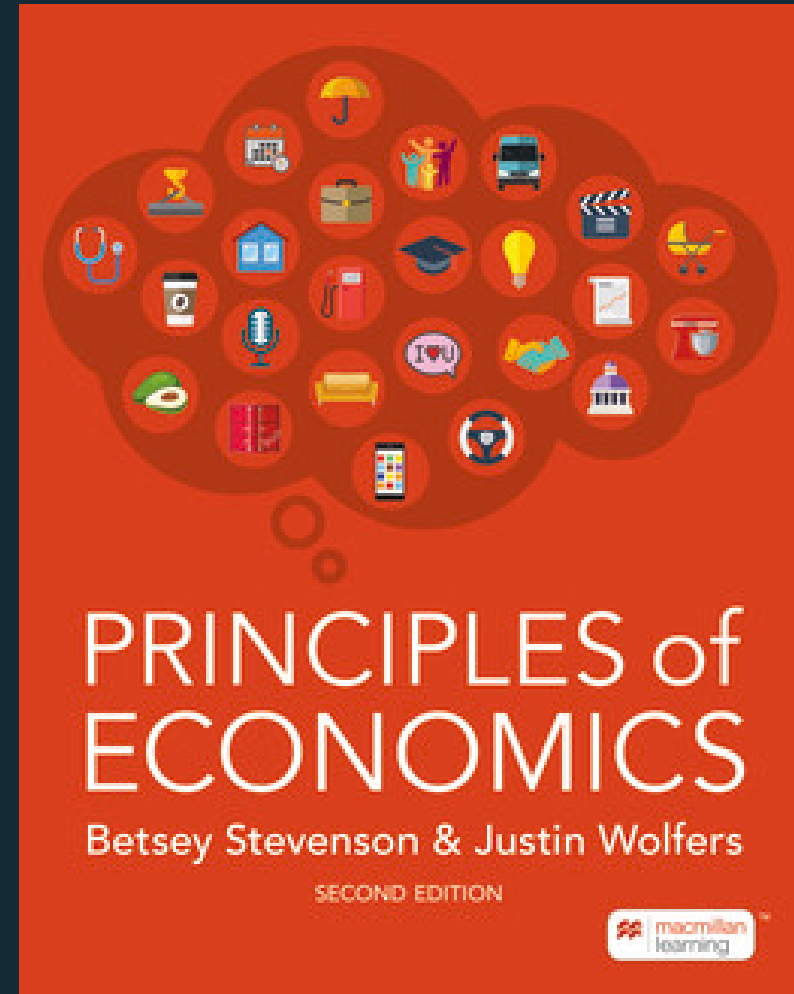


Principles of Economics 2e

Betsey Stevenson; Justin Wolfers

Stevenson and Wolfers' *Principles of Economics* is the most successful new introductory text in a generation. Betsey and Justin's focus on useful economics helps students develop and apply economic intuition to their everyday decisions. They offer a fresh take on a wide range of foundational topics in an engaging presentation that has drawn enthusiastic feedback from hundreds of instructors and thousands of students.

The accompanying Achieve offers an interactive e-textbook plus thousands of assignable and editable problems, LearningCurve adaptive quizzing, easy LMS integration, and the new Graphing Reserve—the first tool in almost 20 years to offer a new approach to graphing in the Principles course.



[Link to the catalog page](#)



A modern approach to teaching business cycles



Justin Wolfers, University of Michigan

Online webinar | Feb 2, 2023

Four questions about traditional AD-AS analysis



1. Do **you** think about business cycles the language of AD-AS?



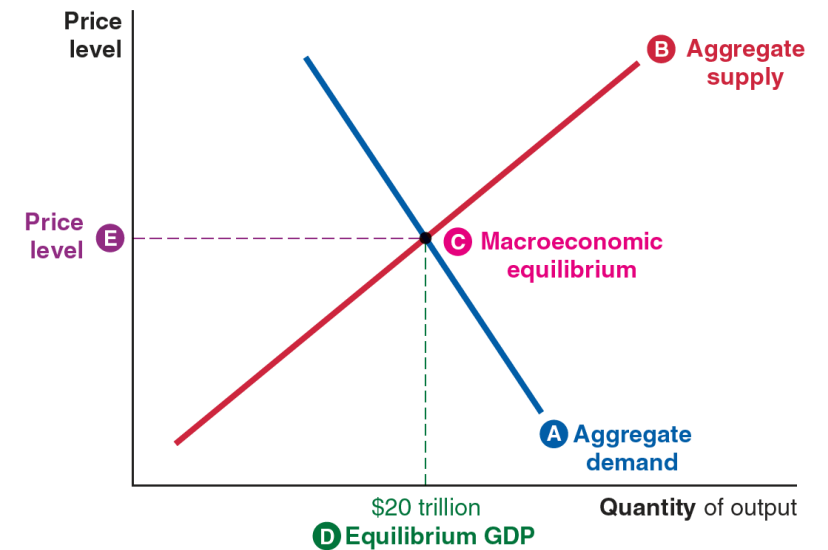
2. Do **policymakers** describe their decisions using this language?



3. Does **media** commentary reinforce and use this language?



4. Do your **students** find AD-AS intuitive?



Two Possible Solutions



Fix it



CONCLUSIONS



You Are Here



Replace it



My Roadmap: Two Alternatives for Teaching Business Cycles

Can we improve and modernize the traditional AD-AS approach?

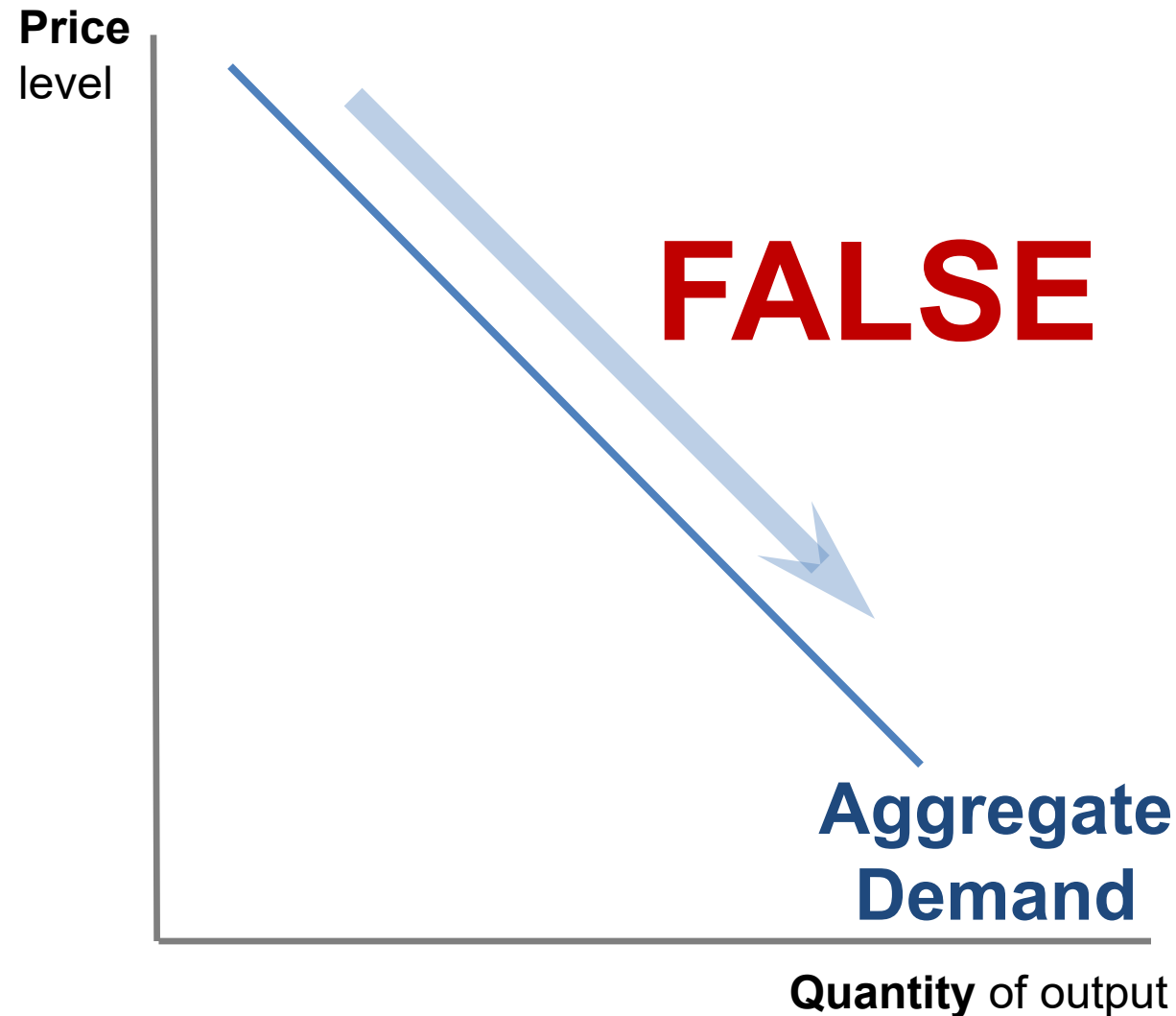
CONCLUSIONS

You Are Here

Can we teach the Fed's approach in a Principles class?

Why does the Aggregate Demand Curve slope down?

The stories we inherited from the 1960s don't work any more...



Story #1: The Interest Rate Effect

*The Fed sets a fixed money supply, \bar{M}
It hasn't done this since the 1970s!*

*And so the real money supply rises:
 $\uparrow P \Rightarrow \downarrow \bar{M}/P$*

↑Price level

↓Real money supply

↑Real interest rate

↓Aggregate demand

The Fed allows the real interest rate to passively respond to changes in the real money supply

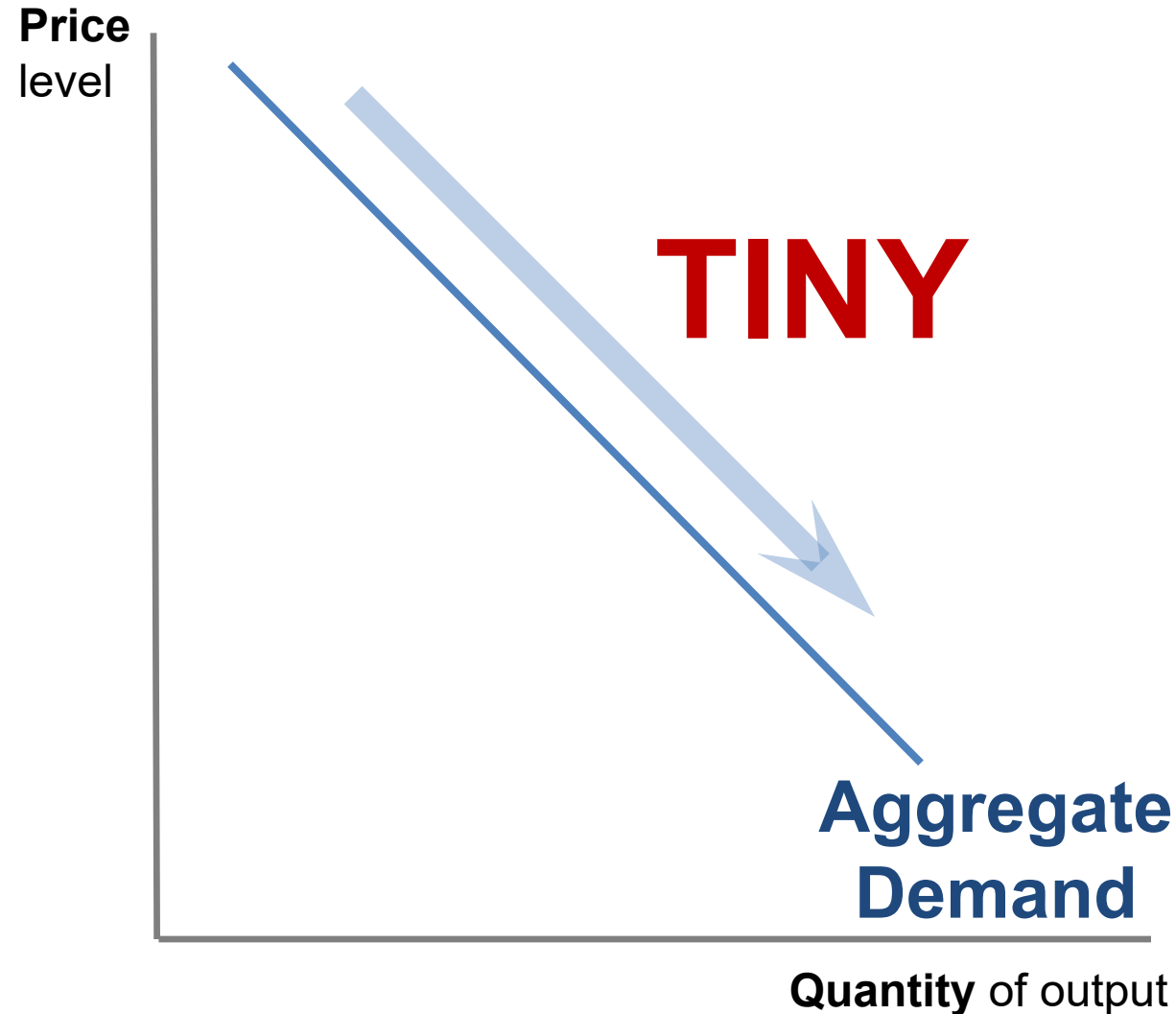
It didn't even do this in the 1970s!

Higher real interest rates reduce aggregate expenditure



Why does the Aggregate Demand Curve slope down?

The stories we inherited from the 1960s don't work any more...



Story #2: The Wealth Effect

↑Price level

A higher price level reduces the value of nominal balances

↓Real wealth

*It also reduce real value of nominal debt
→ This effect only applies to cash!!!*

Lower wealth reduces consumption

↓Consumption

Small changes in wealth create even smaller changes in consumption

Lower consumption reduces aggregate demand

↓Aggregate demand



Why does the Aggregate Demand Curve slope down?

The stories we inherited from the 1960s don't work any more...

