Chapter 24

Output and Prices in the Long Run

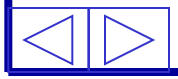
The Long Run

GDP and prices adjust to reach equilibrium in the long run

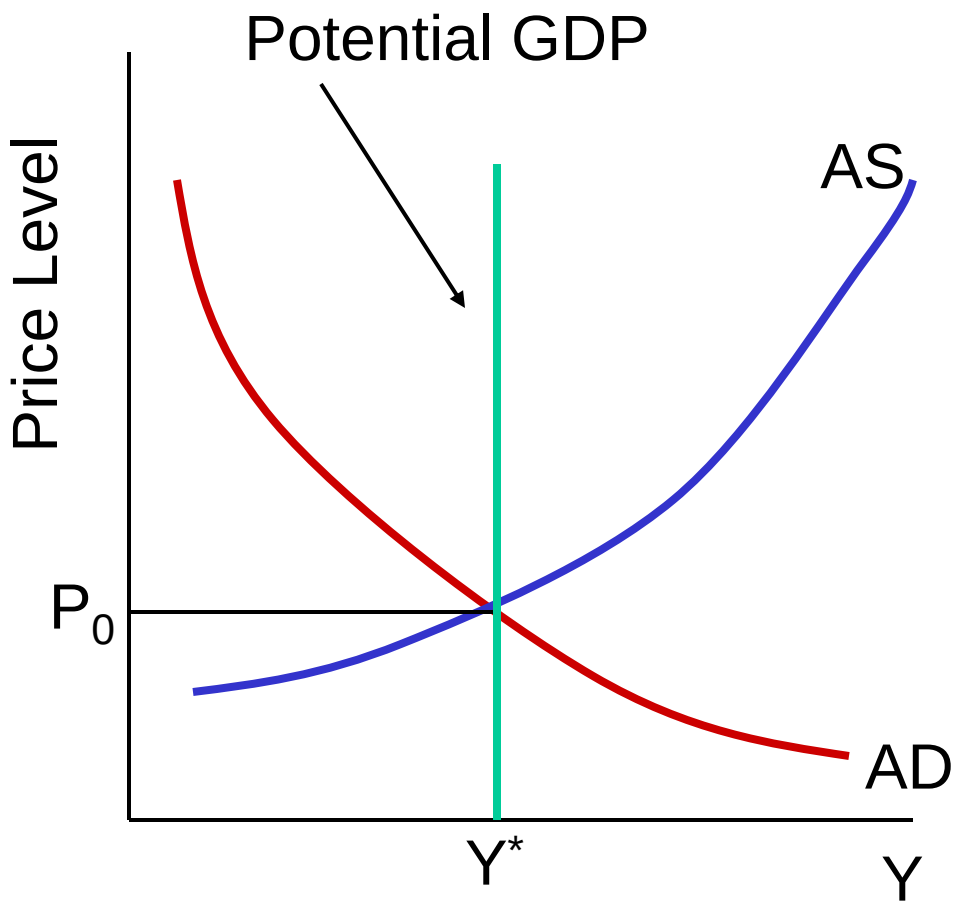
- Assume technology constant
- Factor prices now change
- Begin with **long run equilibrium** – **GDP at potential**:

Potential GDP [or **output]**

- all productive resources (factors of production) used at their **normal rates of utilization**



No Output Gap



- No output gap
- GDP is at potential (Y*)

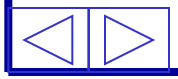
- Price level is P_0
- GDP at Y*

When **Y = Y***

- Unemployment Rate equals the **natural rate of unemployment** [**U***]
- **U*** includes both **structural** and **frictional** unemployment

Output Gaps

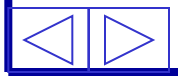
- If actual output is below potential, have **recessionary** output gap [**Y < Y***]
- If actual output is above potential, have **inflationary** output gap [**Y > Y***]



Inflationary output gap

When **Y > Y*** :

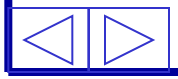
- demand for labour (and other factor services) is high
- **boom** leads to:
- high profits for firms
- high demand for labour
- wages and production costs rise
- Higher production costs shift AS leftward
- Prices rise
- Output declines – equilibrium GDP falls to Y*



A recessionary output gap.

