

Ethical price indices: the case for a cost of consumption index

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Background & Introduction

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

Mission of the Division for Sustainable
Development of the UN Department of
Economic and Social Affairs

OECD Istanbul Declaration – “quality of life”

Sets of indicators

- First indicators published 1993
 - “Driving force-state-response” framework
 - “driving force” = process/activity with positive/negative impact on sustainable development
 - “state-response” = current government positions
 - E.g. “pollution” and strict regulations and fines for companies breaking them

Sets of indicators

- Updated indicators introduced in 2007
 - 134 indicators
 - Diverse and no conceptual framework
 - E.g. Thematic frameworks (relate to measurable goals set by governments e.g. Carbon emissions); capital frameworks (e.g. National wealth including financial capital and goods plus natural, human, social and institutional capital); accounting frameworks (e.g. System of Integrated Environmental and Economic Accounting for the generating of satellite accounts – such as
 - The Environmental Sustainability Index [ESI] – 76 data sets (e.g. Past and present pollution levels and “improvement” actions taken
 - World Bank’s Adjusted Savings indicator – “net savings” (from National Accounts” less “resource depletion (including damage)” plus “education expenditure”
 - » Negative “adjusted savings rate” require policies to address “unsustainability”

Sets of indicators – the consumer price index

- In current set of indicators promulgated by the United Nations the consumer prices inflation rate is used as an indicator of “sustainable” development under the macroeconomic performance sub-theme
 - Defined as the “cost-of-living as measured by the annual percentage increase in the consumer price index”

Sets of indicators – the consumer price index

“The indicator measures inflation, which if too high hampers economic growth. High and unanticipated inflation increases uncertainty and leads to inter- and intra-temporal misallocations of resources as long as prices are not fully flexible.....can also be a sign of unsustainable public finances”

- May be true (can be debated) but more importantly
 - Doesn't consider the total cost associated with consumption, which is not necessarily reflected in the prices which consumers pay in the market place

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”
 - Addresses only short-term financing issue

Cost of Consumption Index

“A cost of consumption index, or COCI, is an index which reflects the total long-term cost of consumption at the time of purchase of a (fixed) basket of goods and services”

- The CPI will rarely reflect the long-term cost to society of current consumption
 - The long-term cost of consumption will
 - Not just include the production cost, the cost of capital, the transport cost and the retailer’s mark-up.
 - It will also include longer-term costs not reflected in the purchase price e.g. Carbon emissions, generation of “waste” and the consumption of non-renewable resources

Cost of Consumption Index

- In the context of satellite accounts the COCI will
 - Help to differentiate between the volume and price (cost) elements of sustainable development
 - Measurement issues with both but volumes more easily calculated than prices?
- With a COCI there is
 - The challenge of identifying cause and effect
 - Mapping the relationship between today's consumption and tomorrow's cost
 - Re-enforces the view that implied price measures are not a satisfactory alternative to explicit estimation

Cost of Consumption Index - uses

- To differentiate between volume and price (cost) elements of sustainable development (satellite accounts)
- To compare market price with actual long-term cost to see the extent to which they differ
- To monitor inflationary trends in the true consumption cost as a key indicator of “sustainable” development (also compared with CPI)
- To provide governments with evidence-based policy decisions. E.g. charging people the true long-term cost of driving a car
- To monitor the impact of government policies
- To support inter-government treaties on sustainability. E.g. inter-country “cost-of-consumption” taxes (broader-based than carbon-trading)
- To contribute to ongoing debate on sustainable development

Different uses may require different index compilation e.g. temporal versus time series

Cost of Consumption Index – conceptual frameworks

- Flows from the systematic application of familiar frameworks
 - Supply-Use balances (double-entry supplier/buyer transactions can be extended to transactions which are not reflected in the market
 - Need to identify these and distinguish them from explicit transactions (to avoid double counting)
 - Need to unravel the relationships, including the temporal dimension

Cost of Consumption Index – conceptual frameworks

- Stage of Processing Framework
- Stage of Production Framework
- Same inherent challenges as Supply-Use balances
 - Lags between setting prices and actual process/production
 - Identifying “implicit” transactions
 - Inadequate simplifications

Cost of Consumption Index – Index form

- Depends on precisely how a COCI is conceptualised
- Costs incurred in future from current consumption involves
 - A (fixed) basket of goods and service currently consumed.
A Laspeyres or Fisher
 - Fixed basket not appropriate for taxation
 - Superlative index possible within the timescale for a COCI
 - A further set of market prices & weights from a more detailed analysis of flows (Stage of Production Process)
 - Another set of prices reflecting sustainable cost (biggest challenge)

