Final.
Name: KEY

Spring 2016
Economics of Development

Each question is worth the total number of points in parentheses; sub-questions are allocated an equal share of the total points per question. Final is worth 30 points.

1) Agriculture. (3 points)

a) Describe the three main types of agrarian systems found in the developing world and note in which geographic region each one is most commonly found.

1) Agricultural dualism (latifundio-minifundio). A few landowners hold a vast majority of the land so there is a high Gini coefficient for land distribution. Frequently observed in Latin America, but also exists in other areas.

2) Absentee landlord / tenant farming / sharecropping systems. Absentee owners of land earn revenue from those who work but do not own the land. Frequently observed in Asia.

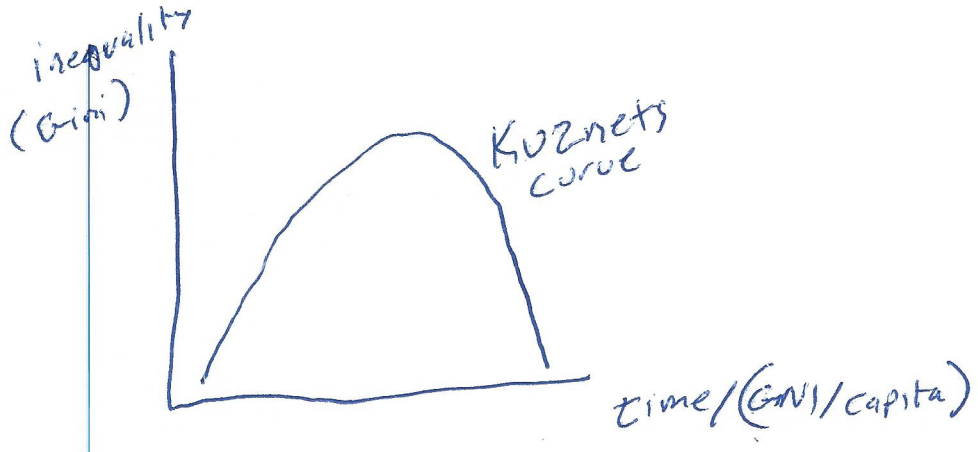
3) Land abundant, extensive cultivation. Some land is unused since the main constraint is labor. There is a low level of technological inputs. Intense cultivation of one field gives way to intensive cultivation of another – shifting cultivation. Frequently observed in Africa.

b) Chose one of these agrarian systems. Describe a way to increase agricultural production for this system.

For agricultural dualism, there is a literature that indicates there is an inverse relationship between yield per hectare / per unit of labor and the size of the land cultivated. This indicates that land reform and training that moves land from the ownership by largeholders to smallholders could increase overall production and reduce inequality.

2) Kuznets curves. (3 points)

a) Draw the original Kuznets curve and label everything clearly.




b) Explain the logic behind the shape of this curve.

