Written Exam for the B.Sc. in Economics summer 2011

Development Economics

Final Exam

August 9th, 2011

(3-hour closed book exam)

Suggested Answers

Problem A

Please explain briefly:

1. The meaning of the term “dual economy”.

   Suggested answer: The term means that the economy is divided into two sectors, a “traditional” sector, mainly based on agriculture, and a “modern” sector. Industry is traditionally viewed as playing a key role in the modern sector, but technologically sophisticated, commercial agriculture and services should also be thought of as parts of the modern sector. The two sectors are not fully economically integrated. For example, there is typically a sizeable wage gap between the modern and the traditional sector, with higher wages in the modern sector.

2. The difference between the “lenders risk” and “lenders monopoly” theories of interest rates in informal credit markets.

   Suggested answer: Interest rates in informal credit markets in developing countries are often higher than in formal markets. Rates may often run to five or ten percent per month, or even more. The two theories provide competing explanations as to why this is the case. According to the “lenders monopoly” hypothesis, high interest rates occur because lenders have local monopolies on credit provision. The “lenders risk” hypothesis holds, instead, that high interest are necessary to compensate lenders for the substantial risk of voluntary (strategic) and involuntary default. This risk is particularly high in informal markets because institutions to enforce repayment are often weak.

3. The Gini coefficient and how it is related to the Lorenz curve.

   Suggested answer: The Gini coefficient is a measure of inequality. In relation to the Lorenz curve, the Gini coefficient is defined as the area between the Lorenz curve and the 45-degree line, divided by ½ (the entire area below the 45-degree line). The Gini coefficient is a desirable measure of inequality because it obeys the anonymity-, population-, relative income- and Dalton criteria and always falls between 0 and 1.

   One formula for the Gini coefficient, G, in a society with m income classes, is

   $$G = \frac{1}{2n^2\mu}\sum_{j=1}^{m}\sum_{k=1}^{m} n_j n_k \left| y_j - y_k \right|$$

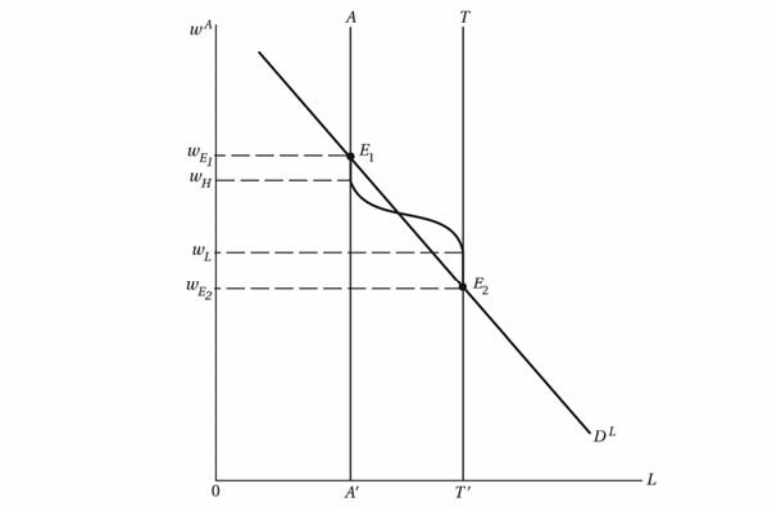
   where n_j is population is income class j, y_j is income in class j and μ is mean income.

4. The meaning of the term “development accounting”.

   Suggested answer: Development accounting explains how differences in levels of output between countries is accounted for by differences in levels of input (e.g. physical and human capital) and total factor productivity (cf. Weil, chap. 7).

