

Final Exam Review Questions with **Suggestive Answers**

1. What is the nutritional poverty trap? How can one escape this trap?

Answer : low nutrition leads to low productivity leads to low wages leads to low purchasing power to buy food for adequate nutrition which in turn leads to low productivity
Credit helps escape this trap, since with borrowed money you can buy food to enhance productivity which increases earning potential in future periods. You could also migrate to a low unemployment area, since the link from low nutrition to low productivity is broken when wages are higher.

2. a) Draw a Lorenz curve for the following income distribution:
{20,10,10,40,80}

Answer 2a: order people from poorest to richest: {10,10,20,40,80}, compute income as a fraction of total income (160): {6.25, 6.25, 12.5, 25, 50}, compute cumulative fractions of income: {6.25, 12.5, 25, 50, 100} and plot these points against the cumulative fractions of population {20,40,60,80,100}

2. b) What additional information do you need to calculate the Head Count Ratio for this income distribution?

Answer 2b: We need to know where the poverty line is.

2. c) Suppose the poverty line is set at 25. Calculate the HCR and the Poverty Gap Ratio for this income distribution. Why is the PGR a superior measure to the HCR?

The HCR is easy: $3/5=0.6$. For the PGR, the formula will be given in the exam. Make sure you

understand the formula.
$$PGR = \frac{\sum_{y_i < p} (p - y_i)}{n \cdot \bar{y}}$$
 PGR measures the extent of poverty among the poor, which HCR does not.

3. What is the moral hazard problem in rural credit contracts? Explain precisely how and why the moral hazard arises.

Answer 3: People will do something with the money they borrow that the bank does not want them to do. For example, they may spend it or consume it (e.g. on an extravagant wedding) rather than invest it. When you consume rather than invest, your ability to pay back is lower.

More realistically, moral hazard is an issue when people invest in projects that too risky relative to the types of projects the bank wants them to invest in. There is usually a risk-return trade-off in investments. If there's limited liability (e.g. value of collateral does not cover the entire value of the loan) so that losses have a lower bound, the potential upside (which is higher in riskier projects) becomes the margin on which investors make decisions. With limited liability, riskier projects have higher expected returns, which induce investors to choose them, although the bank would like them to choose the safer projects.

4. Why do we observe environmental quality improving and then worsening as countries develop?

Answer 4: As we move from low income to middle income, the economic structure changes from agriculture to manufacturing, and manufacturing is more pollution intensive. As countries get rich, other factors come in to play that reverse this trend:

- e. Positive income elasticity of demand for environmental quality. As incomes rise, the demand for better environmental quality rises.

- f. *Changes in the composition of production and consumption. The service sector is less pollution-intensive than the industrial/manufacturing sectors.*
- g. *Increasing levels of education and environmental awareness. This increases the (perceived) marginal private benefits to environmental quality improvements.*
- h. *More open political system. Government regulations become increasingly environment-friendly.*

5. What are the externalities from driving? How might we estimate the total dollar value of all externalities from driving in Sao Paulo?

i) *Externalities. When you drive an extra mile,*

- You generate pollution which hurts breathers*
- You increase the chance that someone else (pedestrian or another car) will get into an accident and will suffer injury, fatality or property damage.*
- You increase congestion costs for all other drivers.*
- You cause road and infrastructure damage which taxpayers have to pay for.*

ii) *Estimating Costs: first we need data on the total amount of driving done by all drivers in Sao Paulo.*

- We need information (probably from environmental engineers and epidemiologists) on how driving translates into pollution and how this pollution translates into health costs to breathers*
- We need to figure out the “Accident Rate” – i.e. how accidents relate to miles driven, so that we have a number for the probability of an accident for every extra mile driven. We then need to figure out the “Injury Rate” and the “Fatality Rate” (i.e. injuries per accident, fatalities per accident”. We then need to estimate the loss in productivity due to the injury or fatality in ways similar to how we did it for AIDS.*
- We need to figure out: given current levels of traffic volumes, when there’s one extra car on the road, how many other cars have to spend extra minutes on the road, and on average how many extra minutes do they spend. We then value this extra minute at the wage rate for the driver (i.e. if you’re on the road for an extra 30 minutes, you cannot earn wages those 30 minutes)*
- This is straightforward – look at total road maintenance expenditures in the year and divide by the total miles driven by everybody to get a sense of the road damage that happens due to an extra mile driven.*

6. Why might we expect slaves to possess greater human capital than migrant labor?

Answer 6: The nutrition based efficiency wage model says that employers will invest in their worker’s health by (for example) paying them a wage above the market clearing wage rate. Employers have stronger incentives to pay this cost and invest in their workers if that worker is tied to them than when the worker can leave next period and go work for someone else. This is a property rights idea.

7. Data on Income before taxes, Savings and Taxes paid are given for 3 individuals. If you ran a regression of savings on income using this data, would your coefficient on income be positive or negative? Is this sensible? To accurately estimate the marginal propensity to save, what type of regression should you run?

Income (\$)	Savings (\$)	Taxes (\$)
100	9	10
110	8.5	25
120	8	40

Answer 7: Ignoring taxes, a regression of savings on income would lead to a negative coefficient on income. The higher the income, the lower the savings. This is not sensible, and it occurs because the omitted variable, ‘taxes’ is correlated with both income and savings. A better approach would be savings regressed on disposable income (Y-T)