



KANDIDAT

10078

PRØVE

SØK2007 1 Utviklingsøkonomi

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Section 1

Oppgave	Tittel	Oppgavetype
i	Front page	Informasjon eller ressurser
1	Answers	Langsvar

1 Answers

Skriv ditt svar her

Question 1:

unconditional convergence is meant by:

No matter the starting point of economy they will converge over time to the same steady state. This means without considering the parameters in the two different countries, they will end up with the same steady state level. This means that the countries can have different level of depreciation or savings and still end up at the same level in steady state. There is also some studies that confirm this on short term level. The theory behind this is that low income economies will have larger growth rate and therefore higher income per capita, than higher income countries. And because of the higher growth rate will expect to catch up with higher income countries. This is because higher growth rates means more worker and more capital, which leads to growth. For example that developing countries over time will catch up with developed countries with already high income per capita.

Conditional convergence predicted by the solow model:

Tells us that countries will end up in their own steady states but with other assumptions. This is because the solow model have assumptions of same parameters in the country, meaning depreciation, savings and growth rate must be the same in every country. Having the same parameters means they over time will converge to their steady state. But there is a certain liability, because it is not reasonable to to assume all these assumptions will hold over time. And there could be many factors changing over time, meaning there are certain uncertainties

Question 4:

1. Discuss the ways in which technology is similar to other factors of production (like physical and human capital) and the ways in which it is different from these other factors

Technology is similar to other factors of production because you can allocate them as you do with manpower. Technology also helps us advance at other stages of industry, and therefore we need to note that for technology to advance we cannot but all our money into other factors. Research and Development is something we need to invest in, but we cannot expect a instant return. We are instead focusing less on consumption at this time of day, in hope of getting more in return later when we invest in R and D. It is also different in the fact that manpower can not be used the same places at ones, but technology can. If we hired a worker to do a job for me, he wouldn't be able to be somewhere else. whereas technology can be used in a lot of different places at the same time.

2. What are some of the properties of technology that tend to diminish the amount of technological progress that takes place in a given society (by reducing private incentives to engage in R&D)?

Some properties of technology that tend to diminish the amount of technological progress is the fact that technology is not something that anyone owns by themselves. And technology is more of a investment in a factor, then an actual factor itself. It can be used in a lot of different places at the same time, meaning that the inventors would have no ownership of this technology. The time taken to research such technology is also important. Because technology is available for everyone this means there is marginal or no incentives for people to invest in these projects. They won't make any money on their developed technology. Low return and income give us less incentive to invest in R and D. If a private company want to

invest in greater machines to build a building, they know everyone can use this technology at the same time as themselves, therefore they will lose capital if they chose to invest. Having no safety that the product you develop only can be used by you, or the fact that there is little return in capita gives less incentive for private investors to engage in R and D.

3. What sort of policies can the government enact to ensure that the private incentives to invest in R&D are not necessarily reduced?

To ensure that private incentives still are there to invest in R and D. The main point would be to have some sort of patent. This could ensure the private investors a return on their investment. For example, it could be a patent where it is a given time, when only the inventors could use the product. This way they would have better technology than other companies and probably higher profit because they, for example can produce products faster than others. A patent would also ensure the investors that they are owning the product. This way they could sell it for money, making the investment profitable, or they could borrow it out to other companies for an amount of money. This is a way to ensure private incentives to invest in R and D. And without some sort of patent or other protection of your work the incentives are very small. So for the incentive to be there the government needs to have some sort of plan for those who want to enact with R and D. If it isn't a patent it needs to something to make sure people make some return or at least own the technology they produced.

Question 5:

1. What does the Kuznets curve suggest about the relationship between economic growth and inequality?

Referring to Figure 1.1 page 5, the Kuznetz curve suggest another relationship between economic growth and inequality. It says something about your starting point, if you are starting at low income, as the income rises the inequality will be greater. Whereas if you have sectors with high income, inequality will decrease over time, as the income rises. By this we mean that, it is expected that when some sectors or factors are growing and income rises in these sectors, the inequality will be greater than it was at a lower income level. This can be compared to the change from a farming community to a more industrial world. The change to factories made them grow and have higher income per capita, which leads to greater inequality, but as the income per capita rises and gets to point A in the figure, it is expected that, we will see a decrease in inequality. This for example can be that other sectors are growing, making the income and inequality less than it were. (Other sectors could be catching up, earning more money, leading to less inequality). This gives us another look at differences, where they come natural as a way of evolving the economy/society, but it is expected that these differences will lessen as income per capita grows to a more equal level.

