The Neutrality of Money in the Classical Macro-model (The Classical Dichotomy)

The classical theory of output and employment tells us that changes in the quantity of money affect only nominal variables (i.e. money wages, nominal GDP, aggregate price level etc.), and have no influence whatsoever on the real variables of the economy such as real GDP (i.e. output of goods and services produced), level of employment (i.e. number of labour – hours or number of workers employed), real wage rate (i.e. wage rate in terms of its purchasing power) etc.

Thus, money is said to compartmentalise or **dichotomise** the economy into two different sectors –the 'real' sector and the 'nominal' sector. Further, all the nominal variables change in the same proportion as that of money supply. So, money supply affects all nominal variables neutrally.

Let us now try to go through the process through which the classical system travels after money supply is, say, doubled from an initial position of equilibrium.

We have already noted that the classical system can be described by the following sets of equations:

1. $Y = f(K_0, L)$ – **The production function,** with K_0 as the fixed capital stock
2. $N^D = N^D(W/P)$- **The labour demand curve** (negatively related to W/P)
3. $N^S = NS(W/P)$- **The labour supply curve** (positively related to W/P)
4. $S = S(r)$, where $(dS/dr) > 0$ – The savings function (positively related to the rate of interest)
5. $I = I(r)$, where $(dI/dr) < 0$ – The investment function (positively related to the rate of interest)
6. $M^s = M_0^s$ – Fixed money supply (governed by the Central Bank)
7. $M^D = kPY$ – 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)

Let the initial equilibrium values be Y_0, L_0, W_0, P_0, S_0, I_0, and r_0. If now money supply is raised from M_0^s to $2\ M_0^s$, the first market to be affected is the money market. Clearly there will be an excess supply of money as $2M_0^s > kP_0Y_0$. This will cause an upward pressure on the aggregate price level, and the money market will only be back to equilibrium when price level goes up to $2\ P_0$, because k is a behavioural (and institutional) constant and Y_0 is determined via the production function.

Now, when P is doubled, the labour market equilibrium is disturbed. For, at $2\ P_0$, the real wage ($W_0 / 2\ P_0$) is only half of the previous level (W_0 / P_0). So, while producers will raise their demand for labour, the workers will want to offer less work effort at such low wages. Thus, there emerges an excess demand for labour. The situation is depicted in fig 1.

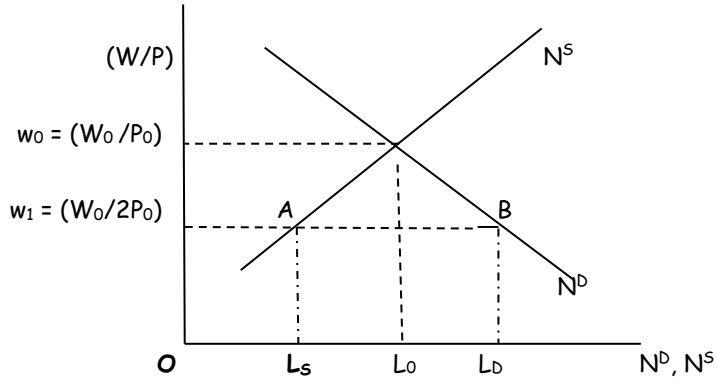

Fig 1 (labour market)

As mentioned above, the fall in real wages created an excess demand for labour. The demand supply gap is equal to AB in fig 1. The firms now compete with each other to recruit the few available workers, and in the process, push up the money wage rate. This process must continue till money wages are also doubled to $2P_0$. This restores the real wage back to the original equilibrium level and equilibrates the labour market. so we are back to $w_0 = (W_0 /P_0)$, L_0 and putting L_0 in the production function, we again get the same level of output Y_0.

This output is a market clearing output, as Say's law ensures via the capital market. In the capital market, meanwhile, the real rate of interest does not change as the nominal interest rate and the price level will double to equate supply of capital (savings) and demand for capital (investment).

Therefore, a doubling of the money supply will double the price level, double the money wage rate, double the nominal rate of interest and double the nominal GDP ($k2P_0Y_0$ is double that of kP_0Y_0).

This establishes the classical dichotomy in its simplest form.

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:

$$\mathbf{I\ (r) = S\ (r)} \quad \ldots\mathbf{(1)}$$

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:

$$PS + \Delta B = PI \quad ....(2)$$

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:

$$PS + \Delta M = PI \quad ....(3)$$

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,

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

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.

Diagram next page

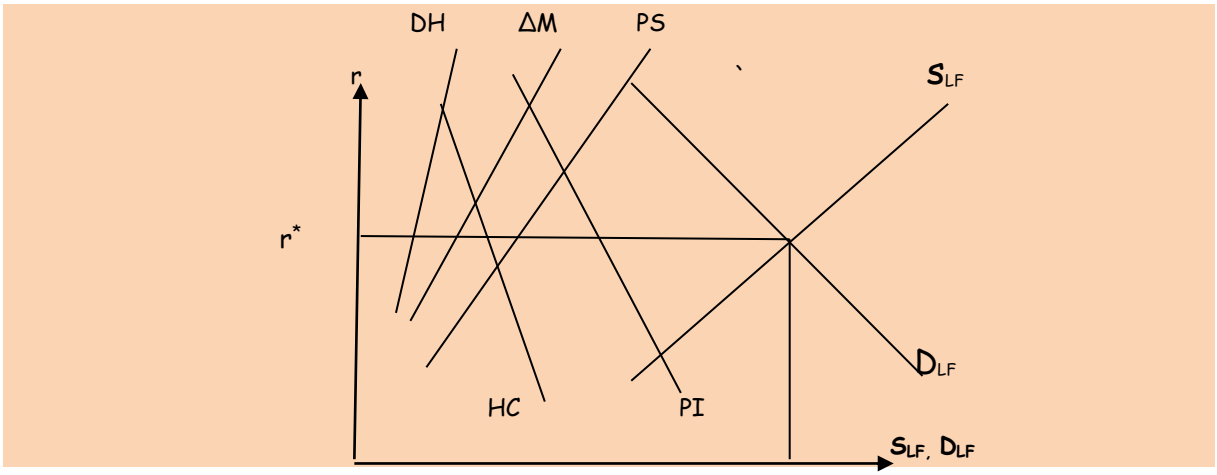

Fig 2 (*S_{LF} and D_{LF} are the curves for total supply for LOANABLE funds and total demand for LOANABLE funds respectively, obtained from a horizontal summation of the relevant underlying curves*).