

The Market for Goods and Services: Growth in the Short-Run

Chapter 4

Overview

- The main trade-off of public authorities: inflation versus economic growth;
- Aggregate demand shifts and what happens when policymakers make a mistake;
- The worst economic scenario: stagflation;
- Expectations and self-fulfilling prophecies;
- The Commodities Supercycle and what happens when companies make mistakes;

Reminder

- ❑ In the closed economy model, aggregate demand is a function of the behavior of consumers, the government, and business: $AD = C + I + G$
- ❑ C: consumption by households
- ❑ I: Investment by companies in expanded capacity
- ❑ G: Government expenditure

Chapter 4.1

From Long-Run to Short-Run

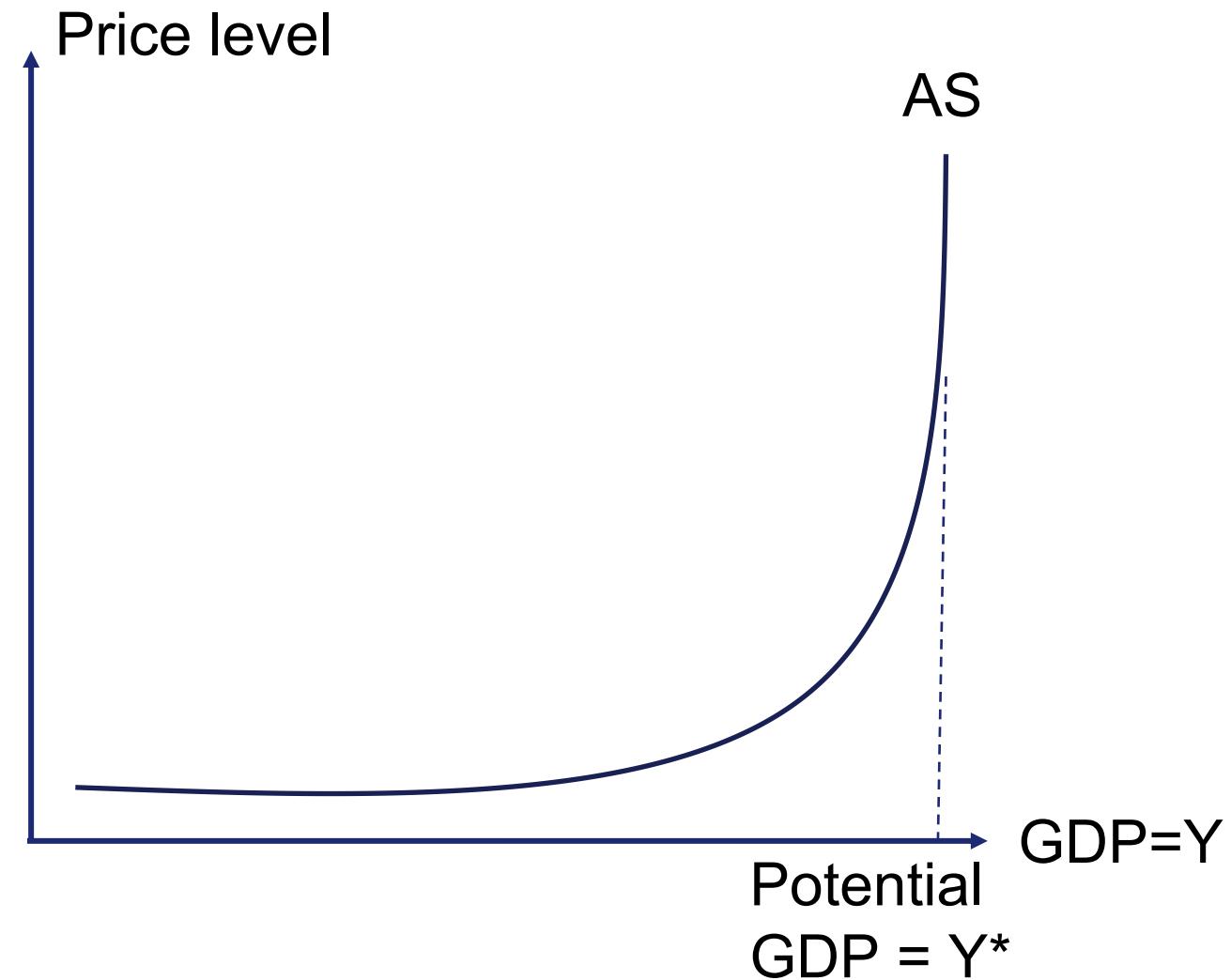
Market for Goods and Services: Importance of demand in the Short-Run

Though in the long run, economic growth is determined by aggregate supply, in the short-run, economic growth is determined by Aggregate demand. This is because:

1. Aggregate supply factors accumulate over time, and often require successful investment that can take years to show returns
2. Prices and wages are “sticky”, or slow to respond to variables that should impact them

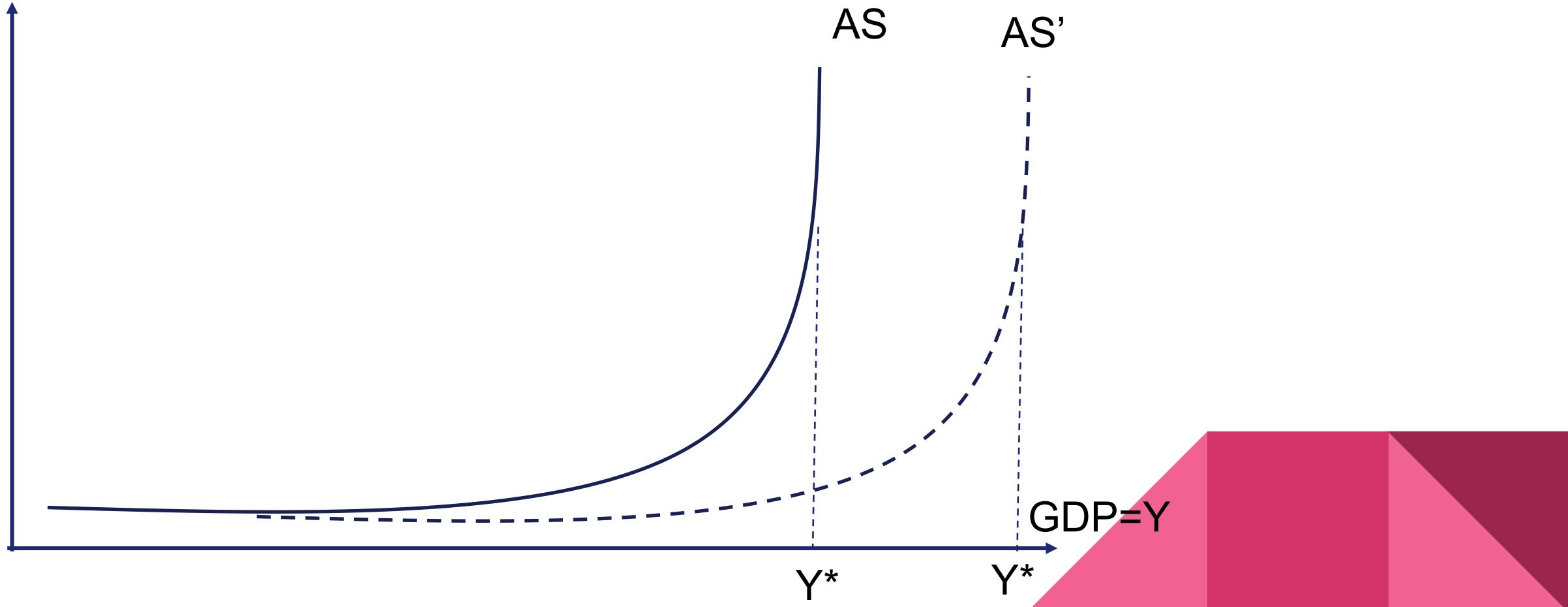
Aggregate Supply: Short-term Vs. Long-Term

- Initially: Price stickiness → more horizontal Aggregate supply curve, less susceptible to price and wage changes
- Near Potential output: AS Curve becomes more vertical because Maximum potential output cannot be exceeded (can't use more than all the resources available)



