Short-term indicator of inflationary trends and contract escalation need input-prices

IMF manual:

- *“2.42 - [...] The essential difference between input and output PPIs is that an input PPI measures potential inflation, by indicating the price pressures that producers are facing. [...]”*
- *“2.53 - [...] The purpose of the indexation is to take the inflationary risk out of the contract. [...] Indexation is common in long-term contracts, where even relatively small levels of inflation can have a substantial effect on the real value of the revenue flows [...]”*

Two ways of contract-escalation, both user-value oriented:

- On the costs of the supplier (input prices of the supplier);
- On the price of the supplier activity (potential input prices of the customer).

C) Many attempts for National Accounts describing welfare, well-being

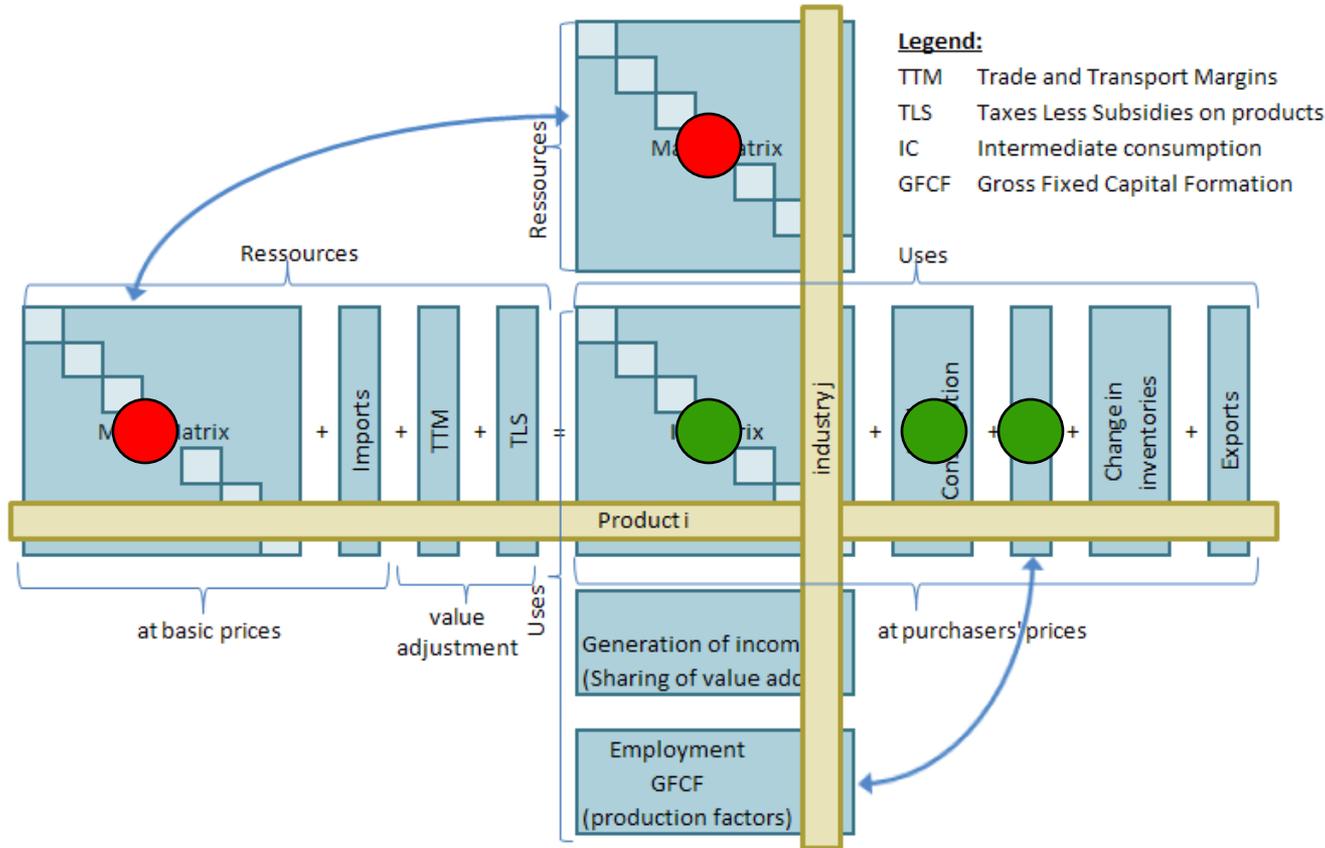
The neoclassical view, for Net National Income as purchasing power.

The Stiglitz Committee for National Accounts better aligned with well-being.

