

**Degree programme:** BSc Economics  
**Name:** Andrei Garbuz  
**Student ID no:** 120904  
**Name and of Course:** Economics of Developing Countries I  
**Seminar tutor:** Dr Graham Dyer  
**Essay title:**

## **The Harrod-Domar Model.**

**Word Count: 1847**

*Abstract:*

The Harrod-Domar Model is the simplest and best-known production function used in the analysis of economic development. This model explains the relationship between the growth and unemployment in advanced capitalist societies. However, the Harrod-Domar Model is used in developing nations as an easy way of looking at the relationships between growth and capital requirements. This model does explain the differences in growth performances between countries. The model allows you to predict an estimate of growth for a nation, which can be compared to predictions of growth for a different country.

The Harrod-Domar model was developed in the 1930s and formulated in context of advanced capitalist economies. It suggests that savings provide the funds which are borrowed for investment purposes. Hence economy's rate of growth depends on the level of saving and the savings ratio and on the productivity of investment. Sir Roy F. Harrod's (1939) "Essay in Dynamic Theory" marked the beginning of the modern theory of growth, had been followed up by Evsey Domar in his 1948 book, 'Towards a Dynamic Economics', as well as in a series of essays (1960, 1963, 1975) he developed this further, highlighting the instability problem of this model and launching the entire post-war research program on economic growth - and, reviving business cycle theory as well as dynamising Keynesian theory. The model has a place in developing economics where it did not remain a theoretical abstraction but served as the framework for plan formulation in countries such as India and Turkey.

The main assumptions of the model are that firstly it is a one sector closed economy producing single undifferentiated product. Secondly, there is a simple production function with nothing else but capital and labor. Thirdly, it is characterized by fixed technical coefficient such as Capital/Labor and Labor/Capital ratios. Moreover, it is a short-run model so there is no technical change available. The model has no government and assumes that operation of financial institutions is perfect and creation of industrial capitalist class will just happen.

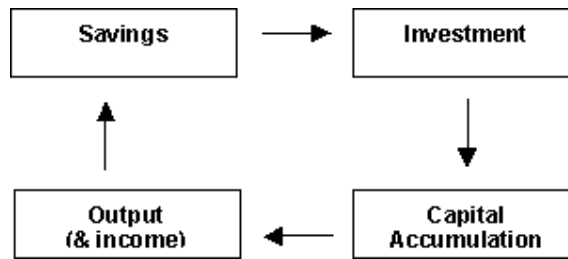
Every economy must have a proportion of its national income saved in order to replace impaired capital goods and in order to grow new investments representing net additions to the capital stock are necessary. Assuming that there is a direct economic relationship between the size of the total capital stock and total GNP, 3 units of capital is always necessary to produce 1 unit stream of GNP, it follows that any net additions to the capital stock in the form of new investment will raise the flow of national output. Let's suppose that such relationship is known as capital output ratio and it is 3 to 1. Defining capital output ratio as  $k$  and assuming that there is a fixed savings ratio  $s$  and that total new investment is determined by the level of total savings we can portray the structure of the model. Because saving ( $s$ ) is a proportion of national income we get  $S=sY$  and total capital stock ( $K$ ) has a direct relationship to total national income ( $Y$ ) we get  $\Delta K=k\Delta Y$ .

Net national savings  $S$  must equal net investment  $I$  ( $S=I$ ) what is a Keynesian assumption, we can say that  $I= \Delta K=k\Delta Y= S=sY$  or  $sY= k\Delta Y$ . Then we can divide both sides first by  $Y$  and then by  $k$  and obtain:  $\Delta Y/Y=s/k$  what is a simplified version of the Harrod-Domar equation.

According to Harrod's equation  $g=s/v$  where  $g$  is the compound rate of growth of real output,  $s$  is the savings rate and  $v$  is the incremental capital output ratio ( $v=\text{change in } K/\text{change in } Y$ ).

According to Domar's equation  $\theta=\sigma\alpha$  where  $\theta$  is the compound rate of growth of real output,  $\sigma$  is the rate of saving and  $\alpha$  is the inverse of the incremental capital output ratio.

The logic of the model is such that in the absence of government the growth rate of national income will be directly related to the savings ratio and inversely related to the economy's capital output ratio. Hence in order to grow economies must save and invest certain proportion of their GNP and the more they save and invest the greater the effect will be. Investment over and above that needed to replace worn out capital (depreciation) leads to more producer goods (capital appreciation) which generates higher output and income. Higher income allows higher levels of saving.



