OUTLINE — November 1, 2019

- *This is makeup for the lost class due to the outage*
- Multiplier, review
  - Closing an Output Gap
- Investment Spending & Its Determinants

Midterm 2 on Wed., Nov 6, 7-8:30 pm
Rooms & Review Sessions posted on Piazza
Same rules as MT1

Be sure to read yesterday's email

Review

Question: Unemployment depends on . . . ?

Answer: Ultimately, aggregate demand

AD = C + I + G + (EX – IM)

Aggregate Demand → Output (GDP) → Employment → Unemployment

Determinants of Aggregate Demand

- Consumption spending by households (C)
  - YD, wealth, credit availability, ? i ?, expectations
  - YD changes when TA or TR change
- Investment spending by businesses (I, today)
  - Interest rates, expected rates of return, credit availability
- Government spending (G, Nov. 6)
  - Direct fiscal policy (G)
- Net exports (EX & IM, Nov. 4)
  - Exchange rates, health of world economy

Solving for Equilibrium

C = 2000 + 0.9·YD
TR = 1,000
TA = 3,000

I = 1,000
G = 400
EX = 200
IM = 400

Y = C + I + G + EX - IM

Macro Equilibrium

Closing an Output Gap

- Suppose
  Y_{FE} = \$15 trillion / year
  Y_E = \$14 trillion / year

How big is the output gap?

- Closing an output gap requires an increase in AD

To close the gap, how big must the initial increase in AD be?

Changes in Equilibrium

Any initial Δspending results in a much larger ΔY_E

1) Δspending → Δoutput
2) Δoutput → ΔY
3) ΔY → Δspending

- Definition of multiplier is
- What's in the formula for the multiplier?

Change of Equilibrium

Investment Spending

- Investment is business spending for
  -
  -
  -
- "Investment" has nothing to do with stocks and bonds

GDP report this week

- Source: bea.gov

Table 2. Contributions to Percent Change in Real GDP

Line		2016	2017	2018	Seasonally adjusted at annual rates 2019 Q1	2019 Q2	2019 Q3
	Percent change at annual rate:						
1	**Gross domestic product**	**1.6**	**2.4**	**2.9**	**3.1**	**2.0**	**1.9**
	Percentage points at annual rates:						
2	***Personal consumption expenditures***	**1.9**	**1.8**	**2.1**	**0.8**	**3.0**	**1.9**
26	***Gross private domestic investment***	**-0.2**	**0.8**	**0.9**	**1.1**	**-1.2**	**-0.3**
27	**Fixed investment**	**0.3**	**0.7**	**0.8**	**0.6**	**-0.3**	**-0.2**
29	Nonresidential Structures	-0.2	0.1	0.1	0.1	-0.4	-0.5
39	Residential Structures	0.2	0.1	-0.1	0.0	-0.1	0.2
30	Equipment	-0.1	0.3	0.4	0.0	0.1	-0.2
35	Intellectual property products	0.3	0.2	0.3	0.5	0.2	0.3
40	**Change in private inventories**	**-0.6**	**0.0**	**0.1**	**0.5**	**-0.9**	**-0.1**
43	***Net exports of goods and services***	**-0.3**	**-0.3**	**-0.3**	**0.7**	**-0.7**	**-0.1**
50	***Government spending***	**0.3**	**0.1**	**0.3**	**0.5**	**0.8**	**0.4**

A New Frozen Yogurt Machine?

- Machine Cost = $10,000
- Expected additional revenue = $ 22,000
- Expected additional costs = $ 21,500
  (excluding interest costs)

→ Expected new net revenue = $ 500

→ Expected $ return =

Expected rate of return (rr^e)
=

Profit-max strategy for buying capital

- Compare
  Expected rate of return (rr^e)
  and interest rate (i)
- What's an interest rate?
  - From perspective of a borrower:
  - From perspective of a lender:
- And remember: savers are lenders
  - Sometimes directly. Often indirectly.

Profit-max strategy for buying capital

- Compare
  Expected rate of return (rr^e)
  and interest rate (i)
- If $rr^e > i$, then
- If $rr^e < i$, then
- Same strategy regardless of source of money

Borrowed $ . . . Saved $

- Source of money doesn't matter

Investment Demand

Project	Cost	rr^e
A	$10,000	14 %
B	$5,000	10 %
C	$8,000	4 %

i = 2 %

i = 8 %

i = 12 %

Investment Demand Curve

Investment depends on Interest Rates

- Interest Rates (i) matter
- Expected rates of return matter

Investment Demand Curve

Investment Demand Curve

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Investment Demand Curve

Investment Demand Curve

Financial Crisis of 2008

- Def of a financial crisis: when "market failure" permeates financial markets
  - Disequilibrium: Lenders won't lend. No interest rate will clear market.
- Asymmetric information problems in financial markets
  - Adverse selection
    - Lenders have difficulty assessing riskiness of potential borrowers
  - Moral hazard
    - After signing contract, borrowers may change behavior, increasing risk of default
  - Solutions to asymmetric info problems enable markets to function

Investment depends on . . .

- Interest Rates (i) matter
  - ↑ i → ↓ Investment
  - ↓ i → ↑ Investment
- Expected rates of return (rr^e) matter
  - ↑ rr^e → ↑ Investment
  - ↓ rr^e → ↓ Investment
- Credit availability – manifestation of a credit (financial) crisis – matters
  - ↑ Credit availability → ↑ Investment
  - ↓ Credit availability → ↓ Investment