Story #3: The International Trade Effect

Price level

UNCLEAR



Aggregate Demand

Quantity of output

↑Price level

If the nominal exchange rate doesn't change the real exchange rate ↑

↑Real exchange rate

But PPP says the nominal exchange rate will change!!! (This is not a sticky price)

Which reduces net exports

↓Net exports

Lower net exports reduces aggregate demand

↓Aggregate demand



A Modern Interpretation: The Fed Channel

↑Price level



↑Inflation

***Definition:** Inflation is the rate of change of the price level, so given last year's prices, the higher the price level this year, the higher the inflation rate.*



↑Real
interest rate

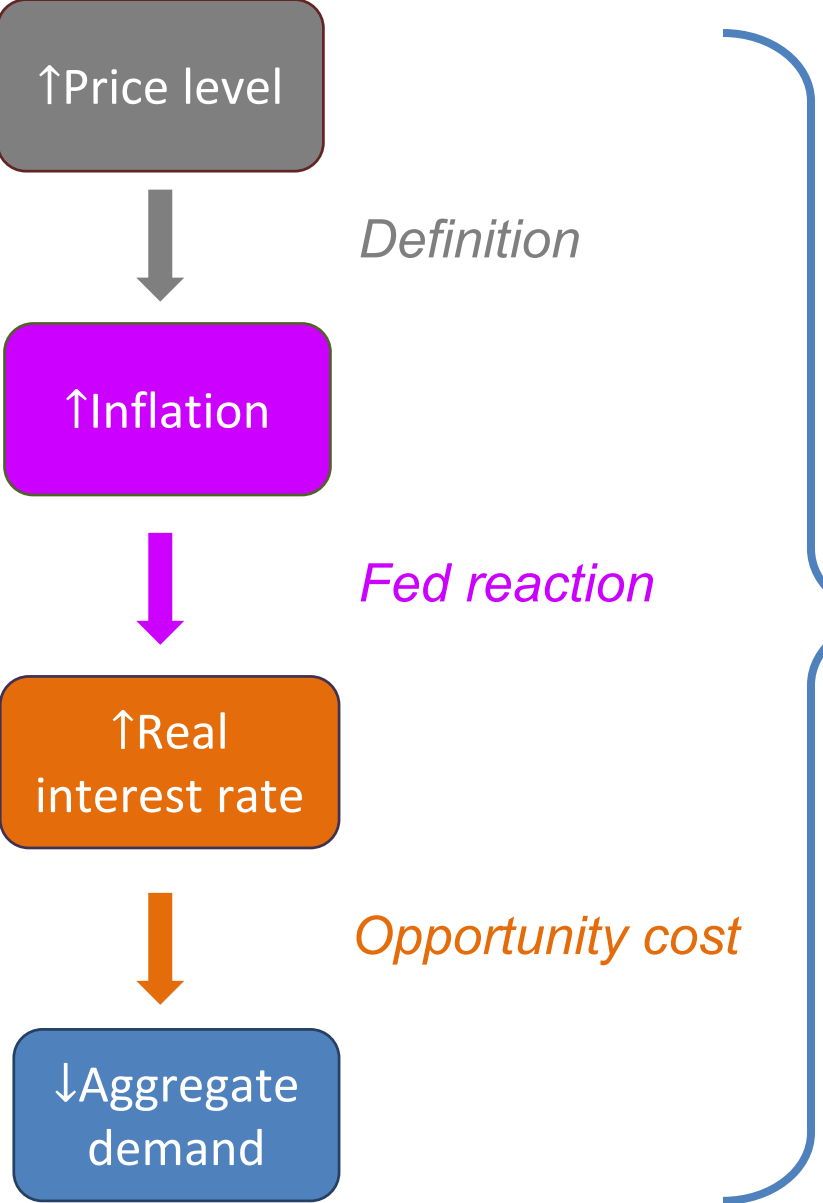
***Fed reaction:** The Fed responds to higher inflation by raising the real interest rate*



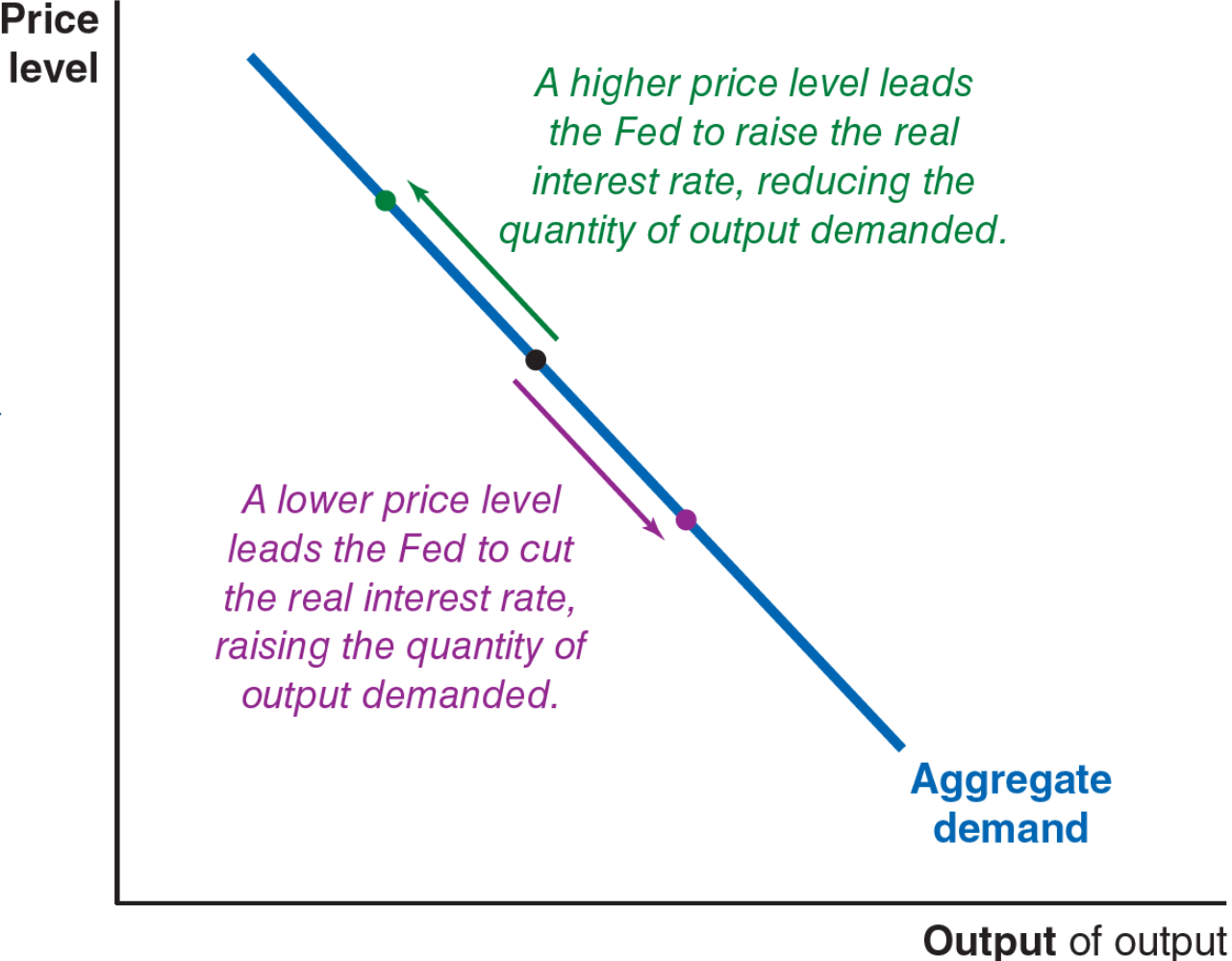
↓Aggregate
demand

***Opportunity cost:** Higher real interest rates raise the opportunity cost of spending, reducing aggregate expenditure*

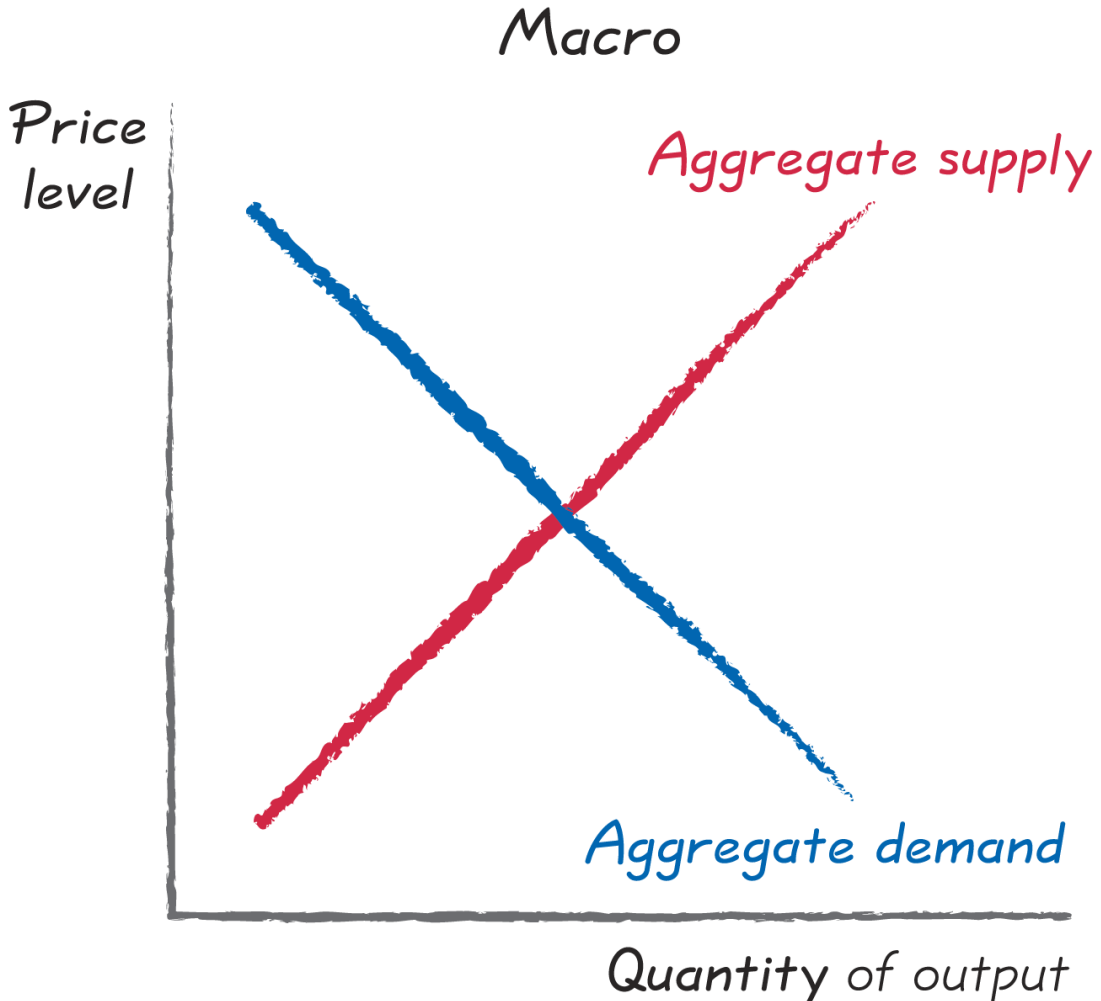
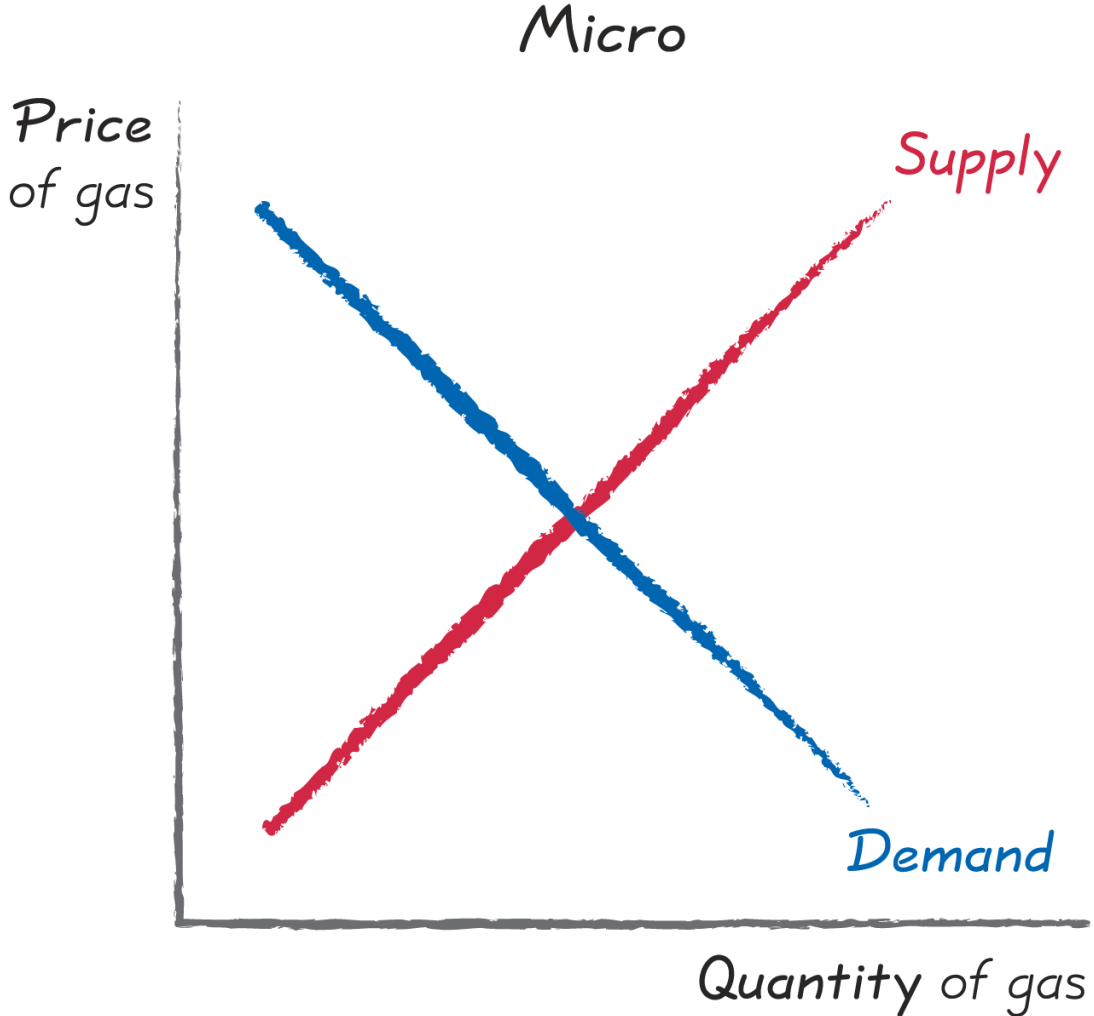
A Modern Interpretation: The Fed Channel



Changes in the price level lead to movements along the aggregate demand curve.