5. The main message of Kaushik Basu's multiple equilibrium model of child labor.

   Suggested answer:Basu's model assumes that adult- and child labor are substitutes and that parents with sufficiently high income do not send their children to work. Adult labor is supplied inelastically. Therefore, the labor supply curve bends backward: when wages are sufficiently high, families earn enough income from adult labor alone to refrain from sending their children to work. This is illustrated in the figure below, where the labor supply curve is T'E_2E_1A. When the labor demand curve intersects the supply curve more than once, there are two stable equilibria, E_2 and E_1. At E_2 wages are low and children work. At E_1 wages are high and only adults work. The model provides an argument for a ban on child labor: an effective ban moves the economy from the "bad" to the "good" equilibrium, because it drives up wages to a point where families do not find child labor attractive. After this, the good equilibrium (without child labor) is self-reinforcing.



Source: From Kaushik Basu, "Child labor: Cause, consequence, and cure, with remarks on international labor standards," *Journal of Economic Literature* 37 (1999): 1101. Reprinted with the permission of the American Economic Association.

6. How and why social returns to secondary and tertiary schooling may differ from private returns in developing countries.

   Suggested answer: There are several reasons why private returns to secondary and tertiary schooling may be higher than social returns in developing countries. First, the cost of education is often borne, at least partly, by the government. Second, wage premiums on education are often artificially high, especially in the public sector. One reason is that the well-educated are more politically powerful than others and have an incentive to drive up wages for themselves and their relatives. Third, well-educated individuals may migrate to other countries ("brain drain"). Unless they return with even more skills, or send home substantial remittances, the return to educating these people is not captured by the country that sponsored the education.
   On the other hand, social returns to secondary and tertiary education may also me higher than private returns if there are positive externalities to education, for example because well-educated individuals pass their skills on to other people.

7. The meaning of the term “sustainable net national income”.

   Suggested answer: The intention behind the concept of “sustainable net national income (NNI)” is to include the effects of pollution and natural resource degradation in national accounting systems. Sustainable net national income is defined as:*

   $$NNI^{*} = GNI - D_m - D_n - R - A$$

   where GNI is gross national income, D_m is depreciaton of manufactures capital, D_n is depreciation of environmental capital (oil and mineral reserves, rain forests, etc.), R is expenditure required to restore environmental capital and A is expenditure required to avert destruction of environmental capital. The last two terms may sometimes be omitted.

8. The main explanations for “urban giantism” in developing countries.

   Suggested answer:The term “urban giantism” refers to the fact that that some cities in developing countries have grown to enormous population sizes. In particular “first cities”, such as Lima, Buenos Aires or Bangkok are often much larger than “second “ cities in the same country. There are several explanations. First, colonial inheritance in some cases plays a role. Colonizers may have concentrated urban development in order to ease the task of maintaining military control over a territory. The same logic may be applied by current dictators. Second, activities tend to gravitate toward the political centre of a country, especially when rent seeking activities are important. Third, if barriers to international trade are large, producers tend to focus on the home market and therefore wish to locate where most customers already live, i.e. in the largest city. When foreign markets are opened, this tendency is weakened.

Problem B

Please explain the differences between fixed rent- and sharecropping land rental contracts and outline the main theoretical arguments explaining the existence of sharecropping.

Suggested answer: With a fixed rent contract, the tenant pays the landlord a fixed amount (in cash or kind) each period for farming a plot of land. With a sharecropping contract, the tenant pays a fixed share of the output on the field each period. Because the tenant does not capture the full, marginal product of his or her effort, sharecropping suffers from “Marshallian inefficiency”: the tenant, according to standard theory, applies less effort on the field than what is socially optimal.

There are several explanations why sharecropping is nevertheless common in some parts of the World, such as South Asia. The most prevalent explanation views sharecropping as an institution that shares risk between the tenant and the landlord. Return to agriculture are affected by several factors outside the control of farmers, e.g. weather- and price shocks. It is often reasonable to assume that tenants are more risk averse than landlords, because landlords are typically richer and have access to a more diverse set of income sources. Risk averse tenants are willing to accept a drop in expected income if at the same time their variance of income is also reduced. Now, the

expected, net income of the tenant varies less with a sharecropping- than with a fixed rent contract. Therefore, landlords may earn as much from a sharecropping- as from a fixed rent contract, even if total output is lower. A risk-neutral landlord may therefore prefer to offer a sharecropping contract instead of a fixed rent contract.

