Valuation Methodology: An overview and advances in modelling and measurement

Haripriya Gundimeda, Rashid Hassan

Broad complexities

- Main Outputs: Food flows, Employment
- Complication: Commodity vs Transformed Product
- **Production**
- Multi functional Farming systems (Joint Production)
- Both private good (commodities) as well as Public good
- Public good – cultural and ecological landscapes, farmland biodiversity, GHG emissions, (good or bad), reduced risk of flooding, high (low) functionality of soils, water quality (good or bad), air quality (good or bad), animal welfare and health (good or bad)
- **Divergent Farming systems** (diversity of crops grown, types and intensity of inputs such as chemical vs organic, irrigation, size of firm, socio-cultural context).

Discussion on the trade-offs

- Intensive (high input) and extensive farming systems (low input).
- Low input bring great benefits (environmental, social and health),
- These farming systems are hardly dependent on external energy and input, almost do not suffer from soil erosion, preserve biodiversity, create job places for rural inhabitants, and provide high quality food for consumers.
- Intensification of agricultural activities leads to negative externalities
- But there is economic efficiency in production and creation of marketable good.

Technological vs Pecuniary Externalities

- Agricultural Pollution
- Offsite damage vs Onsite damage
- Positive externalities
- CICES classification
- Indicators

Difficulties in quantifying the externalities

1) costs neglected in pricing of the commodity
2) occur with time lag.
3) those not part of it impacted (non-point source pollution)
4) identity of the producer of externality is not known (example, eutrophication, private costs – increased pest outbreak as farmers use more insecticides)
5) Highly dispersed and affect any sectors
6) leads to suboptimal economic and policy situation

Valuation

- Context of Valuation (Policy, business, National accounting)
- Valuation of Public goods
- Economic techniques (Market price approaches, Hidden subsidies, market cost approaches (replacement cost approaches, damage cost avoided approaches, production function approaches)
- Revealed preference methods (travel cost method, hedonic price method)
- Stated preference methods (choice modelling, contingent valuation)
- Participatory approaches to valuation (deliberative valuation, mediated modelling)

Non-economic techniques

- Questionnaires
- In-depth interviews
- Deliberative and Participatory approaches
- Focus groups, in-depth groups, citizen juries, health-based valuation approaches, Q-methodology, Delphi surveys, rapid rural appraisal, participatory rural appraisal, participatory action research, Methods for reviewing information, Systematic reviews

Processing, storage and Distribution

- Transforming the products from agriculture to finished products
- e.g. fruit concentrate, input to breweries, biofuels, milk concentrates, aquaculture/fish production
- Both backward and forward linkages((power of dispersion and sensitivity of dispersion)
- Vertical integration versus horizontal integration
- Moving from Perfect to Imperfect competition

Illustration of Value Addition (capture of rents, share of externalities???)

- Two flows of value addition: visible (profits, wages, indirect taxes etc)
- Employment creation and generation of income, contribution to nation's GDP and manufacturing industry, promotes socio-economic development, Integration into global markets, improves food self-sufficiency
- Invisible (food irradiation (to extend the shelf life), contamination, use of additives (preservatives and flavorings, impact of pesticides and antibiotics on human health effects)

Manufacturing and service industry – valuation issues

- Final consumption vs fresh consumption?
- Food industry output – livestock processing, grain processing, fishery processing, fruit and vegetable processing, seasoning, other food, beverages, eating-out
- Concept of shadow prices more relevant
- Concept of indicators

From Valuation to Evaluation

- It is important to carve out some discussion as valuation per se does not have any value unless we use it to demonstrate for alternate scenarios or projects