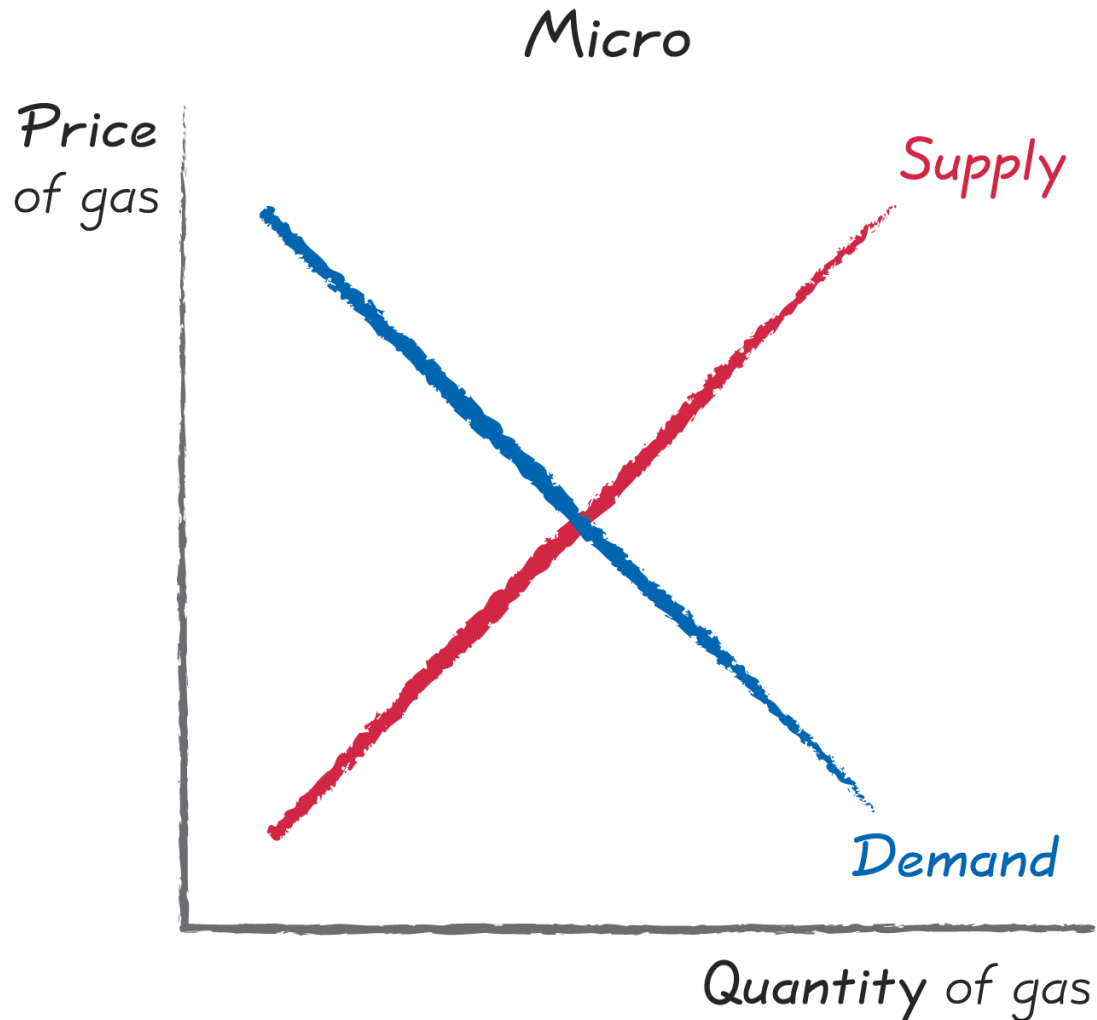
The Promise of AD-AS: Similar Tools for Micro and Macro



The Promise of AD-AS: Similar Tools for Micro and Macro



Quiz



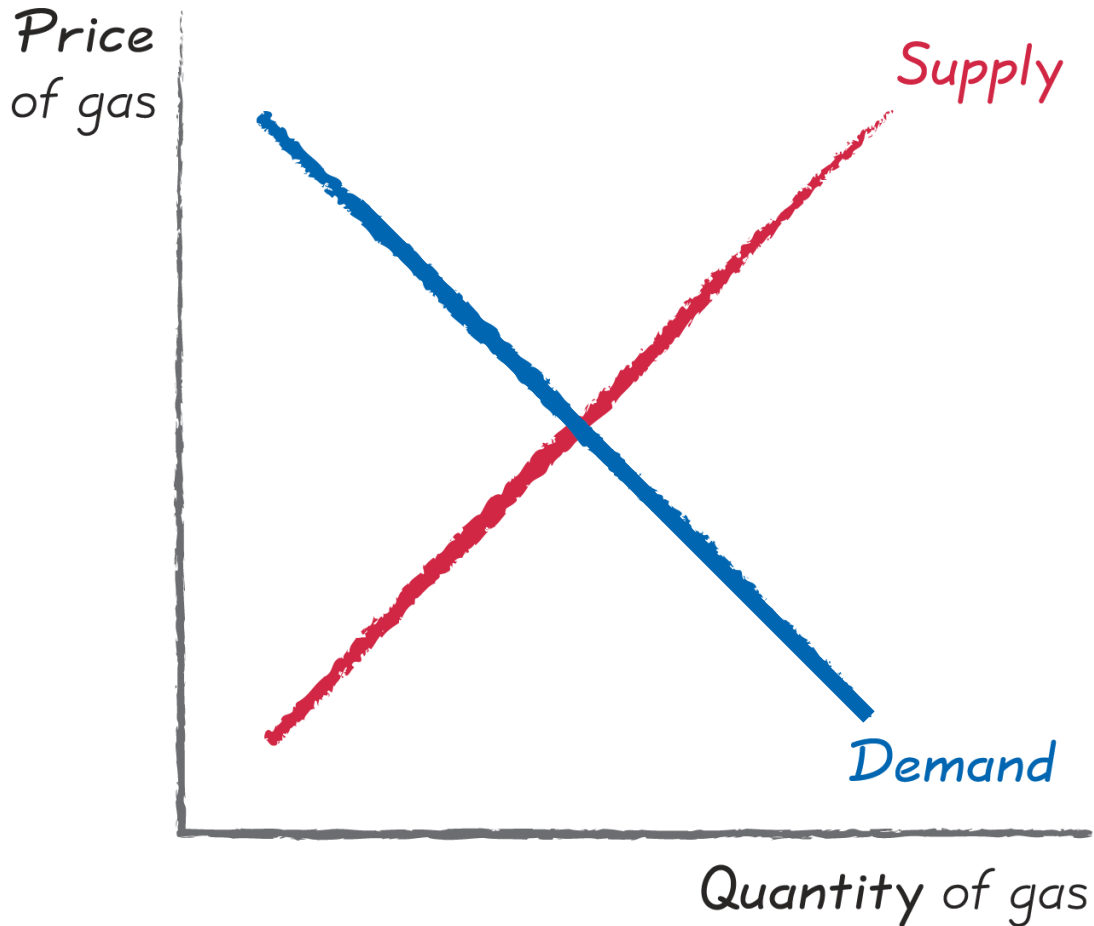
A decrease in demand will cause:

- A. The demand curve to shift left
- B. The supply curve to shift right
- C. A movement along the supply curve
- D. A movement along the demand curve

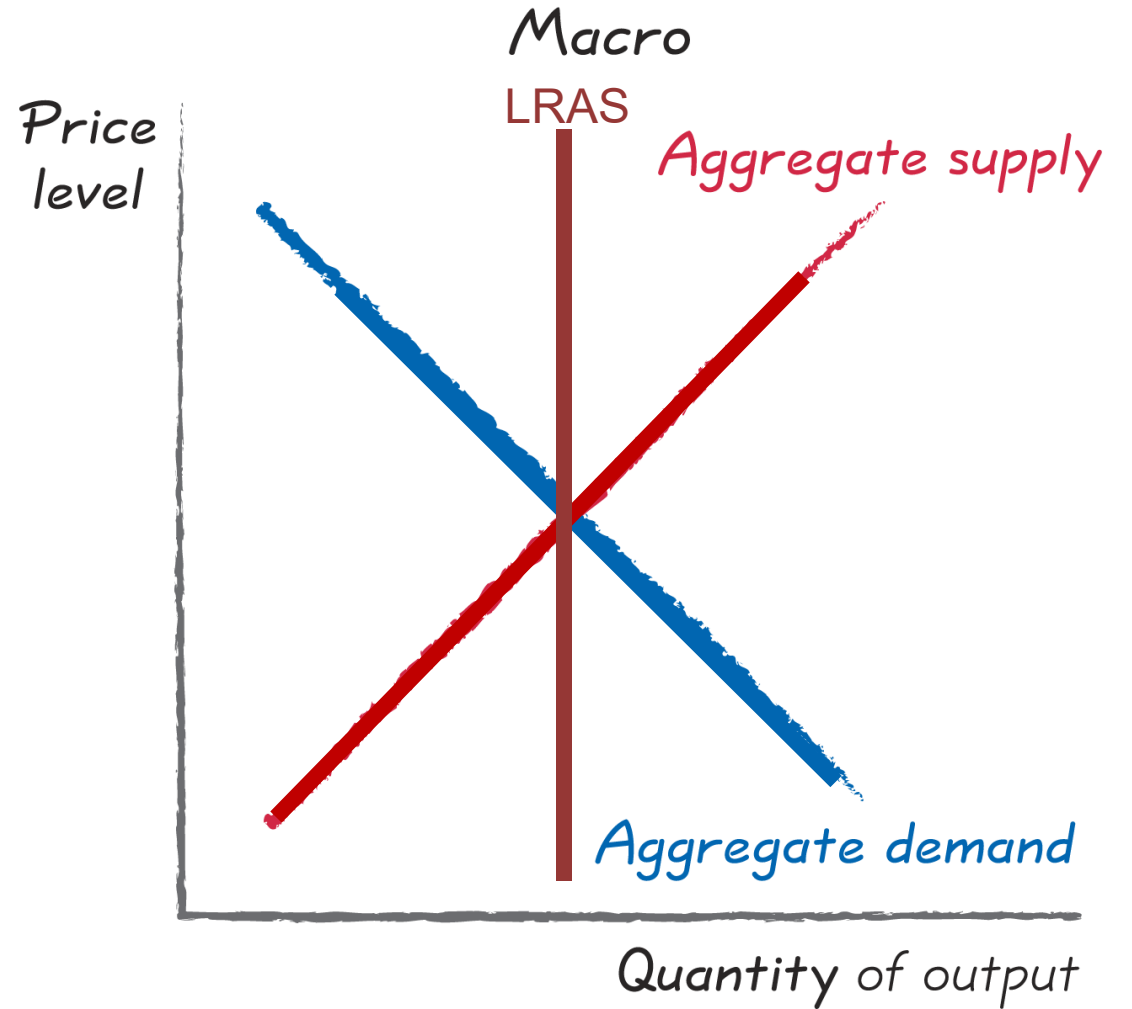
The Promise of AD-AS is based on a false dichotomy

An exogenous decrease
in Demand

⇒ Shifts the demand curve
Micro



An exogenous decrease in
Aggregate Demand
...Creates a complicated mess...



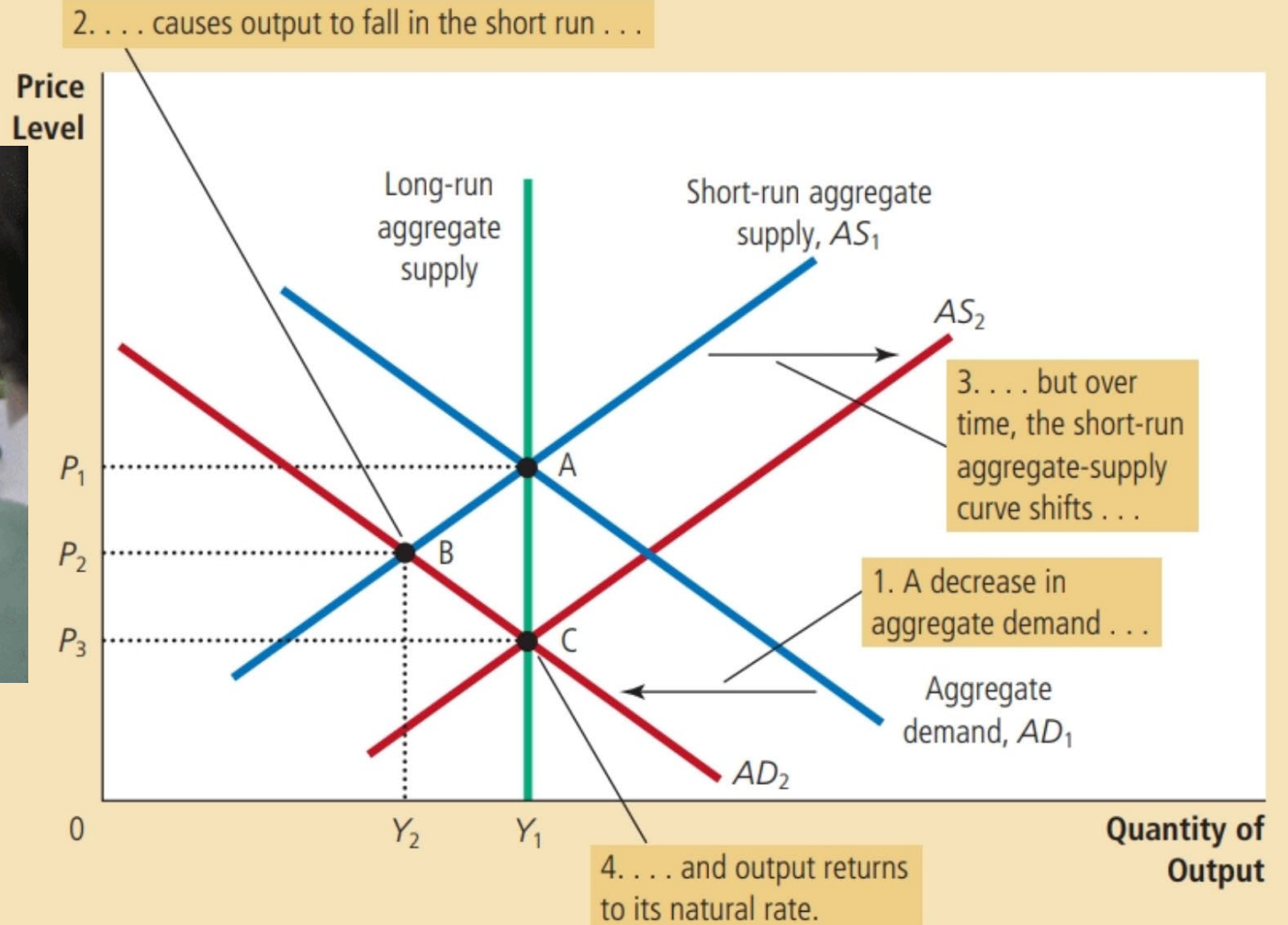
The Case of the Self-Shifting Aggregate Supply Curve

Figure 8

A Contraction in Aggregate Demand



reaches point C, where the new aggregate-demand curve crosses the long-run aggregate-supply curve. In the long run, the price level falls to P_3 , and output returns to its natural rate, Y_1 .



