Олимпиада НИУ ВШЭ для студентов и выпускников – 2019 г.

Направление: «Экономика»

Профили: «Экономика» **КОД – 110**

Время выполнения задания – 180 мин., язык – русский/английский

Решите все три задачи
Веса задач приведены в скобках

Инструкции

- Решение может быть представлено как на русском, так и на английском языке. Никаких дополнительных баллов, впрочем, как и штрафов, за решение на английском языке не предусмотрено.
- Решение должно быть хорошо структурированным, изложено грамотным языком, а почерк – распознаваемым. Ответы на качественные вопросы должны быть убедительно аргументированы, но длинные рассуждения, не относящиеся к сути дела, могут негативно повлиять на оценку.
- Все шаги в решении должны быть обоснованы, все вычисления должны присутствовать в работе. Калькуляторами пользоваться запрещено.
- Черновики не предусмотрены, решение сразу оформляется на чистовик.
- Если приведенное решение является неверным, перечеркните его (перечеркнутое решение не проверяется) и приведите корректную версию.
- При наличии нескольких вариантов решения одного и того же задания, проверяющий сам определяет, какое из решений подлежит проверке, а апелляции с просьбой проверить другой вариант решения не принимаются.

1. (40 points) Answer the following short questions

a) Starting from January 1, 2019 new customs rules are introduced in Russia that among other things concern internet-shopping abroad. According to these rules all purchases above 500 euro are subject to a customs duty equal to 30% of the excess above this limit. In case of a violation (e.g. if a false customs declaration is submitted) not only does the customer have to pay a duty in full, but she is also fined with a half of the duty evaded.

Consider a consumer A. with a 1000 euro wealth who has made a 700 euro purchase in a foreign internet shop. Trying to save on her duty payments, A. can declare a lower sum of the purchase. Experts say that the declaration will be checked with the probability 75% and if so, the actual sum of the purchase will be revealed with the probability 80%. Assume that A's preferences are represented by an expected utility function with an elementary utility function $u(x) = \ln x$. What sum of the purchase will she state in the customs declaration she submits?

b) Consider a perfectly competitive market for a good, the demand for which is formed by a representative consumer, while the supply is formed by a representative firm. Suppose the government is discussing a new social program. According to it the consumer receives a specific subsidy of s currency units per

every unit of the good purchased, and the producer is charged with a share γ of its profit , $0<\gamma<1$. Assume the equilibrium production and consumption are positive. Is it true that such γ and *s* can be found that the social program will lead to an efficient (Pareto optimal) value of production and consumption?

c) Increasing treat of the US government to forbid (US residents) buying Russian government bonds made Russian Central Bank to increase it's refinancing rate in September 2018. The main argument of the Bank of Russia is that inflation expectations and so inflation can burst in the nearest future because of sanctions. Explain intuitively the mechanisms (1) how sanctions in such a form can lead to the increase in inflation in Russia and (2) how BoR struggle with it.

d) In 2018 Russian Government introduced the new budget rule according to which all oil export revenues from oil price more than 40$ per barrel are used to buy foreign currency and store it in the National Wealth Fund. The reason behind the rule is to decrease exchange rate volatility. However, Ministry of Finance notice, that this leads to the strengthening of turmoil in the foreign exchange market in the presence of capital outflow. Explain intuitively (1) how the use of the rule could decrease rouble's volatility if oil prices rise and (2) why the outcome is opposite when capital outflow is huge.

2. (30 points)

A representative consumer and a representative firm model is assumed. The consumer utility function is $u^A(q^A,l^A)=v^A(q^A)+l^A$ where q^A is the amount of an aggregate consumer good (or consumption expenditures in case the aggregate consumer good price is normalized to one), l^A is time for leisure, $\left(v^A(q^A)\right)'>0$ for all $q^A>0$, $\left(v^A(q^A)\right)''<0$.. A time endowment is denoted by $\bar{L}^A$. The firm uses labor to produce the aggregate consumer good. It is required $L=c(Q)$ units of labour to produce Q units of the aggregate consumer good where $c'(Q)>0$, $c''(Q)>0$.

The production of the aggregate consumer good affects the health of the consumer causing her to waste time sick reducing the time available for leisure or labour. A function $e(Q)$ represents time for illness where $e'(Q)>0,\ e''(Q)>0$. So the consumer divides her time endowment $\bar{L}^A$ between leisure time (l^A), labour time (L^A), and illness time ($e(Q)$).

(a) Is the interior competitive (Walrasian) equilibrium allocation optimal from the point of view of society in the economy? The answer is acceptable only if there is a full and correct substantiation for the economy in question. If you think that the equilibrium allocation is not optimal then indicate whether the aggregate consumption good is overproduced or underproduced in equilibrium compared to the optimal amount. Explain the result.

In clauses b) and c) suppose that $v^A(q^A)=400\ln q^A$, $c(Q)=8Q^2$, $e(Q)=\frac{9}{2}Q^2$, $\bar{L}^A=500$.

(b) Find the competitive (Walrasian) equilibrium (i.e. a set that will indicate the equilibrium wage rate, the amount of aggregate good produced and consumed, the labour time, ant the leisure time) and the allocation that is optimal from the point of view of society. (Note: the result obtained in (b) cannot be a proof that the statement in (a) is true because it is a special case.)

(c) Suppose that the government imposes a quantity tax on the company's product (it means that the firm has to pay a certain amount to the government for each unit of the good it produces). The tax revenue is fully transferred to the consumer in the form of a lump-sum subsidy. Is there a tax rate at which the equilibrium will be optimal from the point of view of society? If you think it is then find it. If you think it isn't then prove that is true.

3. (30 points)

There are two types of individuals in the economy: rich and poor. The consumption expenditures of the rich and the poor are given by $C^r = 400 + 0{,}4Y(1 - t^r)$ and $C^p = 50 + 0{,}8Y(1 - t^p)$ respectively. Investment and government expenditures are exogenous and equal to 80 and 120 respectively.

(a) Explain, why marginal propensity to consume is higher for the poor individuals, than for the rich?

(b) Find the equilibrium values of income and consumption of both rich and poor, if the tax rates are the following: $t^r = t^p = \frac{1}{2}$.

(c) Suppose, that the government wants to equalize consumption of both types of individuals and so introduces two following schemes:

- (i) Rich individuals pay lump-sum tax Tx and it is transferred to the poor individuals as lump-sum transfer Tr. Find the value of this tax.
- (ii) Poor individuals are granted with the lump-sum transfer. Find the value of the transfer.
- (iii) Find analytical expressions for the transfers multiplier in (i) and (ii) and compare. Find the values of these multipliers and explain the difference intuitively.
- (iv) Compare the equilibrium values of income using transfer multiplier and government budget balance. Explain your results intuitively.