Aggregate Demand, Aggregate Supply and Fiscal Policy
BACKGROUND

Classical Economic Theory ~

- Market system operated at \( Y_f \)
- Temporary short periods of recession or inflation
- Self correcting (P & Wages go up & down)
- Say’s Law: “Supply creates its own demand”
- Accepted view until 1930’s and the Great Depression
Keynes “In the long run, we are all dead”

Keynesian economic theory ~
• Cycles were not short
• Corrections were not automatic

GOV INTERVENTION WAS NEEDED
KEYNES

• FP is Gov’s way to stabilize economy

• Exp F.P. – <T&/or >G (Recession)

• Cont F.P. >T&/or < G (Inflation)
**AD/AS**

- Key analytical tool for the macroeconomy
- $\text{AD} = Q$ of real GDP that consumers, bus & G are willing and able to buy at each PL
- PL and output ($\text{GDPr}$) = inverse relationship
AD/AS

- AD slopes downward because:
  - **Wealth effect** – purchasing power of $ is < at higher PL’s
  - **i% effect** – PL ▲’s impact i%– : consumption & investment spending react inversly
  - **Foreign purchase effect** – volume of imports/exports depend on relative PL’s here & abroad

EX: If US PL is higher = >M & <X
Consumption Component of GDP

- **INCOME IS NOT WEALTH**
- **GDP & AD = C + Ig + G + Xn**
- **C is largest component**
- **DI = C + S** if Income then C & S
- **MPC = % consumed of a in income**
- **MPS = % saved of a in income**
- **MPS + MPC = 1 (20% + 80% = 1)**
\[ AD = CIGXn \] Consumption

- **Main determinant is income**

- **Other determinants:**
  - **Wealth** (value of assets) if \( W \uparrow \) \( C \uparrow \) \( S \downarrow \)
  - **Expectations** (for \( TT\% \) or future wealth)
  - **Debts** (if \( D \) increases, \( C \) & \( S \) will decrease)
  - **Taxes** (if \( T \) increase, \( C \) & \( S \) decrease, etc)
\( AD = C_{IGXn} \) **Investment**

Investment is:

- Business spending for capital stock
- Most volatile component of AD/GDP
- Assumed to require a loan
- Decisions are based on
  - \( MC \ (i\%) \) vs. \( MB(\text{exp Rate of Ret}) \)
AD = \overline{CGXn}

Government Spending

- More Government Spending (AD →)
- Less Government Spending (AD ←)
Spending

In 2011, the U.S. government spent $3.6 trillion on a range of activities and programs.

Mandatory Spending
13.5% of GDP
$2.0 trillion

- Social Security
  4.8% of GDP
  $725 billion
- Medicaid
  1.8% of GDP
  $275 billion
- Medicare
  3.2% of GDP
  $480 billion
- Other
  3.6% of GDP
  $545 billion

Discretionary Spending
9.0% of GDP
$1.3 trillion

- Defense
  4.7% of GDP
  $700 billion
- Nondefense
  4.3% of GDP
  $646 billion

Net Interest
1.5% of GDP
$227 billion

Consists of spending on programs related to health, income security, education, veterans’ benefits, the earned income tax credit, food stamps, and other programs.
\[ AD = CIG X_n \]

Net Exports

- \( X_n \) are sensitive to:
  - Exchange Rates
  - Strong \$ = More M and Fewer X = (AD ↔)
    - Weak \$ = Fewer M and More X = (AD →)
  - Relative Income
    - Strong Foreign Economies = More X = (AD →)
    - Weak Foreign Economies = Less X = (AD ↔)

LUKE, Use the FOREX
Changes ($\Delta$) in AD

- **$\Delta$ Consumption ($C$)**
  - $C^{\uparrow}$: AD $\rightarrow$ GDP$_R^{\uparrow}$ & PL$^{\uparrow}$: $u\%^{\downarrow}$ & $\pi\%^{\uparrow}$
  - $C^{\downarrow}$: AD $\leftarrow$ GDP$_R^{\downarrow}$ & PL$^{\downarrow}$: $u\%^{\uparrow}$ & $\pi\%^{\downarrow}$

