International Economics Olympiad

Moscow

Economics

Problems

Solve no more than 4 problems out of 5. Indicate your choice of problems to grade on page 3 of your paper.

If you provide solutions for all 5 problems, all of them will be commented by the Jury but only 4 will add to your score. In this case, if you do not specify which to grade, the maximum grade of 5 will be excluded.

Every problem is worth 30 points.

Problem 1. "True cost?" *(30 raw points)*

In Moscow, there exists a restaurant chain that uses the following pricing mechanism.

A consumer must pay some entrance fee, after that they can order whatever they want for the price that is equal to the cost of ingredients. The price of an entry ticket depends on the time of the day (being higher in the evening than in the morning), but prices of menu items remain the same and are very low for Moscow standards.

For instance, a portion of pasta costs only about \$2–2.5, the price of a ribeye steak is about \$4, a burger with grilled tiger prawns and arugula can be purchased for merely \$3. For only \$3–4 a customer can drink a glass of decent wine. These prices are very low compared to other restaurants in the city. Customers must eat and drink inside; if they want to take something away, the price doubles.

a) *(15 rp)* One of the well-known models of price discrimination explains how similar pricing scheme can be profitable for a seller (for instance, in Disneyland entrance fee is high while using most of its facilities is free). Using this model, explain, how such pricing technique helps this restaurant maximize profits (use graphical analysis where appropriate).

b) *(15 rp)* While such a scheme is successful in the theme park industry and restaurant business, we don't see supermarkets or clothes shops pricing this way. Explain why.

Solution

a) Two things are important here:

1. **Different entry fees for different times of the day**. This works because in the evening and at night people are ready to pay more in restaurants. This is because they most likely want to have a fancy dinner with vine etc. rather than a small breakfast that they can otherwise (if prices are high) cook at home. Similar things are sometimes called a third-degree price discrimination.
2. **Entry fee by itself**. This pricing is sometimes called two-part tariff (second-degree price discrimination) and the logic behind it is as follows. If the restaurant use a simple linear price (that is, some fixed amount per meal without any other fees), he has a dilemma. If the price is way higher than marginal cost, profit per meal will be high, but the restaurant will undersell, thus leaving some potential profit unreceived. On the other hand, low linear prices close to the marginal cost will allow to sell many meals, but each meal will bring little profit, leaving the surplus to the customers.
   Two-part tariff is a solution: thus the restaurant can make prices of single meals low (close or equal to marginal cost) and make consumers buy more of them. Simultaneously, the restaurant can remove the surplus from the customers via entry fee. Effectively, the more meals a consumer buys in the restaurant, the cheaper they become on average (because of the fixed entry fee).

b) The crucial feature of the restaurant is that a customer must consume meals that he ordered *inside*. Note that if a customer wants to take something away, the price doubles — this was sort of a hint in the question. In a supermarket or a clothes store consumers would cooperate to pay entry fee only once and buy a lot of stuff. In a restaurant where you have to eat inside it is impossible.

Points distribution

a) 5 Different entry fees explained

a) 10 Entry fee explained

b) 15 Answer is clear and fully covers the question.

Problem 2. "Substitutes and complements" *(30 raw points)*

Consider two commodities, A and B, that are substitutes in consumption.

a) *(10 pr)* Suppose that the number of consumers of good A increased, thus shifting the demand for it. Assuming perfect competition in both markets, what can you say about the resulting change in the price of B? Explain in detail.

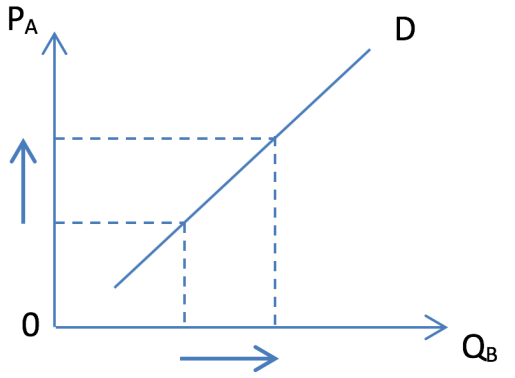
b) *(10 pr)* Suppose that A and B are not only substitutes in consumption but also complements in production. What can you say about the resulting change in the price of B? Explain in detail.

c) *(10 pr)* Give a real-world example of two commodities that are both substitutes in consumption and complements in production.