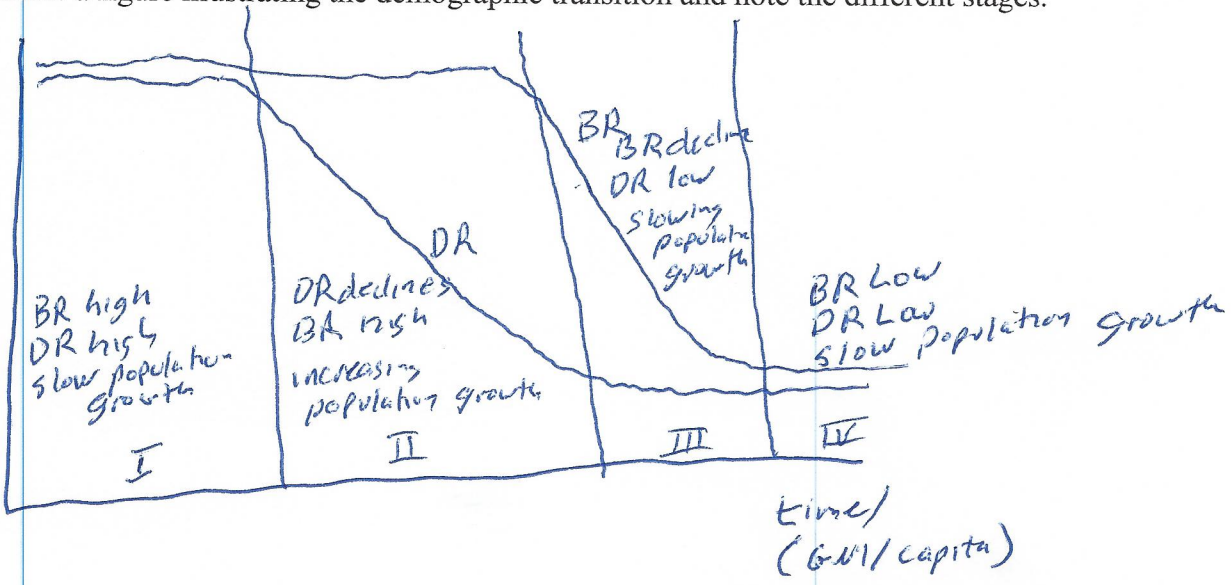
In the beginning of the development process we are all poor and equal. At first a few get ahead, raising mean income but also inequality. As development proceeds and more advance inequality gets worse in comparison to those that are left behind at the level of poverty we started with. Eventually, we reach a an average level of income where we have the means to reduce inequality, and the economy pulls the poor out of poverty so that inequality begins to decline. At the end of this process we have higher incomes and lower inequality.

c) Explain how an 'environmental Kuznet's curve' applies this basic idea to a different context.

In and EKC the y-axis is relabeled to be an environmental bad. The basic idea is the same. In the beginning of the development process we are poor and not having much impact on the environment. As development proceeds we become wealthier but begin to generate a negative impact on the environment which continues to get worse as the economy grows. Eventually we reach a level of well being where we can a) supply more environmental benefits given our wealth level by addressing poverty and b) people begin to demand better environmental quality. Incomes continue to rise as the environmental bad diminishes.

3) Demographic Transition. (3 points)

a) Draw a figure illustrating the demographic transition and note the different stages.




b) Explain why the one rate you drew in (a) decreased before the other rate decreased.

Death rates are declining first due to increased access to medical technologies. In the context of developing countries that means medicines, vaccines, and technologies that have been available elsewhere in the world become available in developing countries. This can happen quickly.

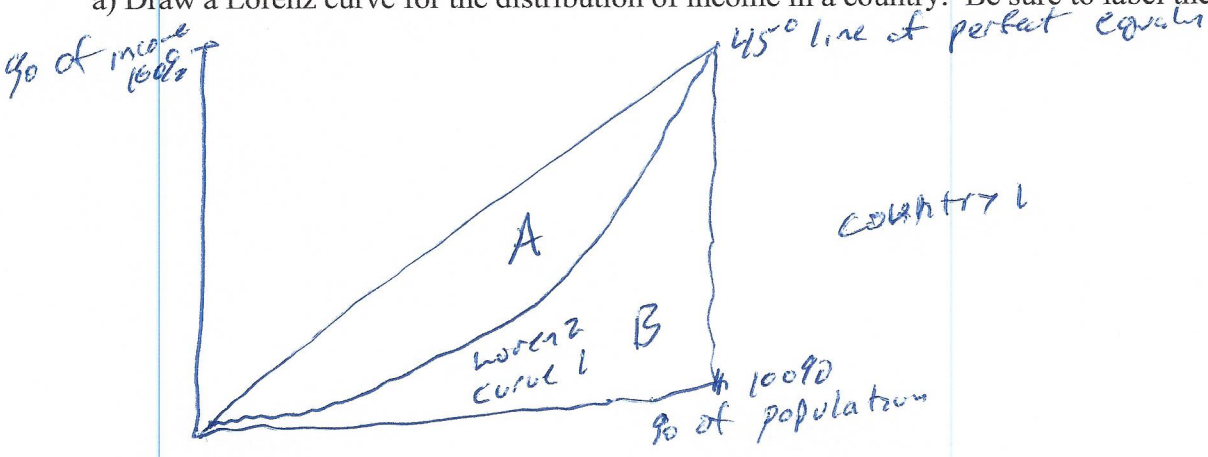
The birth rate comes down later in time. This is because social attitudes to family size take longer to adapt to the changing situation of longer, healthier lives, higher probability of child survival, increased opportunities for females to work, increase costs of having children, use of family planning services and technology,… Eventually these lead to a decline in the birth rate.