Aggregate supply can increase, in the long-run

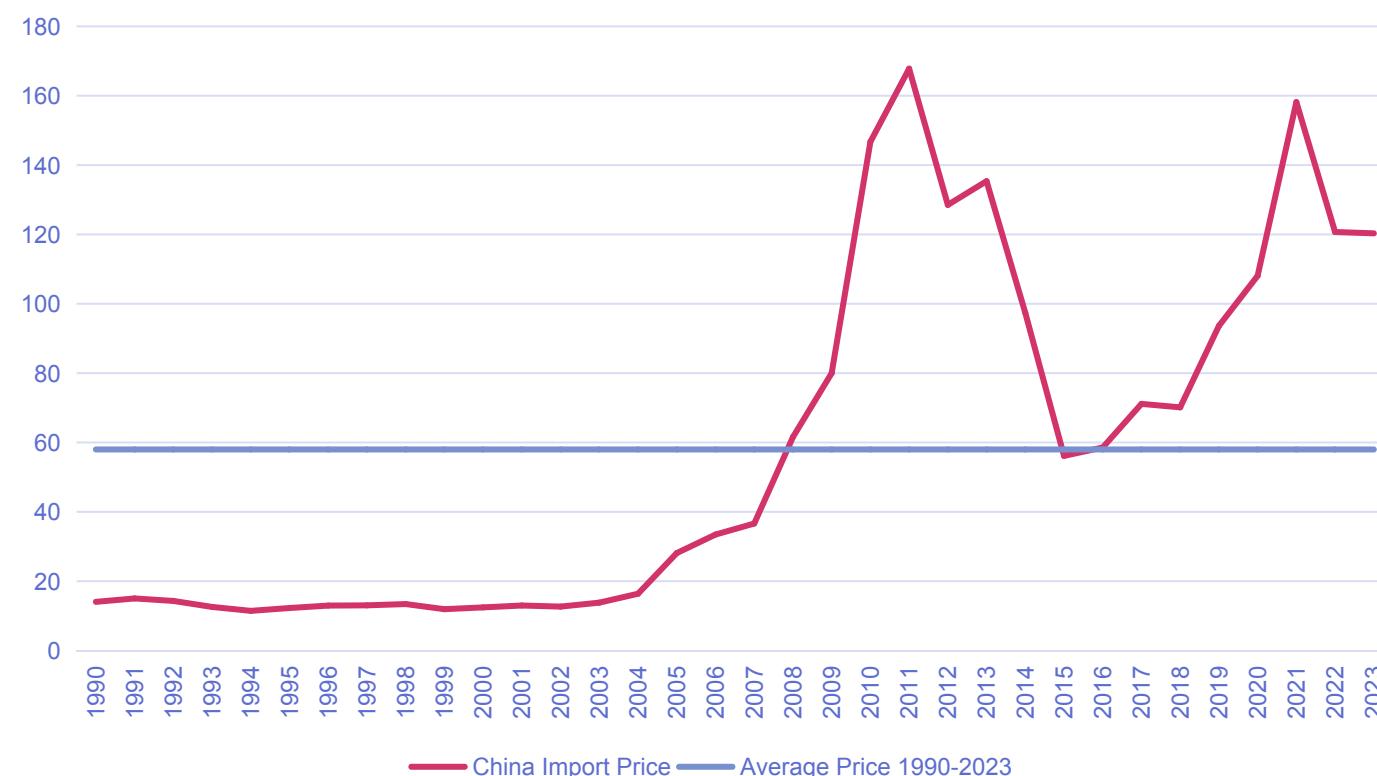
Price level



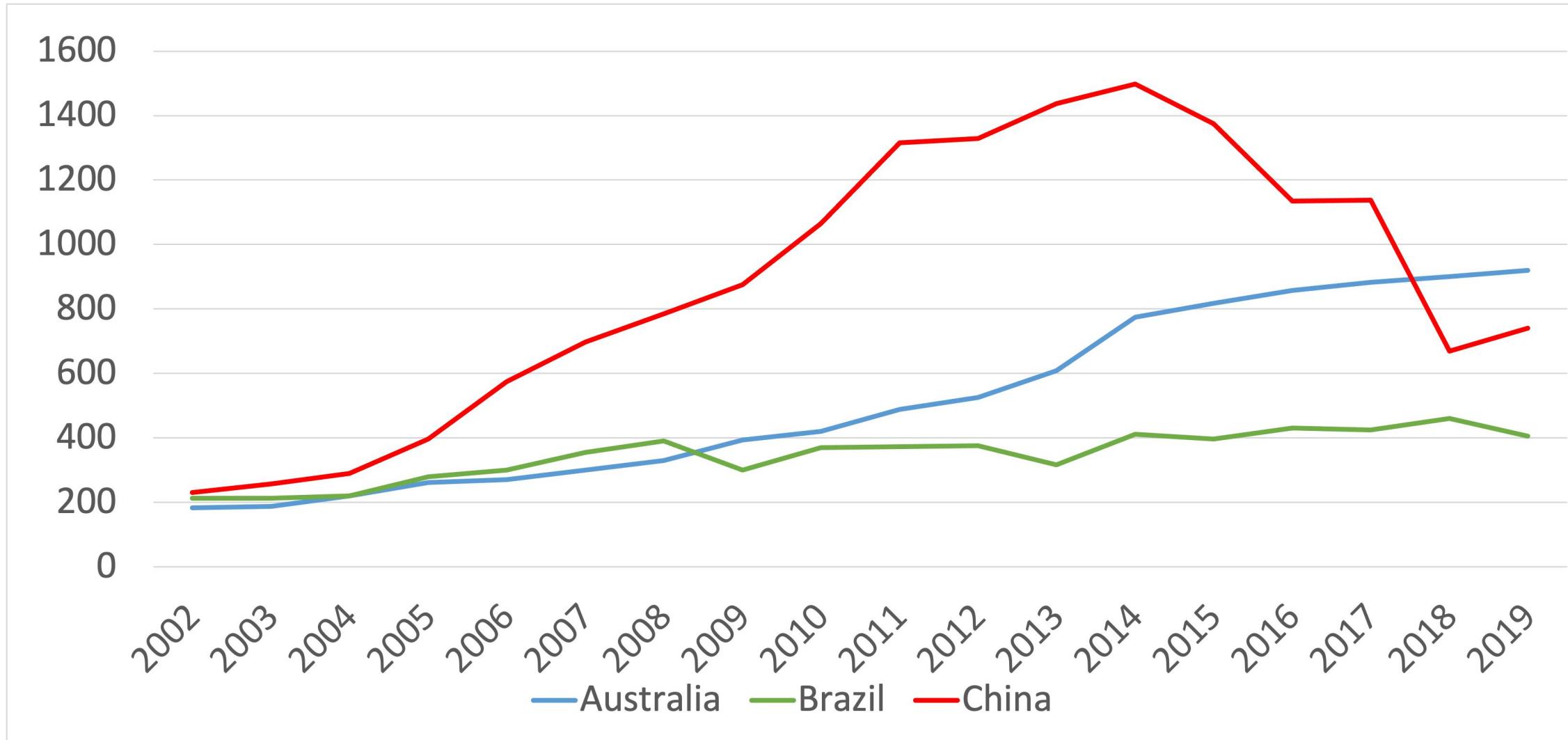
Commodities Supercycle

China's rapid growth in the early 2000's saw massive increases in global demand for commodities.

In turn, this led to robust growth in resource-rich regions like Latin America, and Australia.



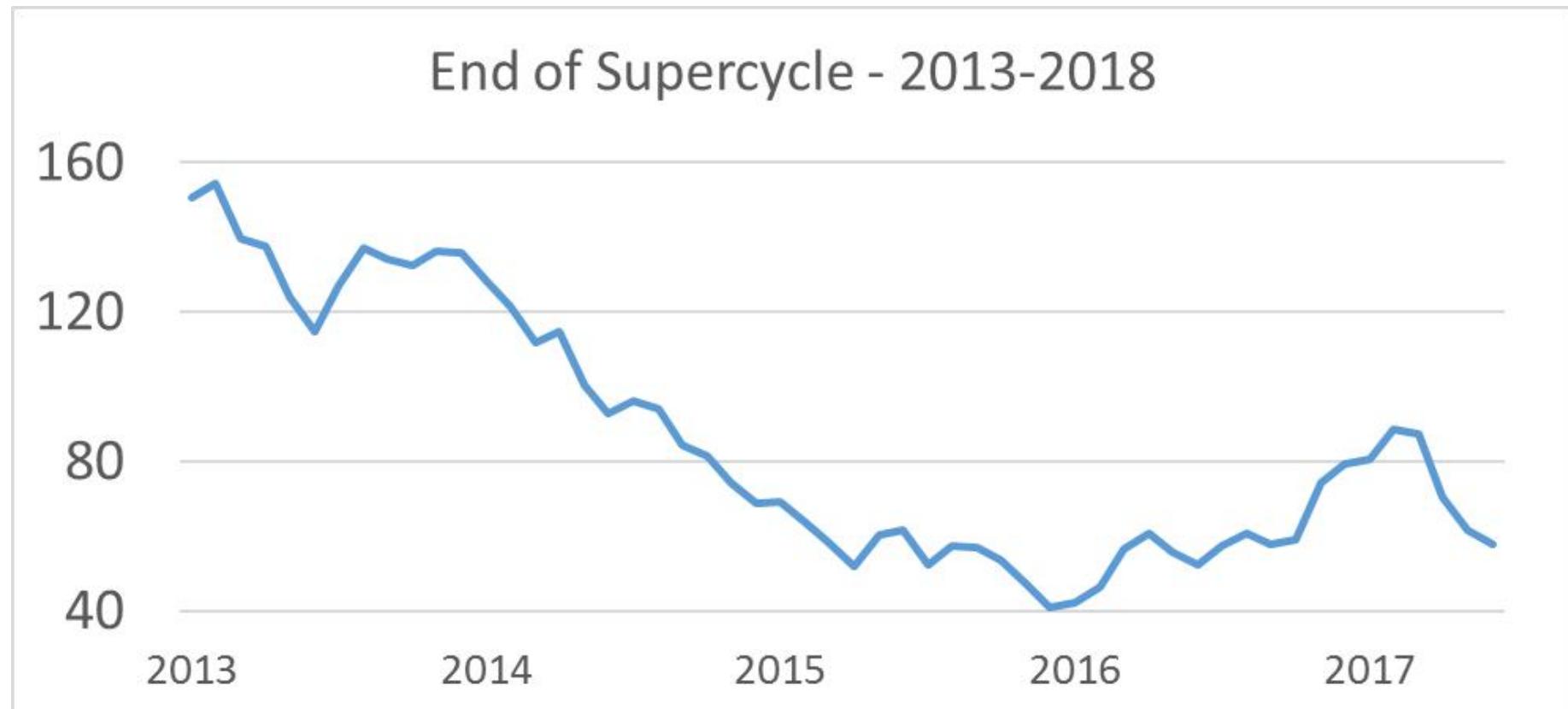
Mine production of iron ore (million metric tons gross weight).



Iron Ore Production Skyrockets during Commodities Supercycle

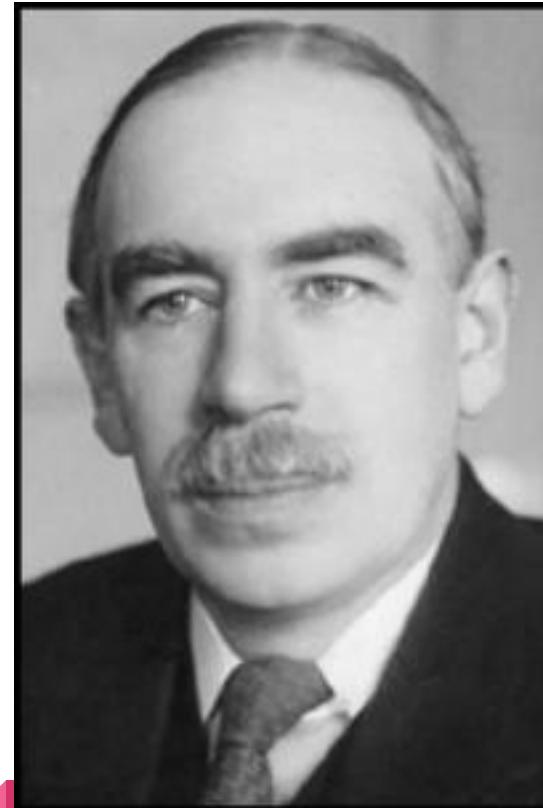
End of the Supercycle

As China's demand for iron ore and other commodities tailed off, so did global demand, which saw a sharp decrease in aggregate demand in many of these commodity rich countries. Many of these countries saw sharp decreases in GDP growth as a result.



Keynesian Economics: Short-run Aggregate Supply

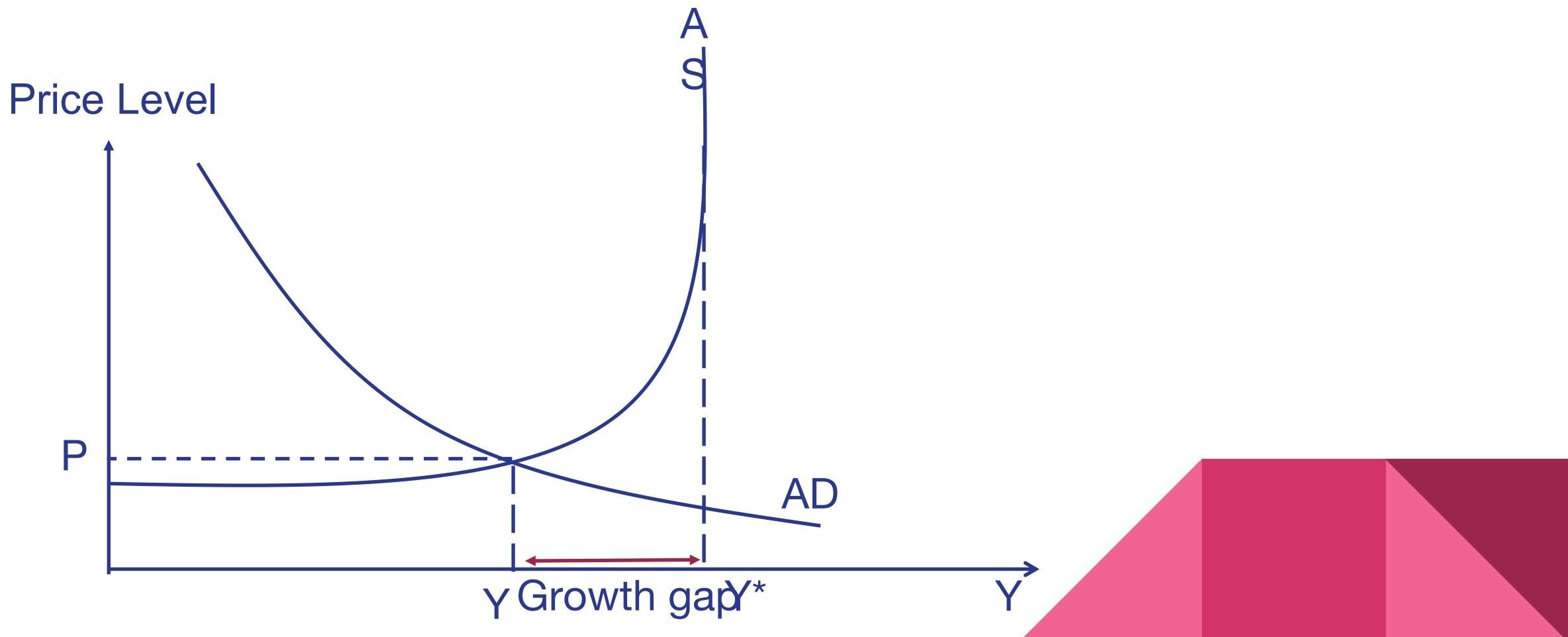
John Maynard Keynes advanced the idea of ‘Effective Demand’, which is the demand level at which people have a real intention to pay for goods and services. Keynes’ theories were instrumental to modern economic understandings of short-run economic growth.