In spite of some warnings against GDP=utility, National Accounts assimilate easily quality with utility for the user. Eurostat handbook on price and volume measures in NA:

- *“For a producer, quality change of an input will be related to its use in the production process and the profit that can be made, and it might be possible to more or less objectively put a value to the change. For a consumer, however, the quality of a product is essentially linked to the utility he or she gets out of it”*

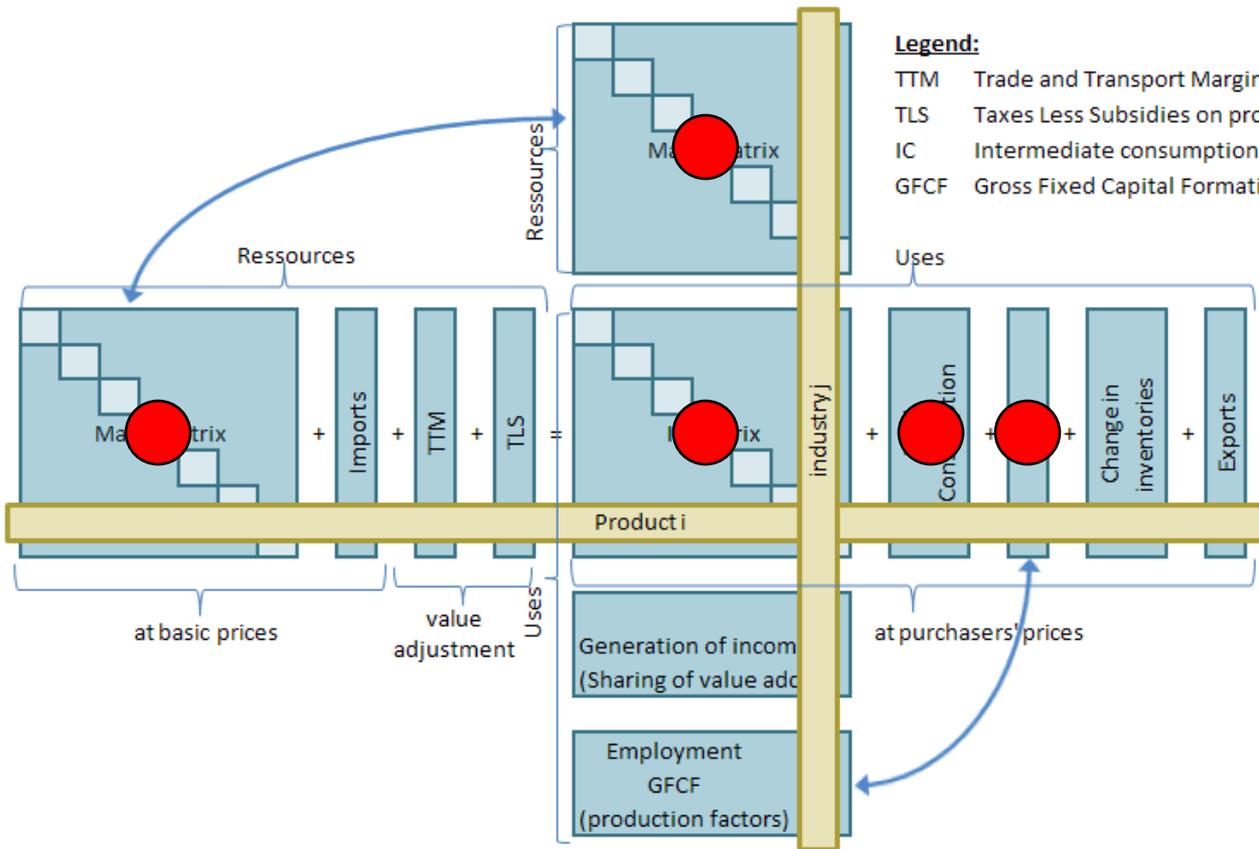
C) The SUT and IOT framework



But the commodity flows must be balanced: which concept will be privileged?

The production approach would be correctly described (according to Jack Triplett)