Cost of Consumption Index – other issues

- **Taxes** – exclude indirect taxes on consumers & taxes borne by producers e.g. fuel duty
- **Cost of labour** – is labour a sustainable resource? It can be replenished but involves medical and educational costs
- **What price base- discount cash flow or net present value?**
 - Discount cash flow computes a value where all future cash flows are discounted to their present values
 - Target for a COCI can be
 - Current values of the cost to current and future generations of current consumption
 - The current investment required in the present to cover current and future costs of current consumption
 - Time-lags issue. E.g. Sustainable rain forests, time taken for tree to grow. But in some cases reserves and extraction costs not known

Cost of Consumption Index – other issues

- **Temporal versus spatial**
 - Measuring change in cost over-time
 - Useful analytical tool to inform debate (e.g. Where trends in market prices and consumption costs deviate)
 - Inter-country difference in cost of consumption useful for taxation
- **Unit of currency** – common currency based on exchange rates?
- **A net-based COCI?** A price index based on difference between price paid and cost of consumption for domestic taxation?
- **Future new technologies?** Constrained or unconstrained COCI? Use best available estimate?
- **Other uncertainties** – E.g. future levels of reserves
- **Frequency & timeliness?** COCI not subject to rapid change and policies are long-term

Cost of Consumption Index – data incomplete and imperfect

- Substantial data problems
 - Need to follow each stage of production process and measure volume and sustainable price (cost)
- Alternatives
 - Sample goods & services where significant difference between retail price and sustainable cost are known (e.g. Utilities, transport & energy, resource-intensive manufacturing and un-organic intense agriculture)
 - Impute prices based on indicative evidence (e.g. Current price differential between products from sustainable sources and the “equivalent” which are not – problematic – premium prices for organic food, not equivalent)

Examples of existing data

- **British Airways carbon footprint**

- Voluntary passenger carbon offsetting scheme introduced in 2005 (pay when booking on-line)
- 18 million tonnes of CO₂ in 2008

“the contributions are automatically calculated based on the volume of carbon dioxide the flight produces and the cost of carbon credits per tonne at the time of booking”

- Periodically updated to reflect BA’s cut in emissions (direct and from suppliers – adopting in 2008 the Greenhouse Gas Protocol Standard)
- E.g. New York Restricted Economy – fare = £315.00 (includes £212.30 Air passenger duty [includes a green tax] but excludes Carbon offsetting voluntary charge of £16.30 [same amount for business class]). Carbon emission per passenger = 1.164 tonnes.

Examples of existing data

- **Organic vegetables**

- Increase in demand. Double digit growth rates in dairy & fresh produce but market share still small
 - Sweden = 1% of total food consumption
- Ad hoc studies of price differential, organic & non-organic
 - Sweden. Organic production cost of apples +75/100% (lower yields)
 - Price premium in shops can fluctuate +25/30% & doesn't always reflect differences in production costs. Additional mark-up to exploit market demand (premium price). Premium = cost + market value
- USA National Organic Standards (2004). Discontinuity?

Examples of existing data

- **Organic vegetables (continued)**
 - Now sold in supermarkets, not just in specialist shops
 - USA National Organic Standards (2002)
 - Discontinuity?

The laws of supply and demand

“make it unlikely that price premiums contributing to higher profits and market growth can coexist over the long-run”

- Supply-demand effect undermines the use of such prices (and the differentials in market prices) to calculate the long-term cost of sustainability without differentiating the different factors at work

Examples of existing data

- **Products from sustainable rainforests**
 - Products from sustainable rainforests sell at a premium
 - Partly reflects costs and partly the laws of supply and demand e.g. Considered a premium good
 - Price effect from voluntary certification
 - Same issues as organic food

Quality adjustment

- Some proponents of eco-labelling claim certification leads to gains in consumer utility (sales and mark-up of consumer prices provide evidence)
- Whether to quality adjust a COCI depends on its use
 - Appropriate for analysing the cost of achieving a constant utility
 - Not appropriate for taxation or “sustainability” trading (broader version of carbon trading)
 - If utility/quality increased COCI would show a lower-than-otherwise increase despite level of resource depletion remaining unchanged
 - Similar for quantities

Cost-of-production index

- COPI – index of sustainable production costs - an alternative?
 - Conceptually similar to a COCI
 - Of analytical value
 - Usefulness as a instrument for taxation also depends on whether user or producer should pay for long-term costs relating to consumption
 - Consumption and production costs should balance in the longer-term but not by country
 - Developed countries likely to have a high COCI & low COPI?

Concluding remarks

- COCIs & COPIs could be useful additions to the Family of Indices
 - They are supported by Supply & Use Balances, Stage of Processing & Stage of Production Frameworks
 - They could usefully supplement other indices e.g. the Environment Sustainability Index (ESI) & the Adjusted Net Saving Indicator
 - The precise form depends on the use of the index e.g. temporal versus spatial for analysing trends in sustainable development or for a “sustainability” tax
 - Data is a big challenge