

# Universität Siegen

## Fakultät III Univ.-Prof. Dr. Jan Franke-Viebach

Exam "International Macroeconomics"  
Winter Semester 2019-20  
(2<sup>nd</sup> Exam Period)

### Solution

Available time: 60 minutes

#### For your attention:

1. The exam is made up of 9 pages (including this cover page). Please check and see if the exam you are holding is **complete**.
2. For your answers, use the designated spaces. Should these not suffice, use the backside of the pages. Please do not use a **pencil**.
3. Additional materials you may use for the exam: a non-programmable calculator. (Smart phones and mobile **phones** are **not** allowed!)
4. **ATTENTION:** The names for variables have the same meaning as in the lecture. Insofar as you also use the same symbols for the variables as we did in the lecture you will not have to define these any further.

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Question	1	2	3	4	Sum	Mark
Points achievable	16	16.5	14.5	13	60	
Points achieved						

**Problem 1:** Balance of Payment (16 points)

Table states the BoP of Germany. Please input the following transactions a) to f) and explaining):

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Balance of Payments for Euro Area

CA	Credit	Debit
Goods	(a)	(b)
Services	(c)	
Primary Income		(e)
Secondary Income	(b)	

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FA	Asset	Liability
Direct Investment	(d)	
Portfolio Investment		(e)
Financial Derivatives & ESO	(f)	
Other Investment	(a) (c)	(d)
Reserve Assets		(f)

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- a) A Chinese student purchased 200 masks from a pharmacy store in Siegen in order to protect himself from the Coronavirus, paid the amount using his parents account of a Chinese bank (2 points)
- b) A group of German students are doing internship with an Africa-based institution. In order to support their project, this institution borrowed money from Deutsche Bank in order to donate equipment for the giraffe in a Munich Zoo. (2 points)
- c) A Russian student is learning driving in Siegen, by which she is allowed to pay the cost after the first 3 courses in 3 weeks. (2 points)
- d) A company in Stuttgart borrows money from a French bank in order to invest its subsidiary in Luxembourg. (2 points)
- e) The smartphone company Apple use its profit from Germany to purchase shares of Deutsche Bahn AG. (2 points)
- f) A Commerzbank senior-manager in Frankfurt sold his options of Commerzbank and exchange them into US-Dollar in order to support her daughter's PhD-study in California. (2 points)
- g) Name two limitations of the BoP? (4 points)

**Problem 2: International Investment Position (IIP)**

a) What does the International Investment Position of a country show? [2 points]

**Solution:** external assets and liabilities (1 point for answer "external balance sheet")  
 (1) (0.5) (0.5)

b) We consider a country whose net international investment position is negative.

b<sub>1</sub> How is a net negative IIP defined? [2 points]

**Solution:** external liabilities exceed external assets ("external" not necessary)  
 (0.5) (1) (0.5)

b<sub>2</sub> Please discuss the implications of a negative net IIP for the country's future external flows of capital income. [12.5 points]

**Solution:**

- foreign as. & liab. represent commitments to future payments of capital income  
 (1) 0.5 (1)
- so, at first sight, the negative net IIP indicates (1)  
 that the country will have higher payments to make than payments to receive  
 (1) (1) (1)
- however, there are two qualifications to that statement:
  - o rates of return (1)  
 on foreign assets may be higher than rates of return on foreign liabilities:  
 (1) (1) (1)  
 in this case, the country will  
 receive higher payments of capital income than it will make  
 (1) (1) (1)
  - or:
  - o only liabilities in form of debt stipulate contractually fixed income payments (3)  
 → many other forms of liabilities only lead to income payments when the debtors are in a good economic situation → they put the country less under stress (4)

**Problem 3: Small Open Economy with Production**

The following equations describe a small open economy with production where the capital stock of the first period ( $K_1$ ) and the labour inputs of both periods ( $L_1, L_2$ ) are exogenous.

$$\text{I) } r = A_2 F_K(K_2, L_2) - \delta$$

$$\text{II) } u(C_1) = \beta(1+r)u(C_2)$$

$$\text{III) } C_1 + \frac{C_2}{1+r} = A_1 F(K_1, L_1) - K_2 + (1-\delta)K_1 + \frac{A_2 F(K_2, L_2) + (1-\delta)K_2}{1+r}$$

$$\text{IV) } B_2 = A_1 F(K_1, L_1) - C_1 - K_2 + (1-\delta)K_1$$

a) Please precisely say what the right-hand side of equation (I) shows.