Chapter 4.2

Aggregate Demand Shifts
and Short-Run Dynamics

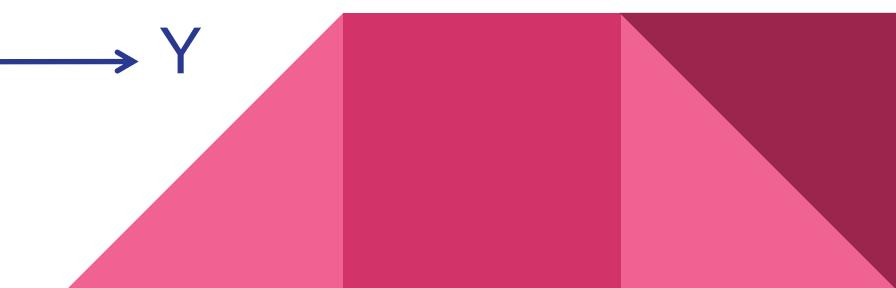
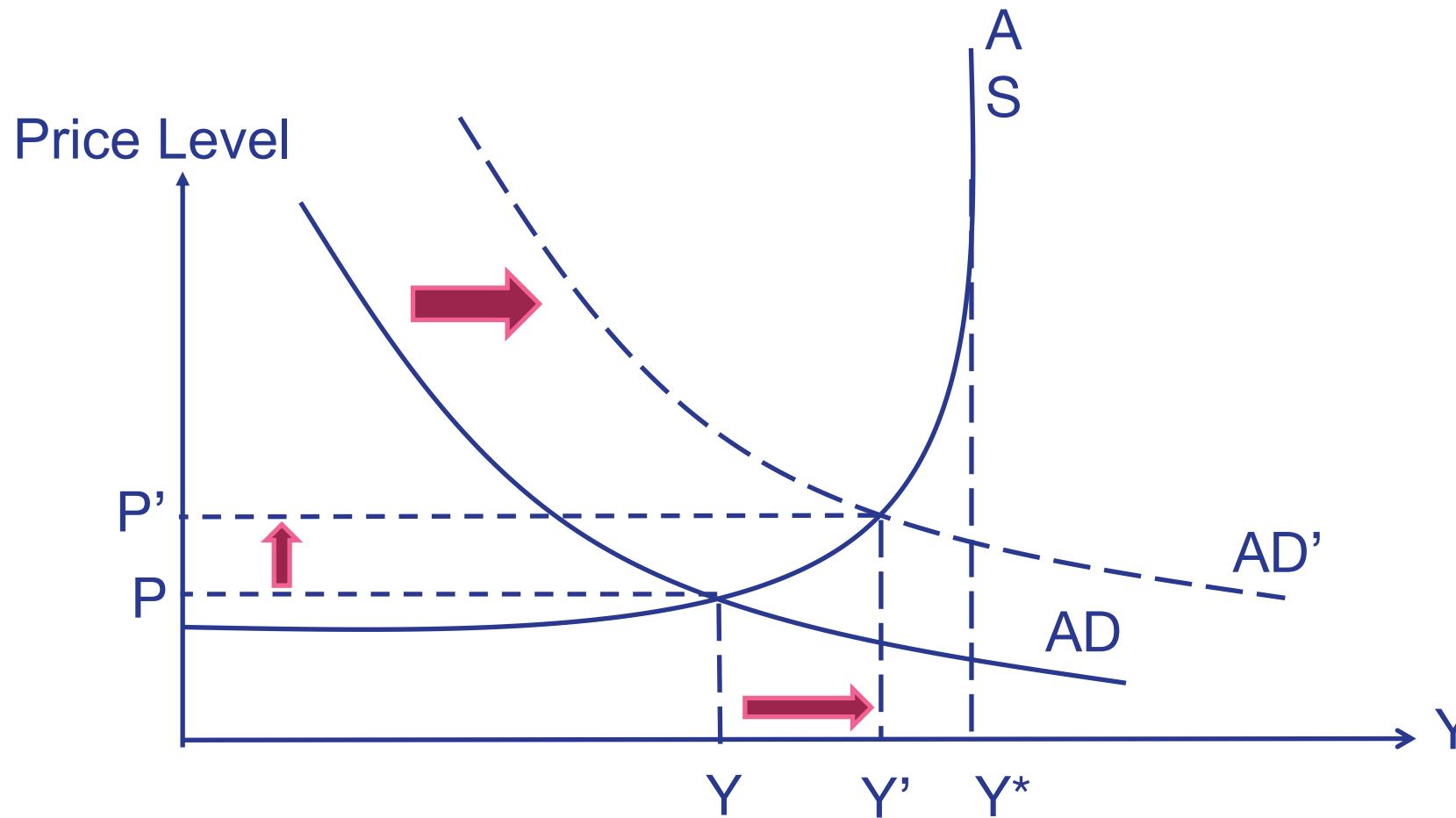
Aggregate Demand in a Growth Gap



Fixing a Growth-Gap

An increase in aggregate demand while an economy is in a growth gap will likely result in stronger economic growth. Increasing aggregate demand can be done by increasing consumption, investment, net exports, or government spending, *Ceterus paribus*.

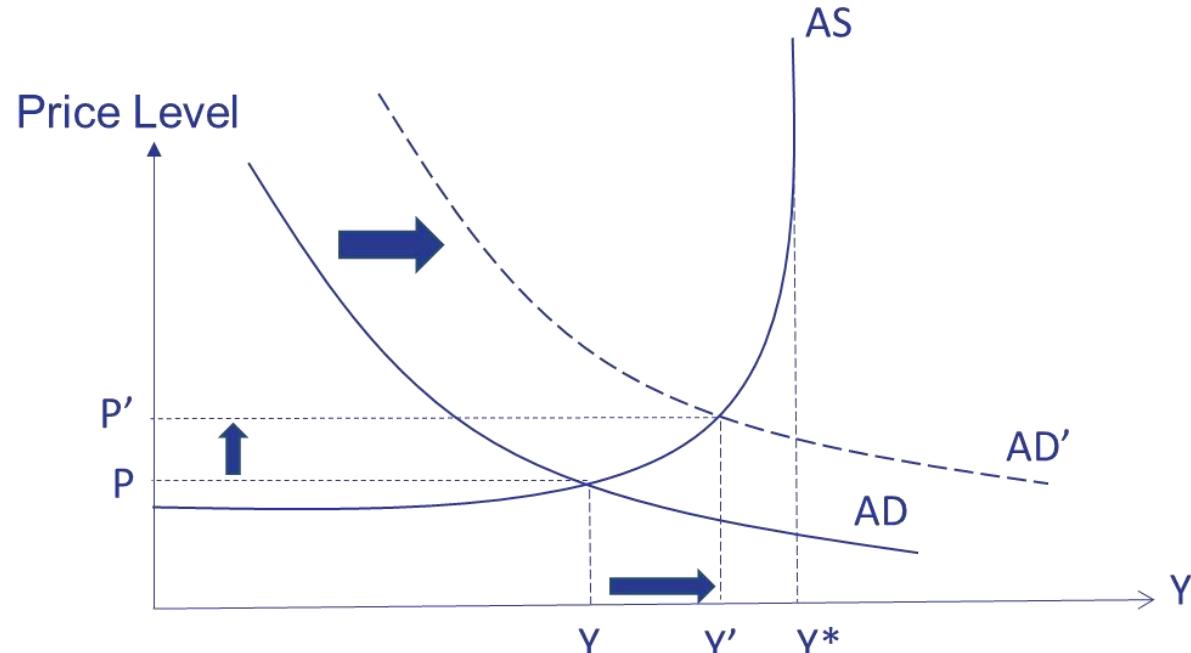
Fixing a Growth Gap



Results from short-run AD Shifts to the right

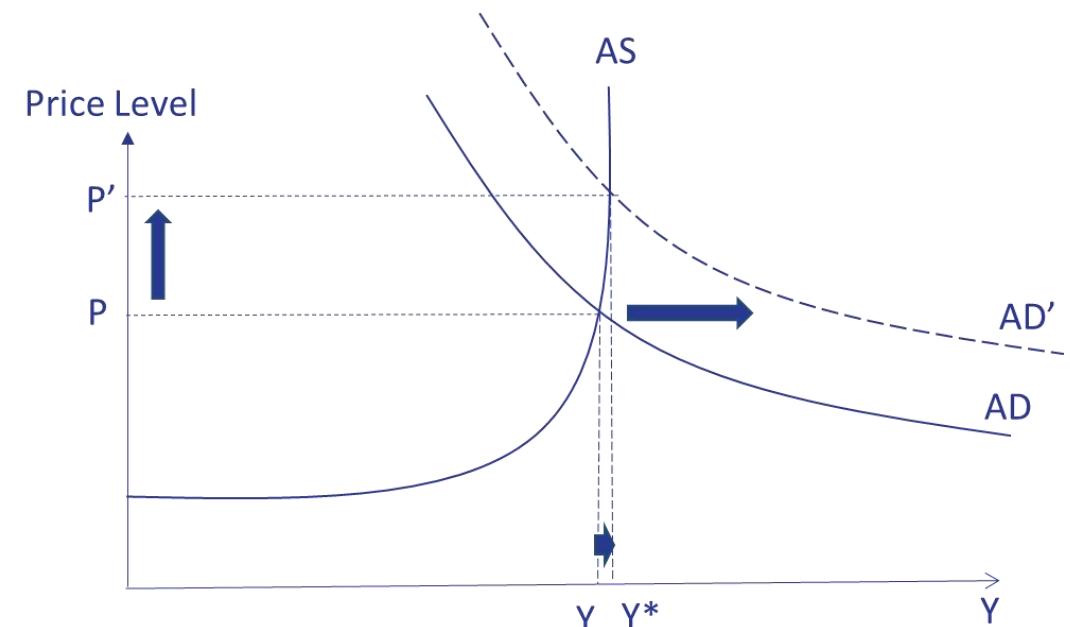
Economic recovery

- Economy starts in growth gap
- AD moves right
- GDP output increases, inflation increases slightly

