Economics II

Lecture 19

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School of Economics and Management
TECHNICAL UNIVERSITY OF LISBON
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Lecture 19

Summary:

10. Aggregate Demand and Aggregate Supply

    10.1. Aggregate Demand Curve

Bibliography:

Frank and Bernanke (2011), Chapter 13

Lecture goals:

At the end of this lesson the student should be able to:

- Understand the concept of aggregate demand function.
- Understand the aggregate demand curve, its slope and changes.

10. AGGREGATE DEMAND AND SUPPLY

10.1. Aggregate Demand Curve

At this point of the program, we will surpass a limitation of the basic Keynesian model:

- We will assume that the price level varies.

We will use the Aggregate Demand (AD) / Aggregate Supply (AS). A graphic exposition.

Aggregate Demand function (AD) represents the situations where there is equilibrium.

In the goods and services market ($Y = D$)...

- ...and simultaneously ...
- ... In the monetary market ($M^s = M^d$).

The function AD shows the equilibrium relation that must exist between the product and the price level so that there is simultaneous equilibrium of both markets:

$$AD\left(Y, P, \bullet\right) = 0$$

Exogenous variables and parameters in the equations of both markets.

How is this function obtained?

- If the goods and services market is in equilibrium (GSM) , consequently :

$$Y = D \Leftrightarrow Y - D = 0$$

- Previously we saw that intentions to purchase final goods and services (*D*) depended on the income (*Y*):
  - through the private consumption (C) or the imports (Im)...
- ... but they can also depend on the internal price level :
  - Through the external competitiveness (R) which affects the exports (Ex) or the imports Im...
  - ... or through the nominal interest rate (i), via the equilibrium in the monetary market (MM), which affect the investment (I).

We have then:

$$AD(Y,P,\bullet) \equiv Y - D(Y,P,\bullet)$$

- This function represents the simultaneous equilibrium of Goods and Services Market (GSM) and MM when takes the value zero

If we graph the equation $AD(Y,P,\bullet) = 0$, named AD curve, on space (Y,P)...

... what kind of slope ... we obtain?

There are (at least) three different effects of general price level of the intentions of spending (real) in final goods and services:

1. Interest rate effect;
2. Competitiveness effect;
3. Wealth effect.

1. Interest rate effect:

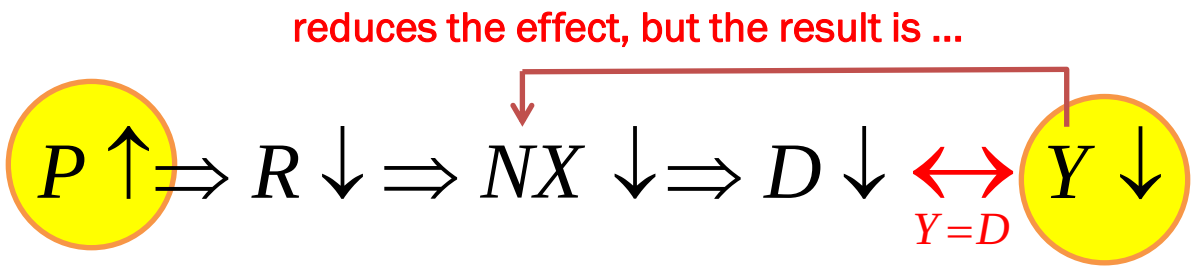
- A higher price level (P) increases money demand (M^d) .
- Assuming that money supply (M^s) remains constant (hypothesis 1 of monetary policy behavior),....
- ... Increases the nominal interest rate, *ceteris paribus*, which balance the monetary market (MM),...
- ... and increases the real interest rate (why?),...
- ... consequently, inducing a decrease of investment (and consumption) intentions.
- Thus, the intentions of domestic expenditure (D) are reduced and .....
- so that to exist equilibrium in the GSM.....
- The equilibrium product must be lower .

reduces the effect, but the result is ...

$$P\uparrow \Rightarrow \begin{cases} M^d \uparrow \\ M^s = \bar{M} \end{cases} \underset{M^s = M^d}{\leftrightarrow} i\uparrow \Rightarrow r\uparrow \Rightarrow I\,(C)\downarrow \Rightarrow D\downarrow \underset{Y=D}{\leftrightarrow} Y\downarrow$$

