```
 1 . do "C:\Users\lutib\AppData\Local\Temp\STD1880_000000.tmp"

 2 .
 3 . // EXERCICE 1
 4 .
 5 . // Q1
 6 . //a
 7 . /*
   > This affirmation is true:
   > The distribution of incomes of the group 2 is similar to that of the first group,
   > except that incomes are multiplied by a scale of 3. Since the relative inequality indices, as the Gini
   >  index,
   > obey to the scale invariance principle, the inequality of the two groups will be the same.
   > */
 8 . clear

 9 . input group inc1 inc2 inc3

        group       inc1       inc2       inc3
   1. 1 1 8 2
   2. 1 2 8 4
   3. 1 9 8 18
   4. 2 3 24 2
   5. 2 6 24 4
   6. 2 27 24 18
   7. end

10 .
11 . igini inc1 , hg(group)

     Index            :  Gini index
     Group variable   :  group
```

Group	Estimate	STE	LB	UB
1: 1	**0.444444**	**0.100411**	**0.186331**	**0.702558**
2: 2	**0.444444**	**0.100411**	**0.186331**	**0.702558**
Population	0.534722	0.080462	0.327888	0.741557

```
12 .
13 . //b
14 . /*
   > This affirmation is false:
   > When the averages of  incomes of the two groups are different,
   > we also must consider the contribution of the between group inequality to the total inequality.
   > */
15 .
16 . //c
17 . /*
   > This affirmation is true:
   > - With the inc1, the between group inequality is the inequality of the distribution: D1: (4,4,4,12,12,
   > 12)
   > - With the inc2, the between group inequality is the inequality of the distribution: D2: (8,8,8,24,24,
   > 24)
   >   Based on the scale invariance principle (the distribution D2 is simply that of the double of the inc
   > omes of D1),
   >   The between group inequality in inc1 is similar to that of inc2.
   >  */
```

```
18 .  dentropyg inc1, hg(group)
```

Decomposition of the Generalised Entropy Index by Groups
Group variable : group
Parameter theta : 0.00

Group	Entropy index	Population share	(mu_k/mu)^theta	Absolute contribution	Relative contribution
1: Group_1	**0.422837**	**0.500000**	**1.000000**	**0.211419**	**0.373084**
	0.114650	0.223607	0.000000	0.110570	0.211759
2: Group_2	**0.422837**	**0.500000**	**1.000000**	**0.211419**	**0.373084**
	0.114650	0.223607	0.000000	0.110570	0.237621
Within	---	---	**---**	**0.422837**	**0.746168**
	---	---	**---**	0.214839	---
Between	---	---	**---**	**0.143841**	**0.253832**
	---	---	**---**	0.022050	---
Population	**0.566678**	**1.000000**	**---**	**0.566678**	**1.000000**
	0.215967	0.000000	**---**	0.215967	0.000000

```
19 .  dentropyg inc2, hg(group)
```

Decomposition of the Generalised Entropy Index by Groups
Group variable : group
Parameter theta : 0.00

Group	Entropy index	Population share	(mu_k/mu)^theta	Absolute contribution	Relative contribution
1: Group_1	**-0.000000**	**0.500000**	**1.000000**	**-0.000000**	**-0.000000**
	0.000000	0.223607	0.000000	.	0.000000
2: Group_2	**-0.000000**	**0.500000**	**1.000000**	**-0.000000**	**-0.000000**
	0.000000	0.223607	0.000000	0.000000	.
Within	---	---	**---**	**-0.000000**	**-0.000000**
	---	---	**---**	0.000000	---
Between	---	---	**---**	**0.143841**	**1.000000**
	---	---	**---**	0.022050	---
Population	**0.143841**	**1.000000**	**---**	**0.143841**	**1.000000**
	0.022050	0.000000	**---**	0.022050	0.000000

```
20 .
21 . // Q2
22 . clear

23 . input group inc1 inc2 inc3

        group       inc1       inc2       inc3
     1. 1 1 8 2
     2. 1 2 8 4
     3. 1 9 8 18
     4. 2 3 24 2
     5. 2 6 24 4
     6. 2 27 24 18
     7. end
```

```
24 .
25 . dentropyg inc1, hg(group) theta(0)
```

Decomposition of the Generalised Entropy Index by Groups
Group variable : group
Parameter theta : 0.00

Group	Entropy index	Population share	(mu_k/mu)^theta	Absolute contribution	Relative contribution
1: Group_1	**0.422837**	**0.500000**	**1.000000**	**0.211419**	**0.373084**
	0.114650	0.223607	0.000000	0.110570	0.211759
2: Group_2	**0.422837**	**0.500000**	**1.000000**	**0.211419**	**0.373084**
	0.114650	0.223607	0.000000	0.110570	0.237621
Within	---	---	**---**	**0.422837**	**0.746168**
	---	---	**---**	0.214839	---
Between	---	---	**---**	**0.143841**	**0.253832**
	---	---	**---**	0.022050	---
Population	**0.566678**	**1.000000**	**---**	**0.566678**	**1.000000**
	0.215967	0.000000	**---**	0.215967	0.000000

```
26 . dentropyg inc2, hg(group) theta(0)
```

