ECON4330

Proposed exam questions

Spring 2022

1 Economic Sanctions [40 Points]

Suppose the Home country is an energy resource exporter. It has been doing this for many years and has a large positive NFA (net foreign asset) position. Explain why (and under which conditions) the home country has a large NFA.

Now suppose that the rest of the world (ROW) imposes sanctions on country A.

- Sanction scenario 1: The NFA are confiscated. The home country has no access anymore. But it can still export.
- Sanction scenario 2: The home country cannot export anymore. But no confiscation of NFA.

Discuss the economic consequences for the home country of sanction 1 and 2. Hint: Follow the concepts of autarky, current accounts and NFA in the lecture.

Then discuss what the current account used in the lecture does not capture. Hint: Does a a current account of zero mean that exports and imports are both zero? If not, what are the consequences of forbidding exports.

Explain your results. Keep your answer concise. There is no benefit from long but imprecise answers.

Guide

Follow the logic in the lecture.

Note first the NFA is the accumulated positive current accounts of the past. That explains the positive NFA.

Scenario 1: A wealth reduction and thus a reduction in consumption for the home country.

Scenario 2: No further wealth accumulation and thus reduction in consumption.

CA = 0 is different from exports and imports = 0. Not being able to import disrupts supply chains....

2 Equilibrium in the Foreign Exchange Market [30 Points]

A. Suppose the world consists of two countries, home and foreign, with two respective currencies, NOK and USD. Uncovered interest rate parity (UIP) is given $i = i^* + e_e$ where i (i^*) is the domestic (foreign) nominal interest rate and e_e is the expected rate of depreciation of NOK.

i. Explain uncovered interest rate parity and why the condition must hold to obtain equilibrium in the foreign exchange market with perfect capital mobility.

> Answer from lecture 11:
>
> Uncovered interest rate parity describes equilibrium in currency markets under perfect capital mobility. When capital mobility is perfect, currency markets can only be in equilibrium if investors get the same expected nominal return in terms of one of the currencies for investing in either currency. In the perfect capital mobility case (that is, no restrictions on capital mobility, no transaction costs, investors are risk neutral and have the same expectations...), if $i \neq i^* + e_e$, then it will cause an infinite demand for one of the currencies. Thus, the only equilibrium is $i = i^* + e_e$.

ii. What could be reasons for imperfect capital mobilty? (Very) briefly explain why.

> Answer from lecture 11:
>
> Examples are risk aversion, diverging expectations, transaction costs, liquidity constraints, exchange controls among more. These are simply examples. Different arguments are accepted given that the candidate rationalize the answer.

B. Assume UIP is violated. Since UIP is violated, there exists well-defined demand functions for the two currencies. The domestic private real demand for dollars is given $\frac{EF_p}{P} = f(r, W_p)$ where wealth $W_p = \frac{B_{p0}+EF_{p0}}{P}$. The foreign real demand for dollars is given $\frac{F^*}{P^*} = W^* - b(r, W^*)$ where wealth $W^* = \frac{B_0^*/E+F_0^*}{P^*}$. Here, E is the nominal exchange rate, F_p (F^*) is the domestic (foreign) private USD holding, B_p (B^*) is the domestic (foreign) private NOK holding, P (P^*) is the domestic (foreign) price level, W_p (W^*) is the domestic (foreign) private wealth, and $r = i - i^* - e_e$ is the expected return differential. The supply is given $S = -F_p - F^*$ (assumed to be well-behaved).

i. Show that the supply function can be rewritten as

$$S = -\frac{P}{E} f\left(i - i^* - e_e, \frac{B_{p0} + EF_{p0}}{P}\right) - P^*\left[\frac{B_0^*/E + F_0^*}{P^*} - b\left(i - i^* - e_e, \frac{B_0^*/E + F_0^*}{P^*}\right)\right]$$

It is not expected by the candidate to explain the function in **B. i**.

Answer from lecture 11:

Solve the real demand functions for dollars with respect to F_p and F^*,

$$F_p = \frac{P}{E} f(r, W_p) \qquad \text{and} \qquad F^* = P^*[W^* - b(r, W^*)],$$

and insert F_p and F^* into the supply function given in the exercise,

$$S = -F_p - F^*,$$

$$S = -\frac{P}{E} f(r, W_p) - P^*[W^* - b(r, W^*)].$$

Lastly, insert the wealth and the expected return differential into $f(\cdot)$ and $b(\cdot)$,

$$S = -\frac{P}{E} f\left(i - i^* - e_e, \frac{B_{p0} + EF_{p0}}{P}\right) - P^*\left[\frac{B_0^*/E + F_0^*}{P^*} - b\left(i - i^* - e_e, \frac{B_0^*/E + F_0^*}{P^*}\right)\right].$$

ii. Assume regressive expectations, $e_e' < 0$, positive initial currency holdings and $0 < f_{W_p}, b_{W^*} < 1$. Explain first what regressive expectations imply. Then explain the portfolio composition effect and the expectations effect of an increase in the exchange rate.

[**Hint**: You may, for example, use the equation given in **B.i**. However, it is not expected to calculate the partial derivative.]

Answer from lecture 11:

e_e is defined as the expected rate of depreciation (appreciation) of NOK (USD) and regressive expectations is one of multiple characteristics of e_e. Regressive expectations states that if the exchange rate appreciates, then the agents expect the exchange rate to depreciate.