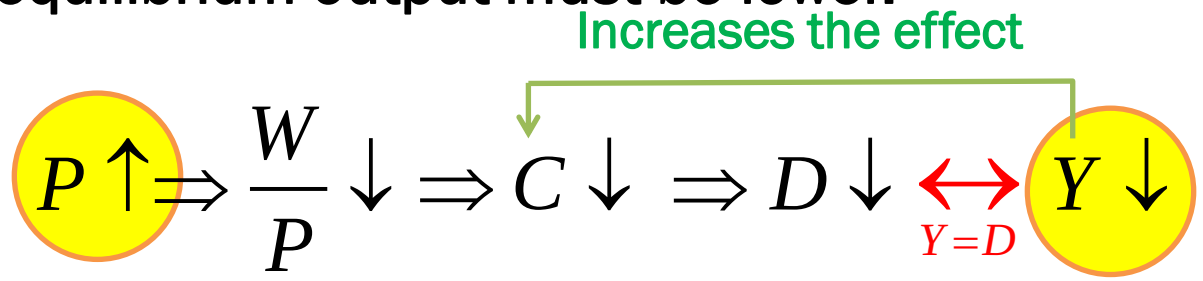
2. Competitiveness effect (in an open economy) :

- A higher level of prices (P), *ceteris paribus*, has as effect a decrease originates a decrease of competitiveness of internal goods and services in relation to external (R)...
- ...consequently, the balance of goods and services (NX) will decrease because the exports (Ex) decrease and the imports (Im)increase!
- So, planned domestic expenditure (D)decreases and,...
- ... To have an equilibrium in the goods and services market (GSM),...
- ... The <u>equilibrium output</u> must be lower.



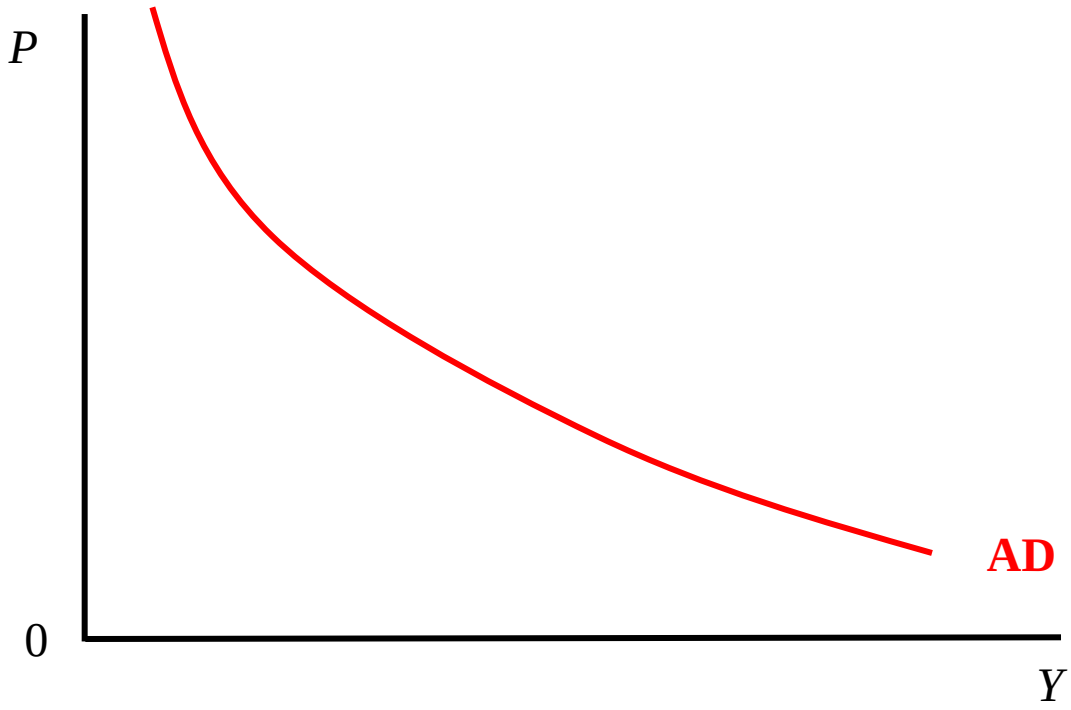
3. Wealth effect:

- A higher level of prices (P), for a given level of nominal wealth of the households (W), represents a lower lever for real wealth (W/P)
- ...consequently, a decrease in the intentions of private consumption (C), according the permanent income/life cycle theory .
- So, the intentions of domestic expenditure (D) decrease and,...
- ... To have na equilibrium in GSM...
- ... The equilibrium output must be lower.



Consequently, the AD curve which represents the aggregate demand function on space (Y, P) is decreasing.

Graphically, the aggregate demand function:



The curve AD (the graphical representation of aggregate demand function) is valid when all other factors remain constant.

When these factors change, the AD curve shifts .