When **Y < Y*** **:**

- demand for labour (and other factor services) is low
- **Slump** leads to :
- low profits for firms
- low demand for labour
- wages and unit production costs fall
- AS curve shifts rightward
- Output rises
- Prices fall
- Equilibrium GDP rises to Y*

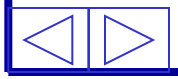


Speed of factor-price adjustment

- Factor-prices adjust at different speeds
- Booms cause wages to rise rapidly
- Slumps cause wages to fall slowly

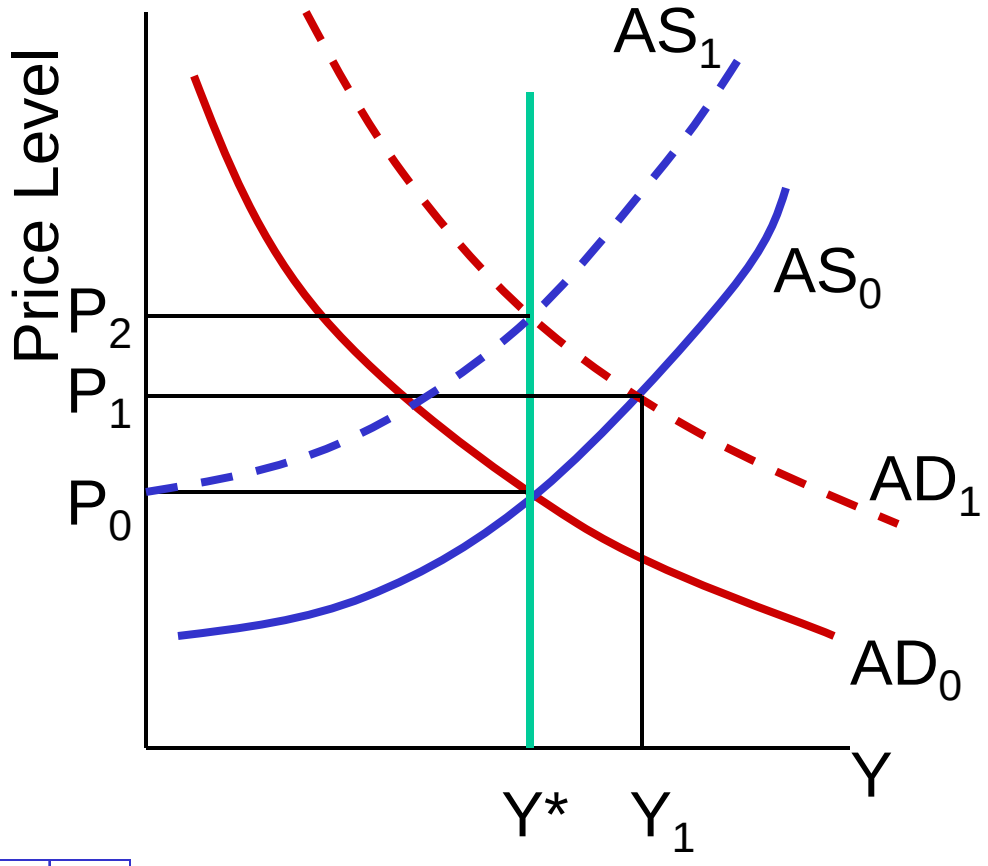
In **long run**, **potential** output is an **anchor**:

- shock raises short run GDP above or below Y*
- wages and other factor prices adjust
- GDP returns to Y*