c) Explain why there is concern that a country could get stuck in stage 2 of the transition.

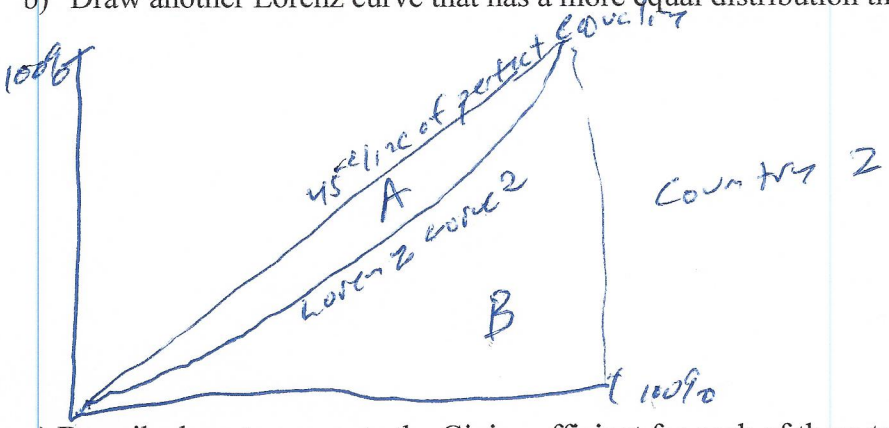
As drawn, we have the x-axis as GNI/capita. During phase 2, population growth is rapidly increasing. If GNI growth does not increase faster than population and GNI/capita is what is driving this transition, there is a danger that GNI/capita will decline rather than increase bringing this transition into question.

4) Inequality. (3 points)

a) Draw a Lorenz curve for the distribution of income in a country. Be sure to label the axes.




b) Draw another Lorenz curve that has a more equal distribution than the one in (a).




c) Describe how to compute the Gini coefficient for each of these two Lorenz curves, and argue whether the coefficient in (b) will be greater than (a) or vice versa.

Area A divided by area A plus area B, $\frac{A}{A+B}$, 2*A, …

Gini for A will be higher than Gini for B because a higher Gini corresponds to higher inequality.

5) True or False (3 points)

| Statement | Circle whether the statement is true or false |
|---|---|
| The proportion of the World's population living in rural areas has been increasing over the past 20 years. | True **False** |
| The % of GDP derived from the agricultural sector is higher in Sub-Saharan Africa compared to other regions of the world. | **True** False |
| The mid-upper arm circumference is used to monitor undernutrition among adults. | True **False** |
| "Where Is the Wealth of Nations" reports wealthier countries have a larger share of wealth accounted for as natural capital than do poorer countries. | True **False** |
| Psacharopoulos reported the private internal rate of return to primary education in sub-Saharan Africa was higher than a standard discount rate of 10%. | **True** False |
| The world population growth rate has slowed since reaching a peak in 1920-1950. | True **False** |
| Current estimates of global population are in the 21-21.2 billion range. | True **False** |
| Not all countries in the world are currently experiencing positive population growth rates. | **True** False |
| The United States is the largest donor of official development assistance of any country in the world. | **True** False |
| The United States allocates over 3% of GNI to official development assistance. | True **False** |
| Williamson identified broadening the tax base and lowering tax rates as part of the 'Washington Consensus'. | **True** False |
| The informal sector is the unorganized, unregulated, unregistered sector of the economy | **True** False |
| Urban giantism describes the phenomena that the largest city in developing countries tends to hold a very large share of the national population. | **True** False |
| The evidence from the WHO presented in class reported that malnutrition is a contributing factor to over half the deaths of children under five in developing countries. | **True** False |
| Heart disease is the leading cause of mortality and the leading cause of DALY worldwide. | **True** **False** True now, false when the test was written |

