Lecture #1
chapter 24

Aggregate Demand and Supply Analysis

Monetarist View of AD

$$V = \frac{P \times Y}{M} = \frac{2000}{1000} = 2$$

$M \times V = P \times Y$

Modern Quantity Theory of Money

$M \times V = P \times Y$

Implication: M determines $P \times Y$

Deriving *AD* Curve

$M = 1000$, $V = 2 \Rightarrow P \times Y = 2000$

Point A: $P = 2$ $Y = 1000$ $PY = 2 \times 1000$
Point B: $P = 1$ $Y = 2000$ $PY = 1 \times 2000$
Point C: $P = .5$ $Y = 4000$ $PY = .5 \times 4000$

Conclusion: $P \uparrow Y \downarrow$, downward sloping *AD*

Shift in *AD* Curve

$M \uparrow$: $P \times Y \uparrow$, so at given P, $Y \uparrow \Rightarrow AD$ shifts right

The AD Curve

Aggregate Price Level, P (1992 = 1.0)

Aggregate Output, Y ($ trillions, 1992)

AD_1

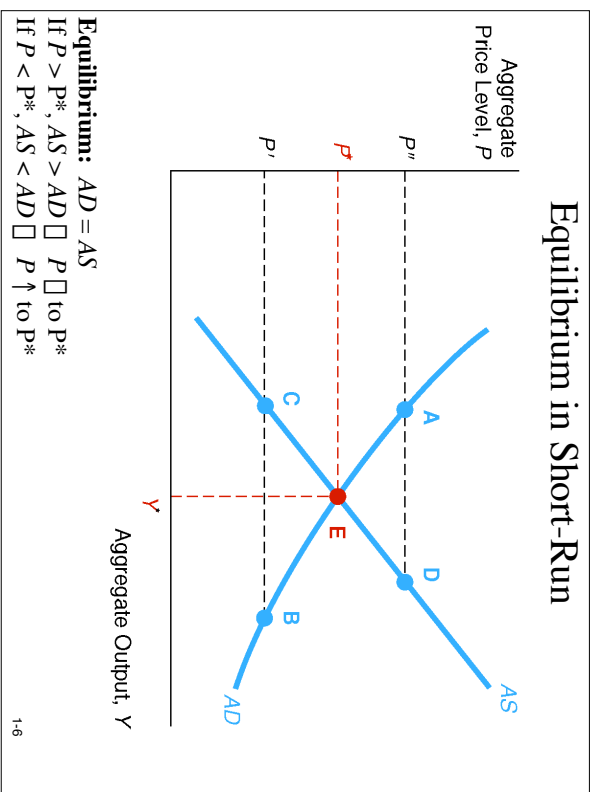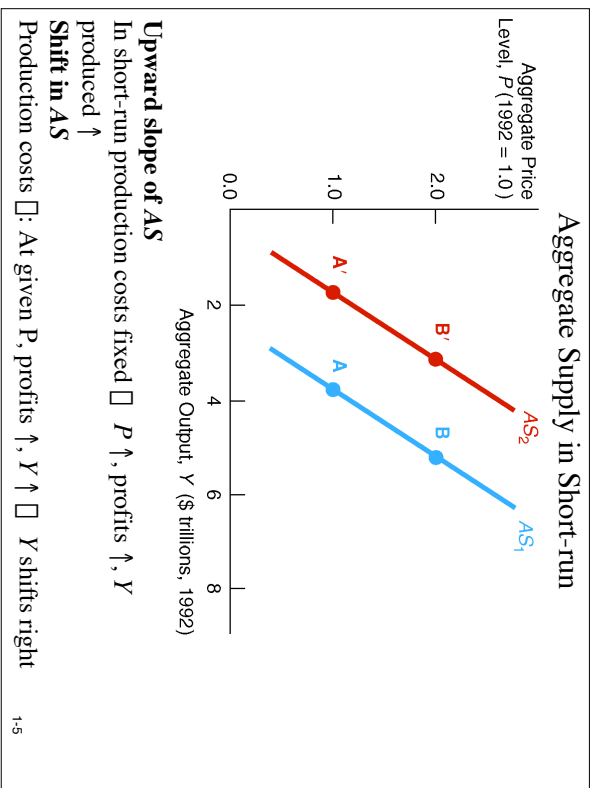AD_2