2. Should governments in developing countries be concerned if inequality goes up during a period of economic growth?

Governments should not necessarily be concerned because of this, because this is an expected factor in the Kuznetz curve when looking at growing economies. As I said it is also expected that as the income per capita rises the inequality will come back to a level with less inequality. But there could be some concern because it could be that the government needs to interfere with the process. It is not necessarily a natural movement going from high inequality to low inequality. There could be signs that the government needs to change something to find a lesser level of inequality. For example interfere with a sector or help by giving additional support. But from the Kuznetz it is expected that inequality will come back to a more equal level as economies are growing in different sectors.

Knytte håndtegninger til denne oppgaven?

Bruk følgende kode:

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Writing area Skriveområde

$$\text{Endowment} = y - A^1 = \frac{1}{3}k^1 + \frac{2}{3}h^1$$

$$\text{Productivity} = y - \text{factor accumulating} \\ = y - \frac{1}{3}k^1 - \frac{2}{3}h^1$$

$$\text{given: } y = Ak^a h^{1-a}$$

Cameroon: Using: $\frac{1}{3}k^1 + \frac{2}{3}h^1$ to find annuat.
growth rate: $= \frac{1}{3} \cdot 0,929 + \frac{2}{3} \cdot 1,118 = \underline{1,055}$

China: $\frac{1}{3} \cdot 7,8467 + \frac{2}{3} \cdot 1,1213 = \underline{3,3631}$

Luxembourg: $\frac{1}{3} \cdot 2,7437 + \frac{2}{3} \cdot 0,2885 = \underline{1,1069}$

Sri Lanka: $\frac{1}{3} \cdot 2,8291 + \frac{2}{3} \cdot 0,4136 = \underline{1,2187}$

Then finding productivity?

Country	$y - \frac{1}{3}k^1 - \frac{2}{3}h^1$:
Cam	$= 0,1474 - \frac{1}{3} \cdot 0,929 - \frac{2}{3} \cdot 1,118 = \underline{-0,9076}$
China	$= 7,6187 - \frac{1}{3} \cdot 7,8467 - \frac{2}{3} \cdot 1,1213 = \underline{4,2556}$
Lux	$= 3,4987 - \frac{1}{3} \cdot 2,7437 - \frac{2}{3} \cdot 0,2885 = \underline{2,3918}$
Sri	$= 3,5788 - \frac{1}{3} \cdot 2,8291 - \frac{2}{3} \cdot 0,4136 = \underline{2,3600}$

Country	Growth rate	factor endow	productivity
Cam	0,1474	1,055	-0,9076
China	7,6187	3,3631	4,2556
Lux	3,4987	1,1069	2,3918
Sri	3,5788	1,2187	2,3600

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Writing area Skriveområde

2. Countries:	Growth rate	annual growth endowment	Productivity
Cam	0,1474	1.055	-0,9076
China	7,6187	3.3631	4,2556
Lux	3,4987	1.1069	2,3915
Sri	3,5788	1.2187	2,3600

China has the highest annual growth rates with 33,6%, where factor accumulation contributes the most we can divide annual by growth rate.

$$\text{Cam: } \frac{1,055}{0,1474} = 7,15, \text{ almost 8 times higher}$$

$$\text{China: } \frac{3,3631}{7,6187} = 0,441 \text{ not high contribution}$$

$$\text{Lux: } \frac{1,1069}{3,4987} = 0,31 \text{ not high}$$

$$\text{Sri: } \frac{1,2187}{3,5788} = 0,34 \text{ not high}$$

Factor acc contributes the most in Cameroon because it is almost 8 times of growth rate output per worker.

