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Strengthening statistical capacity-building in support of progress towards the Internationally Agreed Developments Goals in the Southern African Development Community region

Volume measures
Volume measures

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price and volume measures are needed for:

- goods and services
  - to explain changes in values; and
  - to measure the flows of money associated with transactions in goods and services
  - how much more (or less) of goods can be bought as a result of a change in the level?
Definitions

- **Quantity**
  - Unit for measuring an amount of good or service

- **Price**
  - Value of one unit of good or service (of same quality)

- **Value**
  - Price multiplied by quantity
Constant Prices

- Value of one or more product for the current period using own price(s) from an earlier period
- Values at constant prices are an aggregated volume measure, expressed in money terms and are additive
- *example:* car production
Volume measures and real measures

changes in values (both stocks and flows) at current prices that have quantity and price dimensions can be decomposed into

- changes in prices and
- changes in volumes

measured at constant prices, we say the values are in volume terms

changes in values (both stocks and flows) at current prices that do not have quantity and price dimensions are measured in real terms (at constant purchasing power) by deflating
Price and volume measures for GVA

double deflation – double extrapolation

- gross value added is derived as the difference between output at constant prices and intermediate consumption at constant prices

- NOTE: requires really, really good data
Single extrapolation/deflation

- approximation to double deflation
- The volume index for gross output may be used when
  - Index for intermediate inputs is not available; or
  - Input data are not accurate
- Underlying assumption:
  - Input/output coefficients are fixed
Price and volume measures for GVA

**single extrapolation**
- gross value added is extrapolated using an appropriate volume indicator
  - output data
  - employment data

**single deflation**
- gross value added is deflated directly using
  - output deflator
  - wage index
  - a general measure of inflation like the CPI or a subcomponent
Single extrapolation/deflation

- Alternatively, use Paasche-type price deflator for output to deflate current price value added directly.
- Underlying assumption:
  - Output and input prices do not diverge significantly.
Intermediate inputs as an indicator

volume index for output is preferred, an index based on inputs has greater bias:

- number and variety of outputs is smaller than the variety of intermediate goods and services (and labour) consumed in the production process
- commodity composition of inputs is more variable over time
Intermediate inputs as an indicator

- however, a volume index for inputs may be used as a single indicator for value added in exceptional cases:
  - examples are construction and capital goods producing industries, where it is difficult to measure output in constant prices
  - usually use intermediate consumption and employment indicators
Employment as an indicator

Volume index for inputs of labour services may be used:

- hours worked, possibly weighted according to hourly wages paid to different kinds of workers, which accounts for:
  - changes in hours worked
  - changes in the composition of the labour force
- numbers employed is more common in practice, in particular for:
  - government services
  - financial, business, entertainment services
GDP by expenditure categories at constant prices

- expenditure components can be factored into prices and quantities
- thus, in theory, better constant price measures may be obtained from the expenditure approach
- usual approach for the components is by deflation of current values, although extrapolation by volume index is also used
Summary

- Constant price(s) is the value(s) of product(s) for the current period using its own price(s) from an earlier period.
- There are different methods for deriving volume estimates - depends on the level of detail.