ECON3123
Macroeconomic Theory I

Tutorial #5:

(i) Check up for mid-term exam

(ii) The IS/LM model (if there's time)

Today's tutorial

- The Check up for the mid-term exam
  - Go through the mid-term arrangements
  - Do the Test Quiz on Canvas
    - Check and report any issues
- If there's time:
  - The IS/LM model

The mid-term exam: Date/Time, format and structure

- Date/Time
  - Date/Time: April 1 (Wed), 2020. 1:30 PM – 2:40 PM (70 minutes in total).
  - The exam will be designed to ensure that time may be tight. So, **use your time wisely**.
  - The entire session will be **proctored and recorded via Zoom**.

- The online exam
  - (10 mins) Join the Zoom meeting. Turn on your camera and mic. Show your face. Make sure that you are alone in the room while you take the exam.
  - (60 mins) The exam will be conducted via **"Quizzes" menu on Canvas**. You visit our course page on Canvas, solve the questions, and submit your answers online.
  - It is an **open-book** Calculators and web-searching is also allowed.
  - Press 'Submit' only once; **you cannot go back and open the quiz after submitting**.

The mid-term exam: Date/Time, format and structure

- Exam format
  - You will have multiple choice, multiple answers, dropdowns, numerical answers, etc.
  - Only one question will show up on your screen each time.
  - Questions will be randomly sorted. So, everyone will see the same set of questions in a different order.
  - By clicking question numbers on the right, you can jump between questions. Skipping the current one without giving an answer and returning back later is also possible.
  - For numerical questions, values will be randomly generated for each student. For example, I may ask you to compute x+y, where the values of x and y are different for everyone.
  - For numerical questions, a small amount of rounding errors is allowed. For example, if your answer is 1.11555 and if you are asked to round your answer to the two decimals, then the correct answer is 1.12. In this case, all of 1.11, 1.12, and 1.13 will be treated to be correct. Therefore, you do not need to worry too much about rounding as long as your calculation is correct.
  - The grading will be done automatically. So, re-grading requests will not be accepted.

The mid-term exam: What students need to do

- What students need to do
  - **Attend the pre-exam checkup session (March 23, tutorial).**
  - Before the exam begins, prepare a **student ID** and blank sheets of papers. Write your name and student ID at the upper right corner on **every** page of the blank sheets.
  - Join a **Zoom meeting**. The meeting ID will be announced before the exam. Change your Zoom account name to your **Official Name + Student ID**, e.g., "LEE, Byoungchan 1234567(8)."
  - You should show your faces clearly on the **camera** at all times. Ensure this especially if you have Zoom on your phone.
  - Ensure that you have your **microphones on**. You should **not speak** at any time during the exam. Any suspicious activities (including reading the questions aloud) may lead to voidance of the exam.
  - You should check for messages from the instructors from time to time. The instructors might want to contact the student(s) because their camera is off or misdirected.
  - Do calculations by hand on blank sheets of papers and keep the papers for your record. **We may ask you to explain your answers after the exam. Not providing a satisfactory response may lead to voiding the entire**

The mid-term exam: Important remarks

- Any deviations from the recommended protocol could render the exam void for the student(s) concerned.
- You should work on the exam **alone** in a room. If you are found sitting together with someone in a room, you may be considered as having cheated, and your exam may be void.
- We reserve the right to ask you to lean back and move their camera from side to side to show that you really are alone.
- **We reserve the right to ask you to share your screen.**
- **We reserve the right to contact you after the exam to ask you to explain your answer to any given question. Not providing satisfactory responses to these follow-up orals may lead to voiding the entire exam.**
- We can see the students' action logs. For example, if someone solves questions in an unrealistically short time with surprisingly high precision in the last minutes of the exam, we can detect that.

