ECON 2:
Principles of Macroeconomics

Lecture 11: Expenditure Multiplier and Fiscal Policy

Today

- Expenditure Multiplier
- Role of the Federal Government
- Expenditure vs. Tax Multiplier

Finding Equilibrium

- Economy:
- $I^P = 10$; $G = 10$; $NX = 5$

Real GDP (Y)	Consumption (C)	Planned Investment (I^P)	Government Expenditures (G)	Net Exports (NX)	Aggregate Expenditures (AE)	Change in Inventory
200	200	10				
300	275					
400	350			5		
500	425					
600	500		10			

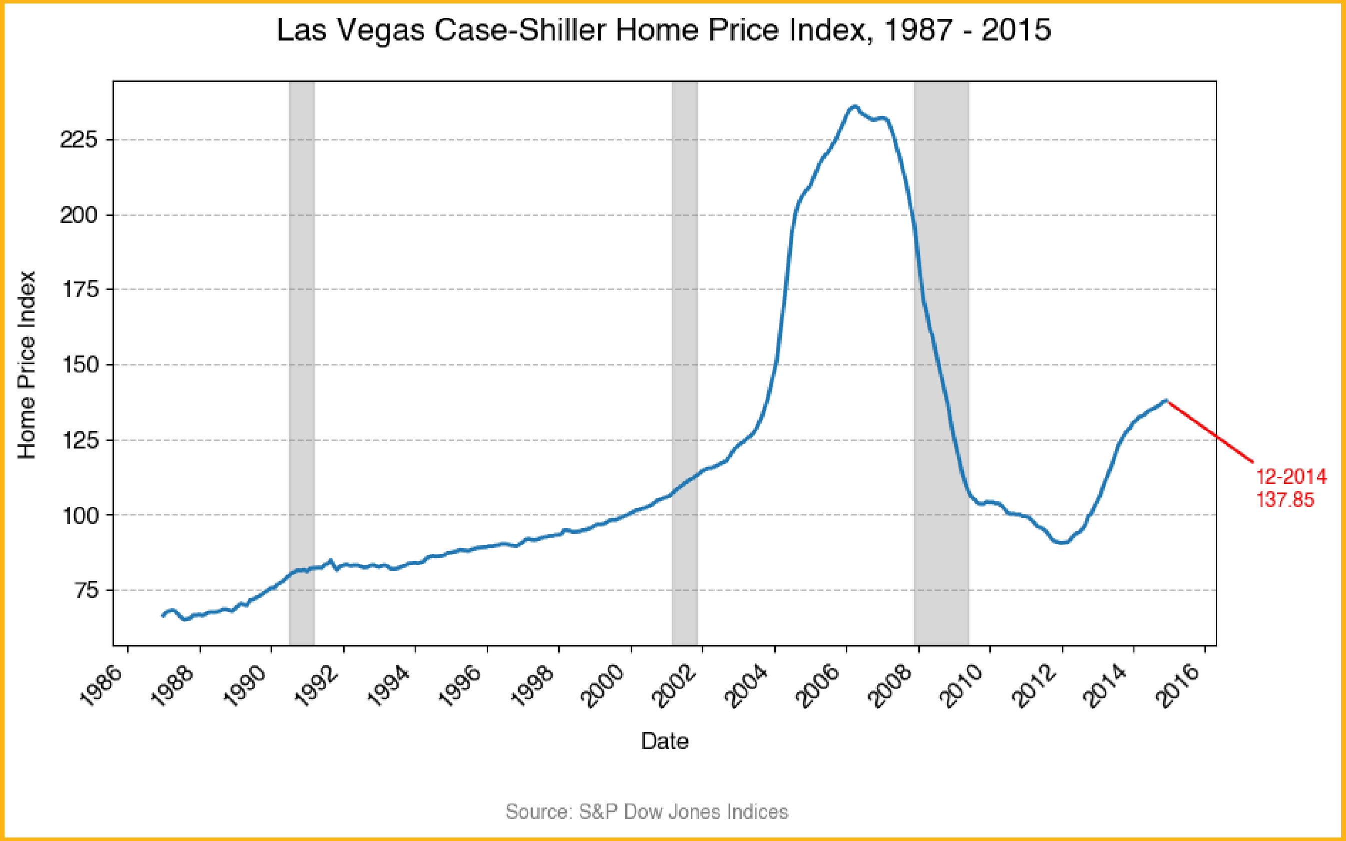
Graphing Equilibrium

Changes in Equilibrium

- Start at Y* = 10,000 (full-employment output)

