

National Accounts Methods to Achieve Exhaustiveness (I)

OECD/UNESCAP/ADB Workshop on Assessing and Improving Statistical Quality: Measuring the Non-observed economy

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National Accounts Methods to Achieve Exhaustiveness

- 3rd line of action in NOE strategy
- Ideal - improvements in data collection
- But this will take some time & data collection cannot cover all production.
- So, indirect methods need to be used
- Presentation looks at legal activities as illegal production poses different measurement problems

Two Indirect Approaches

- Production
- Expenditure
- (and, a third?.. Supply-Use tables)

Production Approaches

- Supply
 - Labour Input
- Demand
- Income
- Commodity Flow
- With these approaches it's important to recognise their complementary nature & so the possibility of overlaps with observed activities.

Supply Approach

- Assumes output can be estimated by 1 or more inputs used in production (raw materials, labour, capital stock).
- Requires information on input to output & VA ratios:
- Preferably ratios obtained through ad-hoc surveys for the current period
- But ratios from a base year can be used to derive KP series.

Supply Approach

- With base year (for KP) need to consider
 - Changes in Technology (and outsourcing);
 - Use of inputs for purposes other than production
 - Changes in Productivity
 - Changes in Capacity utilisation
 - Valuation and timing differences between S & U
- For CP, also need to consider changes in relative prices if reflating from a base year.

Supply Approach

- Handbook cites two country examples
- Russia – Agriculture
 - Unrecorded crop output estimated using average yield per hectare * unrecorded cultivated area.
 - Where unrecorded area is estimated as total consumption of seeds by enterprises*average seeds used per hectare minus recorded cultivated area.
 - Similar approach used for livestock products (using forage as the input).

Supply Approach

- India -Construction
- Output based on supply of construction materials (as is the case in many countries).

(Supply Based) Labour Inputs

- Most significant of Supply (and Output) methods.
- Uses LFS (or household) estimate of labour input into GDP (by activity and size).
- Achieved in 7 steps.

Labour Inputs – the 7 Steps

1. Estimation of labour input using household surveys
2. Estimation of labour input using enterprise data
3. Standardisation of inputs into hours worked, FTEs
4. Comparison
5. Identify labour input missing from enterprise data
6. Estimation of output/VA per unit labour ratios by activity, size (region)
7. Calculate output/VA using ratios * missing labour

Labour Inputs

- Even without LFS data can assess underground activity using ratios of output per employee in S, M & L enterprises (if the information is available).
- Large variances in same activity may point to under-reported output and/or labour

Demand

- Estimates production using indicators related to uses of goods and services
 - (similarities with commodity flow):
- Examples
 - HHFC of personal services
 - Exports of commodities (where exports form significant part of activity)
 - Building permits
- But indicators not always exhaustive, or relate exclusively to domestic production (eg HHFC); although they may give reliable estimates of growth.
- VA calculated using VA to output ratios & so some of the caveats given for supply-based methods apply if KP ratios are used.

Income

- Uses indicators related to income. E.g.
- Income tax receipts or SS contributions for self-employed
 - (although may be biased, tax audit data can be used to correct for under-reporting. (*Calzaroni & Madelin*))
- For certain (professional) services output can be estimated using average income (from tax records, ad hoc surveys etc) * no of practitioners.
 - (Again possibly biased due to under-reporting)

Commodity Flow

- Similar, in some respects, to demand based methods. Confronts total supply (domestic + imports) with total demand, by activity/product.
 - Often used to estimate expenditure components of GDP. Eg, GFCF on construction, P&M.
- Attention should be paid to producer vs. purchaser price differences.
- Retail trade output can be calculated by applying margin rates to consumption.

Industry Specific Methods

- All methods applicable, some more relevant than others, e.g. labour input.
- Need to recall that some NOE is underground and some is informal.
- The use of VAT or revenue statistics are unlikely to help where underground activity occurs since affected enterprises are likely to be covered in regular surveys in the same way, however they may help where the informal sector is concerned, with adjustments for under-reporting. This applies to all industries.