- **$\Delta$ Gross Private Investment ($I_G$)**
  - $I_G^{\uparrow}$: AD $\rightarrow$ GDP$_R^{\uparrow}$ & PL$^{\uparrow}$: $u\%^{\downarrow}$ & $\pi\%^{\uparrow}$
  - $I_G^{\downarrow}$: AD $\leftarrow$ GDP$_R^{\downarrow}$ & PL$^{\downarrow}$: $u\%^{\uparrow}$ & $\pi\%^{\downarrow}$

- **$\Delta$ Government Spending ($G$)**
  - $G^{\uparrow}$: AD $\rightarrow$ GDP$_R^{\uparrow}$ & PL$^{\uparrow}$: $u\%^{\downarrow}$ & $\pi\%^{\uparrow}$
  - $G^{\downarrow}$: AD $\leftarrow$ GDP$_R^{\downarrow}$ & PL$^{\downarrow}$: $u\%^{\uparrow}$ & $\pi\%^{\downarrow}$

- **$\Delta$ Net Exports ($X_N$)**
  - $X_N^{\uparrow}$: AD $\rightarrow$ GDP$_R^{\uparrow}$ & PL$^{\uparrow}$: $u\%^{\downarrow}$ & $\pi\%^{\uparrow}$
  - $X_N^{\downarrow}$: AD $\leftarrow$ GDP$_R^{\downarrow}$ & PL$^{\downarrow}$: $u\%^{\uparrow}$ & $\pi\%^{\downarrow}$
Increase in AD

C↑, I_G↑, G↑ and/or X_N↑ ∴ AD ∴ GDP_R↑ & PL↑ ∴ u%↓ & π%↑
INCREASES IN AD: DEMAND-PULL INFLATION

Real Domestic Output, GDP

"Redelsheimer's Graphs to Know" AP Macro Review Copyright 2005
Decrease in AD

C↓, I_G↓, G↓ and/or X_N↓: AD ←: GDP_R↓ & PL↓: u%↑ & π%↓
Relating LF to AD

- Demand for Ig is **DEMAND** for loanable funds
- Savings is **SUPPLY** of loanable funds
- Equilibrium is the interest rate where \( D \) for Ig=\( S \)

![Graph showing demand and supply curves for loanable funds](image)
Extra determinates of AD

• ▲'s consumer confidence
  if we have optimism then AD >

• ▲'s in wealth – assets value > then AD >

• ▲'s monetary policy – if the Fed > MS then AD >
AD Summary

• AD reflects an inv rel beetw PL and GDPₚₙₗ

• $\Delta$ in PL creates real-balance, i%, and foreign purchase effects that explain AD’s downward slope

• $\Delta$ in C, Iₜₜ, G, Xₙₙ cause $\Delta$ in GDPₚₙₗ bc they $\Delta$ AD.

• Increase in AD = AD $\rightarrow$

• Decrease in AD = AD $\leftarrow$
Warm Up – Draw AD/AS at Yf, in a recession and with inflation (3 graphs)

Write out CIGX and PIG
Aggregate Supply

- AS = Q of output (GDPr) produced at each PL
- Direct relationship between PL and output (high PL = more supply)
- AS = P + I + G
  - Productivity
  - Input Costs
  - G Actions
Aggregate Supply

- 3 ranges of AS:
  - Horizontal = recession – underutilized resources (LLC) – only output changes are possible
  - Vertical = full capacity economy – only PL changes
  - Intermediate = expansion eco – both output & PL changes are possible
Other Details:

- G Multiplier effect is:
  - greatest in the horizontal AS range (much ability to increase GDP)
  - less in the intermediate range (increasing PL leads to inflation)
  - None in the vertical range (GDP does not change – only price level)
PIG = Determinants of AS:

