Question 1: Balance of Payment (8 points)

Table states the BoP of euro area. Please input the following transactions:

Balance of Payments for Euro Area		
	Credit	Debit
Goods	b	
Services		a
Primary Income		d
Secondary Income		b

	Asset	Liability
Direct Investment		d
Portfolio Investment		
Financial Derivatives and ESO		
Other Investment	a	
Reserve Assets		

a) A Siegener Professor paid the entrance fee for visiting the Disneyland in Shanghai, transferred this amount to an account of Deutsche Bank. (2 points)

b) Scientists from Germany and Netherlands founded a NGO and transferred essential equipments for saving the lions in South Africa. (2 points)

c) A Greek-based company borrows money from a Germany bank to purchase shares of an France-based company. (2 points) No Entry For Euro Area?

d) A Canada-based company re-invests the profits of its Germany subsidiary in Germany. (2 points)

1

Question 2: (26 points)

Giving the following functions for an economy in autarky:

$$U_1 = u(c_1) + \beta u(c_2), \quad \beta = \frac{1}{1+b} \tag{1}$$

$$Y_1 = A_1 F(K_1, L_1) \tag{2}$$

$$Y_2 = A_2 F(K_2, L_2) \tag{3}$$

$$K_2 = (1-\delta)K_1 + I_1 \tag{4}$$

$$I_1 = K_2 - (1-\delta)K_1 \tag{5}$$

$$I_2 = K_3 - (1-\delta)K_2 \tag{6}$$

a) The agents only live for 2 periods, which of the equation(s) can be simplified?
And how? (2 points)

Equation (6) $K_3 = 0$

$$I_2 = -(1-\delta)K_2$$

b) Mathematically show that the slopes of the transformation curve and the indifference curve are equal in equilibrium, i.e. $\left(\frac{dc_2}{dc_1}\right)^{MRS} = \left(\frac{dc_2}{dc_1}\right)^{MRT}$. (24 points)

MRS: $\left|\dfrac{dC_2}{dC_1}\right|_{u_1 = const} = \dfrac{u'(C_1)}{\beta u'(C_2)} = 1 + r$

MRS: $\begin{cases} Y_1 = C_1 + I_1 \\ Y_2 = C_2 + I_2 \end{cases} \Rightarrow \begin{cases} A_1 F(K_1, L_1) = C_1 + K_1 - (1-\delta)K_1 \\ A_2 F(K_2, L_2) = C_2 - (1-\delta)K_2 \end{cases}$

$\begin{cases} 0 = dC_1 + dK_2 \\ A_2 \cdot \dfrac{\partial F}{\partial K_2} dK_2 = dC_2 - (1-\delta)dK_2 \end{cases} \Rightarrow \begin{cases} dC_1 = -dK_2 \\ dC_2 = A_2 \dfrac{\partial F}{\partial K_2} dK_2 + (1-\delta)K_2 \end{cases}$

$\dfrac{dC_2}{dC_1} = -(A_2 F_{K_2} + 1 - \delta)$

$1 + r = A_2 F_{K_2} + 1 - \delta$

$\therefore \left(\dfrac{dC_2}{dC_1}\right)^{MRS} = \dfrac{u'(C_1)}{\beta u'(C_1)} = 1 + r = \left|\dfrac{dC_2}{dC_1}\right| = \left(\dfrac{dC_2}{dC_1}\right)^{MRT}$

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Question 3: (26 points)

