

# Harrod - Dornar Growth Model

1939  
Britain

1947

- \* H-D-Model, Keynes के S-I Analysis पर based है
- \* Keynes के short term static analysis को long term dynamic growth model में convert करने का कार्य किया
- \* H-D model में capital को बहुत importance दी गई है।

\* Capital Accumulation के दो Role हैं -

- capital Investment के गुणक प्रभाव के कारण (Y) आय तेजी से बढ़ती है
- capital Inv से productivity बढ़ती है जिससे capital stock  $\uparrow$  जाता है

\* Capital is the most crucial part of economic growth and there should be equi. in demand and supply of labour

## Assumptions :-

1. Full employ. level of Income, No Govt Interfe.
2. Closed economy
3. No timelag in the adjustment of variables (S, I, Y etc)
4.  $APS = MPS$  or  $\frac{S}{Y} = \frac{I}{Y}$
5. APS, MPS and C-O-Ratio is given and constant

## Harrael

Raises 3 issues

1. How can steady growth achieved with given S, Income and C-O-Ratio

Actual Growth Rate (GA)

2 How can steady growth rate be maintained.  
Warranted Growth Rate  $G_w$

3. How do the natural factor put ceiling on the growth rate Natural Growth Rate  $G_n$

1. Actual Growth Rate Ratio of change in income to total income (in given period of time)

$$GA = \frac{\Delta Y}{Y}$$

2 Determinants  $S = \frac{s}{Y}$  = Saving Income Ratio

$C = \frac{\Delta K}{\Delta Y}$  = capital output Ratio

$$GA \cdot C = S \quad \text{----- (1)}$$

$$\frac{\Delta Y}{Y} \cdot \frac{\Delta K}{\Delta Y} = \frac{S}{Y} \quad (\because \Delta K = I)$$

$$\frac{\Delta Y}{Y} = \frac{I}{\Delta Y} = \frac{S}{Y}$$

$$\frac{I}{Y} = \frac{S}{Y}$$

$I = S$  यह स्थिति Steady Growth कहलाएगी

$G_w$

2. Warranted Growth Rate :- जब economy अपनी full capacity से grow करती है तो उसे  $G_w$  कहा जाता है। full capacity growth rate भी कहा जाता है।

\* [growing capital stock को full utilize करने के लिए  $G_w$  Rate पर  $C$  or Ratio बढना चाहिए] यह  $G_w$  है]

$G_w \cdot C_r = S$  ----- (2)

C-D Ratio required to maintain the  $G_w$

2 Condition to be met to get steady G.R

(i)  $G_A = G_w$

(ii)  $C = C_r$

when Actual Investment = R Expected Inv.  
the we get steady growth rate

2 Situations :- (i)  $G_A > G_w$  then  $C_A < C_r$   
C-D Ratio to achieve  $G_A$  must be less than  
Re-C-D-Ratio to achieve  $G_w$  and through that  
we can correct the situation.

(ii)  $G_A < G_w$  then  $C_A > C_r$

3. Natural Growth Rate ( $G_N$ )  $G_N$  Natural condition  
जैसे - Labour, Technology knowledge, capital Equipment,  
आदि से determinant होता है

\* Natural condition.  $G_R$  पर एक ceiling लगा  
देती है जिसे Full employment ceiling कहेंगे।

\* ये ceiling तभी upgrade होता है जब :-

(i) Natural factor grow कर पाये या

(ii) Technology improve हो जाये

$G_N \cdot C_r = S$  ----- (3)

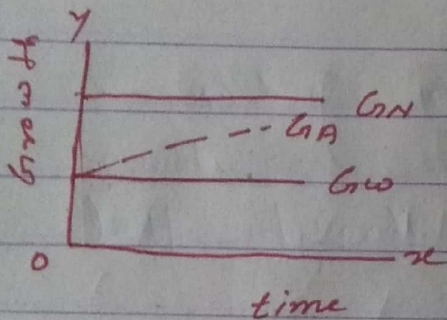
गहां पर Growth, Natural Resources  $\frac{d}{dt}$  determinant हो रहा है तो यह saving को बरकरार हो भी सकता है और नहीं भी

