6. INTERNATIONAL TRADE AND THE BALANCE OF PAYMENTS

Problem 6.1

Consider the following data for an economy observed in two consecutive years:

	Year 0	Year 1
P, domestic price index	1.0	1.06
P^*, external price index	1.0	1.02
e, nominal exchange rate index	1.0	1.05

a) From year 0 to year 1 , did the external competitiveness increase or decrease? (compute the real exchange rate index for each year).
b) What should have been the value of the nominal exchange rate index in year 1 in order to maintain external competitiveness?

Problem 6.2.

For a given economy this information is known:
• the marginal propensity to import is equal to 0.3;
• when the real exchange rate index increases by one monetary unit, planed imports decrease by 50 m.u., and exports increase by 50 m.u..
a) Suppose that the product increases by 10 m.u. and the real exchange rate changed by 0.04. What is the effect on Net Exports? Quantify the changes on Net Exports.
b) Compute the change on real exchange rate index which would create a change of Net Exports equal to zero.

Problem 6.3.

The functions of exports and imports of a given economy are, respectively:
$Ex = 170 + 30R$,
$Im = 50 + 0.4 Y - 50R$
where Y is the product and R the real exchange rate index.

a) Interpret the meaning of the parameters in each of the above functions.
b) Present the expression which represents the Net Exports behavior.
c) Assume that nominal exchange rate index (e) is 1.1, and domestic price index (P) is 1 and that external price index (P *) is 1. What is the value of the product for which the balance of goods and services is balanced?

d) For a hypothetical value of Y = 550 m.u., compute planed exports, planed imports and the balance of the balance of goods and services, all measured as a percentage of the product.

Problem 6.4.

Indicate which of these balances is not part of the Current Balance:
a) Trade Balance / Balance of Goods;
b) Balance of Income;
c) Financial Balance;
d) Balance of Current Transfers.

Problem 6.5.

Which of the following operations is not recorded in the Balance of Current Transfers?
a) food aid from one country to another because of a natural disaster;
b) emigrant remittances;
c) repatriation of profits from a Portuguese subsidiary of a multinational company based abroad;
d) the funds received from the EU structural funds.

Problem 6.6.

Profits received from investments abroad are registered:
a) in the Trade Balance / Goods;
b) in the Balance of Current Transfers;
c) in the Capital Balance;
d) in the Balance of Income.

1.BUSINESS CYCLES– An Introduction

Exercise 7.1.

Briefly define the following concepts:

a) trough;   **b)** peak;

c) business cycle;   **d)** recession;

e) depression;   **f)** expansion;

g) potential product (or potential GDP or

full employment output);   **h)** output gap;

i) cyclical unemployment;   **j)** structural unemployment;

k) frictional unemployment;   **l)** Okun's law.

m) recessionary gap   **n)** expansionary gap

(See lecture 13 and Frank and Bernanke , Chapter Short-Term Economic Fluctuations)

Exercise 7.2.

The following figure represents the output gap *per capita* as a percentage of its potential value in the period 1980-2011, for Portuguese economy.
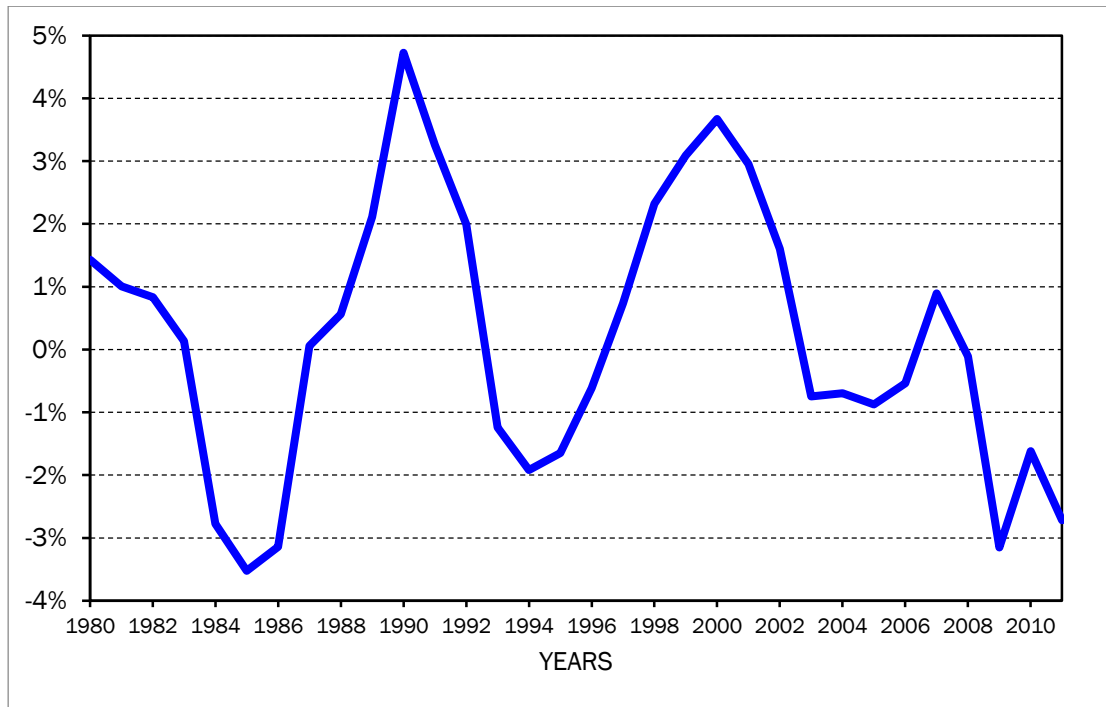
a) How many full business cycles can you identify in the figure above? Please list them.

