

**INSTRUCTIONS: PLEASE READ CAREFULLY**

- This exam has 5 questions, numbered 1 to 5, with subquestions.
- In Question 1 you should choose two, and only two subquestions.
- In Question 5, you should choose one, and only one subquestion.
- This is a open book exam. You can access any printed material and only PDF documents on your laptop or tablet. No other software can be used.
- Please have your ID ready to be checked.
- Please respect the line/page limits in each answer.
- The invigilator will not answer any queries during the exam. If you have a question that does not allow you to proceed with the answer, write down the assumption or assumptions that you deem necessary in order to proceed.
- **Communication between students, access to any written material, or to tablets and mobile phones is strictly prohibited during the exam. Failure to comply with this rule results in failing the course and is considered a serious breach of academic honesty. It will be duly communicated to the competent School authorities.**
- The exam lasts 2h30. The suggested time for completion is indicated in each question. It totals 135 minutes, allowing you a 15-minute slack.

*Good Luck!*

1. (2 points, 10 minutes) Give a brief definition of **two** of the following concepts. Feel free to complement your definition with an example. (Maximum 10 lines per definition.)

- (a) Pigouvian taxes.
- (b) Cycles in binary agendas.
- (c) Positive externality (with an example).
- (d) Market failures.

2. (6.5 points, 45 minutes) When deciding whether or not to get tested for covid, an individual balances the benefit, stemming from having access to certain events and venues, learning about her own health, and the potential risks to infect beloved ones, among others, with the cost to be tested. The cost involves the physical discomfort of the test, but also the time it takes to travel to the nearby health facility or pharmacy, the waiting time, and the price. The marginal benefit of a covid test is  $b = \alpha/t$ , where  $t$  stands for the number of tests taken by the individual in a given month, and  $\alpha$  is a positive constant. The marginal cost is equal to  $t = 2 + p$ , where  $p$  is the monetary price of the test. The current price is  $p = 2$ .



Public Economics Exam  
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Susana Peralta

- (a) The health authorities know that there are two types of individuals. <sup>①</sup> Concerned ones get tested twice a month, whereas <sup>②</sup> unconcerned ones never get tested. Obtain the value of  $\alpha$  for each type of individuals.

In what follows, take  $\alpha = 8$ .

- (b) The health authorities want to incentivise people to be tested more. Why do you think this would be the case?
- (c) The municipality of Lisbon decided to subsidise all tests fully, that is, set  $p = 0$  for the individuals. How many tests will each individual take in a given month?
- (d) Compute the social marginal benefit of each individual test that makes the decision to set  $p = 0$  the optimal Pigouvian correction for the under-testing.
3. (6 points, 40 minutes) Internet connections are supplied in country FiberLand by a monopolist, Link. The monopolist supplies internet connections with a marginal cost of 1. It sets a price of 10. The demand for internet connections is given  $Q = 100 - P$ , where  $Q$  denotes the quantity and  $P$  the price of connections.  
 $MC = 1$   $P = 10$  Demand =  $Q = 100 - P$
- (a) How many internet connections does Link sell? And how much profit does it make?
- (b) The telecommunications regulator in FiberLand is considering opening up the market to more firms. The market will thus become competitive, and supply internet connections at a price equal to the marginal cost. Plot a graph comparing the consumers surplus in both the monopoly and the competitive situation.  $P = MC$
- (c) Link has hired a lobbying expert to try and stop the government from opening up the market to competition. How much is it willing to pay this expert? If you could not answer 3a, assume that Link makes a profit of 800 when acting as a monopolist. Profit = 810
- (d) Comment the following sentence, relating it to public good provision: "If the regulator adapts the new rules and lets more firms enter the market, the gain by consumers is higher than the loss by Link. However, it is unlikely that consumers are more effective at lobbying the government than Link".

4. (4 points, 20 minutes)

The following quote is from the UK government's website "Several different study designs are used in outcome evaluations, including (...) quasi-experimental studies with matched control groups, and randomised controlled trials. Each of these designs provides a different level of evidence about the effectiveness of an intervention: they vary in the extent to which they are able to attribute any observed change to the intervention (as opposed to other initiatives taking place at the same time) and demonstrate cause and effect (see causality for more information)."

- (a) Distinguish a quasi-experiment from a randomised controlled trial. (Maximum half page.)
- (b) Discuss the part about the extent to which they [the methods] are able to attribute any observed change to the intervention. (Maximum half page.)

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Make sure you only answer 5(a) or 5(b)

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5. (2.5 points, 20 minutes) Choose one of the quotes below to comment, highlighting the economic concepts that help understanding it. (Maximum 20 lines.)

- (a) The following quote is adapted from The Financial Times, "Airbnb using independent host groups to lobby policymakers" (March 21, 2021).

"Airbnb is using seemingly independent groups of hosts on the platform to lobby policymakers and help it fend off threats to its business model from tighter regulation. The accommodation-booking platform has more than 400 home-sharing clubs, groups of owners who use Airbnb to rent out rooms. Airbnb says the clubs exist to help owners build new relationships with other hosts, and to discuss issues in their communities and help each other find more information about local rules. But the company also provides resources to the groups so that they can petition and lobby the local authorities seeking to clamp down on Airbnbs activities. (...) Airbnbs grassroots organisations were vastly better resourced than their opponents, who tended to be community groups objecting to the platforms impact on local housing markets, where it stands accused of driving up the cost of rent."

- (b) The following quote is adapted from The Financial Times, "Africas third wave: What haunts me a lot is the Indian scenario" (June 23, 2021).

"Sub-Saharan African countries have procured just over one in 10 of the worlds roughly 8bn doses of approved vaccines on order (...). Countries from Malawi to Rwanda are reaching the end of supplies they have received from Covax, the global vaccine procurement body that has shipped just under 90m doses worldwide so far. Getting these doses delivered and distributed has been hard. South Africa has ordered vaccines for about three-quarters of its population of about 58m, including 31m doses from Johnson & Johnson. But a month into a mass campaign targeting the over-60s, just under 4 per cent of South Africans have received doses. Ramaphosas government has fumbled some of the rollouts logistics, including a sluggish electronic registration system that is difficult for people in rural areas to access. (...) Other countries are still battling with testing infrastructure, including Uganda (...) 'We have no way to know how far the virus has spread in Uganda because of the low testing capacity in the country.' "

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