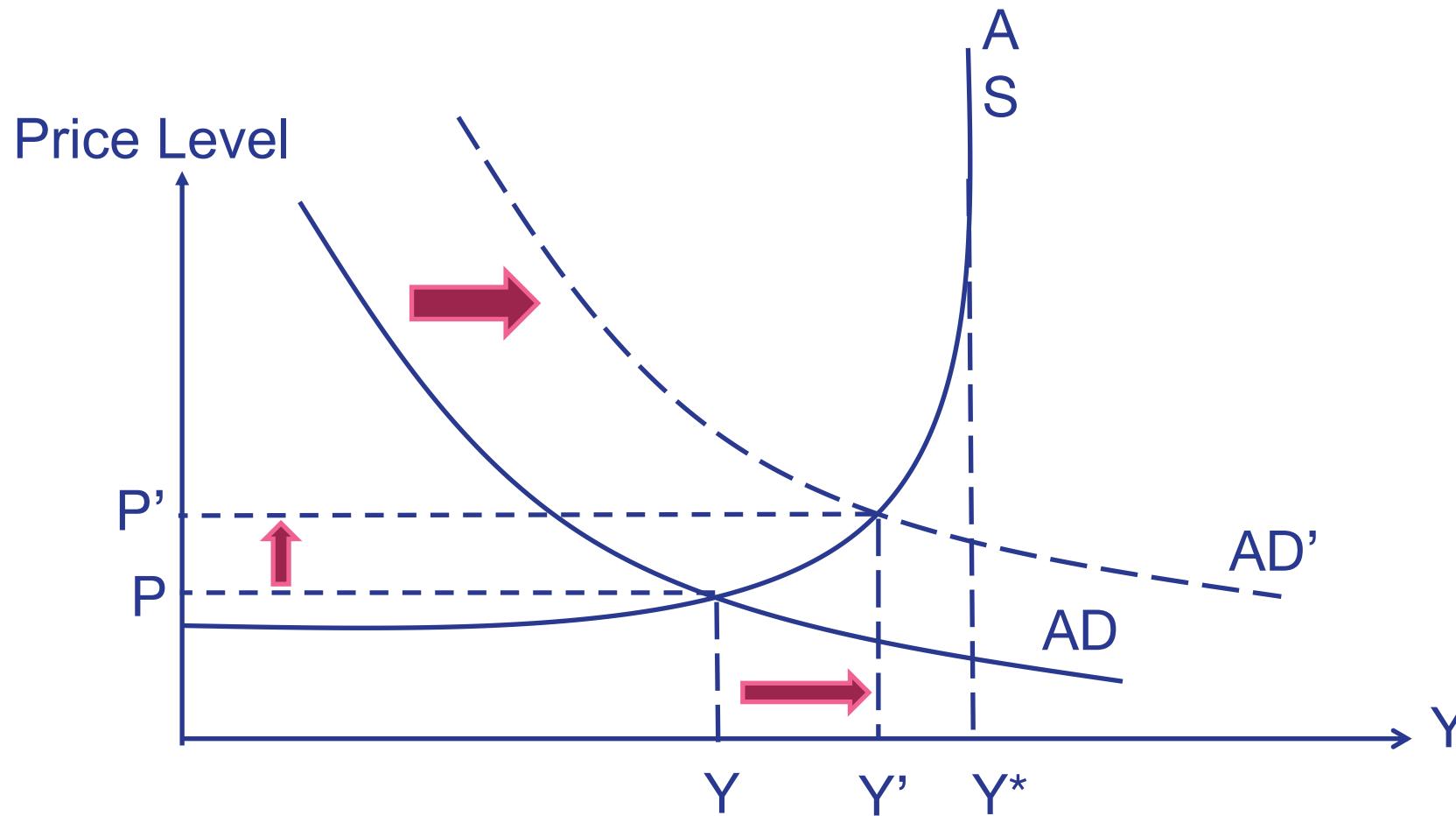


Economic Overheating

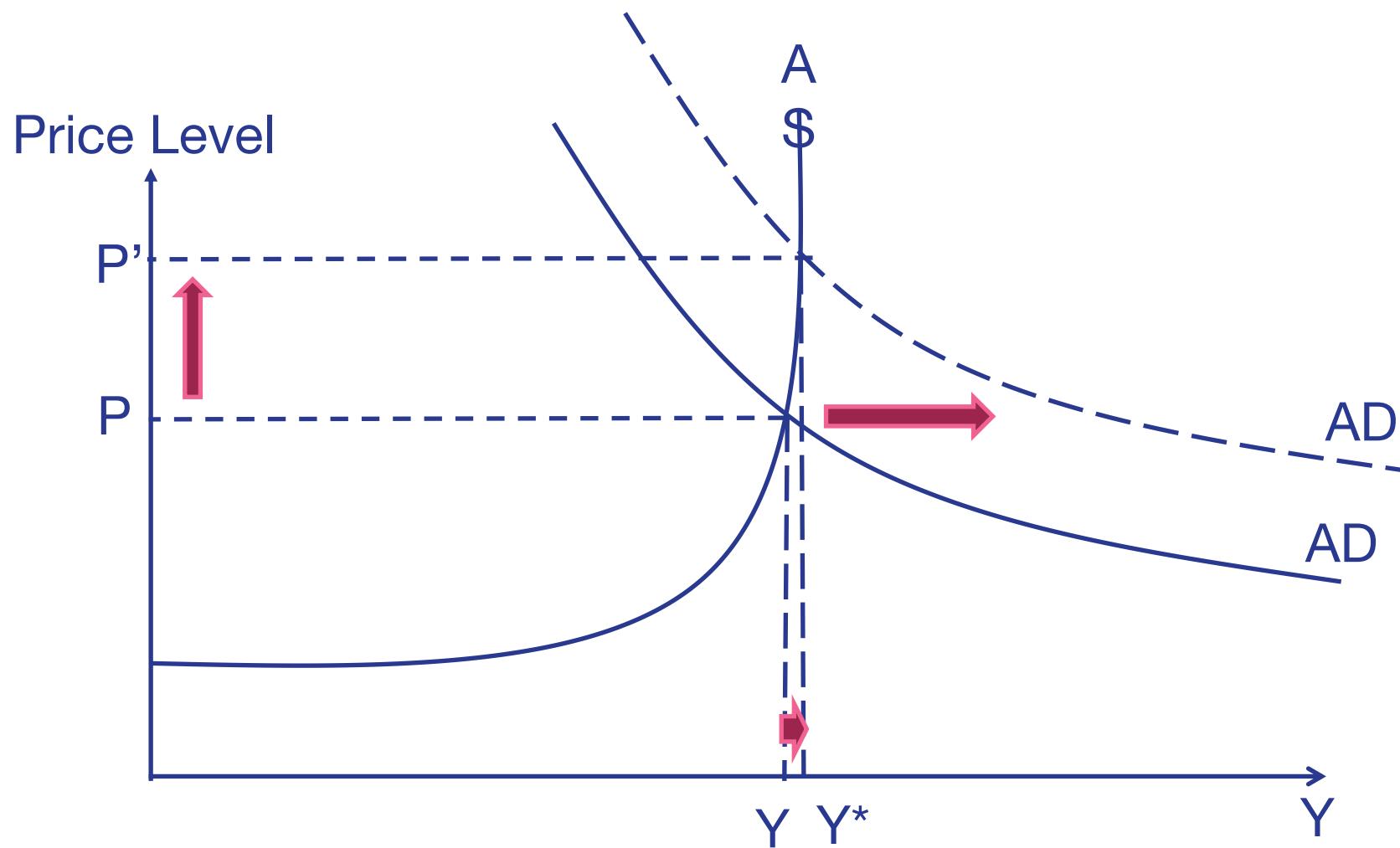
- Economy starts at or near potential GDP output
- AD Moves Right
- GDP output increases slightly, inflation increases drastically



Recovery in a Growth Gap



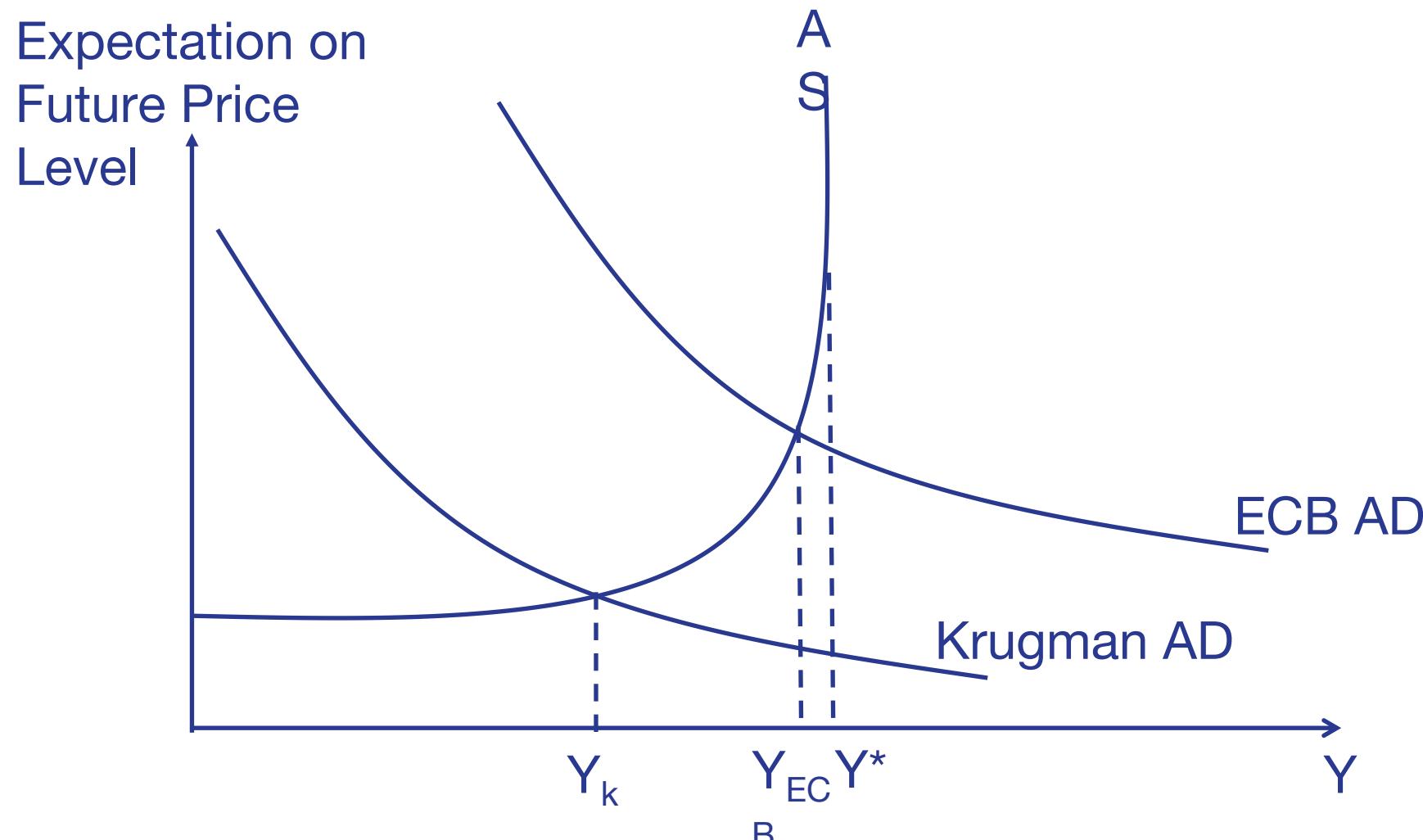
Economic Overheating



Case Study: The ECB's 2011 Rate Hike

- Following the Global Recession, the European Central Bank (ECB) cut interest rates to spur growth. In 2011, however, the ECB believed that recovery had been achieved, and that eurozone countries were nearing the peak of the economic cycle.
- 2011: ECB raises interest rates for eurozone countries
- Noted Economist Paul Krugman was against this decision, claiming that the Eurozone was still in a significant growth gap
- Each came to drastically different conclusions based on same information

Krugman's View Vs. The ECB's view



Why the Disagreement Matters

If the ECB was Right:

- Interest rate hike slows economic growth slightly.
- Lowers threat of inflation.
- Counter-cyclical measure.

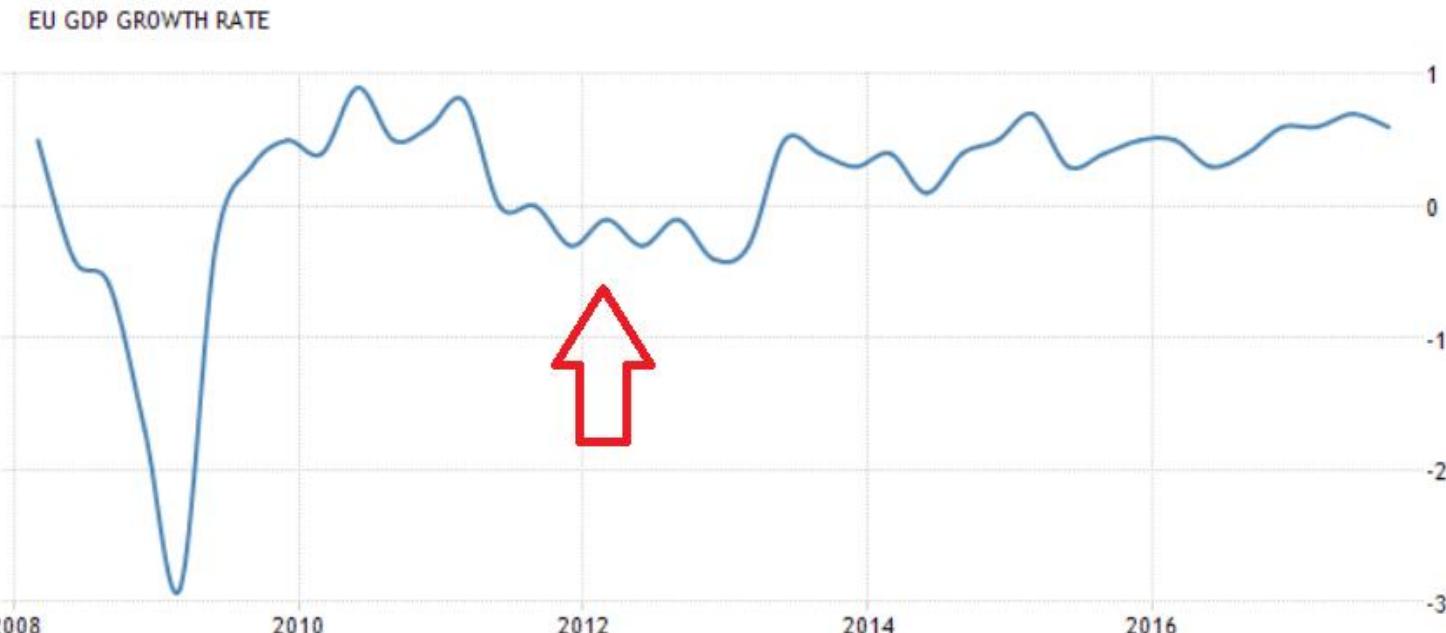
If Krugman was Right:

- Interest rate hike significantly slows economic growth.
- No real impact on already minor inflation.
- Would further exacerbate Eurozone's growth gap.
- Cause a recession.
- Pro-cyclical measure.