[2.5 points]

**Solution:**

Net marginal productivity of capital in the second period

(0.5) (0.5) (0.5) (0.5) (0.5)

(or instead of "net": less depreciation)

b) To which point in time do all variables in equation (III) refer? [2 points]

**Solution:** end of first period (or: beginning of second period) (2)

c) Suppose we would move back to autarky. For that case, please say in words which equation(s) would have to be eliminated and which equation(s) would have to be added. [4 points]

Eliminate:

Add:

**Solution:**

Eliminate (IV) (1)

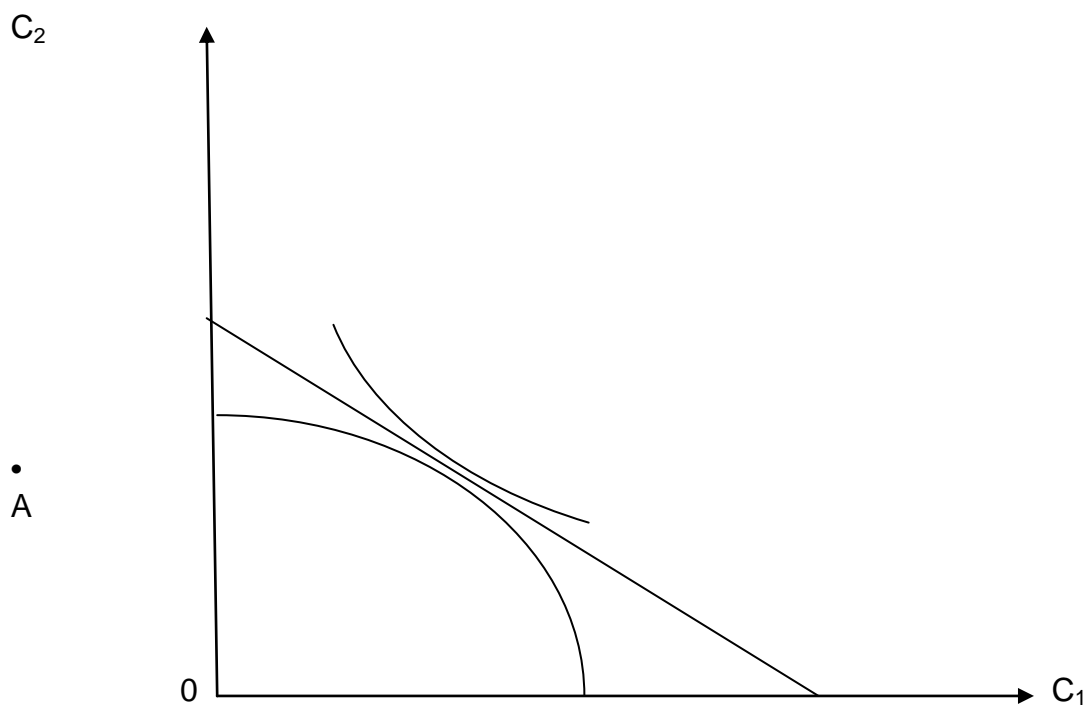
Add: equilibrium conditions for the market of goods for both periods

(1)

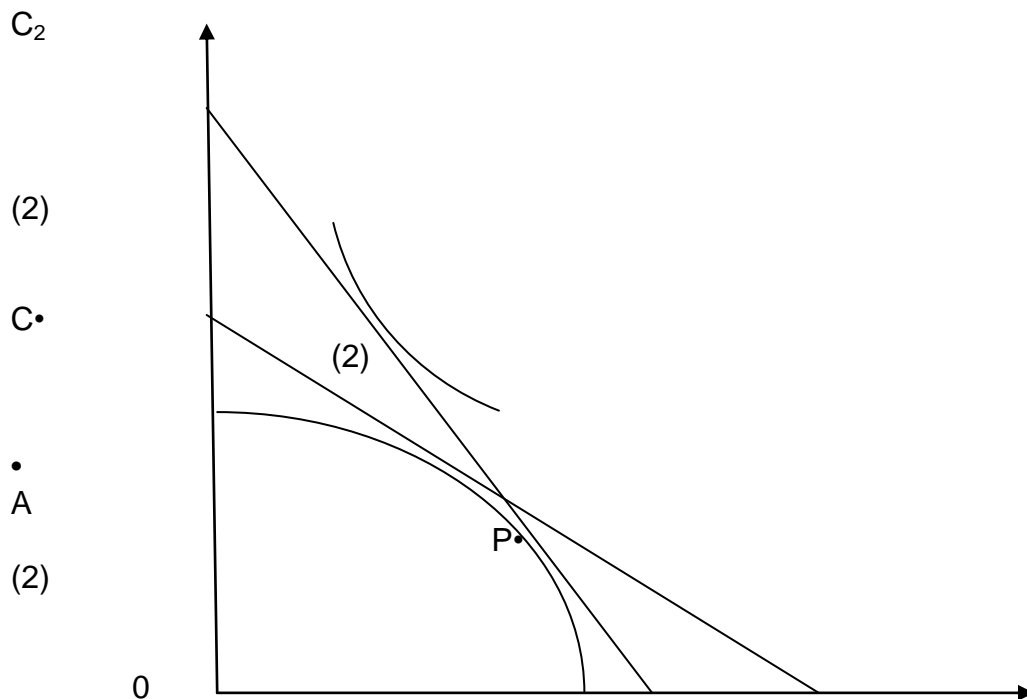
(1)