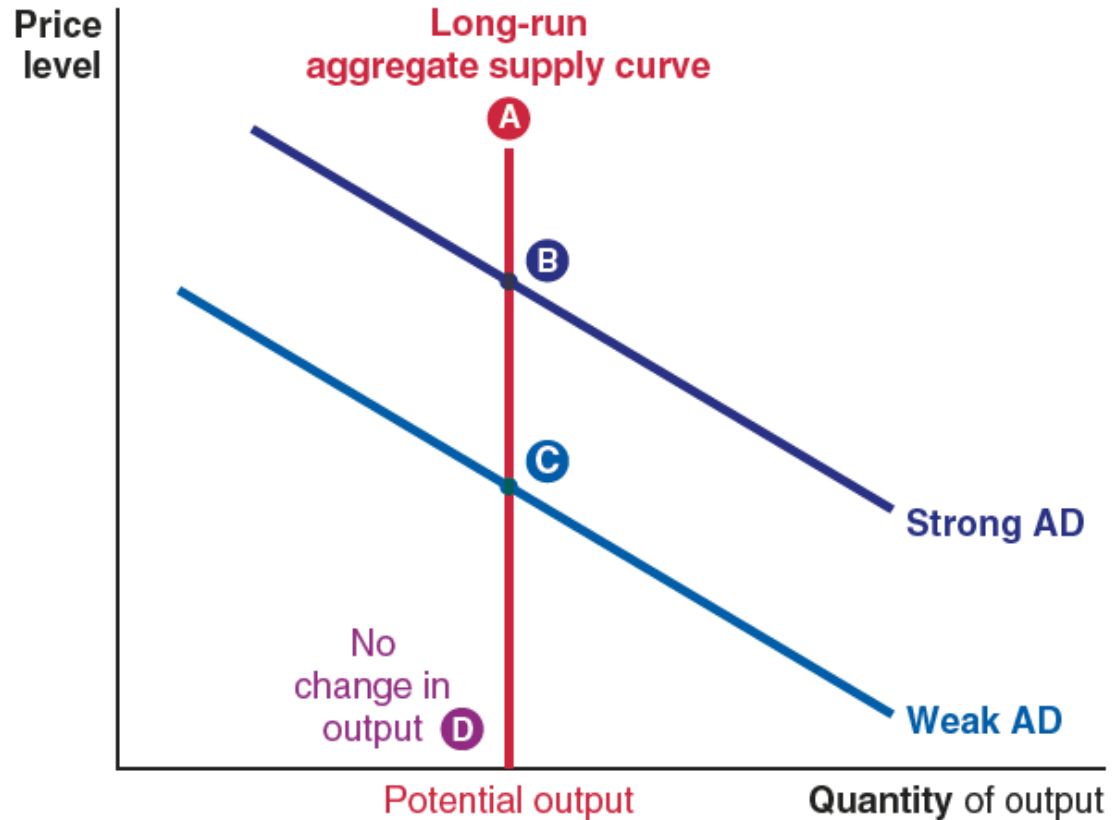
Two Extreme Cases of the Aggregate Supply Curve

Many years

In the Long Run...

Aggregate Supply is Vertical

Classical dichotomy

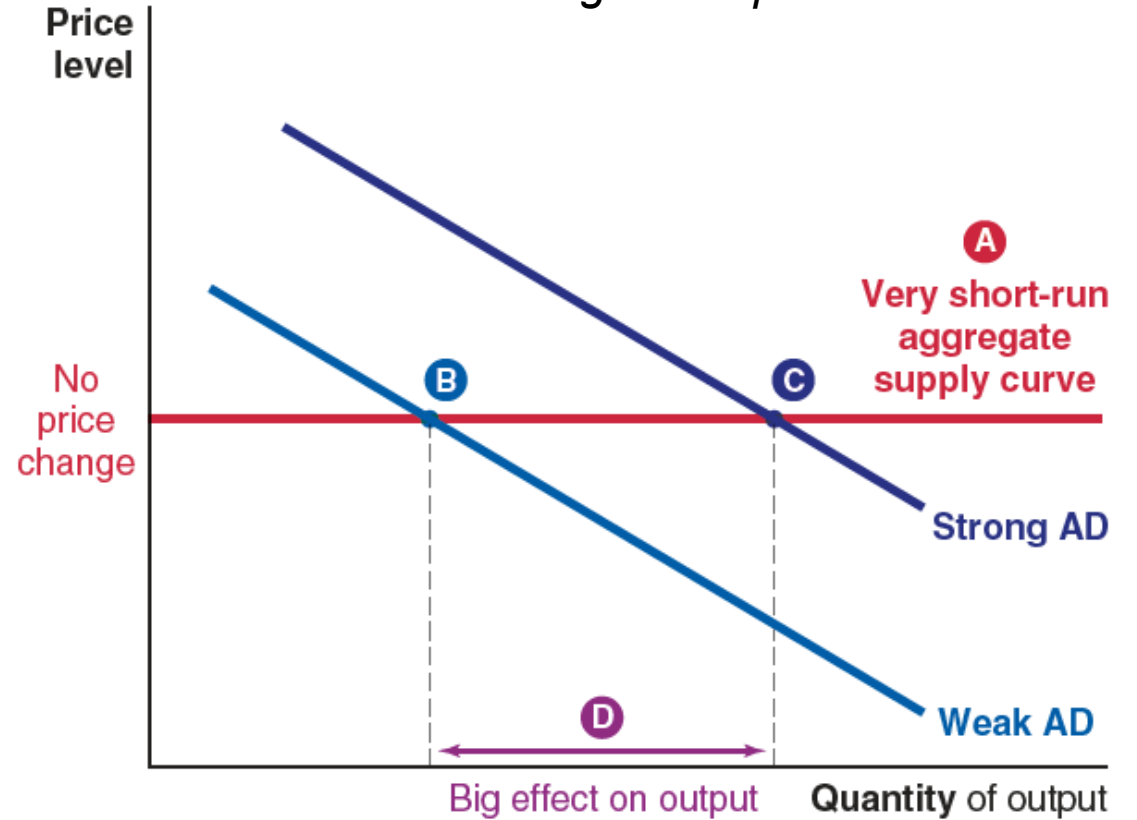


A few weeks

In the Very Short Run...

Aggregate Supply is Horizontal

No-one has had a chance to change their prices

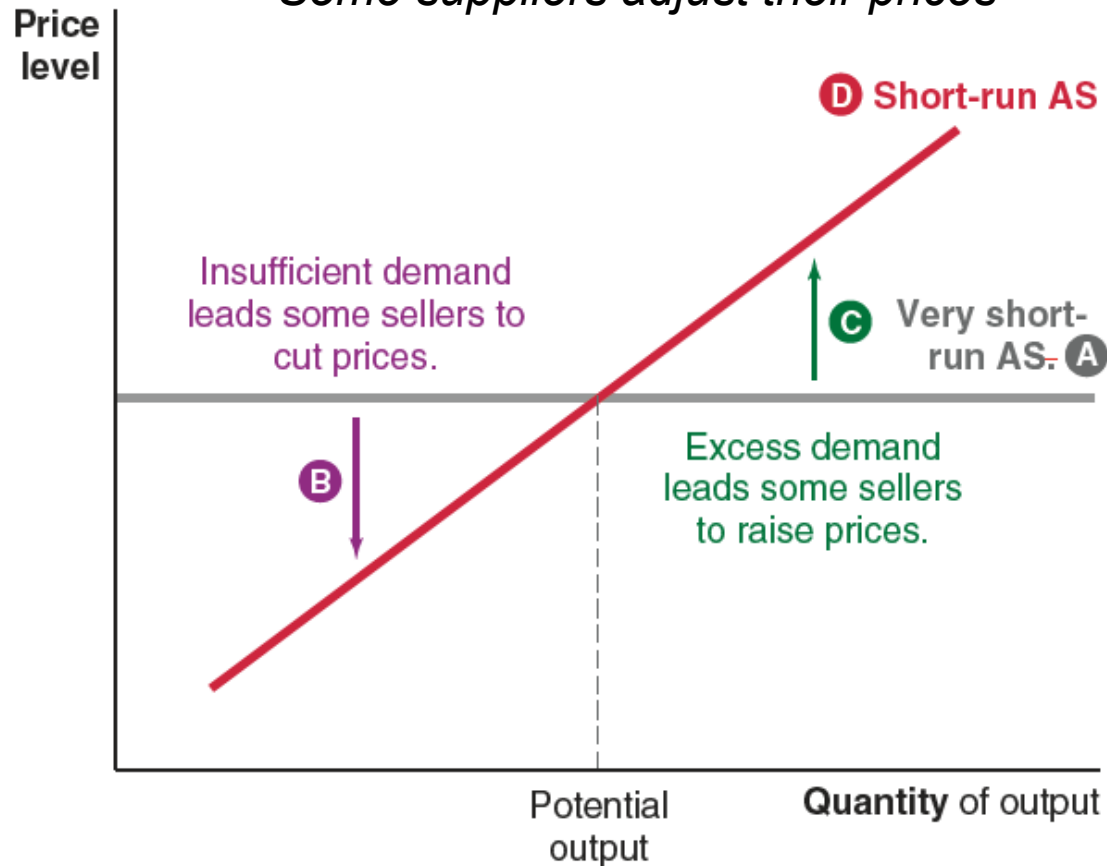


Between the Extremes...

In the Short Run... *A few quarters*

Aggregate Supply Slopes Upward

Some suppliers adjust their prices



In the Medium Run... *A few years*

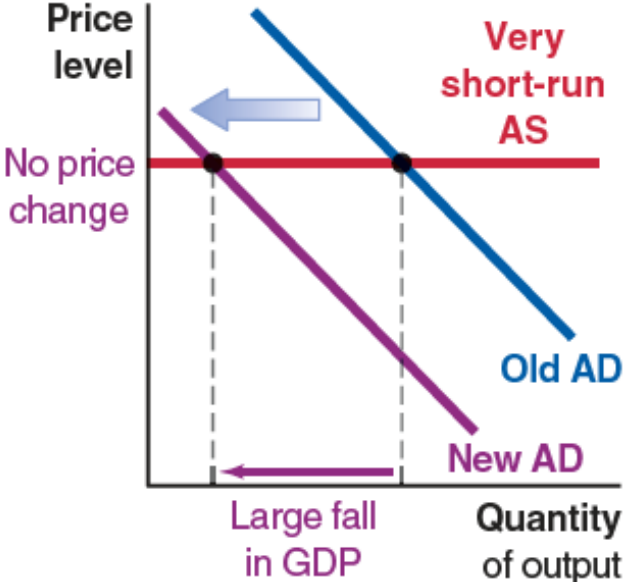
Aggregate Supply Steepens

More suppliers adjust their prices



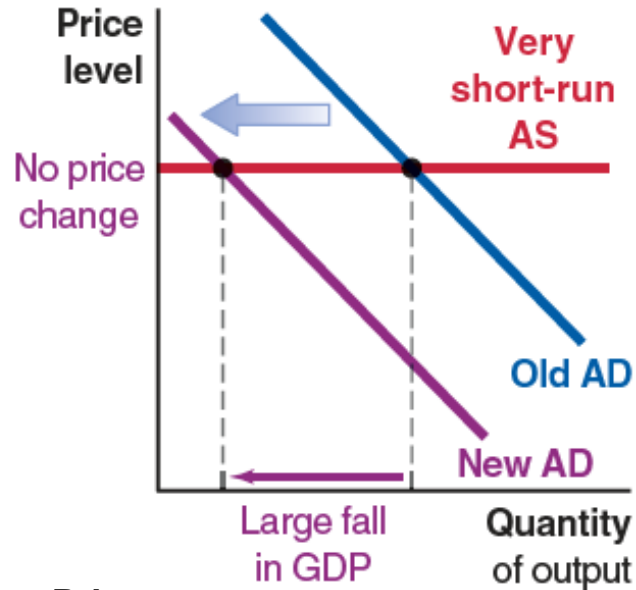
My Comic Strip approach to Aggregate Supply

A couple of weeks
Very Short Run:
Prices Are Fixed

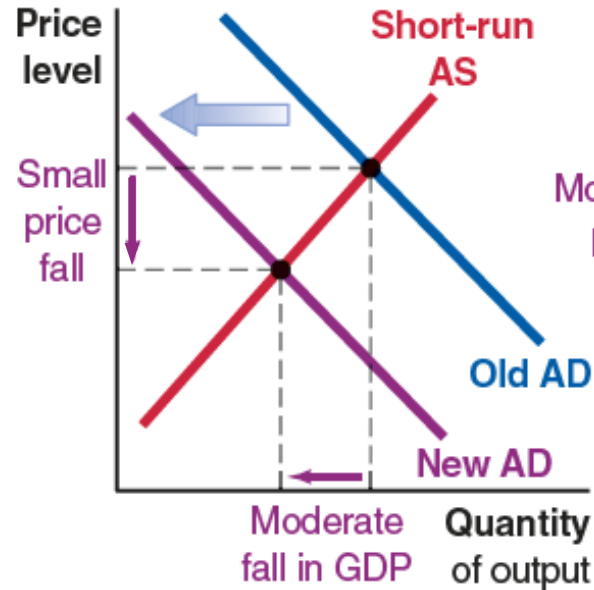


Mapping the response of prices over time to a decrease in demand

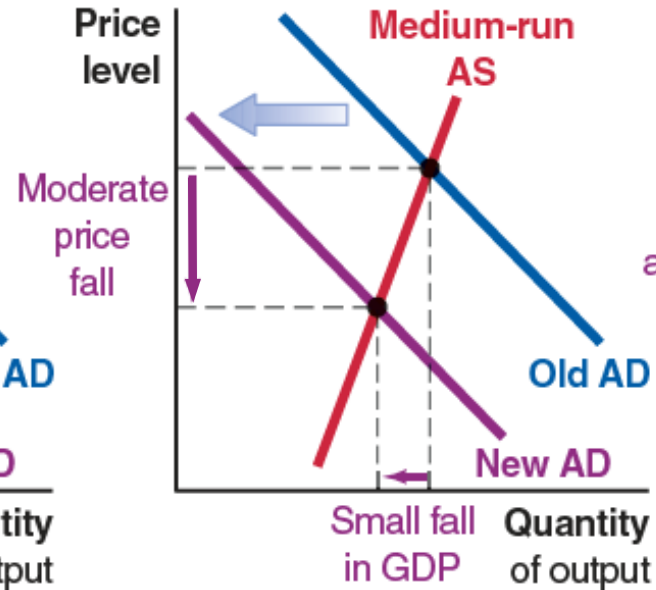
A couple of weeks
Very Short Run:
Prices Are Fixed