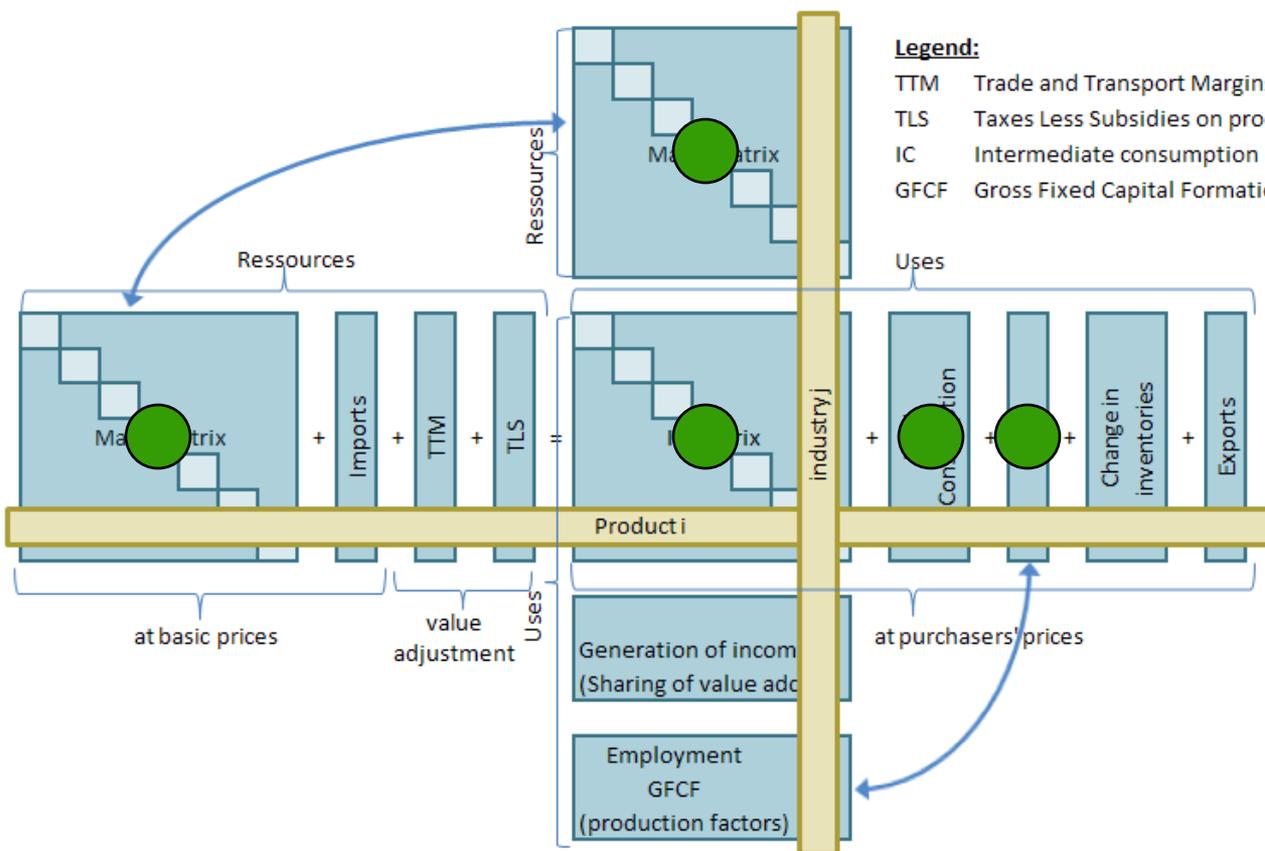
C) If the resource-cost concept is adopted everywhere



The expenditures approach (final consumption) would not reflect welfare, neither income approach (Net National Income)

The production approach would not be fully satisfying (IC would not be user-value oriented).

C) If the user-value concept is adopted everywhere



The expenditures approach (final consumption) and the income approach (Net National Income) would reflect welfare.

The production approach would not be less satisfying.

C) In practice, the user-value is privileged in the commodity flow

Whenever CPI exists, it is respected.

Gordon's view on durable goods (net) user value is conceptually adopted.

Output methods in non-market individual services mean in fact that user-value oriented methods ("input prices" in Triplett's view) are to be preferred to resource-cost oriented methods ("input methods" = "output prices").

The Atkinson's review would have been further with principle B and the outcome quality adjustment.

D) The resource-cost method is not advised by Jack Triplett

Triplett's handbook on hedonic indexes... (OECD, 2004):

- *“In my view, production cost adjustments usually overstate the value of quality changes. What is wanted, in principle, is the cost of making the change in the production conditions of period t : Scale of production, labour and input costs, and production technology should all be held constant. It is difficult to obtain such data from manufacturers, unless their own management information systems are set up this way, which sometimes is the case, but not universally. Since the question is a hypothetical one, it is often difficult even to convey what is wanted. Too frequently, what is provided instead is the actual change in cost from period t to period $t+1$ ”*

Triplett advocates... hedonics.

D) Restriction in practice to products with no or slow technical changes

PPI manual:

- *“7.44 - [...] The output PPI thus aims to measure an output price index constructed on the assumption that inputs and technology are fixed.”*

XMPI manual:

- *“1.109 - When the technology changes, there is no comparable basis for comparing costs between the two qualities, and such procedures break down. An alternative approach would be to use hedonic regression techniques, which are also discussed below and in more detail in Section G of Chapter 8.”*

E) Antipollution devices required by law

Their individual user-value is null or quite null, but their collective user-value is supposed to be worth their costs, otherwise the government would have not taken this decision. Their resource-cost is significant.

Difficult decision on both side (individual utility vs. collective utility, responsibility for inflation vs. contract escalation). Half (volume) / half (price) ? French tradition.

“Classic” National Accounts, in my mind, would rather advocate all in price change, on both sides (of course).

E) Attempt of a synthesis

Most purposes of PPI (SPPI) use them as input prices.

The consistency between the resource side and the uses side of volume and price indicators of a given product is desirable for National Accounts. The general philosophy of National Accounts is more focussed on the uses side.

Hence, PPI and SPPI should be valuated at basic prices, but quality-adjusted with a user-value criterion.

The right theory would be a “fixed-net value for the user input price index” theory, adjusted on the difference of valuation in order to be relevant at basic prices.

The resource-cost technique is a possible estimator (not criterion) of the quality change, the best technic should be a hedonic model catching the shadow market price of (goods or services) characteristics.

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Thank you for your attention

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