



1st year
Academic year 2009-2010

Normal examination period

13 January 2010

Duration: 2h30m (150 minutes)

Always use 3 decimal places.

GROUP I

1. The CFO of a given company is analysing the rates of funding costs of the operations in the 12 months of 2009.

Table: Rates of funding costs

Month	01	02	03	04	05	06	07	08	09	10	11	12
Rate	5,59	5,64	5,60	5,62	5,55	5,61	5,50	5,63	5,64	5,76	5,97	6,12

Source: Firm reports

- (1,00 val) a) Compute the mean and median value of the distribution of rates of funding costs.
- (1,00 val) b) Depict the bar chart. Considering the mean and median values and the frequency graph what you can conclude about the symmetry of the distribution?
- (1,00 val) c) Compute the standard deviation and the coefficient of variation.
- (1,00 val) d) Say, if possible, which was the rate of funding cost in 2009.

2. Knowing that in 2008, in the same company, the CFO had the following values:

Table: Distribution of the rates of funding costs in 2008

Summary measures

Mean	4,75%
Median	4,38%
Standard Deviation	0,70%

Source: Firm reports

- (1,50 val) a) Comment the evolution of the distribution between 2008 and 2009.

3. Knowing that in this company the financial costs supported in each month were the following (values in euros):

Table: Financial costs in 2009

Month	1	2	3	4	5	6	7	8	9	10	11	12
Costs	7250	5460	6523	4368	6430	4350	10530	4150	6730	7260	7580	11260

Source: Firm reports

- (1,50 val) a) Compute the Gini Index of the monthly concentration of financial costs and represent the Lorenz Curve.

GROUP II

1. Sales of a given company were the following:

Table: Sales

	2004	2005	2006	2007	2008
Sales (thousands USD)	910	981	1027	1115	1201

Source: Firm reports

- (1,00 val) a) Compute the annual rates of change.
 (0,75 val) b) Compute the sales rate of change between 2004 and 2008.
 (0,75 val) c) Compute the annual average sales rate of change between 2004 and 2008.
 (1,00 val) d) Compute the 2005 fixed base Index of sales.
 (1,00 val) e) Assuming that in 2009 and 2010 sales change, respectively, 2% e 2,2%, compute the value of sales in 2009 and 2010.

GROUP III

1. Consider the following table where data for Aielândia are shown.

Table: Information for Aielândia economy

Ano	2004	2005	2006	2007	2008
Tax receipts current prices (millions of euros)	48.945,5	53.528,8	56.627,8	61.178,5	62.080,2
Prices rate of change (%)	2,4	2,5	2,8	3,0	1,8

Source: Statistical Office Aielândia

- (1,00 val) a) Compute, for each year, the 2006 fixed base index of prices.
 (1,25 val) b) Compute, for each year, the value of Tax Receipts at 2006 constant prices.
 (1,00 val) c) Compute the 2008 fixed base index of tax receipts at constant prices.
 (1,00 val) d) Assuming that in 2004, tax receipts have changed, in real terms, -4,5%, compute tax receipts at current prices in 2003.
 (1,25 val) e) Compute the value of tax receipts in 2008 at 2005 prices.

GROUP IV

1. Consider the values of GDPmp and Tax Receipts of economy A for the period 2004-2008:

Year	2004	2005	2006	2007	2008
GDPmp	144100	149100	155400	163200	166200
Tax receipts	48.945,5	53.528,8	56.627,8	61.178,5	62.080,2

Source: Statistical Office Country A

- (0,75 val) a) Represent graphically the information for GDPmp and Tax receipts and say, considering the graphic, whether it is possible to conclude that there is a relationship between GPD and tax receipts.
 (1,50 val) b) Knowing that the covariance between those variables is 40174185,3 and that the coefficient of variation is 0,053358 and 0,0863657, respectively for GDPmp and tax receipts compute the linear correlation coefficient and say whether this confirms the conclusion you reached in a). Compute the parameters of the regression line.
 (0,75 val) c) Forecast the value of tax receipts in 2009 if GDPmp increases 0,8% in that year.