

# Macroeconomics for E&BE

## Lecture 1

10-11-2015

### Chapter 1,2,3

In 1929-1932 the Great Depression caused massive unemployment for the first time in the history. It also caused a huge stock market crash. Economists could not explain the huge unemployment. At that time the (neo)-classical thinking appeared, which refers to the invisible hand of the economy. This implies that the market regulates themselves through market and demand

John Maynard Keynes also tried to find an explanation for the great depression. He found out that it was not the price that caused the depression because in the short run the price is flexible. There had to be another reason why this huge unemployment appeared.

Macroeconomics focuses on national income, unemployment, inflation and economic growth in the short-, medium-, and long run. The main question is: how can we affect economic growth? How can we design policies to affect them?

By studying macroeconomics we can understand the decisions taken by the central bank for example. We can also understand where our money goes to.

In the book we study the (growth in) aggregate output, unemployment and inflation.

Governments use fiscal policy and central banks use monetary policy to influence these variables.

Learning objectives of this course:

1. Explain and discuss basic macroeconomic concepts
2. Work with aggregate open- and closed macroeconomic models
3. Distinguish between short-run, medium-run and long-run macroeconomic analysis
4. Apply the method of comparative statics using graphs and simple linear mathematical models

A model is a simple representation of the reality lead by definitions.

### Aggregate output

**GDP (Gross Domestic Product)** = all goods that are produced within national borders.

3 ways to measure GDP:

1. GDP is the value of the final goods and services produced in the economy during a given period  
(A final good is a good that is destined for final consumption).
2. GDP is the sum of value added in the economy during a given period  
(Value added = the value of a firm's production minus the value of the intermediate goods it uses in production).
3. GDP is the sum of incomes in the economy during a given period

**Real GDP** = the value of all goods produced in the economy (measured using constant prices).

**Nominal GDP** = the value of all goods produced in the economy (measured using current prices).

Real GDP per capita is the ratio of real GDP to the population of the country.

GDP growth  $\frac{(Y_t - Y_{t-1})}{Y_{t-1}}$  equals

## What determines output?

In the short run demand determines output.

In the medium run the level of technology, the capital stock and the labour force determines output.

In the long run factors such as education, research, saving and the quality of the government determines output.

## The goods market

The good market is the market where all goods and services are traded. It is also related to the capital market and the foreign exchange market. But for now we are focusing on the goods market. We assume that demand is determining everything and we ignore other countries. We take a look at the short run, where demand determines the aggregate output, i.e. firms are willing to produce any amount of goods and services that are demanded.

This economy can be stimulated using fiscal policy, such as increased government spending and lowering taxes.

For an overview of funds that can be used as a loan, please view the slide.

## The composition of GDP

$$Y = C + I + G + NX$$

Y = income

C = consumption

I = investment

G = government expenditures

NX = net exports

Consumption refers to the goods and services purchased by costumers. It depends on the disposable income, this is the income that remains once consumers have paid taxes and received transfers from the government. The consumption function can be viewed as

$C = C(Y_D)$ . It captures the behavior of consumers. The consumption function is a linear

relation  $C = c_0 + c_1(Y_D)$ .  $c_1$  is the (marginal) propensity to consume, which means the effect of an additional dollar of disposable income on consumption.  $c_0$  is the intercept of the consumption function. Disposable income is given by  $Y_D \equiv Y - T$ .

So we get the total consumption function  $C = c_0 + c_1(Y - T)$ .

The function has a positive slope because the more you earn, the more you will consume.

Investment refers to the purchase of capital goods. It is the sum of non-residential and residential investment. In the model of the goods market this variable is assumed to be exogenous, which means that investment is determined outside the model:  $I = \bar{I}$ .

Government spending refers to the purchases of goods and services by all (local) governments. It does not include government transfers, nor interest payments on the government debt. Government spending (G) together with taxes (T) describe the fiscal policy.

We assume that G and T are also exogenous for two reasons:

- Governments do not behave with the same regularity as consumers or firms

- Macroeconomists must think about the implications of alternative spending and tax decisions of the government.

The net exports refers to the difference between exports and imports:  $NX = X - IM$ . Imports (IM) are the purchases of foreign goods and services by consumers, business firms, and the government. Exports (X) are the purchases of domestic goods and services by foreigners. If the exports are equal to the imports we speak of a trade balance. If the exports are larger than the imports we speak of a trade surplus. If exports are smaller than the imports we speak of a trade deficit.

If we are looking at the goods market, we ignore other countries so that there is no international trade. In this market  $NX = 0$ .

Assuming that exports and imports are both zero, the demand for goods is the sum of consumption, investment and government spending  $Z \equiv C + I + G$ . When we are adding all behavioral relationships we get the equation  $Z = c_0 + c_1(Y - T) + \bar{I} + G$ .

### Equilibrium

Equilibrium in the goods market requires that production (Y) is equal to the demand for goods (Z)  $Y = Z$ . The equilibrium condition is that production (Y) is equal to demand. We know that demand depends on income (Y), which itself is equal to production. So we get  $Y = c_0 + c_1(Y - T) + \bar{I} + G$ . Solving the whole model will lead to

$Y = \frac{1}{1 - c_1} [c_0 + \bar{I} + G - c_1 T]$ . On slide 38 of the lecture slides this equilibrium is projected in a graph, also known as the Teynesian Cross.

### Fiscal policy

The government can stimulate consumption by increasing the government expenditures. If the government increases its spending, the aggregate demand will be higher, so the output will also increase. This will lead to an increase in employment so the income and disposable income of the economy will go up. This will lead to an increase of consumption. The more one-to-one increase in output is called the multiplier effect.

The effect of an increase in government spending  $\Delta G$  on Y is an increase of  $\frac{1}{1 - c_1} * \Delta G$ .

### An alternative interpretation of the goods market (saving)

There are some other assumptions in the goods market not mentioned before:

- If households do not consume, they save
- If governments do not spend all taxes, they save as well

We can now say that the total saving of the economy is  $S_{total} = S_{private} + S_{public} = (Y - C - T) + (T - G)$ . Using the national income accounts identity, it must hold that  $Y - C - G = I$ . So  $S_{total} = I$ .