

University of Turin - Dipartimento di Management
Bachelor Program in Business and Management

Public Management and Public Economics
II part – Public Economics

Surname Name Matricola.....

10 multiple choice questions – Only one answer right per question
(right answer: 1, wrong answer: -0.25)

2 open questions (up to 10 point each)

Multiple choice questions

1. Which of the following is not a normative statement?

- a. The military budget should increase at the same rate as GDP.
- b. The government should play a limited economic role, ensuring that private contracts are enforced.
- c. Integrated schooling has increased the level of literacy among minority groups.
- d. A tax on imported oil should be used to reduce the government deficit.

2. A tax expenditure is

- a. revenue forgone through special provisions in the tax code.
- b. the hidden cost of resources devoted to tax compliance.
- c. money paid to corporations that declare negative net income.
- d. revenue forgone through tax evasion.

3. The marginal rate of substitution is the slope of

- a. a budget line.
- b. a utility possibilities curve.
- c. an indifference curve.
- d. a production possibilities curve.

4. Relative to a closed economy, it is easier in an open economy to

- a. pass the burden of government debt on to future generations.
- b. control interest rates.
- c. discourage private investment through government borrowing.
- d. confer monopoly power on key domestic industries.

5. The first fundamental theorem of welfare economics states:

- a. Pareto improvements lead to increased competition.
- b. Competitive markets lead to a Pareto efficient allocation.
- c. No one can be made better off without someone is being made worse off.
- d. Competitive markets lead to externalities and information problems.

6. The second theorem of welfare economics states that any particular point on the utilities possibility frontier can be reached if the government will

- a. redistribute income properly to begin with.
- b. leave the competitive system alone.
- c. equalize people's marginal rates of substitution.
- d. adopt a utilitarian social welfare function.

7. The free rider problem refers to people who

- a. will only consume a public good if it is free.
- b. for efficiency's sake, should be allowed to consume public goods (such as mass transit) even if they do not pay.
- c. will not voluntarily pay for a public good even though they would benefit from its provision.
- d. are not willing to pay for a public good because they lack information about its potential benefits.

8. Marketable permits are a market solution to pollution abatement which work best when

- a. all firms have the same valuation for pollution.
- b. the location of pollution matters.
- c. the government knows the right quantity of pollution abatement.
- d. some firms have already invested heavily in abatement equipment while others have done nothing.

9. Which is *not* a valid argument favoring the use of output regulation over input regulation?

- a. Firms may have different ways of reducing pollution.
- b. Firms may know better than the government how to reduce pollution cheaply.
- c. It may be easier to monitor the use of technology than the level of emissions.
- d. Output regulations, when enforceable, can ensure that the efficient level of pollution is not exceeded.

10. Which is *not* a valid argument favoring the use of output regulation over input regulation?

- a. Firms may have different ways of reducing pollution.
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Question 1: Public debt sustainability

Suppose that, at time $t-1$, the GDP of a country is 1000 billion euros and public debt is equal to 500 billions. The interest rate and the growth rate of the GDP between period $t-1$ and period t (assumed both to be constant) are, respectively, 7% and -2% (so that, the GDP performs a decrease between $t-1$ and t).

Assuming that the government wants to run a public future public expenditure of $G_t = 200$ billions in period t and wants to pursue a debt stabilization policy between the two periods $t-1$ and t , find:

- the revenues from taxes T_t
- and the total amount of public debt B_t

What is the growth rate of public debt between the two periods?
Is it larger or lower than the growth rate of the GDP?

debt stabilization = trasformare in percentuali
percentuali = anche n
purc = solo r

GDP = 1000
 $B_{t-1} = 500$

$r_{t-1} = 0.07$
 $n_{t-1} = -0.02$ } also t

$G_t = 200$

debt stabilization ($b_t - b_{t-1} = 0$)

$T = ?$

growth = ?

$B_t = ?$

larger or lower than n GDP?

~~GDP in t = 1000 - (0.02) = 980~~

$b_t - b_{t-1} = g - t + (r - n) b_{t-1}$

$0 = \frac{200}{980} - \frac{T}{980} + (0.07 + 0.02) \frac{500}{1000}$

$\frac{T}{980} = 0.2 + (0.09)(0.5)$

$$\frac{T}{980} = 0.2 + 0.045$$

~~980~~
$$\frac{T}{980} = 0.245 \cdot 980$$

$$T = 240.1 = 244.02$$

$$B_t = G - T + (1+r) B_{t-1}$$

$$B_t = 200 - 244.02 + (1.07)(500)$$

$$B_t = -44.02 + 535$$

$$B_t = 490.98$$

gradrate

$$\frac{490.98 - 500}{500} = -0.01$$

$$\frac{980 - 1000}{1000} = -0.02$$

Question 2: Evaluation of Public Expenditure

The government has to choose between two different projects:

1. Project 1 is organized in six years; the flows happen at the end of each period. It costs 100000, incurring immediately, and yields a return of 50000 for the first three years; in the fourth year, it yields a return of 50000, but the government has to sustain a cost of 20000 in order to make some necessary innovations to the structure of the plan; in the fifth year, it is able to generate a positive return of 60000, while in the last year the revenue is of 50000, but there is a cost of 10000 to close the project. The government assumes that, for the first four years, the discount rate should be 10%, while it is more appropriate to consider a discount rate of 15% in the last two years.

2. Project 2 is organized in four years; the flows happen at the beginning of each period. It costs 50000, incurring immediately, and yields a return of 35000 for the first three years; in the fourth year, it yields a return of 40000, but the government has to sustain a cost of 20000 in order to close the project. The government assumes that it is safe to consider a constant discount rate of 5% for the entire duration of the project.

Using the two tables below, please evaluate these two projects and determine if they are acceptable or not.

Second, find which is the best one, according to the Present Discounting Value approach (cost-benefit analysis).

Finally, consider that the benefits and the costs of the chosen project, according to the government's decisions, are not equally redistributed among societal groups: indeed, the two thirds of the benefits are given to the poorest group of the society, while the two thirds of the costs are sustained by the richest group; discuss in which conditions the government should either accept or reject the project.

Project 1

	Benefits (returns)	Costs	Profits	Discount rate	Present Discounting Value
0		-100000	-100000	1	-100000
1	50000		50000	$\frac{1}{1.1} = 0.9$	45000
2	50000		50000	$\frac{1}{1.1^2} = 0.82$	41000
3	50000		50000	$\frac{1}{1.1^3} = 0.75$	37500
4	50000	-20000	30000	$\frac{1}{1.1^4} = 0.68$	20400
5	60000		60000	$\frac{1}{1.15^2} = 0.49$	29400
6	50000	-10000	40000	$\frac{1}{1.15^4} = 0.43$	17200
Total					90000

Project 2

	Benefits (returns)	Costs	Profits	Discount rate	Present Discounting Value
0		-50000	-50000	$\frac{1}{1.05^0} = 1$	-50000
1	35000		35000	$\frac{1}{1.05^1} = 1$	35000
2	35000		35000	$\frac{1}{1.05^2} = 0.95$	33250
3	35000		35000	$\frac{1}{1.05^3} = 0.90$	31500
4	40000	-20000	20000	$\frac{1}{1.05^4} = 0.86$	17200
Total					66950