Graph illustrates the autarky equilibrium of a small open economy. Agents are households as well as firms, who have a two-period time horizon. Firms produce with capital and labour input in both periods. Aggregate labours and first period capital are exogenous. The economy consumes at point A in autarky.
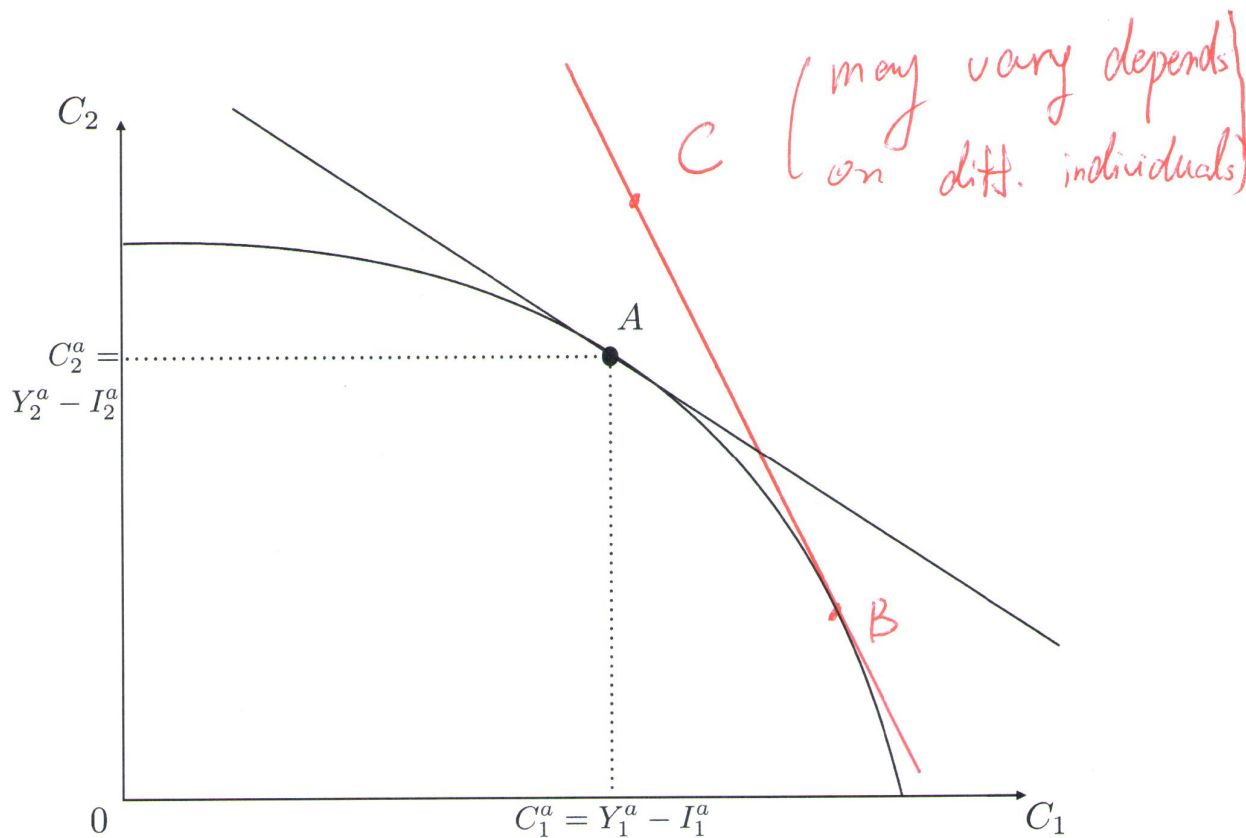
a) Now this economy opens to international in the sense of trading in goods, bonds and domestic shares, but no labour movement. In the world capital market interest r^w is higher than the domestic autarky rate r^a. Please denote the new production point as B and new consumption point C. (2 points)

b) Please use the expressions (increase, decrease, unchanged, not clear) to describe the changes of the following variables: (24 points)

b1) Second period capital K_2: decrease

b2) Investment for the first period I_1: decrease

b3) NIIP B_2: increase

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b4) Consumption in the first period C_1:

b5) Consumption in the second period C_2:

decrease, increase, not clear are all acceptable as long as it consists with student's graph.

b6) Financial investment in shares in the second period X_2: *decrease*

b7) First period output Y_1: *unchanged*

b8) Second period output Y_2: *decrease*

b9) First period current account CA_1: *increase*

b10) Second period current account CA_2: *decrease*

b11) First period wage w_1: *unchanged*

b12) Second period wage w_2: *decrease.*