

Examen Inequality & Poverty Juni 2022

7 questions, of which 4 multiple choice. Total on 100 points.

You get answer boxes, the answers need to stay in the box. The professor calls on you to write shortly and concisely.

Question 1 (30p)

Two distributions x and y :

x	
A	10
B	15
C	25
D	20
E	30

y	
A	18
B	12
C	20
D	75
E	25

a) Calibrate the ordinates for the right abscissa for the Lorenz and generalized Lorenz curves of x and y .

x		
abscissa	Lorenz ordinate	Generalized Lorenz ordinate

y		
abscissa	Lorenz ordinate	Generalized Lorenz ordinate

b) Draw the Lorenz and generalized Lorenz curves for both distributions. A sketch is enough. Indicate the axes.

c) When looking at the Lorenz curves, can you prefer one distribution above the other?

Answer: _____

If yes, say what the relation is and analyze. If no, explain why not.

d) When looking at the generalized Lorenz curves, can you prefer one distribution above the other?

Answer: _____

If yes, say what the relation is and analyze. If no, explain why not.

e) Compare your answers on c) and d) and relate to the distributions. Explain your comparison between the results, using, if possible and useful, the axioms underlying both criteria.

f) Sketch the cumulative distribution functions of both distributions.

g) What can you say about poverty based on the distribution functions?

h) Can you relate this to your previous answers? (*Tip: use first and second order stochastic dominance*) (**← this tip was on the exam by the way, it was not added by me**)

Question 2 (25p)

Numbers from a study by Ferreira et al. (2016) about poverty in Sub-Sahara Africa. An excerpt of the example 1: part 2 of Table 5 in Ferreira et al. (2016) - Reader 06.01:

Table 5 Global poverty by region, 1990–2012

	1990		1999		2011		2012	
Poverty line	\$1.25	\$1.90	\$1.25	\$1.90	\$1.25	\$1.90	\$1.25	\$1.90
PPP	2005	2011	2005	2011	2005	2011	2005	2011
(b) Poverty gap (%)								
East Asia and Pacific	19.5	21.5	10.8	11.6	1.6	1.8	–	1.5
Europe and Central Asia	0.4	0.6	1.0	2.5	0.1	0.7	–	0.6
Latin America and the Caribbean	5.2	8.6	4.8	6.0	2.2	2.8	–	2.6
Middle East and North Africa	1.1	1.2	0.9	0.8	0.4	–	–	–
South Asia	16.3	14.8	12.1	–	5.2	4.6	–	3.7
Sub-Saharan Africa	25.5	24.9	26.6	26.4	19.2	17.3	–	16.5
World	12.6	13.1	9.5	9.6	4.3	4.1	–	3.7

table was already on the slides (

Numbers you get

	1990	1999	2011	2012
Amount of people in SSA				
Amount of poor in SSA				
Average income of the poor as a % of poverty line				

What you need to add:

	1990	1999	2011	2012
Measure of first I of poverty				
Combined measure of first and second I of poverty				

a) What is the measure for the ‘first I of poverty’ according to Sen?

Answer: _____

Calculate this measure for the four years and add in the table.

Analyze the evolution of the measure over time

b) Can we conclude something about stochastic dominance based on this table? If yes, what? If no, why not?

c) In the given table, there is a measure included that indicates the ‘second I of poverty’. What is the term we saw for this measure?

Answer: _____

Analyze the evolution of the measure over time

d) Both I's are missing important aspects of poverty measurement. That is why there is a measure that combines the first and second I. How is it called?

Answer: _____

What is the formula for this measure?

Calculate this measure and put your number in the table

Analyze its evolution over time

Question 3

Three True/False questions. Each time, give True/False and explain briefly why.

a) The lower the parameter of inequality aversion in the class of Generalized Entropy measures, the less inequality averse the underlying SWF of the GE measure is when the parameter is smaller than one.