Solution

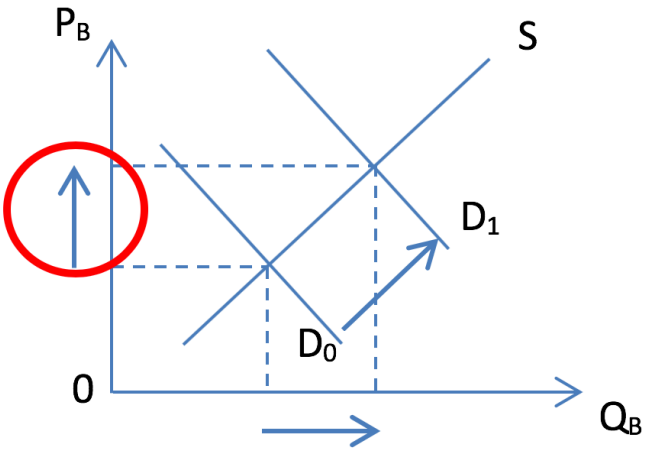
a) If number of customers for good A increases, this means that demand for good A will increase and demand curve will shift to write thus increasing price and quantity demanded for product A (see Pic.1)

Growing demand for product A will increase the pressure on the price of the product A, thus causing consumers reconsider the choice of product A and switching to substitute product B (see Pic.2)



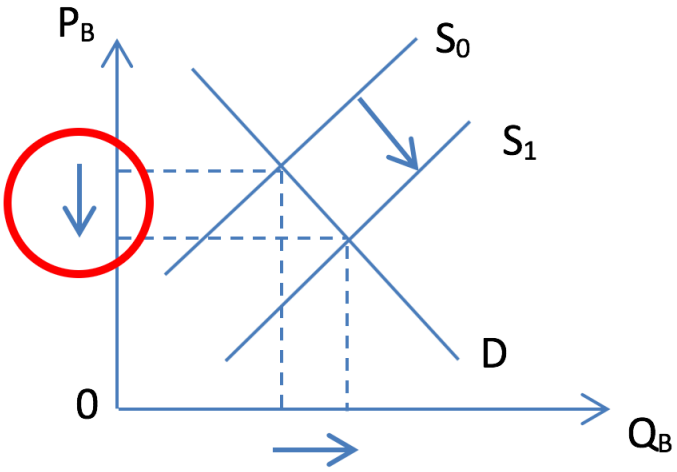
Pic.2. Substitute products A and B (case of cross-price)

If customers are switching to product B then this puts also a pressure on the price of product B. Price of product B increases.



Pic.3. Demand for product B

b) If goods A and B are also complements in production, increase of quantity supplied of A will increase also the supply of B thus causing the downward pressure on the price of B (see Pic. 4).



Pic.4. Demand for product B

Combining Pics 3 and 4, we infer that the effect on the price of B is unclear.

c) Complements in production are two or more goods that are jointly produced using a given resource. The production of one good automatically triggers the production of another, often as a by-product. Both goods are simultaneously produced from the same resources. Production of one good does not decrease the production of the other, as would be the case for substitutes in production.

Real-life examples:

1. Oil and Gas
2. Chicken wings and chicken breast
3. Milk and yogurt

Points distribution for all parts

0	No significant answer or answer that doesn't fit the question
5	Partial answer. Answer fits the question, but some parts are not explained well or unclear
10	Full answer. Answer is clear and fully covers the question.

Problem 3. "Letting the Briber Go Free" *(30 raw points)*

A situation where a government official uses his position to acquire illicit benefit is called corruption. Corruption is a big problem in many countries and governments design different policies to curb it. According to one of the proposed policies (sometimes called *the Basu proposal*[1]), the government should make it legal to give bribes and severely punish only bribe-takers.

a) *(10 rp)* Explain the logic behind this proposal: why may it work?

b) *(10 rp)* Suppose Alice and Beatrice are trying to pass a test to get the driver's licenses. Alice is a good driver. However, Beatrice is a hazard to other drivers and is about to fail the test. The examiner is corrupt and tries to maximize his revenue from bribes. How will implementing the Basu proposal might affect Alice and Beatrice?

c) *(10 rp)* Generalise the example above: for what *class of bribes* the Basu proposal can be an efficient policy?

Solution

a) The mechanism of asymmetric punishments creates incentives for the bribe-giver to report the facts of corruption (blow the whistle), and so, by backward induction, reduces official's incentives to take bribes.

It is not enough to say that increasing the fine for corrupt officials decreases their incentives to ask for bribes. There is nothing special about increasing fines (why not increase fines for both sides?), Basu proposal is special because it encourages whistle-blowing.

b) If the examiner is corrupt, he will try to receive bribes from both ladies, but these are different types of bribes.

In the case of Alice, what official does is called *extortion* (*mzdoimstvo* in Russian) — he tries to receive bribe for performing legal actions that are supposed to be free of charge. In this case, implementing the Basu proposal will create perfect incentives for Alice to blow the whistle, but probably the official will expect that so implementation is likely to reduce corruption.