b) For each of them calculate its duration and amplitude (approximately).

c) Can we consider the year 2009 as a trough? Why? (Why not?)

8. AGGREGATE DEMAND AND INCOME IN THE SHORT RUN

Exercise 8.1.

In a simple Keynesian model without state, fluctuations in the product resulting from modifications of investment:

a) do not exist if the multiplier of the autonomous investment is equal to 1;

b) depend only on the size of the investment changes;

c) will be greater when the marginal propensity to save is lower;

d) decrease if simultaneously the consumption function shifts upward;

e) will be lower if the savings decrease when investment increases.

Exercise 8.2.
In a simple Keynesian model without state, an increase in autonomous consumption by X m.u.:

a) increases the value of the multiplier of autonomous consumption in the proportion of X;

b) increases the product by the same amount that it would increase if it had been the exogenous investment to increase by X m.u.;

c) results in an increase of total consumption in X m.u. / year;

d) increases investment by a lower proportion;

e) b) and c).

Exercise 8.3.
What are the components of aggregate expenditure in the simple Keynesian model without State?

a) private consumption and private investment;

b) the private consumption and private saving;

c) private consumption and public consumption;

d) consumption and private investment and direct taxes (to be subtracted);

e) none of the above.

Exercise 8.4.

In a given economy closed and without State, the behavior of private consumption is given by the function $C=\overline{C}+cY$, , where Y is equilibrium income,

and the investment is given by $I=\overline{I}$. Representing graphically the domestic expenditure (D) in the space (Y, D), which of the following events does not modify the curve which represents it:

a) the product increases;

b) consumption becomes dependent only on income;

c) the marginal propensity to consume decreases;

d) investment increases as a result of improved optimism of the entrepreneurs;

e) the marginal propensity to save becomes null.

Exercise 8.5.

The equilibrium level of domestic product of an economy, according to the Keynesian model without State and closed economy, depends on:

a) the level of autonomous consumption;

b) the level of investment;

c) the marginal propensity to save;

d) the marginal propensity to consume;

e) all the above.

Exercise 8.6.

In the simple Keynesian model without State, an increase in the marginal propensity to consume, ceteris paribus, causes, in equilibrium:

a) an increase in savings;

b) a decrease in savings;

c) no changes occur in savings;

d) not enough information to answer;

e) a decrease in product.

Exercise 8.7.
Consider a closed economy without a state described by the following behavioral equations:

$$I = \bar{I},$$

$$C = 15 + 0{,}8.Y$$

a) Knowing that the autonomous investment corresponds to 5 m.u., calculate the equilibrium values for the expense, the product, and for private consumption and saving. Explain how the calculated macroeconomic variables are related.

b) Indicate the values of the marginal propensities to consume and save, as well as the expression for the average propensity to consume.

c) If the value for the marginal propensity to save changes to 0.3, what is the effect of this change on the equilibrium values of output and savings, considering the level of investment referred to in a)?

d) Consider now the initial model. Explain, without performing any calculation, what are the consequences of an increase of investment from 5 to 10 m.u. on the equilibrium values of product and consumption.

e) Quantify the consequences of the change referred to in the preceding paragraph.

f) What is the investment multiplier? What are the assumptions made when describing the multiplier mechanism?

g) Considering the level of investment referred to in a) quantify the impact on the equilibrium levels of the product, private consumption, investment and savings of a change in autonomous component of consumption from 15 to 20 m.u.

Exercise 8.8.
Consider an economy with no state and closed, where the behavior of private consumption and investment are given respectively by the functions

$$C = \bar{C} + c.Y$$

and

$$I = \bar{I}$$

a) Graph the curves that represent the product and the expense.

b) On your graphical representation (line a)) illustrate the following situations:

      i. the consumer intentions become proportional to income, keeping the marginal propensity;

      ii. a decrease in the marginal propensity to consume;

      iii. an increase in investment intentions.

Exercise 8.9.