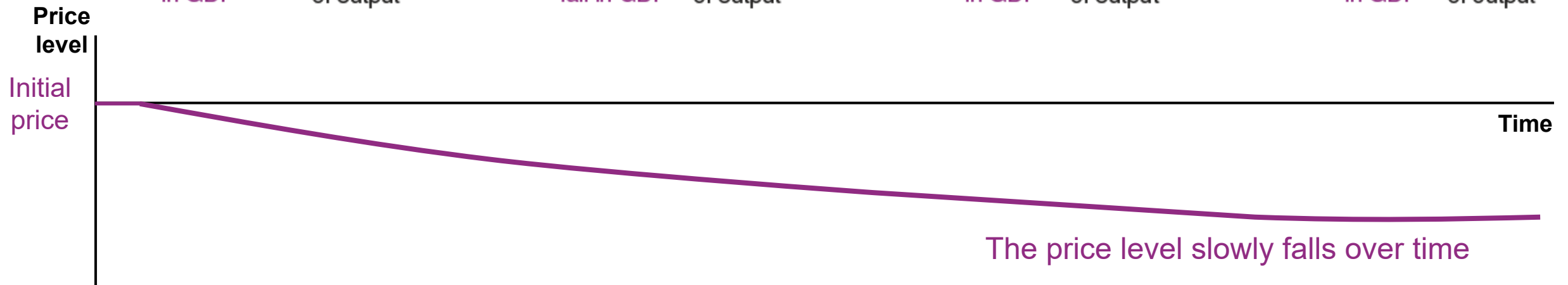
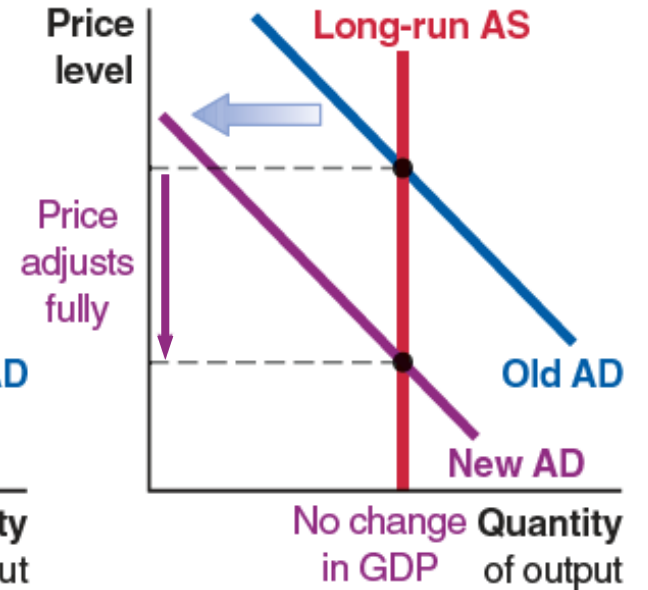
A few quarters
Short Run:
Partial Price Adjustment



A couple of years
Medium Run:
More Price Adjustment

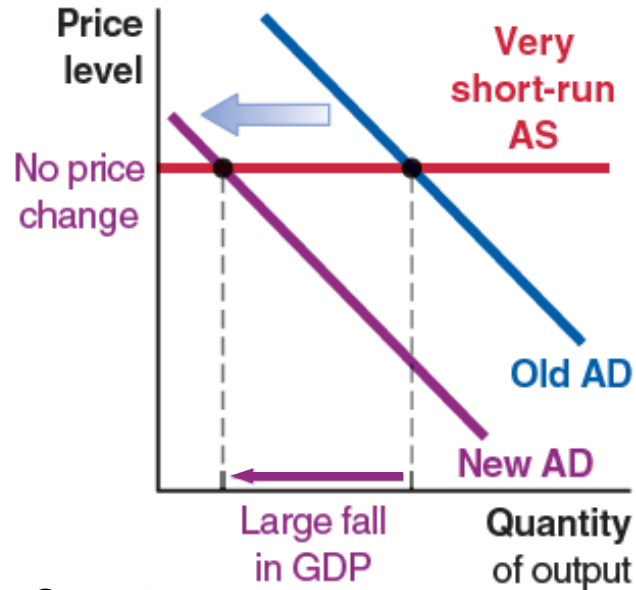


Many years
Long Run:
Complete Price Adjustment

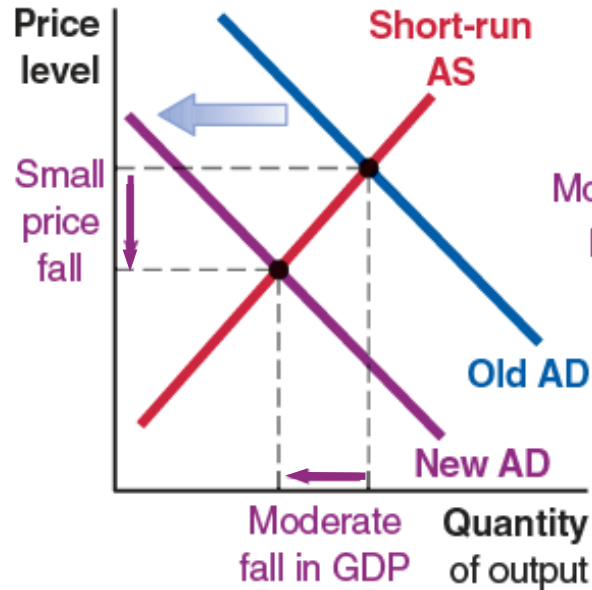


Mapping the response of output over time

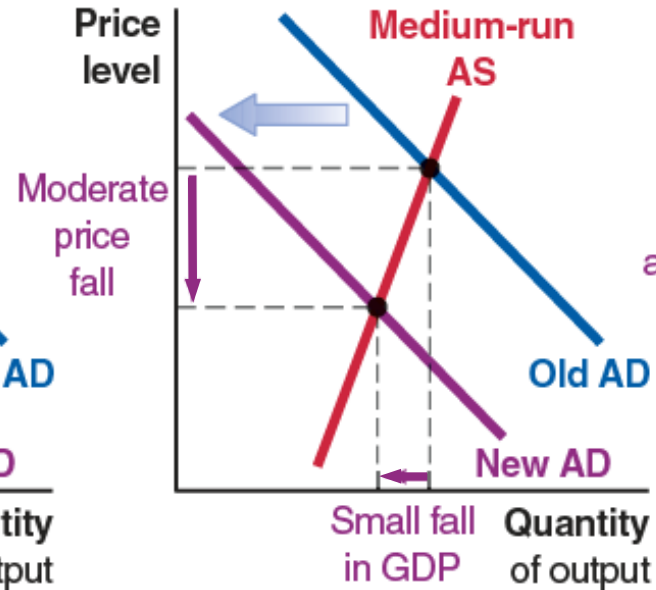
A couple of weeks
Very Short Run:
Prices Are Fixed



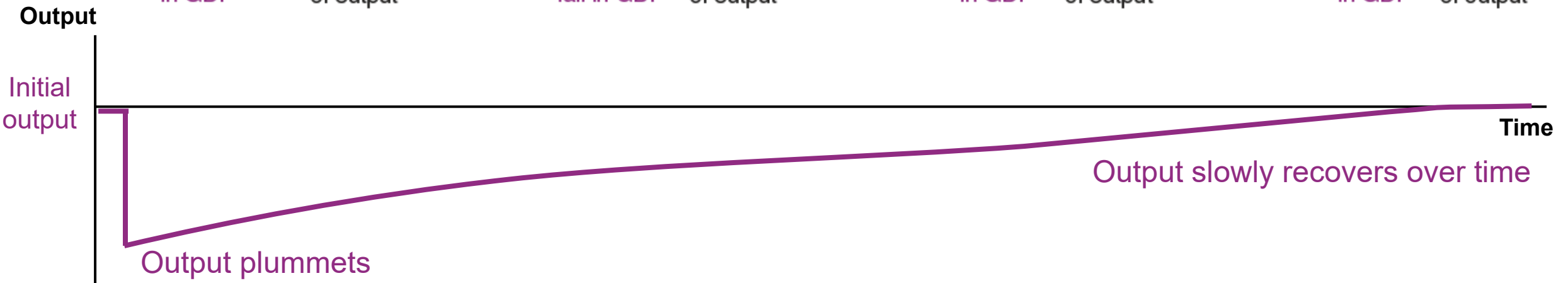
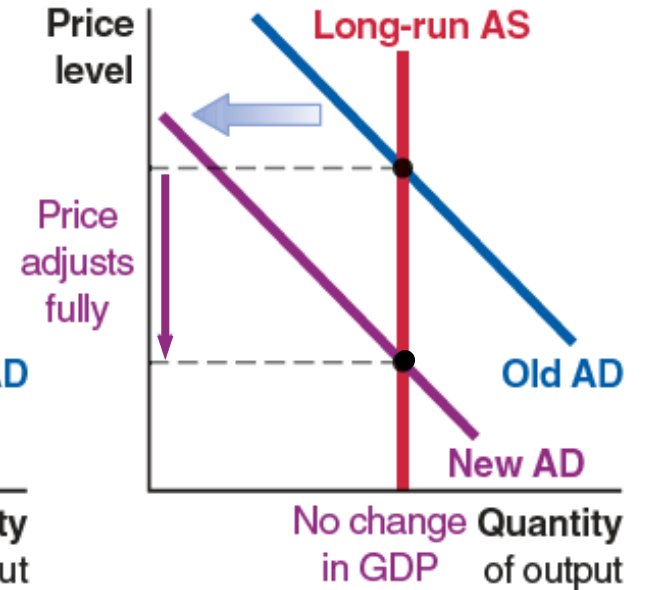
A few quarters
Short Run:
Partial Price Adjustment



A couple of years
Medium Run:
More Price Adjustment



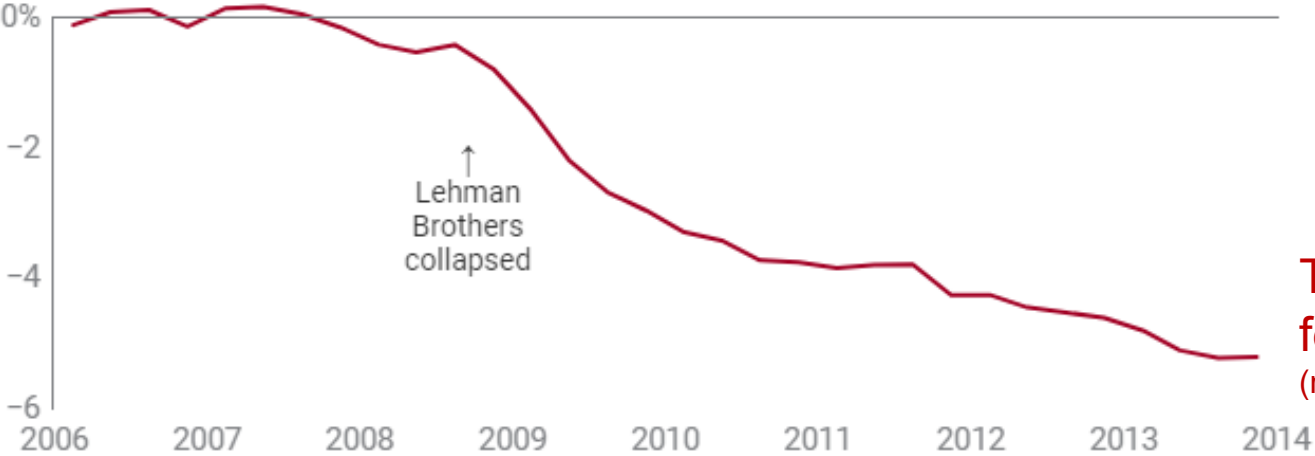
Many years
Long Run:
Complete Price Adjustment



Application: Recovery from the financial crisis

Prices fell slowly, relative to the previous trend

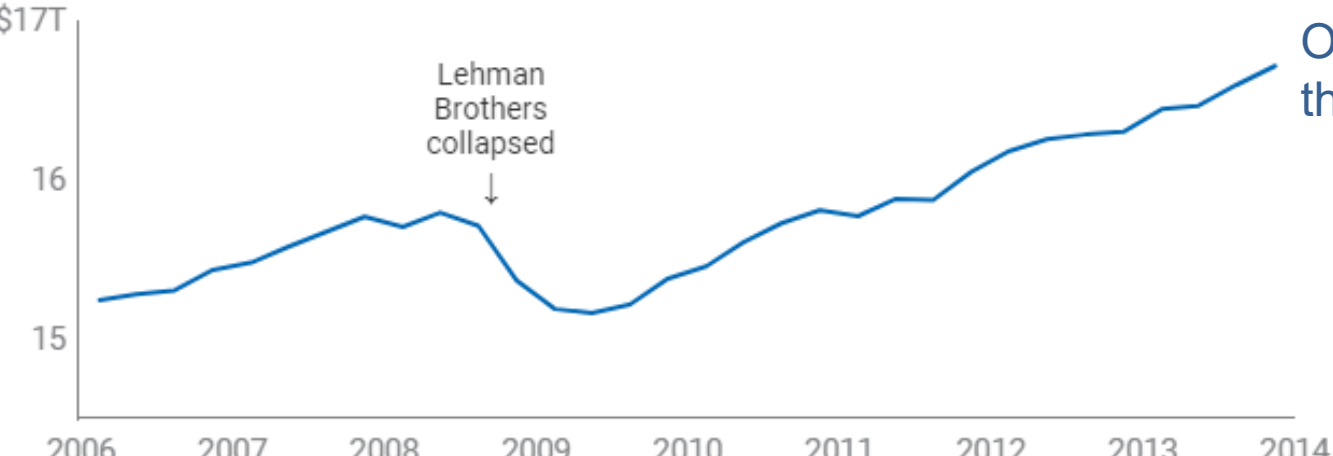
Level of GDP deflator, relative to 2006–2007 trend



The price level slowly fell over time (relative to pre-existing trend)

Output fell dramatically during the 2008 recession, then slowly recovered

Real gross domestic product in trillions of dollars



Output plummeted then slowly recovered

My Roadmap: Two Alternatives for Teaching Business Cycles

Can we improve and modernize the traditional AD-AS approach?