Housing Market Equilibrium

- Las Vegas Housing Prices Over Time



Consequences of the Housing Crash

- Mortgage Backed Securities

Mortgage 1: 100K

Mortgage 2: 200K

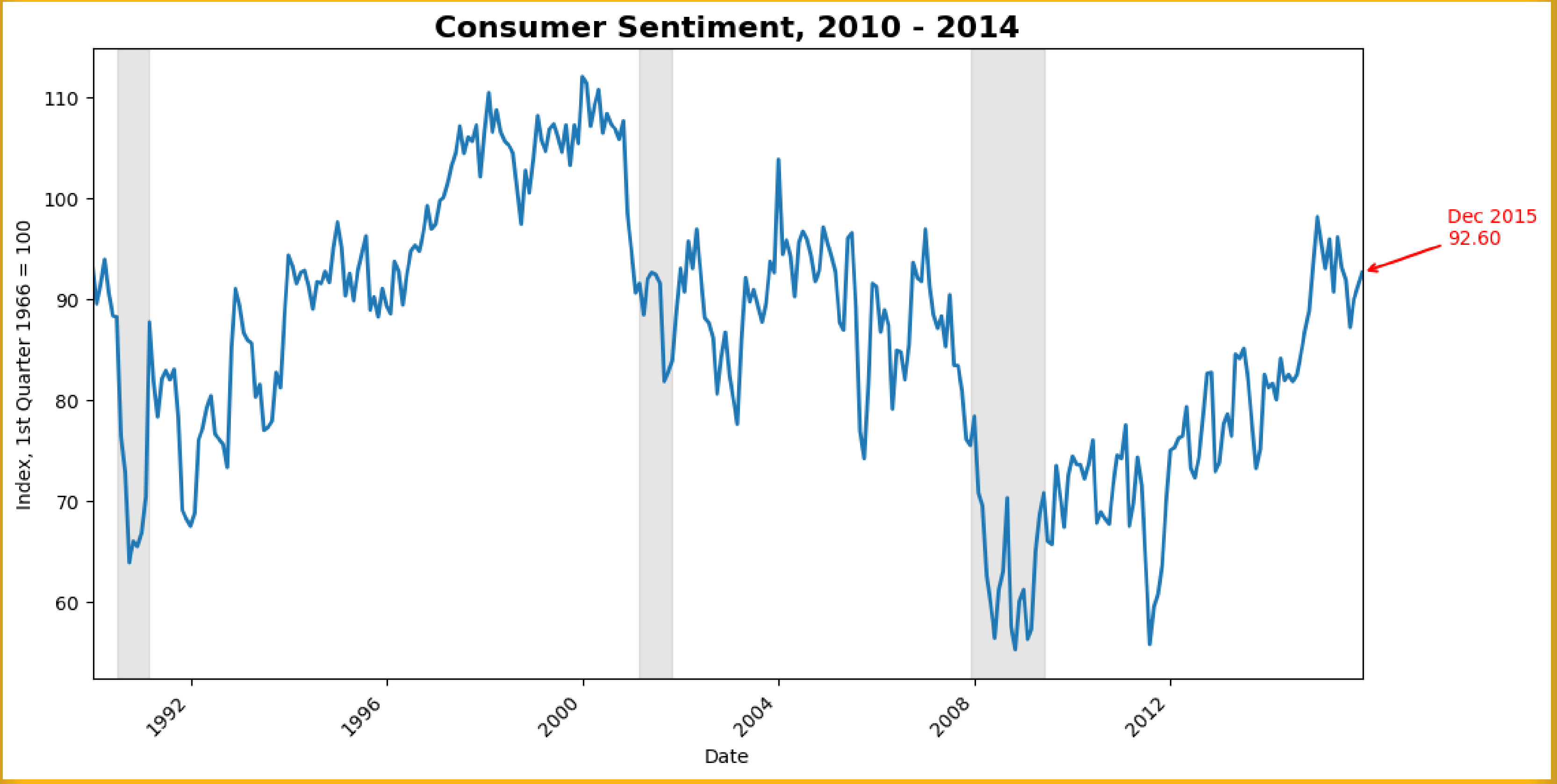
Mo 00K

Bank: 600K + 400K = 1 million (30 years)

