Introduction

The model was independently developed by Roy Harrod (Harrod 1939, 1948) and Evsey Domar (Domar 1946, 1947). In the model, the rate of economic growth is related to the economy's capital stock.

Model (Contd.)

If we let the capital–output ratio (or the amount of capital required to produce a unit of output in the economy), which is assumed fixed, be given by

$$\frac{K}{Y} = v,$$

Model (Contd.)

then it follows that

$$K = vY$$

and

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

where $\dfrac{\Delta K}{\Delta Y}$ is the incremental capital–output ratio (ICOR).

Model (Contd.)

If we divide Equation (7) through by Y_t, we obtain Equation (8):

$$\frac{Y_{t+1} - Y_t}{Y_t} = \frac{s}{v} - \delta \tag{8}$$

where $\dfrac{Y_{t+1} - Y_t}{Y_t}$ is the growth rate of GDP.

Applications of the Model

For a given capital–output ratio, v, which is assumed fixed, we can use the model to determine the savings ratio required to achieve a particular targeted growth rate.

Limitations (Contd.)

The implication here is that for the economy to continue being in equilibrium (that is, a situation of full employment of both labour and capital), the economy must grow at the same rate as the growth of the capital stock and the growth of the labour force.

Example 1

Suppose that for a particular country, the savings rate is 20%, the capital–output ratio is 4, the depreciation rate is 1%, and the rate of growth of the population is 2% per year.

Solution (Contd.)

Therefore,

$$
\begin{aligned}
g &= \frac{s}{v} - \delta \\
&= \frac{0.2}{4} - 0.01 \\
&= 0.05 - 0.01 \\
&= 0.04.
\end{aligned}
$$

Solution (Contd.)

Alternatively,

$$\begin{aligned} g^* &\approxeq \frac{s}{v} - \delta - n \\ &= \frac{0.2}{0.4} - 0.01 - 0.02 \\ &= 0.02. \end{aligned}$$

Solution (Contd.)

The saving rate should be approximately 45%.

Solution (Contd.)

b. - Since $Y = 40$, capital is fully employed (i.e., $K = 200$).

End

End