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The Global Economy II

Nova SBE – Spring 2023/2024

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Midterm Assessment 12/04/2024 – Duration: 2h00

I (4.5)

*Define **three** of the following concepts (3-5 lines each):*

i. GDP vs GNDI

GDP measures the volume of production achieved withing a region's borders in a given period of time. GNDI measure all the income available for residents of that region to consume or save, irrespectively of where this income was generated.

ii. Nominal Effective Exchange Rate

Price of a basket of foreign currencies in terms of the domestic currency, where the weighs reflect the relative importance of each foreign currency in the country' trade. It allows assessing whether the home country is appreciating or depreciating on average, abstracting from changes in the bilateral exchange rates between partners.

iii. Separation of Consumption and Investment Decisions

In a small open economy, the opportunity to borrow and lend implies that one can rely on foreign saving to invest. Investment will then be determined by the international interest rate and by the productivity of capital, independently of consumer's wealth and preferences.

iv. Arbitrage Opportunities

When prices of the same good differ in different markets making in a way that it is possible for agents to make profits buying the good in one market and selling in the other. These arbitrage opportunities should be temporary and vanish over time.

v. Unofficial Dollarization

Occurs when a foreign currency partially or totally displaces the official legal tender (domestic currency) in one or all the basic functions of money (unit of account, means of payment, or store of value). It happens mostly in countries facing high inflation.

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IV (2)

In each question, choose one (correct answer: +0.5; wrong answer: -0.125):

1. If country's NIIP becomes less negative, there may be: (i) a deficit in the current account; (ii) an increase in the country risk premium; (iii) a surplus in the financial account; (iv) none of the above.
2. In an open economy with no investment and with $r^* = \rho$, the trade balance in period 1 will deteriorate with: (i) a permanent output contraction; (ii) a temporary output expansion; (iii) an anticipated output expansion; (iv) none of the above
3. One of the following factors cannot explain the observed short-term deviations from the LOOP: (i) information lags; (ii) the time it takes to establish import-export networks; (iii) price stickiness; (iv) none of the above.
4. In a world with 5 economies, one can have at most: (i) 5 independent exchange rates; (ii) 4 independent monetary policies; (iii) 5 independent monetary policies; (iv) none of the above.

Correction

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II (13.5)

Please present the results with, at most, 3 decimal places.
Each subgroup (2A, 2B and 2C) must be answered in a different sheet.

II.A. Consider an economy with a single, homogeneous, good. In this economy, the production function for period 2 is given by $Q_2 = 20K_2^{0.5}$, the initial output is $Q_1 = 120$, and $\delta = 1$. The representative consumer lives for two periods, with preferences represented by $U = C_1C_2$. Further assume that there are no initial assets nor liabilities.

a) First, assume that the economy is **open to capital flows** and that the international interest rate is $r^* = 25\%$. Determine:
(a1) The optimal investment in period 1
(a2) The lifetime wealth
(a3) The optimal consumption path
(a4) The trade balance in periods 1 and 2
(a5) The NFIA in periods 1 and 2
(a6) The current account in periods 1 and 2.

b) Now, **still considering an open economy**, suppose there is a recession such that production falls to $Q_1 = 75$. Find the new values for:
(b1) The optimal investment in period 1
(b2) The optimal consumption path
(b3) The trade balance in periods 1 and 2
(b4) Explain the role of the trade balance in the adjustment process.

c) **Departing from b),** suppose that the international markets cut the economy's access to funds – sudden stop – and the **economy closes**. Find:
(c1) The production possibilities frontier
(c2) The optimal consumption path
(c3) The optimal investment in period 1
(c4) The autarky interest rate
(c5) The output in period 2
(c6) Is the economy better or worse off compared with the case in b)? Explain the differences, **without** drawing any graphs.

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II.B. The small open economy of Schmidtland has two sectors, a **tradable** (**T**) and a **non-tradable** (**N**). The production functions are given as: $Y_T = L_T$ and $Y_N = L_N$. Further assume that each price weights 50% in the consumer price index [the CPI is given by $P = P_T^a P_N^{1-a}$], that $P^* = 1$ and $P_T^* = \frac{1}{4}$, and that the price of foreign currency in terms of domestic currency is $e = 4$.

d) Assuming that firms in Schmidtland maximize profits, find:
   (d1) The labour demand of each of the sectors
   (d2) The price of tradables
   (d3) The nominal wage rate
   (d4) The price of non-tradables
   (d5) The consumer price index
   (d6) The real exchange rate

e) Consider now that there was a productivity shock in the tradable sector of Schmidtland, such that now $Y_T = 4L_T$. Considering fixed exchange rates, find:
   (e1) The price of tradables and the nominal wage rate
   (e2) The price of non-tradables
   (e3) The consumer price index
   (e4) The real exchange rate
   (e5) Would the absolute and/or relative PPP theories apply in this case? Justify

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II.C. Consider an economy with flexible prices, with a real money demand given by $m^D = \frac{Y}{4i}$, and where i is the nominal interest rate. The foreign price level is $P^* = 1$, the real interest rate is 5% , both the Fisher principle and PPP hold in each moment in time, and the economy is always at full employment, with $Y^f = 225$. Initially, the money supply is growing at $\mu = 20\%$ and the exchange rate is floating.

f) Find out the money market equilibrium, quantifying:
(f1) the nominal interest rate
(f2) the real money demand
(f3) the exchange rate depreciation rate
(f4) the velocity of money
(f5) describe the money market equilibrium in a graph.

g) Now, assume that once the money supply reaches $M = 450$, with $B_{CB} = 312.5$, the central bank decides to **unexpectedly** fix the exchange rate at: $e = 2$.
(g1) Find the new interest rate.
(g2) Quantify the new real money demand and describe graphically the adjustment in the money market.
(g3) Draw the new central bank balance sheet. What happens to foreign reserves? Explain the mechanism.

h) Departing from h), suppose that the central bank starts expanding the domestic credit (B_{CB}) at a rate of 20% per year to finance reoccurring government deficits, while keeping the peg at $e = 2$. Assume that agents are both rational and have perfect foresight.
(tip: remember that $M = m^D \times P$)
(h1) Will the fix exchange rate be sustainable? What is the future real money demand?
(h2) At t=1, describe what happens to the central bank's balance sheet. How do you label this policy?
(h3) What will happen to the central bank's balance sheet at t=2? Explain.

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(Draft Paper)