Things are different for Beatrice. In her case, the examiner will try to receive the bribe for something he is not supposed to do at all (issuing the licence for a person who cannot drive) — in Russian it is called *lihoimstvo*[2]. Of course, if Beatrice rats the examiner out after Basu proposal implementation, she will receive her bribe back but will also have to return her driver's licence because it was issued illegally. But why apply for the licence in the first place? It was a voluntary, mutually beneficial transaction between her and the examiner (although producing negative externalities for society), so cancelling it will make ger worse off. Thus, implementing Basu proposal in the case of Beatrice won't be effective.

c) The answer follows from **b)**: Basu proposal can be an efficient policy only for those cases of corruption when the official tries to extort money for doing his official job.

[1] See Basu, K. (2011). *Why, for a Class of Bribes, the Act of Giving a Bribe should be Treated as Legal.*

[2] For more about the difference between *mzdoimstvo* and *lihoimstvo*, see *Bardhan, P. (1997). Corruption and development: a review of issues. Journal of economic literature, 35(3), 1320-1346.* Bardhan actually uses these Russian words to describe different types of corruption.

Points distribution for all parts

0 No significant answer or answer that doesn't fit the question

5 Partial answer. Answer fits the question, but some parts are not explained well or unclear. For example, if in part **a)** the contestant only says that increasing the fine for the official will create a disincentive to extort bribes.

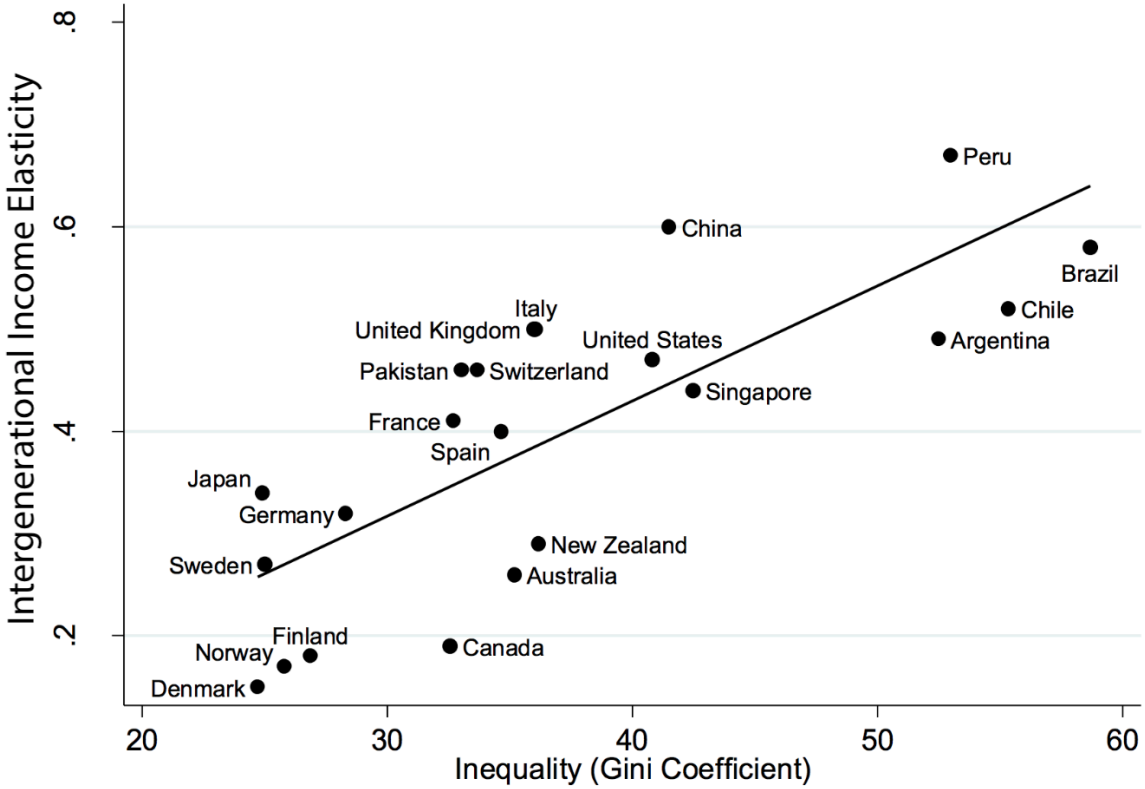
10 Full answer. Answer is clear and fully covers the question.