Decomposition of the Generalised Entropy Index by Groups
Group variable : group
Parameter theta : 0.00

Group	Entropy index	Population share	(mu_k/mu)^theta	Absolute contribution	Relative contribution
1: Group_1	**-0.000000**	**0.500000**	**1.000000**	**-0.000000**	**-0.000000**
	0.000000	0.223607	0.000000	.	0.000000
2: Group_2	**-0.000000**	**0.500000**	**1.000000**	**-0.000000**	**-0.000000**
	0.000000	0.223607	0.000000	0.000000	.
Within	---	---	**---**	**-0.000000**	**-0.000000**
	---	---	**---**	0.000000	---
Between	---	---	**---**	**0.143841**	**1.000000**
	---	---	**---**	0.022050	---
Population	**0.143841**	**1.000000**	**---**	**0.143841**	**1.000000**
	0.022050	0.000000	**---**	0.022050	0.000000

```
27 . dentropyg inc3, hg(group) theta(0)
```

Decomposition of the Generalised Entropy Index by Groups
Group variable : group
Parameter theta : 0.00

Group	Entropy index	Population share	(mu_k/mu)^theta	Absolute contribution	Relative contribution
1: Group_1	**0.422837**	**0.500000**	**1.000000**	**0.211419**	**0.500000**
	0.114650	0.223607	0.000000	0.110570	0.243290
2: Group_2	**0.422837**	**0.500000**	**1.000000**	**0.211419**	**0.500000**
	0.114650	0.223607	0.000000	0.110570	0.243290
Within	---	---	**---**	**0.422837**	**1.000000**
	---	---	**---**	0.081070	---
Between	---	---	**---**	**-0.000000**	**-0.000000**

	---	---	---	0.000000	---
Population	**0.422837** 0.081070	**1.000000** 0.000000	**---** ---	**0.422837** 0.081070	**1.000000** 0.000000

```
28 .
29 . // Q3
30 . igini inc1 inc2 inc3
```

Index : Gini index

Variable	Estimate	STE	LB	UB
1: GINI_inc1	**0.534722**	**0.080462**	**0.327888**	**0.741557**
2: GINI_inc2	**0.250000**	**0.055902**	**0.106300**	**0.393700**
3: GINI_inc3	**0.444444**	**0.071001**	**0.261930**	**0.626958**

```
31 .
32 .
33 .
34 . // EXERCICE 2
35 .
36 . // Q1
37 . clear

38 . input identifier pre_tax_income  hhsize nchild

        identif~r  pre_tax~e     hhsize     nchild
     1. 1 240  4 2
     2. 2 600  5 3
     3. 3 230  3 2
     4. 4 1250 3 1
     5. 5 1900 4 1
     6. 6 280  4 2
     7. 7 620  3 1
     8. 8 880  4 3
     9. end

39 .
40 . /* Scenario A */
41 . gen pcincatA = pre_tax_income * (1.00-0.10)/hhsize

42 .
43 . scalar  un_revenu_A  = 6000*0.06/30

44 . scalar  child_all_A  = 6000*0.04/15

45 . gen     pcuincA  = hhsize*un_revenu_A/hhsize

46 . gen  pcallowA = nchild*child_all_A/hhsize

47 . gen dpcincA= pcincatA+ pcuincA+ pcallowA
```

```
48 .
49 . /* Scenario B */
50 . gen pcincatB = pre_tax_income * (1.00-0.10)/hhsize

51 . scalar  un_revenu_B  = 0

52 . scalar  child_all_B  = 6000*0.10/15

53 . gen     pcuincB  = hhsize*un_revenu_B/hhsize

54 . gen  pcallowB = nchild*child_all_B/hhsize

55 . gen dpcincB= pcincatB+ pcuincB+ pcallowB

56 .
57 .
58 . // Q2
59 . igini dpcincA dpcincB , hsize(hhsize)

      Index            :  Gini index
      Household size   :  hhsize
```

Variable	Estimate	STE	LB	UB
1: GINI_dpcincA	**0.353067**	**0.042274**	**0.253105**	**0.453028**
2: GINI_dpcincB	**0.348667**	**0.042336**	**0.248557**	**0.448776**

```
60 .
61 . // Q3
62 . diginis pcincatA pcuincA pcallowA, hsize(hhsize)

      Decomposition of the Gini Index by Incomes Sources: Rao's (1969) Approach.
      Household size  :  hhsize
```