Change in Productivity – increase means can produce more with same resources

EX: more productivity = increase AS

Lazy Worker + Meth = productive worker
PIG = Determinants of AS:

Change in Input prices (costs of prod)

- Wages or Commodity Prices fall – AS shifts right
- Imported resources – e% can raise P

EX: OPEC, labor unions, etc
PIG = Determinants of AS:

▲’s to Government action regulation - intervention

Taxes (sales, excise, payroll) > costs of prod (AS<)

Subsidies – = lowers costs (AS increases)

G regs = costs more to comply so AS decreases
The government spends billions of dollars to support the energy industry, which allows it to make energy cheaper than it should cost on the open market. These subsidies—either in the form of tax breaks or direct funding—favor some types of energy over others, giving our country a skewed sense of what each gallon of gas or wind-powered electron costs. This is a look at where the government directed its subsidy dollars from 2002 to 2008.

**Carbon Capture and Storage**
- Tax Breaks: $2.3 billion
- Direct Spending: $2 billion

**Renewable Energy**
- Tax Breaks: $12.2 billion
- Direct Spending: $6 billion

**Corn Ethanol**
- Tax Breaks: $16.8 billion
- Direct Spending: $5 billion

**Fossil Fuels**
- Tax Breaks: $70.2 billion
- Direct Spending: $53.9 billion

Source: "Estimating U.S. Government Subsidies to Energy Sources" by the Environmental Law Institute
Complete the $\Delta$’s to SRAS.: GDP$_R$ & PL.: u% & π%

- **$\Delta$ Productivity**
  - Productivity↑.: 
  - Productivity↓.: 

- **$\Delta$ Input Prices**
  - Input Prices↓.: 
  - Input Prices↑.: SRAS $\leftarrow$

- **$\Delta$ Government (Legal-Institutional)**
  - Deregulation.: SRAS $\rightarrow$. 
  - Regulation.: SRAS $\leftarrow$. 

Changes (Δ) in SRAS

• Δ Productivity
  - Productivity↑ .: SRAS → .: GDP_R↑ & PL↓ .: u%↓ & π%↓
  - Productivity↓ .: SRAS ← .: GDP_R↓ & PL↑ .: u%↑ & π%↑

• Δ Input Prices
  - Input Prices↓ .: SRAS → .: GDP_R↑ & PL↓ .: u%↓ & π%↓
  - Input Prices↑ .: SRAS ← .: GDP_R↓ & PL↑ .: u%↑ & π%↑

• Δ Government (Legal-Institutional)
  - Deregulation .: SRAS → .: GDP_R↑ & PL↓ .: u%↓ & π%↓
  - Regulation .: SRAS ← .: GDP_R↓ & PL↑ .: u%↑ & π%↑
Increase in SRAS

Input Prices↓, Productivity↑, and/or Deregulation

.: SRAS → .: GDP_R↑ & PL↓ .: u%↓ & π%↓
Decrease in SRAS

Input Prices $\uparrow$, Productivity $\downarrow$, and/or Regulation

$\therefore$ SRAS $\leftarrow$ $\therefore$ GDP $\downarrow$ & PL $\uparrow$ $\therefore$ $u\%\uparrow$ & $\pi\%\uparrow$
3 Ways to Draw the AD/AS Model
Full Employment

- Full Employment equilibrium exists where AD intersects SRAS & LRAS at the same point.
Recessionary Gap

• A recessionary gap exists when equilibrium occurs below full employment output.

![Graph showing recessionary gap with LRAS, SRAS, AD, PL, P, Y, Y_F, and GDP_R axes.]}
Inflationary Gap

• An inflationary gap exists when equilibrium occurs beyond full employment output.
Other Details:

- **RATCHET EFFECT** (or “sticky wages”)
- Prices don’t always go down when AD shifts left due to: wage contracts, worker morale, minimum wage laws, “menu costs” – costs to change prices up & down frequently & fear of “price wars” with competition.

