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BA in Economics and Political Science (Honours/
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Fundamentals of Economic Growth and Development
CIA 1

Opinion Piece

Harrod – Domar Growth Model

While the Harrod-Domar model is often relegated to the history books of undergraduate economics, it offers us a powerful, if cautionary, perspective for understanding the complexities of modern economic instability thanks to its rigid assumptions. It is not merely a recipe for growth but a stark illustration of how relying solely on capital accumulation often loses sight of the fundamental drivers of national prosperity.

This model shows that the economic growth of any nation directly depends upon the national saving rate and productivity of capital.

The growth rate of output is equal to the savings rate divided by capital output ratio.

$$g = s / v$$

s = saving rate

v = capital output ratio

g = growth rate

This theory was given by Roy F. Harrod and Evsey Domar.

Saving Rate means what percentage of income is saved rather than being consumed.

Capital Output Ratio indicates units of capital needed to produce one unit of output. Lower the capital output ratio, greater will be the efficiency.

The Harrod-Domar economic growth model is a simplified macroeconomic model of long-term capital accumulation and growth. It assumes a closed, laissez-faire economy with no foreign trade, continuously operating at a full-employment level. The consumer behavior in this context implies that the marginal propensity to consume is equal to the marginal propensity to save (MPC = MPS), which is a constant distribution when additional income is equally divided between consumption and saving. Furthermore, the system is in strict macroeconomic equilibrium in the sense that planned (ex-ante) savings and investment are always equal to realized (ex-post) savings and investment.

But we must critique the sterility of the model. By assuming a closed, laissez-faire economy operating at full capacity as their starting point, Harrod and Domar developed an elegant mathematical framework that, unfortunately, ignores the chaotic reality of technological innovation and institutional failure that defines developing markets today.

Harrod Model

The Harrod model is based upon three distinct growth rates.

1) Actual Growth Rate: (G)

The Actual Growth Rate is the ratio of change in income to the total income in the given period.

$$G = \Delta Y / Y$$

The actual growth rate is determined by:

- APS (Average Propensity to Save): S / Y
- Capital Output Ratio: $C = \Delta K / \Delta Y$

2) Warranted Growth Rate: (Gw)

The Warranted Growth Rate is also known as full capacity growth rate where the growth rate of the economy is determined when it is working at full capacity.

$$Gw = S / Cr$$

S = Saving Income Ratio (s / y)

Cr = Capital Output Ratio

Relationship

$$GC = s$$

G = Actual Growth Rate

$$G = \Delta y / y$$

Y	
1000	$\Delta y = 200$
2000	

C = Capital Output Ratio

$$C = \Delta K / \Delta Y$$

K	Y
200	1000

400 2200

$$S = APS$$

$$= S / Y$$

$$\Delta K = 200$$

$$\Delta Y = 1200$$

$$GC = S$$

$$= (\Delta Y / Y) \times (\Delta K / \Delta Y) = S / Y$$

$$= \Delta K / Y = S / Y$$

$$\Delta K = S$$

$$I = S$$

$$\Delta K = I$$

3) Natural Growth Rate: (Gn)

The Natural Growth Rate is also known as full employment growth rate. It is that rate of economic growth which is required to maintain full employment. It is determined by the natural conditions such as labour force, natural resources, capital equipment, technical knowledge, etc.