The mid-term exam: This check-up session

- We will have a dry-run for the exam.
- This is to **check technical issues from your side**. You are asked to test your connection, computer, monitor, and any other technical issues using a test quiz during the pre-exam checkup session with the TA.
- **It is your duty to** check these things before we take the actual exam.
- If you attend the pre-exam checkup session and complete all the required tasks, you will get full marks, corresponding to 5% of your letter grade.
- **If you do not attend the pre-exam checkup session and you encounter any technical issues in the actual exam, which should have been detected and fixed in this checkup session, you will take the responsibility.**

The mid-term exam: The test quiz

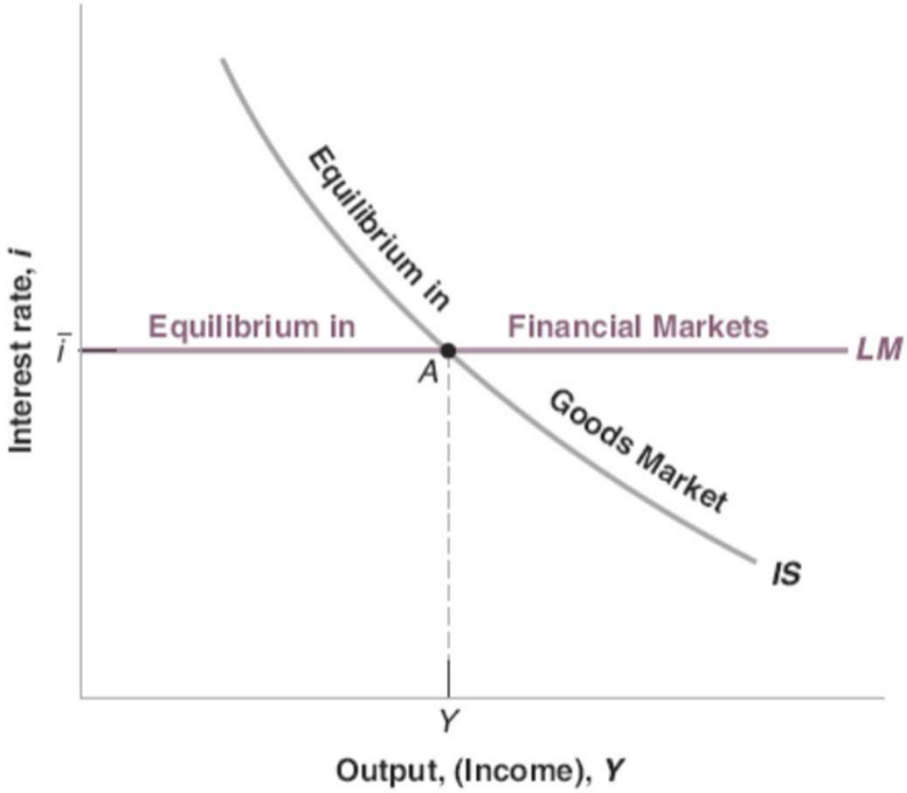
- The quiz serves 3 purposes:
  - 1) Get familiar with the user interface
  - 2) check whether equations and pictures are shown properly (Q5 and Q6). If not, please try other web browsers (we think that Chrome should work fine)
  - 3) Understand different types of questions such as multiple choice, multiple answers, true/false, and formula questions.
- Please note the following:
  - There is a timer on the right.
  - By clicking question numbers on the right, you can jump between questions. Skipping the current one without giving an answer and returning back later is also possible.
  - For this pre-exam quiz, multiple attempts are allowed. However, for the actual exam, only a single attempt will be allowed. You will not be able to restart the exam once they click "submit quiz."
  - Furthermore, in the actual exam, you will each see the same set of questions in a randomly generated order. But for the checkup quiz, questions are not shuffled.

The mid-term exam: This check-up session

- Things to check:

Item	OK/Not OK	Notes
Change Zoom name to official name + Student ID, eg PEGLER, Dominic + 12345678		
Using device with camera and mic		
Camera and mic working ok		
Connection		
Test quiz:		
• Can see all equations		
• Can see pictures		
• Understand all the questions and their format		

The IS/LM model



- IS: $Y = C(Y - T) + I(Y, i) + G$
- LM: $\frac{M}{P} = YL(i)$

The IS/LM model

- IS: $Y = C(Y - T) + I(Y, i) + G$
- LM: $\frac{M}{P} = YL(i)$

- Assume:
  - T, G do not depend on i or Y
  - M set by the central bank, P fixed

- Example: (adapted from Blanchard Ch.5 Q5)

- $C = 100 + 0.3Y_d$
- $Y_d = Y - T$
- $I = 150 + 0.2Y - 1000i$
- $T = 100$
- $G = 200$
- $\left(\frac{M}{P}\right)^s = 1200$
- $\left(\frac{M}{P}\right)^d = 2Y - 4000i$