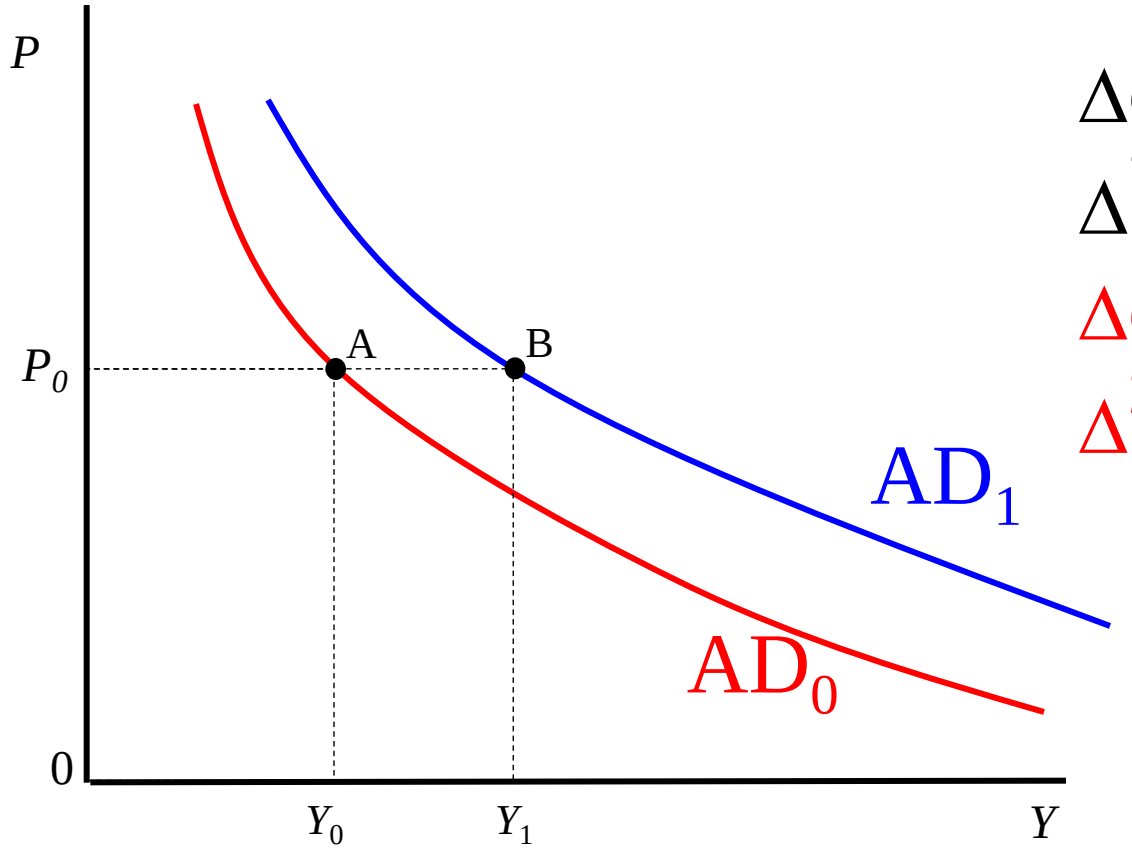
- Other factors which can change the AD curve position
  - Exogenous variables ($\bar{G}, \overline{TR}, \overline{I^{\text{Publ}}}, t, \bar{M}$, etc.);
  - Parameters of the model (c, b, k, h, etc.).

Autonomous aggregate demand :

- Is the part which is not dependent on Y or on Prices , it means , that is determined externally to the model..
- Some of its components are behavioral parameters of the private agents as for example:
  - Autonomous consumption ($\bar{C}$);
  - Autonomous exports ($\overline{Ex}$).

- Others are instruments of economic policy as for example :
  - Public consumption ($\bar{G}$);
  - Monetary supply ($\bar{M}$).

AD shifts to the left :



Examples of possible causes:

$$\Delta\bar{C} > 0 \quad \Delta\overline{I^{\text{Priv}}} > 0$$

$$\Delta\overline{Ex} > 0 \quad \Delta\overline{Im} < 0$$

$$\Delta\bar{G} > 0 \quad \Delta\overline{I^{\text{Publ}}} > 0$$

$$\Delta\overline{TR} > 0 \quad \Delta\bar{T} < 0$$

$$\Delta\bar{M} > 0 \,(\text{hip.1})$$

$$\Delta\bar{i} < 0 \,(\text{hip. 2})$$

The AD curve shifts to the right (left) with:

- increase (decrease) of the values that contribute positively to the autonomous demand;
- decrease (increase) in the values that negatively contribute to the autonomous demand.

A similar situation applies to other quantities that are not part of the autonomous demand as:

- Marginal propensity to consume (c);
- Marginal propensity to import (m);
- Sensibility of investment to real interest rate (b);
- Marginal tax rate (t).

Movements along the AD curve:

•The negative slope of the AD curve results from the negative relationship between price levels and the product that balance GSM and MM:

- Interest rate effect;
- Competitiveness effect (real exchange rate);
- Wealth effect .

Shifts of AD curve :

- Factors that change the position of the AD curve for a given price level (or product):

- Autonomous demand variations
- Other values variations .