1-3
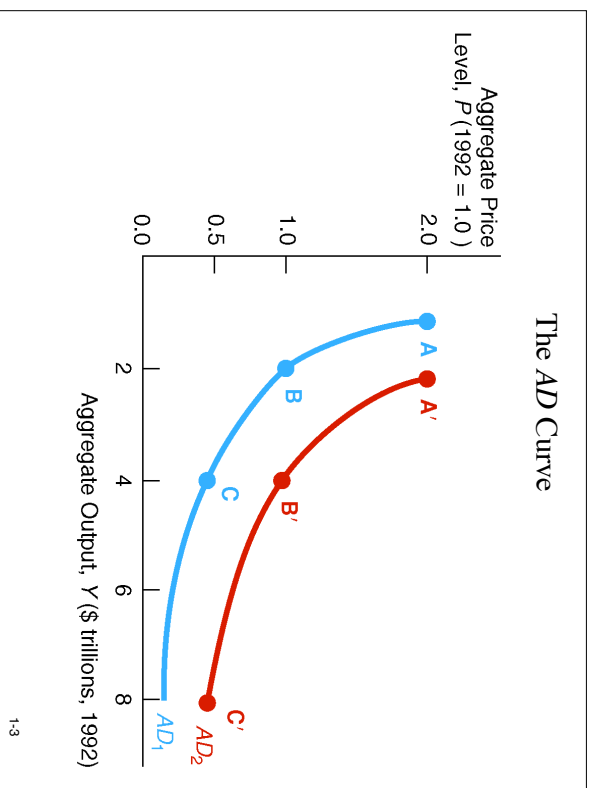
Keynesian View of AD

$y^{ad} = C + I + G + NX$

Downward Sloping AD

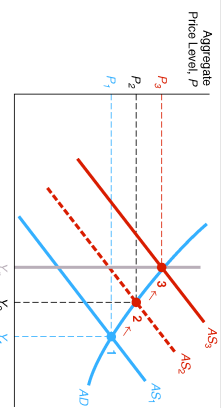$P \downarrow, M/P \uparrow, i \downarrow, I \uparrow, NX \uparrow, y^{ad} \uparrow$

Shift in AD

$M \uparrow, M/P \uparrow, i \downarrow, I \uparrow, NX \uparrow, y^{ad} \uparrow$

$\Rightarrow$ AD shifts right

$C \uparrow$ or $G \uparrow$ or T $\downarrow$ or $NX \uparrow$: $y^{ad} \uparrow$

$\Rightarrow$ AD shifts right

Complete Crowding Out

$G \uparrow, i \uparrow \Rightarrow C \downarrow, I \downarrow, NX \downarrow \Rightarrow$

$C + I + G + NX = y^{ad}$ unchanged

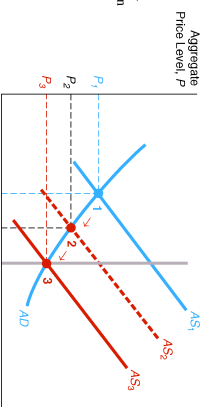*Partial crowding out*: private spending down, but not fully offsetting $G \uparrow$

1-4

Aggregate Supply in Short-run

Aggregate Price Level, P (1992 = 1.0)

0.0
1.0
2.0

Aggregate Output, Y ($ trillions, 1992)

2 4 6 8

A'
B'
AS$_2$

A
B
AS$_1$

Upward slope of AS

In short-run production costs fixed $\Rightarrow$ $P \uparrow$, profits $\uparrow$, Y produced $\uparrow$

Shift in AS

Production costs $\downarrow$: At given P, profits $\uparrow$, $Y \uparrow$ $\Rightarrow$ Y shifts right

Equilibrium in Short-Run

Aggregate Price Level, P

P'
P^*
P''

