Seminar 1 – HDR and growth

1. HDR

   (a) Consider the figures from the HDR 2010 that we looked at in the first lecture (figs 2.4, 2.7, and 2.10, see below). Explain precisely how each number is calculated (see p. 215–217 in HDR 2010), and what it is meant to capture.

   (b) Find the data for Syria in the HDR 2010 and the HDR 2013. Calculate the subindices and the HDI for both years and compare them. Discuss.

   (c) The HDI is the geometric mean of these three submeasures. What is the implied elasticity of the HDI to changes in any one of these measures? What would happen if we used the arithmetic mean instead?

   (d) Take the Syrian example, and imagine that life expectancy at birth dropped to 50 years. How much does this change the HDI? Compare the country ranked directly below Syria before this shift, and the country ranked directly above Syria, what do you conclude?

   (e) Say you wanted to put more weight on life expectancy, name two ways in which you could do this? Discuss whether this would give a better or worse measure when we compare across countries in a given year. What if we wanted to compare across years for a given country, or to compare changes across countries?

   (f) Explain briefly what is meant by "functionings", "capabilities" and "achieved functionings" in Sen's capability approach, and discuss how the HDI captures this notion.

2. Economic growth: The Solow model

   (a) What is meant by "constant returns to scale". Explain verbally and show mathematically.

   (b) What is meant by "diminishing marginal product of capital". Explain verbally and illustrate.

   (c) Write up the capital accumulation equation for the Solow model. Explain what it says.

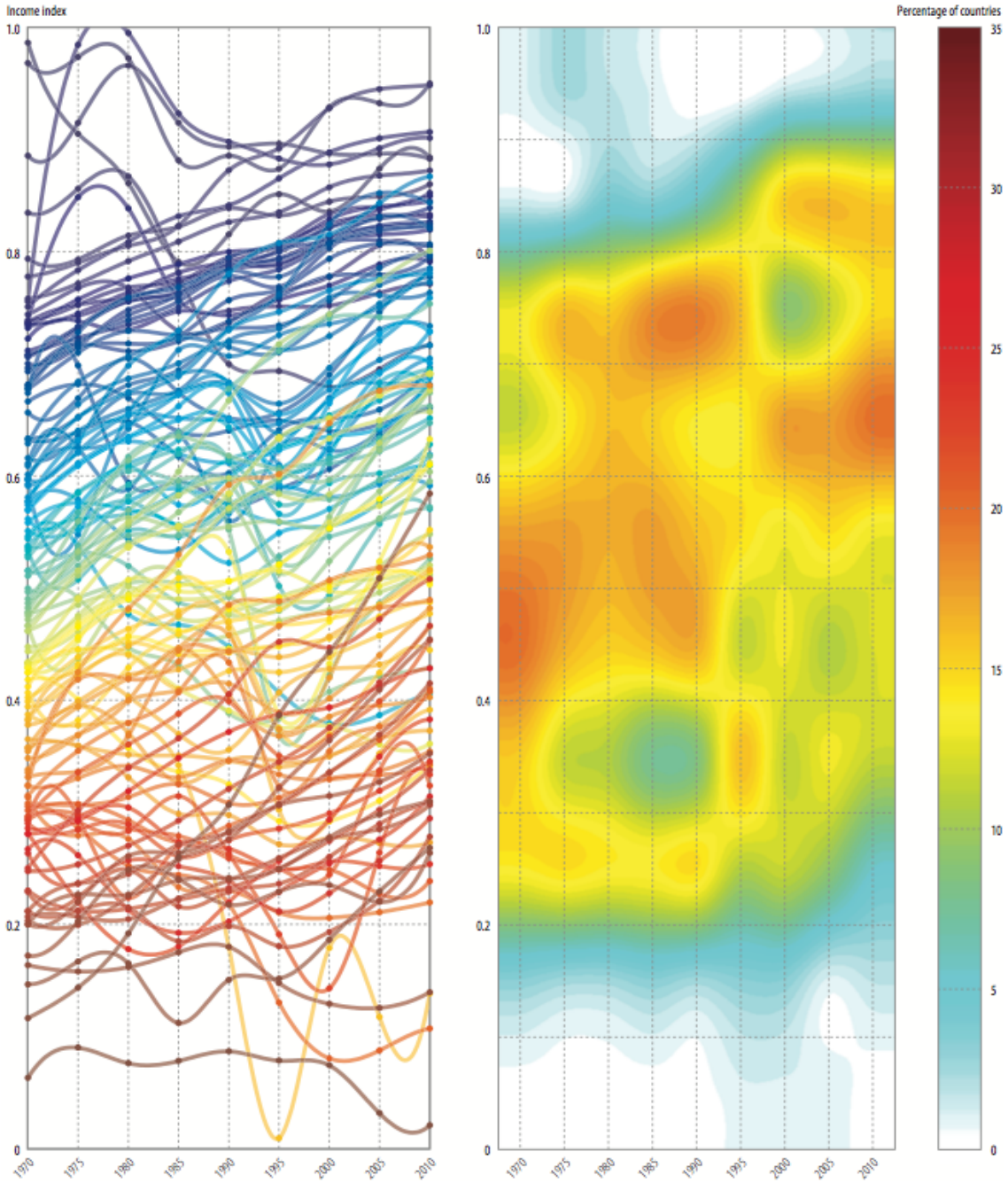
   (d) Explain what is meant by "steady state" in the Solow model.