In order to dynamise Keynesian approach Harrod and Domar bring in accelerator and multiplier model in. The incremental capital-output ratio (ICOR) of 1 means that one additional unit of output requires one additional unit of Kapital. This is one of the main pillars of Keynesian economics, income is generated by investment via the process of multipliers and so are consumption are savings. However this principle is concerned with developed countries only as in LEDCs there is a very low elasticity of output and with a rise in investment the money

The multiplier operates at full employment because of its simplicity. Given a target growth rate  $g$  and  $s$  in LEDCs the demand for investment to obtain target  $g$  is  $g/v$  and the multiplier  $1/s$  gives the required savings  $g/vs$ . If  $s/v < g$ , then the economy is in a state of cumulative depression. If  $s/v > g$ , then the economy is in a state of cumulative expansion. The Harrod-Domar model is not a policy variable as a plastic operational significance and growth in per capita income is

determined by savings ratio. For LEDC steady accelerating rate of growth is needed and saving The main problem with this model is related to stability. The investment level is given by the out of additional income must be greater than saving from normal income. If there is a gap expectations of additional demand and this investment via the multiplier generates effective demand. If investors expect more than the rate 'warranted' by  $s/v$  then the actual growth rate of fulfilled the gap. The marginal rate of savings is always greater than the actual savings rate will be demand will be greater than the anticipated rate, leading to inflation as the expectation was too high. If the expected rate is lower than the actual rate, then the demand will be less than the anticipated rate, leading to deflation. The market will therefore give a perverse signal to investors what is a core problem of The Harrod-Domar model oversimplifies the process of growth and development and by its assumptions it seems to be the 'Ricardian vice'. It cuts the general system into bits and forms its own type which is underlined by simple assumptions. Firstly, 'ceteris paribus' assumptions such as absence of technical change, constant capital-output and labour-output ratios and constant pattern of investment allow us to ignore other variables and let the rate of growth depend only on interactions of  $s$  and  $v$ . Secondly, 'mutatis mutandis' assumptions such as automatic creation of

capitalist class and perfect operation of financial institutions let us ignore the changes which are necessary in the development process. These assumptions show how difficult it is to apply the model to any LEDC country as in order to calculate a reliable estimate of capital output ratio the data needed to calculate it is not available in most developing countries. Moreover, the role of labour along with capital in another input in the process of production is hard to accept in the context of developing world as even labour surplus LEDCs do achieve that surplus seasonally only according to some empirical evidence. Also the model is too aggregative and does not provide the basis for a detailed quantitative study and does not raise any regional or structural difficulties. In addition, 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 growth model supposedly died long ago. But for more than 40 years, economists working on developing countries have applied- still apply- Harrod-Domar model to calculate short-run investment requirements for a target growth rate. They then calculate a financing gap between the required investment and available resources and often fill the "financing gap" with foreign aid. However this gap is not necessarily removed because of marginal rate of savings being above the average rate of savings. Even though the model was formulated in the context of advanced capitalist economies and according to the above critique it is hardly possible to apply the actual model to any LEDC country, the main idea of the model was adopted and applied by countries such as India in its First Five Year Plan (1950-1 to 1955-5). Economists used the model even when the model clearly wasn't working. Total GDP in Guyana fell sharply from 1980 to 1990, as investment was increasing from 30 percent to 42 percent of GDP, and while foreign aid every year was 8 percent of Guyana's GDP. The public World Bank report in 1993 argued that Guyana "will continue to need substantial levels of foreign capital inflows ... to provide sufficient resources to sustain economic growth". The whole point of the model is to show that Investment increases National income through the multiplier and that investment effect is supply side and increases productive capacity of employment, empirical

evidence shows us that investment is necessary but not sufficient. There are many other factors necessary to achieve before trying to increase income growth. These factors are structural changes in the economy and efficient operation of markets together with the right employment pattern.

### **Bibliography:**

1. *Ghatak S, 1995, Introduction to Development Economics, Third edition, Routledge, UK*
2. *Colman David, Nixon Frederick, 1978, Economics of Change in LDCs, Philip Allan Publishers LTD, Oxford*
3. *Todaro M. P., Smith S. C., 2003, Econmic Development, Eighth edition, Pearson Education LTD, UK*
4. *Sen Amartya, 1970, Growth Economics, Penguin Books, UK*
5. *Internet*