OECD EXPERT WORKSHOP ON MEASURING ENVIRONMENTALLY ADJUSTED AGRICULTURAL TOTAL FACTOR PRODUCTIVITY AND ITS DETERMINANTS
DAY 1  Traditional TFP measurement

The question: feasibility of measuring agricultural TFP for OECD + G20 countries to achieve comparability and policy relevance?

• Data issues: availability, reliability, comparability

• Methodological issues: choice of index/aggregation rule, associated problems, legitimacy of TFP measurement at aggregate (economy-wide, sector-wide) level

• Quality-adjustment of inputs: whether/how to do it
DAY 1  Traditional TFP measurement

Data issues: availability, reliability, comparability

Great heterogeneity of what is measured and how it is measured, much missing data, little coordination between countries and statistics-providers.

Standardisation of data definitions and measurement a prerequisite for TFP comparability.
DAY 1 Traditional TFP measurement

Methodological issues: Any conclusions?

• No method is problem-free
• Quantity-based index approaches are sensitive to the way implicit prices are measured, hence other things being equal, superlative index approaches are preferable
• Usefulness of empirical comparisons of competing methodologies
• BUT no explicit discussion of whether GAA is the best choice in this context
DAY 1 Traditional TFP measurement

Quality-adjustment of inputs: whether/how to do it

• Apparent consensus that this is desirable

• Few concrete examples given, hard to form a view across countries of what has been achieved here
DAY 1  Traditional TFP measurement

Two further points

MFP as a residual, \( \Rightarrow \) highly model-specific, hence

• Standardisation of model and of factor measurement a prerequisite for meaningful cross country comparison

• Policy-relevance requires a second stage where TFP is ‘explained’ in terms of its determinants (policy-controlled and others)

Need to recognise climate change in traditional TFP measurement for agriculture?
DAY 2  Environmentally adjusted TFP

- Feasibility of applying GAA to calculate EATFP for agriculture across countries
- Pragmatic approaches vs. theory-consistent approaches
- Material balance accounting
- Diversity of empirical studies incorporating environmental concerns into the production framework
DAY 2  Environmentally adjusted TFP

Feasibility of applying GAA to calculate EATFP for agriculture

Advantages
• compatible with OECD approach at country level
• parameter estimation not involved so long time series not needed

Disadvantages
• requires quantity and price data on all inputs and outputs including non-marketed outputs or inputs

Should shadow prices of these out/inputs reflect private (producer) or social costs?

Implications of this choice for the policy relevance of the EATFP measure?
Pragmatic approaches vs. theory-consistent approaches

- Treating emissions as either inputs or outputs is not theoretically valid.
- Need to specify two technologies are needed – production-generating technology and pollution-generating technology.
- By-products do not always reduce the cost of output.
- Invalidity of assuming CRS for priced outputs and inputs only invalid – should cover all outputs and factors.
- Above all, need for theoretical – and internal - consistency.
DAY 2       Environmentally adjusted TFP

Material balance approach

Very interesting demonstrations of this approach
How could it be useful in the context of sectoral EATFP?
- as a source of measurement of various emissions
- but (caution) it measures potential rather than actual pollution
- implications of this for the interpretation of the TFP index?

Static vs. dynamic MB approach: which is more appropriate in the context of TFP measurement?
DAY 2  Environmentally adjusted TFP

Diversity of empirical studies incorporating environmental concerns into the agricultural production framework
Day 2 Concluding remarks

• Much expertise and enthusiasm to draw on
• Coordinated effort needed to establish an agreed industry standard for TFP measurement
• An OECD-led network could develop
  • protocols for data and model specification
  • clarity on conceptual issues (interpretation and policy relevance of different TFP measurement options)