

OUTLINE — October 29, 2018

- Multiplier, review
 - Closing an Output Gap
- Investment Spending & Its Determinants

PS 3 due 10/31-11/1 in section

Midterm 2 on Tues., Nov 6, 8-9:30 pm

Rooms & Review Sessions posted on Piazza

Same rules as MT1

Solving for Equilibrium

$C = 500 + 0.9 \cdot YD$ $TR = 100$ $TA = 300$	$Y = C + I + G + EX - IM$
$I = 500$ $G = 200$ $EX = 100$ $IM = 200$	

Multiplier Process
Output Gap
Investment: Definitions
Investment Determinants

Change of Equilibrium

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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?

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Changes in Equilibrium

Any initial Δ spending results in a much larger ΔY_E

- 1) Δ spending \rightarrow Δ output
- 2) Δ output \rightarrow ΔY
- 3) $\Delta Y \rightarrow \Delta$ spending

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

Multiplier Process Output Gap Investment: Definitions Investment Determinants

Example: Open Economy with $IM=f(Y)$

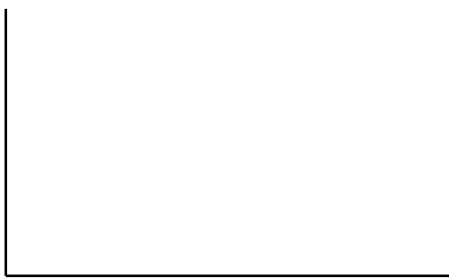
Any initial Δ spending results in a much larger ΔY_E

- 1) Δ spending \rightarrow Δ output
- 2) Δ output \rightarrow ΔY
- 3) $\Delta Y \rightarrow \Delta YD \rightarrow \Delta C$ and $\Delta Y \rightarrow \Delta IM$

- Now what concepts (measures) will be in multiplier formula?

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Change of Equilibrium



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Investment Spending

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

Multiplier Process Output Gap Investment: Definitions Investment Determinants

GDP report last week

- Source: bea.gov (also see my Friday tweets)

Table 2. Contributions to Percent Change in Real Gross Domestic Product

Line	2015	2016	2017	Seasonally adjusted at annual rates			
				2018			
				Q1	Q2	Q3	
Percent change at annual rate:							
1	Gross domestic product	2.9	1.6	2.2	2.2	4.2	3.5
Percentage points at annual rates:							
24	Gross private domestic investment	0.8	-0.2	0.8	1.6	-0.1	2.0
27	Fixed investment	0.6	0.3	0.8	1.3	1.1	0.0
39	Residential Structures	0.3	0.2	0.1	-0.1	-0.1	-0.2
29	Nonresidential Structures	-0.1	-0.2	0.1	0.4	0.4	-0.3
30	Equipment	0.2	-0.1	0.4	0.5	0.3	0.0
35	Intellectual property products	0.2	0.3	0.2	0.6	0.5	0.4
40	Change in private inventories	0.2	-0.5	0.0	0.3	-1.2	2.0

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A New Frozen Yogurt Machine?

- Machine Cost = \$10,000

- Expected additional revenue = \$ 22,000
- Expected additional costs = \$ 21,500

→ Expected new net revenue = \$ 500

→ Expected \$ return =

Expected rate of return (rr^e)

=



Multiplier Process Output Gap Investment: Definitions Investment Determinants

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.

Multiplier Process Output Gap Investment: Definitions Investment Determinants

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

Multiplier Process Output Gap Investment: Definitions Investment Determinants

Investment Demand

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

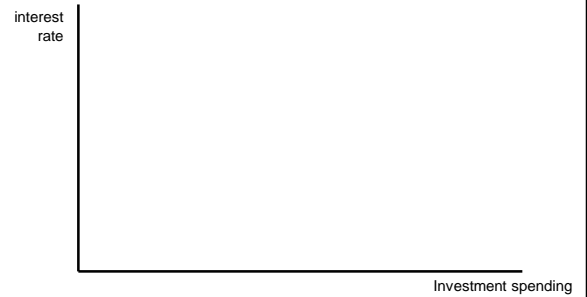
$i = 2 \%$

$i = 8 \%$

$i = 12 \%$

Multiplier Process Output Gap Investment: Definitions **Investment Determinants**

Investment Demand Curve



Multiplier Process Output Gap Investment: Definitions **Investment Determinants**

Investment depends on Interest Rates

- Interest Rates (i) matter

- Expected rates of return matter

Multiplier Process Output Gap Investment: Definitions **Investment Determinants**

What happens to Investment if . . .