Sources	Income Share	Concentration Index	Absolute Contribution	Relative Contribution
1: pcincatA	**0.900000**	**0.395556**	**0.356000**	**1.008308**
	0.028478	0.049440	0.042978	0.006154
2: pcuincA	**0.060000**	**0.000000**	**0.000000**	**0.000000**
	0.015088	0.000000	0.000000	0.000000
3: pcallowA	**0.040000**	**-0.073333**	**-0.002933**	**-0.008308**
	0.013684	0.077784	0.002248	0.006154
Total	**1.000000**	---	**0.353067**	**1.000000**
	0.000000	---	0.042274	0.000000

```
63 . diginis pcincatB pcuincB pcallowB, hsize(hhsize)

      Decomposition of the Gini Index by Incomes Sources: Rao's (1969) Approach.
      Household size  :  hhsize
```

Sources	Income Share	Concentration Index	Absolute Contribution	Relative Contribution
1: pcincatB	**0.900000**	**0.395556**	**0.356000**	**1.021032**
	0.033607	0.049440	0.044140	0.015775
2: pcuincB	**0.000000**	**0.000000**	**0.000000**	**0.000000**
	0.000000	.	0.000000	0.000000
3: pcallowB	**0.100000**	**-0.073333**	**-0.007333**	**-0.021033**
	0.033607	0.077784	0.005663	0.015775
Total	**1.000000**	---	**0.348667**	**1.000000**
	0.000000	---	0.042336	0.000000

```
64 .
65 . // Q4
66 . /*
   > The scenario B is with the highest reduction in inequality in disposable incomes.
   > This is because, this programme targets well the deprived or poor households, which are characterized
   > by a large number of children.
   > */
67 .
68 . // Q5
69 . // generating the per capita income without applying any program
70 . gen pcinc = pre_tax_income/hhsize

71 . difgt dpcincB pcinc, hsize1(hhsize)  hsize2(hhsize) pline1(100) pline2(100) alpha(0)
```

Variable	Estimate	Std. Err.	t	P>|t|	[95% Conf. interval]		Pov. line
dpcincB	**.3666667**	**.1835415**	**1.99773**	**0.0859**	**-.06734**	**.8006734**	100
pcinc	**.3666667**	**.1835415**	**1.99773**	**0.0859**	**-.06734**	**.8006734**	100
diff.	**0**	**0**	**.**	**.**	**0**	**0**	---

```
72 .
73 . // Q6
74 . difgt dpcincB pcinc, hsize1(hhsize)  hsize2(hhsize) pline1(100) pline2(100) alpha(1)
```

Variable	Estimate	Std. Err.	t	P>|t|	[95% Conf. interval]		Pov. line
dpcincB	**.0616667**	**.0374656**	**1.64596**	**0.1438**	**-.0269254**	**.1502588**	100
pcinc	**.1166667**	**.061366**	**1.90116**	**0.0990**	**-.0284408**	**.2617742**	100
diff.	**.055**	**.027522**	**1.9984**	**0.0858**	**-.0100792**	**.1200792**	---

```
75 . /*
   > The households that receive child allowances have some improvement in well-being, but this improvement
   >  is not enough to make them escape poverty.
   > This is what explains the unchanged level of headcount. In the inverse, the poverty gap index is sensi
   > tive to any improvement in the well-being of the poor, and this explains the reduction of this index.
   > */
76 .
77 .
   end of do-file

78 . do "C:\Users\lutib\AppData\Local\Temp\STD1880_000000.tmp"

79 .
80 .
81 . // EXERCICE 3
82 .
83 . //Stata code for the Practical exercise 3 - BLOC3
84 .
85 .  // Q1
86 . clear
```

```
87 .
   end of do-file

88 . use "C:\Users\lutib\Dropbox\PEP_distance_Poverty Course (Exercises)\2019\weaks_semaines 4-5-6\version\
   > data_1.dta"

89 . do "C:\Users\lutib\AppData\Local\Temp\STD1880_000000.tmp"

90 . svyset psu [pweight=sweight], strata(strata)

          pweight: sweight
              VCE: linearized
     Single unit: missing
        Strata 1: strata
            SU 1: psu
           FPC 1: <zero>

91 .
92 .
93 . // Q2
94 . ifgt ae_exp, pline(21000) hs(hsize)

       Poverty index   :  FGT index
       Household size  :  hsize
       Sampling weight :  sweight
       Parameter alpha :  0.00
```

Variable	Estimate	STE	LB	UB	Pov. line
ae_exp	**0.332727**	**0.014759**	**0.303761**	**0.361694**	21000.00

```
95 .
96 . // Q3
97 . ifgt ae_exp, pline(21000) hs(hsize) hgroup(sex)

       Poverty index   :  FGT index
       Household size  :  hsize
       Sampling weight :  sweight
       Group variable  :  sex
       Parameter alpha :  0.00
```

Group	Estimate	STE	LB	UB	Pov. line
1: Male	**0.321482**	**0.014029**	**0.293949**	**0.349014**	21000.00
2: Female	**0.371593**	**0.035153**	**0.302603**	**0.440583**	21000.00
Population	0.332727	0.014759	0.303761	0.361694	21000.00

```
98 .
   end of do-file

99 .
```