C
A
E
D
B

Y

AS
AD

Aggregate Output, Y

Equilibrium: $AD = AS$

If $P >$ P*, $AS > AD \Rightarrow P \downarrow$ to P*

If $P <$ P*, $AS < AD \Rightarrow P \uparrow$ to P*

Equilibrium in the Long-Run

Panel (a): $Y > Y_n$
Wages $\uparrow$: at given P, profits $\downarrow$, Y produced $\downarrow \Rightarrow AS$ shifts in until $Y = Y_n$ at long-run AS

Panel (b): $Y < Y_n$
Wages $\downarrow$: at given P, profits $\uparrow$, Y produced $\uparrow \Rightarrow AS$ shifts out until $Y = Y_n$ at long-run AS

Activist sees movement to long-run AS (self-correcting mechanism) as slow; nonactivist sees as fast
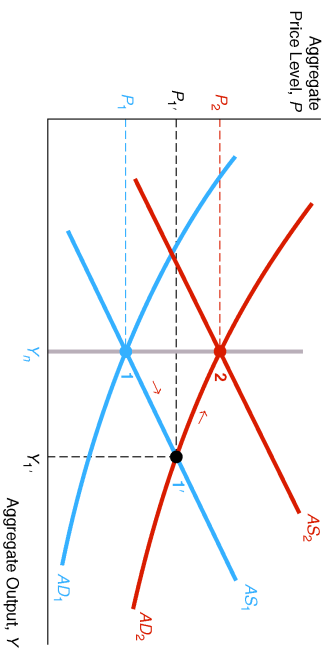

(a) Initial equilibrium in which $Y > Y_n$

(b) Initial equilibrium in which $Y < Y_n$

Summary: Factors that Shift AD

TABLE 1	Factors That Shift the Aggregate Demand Curve	
Factor	**Change**	**Shift in the Aggregate Demand Curve**
Money supply, M	$\uparrow$	
Government, G	$\uparrow$	
Taxes, T	$\downarrow$	
Net exports, NX	$\uparrow$	
Consumer optimism, C	$\uparrow$	
Business optimism, I	$\uparrow$	

Note: Only increases ($\uparrow$) in the factors are shown. The effect of decreases in the factors would be the opposite of those indicated in the "Shift" column. Note that monetarists view only the money supply as an important cause of shifts in the aggregate demand curve.

Effect of Shift in AD on Y

Aggregate Price Level, P

P_2
P_1
$P_{1'}$

Y_n $Y_{1'}$ Aggregate Output, Y

AS_2
AS_1
AD_1
AD_2

1. AD shifts right: $Y\uparrow P\uparrow$ to point 1'
2. $Y > Y_n$: wages $\uparrow$, AS shifts in until reach point 2, where $Y = Y_n$

Conclusion: AD shifts right, $Y\uparrow$ in short-run only; in long-run only $P\uparrow$
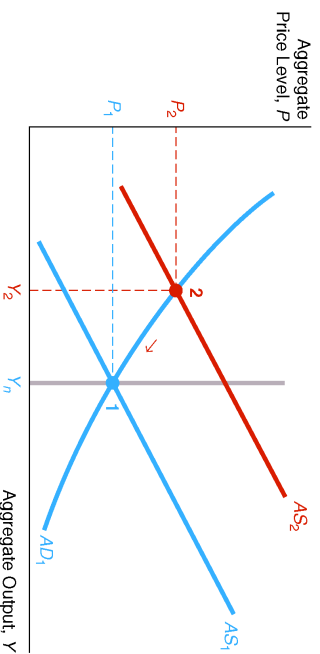

Summary: Factors that Shift AS

TABLE 2   Factors That Shift the Aggregate Supply Curve

Factor	Shifts in the Aggregate Supply Curve	Factor	Shifts in the Aggregate Supply Curve
$Y > Y_n$		Wage push	
$Y < Y_n$		Positive supply shock	
Rise in expected price level		Negative supply shock	

