**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\_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 : 22622.40**

**use "C:\data\_b3\_1", clear**

**cnpe ae\_exp min\_ae\_exp, xvar(ae\_exp) min(0) max(60000) legend(order(1 "perceived minimum well-being" 2 "observed well-being")) title(the subjective poverty line) xtitle(Observed wellbeing) ytitle(predicted level of 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)**

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 :**

1. the subjective poverty line; 0**.122056**



1. the absolute poverty line (z=21000): 0.102046



1. The relative poverty line: (z= half of average income) = 0.059656

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

**A : Relative poverty seems to be the appropriate, as the minimum requirement that the absolute poverty refers to does not realistically reflect the situation in developed countries. While there could be people living under absolute poverty in developed countries, the incidence of such poverty is quite small and maybe of less policy significance.**

# 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 :**

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Conclusion

* The overall incidence of poverty is estimated at 35%. The incidence of poverty in female-headed households (40.2%) is higher than that of male headed households (which is 33.5%). Male headed households contribute 25.95% while female headed households contribute 9.05%.

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

**A : Total poverty headcount is 35%. Regional breakdown is indicated in the table below**



**Conclusion:**

Overall, 35% of households are living below the poverty line. There is disparity among regions in terms of poverty incidence, ranging from 23.8% in Central Region to 62.5% in Northern region.

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 :**

**generate ae\_exp2 = ae\_exp**

**replace ae\_exp2 = ae\_exp\*1.1 if region==3**

**replace ae\_exp2 = ae\_exp\*1.06 if region==2**

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

**A:**

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

**Decomposition of the variation in the FGT index into growth and redistribution.**

**Parameter alpha : 1.00**

**Poverty line : 21000.00**





There is a reduction in poverty gap from the first to the second distribution. This seems to be due to growth effect (though it is a minor increase of 0.5%) despite the slight increase in inequality element (which has increased by 0.4%)

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

**A :**

**dfgtg ae\_exp, hgroup(region) hsize(hsize) alpha(1) pline(21000)**

\*This gives the poverty gap for the initial distribution by region

\*Total (population) poverty gap is 0.102046

**dfgtg ae\_exp2, hgroup(region) hsize(hsize) alpha(1) pline(21000)**

\*This gives the poverty gap for the initial distribution by region

\*Total poverty gap is 0.327031

**\* The change in total poverty gap, disaggregated by region is the difference between the poverty gap for the second distribution and the poverty gap for the first distribution, i.e., 0.327031-0.102046 = 0.2250**

# 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 :**

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sort inc\_t1

gen perc=sum(weight)



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]

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 "mean1 = " mean1

dis "mean2 = " mean2

dis "Growth in averages =" g\_mean

Mean1 = 8.1

Mean2 = 5.6539999

G-mean (growth in averages/means) = **-0.3019753 (indicating that the mean income in the second period (t2) is less than the first period (t1)**

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

**A:**

**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:**

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**I have tried the following command: 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))**

*However, it says “plotregion is not a twoway plot type*”

The graph seems to suggest that the GIC is positive for the lowest percentiles (roughly the lowest 10%), indicating that they have experienced increase in income, while the remaining percentiles (from second decile to the top decile) have experienced negative growth (decline in income between the two periods).

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 :**

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The poverty gap has increased from t1 to t2 by 13.98 percentage points. This could be due to decline in the growth component and increase in inequality (redistribution) components in both reference periods.

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

**A :**





The result shows poverty gap has increased by 13.98 percentage points, because of the reduction in growth by 17.1% and increase in inequality by 3.1%