**Exercise 4**

1. Choose some of the countries in the Table and plot Lorenz curves for them. Choose at least 2 countries for which the Lorenz curves intersect.

2. Consider an economy with 5 households, with incomes 1, 3, 4, 5, 10. Find the median income and the mean income. Draw a Lorenz curve for this economy. How do the median, mean and Lorenz change if the richest household’s income is raised to 50?

3. In Country X everybody in the country-side has the same income, $y_c$, and everybody in the town has the same income, $y_t = 5y_c$. Suppose the population of the country-side, $n_c$, is 90 million and that of the city, $n_t$, 10 million. Construct the Lorenz curves for the country-side, the town and the whole country.

4. The measure $A_x$

$$A_x = 1 - \sqrt[n]{\frac{X_1 \cdots X_n}{X}}$$

is 0 when the $X$’s are all equal. When does $A_x$ equal 1?