The Harrod Model

The Harrod model is based upon three distinct rates of growth

(a) Actual growth rate represented by G_A which is determined by the saving ratio and the capital-output ratio.

(b) Warranted growth rate represented by G_W which is the full capacity growth rate of income of an economy.

(c) Natural growth rate represented by G_N which is regarded as the welfare optimum by Harrod, also known as the potential and full employment rate of growth.

The Actual growth rate

$$G_C = S.$$

where, G is the rate of growth of output in a given period of time and can be expressed as $\Delta Y/Y$; C is the net addition to capital and

and is defined as the ratio of investment to the increase in income i.e $I/\Delta Y$ and S is the average propensity to save i.e S/Y.

$$\frac{\Delta Y}{\Delta Y} \times \frac{I}{\Delta Y} = \frac{S}{Y} \text{ or } \frac{I}{Y} = \frac{S}{Y}$$

$$\Rightarrow I = S.$$

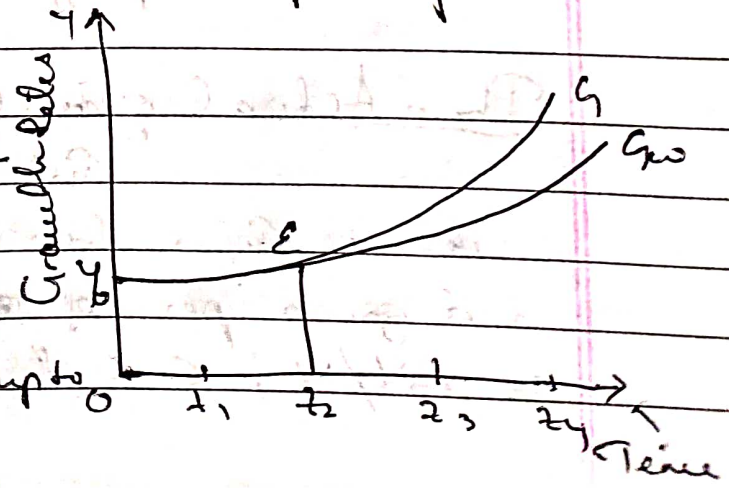
The warranted Rate of Growth

$$G_w C_r = S$$

Where, G_w is the warranted rate of growth or the full capacity rate of growth of income which will fully utilize for a growing stock of capital that will satisfy the entrepreneurs with the amount of investment actually made. It is the value of $\Delta Y/Y$. C_r the capital requirements, denotes the amount of capital needed to maintain the warranted rate of growth.

Genesis of Long run Disequilibrium:

If G and G_w are not equal, the economy will be in disequilibrium. If G exceeds G_w, then C will be less than C_r. Such situation leads to a secular inflation because actual income grows at a faster rate than that allowed by the growth in the productive capacity of the economy.

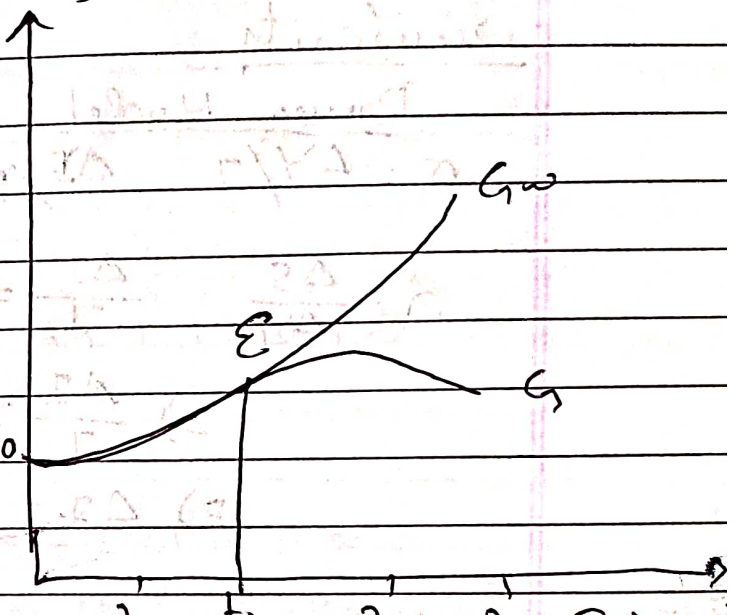


Starting from initial full employment level of income Y_b, the actual growth rate G follows the warranted growth path G_w up to

point E through period t_2. But from t_2 onward G deviates from G_w and is higher than the latter.