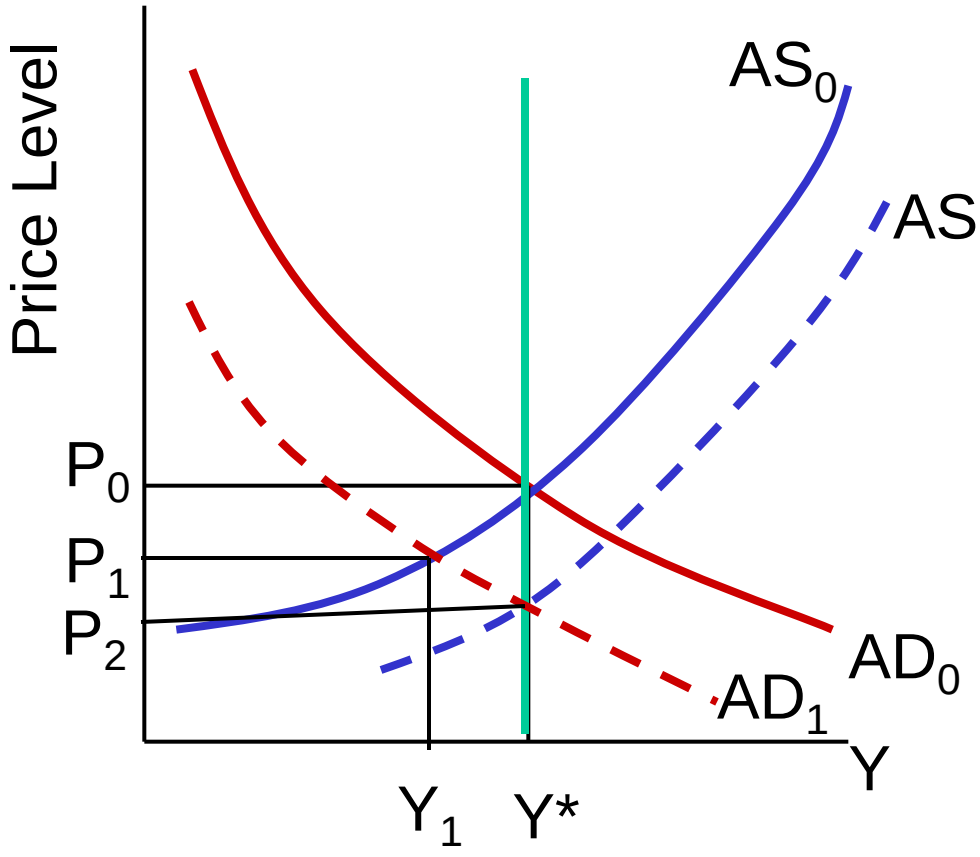
Demand and Supply Shocks

Long Run - Positive AD Shock



- AD rises to AD_1.
- Move to Y_1 and P_1
- Inflationary gap of Y^*-Y_1
- Wages rise,
- AS decreases to AS_1
- Output returns to Y*
- Prices rise to P_2

Long Run – Negative AD Shock



- AD falls at P_1 and Y_1
- Recessionary gap Y^*-Y_1
- Unemployment
- Wages fall
- AS_0 increases AS_1
- Back to Y*
- Price level at P_2

Self–adjustment mechanism

• returns economy to potential GDP

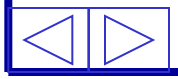
• i.e., it removes unemployment, if wage rates fall

Wage rates "sticky in a downwards direction" (Keynes)

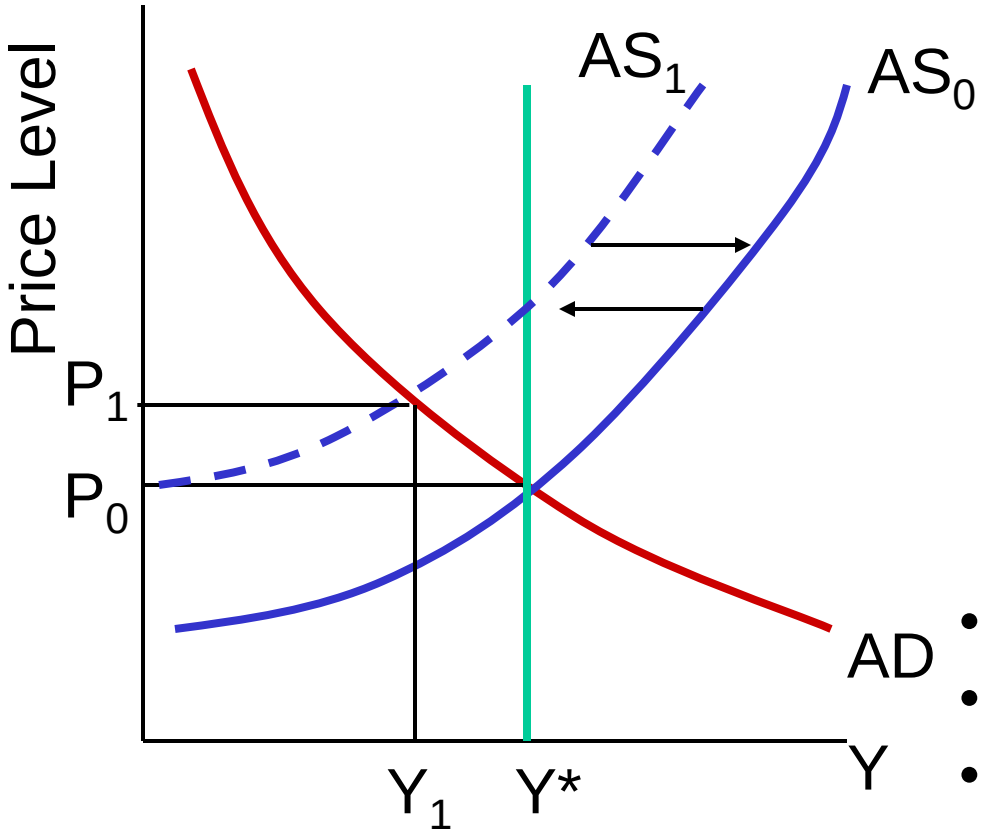
• If wages fall slowly, or not at all

• Supply curve may not shift rightward

• **U** may not return to **U*** (natural rate of unemployment) at **Y*** (full employment) until demand rises



