Planning for the 2024/25 Governance and Coordination activities: Technical Advisory Group

Inter-Agency Coordination Group Meeting

International Comparison Program

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Renewal of ICP Methodology

At the last TAG meeting, we agreed to pursue further methodological explorations to improve ICP in the upcoming rounds. In particular, the following areas of work were identified:

1. Improving the ICP inter-regional linking. The subject matter is non-neutrality of individual regions. The paper was completed last year. [Paper “Improving the ICP inter-regional linking procedure”]

2. Switching from GEKS to the Törnqvist-based CCD index. The paper is completed. [Paper “Multiplier effect of price variations [uncertainties] on the Fisher index (Fisher versus Törnqvist when Relative Price Changes are Large)”]

2a. Background paper on superlative index numbers that item [2] is based on. The paper is completed. [Paper “Range of possible results for certain classes of superlative price indices”]

3. Similarity linking within and between regions, to explore more efficient ways to produce regional results and link the regions. [Joint paper is being written with E. Diewert]

4. Improving stability of the Productivity Adjustment Factors in the ICP. [Paper is to be written].

5. Improving measurement of Construction, including exploring the possibility of incorporating a Productivity Adjustment. [Paper is being written].

Improving the ICP inter-regional linking

(completed)

- The current interregional linking method – the CPDW – is adversely affected by larger regions, such as Africa and OECD. The distortions due to the large-region bias could reach 90% in some cases. In addition, some Basic Headings suffer from the lack of product overlap which, in turn, is exacerbated by the current CPDW linking method.
- To improve on the index number, a neutral version of the CPDW – the geometric IDB – is proposed. That index significantly improves stability of the linking and reduces the large-region bias. The index is block-decomposable meaning that it is possible to use it only with weighted regional price geomeans and regional weights as inputs, and thus it does not need utilizing the individual 146 countries' data in the regression.
- Even though the regional price data fill rates range from 67.8% (OECD) to 77.1% (Asia), for some Basic Headings the rates can be much lower. Those Basic Headings can be improved upon by incorporating additional items into the Global Core List, pricing more existing items, but, more importantly, using better intra- and inter-regional validation. However, we have to be careful here and find a proper balance lest to overburden the countries, as adding more items to collect to their workload may strain their resources devoted to ICP even further, which could in turn affect data quality.
- We also recommend having as least two effective products per Basic Heading (i.e., products overlapping with at least one other region). Another recommendation is to improve comparability of the items across countries and regions. For example, in public transportation, quality of the ride may be not quite comparable across the world, as such things as comfort, timeliness, state of the rolling stock may well not be fully taken into account.
- On the other hand, a possibly more fruitful solution for some of those problematic Basic Headings could be to use reference PPPs. This concept implies estimating parities of hard-to-measure BHs based on one or more other basic headings that had already been calculated. The concept of reference PPPs is widely used in the ICP for dozens of BHs.

Multiplier effect of price variations [uncertainties] on the Fisher index

(Fisher versus Törnqvist when Relative Price Changes are Large)

(completed)

- Among other things, we think the basic aggregation method used in ICP (the Fisher-based GEKS) should be improved as it can be quite unstable in the face of price and expenditure volatility (esp. due to measurement errors). In addition, the GEKS computation can collapse if some weights become negative.
- The problem is relevant not only to spatial comparisons but to temporal indices as well. In particular, the CPIs using the Fisher index are affected as well. (In particular, US price deflators based on 1990-2023 NIPA PCE data and ICP 2021 results were investigated).
- The sources of GEKS instability can be explained via a model that incorporates price shocks and uncertainties for the underlying Fisher index. The paper proposes a remedy for the situation, - the Törnqvist-based CCD (*Caves, Christensen and Diewert*) index. The CCD index is found to be vastly preferrable to the Fisher-based GEKS index under the condition of strong price and expenditure shocks or uncertainties.

Range of possible results for certain classes of superlative price indices

(supporting paper for the Fisher vs. Törnqvist study)

(completed)

- The study aims to find the range of possible results for certain classes of well-known price indices, both unweighted (elementary) and weighted, for an arbitrary smooth weight function.
- The classes of indices include the Fisher, Törnqvist, Walsh, Diewert, Lloyd-Moulton and other indices. Both direct and implicit price indices are discussed.
- In general, approximations of the third order (and, in one case, those of the fifth order) are employed. The range of possible results is expressed in relationship to the geometric Laspeyres index.
- Stability of the indices is discussed and some recommendations for the "best" index are given.

Similarity linking within and between regions

(being written with E. Diewert)

- The study aims to explore more efficient ways to produce regional results and link the regions.
- The similarity linking has been applied to temporal indices (*Diewert and others*) with positive outcomes resulting in an improved stability of the indices.
- The study will attempt applying similar ideas to the spatial (ICP) linking.
- The problem to overcome is the absence of natural order among countries (like the time dimension in CPI). Thus, some efficient techniques for grouping of the countries need to be developed, and various similarity criteria need to be contrasted with each other.
- Those linking methods can be applied to link groups of countries in some complex regions as well (such as Asia and Africa).

Improving stability of the Productivity Adjustment Factors in ICP

(to be written)

- ICP regions employ the productivity adjustment factors (PAFs) to correct government labor inputs for differences in productivity, both in inter-regional linking and within regions (except in the CIS and OECD-Eurostat).
- However, significant instability of PAFs is observed across space (for similar countries) and time (between different ICP benchmarks). Also, some counterintuitive PAFs are observed across different regions and benchmarks.
- The sources for the instabilities to be investigated:
- Various smoothing techniques to be discussed, including
  - [1] grouping and bracketing of the ICP countries (such as the bracketing of countries employed in Asia in 2005),
  - [2] using regressions to smooth inputs instead of using actual available inputs
- Updating inputs into the PAFs with latest trends and inflation (and not the latest available data which may be outdated

Effect of the current ICP Methodology for Construction Wages on GDP and other Aggregates

(being written)

- The current construction methodology employed in the ICP assumes direct estimates of wages in construction (hourly rates).
- The resulting labor inputs in real terms (i.e., nominal wage bill divided by those rates) produces in many cases unrealistic results which may significantly affect the GDP and GFCF aggregates (up to 75% of GDP in Bangladesh case vs. 3.6% in the US).
- The study will quantify those effects and attempt a solution to this problem.
- Several proposals will be considered:
- 1. A productivity adjustment (similar to that in Government Services, but not necessarily the same).
- 2. Alternative data sources
- 3. Alternative methodologies to be contrasted (BOCC and projects vs. current ICP methodology).

THANK YOU

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