   (e) Draw and explain the Solow diagram (with population growth incorporated). All else equal, what happens to the steady state values of capital per worker and output per worker in a country if

      i. the population growth rate increases

      ii. the depreciation rate of capital increases

      iii. the savings rate increases.


Income index
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Percentage of countries
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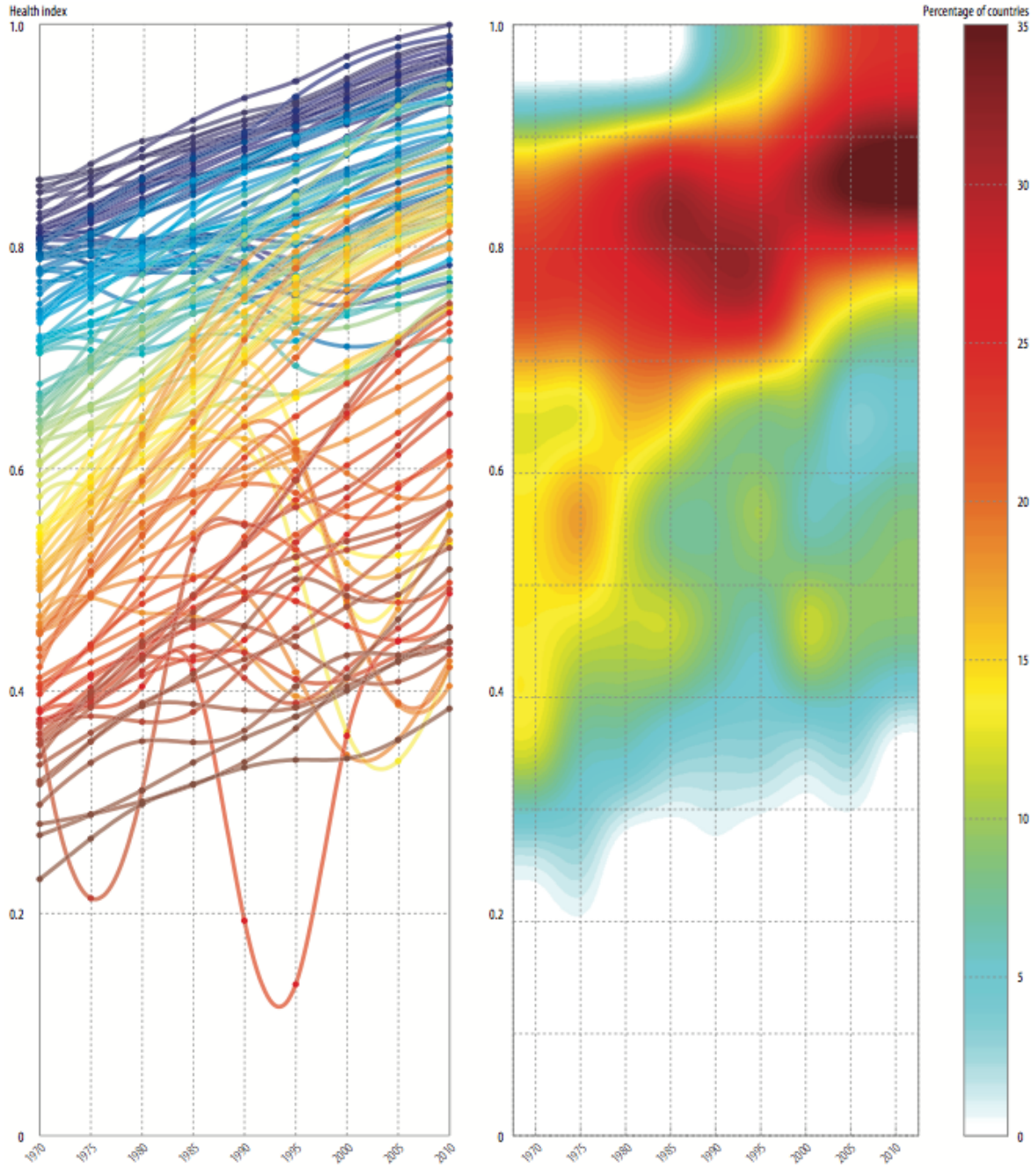
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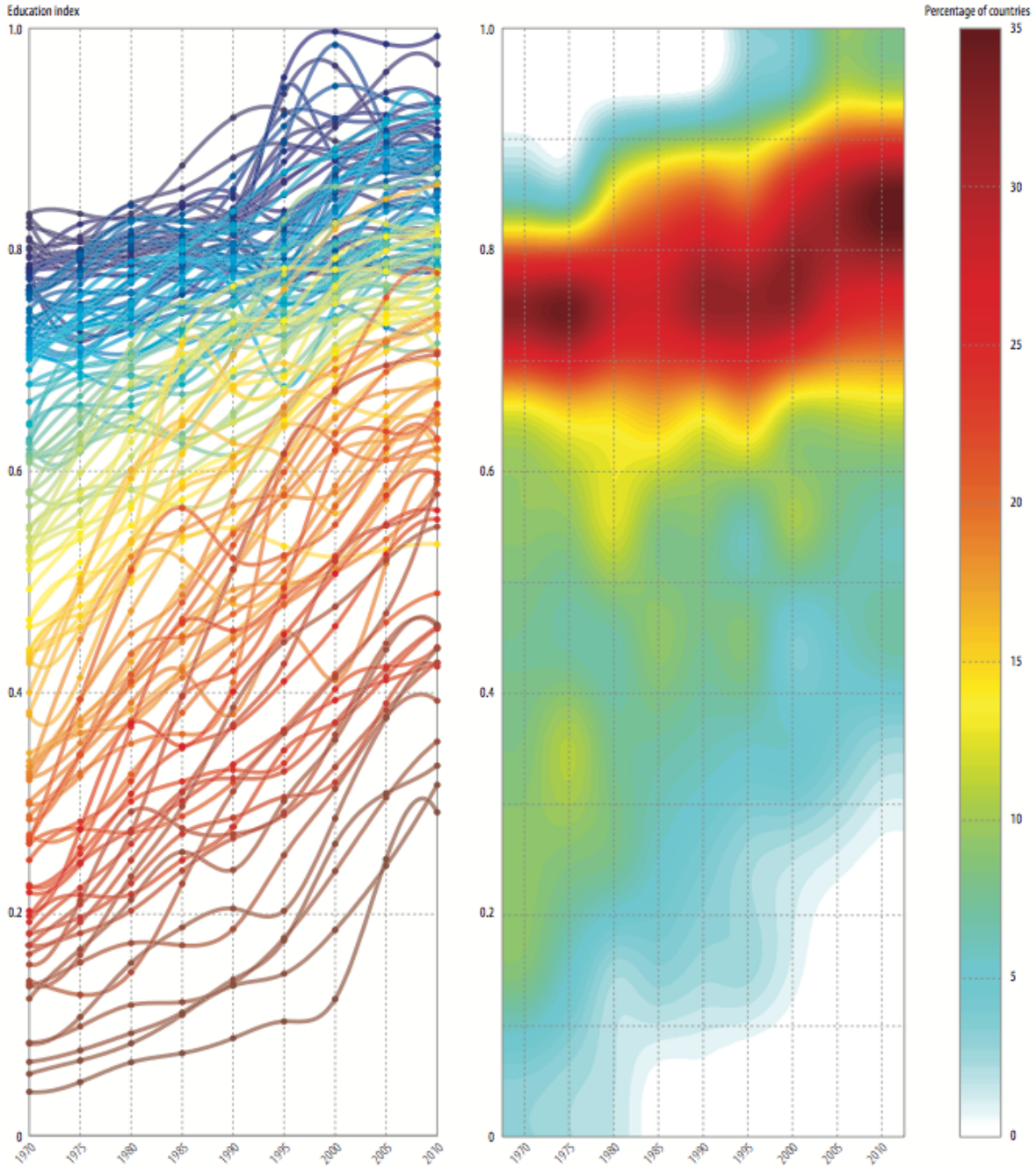
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Percentage of countries
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