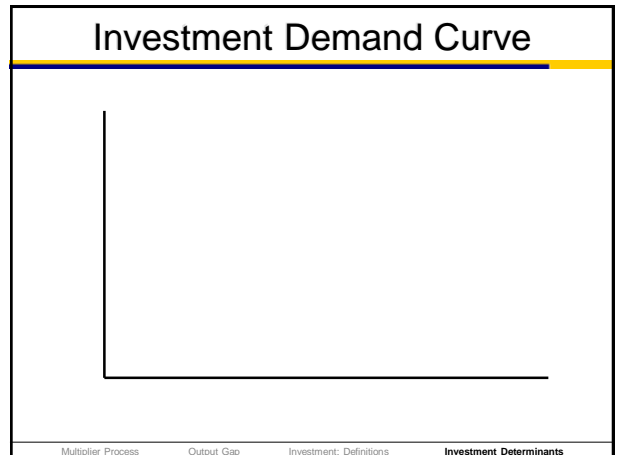
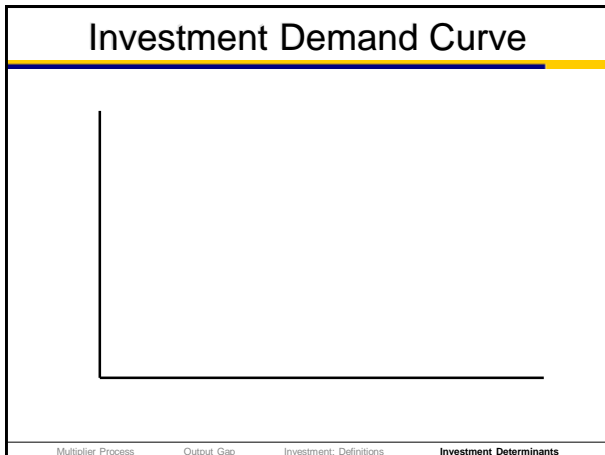
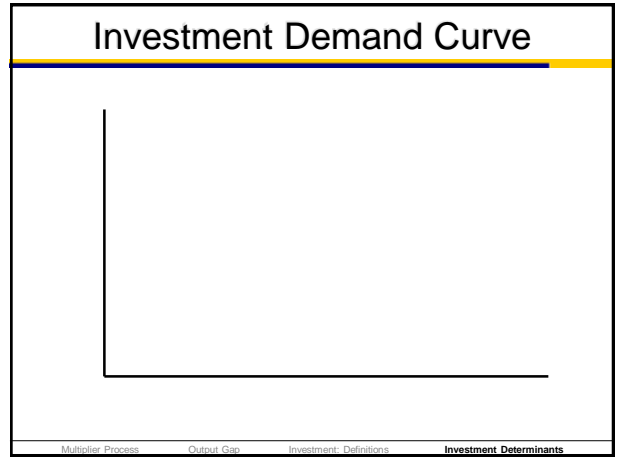
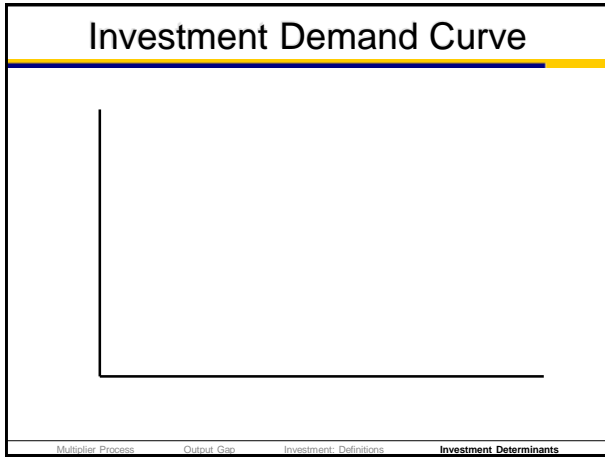
- Expected sales decline?

- Expected energy costs rise?

- Interest rates fall?

- Banks refuse to lend to most businesses (credit crisis)?

Multiplier Process Output Gap Investment: Definitions **Investment Determinants**



Credit (or, 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

Multiplier Process Output Gap Investment: Definitions **Investment Determinants**

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 crisis – matters
 - ↑ Credit availability → ↑ Investment
 - ↓ Credit availability → ↓ Investment

Multiplier Process Output Gap Investment: Definitions **Investment Determinants**