Agriculture

- Typically unobserved activities reflect small scale household production.
- Usually survey based but where info is not available can use:
 - Date on area under cultivation * crop yield.
 - Nutritional Statistics
 - Livestock, numbers (if only available infrequently can be extrapolated using births, slaughter, trade).
 - Input data: seeds and fertilisers (*Supply-based*).
 - If market is largely export oriented can use export figures (*Demand-based*)
 - Household Surveys for Own-final use (and sales) by households.

Agriculture

- Possible overlaps: Need to ensure no overlap with data from other industries' 2nd-ary activity.
- And
- Also need to recognise 2nd-ary activities of agriculture sector: eg accommodation/meals.

Mining and Quarrying

- Not usually considered a big NOE problem area. Since usually large capital-intensive enterprises.
- But informal household sector may not be covered. Could use information from licensing bodies on employment or production; or demand (use) data to estimate total output. Eg, some products will often be mainly purchased by a small set of industries.

Manufacturing

- Capital-intensive but often with many small and informal enterprises below VAT thresholds and survey cut-offs coupled with economic underground activity.
- Can use a variety of methods: commodity flow, labour.
- Household production of manufactured goods very difficult to estimate but may be obtained from household income, expenditure surveys or other ad-hoc surveys.

Construction

- Typified by large economic underground and informal sector. Construction of, and on, private dwellings usually not included in regular surveys.
- Can use variety of methods: demand, labour, supply e.g. supply of construction materials, and building permits for dwellings, drives, extensions..
- Data on repairs and maintenance of dwellings less attainable. But can be estimated using housing stock *estimates of average maintenance costs.

Trade

- Problem of many small scale (and unlicensed) operators.
- Estimates can be based on total supply of products (including adjustments, for shuttle trade not recorded in import statistics), multiplied by an estimate of products that pass through retail channels* average margin rate.
 - Where both %ages are obtained through ad-hoc or normal surveys.
- Similarly, calculation can be based on expenditure estimates (particularly household, although adjustments needed for non-retail purchases and purchases by other sectors).
- Comprehensive estimates can be achieved using SU tables

Trade

- Additionally . Revenues from (legal) traders not covered by regular surveys may be captured by employment data, or tax and local authority administration data.
- Need to take account of possible double counting as some enterprises perform trade as a 2nd-ary activity, which may be included in observed statistics.

Restaurants & Hotels

- Information may be lacking for small restaurants, bars, cafes, unlicensed street vendors, boarding houses etc.
- Where the activities are licensed, info may be available from local authority registration records. Where activity is evasive, can use average occupancy rates.
- Also, tourist statistics, employment indicators, Household expenditure surveys (ex purchases abroad).
- Tipping: rarely captured in normal surveys: special surveys/studies may be necessary.

Transportation

- Data on taxis, mini-buses and trucking is rare.
- Possible sources:
 - Info on vehicle registrations and traffic statistics
 - demand sources e.g. freight data from foreign trade statistics.
 - SU tables, by applying transport margin rates.

Communication

- (Small scale) private communication services.
- Registration records from licensing bodies may be available.

Business, professional & technical

- Labour input methods widely used, (sourced from regulatory bodies/professional associations license info & LFS)
- OECD software task force recent recommendation on own-account software.
- Income tax data, with adjustments for under-reporting is another possible source, although this will not pick-up 'unlicensed' operators.

Education, health and personal

- Unobserved activities usually typified by small scale operators.
- Can use indicators of output, e.g. number of operations from admin sources.
- Labour input methods widely used, (sourced from regulatory bodies/professional associations license info & LFS).
- Care needed with household based estimates as payment is often by insurance companies.
- Illegal activities (unlicensed doctors) can be a problem.

Domestic Services

- Mainly small scale. Can be covered by ad-hoc surveys or household expenditure surveys.

Owner-Occupied Dwellings

- Unobservable.
- Two main methods.
 - no of owner-occupied dwellings * average rents.
 - Using opportunity costs. Net value-added = stock of housing* R & Output = NVA+IC+CFC.

Discussion Points

- In which industrial sectors is the NOE largest in your country? Why? What are the main characteristics.
- What attempts do you currently make to capture the NOE at the activity level? How? (Information should be provided by industry)
- Are there commonalities with approaches used in other countries? Can you apply these to your own country?
- What data sources do you have on labour? e.g. LFS Living Standards (LSMS).
- What information do you have on IO ratios? Do you have a SU framework?
- What adjustments do you make for income-in-kind & tips?