**Assignment weeks 6, 7 and 8**

*To answer all the questions below, you must use Stata (and, specifically, DASP, if requested). Be concise and clear in your answers.*

*The assignment is divided into three exercises (the points assigned to each exercise are indicated next to each exercise). Please answer (A) directly in this file after each question (Q) and please attach the \*.do file (do-file) that you generated. Rename both files as: “Assignment weeks 6\_7\_8 - Name, Surname”. Please submit this completed file and the \*.do through the virtual drop box (boîte de dépôt) in the course portal, no later than Tuesday, March 23 11:59 p.m. (*[***Québec time***](https://www.timeanddate.com/worldclock/converter.html?iso=20190327T035900&p1=189)*).*

# Exercise 1 (3.5%):

1. Using the data file data\_b3\_2.dta, estimate the subjective poverty line by considering the following information:

* The observed equivalent-adult wellbeing is the variable: *ae\_exp*
* The perceived minimum equivalent-adult wellbeing to escape poverty is *min\_ae\_exp.*
* The individual is the unit of analysis (use the household size variable).

**A :**



. cap drop dif

. gen dif = \_npe\_min\_ae\_exp- ae\_exp

. cnpe ae\_exp, xvar(dif) xval(0) vgen(yes)

In progress ...

Sampling weight : fweight

+---------------------------------+

| Variable(s) |Estimated value |

|----------------+----------------|

|ae\_exp | 22289.966797|

+---------------------------------+



1.2 Estimate the poverty gap (using the variables: *ae\_exp* and *hsize*) for each of the three cases, and then discuss the results:

1. the subjective poverty line;
2. the absolute poverty line (z=20600)
3. The relative poverty line: (z= half of average income).

**A : /\*Comment: We notice that using subjective poverty line we have high the highest**

**estimated poverty gap of 11.13, while for absolute poverty line, we have the**

**estimated poverty gap of 9.18% and with relative poverty line we have the**

**estimated 5.02%. Since the subjective ppoverty line is based on perception of**

**individuals themselves, they tend to over report their poverty and tend to express**

**a higher minimum required to satisfy their basic needs, hence we expect to se the**

**highest poverty gap using this subjective poverty line compared to other poverty**

**lines. For the absolute poverty line, is a standardized minimum requirement to**

**ensure a minimum standard of living and allows for comparisons across groups over**

**times or space. Since the absolute poverty is the same for both developing and**

**developed countries, despite the level of incomes, welfare and standards of living,**

**it is more likely to have a higher poverty estimate compared to relative poverty**

**lines but lower compared to subjective poverty. In the same vein we observe that**

**the subjective poverty line is context specific as it is adopted in accrodance**

**with the specific social norm. Rich countries would choose a higher poverty line**

**compared to poor countries and we expect the relative poverty to be more**

**apporopriate in capturing these differences and hence we observe the lowest**

**poverty head gap \*/**

1.3 In your opinion, which is the most appropriate method for measuring poverty in developed countries and why?

**A : /\*In developed countries, using absolute poverty line, majority of individual will lie above poverty line and thus the poverty index will show a low poverty rates. However, the cost of living in the developed countries could be much higher than the cost of living in developing countries. Thus a person slightly above the poverty line in developed country may look to be well to do, but in actual fact they are just bearly surving while someone just above the poverty line in developing country will be doing much better. Therefore, to better capture the levels standards of living, relative poverty is a much better measure of poverty in developed countries\*/**

# Exercise 2 (4.5%):

Additive poverty indices, like the FGT index, allow performing an exact analytical decomposition of these indices by population subgroups. This is useful to show the contribution of each group to total poverty.

2.1 Use the file data\_b3\_2.dta and decompose poverty (headcount index) by the gender of the household head (***sex***) (the poverty line is 20600). What can we conclude?

**A :**

**/\*Comment: 1- The proportion of population of male-headed households is 79.5%, while female-headed households is20.5%.**

**2- The total headcount poverty is equal to 30.68%. Male group contributes by 23.28% and 7.40 % (23.28+ 7.40 = 30.68%).**

**The contribution (to total poverty) among households headed by women is greater than the contribution that comes from their representativeness in the total population ( 0.361 VS 0.205). As known, the absolute contribution to total poverty is given by the product of these two components: poverty in the group x population share of the group. (Compare between the population share of the female group and the relative contribution of that group to the total poverty).**

**However, of course, note that the relative and absolute contributions of female-headed households are smaller than those of male-headed households.**

2.2 Estimate the total poverty (headcount) according to the region of the household head (***region***).

**A : dfgtg ae\_exp, hgroup(region) hsize(hsize) alpha(0) pline(20600)**

2.3 The distribution of the adult equivalent expenditures is similar to that of the initial period (*ae\_exp*), with the following slight differences

* the adult equivalent expenditures have increased by 12% in region 3;
* the adult equivalent expenditures have decreased by 6% in region 2;

Generate the variable *ae\_exp2,* based on the information above.