If on the other hand, G is less the G_w, then C is greater than Cr. Such a situation leads to secular depression because actual income grows more slowly than what is required by the productive capacity of the economy leading to an excess of capital goods (C > Cr).

From period t_2 onward G falls below G_w and the two continue to deviate further away.



Divergence of G, G_w and G_n.

Have for full employment equilibrium growth: $G_n = G_w = G$

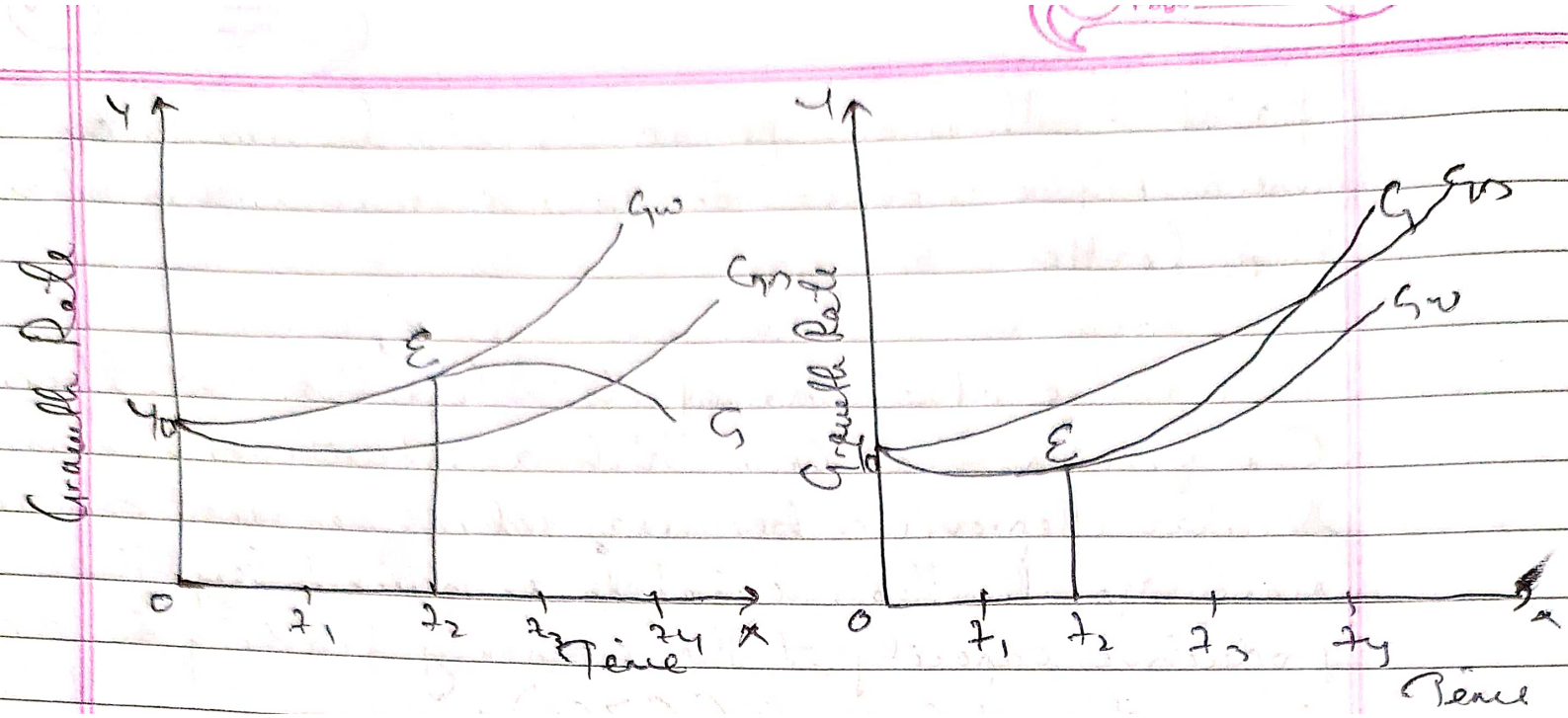
This is a knifeedge balance.

→ If $G > G_w$ investment increases faster than saving and income raises faster than G_w.

→ If $G < G_w$, saving increases faster than investment and rate of income is less than G_w.

→ If $G_w > G_n$, secular stagnation will develop. In such a situation, G_w is also greater than G because the upper limit to the actual rate is set by natural rate.

→ When G_w exceeds G_n, C > Cr and there is an excess of capital goods due to a shortage of labour


Growth Rate
Time
E
G_w
G_s
G
t_0
t_1
t_2
t_3
t_4
O
X
Y