Econ 4382 - International Finance Fall 2022
Granados

Exam # 2

Answer Key

Answer the following questions. You can use a (1 page) notes sheet and a calculator (but no other devices).

Choose 5 questions to answer. Your grade is computed as a percentage of the sum of possible points of the choice.

1. (20 points) **BOP Transactions.**

   Show how each of the following would affect the U.S. balance of payments. Include a description of the debit and credit items, and in each case identify which specific account is affected (e.g., imports of goods and services, IM; exports of assets, EXA; and so on).

   (a) A California computer manufacturer purchases a $50 hard disk from a Malaysian company, paying the funds from a bank account in Malaysia.

   Example:

Description	BOP account	Account detail	Credit/Debit
Hard disk imported from Malaysia	CA ↓	IM (↑), TB(↓)	-$50
Decrease in Malaysian deposits owned by US firm	FA ↑	IM_A^F ↓	+$50

   (b) A U.S. tourist to Japan sells his iPod to a local resident for yen worth $100.

Description	BOP account	Account detail	Credit/Debit
iPod exported to Japan	CA ↑	EX (↑), TB(↑)	+$100
Increase in Japanese currency own by US tourist	FA ↓	IM_A^F ↑	-$100

   (c) The U.S. central bank sells $500 million worth of U.S. Treasury bonds to a British financial firm and is paid in pound sterling that are added to the foreign reserves.

Description	BOP account	Account detail	Credit/Debit
US bonds sold to British firm	FA ↑	EX_A^h (↑)	+$500M
Pound Sterling imported to US from UK	FA ↓	IM_A^F ↑	-$500M

   (d) A U.S. owner of Sony shares receives $10,000 in dividend payments, which are paid into a Tokyo bank.

Description	BOP account	Account detail	Credit/Debit
Export of factor services (capital factor income) to ROW	CA ↑	NFIA (↑), EX_{FS}(↑)	+$10000
Deposit in Japanese bank owned by US citizen	FA ↓	IM_A^F ↑	-$10000

   (e) The U.S. government forgives a $50 million debt owed by a developing country.

Description	BOP account	Account detail	Credit/Debit
Debt forgiveness	KA ↓	KA_{out} (↑)	-$50M
Decrease in foreign assets owned by US	FA ↑	EX_A^F ↑	+$50M

2. (15 points) **External Wealth**. Imagine the world has two countries, home and foreign and that exists for two periods $t = 0, 1$. There is no government or investment ($G = I = 0$). As we have assumed

usually, there are no expatriate workers so the only factor income comes from capital returns, and there are no valuation gains on wealth. However, **there are non-zero unilateral transfers** ($NUT \neq 0$). There is a level of pre-existing wealth in home W_{-1}. The interest rate on all assets (and liabilities) is the same and constant: r^*.

(a) Express the budget constraint of period 0 and period 1. These should be expression for the level of wealth in each period (W_0, W_1) with the trade balance and NUT flows in the right-hand side of the equations as well as the last period level of wealth.

$$W_0 = TB_0 + NUT_0 + (1 + r^*)W_{-1}$$
$$W_1 = TB_1 + NUT_1 + (1 + r^*)W_0$$

(b) Use that the terminal wealth is zero ($W_1 = 0$) and obtain a simple equation for the Long-run budget constraint, it should equal the negative of the present value of wealth with that of the other flows. Split the current account (CA) flows into trade balance flows and NFIA.

We substitute $W_1 = 0$ in the equation for wealth in the last period and solve for W_0:

$$W_0 = -\frac{TB_1}{1 + r^*} - \frac{NUT_1}{1 + r^*}$$

Now we replace this in the equation for the wealth in the initial period:

$$-\frac{TB_1}{1 + r^*} - \frac{NUT_1}{1 + r^*} = TB_0 + NUT_0 + (1 + r^*)W_{-1}$$

Rearranging:

$$-(1 + r^*)W_{-1} = TB_0 + NUT_0 + \frac{TB_1}{1 + r^*} + \frac{NUT_1}{1 + r^*}$$
$$\underbrace{-(1 + r^*)W_{-1}}_{(1)} = \underbrace{TB_0 + \frac{TB_1}{1 + r^*}}_{(2)} + \underbrace{NUT_0 + \frac{NUT_1}{1 + r^*}}_{(3)}$$

Here:

(1) : Present value (PV) of initial wealth
(2) : PV of trade balance flows
(3) : PV of net unilateral transfers flows
$(2) + (3)$: PV of CA flows

(c) The US is running trade balance deficits ($TB < 0$) the majority of years. For a near-zero level of wealth, how should the other current account flows be (NFIA, NUT) in order to facilitate that the long-run budget constraint holds? According that what we discussed in class, have the NFIA flows in the US behaved like that in the last decade?

The LRBC equates the negative of the present value of wealth (LHS) to the present value of the current account, given by the trade balances plus the present value of the NFIA flows (and other flows' payments such as NUT, KA). If the trade balance flows are persistently negative, and the wealth is near-zero (or low), the NFIA should compensate by being positive in most periods.

This has been the case in the US, it has had positive NFIA in the majority of years although these flows are not enough to compensate the trade deficits. Also, more recently the NFIA haven't been high and positive as before so this compensating effect is weakening.

3. (20 points) **Gains from Financial Globalization - Investment**. Consider a country that lives for two periods. It can access the international borrowing and lending market with $r = 0.1$. The country has an investment opportunity. If it chooses to invest \$10 today, its GDP will be $Q0 = \$1000,\ Q1 = \$1150$. If it does not invest, its GDP will be $Q0 = \$1000,\ Q1 = \$1100$. The household in the country has the utility function $U = \min(C_0,\ C_1)$

   Assume there is no government expenditure and no initial wealth. Thus $GNE = C + I$ and $W_{-1} = 0$

   Should the country invest? What are the optimal consumptions with and without investing?