A Look at the Numbers: Who was Right?

After the ECB's rate hike, the EU's annual GDP growth dropped sharply, and the EU went into a nearly 2-year recession.

Seems that Krugman was right.



DROP IN EU GDP GROWTH

EU GDP GROWTH RATE



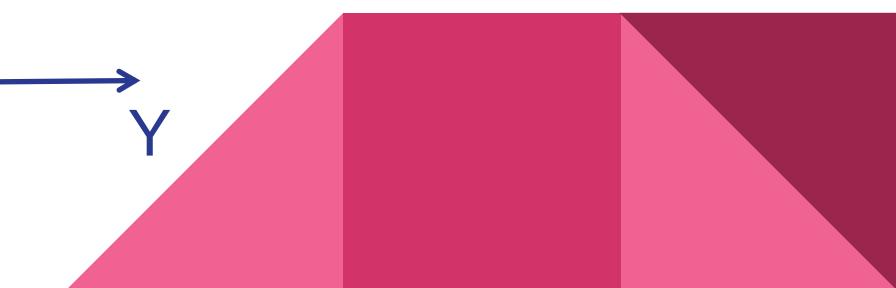
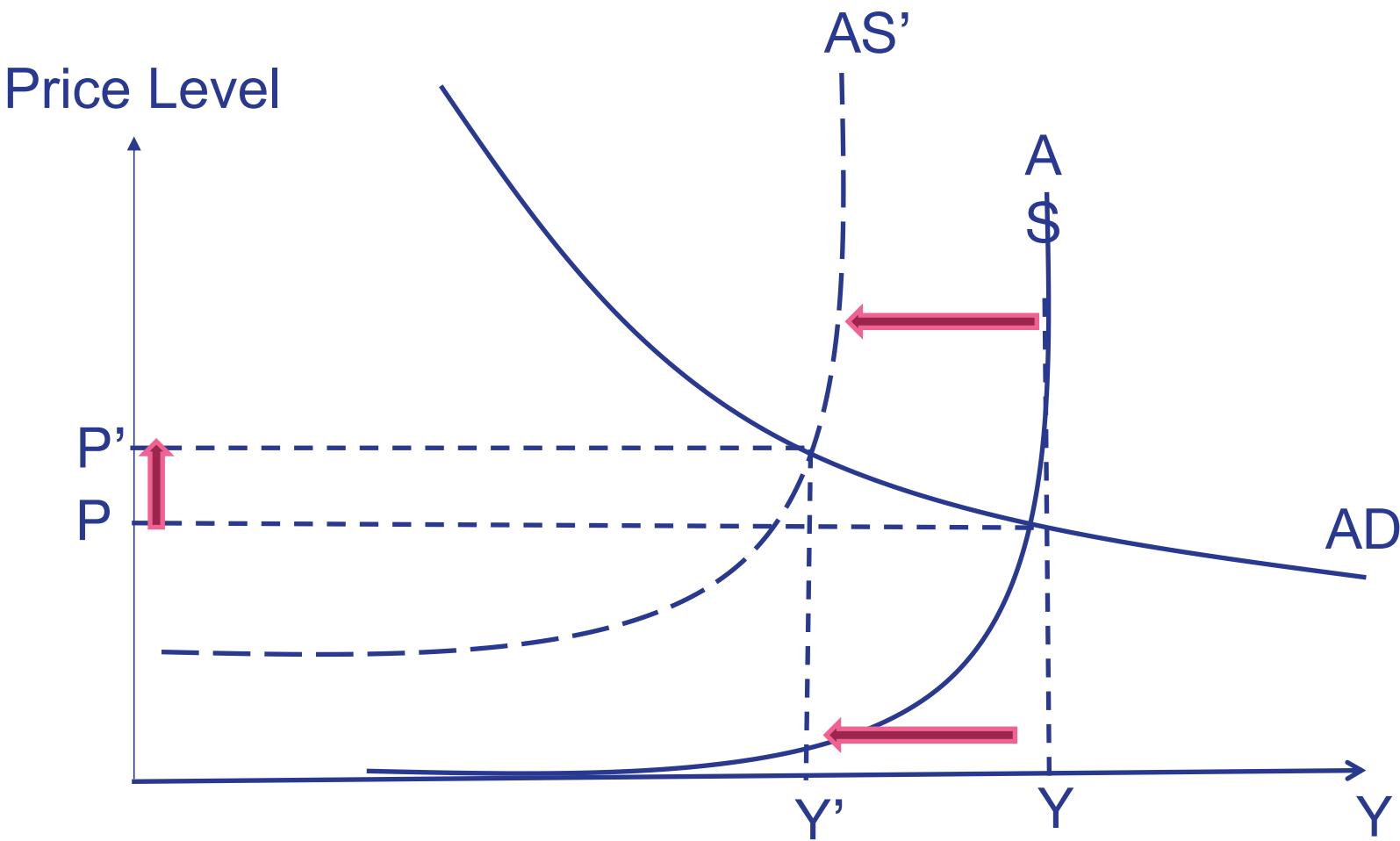
Chapter 4.3

Stagflation and Aggregate Supply Shifts

Stagflation

- ❑ Stagflation is an economic condition characterized by low or negative economic growth and high inflation.
- ❑ One such example was the United States during the 1970's Oil Crisis
- ❑ Stagflation is not illustrated by a shift in aggregate demand. Instead, it is a leftward shift in aggregate supply

Stagflation illustrated



Stagflation by the Numbers: Oil Crisis in the USA

Annual GDP Growth Vs. CPI inflation changes, USA, 1971–1982

Year	GDP growth	Inflation
1971	4.4%	3.5%
1972	6.9%	3.4%
1973	4.0%	8.5%
1974	-1.9%	12.1%
1975	2.6%	7.3%
1976	4.3%	5.0%
1977	5.0%	6.6%
1978	6.7%	8.9%
1979	1.3%	12.8%
1980	0.0%	12.6%
1981	1.3%	9.3%
1982	-1.4%	4.5%

In October 1973, the members of the Organization of Petroleum Exporting Countries (OPEC) declared an oil embargo.

By 1974, prices of oil had quadrupled from \$3 to \$12 a barrel.

Annual GDP Growth Vs. CPI inflation changes, USA, 1971–1982

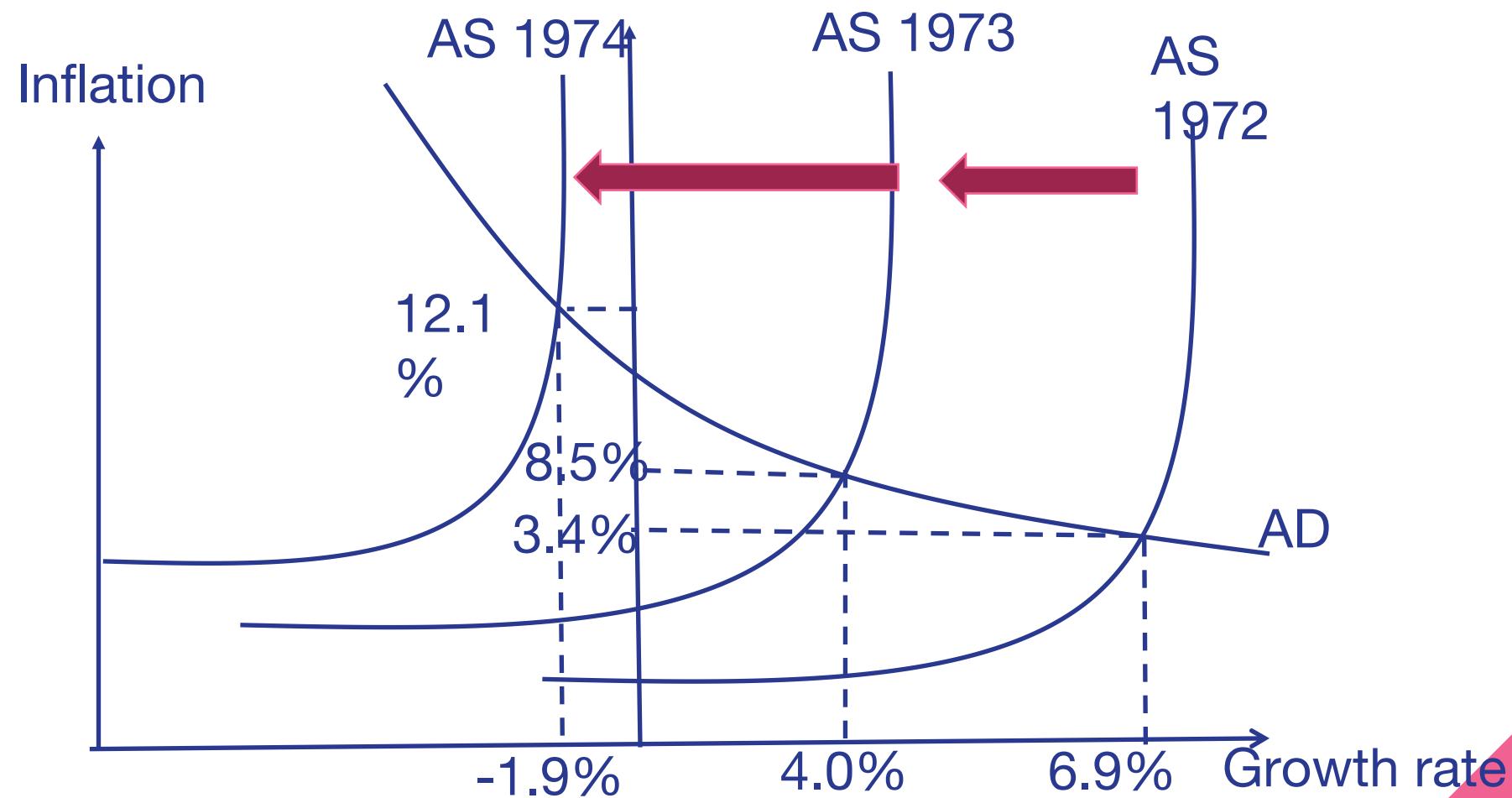
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Source: Fed St Louis (2018).

Oil was a crucial factor in the production of nearly everything in the USA in the 70's. As oil prices rose, prices of goods that needed oil to be produced rose. Total goods produced fell drastically, and the US economy shrunk nearly 2% in 1974.