CONCLUSIONS

You Are Here

Can we teach the Fed's approach in a Principles class?

There are only two problems with the AD-AS framework

Price level
(GDP
deflator)



1. The vertical axis

Problems with the **price level**:

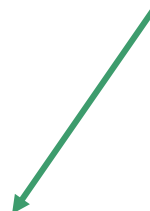
- What is it?
- Have you seen it?
- Does it feature in policy discussions?
- Will students read about it?

2. The horizontal axis

Problems with the **quantity of output**:

- What is it?
- Have you seen it?
- Does it feature in policy discussions?
- Will students read about it?

Quantity of output
(Real GDP)



The Fed's Statement of Economic Projections

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assumptions of projected appropriate monetary policy, December 2022

Percent

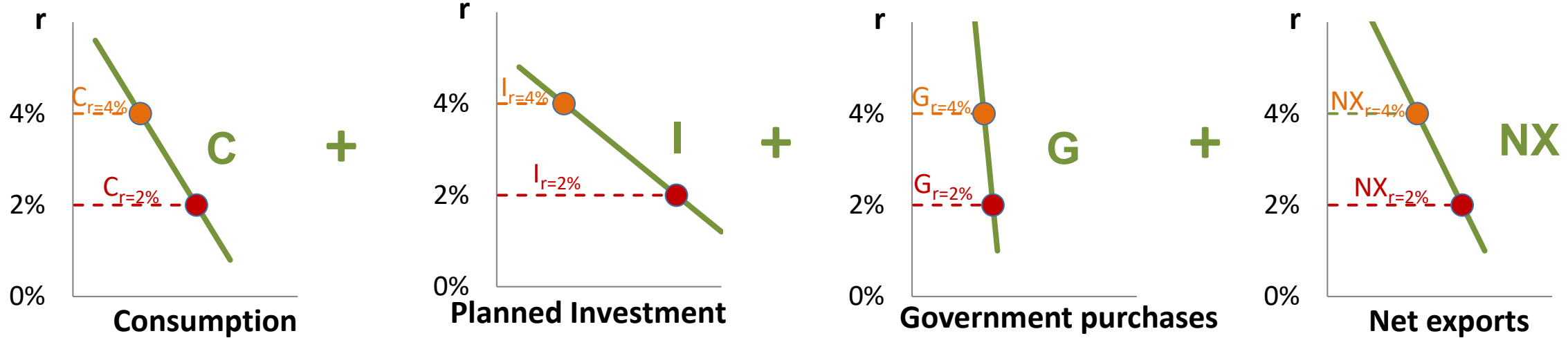
Variable	Median ¹					Central Tendency ²					Range ³				
	2022	2023	2024	2025	Longer run	2022	2023	2024	2025	Longer run	2022	2023	2024	2025	Longer run
Change in real GDP	0.5	0.5	1.6	1.8	1.8	0.4–0.5	0.4–1.0	1.3–2.0	1.6–2.0	1.7–2.0	0.2–0.5	-0.5–1.0	0.5–2.4	1.4–2.3	1.6–2.5
September projection	0.2	1.2	1.7	1.8	1.8	0.1–0.3	0.5–1.5	1.4–2.0	1.6–2.0	1.7–2.0	0.0–0.5	-0.3–1.9	1.0–2.6	1.4–2.4	1.6–2.2
Unemployment rate	3.7	4.6	4.6	4.5	4.0	3.7	4.4–4.7	4.3–4.8	4.0–4.7	3.8–4.3	3.7–3.9	4.0–5.3	4.0–5.0	3.8–4.8	3.5–4.8
September projection	3.8	4.4	4.4	4.3	4.0	3.8–3.9	4.1–4.5	4.0–4.6	4.0–4.5	3.8–4.3	3.7–4.0	3.7–5.0	3.7–4.7	3.7–4.6	3.5–4.5
PCE inflation	5.6	3.1	2.5	2.1	2.0	5.6–5.8	2.9–3.5	2.3–2.7	2.0–2.2	2.0	5.5–5.9	2.6–4.1	2.2–3.5	2.0–3.0	2.0
September projection	5.4	2.8	2.3	2.0	2.0	5.3–5.7	2.6–3.5	2.1–2.6	2.0–2.2	2.0	5.0–6.2	2.4–4.1	2.0–3.0	2.0–2.5	2.0
Core PCE inflation ⁴	4.8	3.5	2.5	2.1		4.7–4.8	3.2–3.7	2.3–2.7	2.0–2.2		4.6–5.0	3.0–3.8	2.2–3.0	2.0–3.0	
September projection	4.5	3.1	2.3	2.1		4.4–4.6	3.0–3.4	2.2–2.5	2.0–2.2		4.3–4.8	2.8–3.5	2.0–2.8	2.0–2.5	
Memo: Projected appropriate policy path															
Federal funds rate	4.4	5.1	4.1	3.1	2.5	4.4	5.1–5.4	3.9–4.9	2.6–3.9	2.3–2.5	4.4	4.9–5.6	3.1–5.6	2.4–5.6	2.3–3.3
September projection	4.4	4.6	3.9	2.9	2.5	4.1–4.4	4.4–4.9	3.4–4.4	2.4–3.4	2.3–2.5	3.9–4.6	3.9–4.9	2.6–4.6	2.4–4.6	2.3–3.0

The Fed's Model: Teaching IS-MP for Principles Students



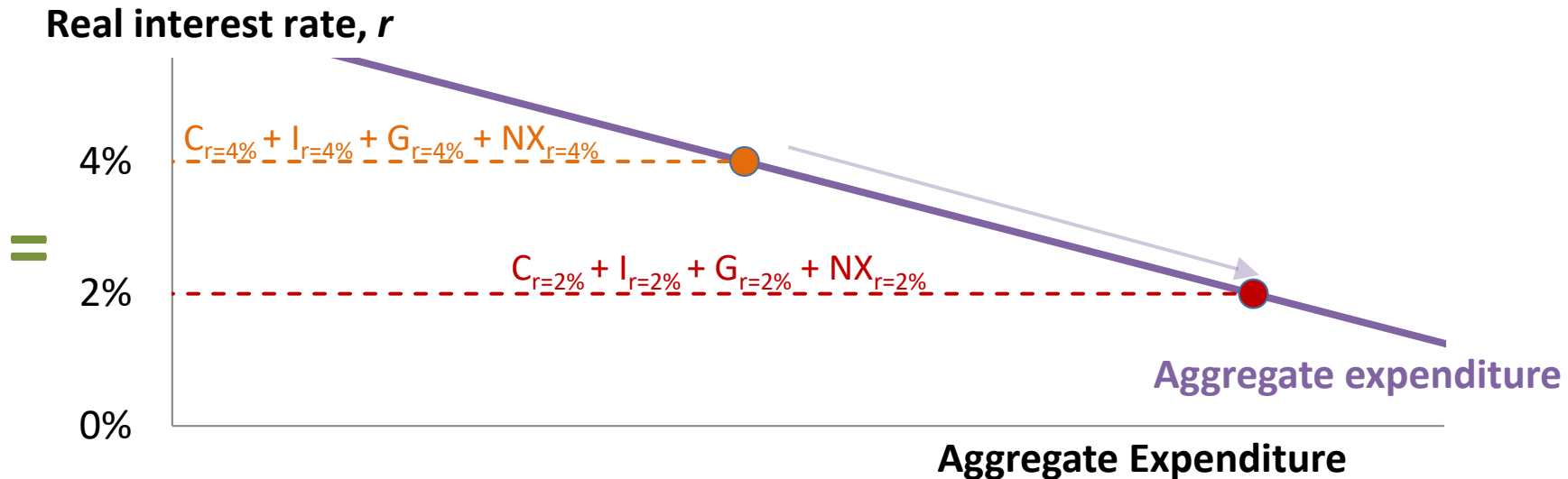
Teaching the IS Curve: How Real Interest Rates Shape Activity

The real interest rate is the opportunity cost of spending money today



⇒ Lower real interest rates yield more consumption, investment, government purchases and net exports.

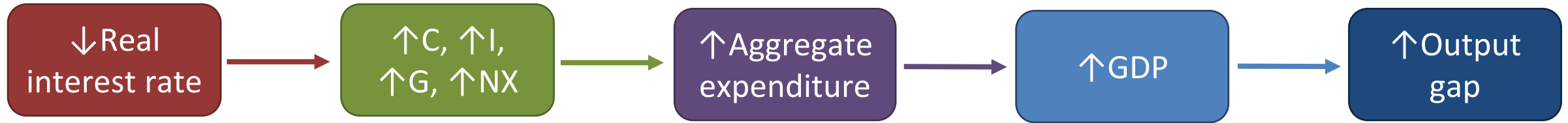
Which implies that lower real interest rates yield higher aggregate expenditure



The IS Curve: Lower Interest Rates Yield Higher Output

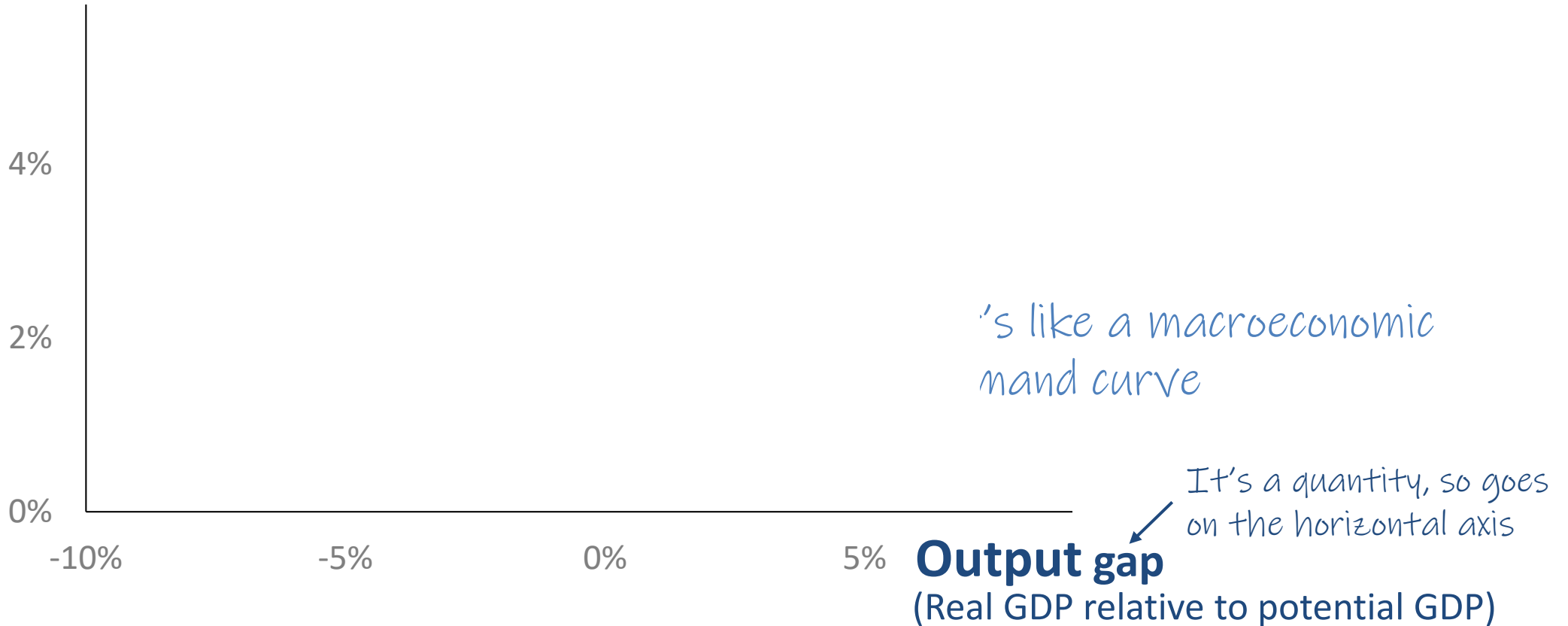
The real interest rate is the opportunity cost of spending money this year (rather than next). Businesses adjust output to meet demand. Potential GDP is unchanged so changes in GDP translate to changes in the output gap.

$\text{Aggregate expenditure} = C + I + G + NX$
 $\text{equilibrium: } \text{GDP} = \text{Aggregate expenditure}$



Real interest rate

It's a price, so goes on the vertical axis



The MP Curve: Where Do Interest Rates Come From?

The Fed sets the risk-free interest rate

Financial markets add a risk premium

Real interest rate

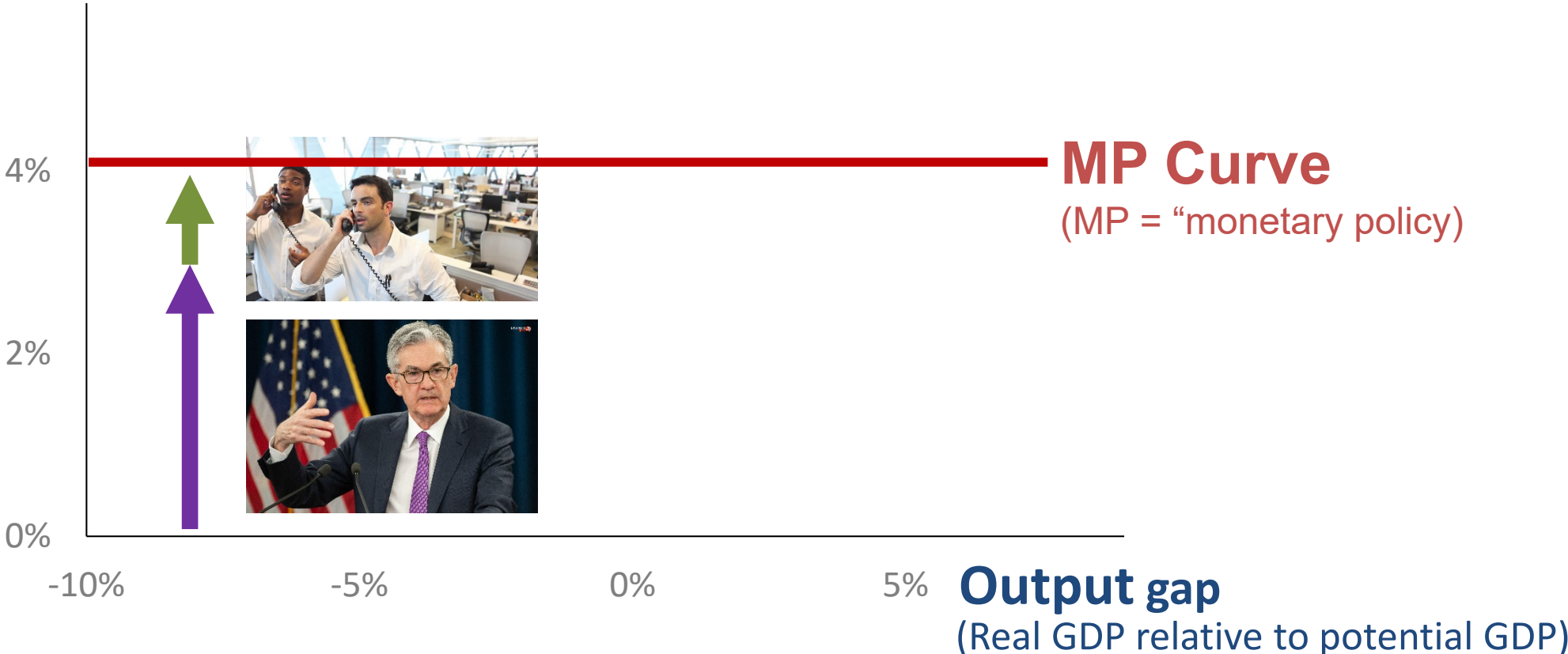
=

Risk-free interest rate

+

Risk premium

Real interest rate



The MP Curve: What if the Fed lowers rates?