(1)

d) The following graph illustrates the autarky equilibrium in point A. Please illustrate the open-economy equilibrium for the case that the interest rate in the world market is higher than the domestic autarky rate. Denote the production point as P and the consumption point as C. [6 points]



**Solution:**



**Problem 4: Increase of World Market Rate of Interest**

Consider a small open economy (SOE).

a) Why is the rate of interest in the world market exogenous for the SOE? [1.5 points]

**Solution:**

SOE's supply and demand (or: market power) in the world financial market are small  
 (0.5) (0.5) (0.5)

b) We want to analyze the impact of the increased interest rate on the consumption in the first period ( $C_1$ ).

b<sub>1</sub> The total impact on  $C_1$  can be de-composed in three sub-effects. Let us denote them by a, b, c. Please give the names of those sub-effects. [1.5 points]

**Solution:** effect a: substitution (0.5)

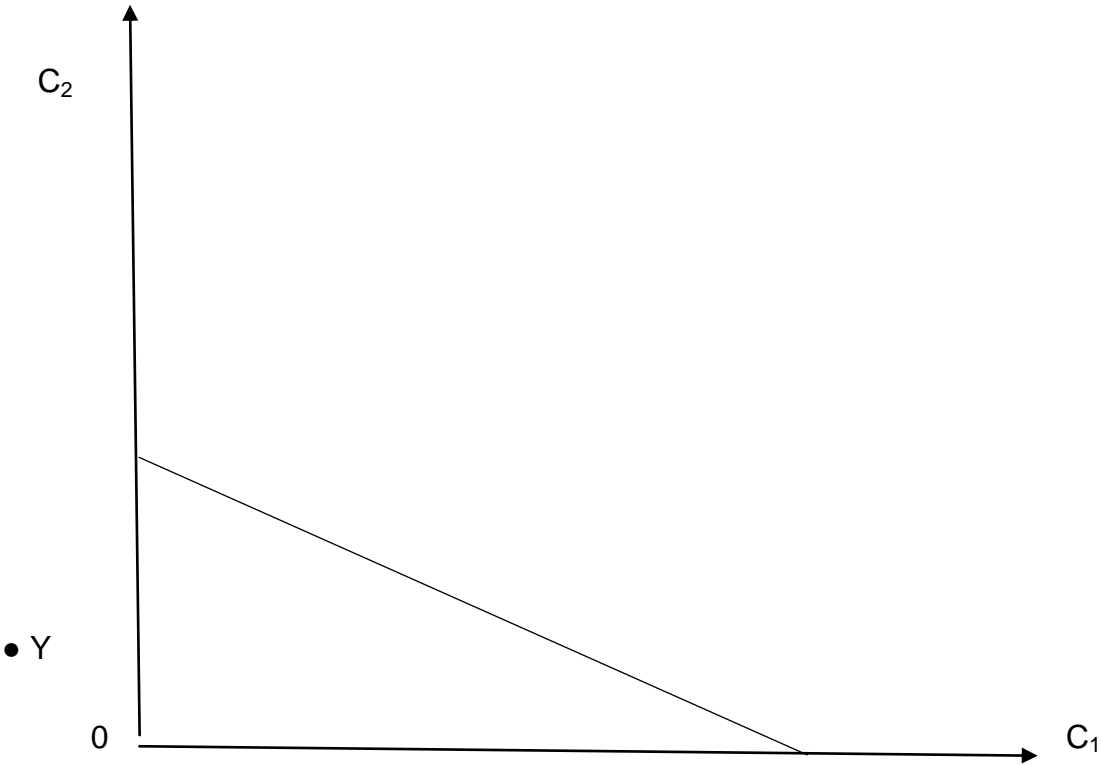
effect b: income (0.5)

effect c: wealth (0.5)

b<sub>2</sub> In the following graph, Y indicates the exogenous endowment point of the SOE.

Assuming that the SOE has a current-account surplus in the first period, please indicate the initial consumption point as A. Then, indicate and illustrate the three sub-effects mentioned in b<sub>1</sub> by drawing the corresponding consumption points B, C, D and by using arrows ( → ):





**Solution:**

