

# Development ECON 2273

## Problem Set 4

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- 1. Inequality calculations** Find the UNU-WIDER database on World Income Inequality [http://www.wider.unu.edu/research/Database/en\\_GB/wiid/](http://www.wider.unu.edu/research/Database/en_GB/wiid/). Get the deciles divisions for South Africa in 1993 and the United States in 1994 (there are several US versions, which show slightly different things, use the one measuring Disposable Income from the March CPS). You will likely want to copy the decile information to a new worksheet. Throughout we will assume that everyone in a decile gets the same amount: so if the bottom decile gets 2% of total income, then that is evenly divided among everyone in that decile.
  - (a) Create the Lorenz Curve for South Africa in 1993 based on the decile information using an x-y chart. Remember to include the starting point with 0 population and 0 income and set the range for each axis to go from 0 to 100.
  - (b) Create the Lorenz Curve for the US in 1994 on the same chart. Add the “perfect equality” line. Print out your chart and include it with your problem set.
  - (c) Which country was more equal in 1993/1994? Does the Lorenz criterion allow us to unambiguously say which was more equal? Why?
  - (d) What is the Gini coefficient for South Africa in 1993 based on the deciles? (Use the formula rather than trying to calculate areas. You do not need to show your work.) Check your work by seeing if your calculation is close to the Gini reported in the WIID—it will not be exactly the same since we are ignoring inequality within deciles.
  - (e) Is the South African Gini higher than the WIID reported Gini for the US?
  - (f) Calculate the Kuznets ratio, the ratio of the share of income of the top 20% to the bottom 40%, for the US and South Africa. Which country is more unequal by this measure?
- 2. Inequality over Development** Consider an economy consisting of 5 people, all of whom initially work in a traditional agriculture sector earning \$500 a year. Suppose the modern sector starts to develop and hires a new worker each year, paying \$2000 a year. So in year 0 there are no modern sector workers, in year 1 there is 1 modern sector worker and in year 5 all of them work in the modern sector.
  - (a) Calculate the GDP per person for each year from 0 to 5.

- (b) Calculate the Gini coefficient for each year from 0 to 5.
- (c) Plot the Gini coefficients over time (put year on the x-axis and inequality on the y-axis).
- (d) Plot the GDP per capita on the x-axis against the Gini on the y-axis.
- (e) Does this simple model of development support Kuznets's hypothesis? Does it explain why it seems like worsening and then improving inequality should be a general feature of economic development?

### 3. Changes in regional poverty

- (a) Chen and Ravallion (2008) report the mean consumption of the poor in table 10. In which region were the poor with a poverty line of \$1.25 the worst off in 1981? How about in 2005? Does the same pattern hold for those under \$2.00 a day?
- (b) Calculate the percentage change in the consumption of the \$1.25 poor from 1981 to 2005 for each region. Which region has improved the lot of the poor the most?
- (c) Compare the number of people in poverty (\$1.25) in East Asia and Sub-Saharan Africa in 1981 and 2005. Why does the increase in the mean consumption of the poor in East Asia between 1981 and 2005 understate how much better off the poor in 1981 are in 2005?