

HOMEWORK 1

SEAN RICHARDSON, ECONOMIC DEVELOPMENT

- (1) (a) Roland suggests taking the cheapest basket of food that provides 2000 calories per day. Then, the poverty line is defined by the price of this basket of goods.
 (b) The poverty gap sums over the distance between the poverty line z and the income y_i for the number of people under the poverty line q . The average poverty gap considers the same quantity but divides the total by the total amount of people n . Or,

$$PG = \sum_{i=0}^q \left(\frac{z - y_i}{z} \right) \text{ and } APG = \sum_{i=0}^q \left(\frac{z - y_i}{z} \right)$$

The poverty gap allows for measure of not just how many are in poverty, but how much are in poverty on average.

- (c) Measuring poverty allows the government to set econcrete goals for relieving poverty, which encourages effective policy. And, this allows NGOs/governments to measure what strategies for relieving poverty work best.
 (2) (a) Using midpoint method, we have $Y = \frac{Y_f + Y_i}{2} = 1050000$, $\Delta Y = Y_f - Y_i = 600000$, $D = \frac{D_f + D_i}{2} = 537.5$, and $\Delta D = D_f - D_i = 55$. Then,

$$Elasticity = \frac{Y}{D} \cdot \frac{\Delta D}{\Delta Y} = \frac{1050000}{600000} \cdot \frac{55}{537.5} = 0.179$$

- (b) This elasticity is above 0, so the income elasticity is inelastic. This means that the good is a normal good.
 (c) If the local government were to subsidize grain, there would be an increase in demand grain (because it is a normal good) and a decrease in demand for other goods.
 (3) (a) Bangladesh:

Life Expectancy: $H = \frac{Actual - Min}{Max - Min} = \frac{69 - 20}{83 - 20} = 0.777$

Income: $I = \frac{\ln(Actual) - \ln(Min)}{\ln(Max) - \ln(Min)} = \frac{\ln(1910) - \ln(100)}{\ln(48820) - \ln(100)} = 0.476$

Average Education: $EA = \frac{Actual - Min}{Max - Min} = \frac{8 - 0}{13.2 - 0} = 0.606$

Expected Education: $EE = \frac{Actual - Min}{Max - Min} = \frac{10 - 0}{18 - 0} = 0.555$

Education: $E = \frac{EA + EE}{2} = \frac{0.606 + 0.555}{2} = 0.580$

$HDI = (HEI)^{1/3} = (0.777 \cdot 0.580 \cdot 0.476)^{1/3} = 0.599$

Niger:

Life Expectancy: $H = \frac{Actual - Min}{Max - Min} = \frac{55 - 20}{83 - 20} = 0.555$

Income: $I = \frac{\ln(Actual) - \ln(Min)}{\ln(Max) - \ln(Min)} = \frac{\ln(600) - \ln(100)}{\ln(48820) - \ln(100)} = 0.289$

Average Education: $EA = \frac{Actual - Min}{Max - Min} = \frac{5 - 0}{13.2 - 0} = 0.378$

Expected Education: $EE = \frac{Actual - Min}{Max - Min} = \frac{7 - 0}{18 - 0} = 0.388$

Education: $E = \frac{EA + EE}{2} = \frac{0.378 + 0.388}{2} = 0.383$

$HDI = (HEI)^{1/3} = (0.555 \cdot 0.383 \cdot 0.289)^{1/3} = 0.397$

- (b) The life expectancy, education, and per-capita income is better in Bangladesh than in Niger. And, the HDI is higher in Bangladesh than in Niger, so it seems like a good measurement.

(4) (a) I found:

headcount ratio = 0.2; poverty gap index = 0.11488; poverty severity index = 0.082.

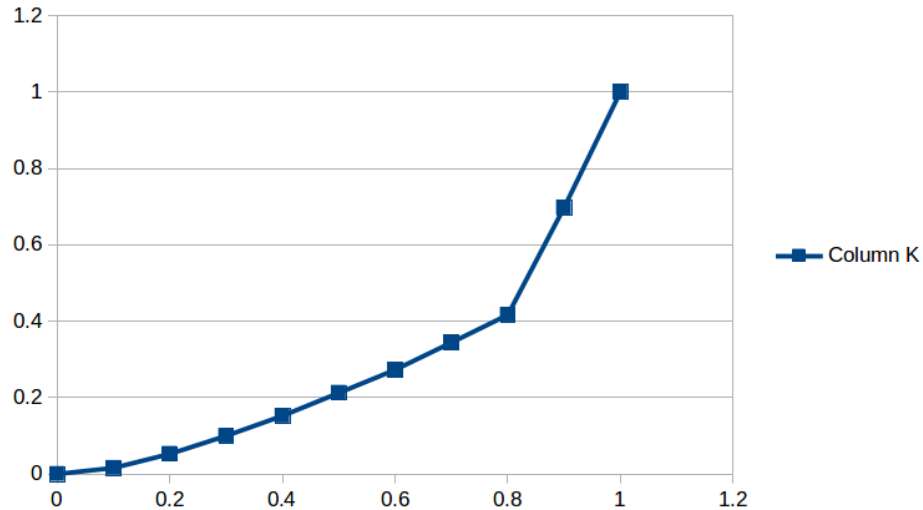
Poverty is not uncommon (being 20%), but there is one case of a household being far below the poverty line so it could be called severe.

Note: the poverty line was given per person and the incomes were given per household, so I multiplied the per person poverty line by the average household size 4.8 to get a household poverty line.

(b) After the 100 rupee transfer, I found: headcount ratio = 0.1; poverty gap index = 0.0565; poverty severity index = 0.0320.

The direct transfer of money decreased all three index measures of poverty.

(c)



(d) I calculated the Gini coefficient to be: 0.449. This is high for India, for India's average Gini in 2013 is 0.34. But, this is not as high as Kenya's Gini coefficient in 2013 of 0.48