Answer: _____

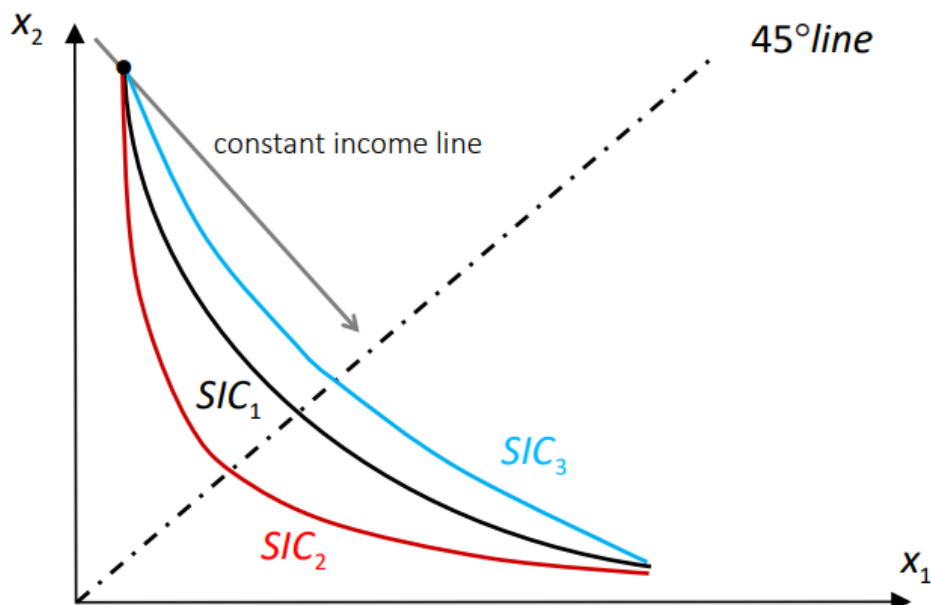
Explanation

b) If the parameter of inequality aversion in the class of Generalized Entropy measures is smaller than 2, the underlying SWF does not satisfy the Pigou Dalton criterion (or Transfer Principle) anymore.

c)?

Now the four multiple choice questions. Every time, only one statement is correct. There is no guess correction.

Question 4 (5 points)



a) The equal distributed equivalent is higher for when using SIC2 compared to SIC1

- b) If X has an inequality neutral distribution, the EDE would be C Because all the SIC cross in X, the measurement of inequality is the same for all
- c) The cost of inequality is the distance AB

Question 5 (5 points)

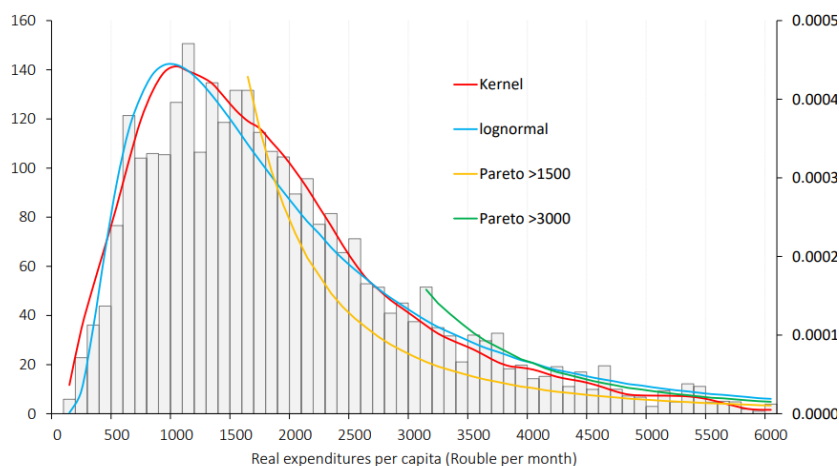
In a recent article in *The Economist* about the presidential elections in Colombia, this graph was included.



Suppose (realistically) that the average income of the US is higher than that of the other countries in any year.

- a) The Lorenz curve of the US will be above the one of Canada
- b) The risk aversion decreased in Argentina in the 2000s
- c) ..
- d) The generalized Lorenz curve of the US needs to end above that of Mexico

Question 6 (5 points)



- a) Because the lognormal distribution is not symmetric, it does not fit the data well
- b) The Pareto distribution of >1500 is a better fit than >3000 , so by lowering the threshold an amount under 1500 the pareto distribution would fit better
- c) The mode is lower than the average.
- d) The kernel density function fluctuates because it depends on one parameter.

Question 7 (5 points)

Say we have the following tax system. You can assume that there is at least one person falling in under every tax bracket

income bound (min)	income bound (max)	tax rate
0	30000	20%
30000	40000	30%
40000	50000	40%
50000	...	50%

A social planner want to change the tax policy and considers 2 options:

option X: increase the highest tax rate from 50% to 55%.

option Y: implement a proportional tax so that the tax revenues are the same as in option X

- a) The Kakwani index stays the same in option X.
- b) The Kakwani index stays the same for X and Y because the tax revenues are the same in both options.
- c) Both the Kakwani and Reynolds-Smolensky index increase in option X.
- d) For Y, the Gini after tax stays the same after the change