Harrod Domar Growth Model

As we know that one of the principal strategies of development is mobilisation of domestic and foreign saving in order to generate sufficient investment to accelerate economic growth. The economic mechanism by which more investment leads to more growth can be described in terms of Harrod-Domar growth model, often referred to as the AK model.

Every economy must save a certain proportion of the national income, if only to replace worn-out or impaired capital goods (buildings, equipment, and materials). However, in order to grow, new investments representing net additions to the capital stock are necessary. If we assume that there is some direct economic relationship between the size of the total capital stock, K, and total GNP, Y – for example, if $3 of capital is always necessary to produce a $1 stream of GNP – it follows that any net additions to the capital stock in the forms of new investment will bring about corresponding increases in the follow of national output, GNP. This relationship is known as *'capital-output ratio'* and is represented as *'k'*. in the above case *'k'* is roughly 3:1.

If we further assume that the national savings ratio *'S'* is a fixed proportion of national output (e.g. 6%) and that total new investment is determined by the level of total savings. We can construct the following simple model of economic growth:

- Saving (S) is some proportion, s, of national income (Y) such that we have the simple equation:

$$S = s.Y \text{ ---------- } (i)$$

- Net investment (I) is defined as the change in the capital stock, K, and can be represented by ΔK such that:

$$I = \Delta K \text{ ---------- } (ii)$$

But because the total capital stock, K, bears a direct relationship to total national income or output, Y, as expressed by the capital-output ratio, k, it follows that:

$$\frac{K}{Y} = k$$

Or

$$\frac{\Delta K}{\Delta Y} = k$$

Or

$$\Delta K = k.\Delta Y \text{ ---------- (iii)}$$

- Finally, because net national savings, S, must equal net investment, I, we can write this equality as:

$$S = I \text{ ---------- (iv)}$$

But from equations (i), (ii) and (iii), we finally get the following equation:

$$I = \Delta K = k.\Delta Y$$

Therefore, we can rewrite the equation (iv) as follows:

$$S = s.Y = k.\Delta Y = \Delta K = I \text{ ---------- (v)}$$

Or simply

$$s.Y = k.\Delta Y \text{ ----------(vi)}$$

Dividing both the sides of equation (vi) first Y and then by k, we obtain the following expression:

$$\frac{\Delta Y}{Y} = \frac{s}{k} \text{ ---------- (vii)}$$

Note that the left-hand side of the equation i.e., $\Delta Y / Y$ represents the rate of change or rate of growth in GNP (i.e., the percentage change in GNP).

The Harrod Domar Model, more specifically says that in the absence of government, the growth rate of national income will directly or positively related to the savings ratio (i.e., the more an economy is able to save and invest out of a given GNP, the greater the growth of that GNP will be. Harrod Domar Model further states that the growth rate of national income will be inversely or negatively related to the economic capital-output ratio (i.e., the higher k is, the lower the rate of GNP growth will be).

The additional output can be obtained from an additional unit of investment and it can be measured by the inverse of the capital-output ratio, k, because this inverse, $1 / k$, is simply the output-capital or output-investment ratio. It follows that multiplying the rate of new investment, $s = I / Y$, by its productivity, $1 / k$, will give the rate by which national income or GNP will increase.

For example, the national capital-output ratio in an under-developed country is, let say, 3 and the aggregate saving ratio (s) is 6% of GNP, it follows that this country can grow at

a rate of 2% (i.e., 6% / 3 or s / k or $\Delta Y / Y$). Now suppose that the national saving rate increased from 6% to 15% through increased taxes, foreign aids, and / or general consumption sacrifices – GNP growth can be transferred from 2% to 5% (15% / 3).

According to Rostow and other theorists, the countries that were able to save 15% to 20% of GNP could grow at a much faster rate than those that saved less. Moreover, this growth would then be self-sustained. The mechanisms of economic growth and development, therefore, are simply a matter of increasing national savings and investment.

The main obstacle or constraint on development, according to this theory, was the relatively low level of new capital formation in most poor countries. But if a country wanted to grow at, let say, a rate of 7% per annum and if it could not generate savings and investment at a rate of 21% (i.e., 7% × 3) of national income but could not only manage to save 15%, it could seek to fill this saving gap of 6% through either foreign aid or private foreign investment.

Limitations of the model:

1. ***Economic growth and economic development are not the same***. Economic growth is a necessary but not sufficient condition for development
2. Harrod Domar model was formulated primarily to protect the developed countries from chronic unemployment, and was ***not meant for developing countries***.
3. Practically it is ***difficult to stimulate the level of domestic savings*** particularly in the case of LDCs where incomes are low.
4. It fails to address the ***nature of unemployment*** exists in different countries. In developed countries, the unemployment is 'cyclical unemployment', which is due to insufficient effective demand; whereas in developing countries, there is 'disguised unemployment'.
5. Borrowing from overseas to fill the gap caused by insufficient savings causes ***debt repayment problems*** later.
6. The ***law of diminishing returns*** would suggest that as investment increases the productivity of the capital will diminish and the capital to output ratio rise.

The Harrod-Domar model of economic growth cannot be rejected on the ground of above limitations. With slight modifications and reinterpretations, it can be made to furnish suitable guidelines even for the developing economies.