Another explanation for the existence of sharecropping is the fact that sometimes inputs are provided by both tenants and landlords. For example, the landlord may provide irrigation or seeds, while the tenant provides labor. In this case, a fixed rent contract is sub-optimal because it provides no incentives for the landlord to provide sufficient amounts of input.

A third explanation focuses on limit liability constraints. If output is lower than the fixed rent agreed, it might be impossible for the landlord to claim the full rent. This problem is avoided with a sharecropping contract.

A fourth explanation is that that different contracts may be used to screen tenants. Assume that the "abilities" or other important characteristics of tenants are unobservable by landlords. A well-designed menu of contracts (fixed rent- and sharecropping) may induce tenants to reveal these characteristics (their "type" in contract theory lingo) through their choice of contract. In particular, high ability tenants should choose fixed rent contracts, while tenants with lower ability should choose sharecropping. Inducing this type of self-selection might generate higher income for the landlord than if he/she offered only one contract type.

Problem C

Please provide a discussion of the importance of population growth in the process of economic development.

Suggested answer: There are several, conflicting views about the effects of population growth on economic development.

The first view holds that rapid population growth is an important obstacle for development. The most classic version of this argument is Malthus' theory that initial spurts in income are always cancelled by even fasters spurts in population growth, which in the long run keep per capita income at subsistence levels. An important, more recent concern is the effect of population growth on the degradation of natural resources. For example, increasing scarcity of land- and water resources is an important problem in some many of the world. Fast population growth also puts severe pressure on system of public finance. Substantial amounts of revenue is required to pay for ever-increasing numbers of students, users of public infrastructure and so on. With imperfect credit markets and ineffective systems of taxation, governments may find it difficult to finance these expenditures.

A second view regards population growth more as a symptom of other problem than as a problem in itself. High levels of fertility result from poverty, insecurity and lack of female empowerment. Once these problems are dealt with (as they should be anyway), population growth will automatically drop, as it has in all developed countries.

A third view is that population growth is actually beneficial. One version of this argument was provided by Ester Boserup, who claimed that innovation in agriculture was the result of increased

population pressure. Innovations take time to be fully developed, but eventually the effects of innovation outweigh the effects of population growth and lead to higher living standards. A second version of the argument is presented by Michael Kremer, who argues that an economy with a larger population grows faster, simply because it has higher number of innovators (since innovations are often public goods, they benefit everybody, no matter how large the population is).
Finally, there may be returns to scale, which means that some goods are provided more efficiently to large- than to small populations. This might be true for infrastructure goods such as roads or irrigation canals, for example.

In addition to discussing the effect of population growth, the course has also dealt with the determinants of population growth. First, we have discussed the "demographic transition". In the course of development, both birth- and death rates tend to decline. However, death decline faster than birth rates, which leads to a process of strong population growth as countries develop from traditional to modern societies. There are several reasons why birth rates decrease more slowly than death rates: First, fertility is in part determined by social customs, which only change gradually. Second, a high number of children is a means to deal with economic insecurity. Therefore, risk aversion may lead families to continue having a large number of children if the consequences of economic growth are uncertain. Third, "population growth momentum" means that even after fertility has dropped, birth rates to be higher than death rates for some generations, because high population growth in the past means that the generation having children are larger than the generation in old age.

Micro-economic models of fertility focus on the opportunity costs of having children and on the intra-household distribution of bargaining power between husband and wife. The opportunity cost of having children goes up, for example, if women's access to labor markets is improved, or if opportunities to educate the children already born are increased (household may then choose to invest in the education of a few children rather than spending their resources on rearing many children).