6) Hidden momentum of population growth (3 points)

a) Fill in the following tables. Fr stands for the total fertility rate of the associated age cohort during their reproductive years. Assume all future youth cohorts will have a total fertility rate of 2 in their reproductive years. Total population is for males and females; assume 50% of the population is female. The number in each cell of the table in rows a,b, and c should describe the number of females in each cohort in a given generation.

Country A

| | Generation 1 | Generation 2 | Generation 3 | Generation 4 |
|---|---|---|---|---|
| a.Pre-reproductive cohort, Fr=2 | 7500 | 7500 | 7500 | 7500 |
| b. Reproductive cohort , Fr=2 | 7500 | 7500 | 7500 | 7500 |
| c.Post reproductive cohort, Fr=3 | 5000 | 7500 | 7500 | 7500 |
| *Female Population* | *20000* | *22500* | *22500* | *22500* |
| *Total population* | *40000* | *45000* | *45000* | *45000* |

Country B

| | Generation 1 | Generation 2 | Generation 3 | Generation 4 |
|---|---|---|---|---|
| a.Pre-reproductive cohort, Fr=2 | 10000 | 10000 | 10000 | 10000 |
| b.Reproductive cohort , Fr=2.66667 | 7500 | 10000 | 10000 | 10000 |
| c.Post reproductive cohort, Fr=6 | 2500 | 7500 | 10000 | 10000 |
| *Female Population* | *20000* | *27500* | *30000* | *30000* |
| *Total population* | *40000* | *55000* | *60000* | *60000* |

Describe how your findings on total population by the fourth generation illustrate the concept of **the hidden momentum of population growth**.

Both country A and B start off with the same size female population, same size total population and have achieved a TFR of 2 for the pre-reproductive cohort. However, given the difference in population structure, country B has a higher size population cohort in the pre-reproductive category (a bottom heavy demographic pyramid). Even achieving a total fertility rate at the replacement rate will lead country B to end at a larger total population since there are more in the pre-reproductive cohort who will be replacing themselves.

b) What is meant by a 'bottom heavy' population pyramid and how does that relate to what you found in part a?

A bottom heavy population pyramid refers to the fact that population pyramids have number of the population / share of the population on the x axis with males on one side and females on the other, and age cohorts on the y axis with younger cohorts lower on the axis and older cohorts higher on the axis. Bottom heavy refers to the fact that there are more youth / a higher share of the population are youth compared to older cohorts so the graph of the population takes on the shape of a triangle.

7) Poverty measures. (3 points)

| Person number | Income per day |
|---|---|
| 1 | $0.10 |
| 2 | $0.35 |
| 3 | $0.50 |
| 4 | $0.80 |
| 5 | $0.90 |
| 6 | $1.20 |
| 7 | $2.00 |
| 8 | $3.90 |
| 9 | $6.00 |
| 10 | $15.25 |
| TOTAL INCOME | $31.00 |

a) What is the headcount, the headcount index, the total poverty gap, the average poverty gap, the average income shortfall, and the normalized average income shortfall if the poverty line is defined as $1.25 per person per day?

H=6

HI=60%, or .60

TPG= $1.15+$0.90+$0.75+$0.45+$0.35+$0.05=$3.65

APG=($3.65/10)=$0.365 or $0.37

AIS= ($3.65/6)=$0.61

NAIS=($0.61/$1.25)=0.49 or 49%

b) If we take $1.00 from person 7 and give it to person 1, is there any change to the headcount index? Is there any change in the total poverty gap?