The IS/LM model

- Example: (adapted from Blanchard Ch.5 Q5)

1. Derive the equation for aggregate demand

- $C = 100 + 0.3Y_d$
- $Y_d = Y - T$
- $I = 150 + 0.2Y - 1000i$
- $T = 100$
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2. Derive the IS relation

The IS/LM model

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3. Derive the LM relation

The IS/LM model

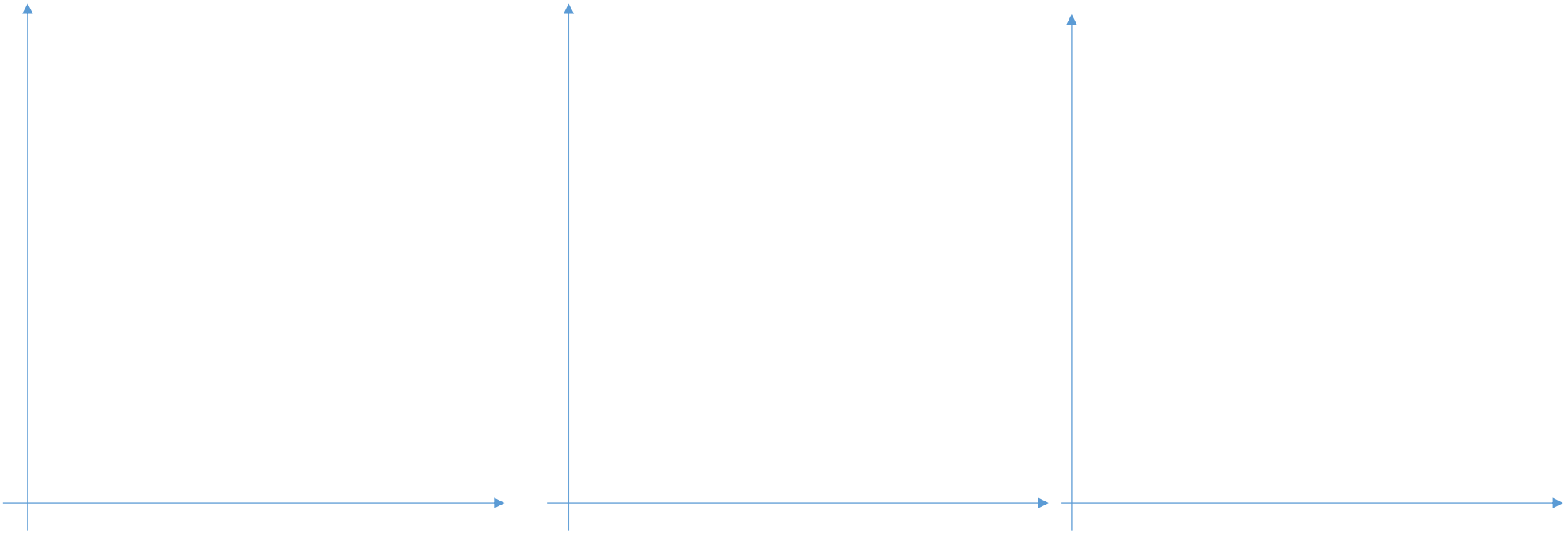
- Example: (adapted from Blanchard Ch.5 Q5)

- $C = 100 + 0.3Y_d$
- $Y_d = Y - T$
- $I = 150 + 0.2Y - 1000i$
- $T = 100$
- $G = 200$
- $\left(\frac{M}{P}\right)^s = 1200$
- $\left(\frac{M}{P}\right)^d = 2Y - 4000i$