By the 2nd Oil Crisis of 1979, Oil prices increased 10x over 1973 prices to \$39.5 a barrel

First Oil Crisis Illustrated Graphically



Stagflation

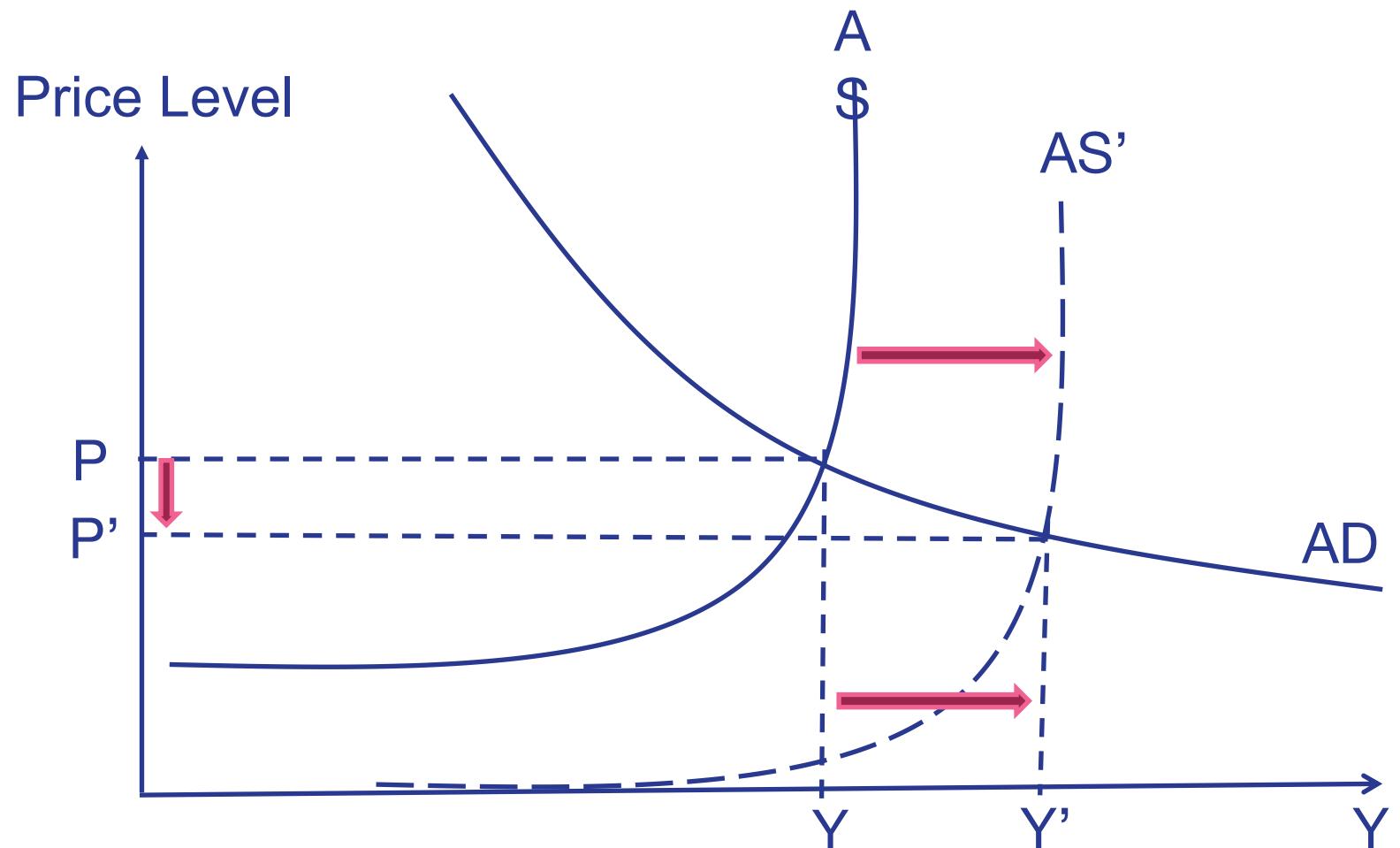
Aggregate Supply shocks are usually temporary. The Oil Crisis was different, because of how crucial oil was to the productivity of the United States economy.

- During times of stagflation, short of reversing the shock, there is no full-proof way to get back to economic stability. Nations can either aim to control inflation and reestablish credibility, at the risk of exacerbating or causing a recession, or aim to spur economic growth at the risk of Inflation increasing even more drastically. In the 1970's and 80's, under the direction of Paul Volcker, the U.S.A. chose the former.

Positive Supply Shocks

Economies can also experience positive supply shocks. These are spawned by sudden and drastic increases in the productivity of factors of the economy.

- ❖ Ex: the Internet Revolution of the mid-late 1990's.
- ❖ Ex: Introduction of the cotton gin to American South, circa early 1800s



The Internet Revolution: Positive AS Shock

U.S. GDP Growth Vs. CPI-tracked inflation, 1994–2001

Year	GDP growth	Inflation
1994	3.4%	2.3%
1995	3.5%	3.0%
1996	2.6%	2.7%
1997	4.6%	2.9%
1998	4.6%	1.2%
1999	4.8%	1.7%
2000	4.2%	3.4%
2001	2.3%	3.3%

Source: Fed St Louis (2018).

Chapter 4.4

The Components of
Aggregate Demand:
Consumption and
Investment

Aggregate Demand's Components

Because the economy produces at the intersection of AD and AS, the equation for AD can be expressed as $AD=AS=GDP=C+I+G+X-M$.

For now, lets look at C and I: Consumption and investment.

Consumption

Consumption is what people consume. Household consumption makes up a significant part of all countries' GDPs, and typically becomes a larger share of the economy as a nation gets richer. A simple model of Aggregate consumption is this:

$$C = a + b(Y - T)$$

Where C is Aggregate consumption, a is the fixed amount that people must consume, b is a proportion of individuals' disposable income, Y is economic output, and T is total income taxes.

Consumption Continued

People either spend or save their disposable income, and b represents the ***Propensity to Consume***. We define s as the ***Propensity to Save***, or the proportion of their disposable income that individuals save.

$$b + s = 1.$$

Consumption continued

Permanent Income Hypothesis: consumption today should be based on not only current income but future income as well.

If people were purely rational and had access to all the proper information, people would save exactly enough money for old age. People across the world would have similar b and s , and the only real changes would be in demographics.

This is not the case.

Propensities to Save and Consume

b and s differ across the world. They are heavily context-dependent, not only with regards to age-demographics.

Marginal and average propensities can be affected by age, culture, inequality, and socioeconomic status.

Household Consumption Globally

As people become richer they tend to save more at the margins, meaning that poorer countries tend to have higher rates of consumption than developed countries.

China is a notable exception to this rule, as its 30+ years of strong growth came in part from the significant strength of investment as a portion of GDP.

Household final consumption expenditure (% of GDP), 2016

High income	60.2
Upper middle income	50.3
Middle income	53.3
Lower middle income	64.8
Low income	75.6
United States	68.4
Euro area	55.7
China	37.4

Source: World Bank (2018).

Aggregate Demand: Investment

Besides consumption, another aspect of Aggregate demand is investment. Investment is the purchase of goods or assets that will create wealth in the future. Building roads is an investment. Constructing new fiber optics lines are investment. Building new factories, training programs for workers, etc. are all forms of investment.

Investment is a crucial contributor to long-run economic growth, because good investments increase the productive capacity of the country, which increase the potential GDP output.

Aggregate Investment and Interest Rates

Investment is a function of interest rates and opportunities envisioned by companies.

Interest rates influence the cost of capital. They are, broadly speaking, the cost of borrowing (or lending) money.

Investment can be shown as:

$I = I(r)$, where r is the real interest rate.

Important things to know about Interest Rates:

- Central banks can affect, through money market operations, the target interest rate.
- The target interest rate is closely related to the risk-free interest rate in the capital asset pricing models (CAPM).
- Changes in the target interest rate affect the price of money in the national economy.

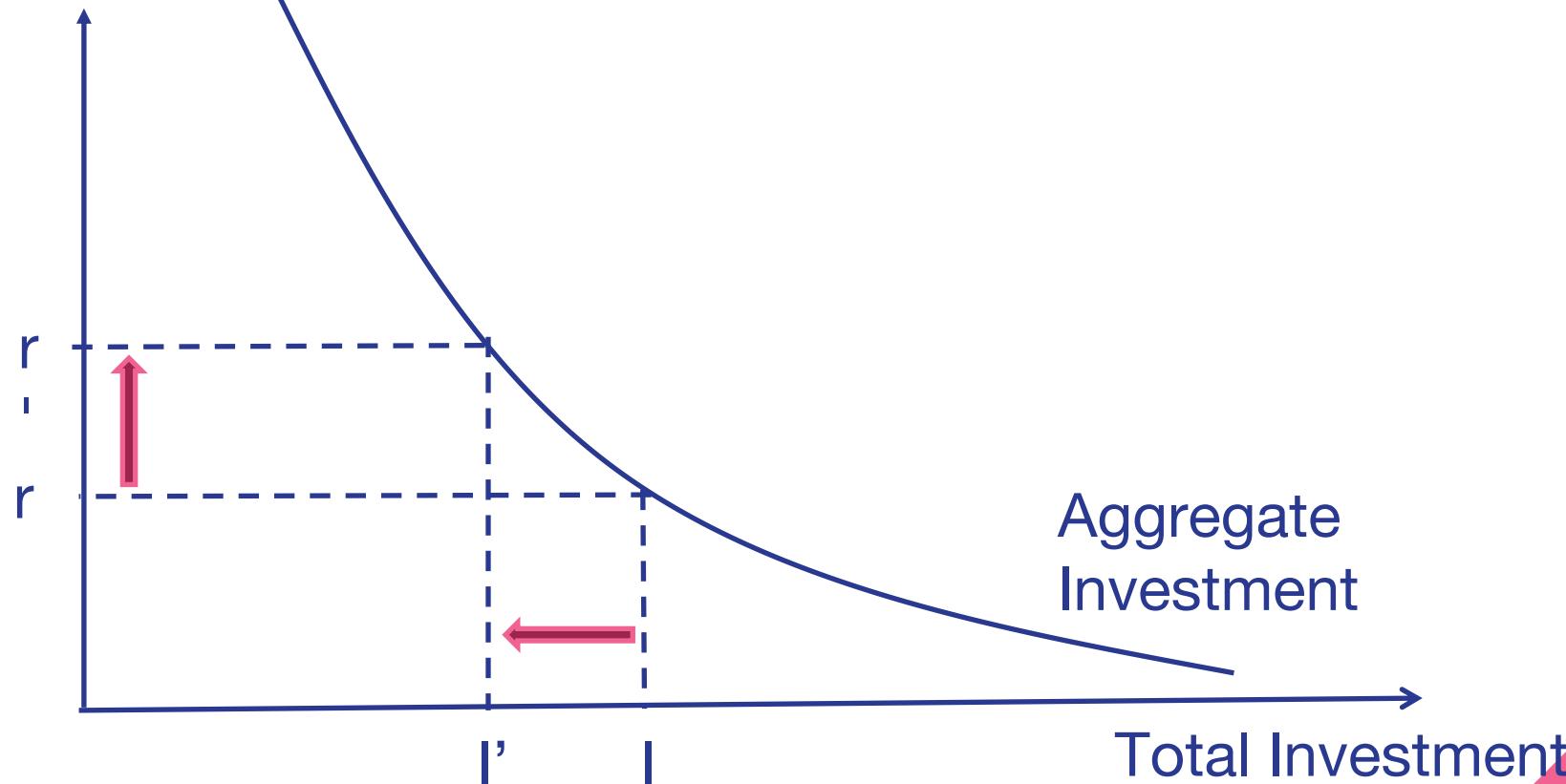
How Interest Rates Affect Investment

As interest rates rise, borrowing money becomes more expensive. Less people are likely to borrow money for potential investment (Investment decrease).

As interest rates drop, borrowing money becomes cheaper, and more people are likely to borrow money for potential investment (Investment increase).

