Input-Output Flow Table

An Input-Output (I-O) table shows the structure of a country's entire production system for a particular period, usually one year.

Sales (Outputs)

(a) *Intermediate Products*, or in other words, raw materials
(b) *Final Products*, as stated, no more process of changing

Gross Operating Surplus (GOS)

The word gross means no depreciation
TOTAL OUTLAYS = TOTAL REVENUE
The GOS is the item that makes the total outlays = total revenue.

Input Demand Is a Derived Demand

Change in demand for a final product → Give change to the demand for the raw product

Purpose of National Accounts

(a) Inform about the pace of market sector economic activity;
(b) Inform about the composition of aggregate production, expense, and income;
(c) Changes in employment, hours worked and productivity.

Imports and Exports

Imports is the total value purchases by residents of International goods and services (from overseas). **(denoted as M)**

Exports is the total value purchases by foreigners of domestically produced goods and services. **(denoted as X)**

Gross National Product (GNE)

All spending that is done by the residents (Domestic or International product)

Balance of Trade

Net exports **(Denoted as NX)** = X-M
X > M → NX > 0 → Trade Surplus
X < M → NX < 0 → Trade Deficit

GNE (What determines it?)

Regarded as sum of Private Consumption Expenditure **(C)**, Private Investment **(I)**, and Government Expenditure **(G)**.

$$GNE = C + I + G$$

Gross Domestic Product (GDP)

Market value of final goods and services produced in an economy (inside country)

There are three ways in calculating GDP,

(a) GDP(E)
Regarded as the sum of products that are produced by domestic that are sold.

$$GDP(E) = C + I + G + NX$$

(b) GDP(P)
Total value added of a firm is the sum of all value added, while value added here is defined as the **total Payments to the factors of production labour and capital** therefore,

$$GDP (P) = \Sigma (Value\ Added_P)$$

(c) GDP(I)
Similar to GDP(P) but the total value added here means **the sum of Compensation of Employees and GOS**

$$GDP (I) = \Sigma (Value\ Added_I)$$

(d) GDP(A)
The average of all three methods, which then will be used as the GDP.

In theory, GDP(E) = GDP(I) = GDP(P), which makes three of it to equal GDP(A)

Nominal GDP = GDP at current prices

Nominal GDP and Real GDP

Nominal GDP will only reflect the quantity and prices prevailing at that time only. While Real GDP will reflect the real increase (rise in quantity produced)

Laspeyres Volume Index

Number index that using the approach to adjust price changes using the prices in earlier period as the basis

For example,

$$L\,Volume\,index_t = \left(\frac{[p_{x0}q_{xt}]}{[p_{x0}q_{x0}]}\right) \times 100$$

Real GDP

Two methods to measure the movement of real GDP

(a) Constant Price Method

For easier notation, denote this as GDP$_{CP}$. As the name suggests, this method relies on the GDP calculated using the same price as the base year.

Therefore, the GDP at constant price at year n, if we know that the price of commodity x in period 1 is p_{x1} and so on is,

$$GDP_{CP} = \sum p_{x1}q_{xn}$$

The advantage of this method is it doesn't cost much, as this method need only to find the price for the base year to find the GDP for other year.

(b) Chain Volume Method

For easier notation, denote this as GDP$_{CV}$. In the chain volume approach, the comparison can't be bought to larger than one year, so the price in this notation can't be a constant, and at a maximum level of n − 1.

Therefore, to find the volume index for year 3 with year 1 as the base,

$$GDP_{CV}\left[\frac{\sum_x p_{x1}q_{x2}}{\sum_x p_{x1}q_{x1}} \times \frac{\sum_x p_{x2}q_{x3}}{\sum_x p_{x2}q_{x2}}\right] \times 100$$

Growth Rates for Successive Periods

Growth rate is measured in percentages, easily calculated by

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

Growth Rate > 0 → Inflation
Growth Rate < 0 → Deflation

Laspeyres Price Index or CPI

Similar to Volume Index but in this term, the approach is reversed, where it is needed to find the price changes not the volume changes

$$L\,Price\,Index_t = \left[\frac{\sum p_{xt}q_{x0}}{\sum p_{x0}q_{x0}}\right] \times 100$$

$$CPI_t = \sum_x \left[\left(\frac{p_{xt}}{p_{x0}}\right)\left(\frac{p_{x0}q_{x0}}{\sum_x p_{x0}q_{x0}}\right)\right] \times 100$$

Where $\left(\frac{p_{xt}}{p_{x0}}\right)$ are called the "price relatives", and $\left(\frac{p_{x0}q_{x0}}{\sum_x p_{x0}q_{x0}}\right)$ are called "the weights".

Inflation

A sustained increase in the general price level, usually calculated between 2 years, suppose for below formula, it is to calculate inflation rate from n to t.

$$Inflation\ Rate_t = \left(\frac{CPI_t - CPI_{t-4}}{CPI_{t-4}}\right) \times 100$$

However, calculating inflation rate from this method is biased (CPI method), because:

(a) If there is an inflation going on, quantity purchased can't be the same;
(b) In case of substitution is possible, it can also change the quantity purchased;
(c) As the quantity purchased keep changing, but the CPI method doesn't recognize this.

Seasonality

A particular time of the year that exhibits a temporary increase/decrease

Real Interest Rate and the "Fischer Equation"

With inflation rate **π**, Fischer equation gives the relationship between the nominal **(denoted as i)** and real interest rates **(denoted as r)**, by

$$r \approx i - \pi$$

Inflation Targeting

A high rate of inflation should be avoided if possible

To control the inflation rate, the central banks should control their interest (or the money supply).

Effect of controlling interest rate to the inflation rate

Decreasing the interest rate (i)
→ as i decreases, more people will be able to borrow money
→ as they borrow money, it will grow the economy (cash rate ↑)
→ then it will tend to increase the inflation

Increasing the interest rate (i)
→ as i increases, less people will to borrow money
→ as more people didn't borrow money, it they will tend to save money, which will slow the economy (cash rate ↓)
→ then it will tend to decrease the inflation

Taylor's Principle

In order to stabilize the economy, they must raise (or lower) the nominal interest rate for more than one-for-one in response to higher (lower) inflation.

Explanation: What it means is that one-for-one response will not change the real interest rate, because if we see the Fischer equation, if i decrease by 1% and inflation increase by 1%, then it is already balance, and real interest rates will not be affected!

Hyperinflation

Event in the month where the monthly inflation rate exceeds 50%, and ending when the monthly inflation rate drops below 50%

Costs of Inflation

Although if inflation is happening, and the salary earner have his/her nominal wage increased matching the inflation, the real wage they get will not change.

Concept: with the inflation, some people will choose whether to stay working or saves its money on the bank (as money balances in the form of cash have fixed nominal value, while in bank there will be an interest), as not all job will have an increase wages

→ Shoe Leather Costs
As more people will hold their money to the bank, there will be more trip to the bank, which deplete the shoe leather.