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Writing area Skriveområde

3. Doing the same here, but with =
Productivity
output

$$\text{Cam} : \frac{-0,9076}{0,1474} = -\underline{6,15}$$

$$\text{China} : \frac{4,2556}{7,6187} = \underline{0,55} = 55\%$$

$$\text{Lux} : \frac{2,3915}{3,4987} = 0,68 = \underline{68\%}$$

$$\text{Sri} : \frac{2,3600}{3,5788} = 0,65 = 65\%$$

Highest productivity can be found in China,
but from the calculation we see that
productivity contributes the most in Luxembourg
with almost 68% of output growth

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Writing area Skriveområde

$$1. \quad g = \frac{a}{1-a} \cdot \hat{A} = e$$

$$a = 1/3$$

$$k^* = \left(\frac{s}{\delta + g + n} \right)^{1/(1-a)}$$

$$y^* = \left(\frac{s}{\delta + g + n} \right)^{a/(1-a)}$$

First we start by finding g = this helps us determine capital and output:

$$g = \frac{1/3}{1-1/3} \cdot 0,06 = 0,03 = 3\%$$

Finding capital per worker, then production

$$k^* = \left(\frac{0,07}{0,03 + 0,03 + 0,04} \right)^{1/(1-1/3)} = \underline{\underline{0,5856}}$$

$$y^* = \left(\frac{0,07}{0,1} \right)^{1/2} = \underline{\underline{0,8366}}$$

Capital per worker = 0,5856, and prod. = 0,8366

2. Growth rate output per worker can be find

$$\text{using: } g = \frac{a}{1-a} \cdot \hat{A}$$

$$g = \frac{1/3}{1-1/3} \cdot 0,06 = 0,03 = \underline{\underline{3\%}}$$

Growth rate per worker in steady state is 3%

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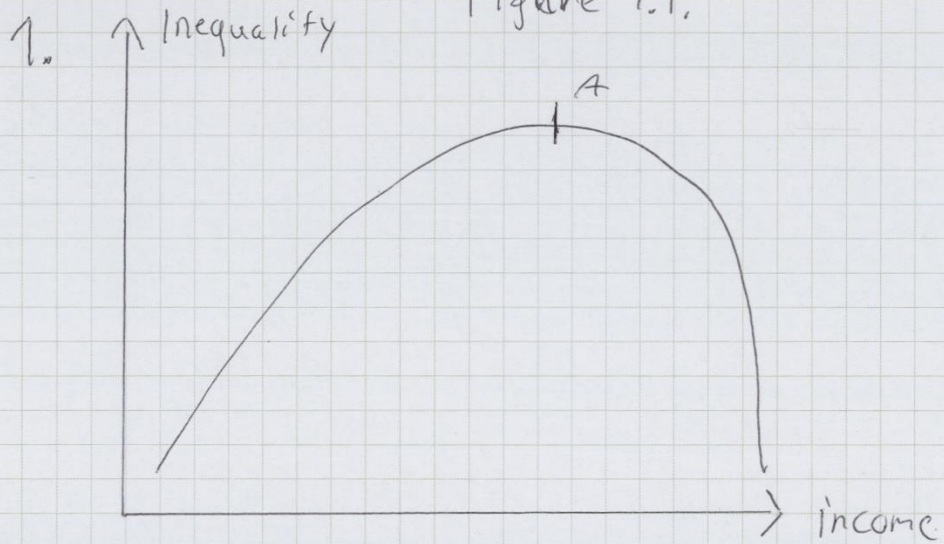
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Figure 1.1.



Kuznetz curve

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Writing area Skriveområde

1. output per worker: $Y_A \cdot \frac{L}{K}$

$$L=1, K=5, Y_A=0,5$$

We can find output per worker at the rate they are growing by inserting the numbers into the formula.

$$Y_A \cdot \frac{L}{K} = 0,5 \cdot \frac{1}{5} = 0,1.$$

Output per worker is growing with 10% giving us a growth term $1,10^t$

2. If Y_A is raised to 0,75:

$$0,75 \cdot \frac{1}{5} = 0,15,$$

$$\text{New - old production} = Y_1 - Y_0 \\ = 0,25A - 0,15A = 0,10A$$

$$\frac{1,10^t}{1,15^t} = \frac{0,10}{0,15} \Rightarrow \left(\frac{1,10}{1,15}\right)^t = \frac{1}{1,5}. \text{ Using log to find}$$

how many years it takes to be at same level

$$t = \frac{\log\left(\frac{1}{1,5}\right)}{\log\left(\frac{1,10}{1,15}\right)} = \underline{15,59}. \text{ Had } Y_A \text{ not been raised}$$

output per worker would have reached the the same level of output during the 15 years.

(To be precise 15,59 years)