Interest Rates and Investment

Real interest rate



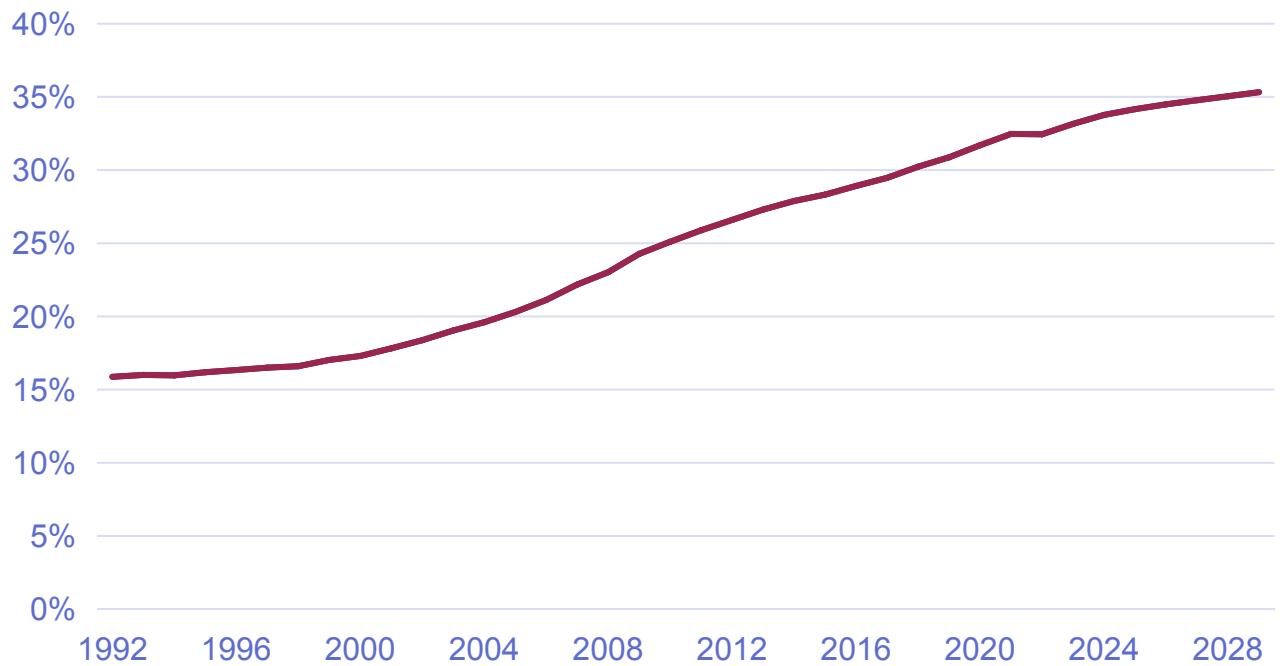
Aggregate
Investment

Total Investment

AD Applied: The “BRICS” New Development Bank

BRICS is an acronym that refers to Brazil, Russia, India, China, and South Africa. These countries are the largest low-middle income emerging economies. They are projected to be increasingly important in the global economy in the coming years.

BRICS share of
world GDP in
PPP, projected,
1992-2025.



Source: IMF.

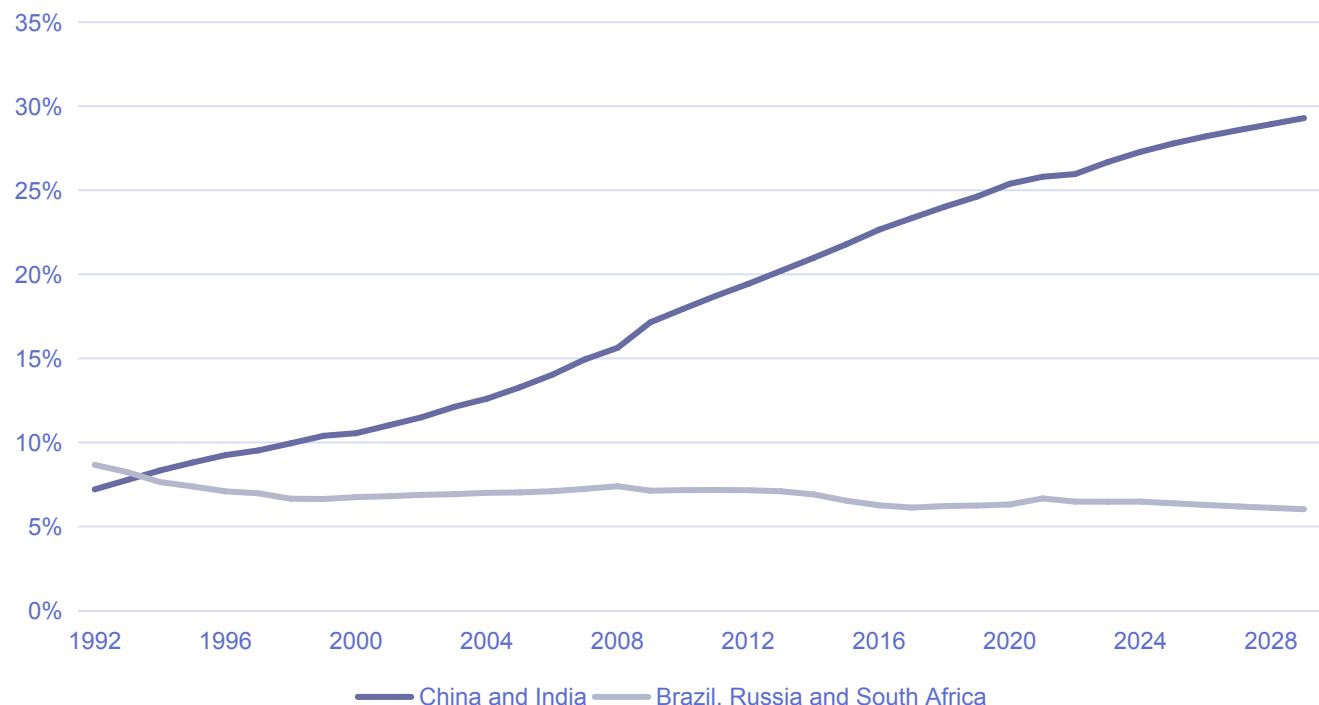
BRICS

Russia, Brazil and South Africa will likely see their share of the global economy decrease in coming years.

This is primarily due to the strength of institutions, but is also related to China and India's success at securing investment as a major percentage of their GDP

BRICS share of world GDP in PPP, projected, 1992-2025.

Source: IMF.



The New Development Bank

The NDB subsidizes investment by providing loans at a lower interest rate than would otherwise occur in the country.

Most subsidized investments go towards infrastructure.

Whether the NDB is successful is, as of yet, unclear. But the fundamental mechanism through which they operate, is. They act to lower interest rates in BRICS countries, in order to increase their national investment, to spur long-term economic growth.

Chapter 4.5

The Role of Expectations

Expectations and Aggregate Demand

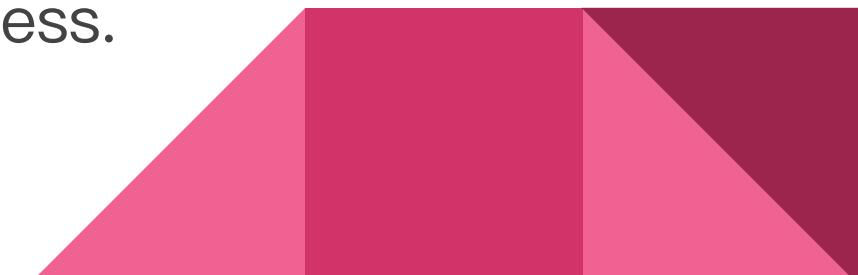
We know that consumption and investment are components of aggregate demand. Expectations also play a huge role in affecting aggregate demand. Economic agents are forward looking, and accounting for expectations illuminates a lot about economic events.

Negative Expectation Shocks and “Self-Fulfilling Prophecies”

Negative expectations shocks can be caused by news breaking about something/anything that could put a damper on economic growth or make people less confident in the security or viability of investment. Political gridlock, governmental scandal, important economic or monetary policy announcements, and terror attacks are examples of events that could cause expectations shocks.

People that expect uncertainty/instability will save more and consume less.

Companies that expect uncertainty/instability will invest less.



Self-Fulfilling Prophecies

- ❑ If people/companies expect an economic downturn, they will likely save more to prepare for it.
- ❑ This lowers both consumption and investment, lowering aggregate demand and creating a growth-gap.
- ❑ Thus, expectations of economic downturn can, in effect, increase the likelihood economic downturn, creating a self-fulfilling prophecy

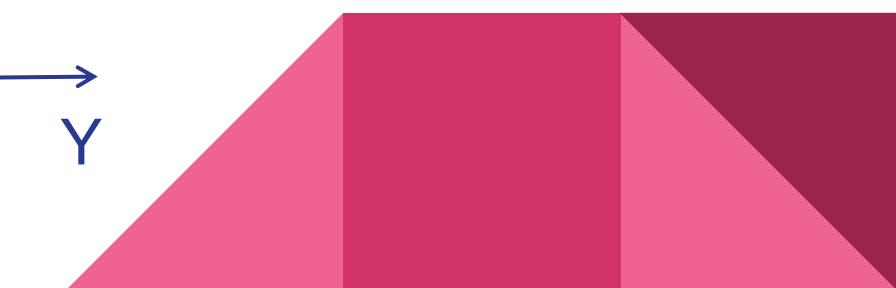
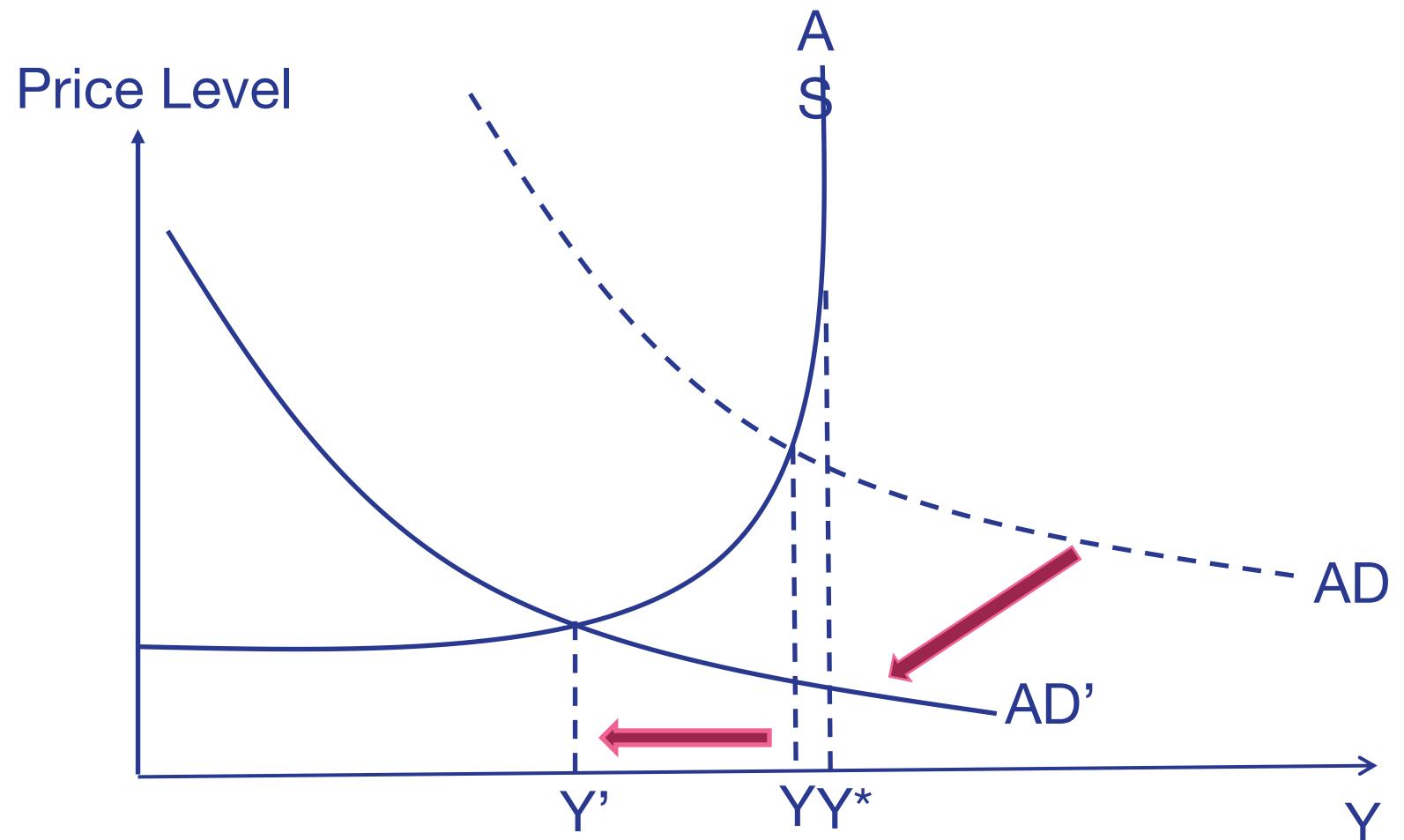
Role of Expectations: A Tale of Two Presidents

When Donald Trump was elected President of the United States, there was much uncertainty as to what his role as the head of the US government would mean for the U.S. economy. Expectations, both positive and negative, have played a key role in shaping the path of the economy since his election. Here are two scenarios that people expected. Neither was entirely correct, but the latter has been more influential in the U.S.A.'s economic growth for his first year in office.