4. Find The equilibrium income and interest rate

The IS/LM model

5. Draw basic versions of the IS/LM, Keynesian Cross and noney market diagrams to illustrate this economy



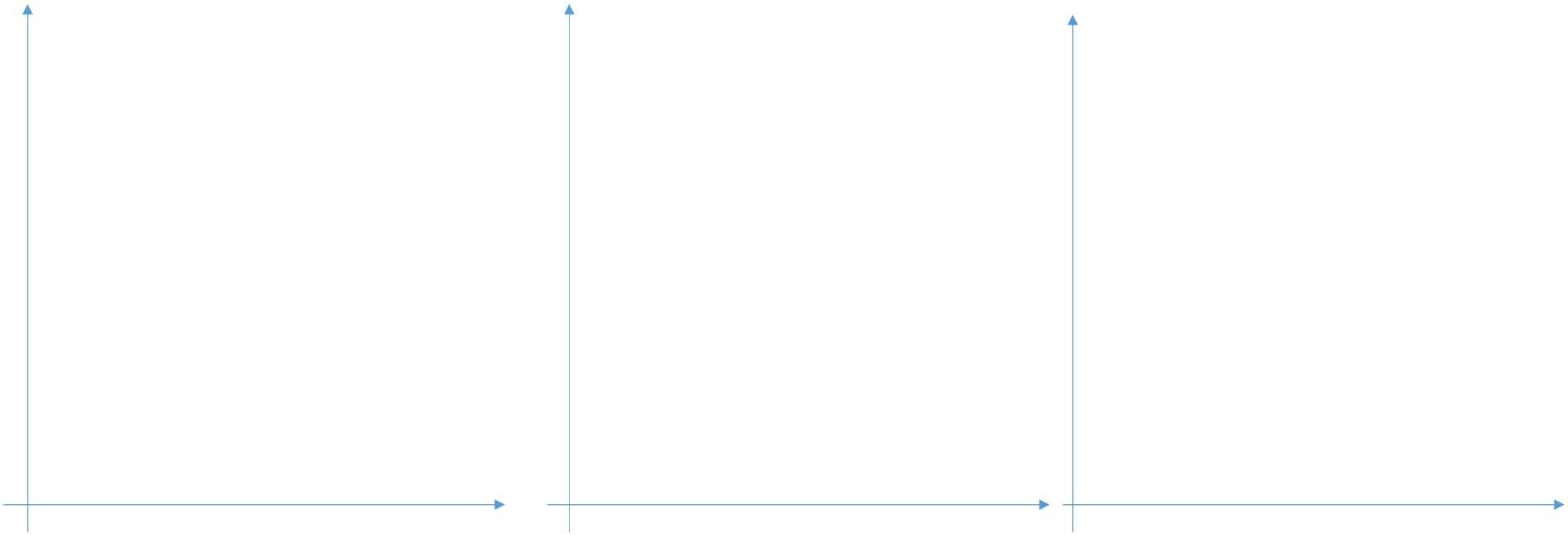
The IS/LM model

- $Z = c_0 + c_1(Y - T) + d_0 + d_1 Y + d_2 i + G$
- In goods market equilibrium:
- $Y = Z$
- $Y = c_0 + c_1(Y - T) + d_0 + d_1 Y - d_2 i + G$
- ie:
- $Y = \left(\frac{1}{1 - c_1 - d_1}\right)[c_0 - c_1 T + d_0 - d_2 i + G]$

6. What are the multipliers in this model for the following:
   - Government spending
   - Taxation
   - Interest rates

The IS/LM model

7. Assume now that the government increases government spending by 100. Draw the new equilibrium in IS/LM, Keynesian Cross and money market diagrams. What must the central bank do to maintain interest rates unchanged?



The IS/LM model

8. How much does equilibrium income increase by? What is the new equilibrium income?

9. How much does the money supply have to increase by to maintain interest rates at 6%?

The IS/LM model

10. What happens to the following as a result of the increase in government spending?

	Change	Value
T		
C		
I		
Aggregate demand		
Equilibrium income (1)		
Public saving $(T - G)$		
Private saving (S)		
Equilibrium income (2)		

The IS/LM model

- Changes in which variables cause the IS and LM curves to shift, and which do not?

Increase in variable	IS	LM
c_0	Shifts to right	No effect
c_1	IS flatter and shifts to left	No effect
d_0	Shifts to right	No effect
d_1	Shifts to right	No effect
G	Shifts to right	No effect
T	Shifts to left	No effect
M	No effect	Shifts down
P	No effect	Shifts up (unless M increases to keep $\frac{M}{P}$ constant)
i	Move up the existing curve	Shifts up (caused by fall in M)
Y	Move down the existing curve	No effect (assume M changes to keep i constant)