Suppose a closed economy with no state, characterized by the following expressions for the intentions of private consumption and investment:

C = 50 + 0.75 Y

and

I= 250 mu

a) Calculate the equilibrium values for the income, savings and private consumption.

b) For each additional unit of income, households decide to save 5 percentage points less than they did previously. What are the new equilibrium values for the income, consumption and savings? Interpret the results.

c) Assume the initial marginal propensity to consume. If investment intentions increased to 260 m.u., which will be the new equilibrium values for the income, consumption, and savings?

Introduce now the State. The behavioral equations of this economy are now the following (usual notation):

C = 50 + 0.75 Yd,

I = 250 mu

G = 200 mu.

T = 0.2. Y

TR = 80 mu

d) Determine the equilibrium values for the income and the budget balance.

e) If the income of full employment is *Yp* = 1500 m.u. and if we want to achieve it through a variation of public consumption, which should be this variation?

f) Calculate the impact on the budget balance that the measure adopted in the previous paragraph had.

g) Now suppose that it was intended to achieve full employment income keeping the budget balanced. Only two alternatives are allowed: changes in government consumption and in transfers from State to households. Compute those variations.

Now consider that this economy is open, assuming that:

• intentions of export (Ex) are exogenous and equal to 100m.u.;

• intentions of import (Im) depend positively on income, as follows:

Im = 150 + 0.1 Y

h) Calculate the equilibrium values for the revenue, the budget balance and net exports.

i) If the taste for foreign goods increases, so that the marginal propensity to import doubles, what happen o the equilibrium values of income, budget balance and net exports?.

Exercise 8.10.

The following information is known about the market of goods and services in a given economy well represented by the Keynesian model:

• *C = 94 + 0.75 Yd*

• The system of direct taxes in the economy is such that its tax burden always corresponds to 19% of the product;

• transfers from the state to households are equal to 700 m.u.;

• State expenditure on investments in infrastructure and public consumption are, respectively, 395 m.u. and 1020 m.u.;

• private investment is autonomous and totals 1941 m.u.;

• export intentions are exogenous and have a value of 3560 m.u.;

• imports always correspond to 40% of the product.

Given this information, determine the equilibrium level of output..

Exercise 8.11.

Consider a closed economy that can be described by the following system of behavioral equations:

C = 20 + 0.8 Yd,

I = 1300 m.u.,

L = 250 m.u.,

T = 30 + 0.2 Y

TR = 150 m.u.

a) Determine the equilibrium level of the product of this economy.

b) Calculate the value of the budget balance, assuming that there is no public investment.

c) Suppose now that, knowing that the public consumption impacts positively on the product, the government decides to increase G to 300 m.u. Calculate the new equilibrium values for income and budget balance.

Exercise 8.12.
Starting from the situation c) of the previous exercise (*Exercise 8.11*) we can assume that the economic policy agents despite the fact that they were satisfied with the growth of the product, they know that the financing of public spending should be accompanied by an increase in government revenue and two possible alternatives were discussed:

• *Alternative A* - reduction of state transfers to households (TR) in 50mu, exactly the same amount of the growth in public consumption (G) or

• *Alternative B* - increase of 2 percentage points in the tax rate (t).

Discuss the validity of these two alternatives, bearing in mind that this Government is concerned not only with the balance of public accounts, but also with the level of income in this economy.

Exercise 8.13.
Consider a closed economy for which we know the following information expressed inm.u., for a given year:

C = 72 + 0.8. Yd,

I = 400 m.u.

L = 400 m.u.

T = 40 + 0.25. Y

TR = 200 m.u.

a) Calculate the product of equilibrium of this economy.

b) Calculate the current budget balance.

c) It is known that the values obtained in the previous paragraphs are accompanied by a positive cyclical unemployment and it is estimated that at full employment, the product of this economy could reach 3000 m.u. How could the State use the current public expenditure to drive the economy to the level of full employment output? Quantify and justify your answer by analyzing the economic significance of the measures proposed.

Exercise 8.14.
For a given closed economy the following information (in monetary units) is known, for a given year:

• the value of GDP at market prices is 1500;

• the value of transfers from the State to families is 150;

• the value of the current budget balance is 5.

a) Assuming that direct taxes (the exercise, assumes that all taxes are direct) of this economy can be defined by the function T = 30 + 0.25 Y, determine the value public consumption presented this year.

b) Knowing that the value of the propensity to consume is 0.8, determine the value that could be obtained for GDP m.p., if the public consumption increases by 100 m.u. What would be the consequences for the balance of the current budget balance?

Exercise 8.15.
The value of exports of Niceland, exogenously determined, is currently equal to its imports. The marginal propensity to import has a value of 0.1, the marginal propensity to consume has a 0.6 and direct taxes are exogenously determined. What will happen to the equilibrium values of the balance of goods and services and the income in this country, keeping everything else constant, if:

a) public consumption increases by 10 m.u.

b) exports decreases by 10 m.u.

c) investment decreases by 10 m.u.