

Semester II: Introductory Macroeconomics

Unit 3 (The Classical System)

Lesson 1

Syllabus

Basic ideas of classical macroeconomics; Say's law and Quantity Theory of Money - The Loanable Fund theory - Classical theory of income and employment determination-Full employment and wage-price flexibility- Classical dichotomy and neutrality of money

In this lesson, we shall discuss only the highlighted portion of the syllabus.

Section 1. Basic ideas of classical macroeconomics:

The so-called 'classical economic theory' is a school of thought that emerged from the time of the industrial revolution, was refined through the ages by several economic thinkers, and remained the dominant economic philosophy till the 1930s. It will not be correct to assume that a few economists agreed on a common framework and built an economic model. It started with Adam Smith's '*Wealth of Nations*' (1776), was given a more formal structure by the likes of David Ricardo and James Mill during the early 19th century, was refined, expanded and synthesized by several great minds like J.B Say, John Stuart Mill, A.C. Pigou and others.

We shall now present a framework that is generally accepted as the classical model. This model represents a formal structure of a so-called 'classical' economy in which the market economy has the ability to reach certain 'desirable' goals as full-employment equilibrium, and also the power to correct disturbances of its own.

The basic model of the classical economy can be described as follows.

1. Output is produced with capital and labor, that is, we have a production function of the form: $Y = f(K, L)$. In the short run, with fixed capital, the quantity of labour input determines output.
2. Labor is supplied by households who choose between leisure and consumption, resulting in a labor supply function that depends positively on the real wage. Firms pay a real wage equal to the marginal product of labor, and as marginal product of labor decreases with increase in labour input, the demand for labour is negatively related to the real wage.

In equilibrium, labor demand equals labor supply at the market-clearing real wage. The labor force is fully employed in the sense that everyone can find a job at prevailing wages, though workers may be unemployed while they are searching for new jobs.