Instability of Growth

Case 1:

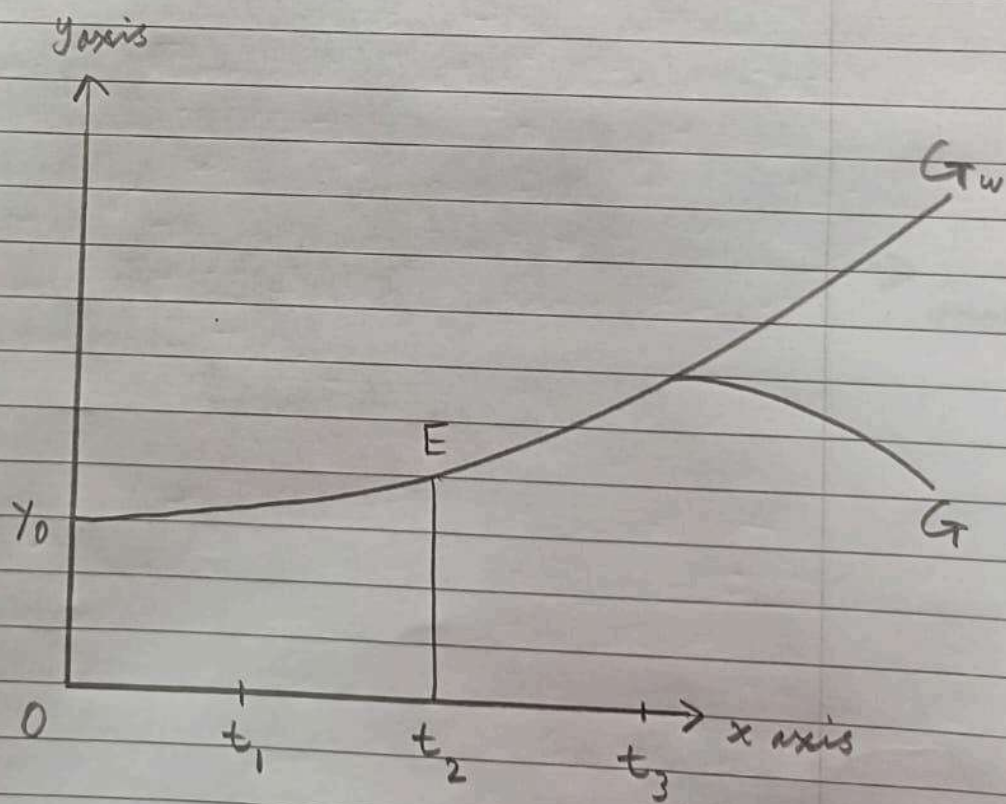
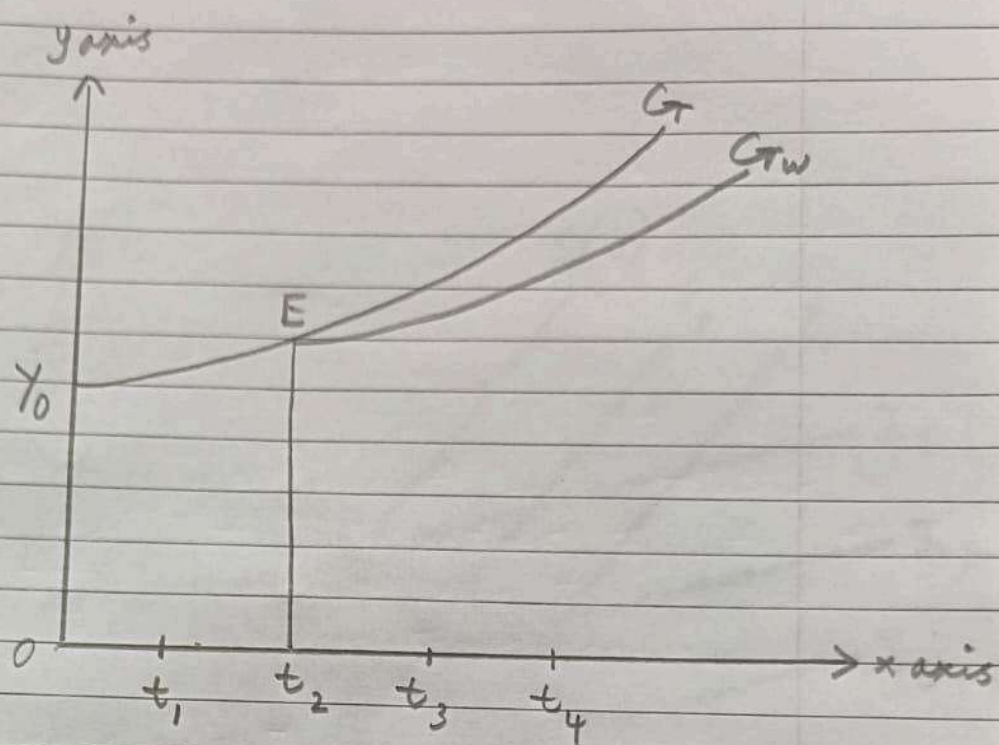
G	>	Gw
Actual	is	Warranted
Growth	more	Growth
Rate	than	Rate

