Topic 4: Descriptive models of Economic Growth and Development

By

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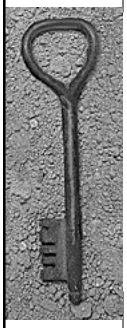


Basic Growth Models

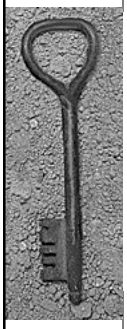
So far we have done the following:

- ✓ **Measures of Living standards**
  - *** Per capita income (we are pursuing now)**
  - *** Human Development Index and PQLI**
- ✓ **Growth Accounting to account for sources of differences in the growth rates of per capita income**

$$r_Y = r_A + \eta_{FK} \cdot r_K + \eta_{FL} \cdot r_L$$

Question: Why do we need growth models, or models of economic development?

Growth accounting, can explain why some countries grew fast than another country, what has been the source for such differences, but it cannot predict where the economy is going.



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- If we introduce a policy to encourage savings, we know it will have also effect on labor, since more savings will lead to more investment and more labor demand and thus it will lead to growth from both through labor channel and through capital channel. The growth accounting does not do that.
- Also it does not explain the process of structural changes.
- Growth models, or models of development will just do that

Harrod-Domar Model

- The simplest and earliest model of growth, to explain one of the main force of growth and development is the savings rate.
- It shows that $g_Y = v.s$,

  where,

  g_Y growth of total output

  v = output-capital ratio, which is same as $1/k$ of the book.

  s = savings rate

Example

- Suppose (as in 50's) India had

Savings rate, s=.15

Output-capital ratio,

v =1/3

According to Harrod-Domar model, growth rate of total income

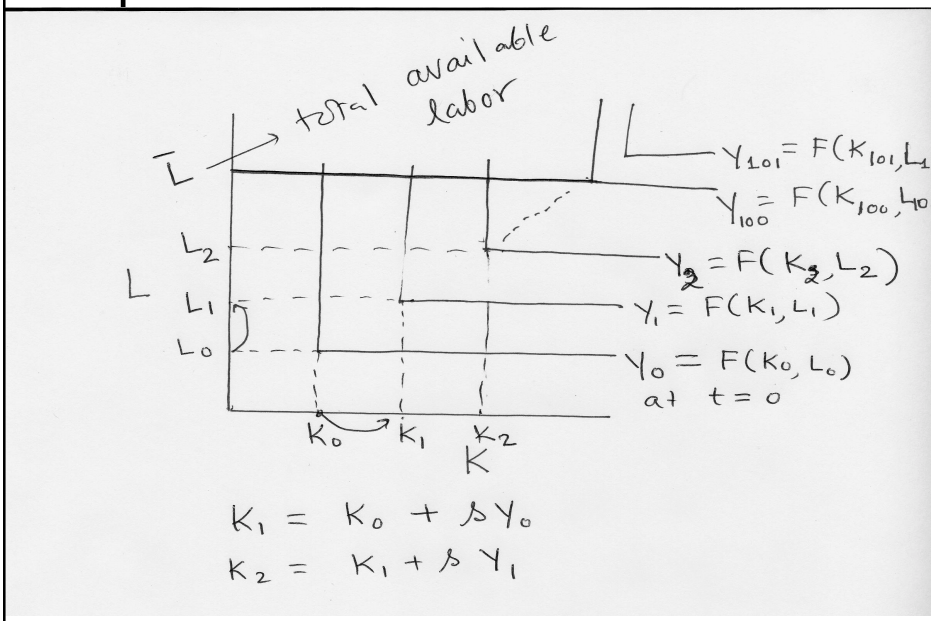
G_Y = .15/3 =.05

If G_pop = .03, what is

Growth rate of per capita income?

