

# Geographical Economics

## Course 3: Growth and geography

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3. What about geography and growth ?

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## What about geography and growth ?

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- ▶ Current lines of research convey the attention on the impact of local clusters (or agglomerations) on the economic growth of a specific territory.
- ▶ **Key-path:** Identification of *common* or *complementary* factors that trigger either firms' competitiveness and local development.
- ▶ **Key-device:** the existence of strong *localized externalities (spillovers)* yield the establishment of a core and periphery structure where the core records higher growth rates than the periphery.

## Basic definitions: accounting

Key-player: GDP

Why ? Supply approach = demand approach

$$Y = \underbrace{\sum_{i=1}^N p_i q_i}_{\text{Supply}} = \underbrace{G + C + I + X - M}_{\text{Demand}}$$



## Basic definitions: accounting

$$\uparrow Y \implies \uparrow q_i \implies \begin{cases} C \uparrow \\ X \uparrow \end{cases}$$

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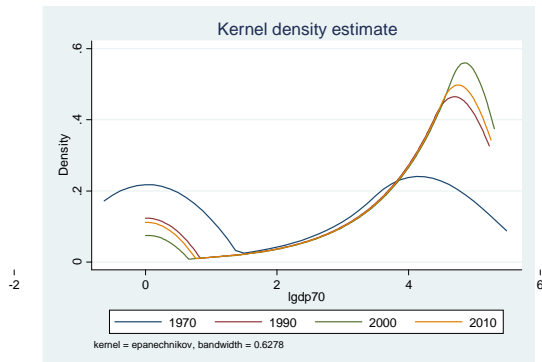
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2. How is it possible that  $X \uparrow \implies \uparrow q_i \implies \uparrow Y$  ?
3. Which is the most efficient device to get  $\uparrow q_i$  ?

# Talking about growth

Some empirical evidence:

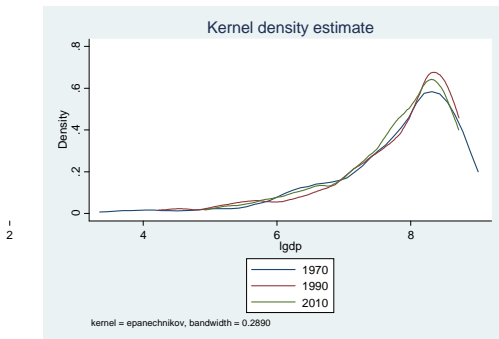
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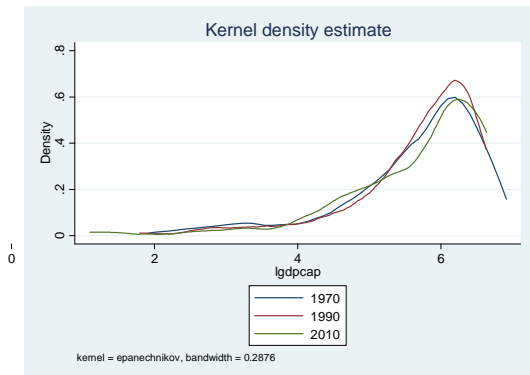
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- ▶ Labor ?; Physical capital ?; Technology ?

## The Solow-Swann model

The production or income function is

$$y(t) = F[k(t), A(t)L(t)],$$

$A(t)L(t)$ : effective labor (technology is labor augmenting)

HPs:

1. Constant returns to scale, then

$$F\left(\frac{K}{AL}; 1\right) = \frac{1}{AL} F(k, AL) \implies y = f(k) = F(k, 1)$$

or  $y = f(k)$

2.  $f(0) = 0$ ;  $f' > 0$ ;  $f'' < 0$
3.  $f(\cdot)$  satisfies the INADA conditions:

$$\lim_{k \rightarrow 0} f'(\cdot) = \infty; \quad \lim_{k \rightarrow \infty} f'(\cdot) = 0$$

# The Solow-Swann model

Graphically:

Diagram 1.1: The Solow-Swann model. The horizontal axis is labeled  $k$  and the vertical axis is labeled  $y(k)$ .

$y(k)$

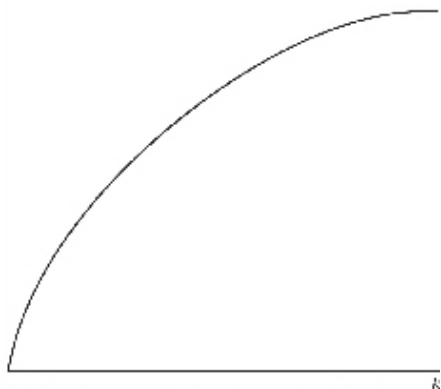


FIGURE 1.1 An example of a production function

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- ▶  $sf[k(t)]$ : actual investment
- ▶  $(n + g + \delta)k(t)$  : *break-even condition*

# The Solow-Swann model

## Graphically

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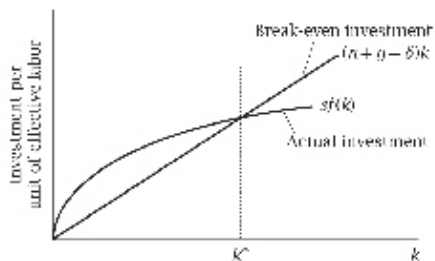


FIGURE 1.2 Actual and break-even investment

# The Solow-Swann model

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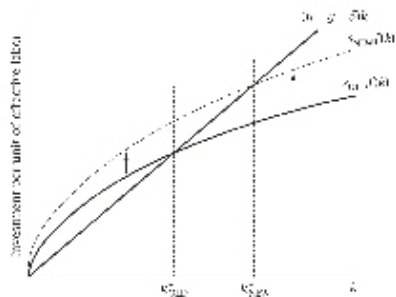


FIGURE 14 The effects of an increase in the saving rate on investment

# The Solow-Swann model

Evolution of the investment size:

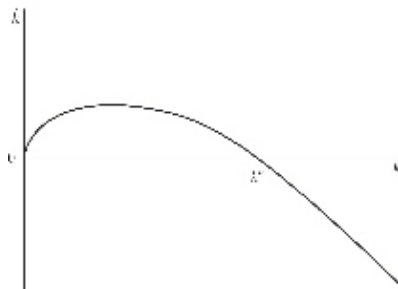


FIGURE 1.3 The phase diagram for  $k$  in the Solow model

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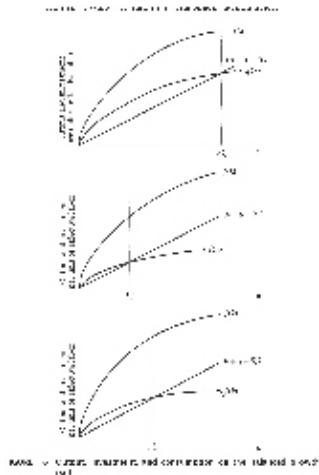
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- ▶ KEY ISSUE: in Solow *ONLY* changes in the rate of the technological progress have growth effect
- ▶ On the balanced growth path, consumption is equal to:

$$c^* = f[k^*] - (n + g + \delta)k^*.$$



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7.  $\delta \cong 3; 4\% - \text{year}$



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1. Only the effectiveness of labor can lead to permanent growth,
2. Therefore, differences in growth have to be associated to the level of effectiveness of labor,
3. In order to conclude something in that direction, it is important to look at **stock of knowledge** (looking at education, skill, infrastructure, cultural attitude entrepreneurship...)