**SHORT RUN** – period when wages & other costs are **FIXED** (suppliers need time to adjust to change in AD/AS)

**LONG RUN** – period when suppliers can make adjustments in LLC due to a change in AD/AS
AD/AS Equilibrium

- Intersection of AD & AS
- Shift results in change of PL and real GDP

![Graph showing AD/AS equilibrium with shifts in AD and AS resulting in changes in PL and real GDP.](image-url)
Supply Side Fiscal Policy

- Theory to cut taxes to increase AS
- Encourages savings to give businesses an incentive to expand investments
- Lower income taxes encourage workers to work more & earn more
- Entrepreneurs are more willing to take risks when they get more rewards
Discretionary Fiscal Policy
(AT G DISCRETION OR CHOICE)

- Goal is to restore economic stability
- Tools – increase/decrease government spending or increase/decrease taxes
- If recession – need expansionary policy (increase spending &/or decrease taxes)
- If inflation – need contractionary policy (decrease spending &/or increase taxes)
Fiscal Policy Shifts AD

RECESSION – AD SHIFTS RIGHT
WHEN GOV SPENDING INCREASES
OR TAXES DECREASE (more C & Ig)
Fiscal Policy Shifts AD

INFLATION – AD SHIFTS LEFT WHEN GOV SPENDING DECREASES OR TAXES INCREASE (less C or Ig)
Automatic Stabilizers

- Government actions that were NOT done to help economy, but cause positive effects
- In an expansion cycle – tax revenue increases & the surplus slows inflation
- In a recession cycle – deficit spending stimulates the economy & creates jobs
Problems with Fiscal Policy

- **Timing:** Recognition Lag, Administrative Lag & Operational Lag
- **Crowding Out Effect** – deficit spending drives interest rates up and private Ig decreases so AD decreases
- **Net Export Effect** – reduces Fiscal Policy effects
Review: Crowding Out Effect

- G is often “deficit spending”
- Gov borrows in the LF Mkt – selling bonds > \( D_{LF} \)
  - drives up the price of borrowing (\( i\% \)) making it more expensive for Ig to occur so Ig <
- Gov borrowing has “crowded out” business spending lowering GDP (output) in the long run (less capital stock = less future output)
Net Export Effect

- If Recession: exp F.P. can > AD Gov deficit spending will drive interest up
  - Foreign demand for US assets goes up in foreign exchange market
  - Dollar appreciates
  - $X_n$ decreases because imports are greater than $X$
  - $AD$ shifts left (lessens effect of F.P.)
Net Export Effect

• If Inflation – F.P. gov decreases spending & interest rates drop
  • Foreign demand for US assets decreases in the foreign exchange market
  • Dollar depreciates
  • $X_n \uparrow$ because exports are greater than $M$
  • AD shifts right (lessens effect of F.P.)
Last but NOT Least Part of Problem – Congress is in control of Fiscal Policy

THE END!
Review: AD/AS GRAPH PRACTICE

**AD shifts when there are changes in:**

- $C = \text{consumer spending}$
- $I_g = \text{business investment spending}$ (for capital stock)
- $G = \text{government spending}$
- $X_n = \text{actions Net export spending} (X \text{ minus } M)$

**AS shifts when there are changes in:**

- $P = \text{productivity}$
- $I = \text{inputs costs}$
- $G = \text{government}$
MULTIPLIERS:

• **Investment Multiplier** = $1/1$ - MPC or $1/MPS$ (change in GDP = change in Ig X multiplier)
  
  Use when there is a change in investment

• **Gov Spending Multiplier** = $1/1$ - MPC or $1/MPS$ (change in GDP = change in G X multiplier)
  
  Use when there is a change in government spending

• **Tax Multiplier** = $-(MPC/1-MPC) = -MPC/MPS$
  
  (change in GDP = change in T X multiplier)
  
  Use when there is a change in lump-sum taxes; the tax multiplier has a negative sign
  
  (GDP change = chg in tax X multiplier)