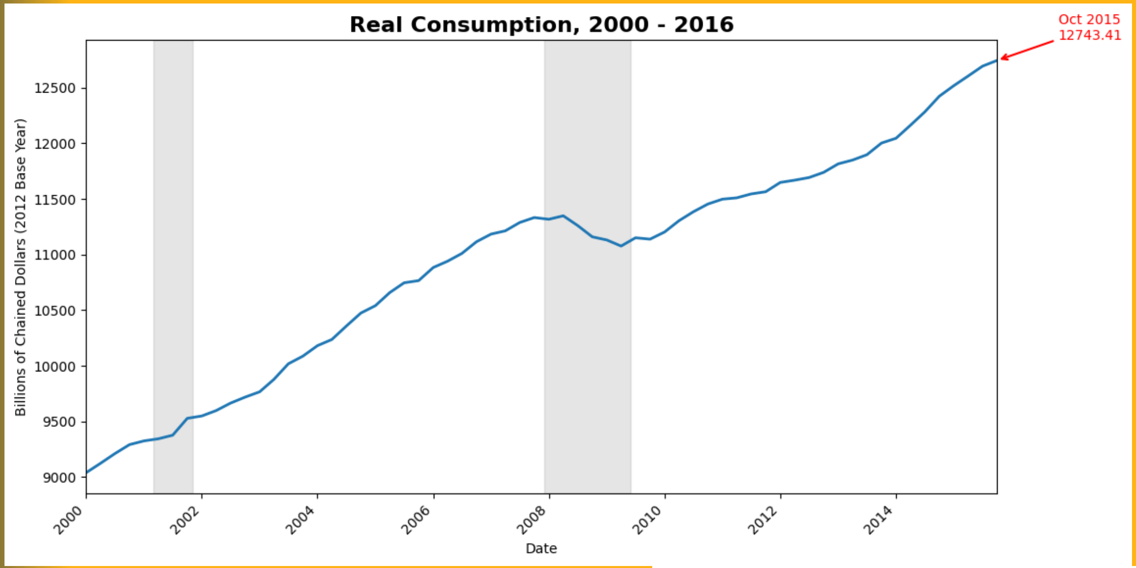
1 million over 30 years

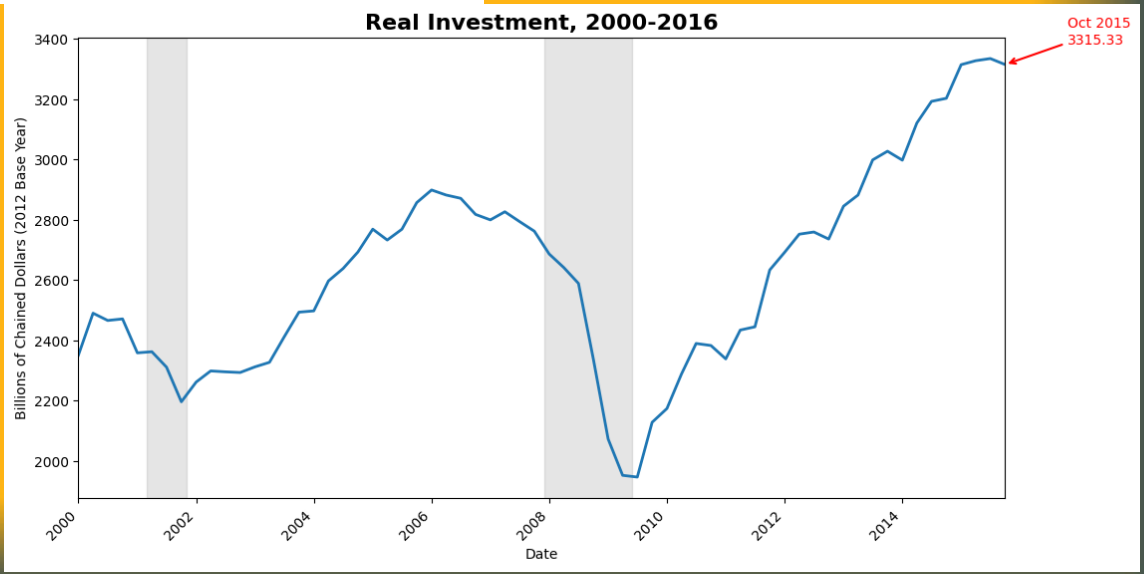
750K

Consumer Confidence Decreased

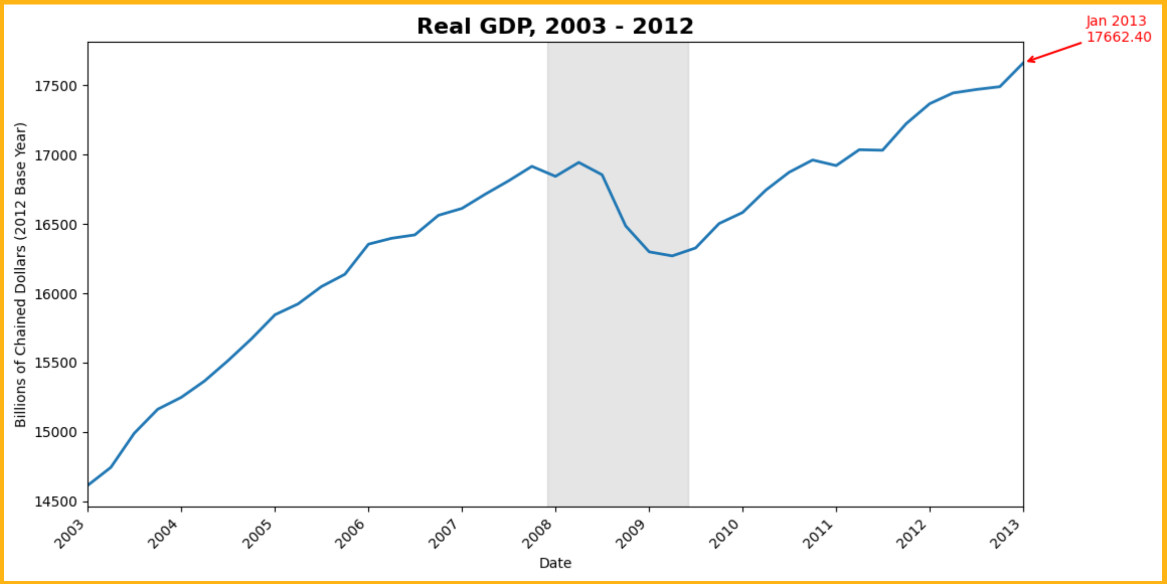


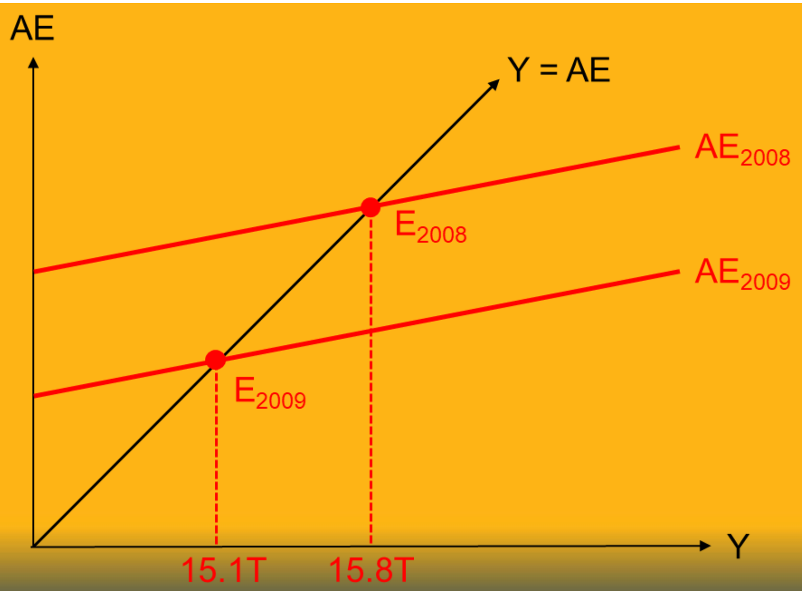
Housing: Decrease in AC and I





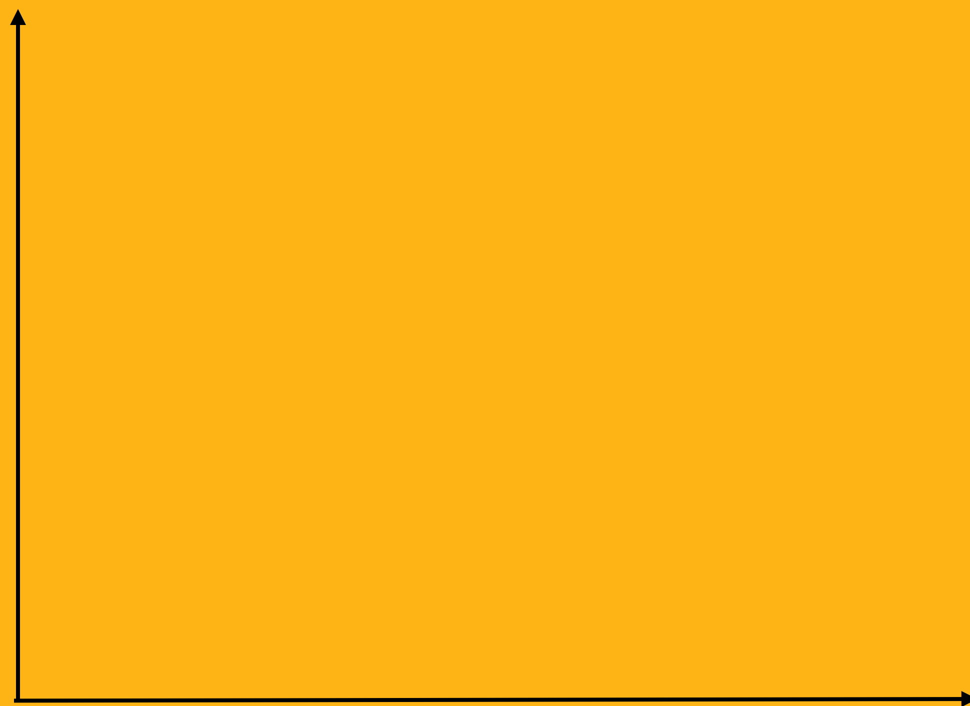
Great Recession





Changes in Equilibrium

- Start at Y* = 10,000 (full-employment output)
  Housing Crash! (assume mpc = 0.8)



Recovering from a Crash

- Option 1: Rich person buys $500 worth of machines ($I^P$)

$500 in machines = increase I^P by $500
Incomes increase by $500

Recovering from a Crash

- Option 1: Rich person buys \$500 worth of machines (I^P)