Negative Scenario

Negative: Donald Trump would be unqualified for office, and his outbursts and quick temper (and his tweets) would cause so much uncertainty that the USA's stock market would collapse, and any policy proposals designed to spur economic growth would be undermined by the nation's distrust of his credentials.

Illustration of a Negative Expectations Shock



Positive Scenario

Positive: Donald Trump's outbursts would cause some market volatility, but his consistent messaging of deregulation would allow for businesses to thrive. Lower corporate taxes and less oversight could lead to higher growth. So companies invest anticipating more favorable conditions will soon arise.

A Tale of Two Presidents, Illustrated

In the negative Scenario, AD would Decrease, lowering inflation and GDP output as expectations worsened.

In the positive Scenario, AD would increase, increasing inflation and economic growth (to varying degrees, depending on the initial position of the economy) as expectations improved.

Positive Expectation Shocks

Positive expectation shocks bring economic gains:

- People having more faith in the economy can spur growth and investment. It can lower unemployment and bring people out of poverty.

Positive Expectation Shocks

Positive expectation shocks (strangely enough) can also bring the seeds of the next downturn:

- ***Irrational Exuberance***—Investor enthusiasm that is not backed by the fundamentals of the economy, may lead to huge asset pricing bubbles that can cause problems when they pop:
 - ❖ The DotCom crash in 1999 and 2000:
 - ❖ The housing market crash in 2008 that sparked the great financial crisis.

Expectations in Economics

- Expectations are a large force behind why international economics is ***context-dependent***.
- Expectations are influenced by trust in institutions and governments.
- Expectations can either ***amplify or mitigate*** the efforts of policymakers, ***depending on whether the policymakers are trusted***.
- The success of economic policy relies on the reactions of economic agents.
- ***Credibility is crucial.***

Chapter 4.6

Prepping for Economic Policy

The Market for Goods and Services: Representational Pros and Cons

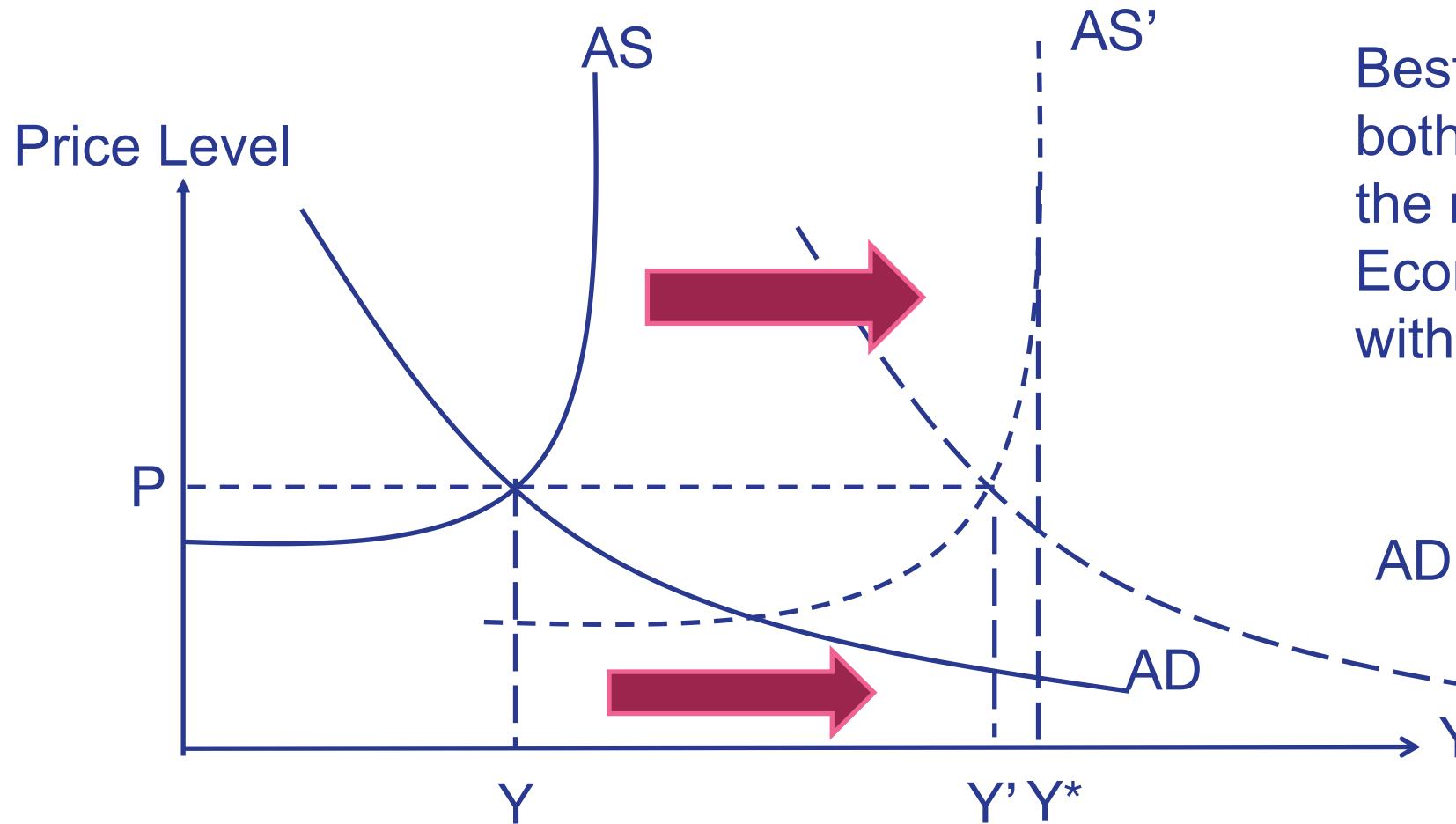
Pros:

- Simple, concise and clear.
- Can represent nearly all economic positions.
- Demonstrates (nearly universal) tradeoff between unemployment and inflation.

Cons:

- Reductionary—tends to gloss over diverse sectors of consumers and corporations.
- Works best with discrete shifts.
- Good for representing economic changes, but less so for making accurate assessments of current economic position.

Sustained economic growth



Best possible scenario:
both AD and AS shift to
the right at the same time.
Economy grows (Y to Y')
without inflation.

Appendix

Okun's “law” and the
Phillips Curve

Okun's Law

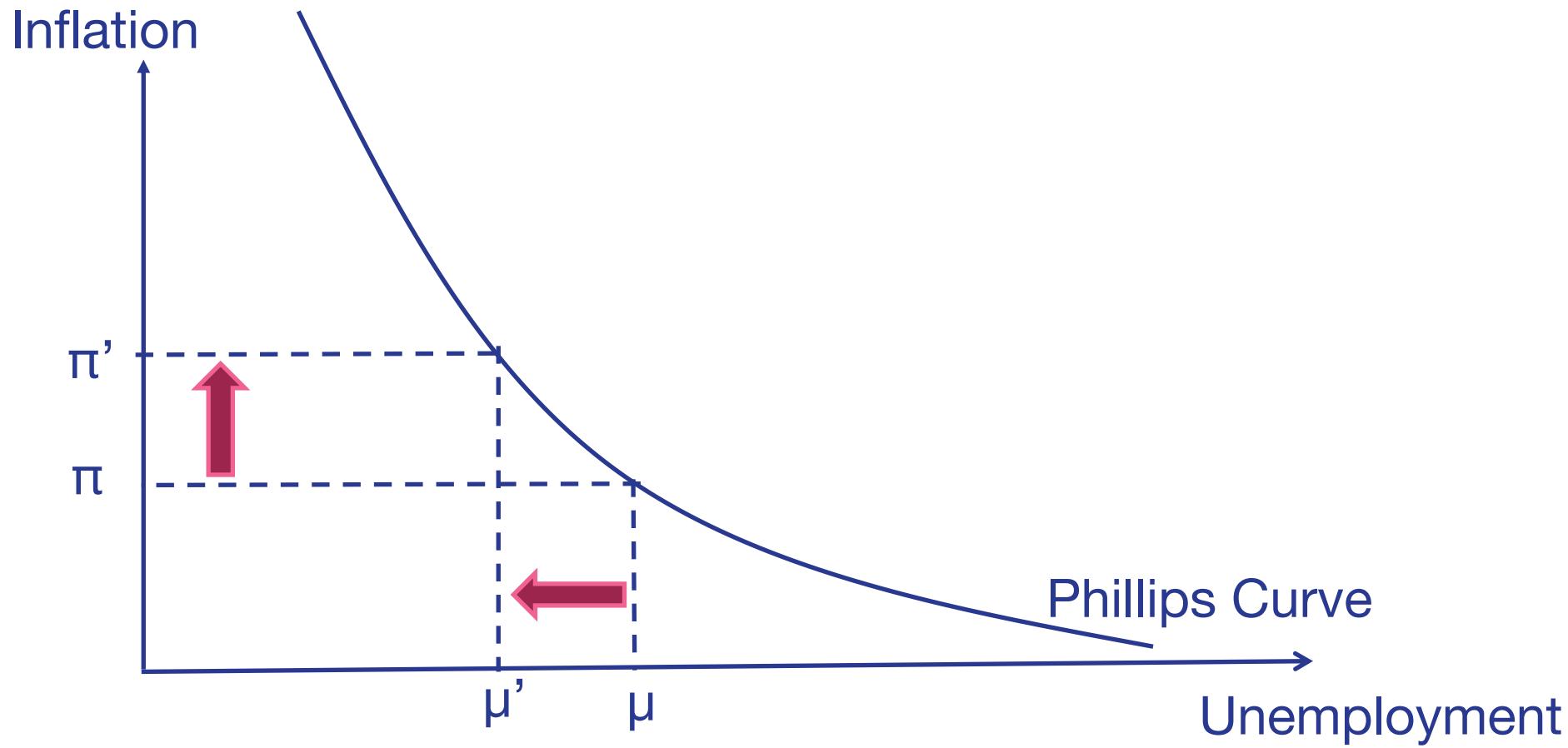
Okun's law is really more of a rule of thumb, and is rarely fully accurate

- Illustrates relationship between economic growth and unemployment
- Claims that: $\text{Change in the unemployment rate} = -\frac{1}{2}(\text{change in real output/potential output})$
- Unemployment only decreases if the change real output is greater than the change in potential output.
- A one-point increase in cyclical unemployment corresponds to a 2% negative GDP growth

The Phillips Curve

- The Phillips Curve is another way to represent the trade-off between employment and inflation.
- As unemployment decreases, inflation increases.
- Illustrates the fundamental issue facing policymakers.
- Shows that current inflation is a function of expected inflation, the pricing mark-up, conditions in the labor market and the rate of unemployment.
- Tradeoff is shown explicitly rather than implicitly.
- Can supplement understanding of the Market for goods and services (MGS).

The Phillips Curve Graph



Phillips Curve Equation

Phillips Curve Equation:

$$\pi_t = \pi^e + (\mu + z) - \alpha u_t$$

Where:

- π_t is the inflation rate at time t ;
- π^e is the expected inflation at time t ;
- μ is the mark-up of firms, a measure of excess profits related to their market-power;
- z is a ‘catch-all’ variable referring to idiosyncrasies in the labor market that affect the rate of unemployment (trade union power, employment legislation etc);
- α is the elasticity of inflation to unemployment.

Why the Phillips Curve Matters

- Explicit demonstration of tradeoff between employment and inflation
- Ties labor markets more closely to current economic models
 - Changes in labor market regulations can shift the phillips curve
 - Unionization, which can make it more difficult to fire employees, can shift the curve to the right, causing more significant consequences for policymakers.