

ECON10003- Introductory Macroeconomics

Lecture 1 - Introduction Input-Output Flow tables

Input-Output Accounts

- Input-Output Table – Shows structure of country's entire production system for a particular period (usually one year)
- Accounts assume that the sum of the value of all the payments for inputs is equal to the value of the output provided.
- **Note** depreciation is not considered a cost of production
- All $g + s$ produced and sold in a period are:
 - o Used as inputs by industries in their production process or
 - o Sold to 'final' users of the $g + s$ i.e. households
 - o Contributing to the changes in inventories

Sales (outputs) are either:

Intermediate products – Sales that have been produced in one firm in Australia and sold to another firm in Australia to be further transformed (raw materials)

Final products – Not further transformed in the market sector in Australia – we say that these products are sold to satisfy 'final demand'

Sales revenue is assumed to be spent on one or other of the following 'inputs':

1. Buying raw materials from other Aus Firms
2. Buying imported raw materials
3. Payments to workers
4. Paying indirect taxes
5. Gross Operating Surplus (The surplus after the above 4 points have been accounted for)

What does 'gross' mean?

- Means no allowance has been made for depreciation

Flow Table

- Usually works with industries or sectors
- Information is presented in a certain order
 - o Buyers are listed along the top
 - o Sellers are along the side
 - o First 6 rows information about destination of sales at the side
 - o First 6 rows information about destination of sales at the top

Input demand is a derived demand

Lecture 2 – National Accounts 1

Reading: Textbook 4th ed pp 4-18 and handout 'Measuring aggregate Market production' pp. 1-8

Relationship between input-output table to national income and expenditure accounts

IO tables provide more detailed analysis of the flow of $g + s$ in the production process, whereas national income, expenditure and product accounts only shows end results of economic activity.

Simply these aggregates are made up of smaller ideas

Producers produce two types of products

Intermediate Product: $G + S$ that are produced by a firm in a country and then sold to another firm in the same country to be further produced (RAW MATERIALS) – HAS TO BE THE SAME COUNTRY

Final Products: Products that are not further transformed within the country they're made.

The reason IO tables are useful is because it looks at both intermediate and final products, whereas national accounts ignore intermediate products

Purpose of National Accounts

- Inform us about historical change in economic activity in a country
- Tell us about the composition of aggregate production, expenditure and incomes
- Highlight changes in employment, hours worked and productivity

GDP – The aggregate/total market value of all final (as oppose to intermediate $g + s$) $g + s$ produced within a given period. GDP is the same as GNE + exports of $g + s$ minus imports of $g + s$.

Gross means that no deduction is made for depreciation.

Market Value – Much government production is not 'marketed' so they are valued at their labour cost (wages paid to police, soldiers etc)

Ways of measuring GDP

1. Total value of spending on final $g + s$ in the economy, asking the buyers how much they bought, GDP (E)
2. Total 'value added' of all the producers in the economy, ask firms how much they produced, GDP (P)

3. Total value of incomes generated by the process of production, what income did people receive from participating in the production process, GDP (I)

GDP (E)

How do we measure what has been bought?

It is the sum of two components

1. Part that is produced at home and sold to foreigners (X)
2. The part which is produced at home and sold at home
 - a. Gross National Expenditure – Total spending on final g + s by residents of Australia
 - b. Imports (M) – Total value of purchases of residents of g + s from overseas
 - c. THEREFORE, Total value of g + s produced at home and bought by buyers at home is $GNE - M$
 - d. $GDP = X + (GNE - M)$, this is often rearranged to $GDP = GNE + (X - M)$.

The reason we rearrange the equation is that people are often interested in the **Balance of Trade**

BOT is $X - M$. IF $X > M$ the country is in trade surplus is $X < M$ the country is in trade deficit.

Movements in BOT has a large affect on the exchange rate

What determines GNE?

GNE is the sum of three parts

- Private Consumption Expenditure (c)
- Private investment (made up of 'fixed capital expenditure' and 'increases in stocks' (I)
- All government expenditure (G)
- $GNE = C + I + G$
- THEREFORE $GDP = C + I + G + X - M$

GDP (P) and GDP (I)

Countries outlays

- Purchases of raw materials
- Compensation of employees
- Gross Operating Surplus

Countries Revenue

- Sales Revenue

GDP (P) is looking at the firms not the buyers

Value Added = Sales revenue less purchases of raw materials. If we sum all Value added for all of the producers we will obtain an estimate of total production of final products in the

economy because all the intermediate transactions are excluded!! This is GDP (P), GDP estimated by asking producers.

Therefore, firms revenue is value added and its outlays are compensations of employees and Gross Operating Surplus

GDP (I), go to the firms and the households and ask for the sources of their income

In principle GDP (E,P and I) should all equal to each other. But they don't, so GDP (A) is the average of the three.

Lecture 3 – National Accounts 2

Reading 18-24

Real GDP and Nominal GDP

- Real GDP: Economic output adjusted for price changes
- Nominal GDP: Economic output evaluated at current prices

How can we measure the movement of real GDP?