Round 1:
Y up \$500

\$500 in machines = increase I^P by \$500
Incomes increase by \$500

Round 2:
Y up \$400 more,
\$900 total

Spend mpc x 500 =
0.80 x 500 = \$400
Consumption increase

Save mps x 500 =
0.20 x 500 = \$100

Recovering from a Crash

- Option 1: Rich person buys $500 worth of machines ($I^P$)

Round 1:
Y up $500

$500 in machines = increase I^P by $500
Incomes increase by $500

Round 2:
Y up $400 more,
$900 total

Spend mpc x 500 =
0.80 x 500 = $400
Consumption increase

Save mps x 500 =
0.20 x 500 = $100

Incomes rise by $400

Recovering from a Crash

- Option 1: Rich person buys \$500 worth of machines (I^P)

Round 1:
Y up \$500

\$500 in machines = increase I^P by \$500
Incomes increase by \$500

Round 2:
Y up \$400 more,
\$900 total

Spend mpc x 500 =
0.80 x 500 = \$400
Consumption increase

Save mps x 500 =
0.20 x 500 = \$100

Incomes rise by \$400

Round 3:
Y up \$320,
\$1,220 total

Spend mpc x 400 =
0.80 x 400 = \$320
Consumption increase

Save mps x 400 =
0.20 x 400 = \$80

Recovering from a Crash

Round	Additional I^P	Additional Consumption	Total Additional Spending = Additional GDP
1	500	0	500
2	0	mpc x 500 = 400	500 + 400 = 900
3	0	mpc x 400 = 320	500 + 400 + 320 = 1,220
4	0	mpc x 320 = 256	500 + 400 + 320 + 256 = 1,476
5	0	mpc x 256 = 204.8	500 + 400 + 320 + 256 + 204.8= 1680.8
…			
10	0	mpc x 83.89 = 67.11	2231.56
…			
25	0	mpc x 2.95 = 2.36	2490.56
…			
50	0	mpc x 0.011 = 0.009	2500

Recovering from a Crash

- Original Increase in I^P = \$500
- Total Increase in GDP = ?
- Expenditure Multiplier =

Calculating the Expenditure Multiplier

- How to figure out the total change in GDP when I^P increases by \$500?
- Total Additional GDP = \$500 + mpc x \$500 + mpc x (mpc x \$500) +…
  Round 1 + Round 2 + Round 3
- Re-write as: \$500 x (1 + mpc + mpc^2 + mpc^3 + …) = \$500 x $\frac{1}{1-mpc}$ = \$500 x $\frac{1}{mps}$
- Expenditure multiplier = $\frac{1}{1-mpc}$
- How to use the expenditure multiplier: Increase in I^P is \$500, mpc = 0.8
- Total Change in GDP = \$500 x $\frac{1}{1-0.8}$ = \$500 x 5 =\$2,500
- GDP started at \$7,500, ended at \$10,000
- Same result if we change G, NX, AC!!!

Finding Equilibrium

- Economy:
- $I^P = 500$; $G = 200$; $NX = 40$

Real GDP (Y)	Consumption (C)	Planned Investment (I^P)	Government Expenditures (G)	Net Exports (NX)	Aggregate Expenditures (AE)
5000	4560	500	200	40	
6000	5460	500	200	40	
7000	6360	500	200	40	
8000		500	200	40	
9000		500	200	40	
10000		500	200	40	

- MPC?
- Where is Y-bar? How can we get there?

Role of the Federal Government

Executive (President) and Legislative (Congress/Parliament) Branches of Government:

Move Y to full-employment Y!

"Federal Government" = "Government" = "President/Congress"

What can the Government change that will influence aggregate expenditures/equilibrium Y?

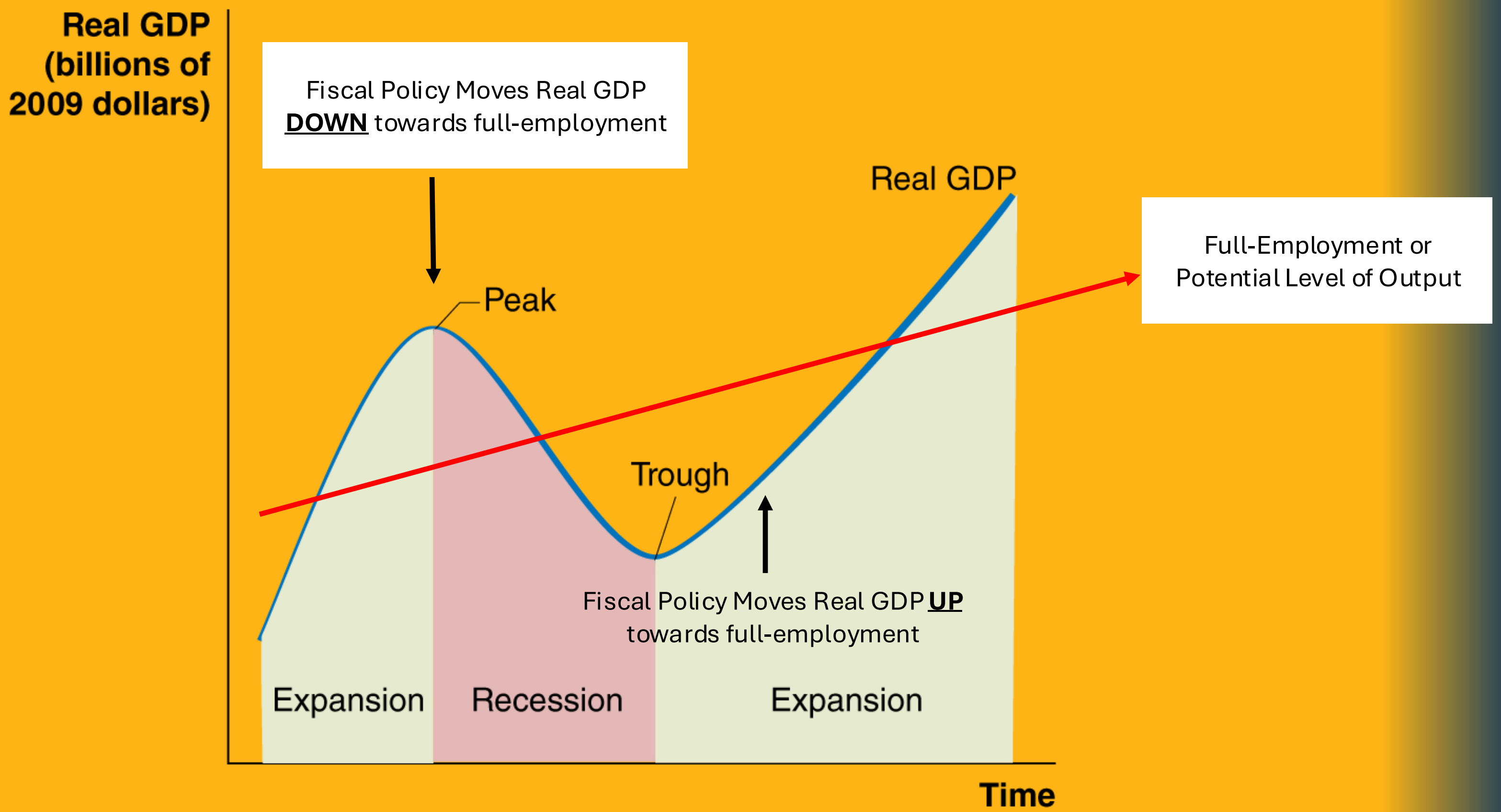
1.

