**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***](about:blank)*).*

# Exercise 1 (3.5%):

1. Using the data file data\_b3\_1.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 : /\* Q1.1 estimate the subjective poverty line. \*/**

**cnpe ae\_exp min\_ae\_exp, xvar(ae\_exp) min(0) max(60000)** ///

**legend(order( 1 "Perceived minimum well-being " 2 "Observed well-being"))** ///

**subtitle("") title(The subjective poverty line)** ///

**xtitle(Observed well-being)** ///

**ytitle(Predicted level of the perceived minimum well-being )** ///

**vgen(yes)**

**cap drop dif**

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

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

**cnpe ae\_exp min\_ae\_exp, xvar(ae\_exp) min(0) max(60000)** ///

**legend(order( 1 "Perceived minimum well-being " 2 "Observed well-being"))** ///

**subtitle("") title(The subjective poverty line)** ///

**xline(22622.398438) xtitle(Observed well-being)** ///

**ytitle(Predicted level of the perceived minimum well-being )**

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

1. the subjective poverty line;
2. the absolute poverty line (z=21000)
3. The relative poverty line: (z= half of average income).

**A : /\* Q1.2 estimate the poverty gap. This is done using the ifgt command and alpha is set to 1\*/**

**ifgt ae\_exp, alpha(1) hsize(hsize) pline(22622.398438)**

**ifgt ae\_exp, alpha(1) hsize(hsize) pline(21000)**

**ifgt ae\_exp, alpha(1) hsize(hsize) opl(mean) prop(50)**

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

**A : Relative poverty compares the person or household's income (expenditure) to the income distribution of the country. Absolute poverty is measured with reference to the cost of a basket of minimum basic goods and services, for instance food. For developed countries, because poverty is not widespread compared to developing economies have a large population living below $1 per day, then it might make more sense to measure poverty in terms of absolute for 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\_1.dta and decompose poverty (headcount index) by the gender of the household head (***sex***) (the poverty line is 21000). What can we conclude?

**A : /\* Q2.1 Decompose poverty by gender of the household.\*/**

**dfgtg ae\_exp, hgroup(sex) hsize(hsize) alpha(0) pline(21000)**

**From the results obtained, the following conclusions can be made:**

**1- Male-headed household in the population account for about 77.47%, while female-headed household is around 22.53%.**

**2- The total headcount poverty is equal to 35.00%, from which the male and female group accounts for 25.95% and 9.05%, respectively.**

**Also, the results indicate that in terms of contribution to total poverty for women-headed household is far greater than their contribution from their share in the total population (0.402 against 0.225). In addition, 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 : /\* Q2.2 Estimate poverty (headcount) by region. Therefore, alpha is set to 0\*/**

**ifgt ae\_exp, alpha(0) hsize(hsize) hgroup(region) pline(21000)**

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 10% in region 3;
* the adult equivalent expenditures have decrease by 6% in region 2;

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

**A : /\* Q2.3 adult equivalent expenditures have increased and reduced by 10% and 6% in region 3 (ae\_expr3) and region 2 (ae\_expr2) respectively. Then Generate the variable ae\_exp2 based on the changes \*/**

**gen ae\_expr3 = ae\_exp\*1.1\*(region==3)**

**gen ae\_expr2 = ae\_exp\*0.94\*(region==2)**

**gen ae\_exp2 = ae\_exp+ae\_expr3+ae\_expr2**

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

**A : /\* Q2.4 Using the Shapley approach, decompose the poverty gap change into growth and redistribution \*/**

**dfgtgr ae\_exp ae\_exp2, alpha(1) pline(21000)**

**The result shows that there is a reduction in the poverty gap by around 0.055688 approximately (-5.67%). By components growth accounted for about -0.050587, redistribution accounted for around -0.005100 and residue of 0.002244.**

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

**A :**

# 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 : /\* Q3.1 generate the percentiles based on the rank of incomes of the initial period (variable perc)) and the first percentile must be equal to zero) \*/**

**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 : /\* Q3.2 Initialize the scalar g\_mean \*/**

**qui sum inc\_t1 [aw=weight]**

**scalar mean1=r(mean)**

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

**scalar mean2=r(mean)**

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

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

**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 : /\* Q3.3 Generating the variable g\_inc, as the growth in individual incomes \*/**

**gen g\_inc =(inc\_t2-inc\_t1)/inc\_t1**

**replace g\_inc = 0 in 1**

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

**A : /\* Q3.4 Drawing the Growth Incidence Curve using the variables g\_inc and perc\*/**

**line g\_inc g\_mean perc, ///**

**title(Growth Incidence Curve) ///**

**yline(`g\_mean') ///**

**legend(order( 1 "GIC curve" 2 "Growth in average income")) ///**

**xtitle(Percentiles (p)) ytitle(Growth in incomes) ///**

**plotregion(margin(zero))**

**The Growth Incidence Curve (GIC) captures graphically the annualized growth rate of per capita income for every percentile of the income distribution between two points in time. The graph shows that** **the slope is negative, this suggests that the growth episode is benefiting the poorest more than the richest.**

3.5 Assume that the poverty line is equal to 10.2. Estimate the Chen and Ravallion (2003) pro-poor index (). Discuss the results.

**A : /\* Q3.5 Estimating the Chen and Ravallion when poverty line is equal to 10.2 \*/**

**drop in 1**

**sum g\_inc [aw=weight] if (inc\_t1<10.2)**

**dis = r(mean)**

**ipropoor inc\_t1 inc\_t2, pline(10.2)**

**The result indicates that the rate of pro-poor growth is -0.301975 or approximately around -30.20%.**

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

**A : /\* Q3.6 Using the Shapley approach, decompose the change in the poverty gap into growth and redistribution components \*/**

**dfgtgr inc\_t1 inc\_t2, alpha(1) pline(10.2)**

**The result shows that there is an increase in the poverty gap by around 0.139804 approximately (13.98%). By components growth accounted for about 0.171182 and redistribution accounted for around -0.031378.**