Two principle methods

1. Constant price method – Involves removing the effect of prices from the expenditure figure, leaving us with just the change in Q.
 - a. Take for example Year 1 and Year 2, we are trying to find the change in Q
 - b. This is done by first multiplying $p_1 \times q_1$ and then multiplying $p_1 \times q_2$.
 - c. You can use price data from 2005 and couple it with quantity data from 2016
 - d. $(P_{2005} \times q_{2015}) (P_{2005} \times q_{2016}) (P_{2005} \times q_{2017})$
2. Chain volume method

Laspeyres Volume Index (Chain Volume Method)

$$\left(\frac{[p_1 q_2]}{[p_1 q_1]} \right) \times 100 \quad \left(\text{this is an estimate of } \left[\frac{q_2}{q_1} \right] \times 100 \right)$$

- This method allows the value of GDP in year 1 = 100
- Then evaluates the constant P in year 2, is it below or above 100??
- Only need original price data

Laspeyres Volume Index continued

$$\left(\frac{[p_1 q_2]}{[p_1 q_1]} \right) \times p_1 q_1 \quad (\text{this is an estimate of } [p_1 q_2])$$

- Through this you can work out the value of expenditure, or expenditure at average prices of year Z

Problems with this method

- The movement of large number of prices, not just one price (one item)
- The fact that we can't just sum quantities (as they are in different units, number of jeans, liters of milk etc...how do we make these things common...they sell for MONEY!!)
- Hence, we use summation notation

Notation

Some notation

p_{i1} is the price of commodity i in period 1

p_{i2} is the price of commodity i in period 2

q_{i1} is the quantity of commodity i produced in period 1

q_{i2} is the quantity of commodity i produced in period 2

Using this notation, the total dollar value of production (ie GDP in current prices) in period 1 will be:

$$\sum_i p_{i1} q_{i1} \quad (1)$$

And the total dollar value of production (ie GDP in current prices) in period 2 will be:

$$\sum_i p_{i2} q_{i2} \quad (2)$$

- The total value of each year will be the $\sum p_i q_i$ of every commodity
- 'i' recognizes the different products

GDP at constant prices

$$\sum p_{i1} q_{i2}$$

The value of the above is the measure of Q bought in time period 2 had the prices remained constant in year 1. The value of GDP in year 2 measure at constant prices. Comparing this value to:

$$\sum p_{i1}q_{i1}$$

Gives us insight into the change in GDP. The only reason they'd differ is if Q changes (representing a volume change)

This can continue, calculating GDP for Q3, Q4... Price data is only needed to be collected once, most countries don't use this method however, they now use the chain volume method

Why??

- There are problems with the constant price method
 - o Prices date too far in the past
 - o New products appear, old disappear and there are quality changes
 - o Leads to substitution bias

Difference is that in chain volume method prices are only compared to the year before Q data is gathered.

How do we compare across years?

$$\left[\frac{\sum_i p_{i1}q_{i2}}{\sum_i p_{i1}q_{i1}} \times \frac{\sum_i p_{i2}q_{i3}}{\sum_i p_{i2}q_{i2}} \right] \times 100$$

- We chain the quantities together; we estimate how the volume in year 2 compares with year 1 and how volume in year 3 compares with year 2.
- This can go on for a long period

$$\left[\frac{\sum_i p_{i1}q_{i2}}{\sum_i p_{i1}q_{i1}} \times \frac{\sum_i p_{i2}q_{i3}}{\sum_i p_{i2}q_{i2}} \times \frac{\sum_i p_{i3}q_{i4}}{\sum_i p_{i3}q_{i3}} \times \frac{\sum_i p_{i4}q_{i5}}{\sum_i p_{i4}q_{i4}} \times \dots \times \frac{\sum_i p_{in-1}q_{in}}{\sum_i p_{in-1}q_{in-1}} \right] \times 100$$

- Index is conducted with prices from the year before

How do we get a real GDP figure?

$$\left[\frac{\sum_i p_{i1}q_{i2}}{\sum_i p_{i1}q_{i1}} \times \frac{\sum_i p_{i2}q_{i3}}{\sum_i p_{i2}q_{i2}} \right] \times \sum_i p_{i1}q_{i1}$$

Comparing Real GDP and Current Price GDP

- Current Price GDP says GDP has risen 1100% since 1980
- Whilst real GDP says only 300%

- This is the problem with Current Price GDP, it does not account for inflation...
- There is therefore an 800% increase in Prices

Growth Rates for successive periods

Growth Rates for successive periods

By convention, a growth rate is measured in percentage terms as:

$$\left[\frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}} \right] \times 100$$

Examples of terms involving growth rates:

A **recession** is where real GDP growth has been negative for (at least) two successive quarters.

Inflation is where the general level of prices is rising (growth rate is positive) “**Deflation**” is where prices are falling.