POVERTY ANALYSIS
Exercise 4 (revised)

Answers to this exercise are due back by the end of Friday, April 24, by e-mail: send to jhaughton@suffolk.edu.

1. Using PovcalNet

The World Bank estimates the extent and evolution of world poverty with the help of PovCalNet, a software interface that is available online at http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp. This exercise represents an exploration of world poverty using PovCalNet. To answer this exercise you will need to use a browser such as Explorer and log in to PovCalNet.

1. Assume a poverty line of $1.90 per person per day. Create a table that shows the headcount poverty rate for the six main regions (East Asia/Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, South Asia, and Sub-Saharan Africa) for 1981, 1993, 2005, and 2018.

2. Repeat question 1, but for a poverty line of $3.80 per person per month. Based on 1. and 2., which are the world’s poorest regions? And which regions have seen the biggest reduction in poverty over the past two decades?

3. Pick a country. Graph the evolution of its headcount poverty rate over time (i.e. for every year available; it is best to pick a country where there have been several surveys). On the same graph, show the headcount poverty rate for the region in which the country is located. Relative to the region, has the country you chose done relatively well, or poorly, in reducing poverty over time?

4. Pick any two countries. Compute the headcount poverty rate for each country (for as recent a year as you can) at a dozen different poverty lines ($25, $30, $35, ..., $80) and graph these curves. The horizontal axis will show the poverty line and the vertical axis will show the headcount poverty rate. These are poverty incidence curves. Which country has the higher poverty rate? Explain.

2. Basic Measurement of Vulnerability to Poverty

We have the following information on the income of five households. Fill in the blanks. [Hint: Use Excel for this.]

<table>
<thead>
<tr>
<th>Income</th>
<th>Poverty line</th>
<th>SD of income</th>
<th>Probability of poverty next year</th>
<th>Vulnerability*</th>
<th>Probability of poverty at least once in next two years</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>125</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>125</td>
<td>12</td>
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<td>130</td>
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</tr>
<tr>
<td>220</td>
<td>125</td>
<td>30</td>
<td></td>
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</tr>
</tbody>
</table>

- Highly vulnerable: 1. If probability of poverty next year is > 0.5.
- Somewhat vulnerable: 2. If probability of poverty next year is >P₀ but <= 0.5.
- Not vulnerable: 3. If probability of poverty next year is <=P₀.
3. Measuring Vulnerability with Data from Bangladesh

Measure the proportion of households in Bangladesh who were “highly vulnerable to poverty” in 1998. Here are the steps that you will probably want to take:

i. Use the 1998 Bangladesh data to construct and estimate a regression model where the dependent variable is the log of consumption per capita. [Use final.dta or pce.dta for the numbers.]

ii. Keep the predicted output (yhat) and residuals (resid).

iii. Regress the square of the residuals on the same variables as in i. and save the predicted value (estvar).

iv. Construct a variable (call it flessc) that is \((\log \text{ of food poverty line} - \text{estimated log of consumption})/(\text{square root of estimated variance})\)

v. Compute the probability of poverty for each household using \(\text{normal}(\text{flessc})\).

vi. Construct a variable called vul1 that is =1 if the household has at least a 50% probability of being poor next year.

vii. [Time permitting] Redo the exercise on the assumption that the age of the household head has risen by 5 and the household assets have increased by 20%.