2.

Fiscal Policy:

Counter-Cyclical Fiscal Policy:

Counter-Cyclical Fiscal Policy



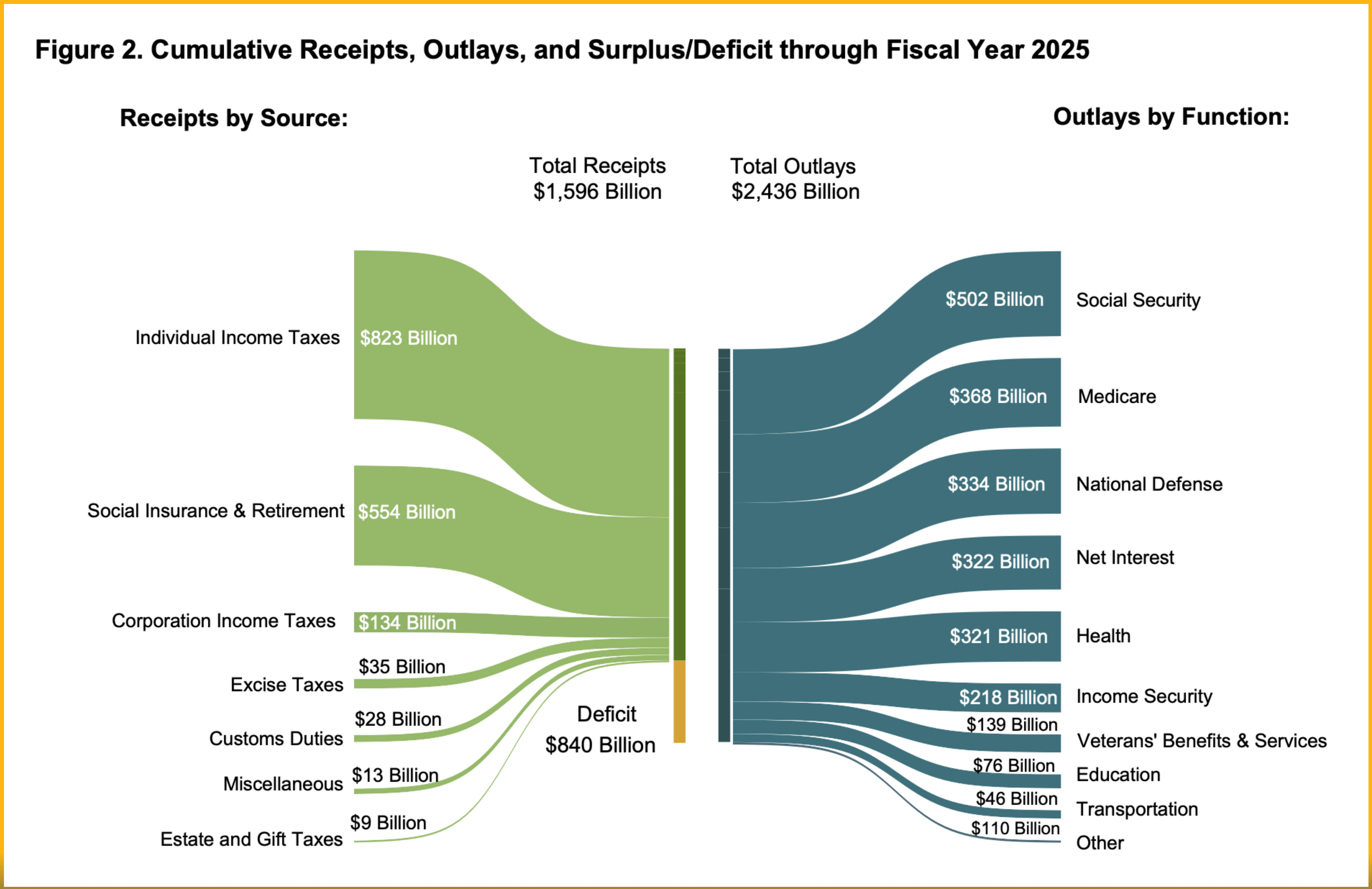
Fiscal Policy

Two categories of Fiscal Policy

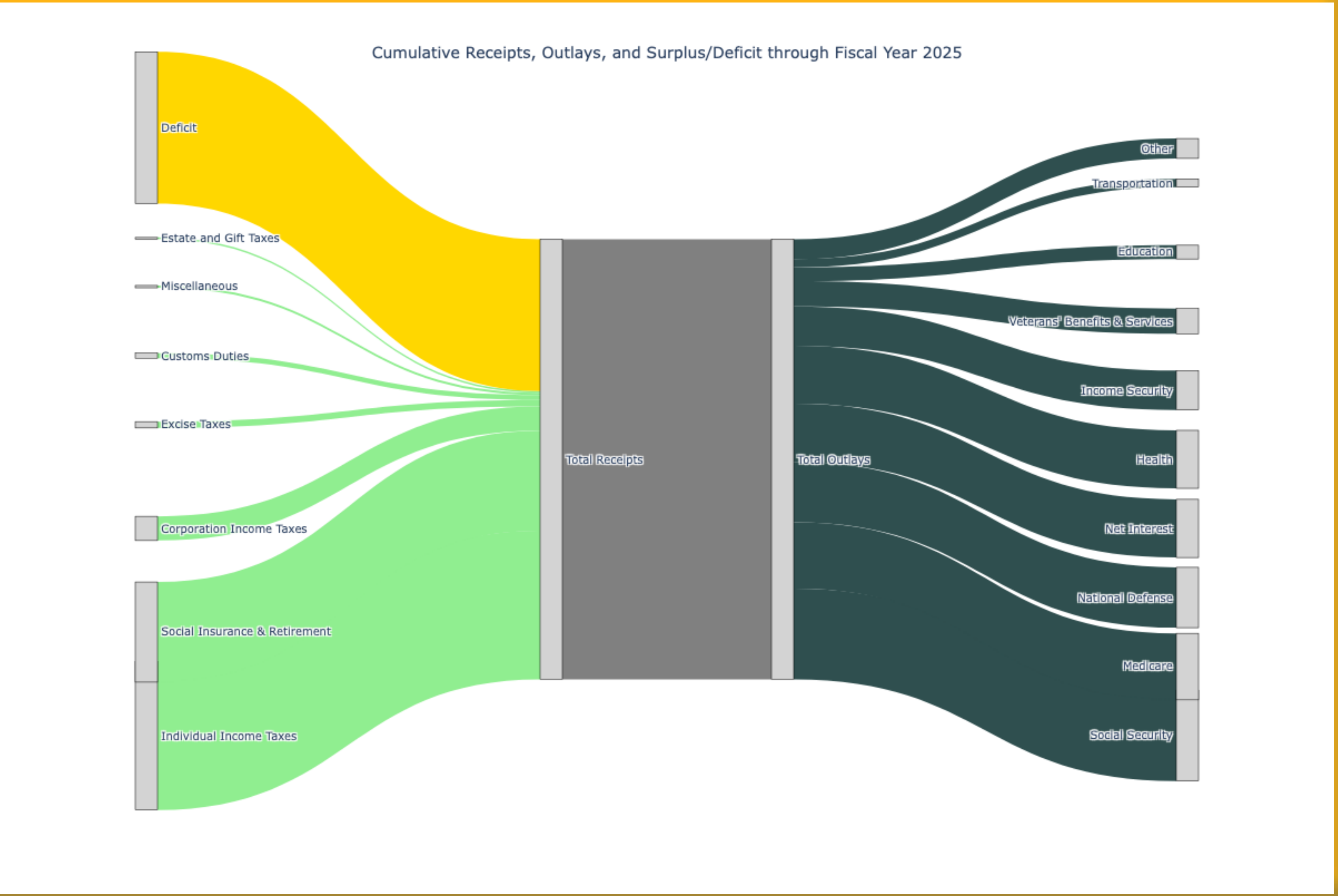
1.Discretionary Fiscal Policy

2.Automatic Stabilizers

Federal Government Expenditures (since 10/2024)

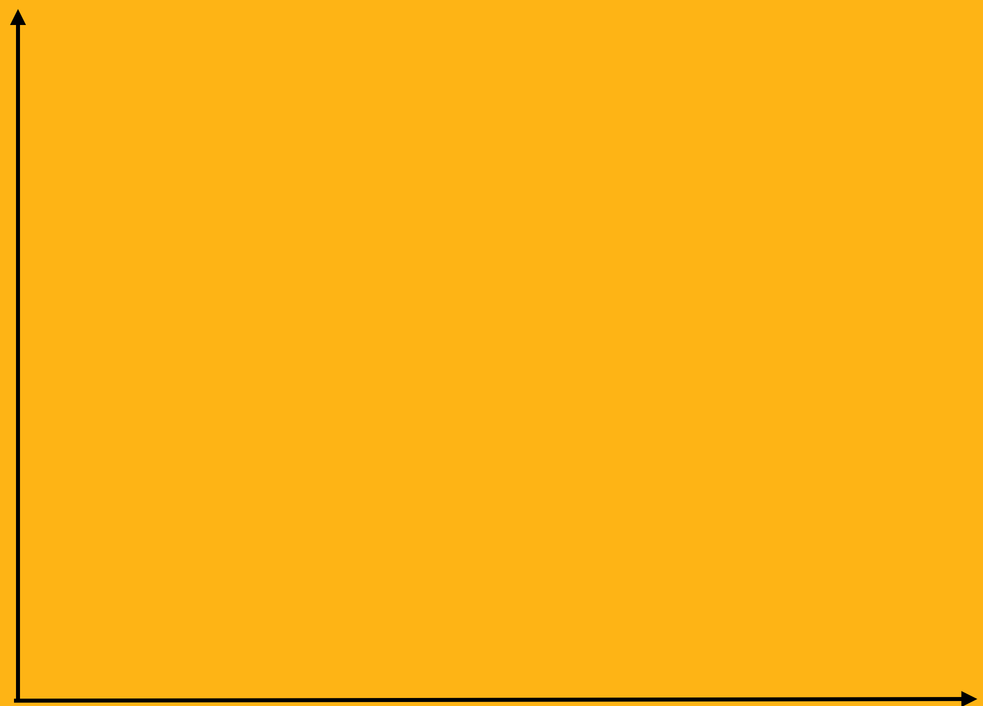


Federal Government Revenue



How can the Government use Fiscal Policy?

- Y* decreases to $7,500
- What should the government do to bring output up to $10,000 but **<u>mpc=0.90</u>**?
- Option 1: Increase Government Purchases (same as before)



How can the Government use Fiscal Policy?

- Option 1: Increase G by $250, mpc=0.9

Round 1:
Y up $250

$250 in new bridge = increase G by $250
Incomes increase by $250

Round 2:
Y up $225 more,
$475 total

Spend mpc x 250 =
0.90 x 250= $225
Consumption increase

Save mps x 250 =
0.10 x 250 = $25

Incomes rise by $225

Round 3:
Y up $202.50,
$677.5 total

Spend mpc x 225 =
0.90 x 225 = $202.5
Consumption increase

Save mps x 225 =
0.10 x 225 = $22.50

Changing Government Purchases or Taxes?

- How does the government increase G?
- Congress ***<u>AGREES</u>*** on a change in G! President does not veto a change in G!
- Example: A new bridge is built over the Ohio River in Cincinnati on I-71/75, $\Delta G = 250$

Problems with Changing G

1. Time Lag: Can Congress respond quickly?

2. Implementing Spending: Who builds the bridge? When?

3. Irreversibility: What if economy recovers before completion of the project?

How can the Government use Fiscal Policy?

Option 2: Decrease Taxes by $250, mpc = 0.9

Decreasing T misses round 1 increase in Y, but all other rounds are the same.