Then	C	<	Cr
	Capital Output		Capital Output ratio in case
	ratio in case of		of Warranted Growth Rate
	Actual Growth		

This situation implies that the economy will have to undergo a quagmire of inflation. This is because in this situation, the growth rate of income is more than the growth rate of output. As a result, the demand for output will increase the supply of output.

On the other hand, if actual growth rate is less than warranted growth rate is less than warranted growth rate then the economy will have to go through stagnation because actual income is growing slowly in comparison to what is required by the productive capacity of economy which will lead to excess of capital goods.

This "quagmire of inflation" or "stagnation" is not merely a theoretical by-product but a relevant critique of why modern development strategies must prioritize more than just the capital-output ratio. But the developing countries of today remind us that failure to balance growth is often a reflection of the exact instability that Harrod identified decades ago.



Domar Model

It was given by Evsey David Domar.

This model was built from both demand and supply side based upon the dual effect of investment and provided the solution for steady growth.

Demand Side of Long Term Investment	Supply Side of Long Term Investment
$\Delta Y_d = \Delta I (1/MPS)$ $\Delta Y_d = \text{Change in National Income}$ $\Delta I = \text{Change in Investment}$ $MPS = \Delta S / \Delta Y$	$\Delta Y_s = (\Delta K) \sigma$ or $\Delta Y_s = (I) \sigma$ $\Delta Y_s = \text{Change in Output Supply}$ $\Delta K \text{ or } \Delta I = \text{Change in Real Capital}$ $\sigma = \text{Capital Productivity}$

Economy is said to be at equilibrium when change in National Income = Change in Output