   We know from the LRBC that:

$$C_0 + I_0 + \frac{C_1}{1+r} = Q_0 + \frac{Q_1}{1+r}$$

   Furthermore, we use the solution from the utility maximization of the households and substitute $C = C_0 = C_1$

$$C(1 + \frac{1}{1+r}) = Q_0 + \frac{Q_1}{1+r} - I_0$$

   Thus we can replace r and solve for C:

$$C = \frac{1}{1 + \frac{1}{1.1}} \left(Q_0 + \frac{Q_1}{1.1} - I_0 \right)$$

   Then we are going to replace the GDPs and Investment in each case:

   If country invests: $Q0 = \$1000,\ Q1 = \$1150$ and $I = 10$

$$C = \frac{1}{1 + \frac{1}{1.1}} \left(1000 + \frac{1150}{1.1} - 10 \right) = 1066.2$$

   If the country does not invest: $Q0 = \$1000,\ Q1 = \$1100$ with $I_0 = 0$

$$C = \frac{1}{1 + \frac{1}{1.1}} \left(1000 + \frac{1100}{1.1} - 0 \right) = 1047.6$$

   It is better to invest as it allows a higher stream of consumption ($1066.2 > 1047.6$ every period)

4. (15 points) **BOP flows** . Based on the previous question, what is the GNE, TB, CA and FA in each period ($t = 0$ and $t = 1$) if the country invests? (here we are assuming $KA = 0$)

	Period 0	Period 1
GNE	1066.2 + 10 = 1076.2	1066.2
TB	1000 - 1066.2 - 10 = -76.2	1150 - 1066.2 = 83.8
CA	-76.2	83.8 + 0.1(-76.2) = 76.2
FA	76.2	-76.2

5. (15 points) **Open vs. Closed economy models and exchange rate regimes**

   (a) In the context of an IS-LM-FX model (or of an open economy), when the interest rate falls, output increases. Why is this effect stronger in an open economy compared to a closed economy? Explain your answer.

   In closed economy we only account for the effect on investment (increases). In open economy we also have an increase in the trade balance after a depreciation of the ER which is expansionary and raises the output further.

   (b) Is the effect of an expansionary fiscal policy stronger under a floating exchange rate regime or under a fixed rate regime. Explain your answer.

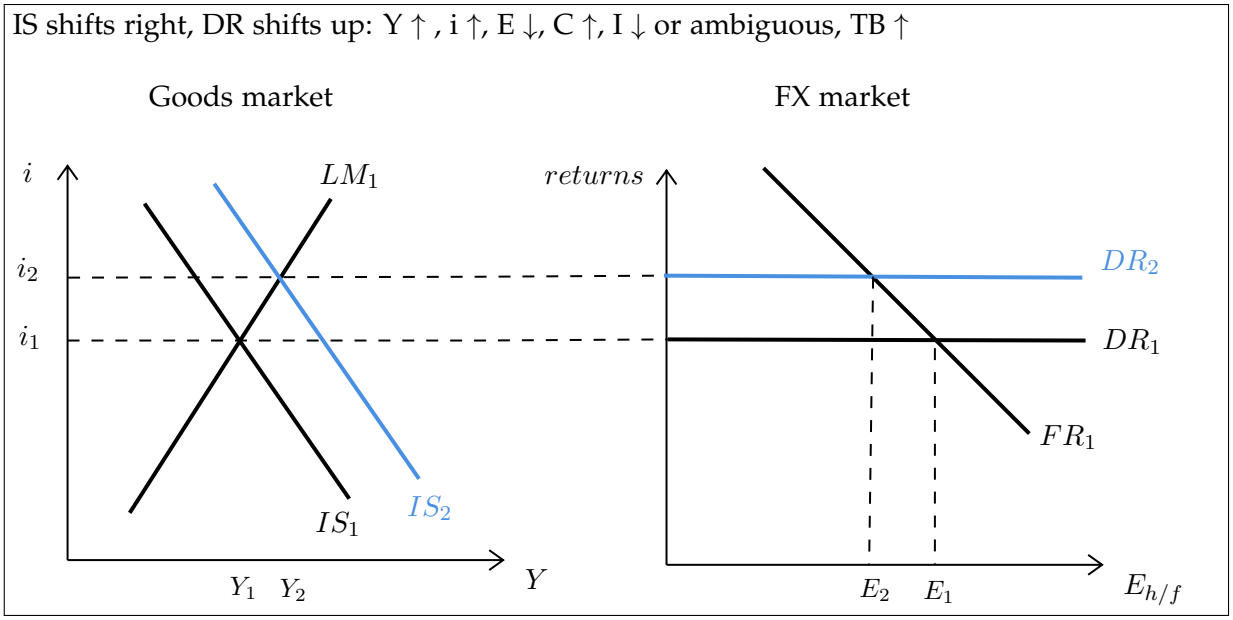
   It is stronger under a fixed regime. Fiscal policy crowds out investment and the trade balance because it leads to an increase in the interest rates. This limits the expansionary effect of fiscal policy on the output.

   Under a fixed exchange rate regime, these effects are nullified because after the fiscal policy (e.g., increase in G) the central bank has to increase the money supply to bring the interest rate down to its initial level.

6. (20 points) **More IS-LM-FX practice**. Quick questions.

   For each of the following situations, use the IS-LM-FX model to illustrate the effects of the shock. For each case, state the effect of the shock on the following variables (increase, decrease, no change, or ambiguous): Y, i, E, C, I, and TB. Assume a floating exchange regime in all cases. You may or not use plots here.

   (a) Foreign output increases



(b) Investors expect an appreciation of the home currency in the future.