Headcount index changes from 60% to become 70%.

Total poverty gap goes from $3.65 to $2.90

c) What share of total income is held by the highest quintile and what share is held by the lowest quintile (before the redistribution of part b – go to the table above to calculate)?

Highest= ($21.25/$31.00)=0.685 or 69%

Lowest=($0.10+$0.35)/$31.00=0.0145 or 1.5%

8) Migration Models (3 points)
a) Describe the Harris-Todaro model of migration.

There is an expected wage in the rural agricultural sector and an expected wage in the urban labor market. Assume for simplicity that the expected wage in the rural area is known with certainty for simplicity and is RW. Expected wage in the urban labor market is composed of probabilities of obtaining a job at a given wage (pr) interacting with the given wage levels. For simplicity assume there are two outcomes in the urban market. One is urban unemployment (uu) with a wage of zero. The other is employment (ue) at urban wage level noted UW.

Migration to the urban area will occur when:
RW< pr(uu)*0+pr(ue)*UW or pr(ue)*UW

b) Explain how this model explains why you have continued migration to urban areas in spite of high urban unemployment.

As long as people have high enough expectations about obtaining urban employment migration will continue to urban areas in spite of existing unemployment in the urban area. They are not reacting directly to the existence of unemployment in the urban area but are factoring it in indirectly through the expectation of the urban wage. As long as the product of the probability of earning the urban wage and the urban wage is high enough migration will continue to urban areas in spite of urban unemployment.

c) Identify two policy implications of the model for a government which desires to reduce urban unemployment rates.

One way to decrease urban unemployment rates is investment in rural areas to increase RW. Another way to reduce urban unemployment would be to tax urban wages at a higher rate to reduce the effective level of UW.

9) Education (3 points)

| | Circle whether the statement is true or false |
|---|---|
| The 'missing women mystery' asks why the share of primary school teachers who are female is lower than that of males. | True **False** |
| In general, as the average years of education in a developing country goes up, the education Gini also increases. | True **False** |
| The rates of return to education calculations we discussed in class include the opportunity cost of wages that could have been earned during the years a student is at school. | **True** False |
| The primary school enrollment ratio has declined from 1970 to now in Sub Saharan Africa due to population growing more rapidly that spaces in classrooms have been provided. | True **False** |
| Achieving universal primary education was one of the Millennium Development Goals. | **True** False |
| A country's educational attainment is included as a component of the Human Development index for that country. | **True** False |

10. Long term poverty dynamics.(3 points)

a. Contrast the concept of asset poverty with the concept of income poverty.

Income poverty is observing an income level that is below a threshold poverty line at a given point in time ($y_{it} < y_p$) where y is income, i is household i, t is time, and p is the poverty line.

Asset poverty is observing asset levels that are below a threshold that generates expected income above the poverty line $y_p$. $E[y(A_{it})] < y_p$. Less formally, assets are not sufficient to generate an income level above the threshold poverty line for a household at time t.

b. Describe a policy that could be used to reduce asset poverty.

Asset poverty could be addressed by microfinance, loans, credit, asset transfers like restocking, asset insurance. Just one of these would do.

c. What does Krishna mean in the title of his article "For Reducing Poverty Faster: Target Reasons Before People"

If you don't understand what are the pathways into poverty and the pathways out of poverty, you are unlikely to have as much of an impact on poverty as you could. If you don't pay attention to the people who are currently out of poverty but are in danger of falling into poverty you could have no net impact on poverty rates as people are falling into poverty who are currently out of poverty as fast as you are taking people who are currently in poverty out of poverty. You need to understand the reasons that are behind the situation of three groups in particular: those who are stuck in poverty, those who are in poverty now who were not in poverty before, and those who were out of poverty before who have moved into poverty now. It is likely that different policies will be required for each group.