Effect of Shift in AS on Y

Aggregate Price Level, P

Aggregate Output, Y

P_2 P_1 Y_2 Y_n

AS_2 AS_1 AD_1

1. Negative supply shock: AS shifts in, $Y \downarrow P \uparrow$ to point 2
2. $Y < Y_n$: wages $\downarrow$, AS shifts out until return to point 1

Conclusion: AS shifts in, $Y \downarrow P \uparrow$ in short-run, but in long-run Y and P are unchanged

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Shifts in Long-Run Supply

Y_n grows over time, but is shown as fixed in AD/AS diagram

Real Business Cycle Theory

1. Y_n fluctuates a lot due to aggregate supply (real) shocks
2. Shifts in AD small
3. Conclusion: Business cycles due to real shocks
4. Supports nonactivism

Hysteresis

1. AD shifts in, natural rate of unemployment $\uparrow$, Y_n shifts in
2. Unemployment stays high
3. Supports activism

Vietnam War Buildup: 1964–70

TABLE 3 Unemployment and Inflation During the Vietnam War Buildup, 1964–1970

Year	Unemployment Rate (%)	Inflation (Year to Year) (%)
1964	5.0	1.3
1965	4.4	1.6
1966	3.7	2.9
1967	3.7	3.1
1968	3.5	4.2
1969	3.4	5.5
1970	4.8	5.7

Source: Economic Report of the President.

Negative Supply Shocks: 1973–75 and 1978–80

TABLE 4 Unemployment and Inflation During the Supply Shock Periods, 1973–1975 and 1978–1980

Year	Unemployment Rate (%)	Inflation (Year to Year) (%)	Year	Unemployment Rate (%)	Inflation (Year to Year) (%)
1973	4.8	6.2	1978	6.0	7.6
1974	5.5	11.0	1979	5.8	11.3
1975	8.3	9.1	1980	7.0	13.5

Source: Economic Report of the President.

Phillips Curve and AS

Phillips Curve

$$\Delta w/w = -h \times (U - U_n)$$

Implication: When $U > U_n$, i.e., $Y < Y_n$ $w \downarrow$, AS shifts in

Expectations Augmented Phillips Curve

$$\Delta w/w - \pi^e = -h \times (U - U_n)$$

or

$$\Delta w/w = -h \times (U - U_n) + \pi^e$$

Phillips Curve

(a) Phillips Curve, 1948–1969
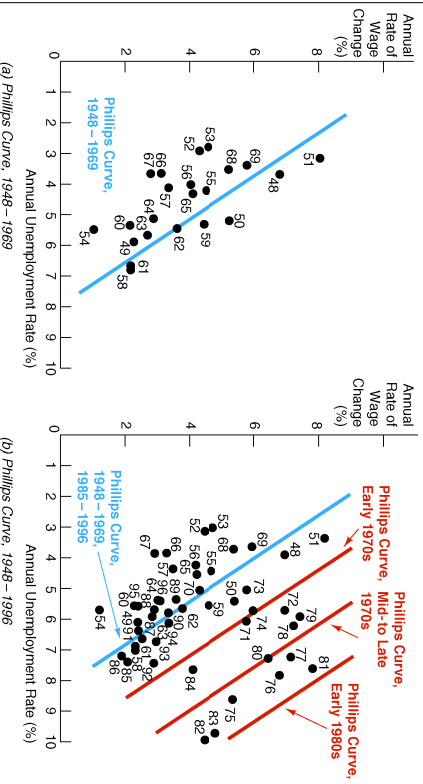
(b) Phillips Curve, 1948–1996

Implications of Expectations
Augmented Phillips Curve

1. When $\pi^e \uparrow$, Phillips Curve shifts up

2. U deviates from U_n only when there are surprises about inflation

   Solving above for U

   $$U = U_n - (\Delta w/w - \pi^e)/h$$

   π substituted for $\Delta w/w$ cause move together

   $$U = U_n - (\pi - \pi^e)/h$$

3. Can't buy U permanently below U_n by higher π

   In long-run $\pi = \pi^e$: so from eq. above, $U = U_n$