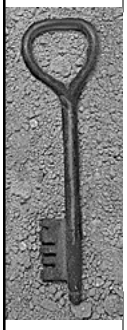
- Suppose India increased savings rate to s=.21, what is the new g_Y?
- G_Y=.07, I.e., 7 %

Graphical Presentation



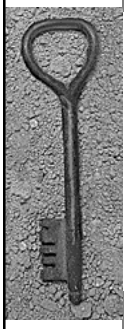
Criticism of Harrod-Domar Model

- According to our simple model, the growth in output will cease once the capital accumulation process come to a point when there is no more excess labor(in the graph, it will happen at t = 100). The model cannot explain what happens after that.
- It does not explain the process of structural change explicitly. For instance, how the rural economy with 80-90 percent population in agriculture is converted to an industrialized economy with only 2-4% of the labor force in agriculture.
- In this model, there is no role is given to other sources of growth such as human capital or education, and total factor productivity growth.



Lewis Dual Economy Growth Model

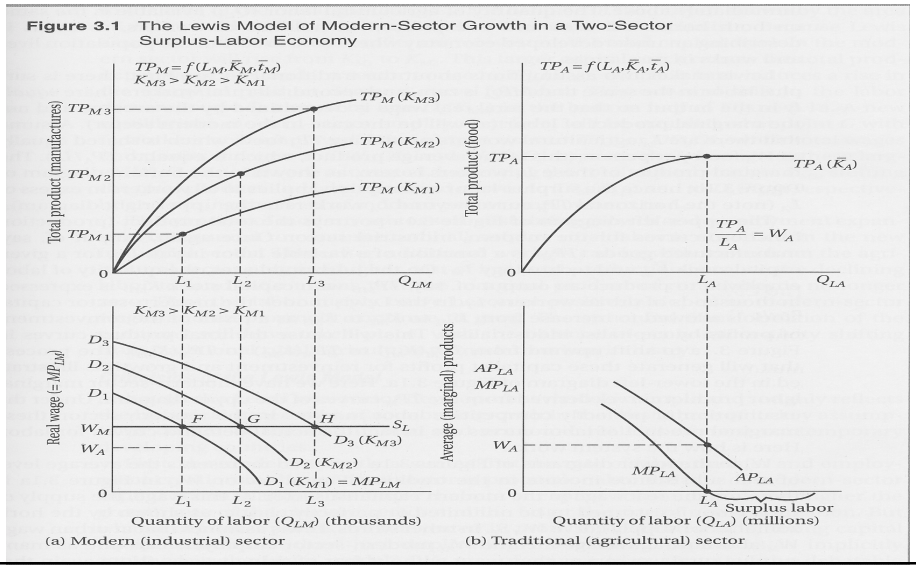
- This model explicitly models labor absorption process and models the rural-urban migration.



Basic Assumptions

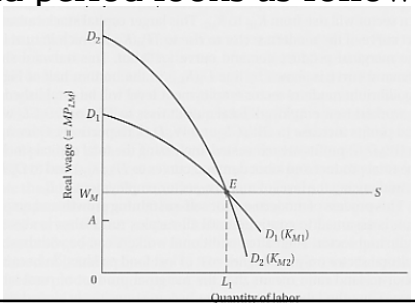
- Two sectors, agricultural sector, and urban manufacturing sector.
- Surplus labor in agriculture. I.e., labor that can be taken out of the agriculture sector without reducing the total output in the sector. Wage rate is set as the average product of labor W_A
- The wage rate W_M is set at 30% higher than wage rate in the agricultural sector. The industrialist maximize profit and reinvest all his profit.

Graphical Presentation



Criticism of Lewis Model

- What happens if the industrialist invest in R&D to develop labor saving technology or import technology which is labor saving so that the marginal product curve in the second period looks as follows:



Lewis model (criticism continued)

- It cannot explain what happens to the growth and development process once all the excess labor is absorbed in the manufacturing sector.
- In the model, human capital and total factor productivity growth which we saw in the growth accounting framework as important sources of growth do not play any role in the model.
- While the model explains rural-urban migration, but it is inconsistent with what is observed in most less developed country: a lot unemployed workers in the urban sector, and very few unemployed workers in the rural sector, as opposed to what model assumes.
- Most of these criticisms could be accommodated by extending the basic model, see for instance the work of Fei and Ranis, and Todaro on rural urban migration.