Problem 4. "Intergenerational Elasticity" *(30 raw points)*

The degree to which members of society have equal opportunity of success, irrespective of their family background, is often measured by *intergenerational elasticity of income*. Roughly, it measures what percentage of inequality between members of the generation is passed on to the members of the next generation. Here is a definition from *The Economy* by CORE:

> *[C]onsider two pairs of fathers and children. The father in the first pair is richer than the father in the second. The intergenerational elasticity measures how much richer the child of the well off father will be than the child of the poorer father. An elasticity of 0.5, for example, means that if one father is 10% richer, then his child, when grown up, will be on average 5% richer than the other child.*

The following graph show the relation between inequality and intergenerational income elasticity. Sometimes it is called *The Great Gatsby Curve*[3].



Corak, M. (2012). *Inequality from generation to generation: The United States in comparison.*

Provide two distinct economic arguments that explain the positive correlation between current inequality (measured by the Gini coefficient) and intergenerational inequality.

Solution

In grading we valued clarity of the exposition and well connected arguments. We took into consideration that the statement of the question does not specify whether the Gini coefficient refers to pre-or post-tax income.

In the answer, students should address two arguments in line with those presented in the following list:

[3] The term is attributed to Alan Krueger.

- Ability: more able parents have higher income and transmit their ability to their kids (when income represents labor productivity).
- Inheritance: higher income parents accumulate more wealth and their children receive a higher inheritance (income from wealth).
- Arguments related to imperfections
  - Children from higher income parents enjoy better opportunities to increase their income via access to education, parental care, ...
  - Children from higher income families do no suffer from credit constraints
  - Segregation and discrimination
  - Inequality leads to institution failures: favoritism in the labor market, corruption...

Point Distribution

5 points	Descriptive answer
10 points	Some argumentation but not fully developed
15 points	One sound reason
20 points	One sound reason with a second reason not fully developed
25 points	Two reasons with some gaps in the argumentation
30 points	Two distinct sounded reasons

Problem 5. "Current Account Deficit" *(30 raw points)*

During his lecture at Sberbank Corporate University, Ilya Androsov was talking about countries that find themselves in a situation of current account deficit.

a) *(15 rp)* Using the example of Turkey, explain why this deficit can be detrimental to economic growth.

b) *(15 rp)* Can you tell a story where such current account deficit can be beneficial for the economy of the country?

Solution

a) Ideal answer: current account deficit is balanced by an inflow of foreign capital. It means that the country is borrowing abroad. To establish if this borrowing is good or not, one needs to look at the use of the credit and the terms of credit.

Turkish banks were borrowing in foreign currencies (dollar and euro-denominated bonds and loans), which means that they were exposed to the currency risk. They tried to address this exposure by extending loans to their customers in dollars as well, but that only transferred the exchange-rate risk exposure off their balance sheets and to the balance sheets of their customers. In the end, banks were still exposed to the exchange rate risk through default risk of their customers. Moreover, the loans extended were of short maturity. All this means that the terms of the credit that Turkey got were unfavorable (short credit with exchange-rate exposure).

Turkey used the credit to finance its construction boom. Despite part of the money going to the construction of infrastructure, there was a also a substantial fraction that financed construction of residential and commercial real estate that had little potential to increase the country's GDP in the future. From the lecture we learned that investment projects were of poor quality as lending standard deteriorated, also bringing into question the ability of such projects to boost GDP growth. Hence, the way Turkey spend this borrowed money was not generating GDP growth.

Grading: (mention one of each)

5pts: Unstable currency. Currency exposure of banks through borrowing in USD, but lending in lira.

Substantial leverage and accumulated interest expense.

10pts: Mismatch between maturity of loans and investments. Rollover risk.

Currency exposure of banks through default risk of loans. Deterioration of credit standards.

15pts: Investments in construction projects, residential and commercial. i.e. boosting consumption.

b) Ideal answer:

If the international loans are done at good terms and the funds are invested wisely, then current account deficit can be beneficial for a country. Example of good loan terms - USA, that is able to borrow in $, its domestic currency. Hence, its counter-parties are exposed to the exchange rate risk, not the USA.

If a country, on top of that, is using borrowed funds not for consumption, but for invest-

ment goods, then its GDP growth is likely to accelerate in the future.

Quoted from one of the submitted answers: "Imagine a scenario in which lots of companies in a country with lots of sunshine decided to stop their activities and start a joint venture in which with funds or loans partly from abroad they made a huge system that got energy from the sun (solar panels, etc) and produced enough energy not only for the country but also for the surrounding ones. This way, the current account would be in deficit for several years but when the country started being fueled by green energy, energetically efficient and sold energy to there countries not only would the current amount deficit be greatly reduced but also lots of economic activities surrounding the energy sector would develop, thus boosting the country's economic activity."

Grading: (mention one of each)

5pts: Stable currency.

Investment in education by foreign aid agencies.

10pts: Loans in domestic currency. Example: USA. Long-term credit.

15pts: Investments in production capacity, not consumption.