Universitat de Barcelona
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Macroeconomics - Group A8
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# Basic models of the determination of national income. Short and long run.

## List 2 - The Keynesian cross model.

1. What are the exogenous variables of the Keynesian cross model?

2. According to the Keynesian cross model, does an additional unit of government spending increase income by more or less than 1? Justify your answer.

3. In a closed economy without public sector, explain analytically and graphically the effect of a decrease in investment on the equilibrium level of income, consumption, and savings.

4. Consider a closed economy without public sector where consumption is $C = 40 + cY$, investment is $I = 50$, and the equilibrium level of income is $Y_e = 100$.

   (a) Compute the values of the marginal propensity to consume.

   (b) Compute the value of the multiplier. What does it depend on?

   (c) Recall the definition of national savings. What is the value of savings in this economy?

   (d) How much should the investment increase so as to have $Y_e = 200$.

   (e) How does an increase of investment by 100 units affect $Y_e$? Compute the new equilibrium level of income. What happened to consumption and savings?

   (f) What is the effect on $Y_e$ of a change in the marginal propensity to consume up to $c = 0.9$? What happened to the multiplier? What about consumption and savings?

5. Suppose that in a closed economy $S > I$. Can we say that we are at equilibrium? What does this imply for the investment in inventory?

6. Suppose a closed economy without public sector characterized by the following equations: $C = 100 + 0.8Y_d$ and $I = 50$.

    (a) Determine the equilibrium level of income.

    (b) Compute the amount of national savings.

    (c) If the income increased up to $Y = 800$, what would the unplanned inventory buildup be?

    (d) If investment increased by 100 units, how much would the income increase?

    (e) Represent and identify graphically all of the above.

7. In a closed economy with public sector, consumption is described by $C = 50 + 0.8Y_d$, investment by $I = 70$, government purchases by $G = 200$, public transfers to the households by $TR = 100$, and taxation by the tax rate $t = 0.2$.

    (a) Determine the equilibrium level of income and the government spending multiplier.

    (b) Compute the public savings. Is there a public deficit or a public surplus?

    (c) Suppose the tax rate becomes $t_1 = 0.25$. What is the new equilibrium level of income? How high is the multiplier now?

    (d) Compute the public savings for $t_1 = 0.25$.

    (e) Explain why the multiplier is 1 when $t = 1$.

8. Suppose an economy with a public sector. Suppose that $S + T < I + G$. The adjustment towards equilibrium will be characterized by one of the following processes. Choose the one you think is correct and explain why.

    (a) An unplanned drop in inventory, income, consumption, and savings.

    (b) An unplanned drop in inventory, but an increase in income, savings, and investment.

    (c) An unplanned drop in inventory, but an increase in income, consumption, and savings.

    (d) An unplanned drop in inventory, income, consumption, and investment.

9. An economy is characterized by $C_0 = 200$, $c = 0.8$, $t = 0.25$, $m = 0.1$, $I = 2000$, $G = 3000$, and $X = 1500$.

(a) Determine the multiplier of investment, government spending, and exports. Repeat the exercise for the cases of a closed economy without and with public sector, and for an open economy with public sector.

(b) Derive the equilibrium level of income and the corresponding levels of consumption, private and public savings, and net exports.

(c) When faced with a situation of high unemployment, the government decides to increase public spending by 500 units. What will be the effect of such a policy on the income level, the public savings, and the net exports?

10. Suppose an economy where the marginal propensity to consume is $c = 0.8$, the tax rate is $t = 0.75$, and the marginal propensity to import is $m = 0.1$.

    (a) Determine what is the multiplier of government spending in each of the following cases: closed economy without public sector, closed economy with public sector, and open economy with public sector. Explain why these multipliers are different.

    (b) "A fiscal policy consisting of variations in government purchases is less effective in increasing equilibrium income the more open to trade the economy is." Is this statement true or false? Justify your answer by means of the multiplier.