**A :**

**gen ae\_exp2= ae\_exp\*0.94 if region==2**

**replace ae\_exp2= ae\_exp\*1.12 if region==3**

**replace ae\_exp2= ae\_exp if ae\_exp2==.**

2.4 By using the Shapley approach, decompose the poverty gap change into growth and redistribution. Discuss the results.

**A : \*/**

**/\*Comment: The shapley approach helps us to have a linear approximation of decomposing non-additive functions. The growth effect is an average of the previous two growth effects and the redistribution effect as an average of the two previous redistribution effects. This allows us to eliminate the residual as it sums up to zero. this is the oibserved difference from the previous decompositions. average income Growth is positive (0.000235) but inequality is negative (-0.003162) thus, we conclude that the observed poverty levels are as a result of redstributive of income with population \*/**

2.5 Perform a sectoral decomposition (based on region groups) of the change in total poverty gap. Discuss the results.

**A : \*/**

**/\*Comment: The total poverty gap in the first scenario is 9.1% while in the scenario whith the changes in the incomes in eastern and northern region is 8.8 % a reduced poverty gap. a 12 % increase in the ae expenditure in northern region, decreases its absolute contribution to total poverty gap from 0.045930 to 0.038332 and 6% decrease in ae expenditure in eastern region also decreases the contribution to total poverty gap from 0.026598 to 0.022264. For other regions, their contributions remain the same \*/**

# Exercise 3 (4.5%):

Assume that the population is composed of ten individuals. The following table shows the distribution of incomes of two successive periods.

|  |  |  |  |
| --- | --- | --- | --- |
| *Identifier* | *weight* | *inc\_t1* | *Inc\_t2* |
| 0 | 0 | 0.00 | 0.00 |
| 1 | 0.1 | 1.50 | 1.54 |
| 2 | 0.1 | 4.50 | 3.85 |
| 3 | 0.1 | 7.50 | 6.60 |
| 4 | 0.1 | 3.00 | 2.75 |
| 5 | 0.1 | 4.50 | 4.40 |
| 6 | 0.1 | 9.00 | 7.70 |
| 7 | 0.1 | 10.50 | 8.80 |
| 8 | 0.1 | 15.00 | 7.70 |
| 9 | 0.1 | 12.00 | 6.60 |
| 10 | 0.1 | 13.50 | 6.60 |

3.1 Insert the data, and then generate the percentiles (*based on the rank of incomes of the initial period (variable perc)), and the first percentile must be equal to zero*).

**A :**

**/\*inputing the data and generating percentiles\*/**

**input Identifier weight inc\_t1 Inc\_t2**

**0 0 0.00 0.00**

**1 0.1 1.50 1.54**

**2 0.1 4.50 3.85**

**3 0.1 7.50 6.60**

**4 0.1 3.00 2.75**

**5 0.1 4.50 4.40**

**6 0.1 9.00 7.70**

**7 0.1 10.50 8.80**

**8 0.1 15.00 7.70**

**9 0.1 12.00 6.60**

**10 0.1 13.50 6.60**

**end**

**sort inc\_t1**

**gen perc=sum(weight)**

**list perc**

3.2 Initialize the scalar *g\_mean*, which is equal to the growth rate in the average income.

**A :**

**qui sum inc\_t1 [aw=weight] // To compute the mean of incomes in t1. Also, the summarize (sum in abbreviation ) returns the average as: r(mean)**

**scalar mean1=r(mean) // To keep in memory the scalar mean1 = r(mean) in t1**

**qui sum Inc\_t2 [aw=weight]**

**scalar mean2=r(mean) // To keep in memory the scalar mean2 = r(mean) in t2**

**scalar g\_mean = (mean2-mean1)/mean1**

**gen g\_mean = (mean2-mean1)/mean1 // To generate the variable g\_mean, which is equal to the growth in averages.**

**dis "Mean 1 =" mean1**

**dis "Mean 2 = " mean2**

**dis "Growth in averages = " g\_mean**

3.3 Generate the variable *g\_inc*, as the growth in individual incomes.

**A :**

**gen g\_inc =(Inc\_t2-inc\_t1)/inc\_t1 // This variable with contain the individual growth in income.**

**replace g\_inc = 0 in 1 // When the percentile = 0, the growth is also 0 // default values.**

3.4 Draw the *Growth Incidence Growth* using the variables *g\_inc* and *perc*. Discuss the results.

**A : **

**The GIC is proportional change on incomes observed at different percentiles. We observe that the GIC is greater than the increase in mean income for all poor percintiles, thus we conclude that growth is relatively pro-poor in this economy.**

3.5 Assume that the poverty line is equal to 10.4. Estimate the Chen and Ravallion (2003) pro-poor index (). Discuss the results.

**A :**

**/\*Comment: The Ravallion & Chen (2003) index is -0.081296 which is greater than the avergae Growth rate(g) of -0.301975 by 0.220679. The higher the index the greater the growth among the poor regardless of the incomes of the non-poor.\*/**

3.6 Using the Shapley approach decompose the change in the poverty gap into growth and redistribution components. Discuss the results.

**A : Comment: The average growth effect from the previous two growth effects is 0.173659 while the average redesrtibution effect from the previous two redisrtibution is -0.028851.That we see that the mean income difference is possitive while mean inequality differences is negative. That these two factors affect poverty and inequality in opposite directions. While the mean income difference is postive implying there is growth in incomes between the two peoriods, the mean inequality chnages is negative implying that inequlaity is also increasing. That implies that the observed poverty in the society is as a result of distributive of income within the population.\*/**