

Development Economics
Problem set 3
City University
Spring 2007

Inequality and growth

Question 1: Savings, inequality and growth.

(this exercise is from Debraj Ray's textbook, ex 7 page 245)

The economy of Sonrisa has people in three income categories: poor, middle class and rich. The poor each earn \$500 per year and have to spend it all to meet their consumption needs. The middle class each earn \$2000 per year, of which \$1500 is consumed and the rest is saved. The rich each earn \$10000 per year, consume 80% and save the rest.

1. Which category of people has the highest savings rate?
2. Suppose there are a total of 100 people in Sonrisa, of which 20% are poor and 50% are in the middle class.
 - Calculate the overall savings rate in Sonrisa.
 - Suppose that growth occurs by moving people from the poor category to the middle class category. Calculate the new savings rate in Sonrisa. Has it increased or decreased?
 - In the Harrod Domar model of growth, how does this change in the savings rate affect the long run growth rate of Sonrisa's income?
 - In the Solow model, is the effect different and why?

Question 2: Imperfect capital markets.

(from Debraj Ray, ex 9 page 246)

Pooh is a country with only two occupations: you can work as a laborer or you can become an entrepreneur who hires labor and makes profits. To become an entrepreneur, you need an loan of $I = \$20000$. With this amount of money, you can set up a factory, hire 10 workers, each of whom you pay income w per year. The workers produce an output worth \$30000. Hence, your business profits equal $30000 - 10w$.

At the end of the year, you must repay your loan with interest and interest rate is r , that is, you own $(1+r)I$, so that your net profits are $30000 - 10w - (1+r)I$.

Since the lender does not know you, he requests that you put up an amount A as a collateral. A year later, if you don't reimburse your loan, the lender keeps the collateral, which then has a value $(1+r)A$ because of interest. In addition, if you don't reimburse, you have to pay a fine of \$500, as well as 20% of your business profits.

1. Find the minimum value of collateral A (as a function of w and r) that the lender will request in order to grant you a loan. (Hint: he grants you a loan only if he anticipates that you will reimburse him). Briefly discuss what this implies for people's access to credit.

2. Imagine that w , the income of each worker in the factory, is the minimum wage in Pooh. Given your previous result, in this model, what is the effect of imposing a higher minimum wage $w' > w$?