Increasing G by $250 increased Y by $2,500

Decreasing T by $250 will increase Y by less than $2,500. How much less?

Tax Multiplier:

How can the Government use Fiscal Policy?

- Option 2: Decrease Taxes by \$250, mpc = 0.9

Round 1:
No change in Y
Disposable Y up
\$250

\$250 in tax breaks to workers = decrease T by \$250
Change in Y? None

Round 2:
Y up \$225 more,
\$225 total

Spend mpc x 250 =
0.90 x 250= \$225
Consumption increase

Save mps x 250 =
0.10 x 250 = \$25

Incomes rise by \$225

Round 3:
Y up \$202.50,
\$427.5 total

Spend mpc x 225 =
0.90 x 225 = \$202.5
Consumption increase

Save mps x 225 =
0.10 x 225 = \$22.50

Tax Multiplier

What is the value of the tax multiplier?

For every $1 increase in taxes, Y will change by…

For every $1 decrease in taxes, Y will change by…

Problems with Tax Cuts

Simple Option 1: Cut taxes for low income households

Benefits:

Costs:

Problems with Tax Cuts

Simple Option 2: Cut taxes for rich

Benefits: $1 million dollar salary = $353,168.19 in Federal taxes

Costs:

Forward-Looking Behavior: Tax cuts today mean tax increases in the future

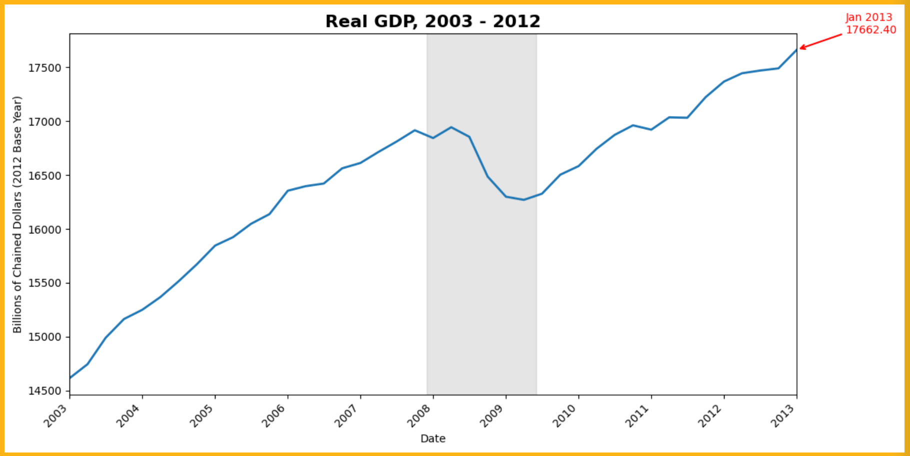
Federal Reserve Response?

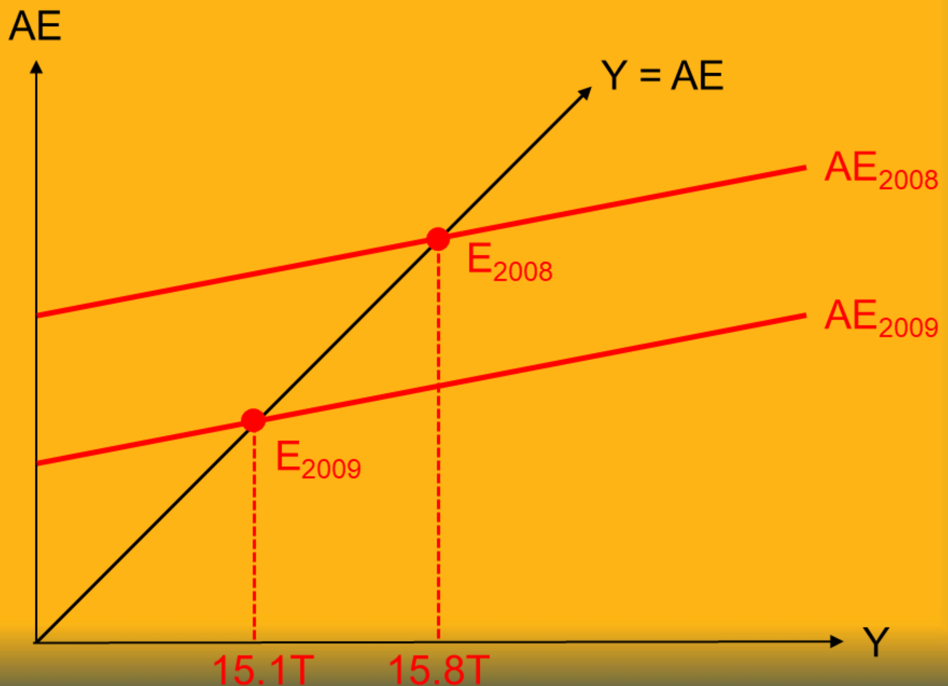
Biggest Concern with Fiscal Policy?

Government Response to the Great Recession

Economic crises = fiscal policies

- Great Financial Crisis
- Covid-19 pandemic





Government Response to the Great Recession

2008: Troubled Asset Relief Program (TARP) = Bank Bailout Bill

$700 billion in “troubled assets” authorized to be bought by the US Treasury

Government bought stocks in banks: Goldman Sachs, JP Morgan, Wells Fargo, etc.

Banks required to pay back loans with a 5% dividend (up to 9% in 2013)

Loans to:
American Insurance Group ($40 billion)
Community Banks ($92 billion)
Big 3 Auto Companies ($25 billion)
Citigroup and Bank of American ($45 billion)

Only $350 billion of $700 billion was used to stabilize the financial markets

Concerns about why certain banks were “bailed out” (discrimination)

US Treasury actually made a $15 billion profit from TARP

Government Response to the Great Recession

2009: American Recovery and Reinvestment Act

$800+ billion package of tax cuts and government spending increases

Tax Cuts = $300 billion, ΔT = -$300 billion

State and Local Government Spending = $150 billion, ΔG_1 = $150 billion

Federal Government Spending = $350 billion, ΔG_1 = $350 billion

How much will Y change? Depends on mpc!

