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Development and growth III:

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Development Economics
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Formalization of the SM

getting

6.3 $S(t) = I(t)$

and

6.4 $K(t+1) = (1-\sigma)K(t) + I(t)$

Thinking that

6.5 $\frac{S(t)}{Y(t)} = s$

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Formalization of the SM

Then we have

8.1 $K(t+1) = (1-\sigma)K(t) + sY(t)$

Dividing everything per $P(t)$

Assuming $P(t)$ growth constant

8.2 $P(t+1) = (1+n)P_t$

Then the 8.1 becomes

8.3 $(1+n)k(t+1) = (1-\sigma)k(t) + sy(t)$

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Formalization of the SM

$$8.3 \quad (1+n)k(t+1) = (1-\sigma)k(t) + sy(t)$$

where k and y are the Kapital and Income p.c.

$$6.6 \quad \frac{K(t)}{P(t)}$$

$$6.7 \quad \frac{Y(t)}{P(t)}$$

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The intuition of Solow

$$8.3 \quad (1+n)k(t+1) = (1-\sigma)k(t) + sy(t)$$

where $(1-\sigma)k(t)$

where $sy(t)$ saving rate p.c.

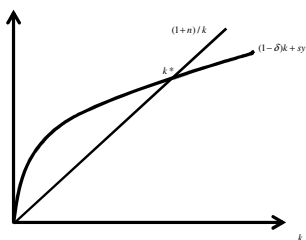
The sum is

$$k(t+1)$$

The stock of Kapital p.c.

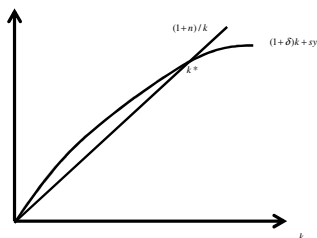
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The relationship between Kapital and Population growth and the Steady State



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Il rapporto capitale/popolazione e lo stato stazionario



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The Steady State

In the steady State

$$8.4 \quad k(t) = k(t+1) = k^*$$

Then the H-D could be written and take into account of some endogenous variable such as the Kapital

$$8.5 \quad \frac{k^*}{y^*} = \frac{s}{n + \delta}$$

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The Progress and efficiency of the workers

Now it's necessary to separate the workers from the population

$$8.6 \quad L(t) = E(t)P(t)$$

where $E(t)$ is the worker productivity

Therefore assume the population growth and the increasing of the workers efficiency given by π

$$8.7 \quad E(t+1) = (1 + \pi)E(t)$$

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Formalization of the new SM

Taking again

$$8.3 \quad (1+n)k(t+1) = (1-\sigma)k(t) + sy(t)$$

Instead of k and y having $\hat{k}$ and $\hat{y}$ that are
Capital and Income per unit of product o per worker

$$8.8 \quad \frac{k}{E(t)} \quad \text{and} \quad 8.9 \quad \frac{y}{E(t)}$$

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The formalization of the new SM

Then 8.3

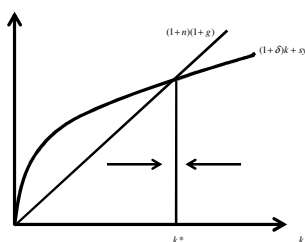
$$8.3 \quad (1+n)k(t+1) = (1-\sigma)k(t) + sy(t)$$

becomes

$$8.10 \quad (1+n)(1+\pi)\hat{k}(t+1) = (1-\sigma)\hat{k}(t) + s\hat{y}(t)$$

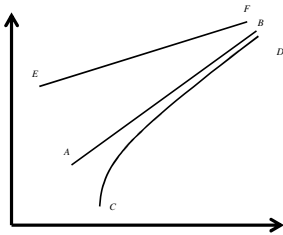
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The new model



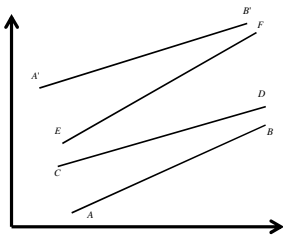
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Conditional convergence



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Unconditional Convergence



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