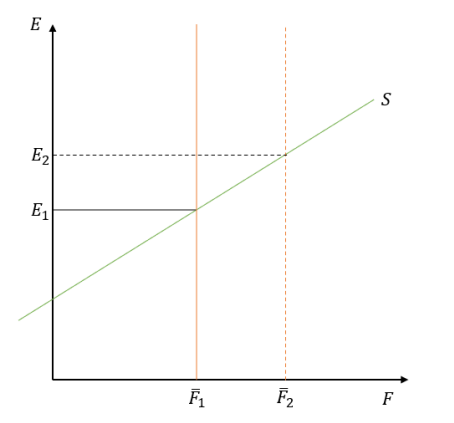
The portfolio composition effect is a reoptimization of the portfolio when the exchange rate changes. If the exchange rate appreciates, then the private agent has too much wealth in USD and too little wealth in NOK. The agent will sell USD for NOK to rebalance portfolio shares, thus increase the supply of USD.

The expectations effect depends on the assumption of e_e'. Given regressive expectations, expecting the exchange rate to decline is the same as expecting NOK to appreciate. This implies that investing in NOK is more attractive for home and foreign, thus increase the supply of USD.

C. Consider a domestic floating exchange rate regime where the Central Bank's demand for dollars is fixed, $F_g = \bar{F}_g$.

i. Show graphically the effect of an increase in the domestic Central Bank's dollar demand. Explain!

Answer from lecture 11:



The Central Bank increases its reserves and the exchange rate increase as well as the supply of dollars. The increased supply of dollars can be explained by the portfolio composition effect and the expectations effect as explained in **B. ii**. The private agents are only willing to sell more foreign currency to the Central Bank if the price of foreign currency increase.

ii. Due to past history, the expected rate of depreciation, e_e has an even stronger regressive characteristic, $\hat{e}'_e$, where $\hat{e}'_e < e'_e < 0$ and assume again an increase in the domestic Central Bank's dollar demand. Compare with **C.i**. Show graphically and explain your answer.

Answer based on lecture 11 (see AR chapter 1 p. 25):

Strongly regressive expectations reduce the effect of an intervention on today's exchange rate (flatter supply curve).

3 Sovereign Default [30 Points]

A. Assume an ADS market with $n = 1, 2, ..., N$ countries and two states, good or bad (high or low consumption) with no risk-free bond trade. Assume that the ADS contracts are written such that the countries diversify the risk of uncertain output.

i. Why can hidden information lead to a break down of the asset market?

> Answer from lecture 10:
>
> With hidden information, the state of the output is only visible to the country itself. This makes it always optimal to pretend to be in the bad state to receive insurance payment. As nobody wants to sell the bad state ADS simultaneously as everyone wants to buy the bad state ADS, the market breaks down.

ii. How does the break down of the asset market impact the countries?

> Answer from lecture 10:
>
> With no risk-free bond trade, equilibrium is in autarky. Lucky countries consume the an high amount and unlucky countries consume low amount. The equilibrium is strictly worse ex-ante without possibilities of consumption smooth.

B. Assume creditors can punish defaulting countries by seizing an η share of production $A_2F(K_2)$ where the productivity A_2 is stochastic, $A_2 \in [A_L, A_U]$.

i. Why do creditors always prefer that the borrower invests more of the borrowed fund?

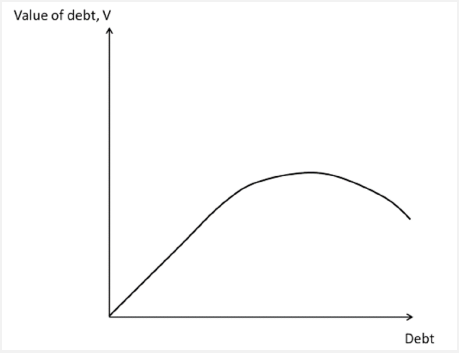
> Answer from lecture 10:
>
> If the borrower invests the funds, then the punishment of the creditors are higher.

ii. Explain the debt overhang problem.

> Answer from lecture 10:
>
> As investing makes the punishment of the creditors higher, a defaulting country makes the country invest less than optimal. Thus, the country will invest less the more likely default is, and default is more likely the higher the debt is (debt overhang).

iii. Show graphically the Laffer curve and explain it.

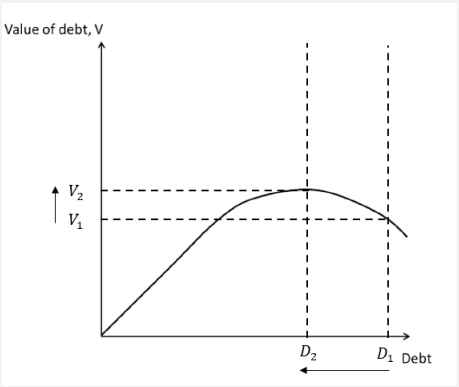
Answer from lecture 10:



The Laffer curve shows the relation between debt and the value of the debt. The curve starts upward sloping as when creditors issue more debt, the countries has such a low debt they will for sure invest the funds and repay the loan. At this point, the value of the debt increase with the debt issued. When debt cross a certain threshold, the more likely default is. This will discourage investment as investing the funds increase the creditors' punishment of default. At this point, the value of the debt decrease as.

iv. What is meant by a haircut of the sovreign debt? Can a haircut of the sovereign debt improve the value of the debt?

Answer from lecture 10:



In this case, forgiving some of the debt increases the value of the debt as it encourages investments and repayment. This might be optimal if the country suffers from debt overhang. However, the creditors have a direct loss of $\Delta = D_1 - D_2$ if the loan is repaid.