

# ECON20001 Intermediate Macroeconomics

Tutorial 1 (Week 2)

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The University of Melbourne

# Introduction

Zheng Fan

- Ph.D student in Economics at Unimelb
- Consultation & Ed discussion board (your first priority)
- Email: fan.z@unimelb.edu.au (last resort!)

Please attend consultations or post on Ed discussion board before sending me an email!

- Before asking any questions, make sure you have gone through the [subject guide](#) and [Q&A](#) on Canvas!
- Email Dr David Moreton for all administrative issues
- Consult Stop 1 for special consideration
- In-tute and pre-tute solutions will be available at the end of each week

## Last week lectures

Total demand for goods  $Z$

$$Z = C + I + G + X - IM$$

In a closed economy,  $X = IM = 0$ ,

$$Z = C + I + G$$

Consumption:

$$C = c_0 + c_1 Y_D = c_0 + c_1 (Y - T)$$

Endogenous investment (something different from Intro Macro):

$$I = I(Y, i) = b_0 + b_1 Y - b_2 i$$

So in equilibrium  $Z = Y$

$$Y = \frac{1}{1 - c_1 - b_1} (c_0 - c_1 T + b_0 - b_2 i + G)$$

# In-tutorial Sheet - Q1

1. Make sure that you understand the problems set in the blue sheet (pre-tutorial work) for this week's tutorial. Ask others in your group if you are still unsure about any of the blue sheet problems.
- 5 mins talk to introduce yourself and know each other.

## In-tutorial Sheet - Q2

2. For both political and macroeconomic reasons, governments are often reluctant to run budget deficits. Here we examine whether policy changes in  $G$  and  $T$  that maintain a balanced budget are macro-economically neutral. Put another way, we examine whether it is possible to affect output through changes in  $G$  and  $T$  that keep the budget balanced. You should begin with the equilibrium condition:

$$Y = c_0 + c_1(Y - T) + I + G$$

(a) By how much does  $Y$  increase when  $G$  increases by one unit?

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(a) By how much does  $Y$  increase when  $G$  increases by one unit? Due to the multiplier effect,  $Y$  increases by

$$\frac{1}{1 - c_1}$$

## In-tutorial Sheet - Q2

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(c) Why are your answers to (a) and (b) different?

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(c) Why are your answers to (a) and (b) different?

Because government spending affects demand directly while taxes affect demand indirectly through consumption and the MPC is less than one ( $0 < c_1 < 1$ ).

## In-tutorial Sheet - Q2

Suppose that the economy starts with a balanced budget:  $T = G$ . If the increase in  $G$  is equal to the increase in  $T$ , then the budget remains in balance. You are going to calculate the balanced budget multiplier.

(d) Suppose that  $G$  and  $T$  increase by one unit. Using your answers to parts (a) and (b), what is the change to equilibrium GDP? Are balanced budget changes to  $G$  and  $T$  macro-economically neutral?

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The net change in  $Y$  is given by

$$\frac{1}{1 - c_1} - \frac{c_1}{1 - c_1} = 1$$

Therefore the balanced budget changes in  $G$  and  $T$  are NOT macro-economically neutral.

## In-tutorial Sheet - Q2

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The marginal propensity to consume has no effect because the balanced budget tax increase aborts the multiplier process initiated by the increase in government spending.

As  $Y$  and  $T$  both increase by one unit, disposable income, and hence consumption, does not change.

## In-tutorial Sheet - Q3

Suppose the economy is characterized by the following behavioral equations:

$$C = c_0 + c_1 Y_D \quad Y_D = Y - T \quad I = b_0 + b_1 Y$$

Government spending and taxes are constant. Note that investment now increase with output.

(a) Solve for equilibrium output.

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(a) Solve for equilibrium output.

Goods market equilibrium requires

$$Y = C + I + G$$

Plug in for  $C$ ,  $Y_D$  and  $I$  into the equilibrium condition

$$Y = c_0 + c_1(Y - T) + b_0 + b_1 Y + G$$

Solve for  $Y$

$$Y = \frac{1}{1 - c_1 - b_1} (c_0 - c_1 T + G + b_0)$$



## In-tutorial Sheet - Q3

(b) What is the value of the multiplier? How does the relation between investment and output affect the value of the multiplier? For the multiplier to be positive, what condition must  $(b_1 + c_1)$  satisfy? Explain your answers.

# In-tutorial Sheet - Q3

(b) What is the value of the multiplier? How does the relation between investment and output affect the value of the multiplier? For the multiplier to be positive, what condition must  $(b_1 + c_1)$  satisfy? Explain your answers.

The multiplier is

$$\frac{1}{1 - c_1 - b_1}$$

In the investment equation, a higher  $b_1$  would lead to a higher multiplier.

Two channels that autonomous spending can affect output

- A consumption channel through  $c_1$
- An investment channel through  $b_1$

For the multiplier to be positive, we require  $b_1 + c_1 < 1$

## In-tutorial Sheet - Q3

(c) What would happen if  $(b_1 + c_1) > 1$ ?

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If

$$b_1 + c_1 > 1,$$

the multiplier will be negative and there is no equilibrium level of output.

Intuitively,  $b_1 + c_1 > 1$  implies that the increase in consumption and investment will be more than 1 when autonomous spending increases by 1, which does not make sense.

## In-tutorial Sheet - Q3

(c) Suppose that the parameter  $b_0$ , sometimes called **business confidence**, increases. How will equilibrium output be affected? Will investment change by more or less than the change in  $b_0$ ? Why? What will happen to national saving?

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When **business confidence**  $b_0$  increases by 1, output increases by the size of the multiplier.

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$$I = b_0 + b_1 Y$$

Investment increases by the change in  $b_0$  plus  $b_1$  times the change in output. The change in **business confidence** leads to an increase in output, which induces an additional increase in investment.

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Since investment increases, and national saving equals investment, national saving must also increase.



# The end

Thanks for your attention! 😊

See you next week!