

PRACTICE PROBLEMS FOR MIDTERM EXAMINATION

1. Do you agree, partly agree or disagree with the following statements? If you partly agree, be explicit about which part you agree with, and which you disagree with. Provide the reasoning for your answer.

- (a) The Solow model is based on the assumption of diminishing returns to scale, i.e., doubling capital and labor inputs will cause output to grow by a factor smaller than two.
- (b) The Harris-Todaro model of rural-urban migration predicts that government wage subsidies for the urban formal sector alone can achieve the twin goals of eliminating urban unemployment and achieving an efficient allocation of labor.
- (c) Local government revenues constituted the most important source of all government revenues in the United States during the 19th and early 20th century, in contrast to most Central and Latin American countries.
- (d) The Gini coefficient is the only inequality measure that satisfies the four axioms of inequality measurement: anonymity, population replication, relative income principle, and the Dalton principle.
- (e) It is possible for the poverty gap ratio in a given country to decline from year 1 to year 2, while the poverty head count ratio increases at the same time.
- (f) A decrease in the infant mortality rate induces households to give birth to more children.

2. Explain and contrast the predictions concerning the effects of a higher population growth rate on the growth rate of per capita income in each of the following theories: (i) Harrod-Domar, (ii) Solow, (iii) Lewis, for both (a) the short-run and (b) the long run.

3. Consider the following version of the Lewis model. There are two goods: corn and shirts. In Year 0, there are no factories, while there are 100 family farms. Each farm has ten adults, and a limited amount of land which produces corn as follows. If there are $x \leq 5$ adults in the family working in the farm, they collectively produce $2x$ units of corn. The land does not support gainful employment of more than five adults, so if $x > 5$, the farm produces a constant amount (10 units) of corn. Farm members share output, and value consumption only of corn (i.e., they do not have any demand for shirts).

In Year 1, 10 factories are set up in the urban area. Each factory is owned by a capitalist who hires workers to maximize his own profits. The marginal product of labor in any factory is $12 - y$ shirts, if the factory is employing y workers. Factories export all their output at a constant relative price of 1 shirt = $\frac{1}{2}$ units of corn. Factory owners reinvest all their profits in new factories which are set up at the end of Year 1; they do not spend anything on corn. The setup cost of a factory equals 50 shirts. Workers incur no transport costs to travel between farms and the urban area.

- (a) In Year 1, what is the industrial wage rate, employment and profit per factory (in units of shirts)? How much surplus labor is there in the rural sector? What is the GDP of the country (measured in units of shirts)?
- (b) How do these change in Year 2?
- (c) Now suppose that at the beginning of Year 2, the price of shirts (relative to corn) doubled. What would be the effect on each of the above listed variables in Year 2?
- (d) Assess the impact of the change in shirt prices in Year 2 on living standards of workers and capitalists respectively.