Thus, $N^D = N^D(W/P)$, with $(d N^D)/d(W/P) < 0$, and

$N^S = N^S(W/P)$, with $(d N^S)/d(W/P) > 0$

Labour market diagram below

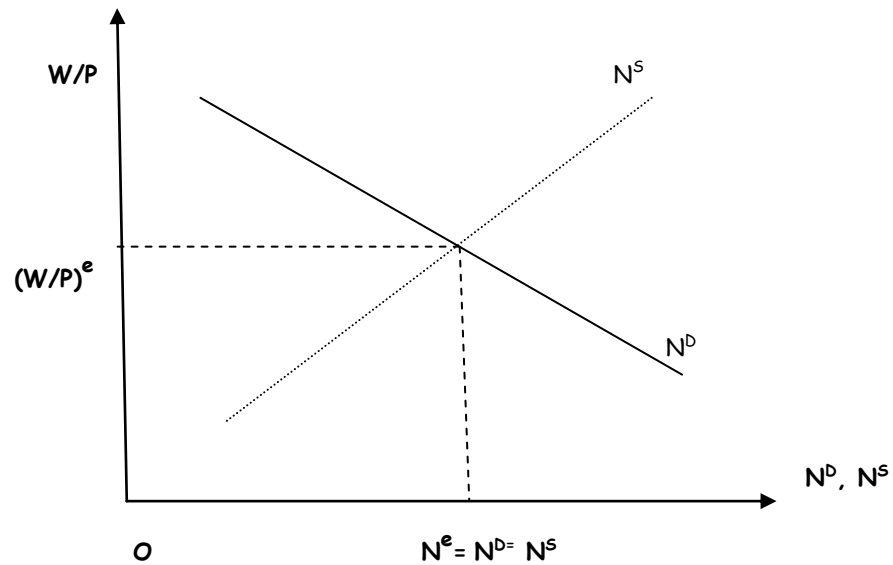


Figure 1.1

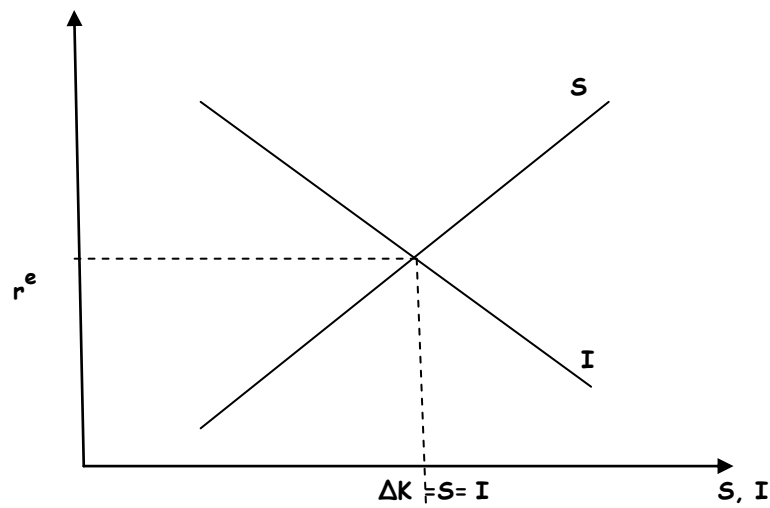
In the diagram, $(W/P)^e$ and N^e represent equilibrium real wage and equilibrium (full employment) labour input respectively.

3. The output Y that can be produced with the available capital stock and the equilibrium labor inputs defines the aggregate supply on the goods market. Demand for goods comes from households (for consumption), firms (for capital investment), the government (exogenous), and foreigners (export is assumed exogenous here). **For the moment, let us consider a closed economy without government activity.**
4. Consumers have a choice either to consume or to save and earn interest. Therefore, consumption and savings depend on the interest rate—specifically, on the real interest rate, because they care about real consumption. Savings is assumed to depend positively on the real interest rate, which is logically quite an acceptable assumption to make.

Thus, $S = S(r)$, where $(dS/dr) > 0$.

5. Because capital investment must be financed, investment also depends on the interest rate—again, on the real interest rate, because real investment produces real output. Higher real interest rates discourage a potential investor and thereby reduce investment. Thus,

$I = I(r)$, where $(dI/dr) < 0$. (See Figure 1.2 below for diagrammatic representation of the capital market)



In the diagram, capital market equilibrium is shown, where r^e represents the equilibrium interest rate and ΔK (equal to S and I) represents the amount of new capital formation.

- The aggregate price level is determined in the money market through a relationship known as the **Quantity Theory of Money**. The QTM tells us that the demand for money is given by the transaction demand kPY , that is, a certain fraction k of the nominal national income PY (price level multiplied by real output). The fraction k is a behavioural and institutional constant that does not change in the short run. Thus:

$M^S = kPY$ is the money market equilibrium condition, where M^S - or the supply of money - is fixed by the monetary authority. On the right-hand side, both k and Y are fixed in the short run, and therefore, any mismatch with M^S is adjusted through a **perfectly flexible price level**.

- Money wages, prices and interest rates** are perfectly flexible. Therefore, equilibrating adjustments in the labour market, the capital market and the money market are ensured.
- Say's law holds true:** The famous Say's law tells us that '**supply creates its own demand.**' Therefore, the problem of overproduction is somewhat ignored in the classical model. The

So we have a system of equations as follows:

- $Y = f(K_0, L)$ - The production function, with K_0 as the fixed capital stock
- $N^D = N^D(W/P)$ - The labour demand curve (negatively related to W/P)
- $N^S = N^S(W/P)$ - The labour supply curve (positively related to W/P)
- $S = S(r)$, where $(dS/dr) > 0$ - The savings function (positively related to the rate of interest)
- $I = I(r)$, where $(dI/dr) < 0$ - The investment function (positively related to the rate of interest)
- $M^S = M_0^S$ - Fixed money supply (governed by the Central Bank)
- $M^D = kPY$ - The demand for money function, with only a transaction demand for money

The various equilibrium conditions are:

$N^D = N^S$ for the labour market (ensured through flexible wages)

$S = I$ for the capital market, (ensured through flexible interest rate) and

$M_0^S = kPY$ for the money market (ensured through flexible price level) - **Quantity Theory of**

Money

The mechanism at work

- From the labour market, we get the (full employment) equilibrium labour input level, say, L_f .
- Putting L_f in the production function, we get the full employment level of output, say Y_f .
- There is no problem of absorption of Y_f through **Say's law of the markets** (supply creates its own demand).
- The equilibrium rate of interest is determined in the capital market, where savings - investment equality is ensured.