$$GN \text{ or } \neq S$$

### Interaction Between $G_A$ , $G_W$ , $G_N$

3 conditions:—

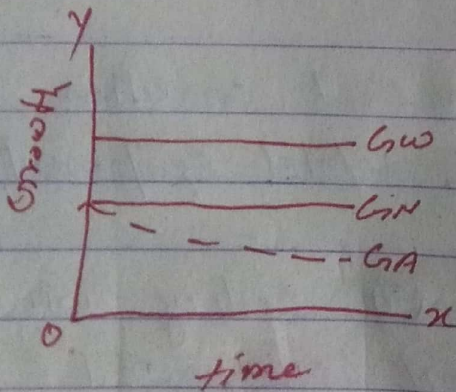
1.  $G_A = G_W = G_N$  - Steady State Equ. Growth
2.  $G_N > G_W$



$G_A$  की tendency  $G_N$  को बढ़ा देने की होगी।

Inflation की tendency होगी।

3.  $G_W > G_N$



चूंकि  $G_A$ ,  $G_N$  में  $\frac{d}{dt}$   $\frac{d}{dt}$  नहीं हो सकती अतः यह  $G_N$  में नीचे की जाएगी।

\* Cumulative ~~Recession~~ Recession

\* Unemployment

5

Domar Model (1947) USA

'Expansion and Employment'

1. Rate of Growth of Income
2. Rate of Growth of Productive Capacity

Here Domar arises a question that what should be the rate of growth of investment to coincide the above two to achieve a steady state growth equilibrium.

Assumptions are same in H-D Model

Demand Side  $\boxed{Y_d = \frac{I}{\alpha}}$

where  $Y_d$  = level of effective demand or level of Income

$I = \Delta K$  = Net Investment

$\alpha = MPS$

Supply Side  $\therefore \boxed{Y = \sigma K}$

Incremental form :-

$$\Delta Yd = \Delta Ys$$

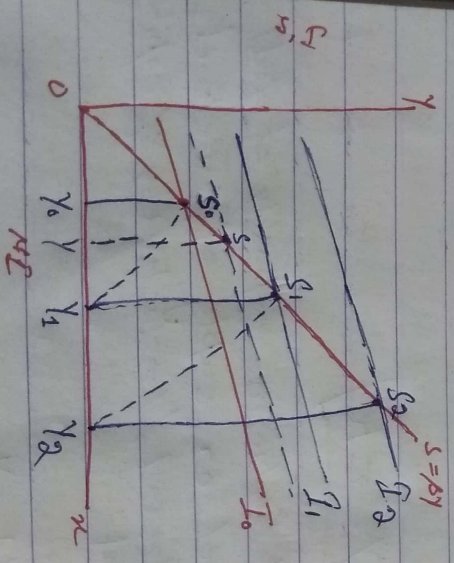
$$\frac{\Delta I}{s} = \sigma \frac{\Delta K}{K}$$

$$\frac{\Delta I}{I} = \sigma \cdot I$$

$$\frac{\Delta I}{I} = \alpha \sigma$$

Note -  $\frac{\Delta I}{I}$  growth rate of  $I$  in economy of growth rate of  $g$  productive capacity of  $g$  should be equal to multiplication of  $\sigma$  and  $\alpha$ .  
 rate of  $g$  growth rate of  $I$  should be equal to multiplication of  $\sigma$  and  $\alpha$ .  
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Diagrammatic Analysis



$S_1$  - saving curve  
 $I_0$  - Initial Investment

Eg -  $s = I \rightarrow$  point  $S_0$

$\Rightarrow$  By this investment productive capacity of an economy increases.

$\Rightarrow$  NI increases  $Y_0, Y_1$   
 $\Rightarrow$  To absorb this income  $I_{inv}$  should be shifted to  $I_1$ .

$\rightarrow$  Only in that case economy is in steady state

State eqy. This process goes on.

In case: Investment increase not sufficient.

Not Absorb full capacity generated  
C<sub>1</sub>Y<sub>1</sub> की absorb हो पाया आगे unutilize रह जाया

⇒ in next period producer will invest less  
Y ↓ I ↓ disepir बढ़ती जाती है

not increases necessary

⇒ if require of Investment, for productive capacity  
to augmentation of economy में disepir

होती शरत में बढ़ती जाती है