Long Run – Negative Aggregate Supply Shock



- AS_0 decreases to AS_1
- Exogenous factor price increase – Price of Oil ↑

- Output ↓
- Unemployment ↑
- Move to P1 and Y_1
- **Stagflation**

- Other factor prices decline
- AS increases to AS_0
- GDP returns to potential

- Usually a policy change is needed to increase AD to close the output gap and return Y to Y*

After AD or AS shock

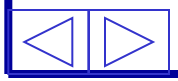
- **wage flexibility** determines speed economy returns to Y*

Flexible wages:

- rapidly during inflationary output gaps
- provide an automatic adjustment mechanism
- pushes economy back to potential

Sticky or rigid wages:

- economy's adjustment mechanism is sluggish
- output gaps tend to persist

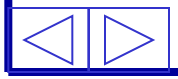


Economic Shocks and Business Cycles

- AD and AS subject to continual random shocks

- Automatic adjustment mechanism converts shocks into **cyclical fluctuations** in real GDP

- Lags cause changes in output to be extended over long periods of time



Long-Run Equilibrium

• excess demand or supply of labour (and other factors) will be eliminated

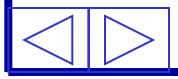
• full employment of factors

• output at potential level, **Y***

• Potential GDP is vertical at **Y***

• there is **no** relationship in long run between price level and output produced

• Unemployment is U*
• Firms' output same, regardless of price level

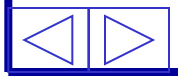


Fiscal Policy and the Business Cycle

Fiscal Stabilization

Fiscal Policy :

- use government taxes and spending
- to stabilize level of GDP at potential
- maintain full employment



If Y < Y* (recessionary gap):

- wait for gap to close on its own - long time

Or, use **fiscal policy** :

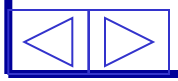
- increase government spending
- or, cut taxes to increase private spending

If Y > Y* (inflationary gap):

- Wait for wage rates to rise
- Shifts AS leftward

OR, use **fiscal policy**

- To lower AD
- Reduce government spending, or
- Raise taxes to reduce private spending
- AD shifts leftward

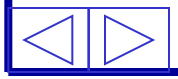


Role for fiscal policy:

Inflationary gap:
- Cut government spending
- Or raise taxes to reduce private spending
- Keeps prices from rising

Recessionary gap:
- Increase government spending
- Or lower taxes to encourage more private spending
- Avoids long wait to return to potential GDP (full employment)

Self-adjustment: - Very slowly
Possibly:
- With price increases
- Long-lasting unemployment



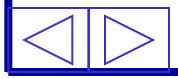
Paradox of thrift:

An **increase** in saving (less spending) by private and public sectors

- **reduces** the level of real GDP (by reducing AD)

"Paradox":
- Good behaviour for individuals (saving)
- Bad for economy
- Reduces AD

e.g. during Great Depression of 1930's
- Government revenues fell
- Tried to balance budgets by reducing gov't spending
- Raised unemployment
- Made depression worse



Short run:

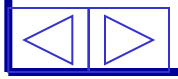
• Paradox true when level of **AD** and **AS** determines **real GDP**

In long run:

• **O**utput determined only by position of **Y***
• Paradox not true

Increase in desired saving has following effects:

- Price level falls
- Investment rises
- Output returns to potential GDP [Y*]



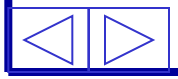
Automatic vs. Discretionary Fiscal Policy:

Discretionary Fiscal Policy: (Policy change)

- Government changes **G** and/or **T**
- Shifts **AD** curve
- To change **real GDP**

Automatic Stabilizer: (No Policy change)

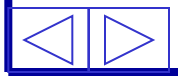
- Fiscal system - progressive **Taxes** & **Transfer Payments**



Automatic fiscal stabilizers
• desirable, work well

Concerns about **discretionary** fiscal policy:

- long and uncertain lags
- Impossible to “fine tuning” small exact changes in GDP
- Temporary versus permanent changes in policy
- Temporary tax changes may have little effect



Fiscal Policy and Growth desirability:

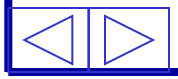
- Speed of automatic adjustment mechanism

Fast:

- Less need for fiscal policy

Slow:

- greater need for fiscal policy



Fiscal stabilization policy have consequences for economic growth:

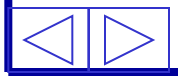
An increase in **G**

- temporarily increases real GDP

Larger change in **G**

- reduces investment in long-run
- [“**crowding out**” private I]

- may reduce growth of potential output



Lower taxes may:

- stimulate I
- increase potential GDP

Need to fund desired gov't services

- medicare
- social services
- education