Олимпиада для студентов и выпускников – 2017 г.

Направление: «Экономика»

Профиль: «Экономика» **КОД - 110**

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

Решите задачи. Вес каждой задачи приведен в скобках.

- 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. [48 points] Answer the following short questions:

(a) [8 p.] ‘International trade can contribute to the spread of economic recession all over the world’. True or false? Explain.

(b) [8 p.] On November 8, 2016 the Indian Prime-Minister announced that starting from November 9, all the 500 and 1000 rupee notes stop to serve as a medium of payment. These banknotes can be either exchanged for the new banknotes up to some limit or put on bank deposits. Which consequences of this reform do you expect in the short and in the long run, if the 500 and 1000 rupee notes constituted around 90% of all money in circulation, more than 90% of deals were made in cash and 80% of the population did not have bank accounts?

(c) [8 p.] Suppose that in country A the rate of population growth is higher than in country B. All other parameters are identical for both countries.

(i) Do you expect that countries will converge to the same level of GDP per capita if both economies are closed?

(ii) Does your answer to the previous question change if both countries become open to international capital flows? Explain and illustrate your answers using Solow model.

(d) [8 p.] Comment on the following statement: ‘When a distortion cannot be removed from one market, it is not generally efficient to ensure that all other markets are distortion-free’.

(e) [8 p.] Comment on the following statement: “Per unit subsidy on good X can never be better for an individual than a monetary transfer of the same value but can be worse.”

(f) [8 p.] One well-known empirical study demonstrates that US power plants that were strategically located near coal mines to benefit from low transportation costs have contracts with their coal suppliers that cover significantly longer time span than contracts of other power plants. How would you explain this observation?

2. [26 p.] Consider an economy with fixed stock of capital equal to 4. There are two regions $(i = 1, 2)$ in this economy and the capital tax rates $t_i \geq 0$ are set by the regional authorities. Capital is fully mobile and capital owners allocate the capital between the regions on the basis of after-tax returns given by $R_i = 5 - b_i K_i - t_i$ where $0 < b_1 \leq b_2 = 0{,}5$ and K_i is the capital allocated to region i. The total capital supplied will be equal to 0 if the after-tax returns are negative in both regions.

(a) Suppose that the tax rates are fixed, find the allocation of capital between the two regions, assuming that tax rates are small enough and both regions attract some capital.

(b) Suppose that regional authorities choose the tax rate that maximises the regional tax revenue. Consider a game, where at the first stage the local (regional) authorities simultaneously and independently decide on the tax rates and then capital owners observe these rates and choose the capital location.

(i) Find the equilibrium tax rates.

(ii) Compare the equilibrium tax rates and explain the result.

(c) Find the effect of increasing b_1 on equilibrium tax rates and explain the results.

(d) Let $b_1 = 0.5$ and suppose that the tax policy is centralised. These tax rates are set by the federal government that maximises the sum of tax revenue from both regions.

(i) Find the resulting tax rate t assuming $t_1 = t_2 = t$.

(ii) Compare the tax rate found in (i) with equilibrium one (for $b_1 = 0.5$) and explain the result.

3. [26 p.] A small open economy (Home country) can be described by the Mundell-Fleming model (IS-LM-BP model) with the following equations:

$$\boldsymbol{Y = a_0 + a_2 r + a_3 Q}$$

$$\boldsymbol{\frac{M}{P} = b_0 + b_1 Y + b_2 R}$$

$$\boldsymbol{c_0 + c_1 Y + c_2 (r - r^*) + c_3 Q = 0},$$

where $\boldsymbol{Y}$ is the real output, $\boldsymbol{r}$ is the real interest rate, $\boldsymbol{Q}$ is the real exchange rate (real depreciation is an increase of $\boldsymbol{Q}$), $\boldsymbol{M}$ is the nominal money supply, $\boldsymbol{P}$ is the price index, $\boldsymbol{R}$ is the nominal interest rate, $\boldsymbol{r^*}$ is the real interest rate of the Rest of the world, price indices are constant both in the Home country and in the Rest of the world, $\boldsymbol{a_0, a_2, a_3, b_0, b_1, b_2, c_0, c_1, c_2, c_3}$ are non-zero real numbers and $\boldsymbol{b_1 / b_2 < c_1 / c_2}$. The Marshall-Lerner condition is satisfied.

(a) Give the economic interpretation of the equations of the model and title them. What signs of parameters (if any) are implied by the macroeconomic theory?

(b) What are the endogenous variables of the model in case of the flexible exchange rate regime? Show graphically the impact of a change of the foreign interest rate ($\boldsymbol{r^*}$) on all endogenous variables of the model under the flexible exchange rate regime. [Hint: you may need more than one diagram]. Explain your answer.

(c) What are the endogenous variables of the model in case of the fixed exchange rate regime? Show graphically the impact of a change of the foreign interest rate ($\boldsymbol{r^*}$) on all endogenous variables of the model under the fixed exchange rate regime. [Hint: you may need more than one diagram]. Explain your answer.

(d) Derive necessary and sufficient condition(s) on parameters that guarantee that a change of the foreign interest rate has an equal impact on the domestic interest rate ($\boldsymbol{r}$) under flexible and fixed exchange rate regimes.