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Volume measures

Volume measures

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Introduction

- 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 quanitity

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