$$\Delta Y_d = \Delta Y_s$$

$$(\Delta I) (1 / MPS) = I \sigma$$

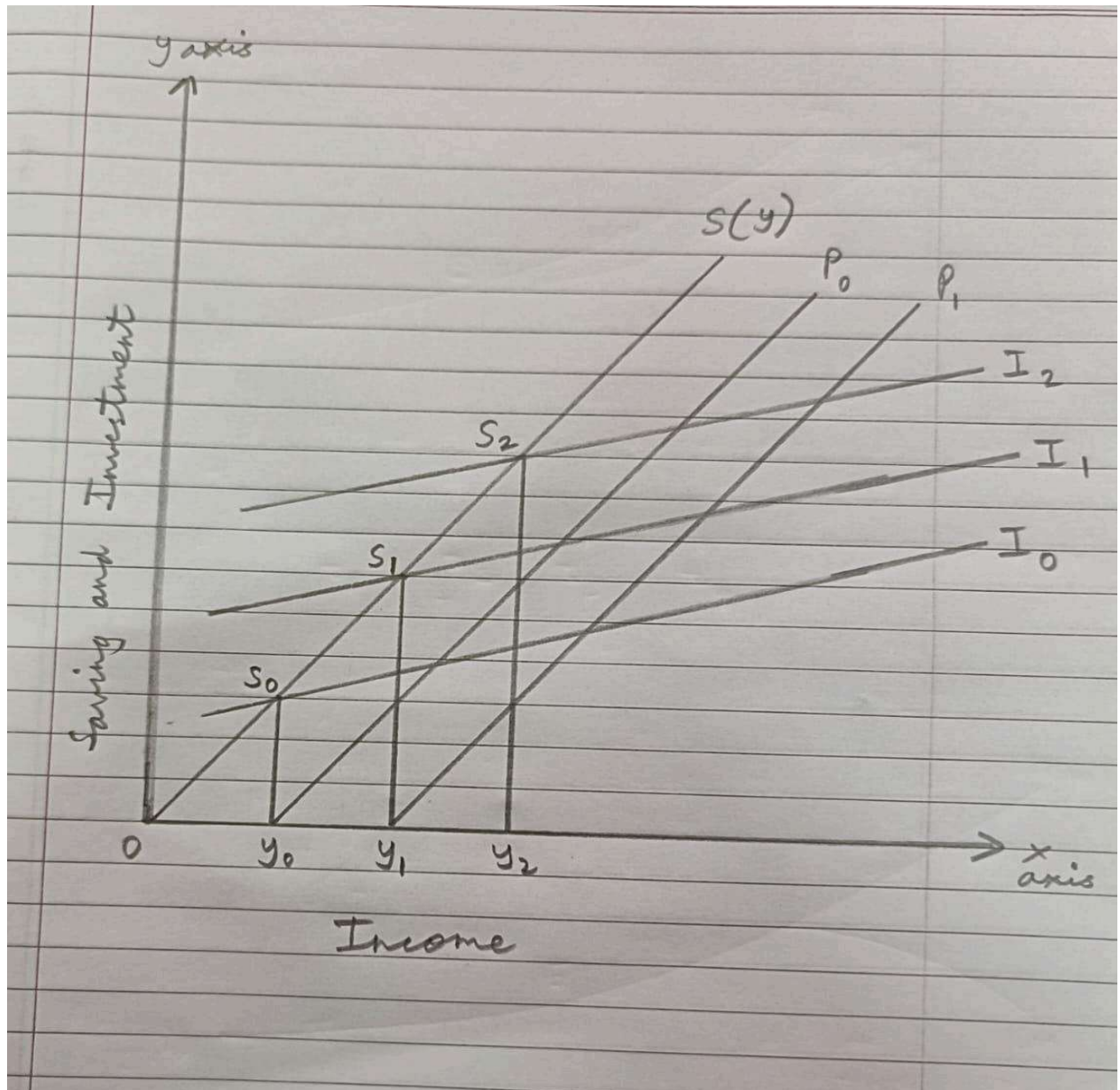
$$(\Delta I) = (MPS) I \sigma$$

Or

$$\Delta I / I = (MPS) (\sigma)$$

Case 1: If $\Delta I / I > (MPS) (\sigma) \rightarrow$ Economy will experience Inflation

Case 2: If $\Delta I / I < (MPS) (\sigma) \rightarrow$ Economy will experience Stagnation



$S(y) \rightarrow$ Saving Line

$I_0, I_1, I_2 \rightarrow$ Investments

Saving and Investment Interest

(Equilibrium points)

$S(y)$ is the saving schedule at different levels of National Income and I_0, I_1 , and I_2 are different levels of investment in this framework. Lines Y_0P_0 and Y_1P_1 indicate capital productivity, and are drawn parallel to each other to indicate that capital productivity is constant. The economy is in equilibrium at S_0 . The total savings generated is S_0Y_0 . Once these savings are fully recycled back into the economy, it results in an increase in national income from Y_0 to Y_1 . Then, the growth of national income increases the productive capacity of the whole economy and raises the total capital output and income growth.

Conclusion

Ultimately, the Harrod-Domar model is a success as a mathematical exercise and a failure as a guide to the real world. Its true value in the 21st century lies not in its ability to predict growth, but in its power to show us exactly what is missing: the human, technological, and political factors that actually make sustainable progress possible.

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