- e) The money market is equilibrated through a flexible P , and we get an equilibrium aggregate price level P_e for a given value of M_0^S , a given value of k and the full employment output level Y_f .

If the system is thrown into disequilibrium by some disturbance, it will be brought back to equilibrium through changes in W , P and r .

The Loanable Fund theory

We have briefly described the classical theory of interest rate. This theory is associated with the names of economists like Ricardo, Marshall, Pigou, and Knight. This theory is also known as the real theory of interest rate because it leads to a determination of interest rate through the interaction of real factors like productivity and savings habit. Monetary factors, on the other hand, are not considered. The main features of the so-called 'classical' model can be summarized as follows:

Saving is an increasing function of rate of interest, which may be written as $S(r)$, and investment is a declining function of rate of interest, which may be written as $I(r)$. The equilibrium in the capital market (where investment represents the demand for, and savings represent the supply of capital) is given by:

$$I(r) = S(r) \dots(1)$$

So we have one upward sloping curve (savings) and one downward sloping curve (investment). The rate of interest is the variable that affects both. The point of intersection between the two curves gives us, on the one hand, the equilibrium interest rate; and on the other hand, the equilibrium quantity of planned savings and planned investment (The relevant diagram is not drawn here: we are very familiar with it).

One criticism that has been levelled against the classical theory is that it does not offer any answer as to what the equilibrium interest rate would be. For, aggregate savings is a function of national income, while aggregate investment affects national income. Therefore, in a sense, the position of the upward sloping savings curve is not something unique (it is, only if income is held constant), and shifts in the investment curve can affect its position as well. So, the theory is 'indeterminate'.

The Loanable Fund theory is an extension of the classical theory (attributed to economists like Wicksell and Robertson) with some monetary component added to the classical theory. It focuses on the fact that savings need not be the only means of funding investment expenditure: bank credit is an equally important source. As banks can create credit, they can affect the flow of investment expenditure in the economy. (In fact, we know very well that the credit policies of Central Banks around the world focus on controlling bank credit with a view to influencing economic activities via the investment channel). So in this theory, we rewrite equation (1) as:

$$PS + \Delta B = PI \dots(2)$$

Where P is the aggregate price level and ΔB is the change in bank credit. Note that multiplying S and I with P gives us nominal savings and nominal investment respectively, and as ΔB is stated in nominal terms, both sides of (2) are stated in nominal terms. Also, it should be noted that the PI and PS being flow variables, we cannot have B - or stock of bank credit - on the LHS of the equation. So we take ΔB , which is a flow variable (change in bank credit in the relevant time period).

If change in bank credit leads to an equivalent change in money supply, (2) can be rewritten as:

$$PS + \Delta M = PI \dots(3)$$

The preceding description clearly holds for closed economies. In open economies, net capital inflows must be added to change in credit on the LHS to give a correct description of the equilibrium condition.

Often, dishoarded cash can offer an additional fund of investment expenditure. Similarly, hoarded cash (from additional M created) can reduce the room for investment expenditure. Taking all these into account, we can finally write,

$$PS + \Delta M + DH = PI + HC \dots(4)$$

Where DH is freshly dishoarded cash and HC is freshly hoarded cash. Therefore, we no longer have just a savings curve and an investment curve, but a curve for total supply for LOANABLE funds and a curve for total demand for LOANABLE funds. These curves are a horizontal summation of the relevant underlying curves.