The Fed sets the risk-free interest rate

Financial markets add a risk premium

Real interest rate

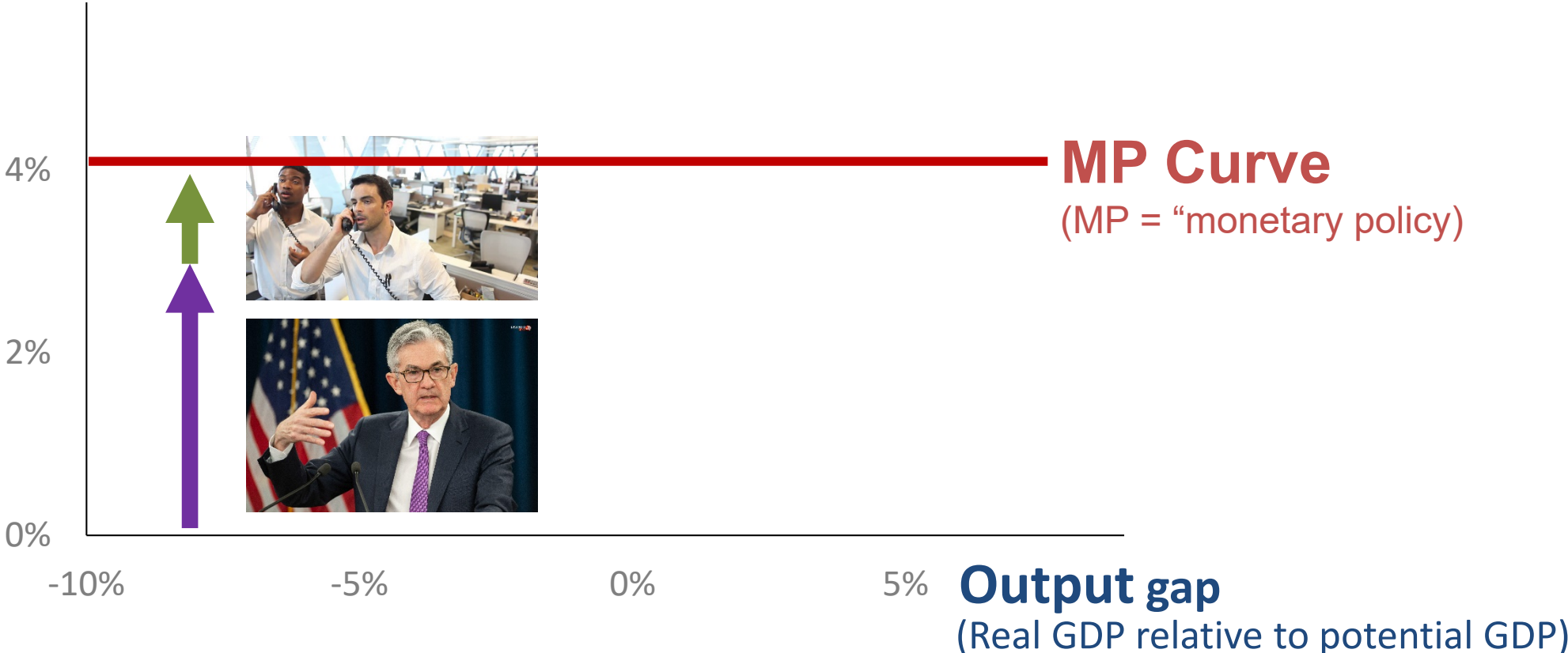
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Risk-free interest rate

+

Risk premium

Real interest rate



The MP Curve: What if a Financial Crisis Occurs?

The Fed sets the risk-free interest rate

Financial markets add a risk premium

Real interest rate

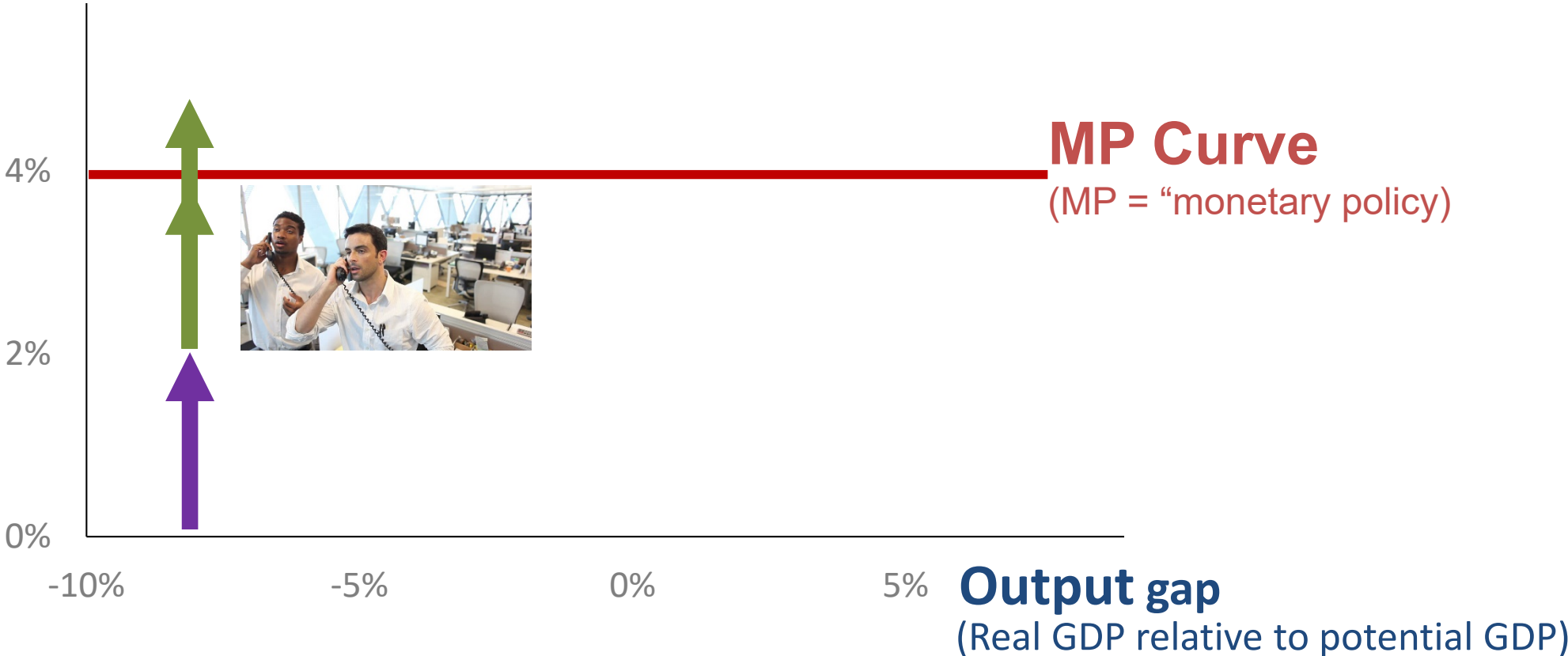
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Risk-free interest rate

+

Risk premium

Real interest rate



Bringing the Curves Together: IS-MP Equilibrium

The state of the economy is determined by the intersection of the IS curve and the MP curve

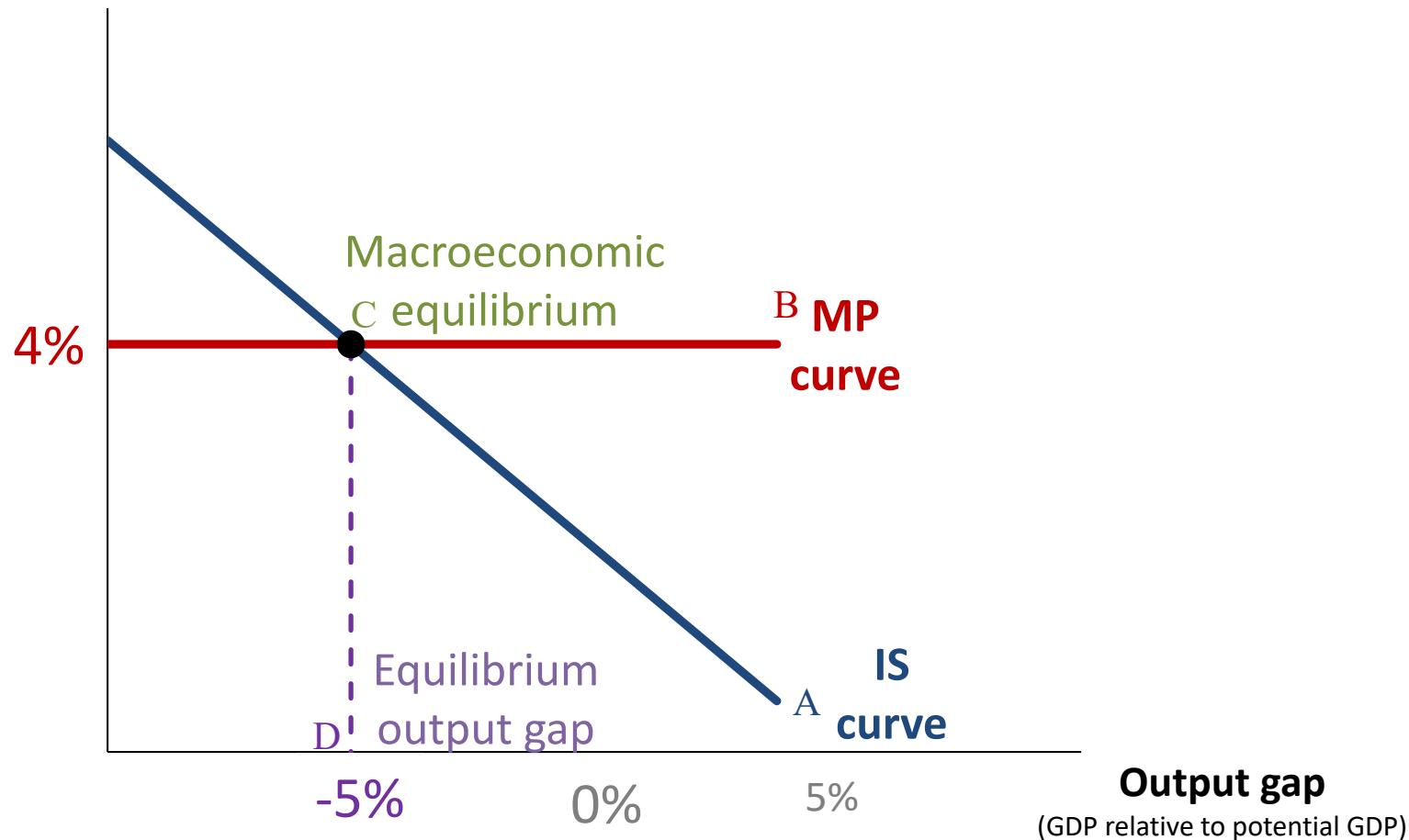
A The **IS curve** describes the level of aggregate expenditure and hence output gap associated with each real interest rate.

B The **MP curve** describes the **real interest rate** set by monetary policy and financial markets.

C The economy moves to the point of **macroeconomic equilibrium** where the two curves intersect.

D This occurs when the **real interest rate** is 4% and the **equilibrium output gap is -5%** (GDP is 5% below potential GDP).