Assume the mpc = 0.5

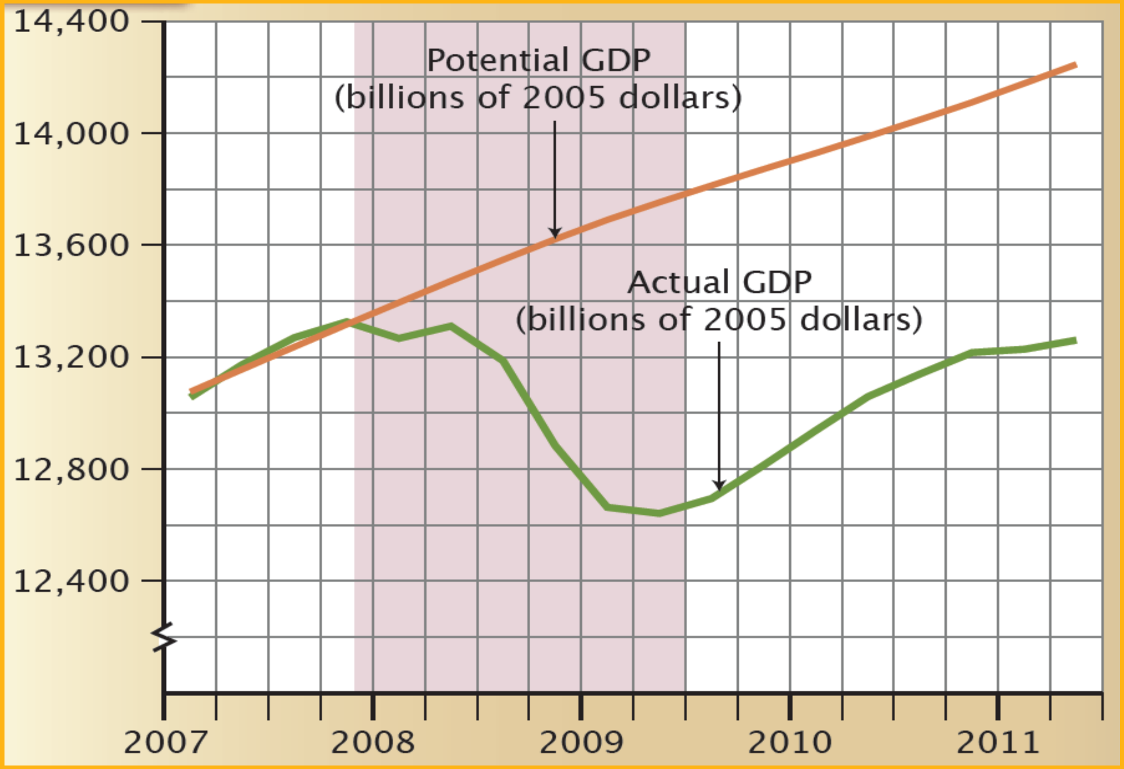
Tax Multiplier =

Expenditure Multiplier =

Total Increase in Y after 2009?

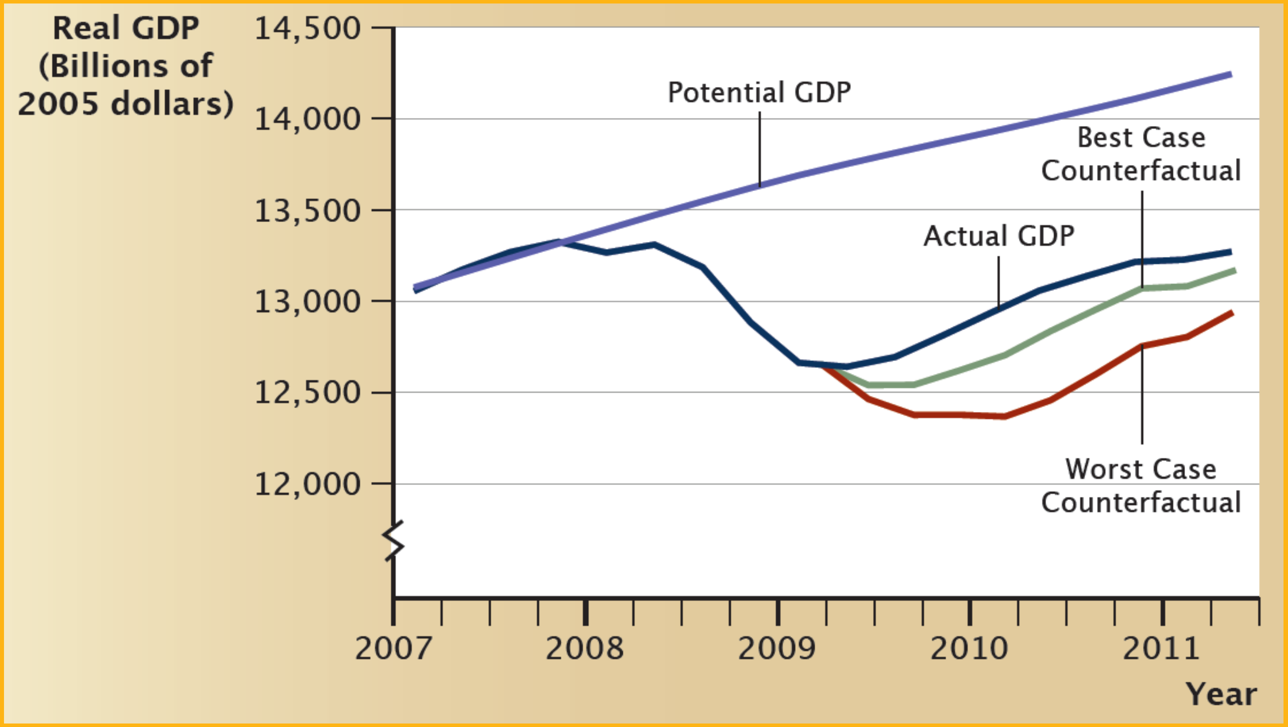
Government Response to the Great Recession

- Was stimulus effective?



Government Response to the Great Recession

- Was stimulus useless?



Government Response to the Great Recession

Purchases of goods and services by the federal government	1.0 to 2.5
Transfers to state and local governments for infrastructure	0.5 to 2.5
Transfers to state and local governments for other purposes	0.7 to 1.8
Transfer payments to individuals (such as unemployment benefits and food stamps)	0.8 to 2.1
One-time payments to retirees and disabled individuals	0.3 to 1.0
One-time payments to existing recipients of Social Security	0.3 to 1.0
Making Work Pay tax credit	0.5 to 1.7
AMT patch	0.2 to 0.6
Other individual tax provisions	0.3 to 1.5

Government Response to the Great Recession

The size of the Great Recession stimulus package is still debated

Some say it was too small to stimulate the economy

Others claim it was too large and led to inflation and debt

Problems with the package's design besides its size