Real interest rate



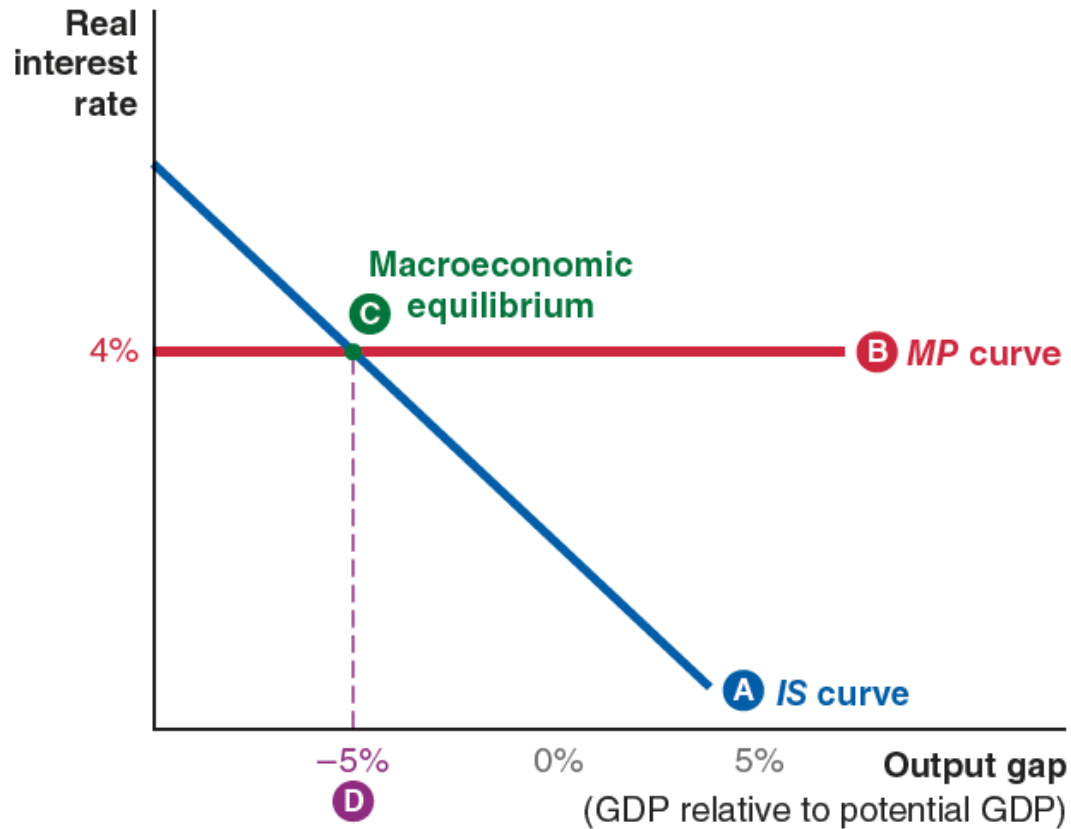
Advantages of the IS-MP Approach

- This is the language of policy debates



Advantages of the IS-MP Approach

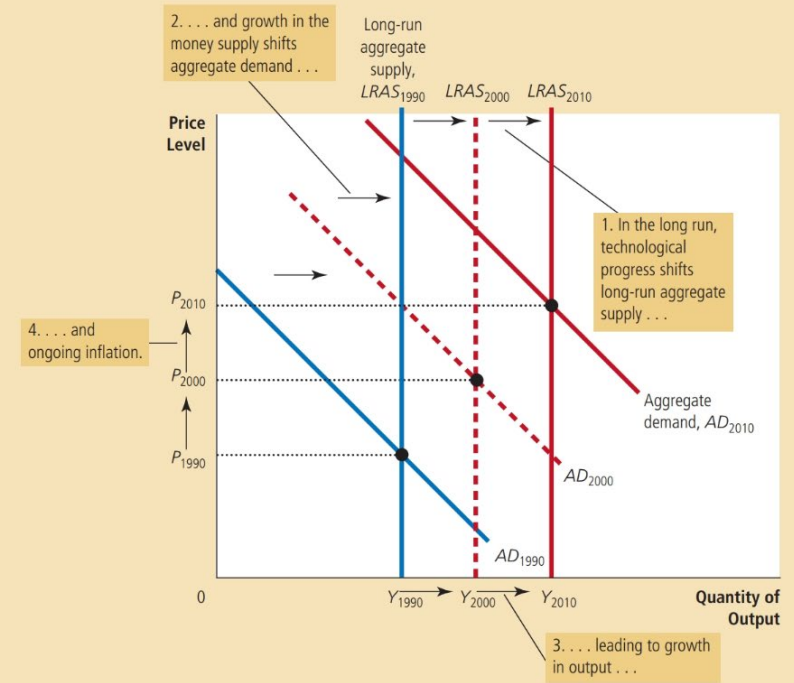
- This is the language of policy debates
- Model is consistent with reality of ongoing economic growth and inflation



As the economy becomes better able to produce goods and services over time, primarily because of technological progress, the long-run aggregate-supply curve shifts to the right. At the same time, as the Fed increases the money supply, the aggregate-demand curve also shifts to the right. In this figure, output grows from Y_{1990} to Y_{2000} and then to Y_{2010} , and the price level rises from P_{1990} to P_{2000} and then to P_{2010} . Thus, the model of aggregate demand and aggregate supply offers a new way to describe the classical analysis of growth and inflation.

Figure 5

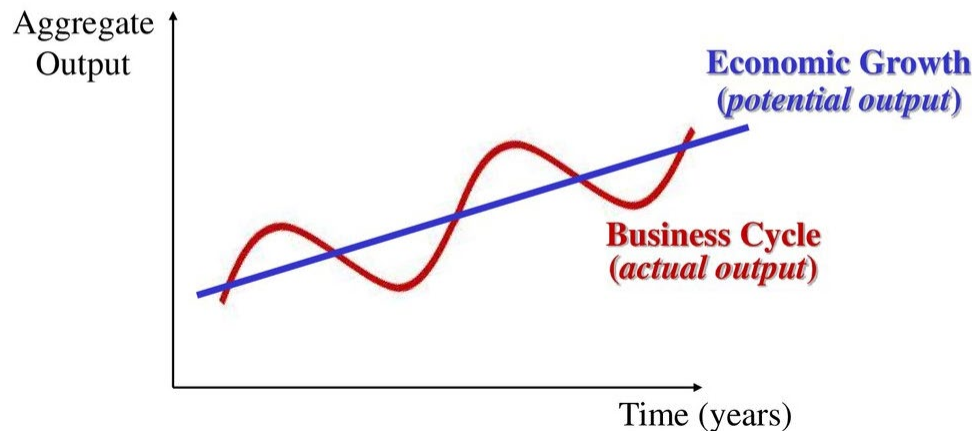
Long-Run Growth and Inflation in the Model of Aggregate Demand and Aggregate Supply



Advantages of the IS-MP Approach

- ❑ This is the language of policy debates
- ❑ Model is consistent with reality of ongoing economic growth and inflation
- ❑ Clear separation between:
 - ▶ Economic growth model: Determines potential output
 - ▶ **Short run business cycles: Focus on output gap**

Long-run Growth versus Business Cycle



Advantages of the IS-MP Approach

- ❑ This is the language of policy debates
- ❑ Model is consistent with reality of ongoing economic growth and inflation
- ❑ Clear separation between:
 - ▶ Long run growth: Determines potential output
 - ▶ Short run business cycles: Focus on output gap
- ❑ Focus on variables students observe:
 - ▶ Inflation, interest rates, and output gap



Advantages of the IS-MP Approach

- ❑ This is the language of policy debates
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- ❑ Clear separation between:
 - ▶ Long run growth: Determines potential output
 - ▶ Short run business cycles: Focus on output gap
- ❑ Focus on variables students observe:
 - ▶ Inflation, interest rates, and output gap
- ❑ Includes a central role for financial shocks

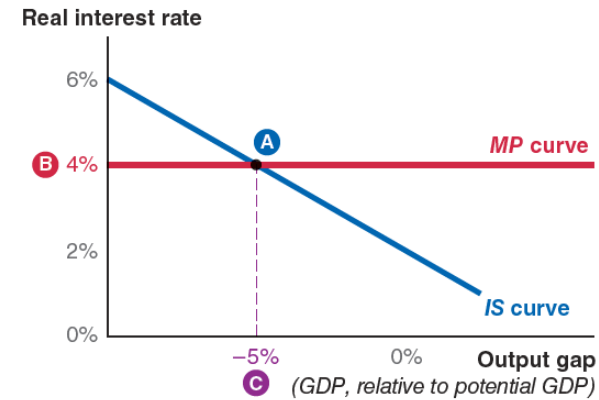


Advantages of the IS-MP Approach

- ❑ This is the language of policy debates
- ❑ Model is consistent with reality of ongoing economic growth and inflation
- ❑ Clear separation between:
 - ▶ Long run growth: Determines potential output
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 - ▶ Inflation, interest rates, and output gap
- ❑ Includes a central role for financial shocks
- ❑ Easily integrated with the Phillips Curve

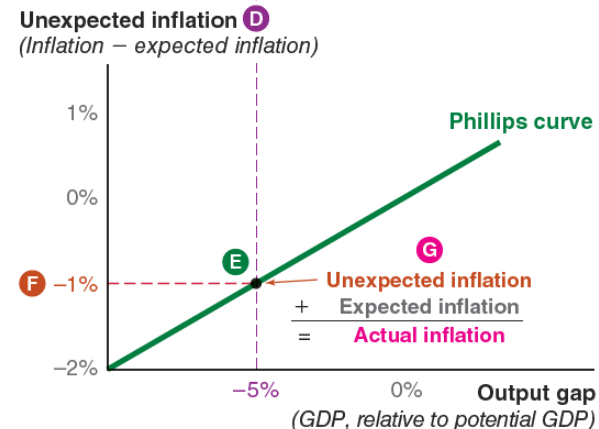
Figure 1 | The Fed Model

Use the IS-MP framework to find the output gap and the Phillips curve to forecast unexpected inflation.



Start by finding the output gap

- A** Find equilibrium at the point where the **IS curve** intersects the **MP curve**.
- B** Look to the left at the vertical axis to find the **real interest rate**, which is **4%**.
- C** Then look down at the horizontal axis to find the **output gap**, which is **-5%**.



Next, assess inflation

- D** Trace the **output gap** down to the lower graph.
- E** Find the point on the **Phillips curve** with the **same output gap**.
- F** Look to the left at the vertical axis to find **unexpected inflation**, which is **-1%**.
- G** Calculate **Actual inflation** = **Unexpected inflation** + **Expected inflation**.

Advantages of the IS-MP Approach

- ❑ This is the language of policy debates
- ❑ Model is consistent with reality of ongoing economic growth and inflation
- ❑ Clear separation between:
 - ▶ Long run growth: Determines potential output
 - ▶ Short run business cycles: Focus on output gap
- ❑ Focus on variables students observe:
 - ▶ Inflation, interest rates, and output gap
- ❑ Includes a central role for financial shocks
- ❑ Easily integrated with the Phillips Curve
- ❑ Prepares students for higher level classes
- ❑ Teach authentically using the model you use

Two Questions

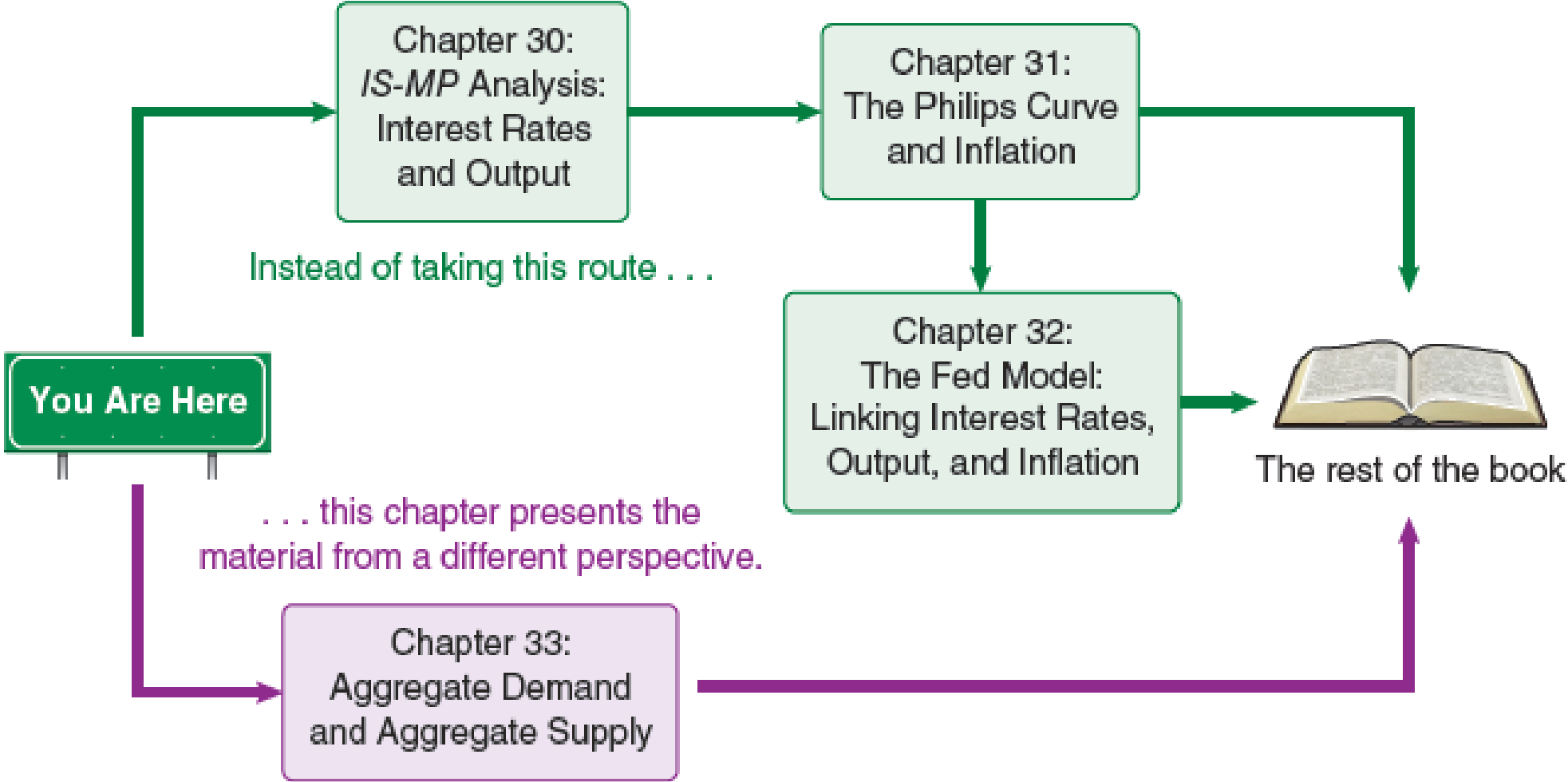
Can we improve and modernize the traditional AD-AS approach?

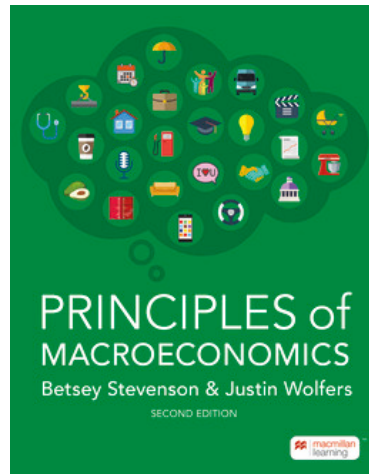
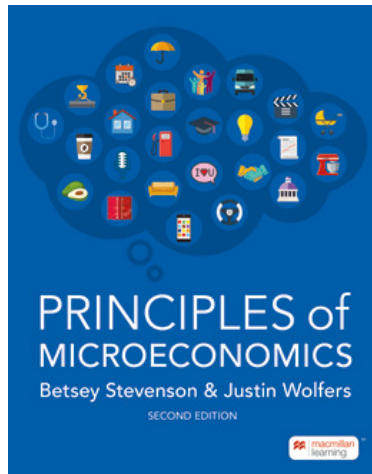
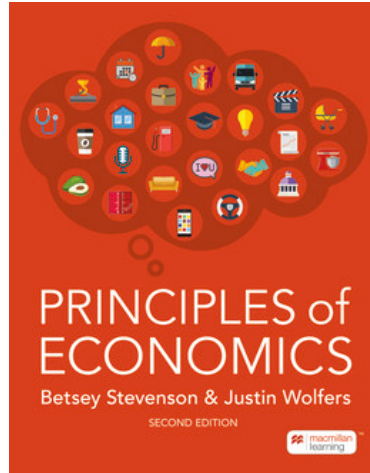
CONCLUSIONS

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Can we teach the Fed's approach in a Principles class?

Stevenson-Wolfers Approach: Choose Your Favorite Pathway





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