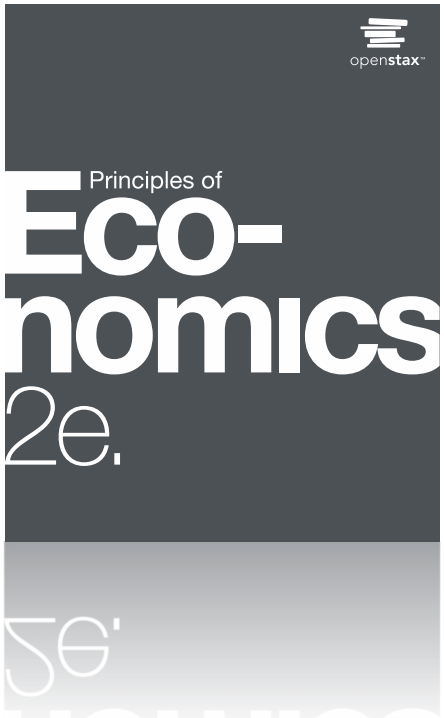
PRINCIPLES OF ECONOMICS 2e

Chapter 24 The Aggregate Demand/Aggregate Supply Model



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CH.24 OUTLINE

24.1 Macroeconomic Perspectives on Demand and Supply

Macroeconomists are sometimes divided into **two broad groups**, which we will call the Neoclassical economists and the Keynesian economists.

- **Neoclassical** Economists: **Aggregate Supply** is the most important determinant of macroeconomic production; supply generally determines demand.
- **Keynesian** economists: **Aggregate Demand** is the most important determinant of macroeconomic production; demand generally determines supply.

However, differences between economists are often a matter of emphasis. Useful macroeconomics must consider both aggregate supply and aggregate demand.

Two Extreme Simplifications

Despite their names, these are not economic laws. Instead, they are simplified statements of conflicting views of the primary determinant of economic production.

Say's Law: supply creates its own demand.

Keynes' Law: demand creates its own supply.

Say's Law

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Say's law: "Supply creates its own demand."

- Each time a good or service is produced and sold, it represents income to someone. That income underpins the demand for goods and services.
- **Neoclassical economists** tend to emphasize aggregate supply when determining the size of the macroeconomy over the **long run**.
  - The **long run** refers to periods of years or even decades, as the productive power of an economy to supply goods and services increases
  - In the long run, total demand in the economy grows at roughly the same pace as its ability to supply goods and services.
- **However**, over shorter time horizons of a few months or years, recessions or depressions can occur in which firms in the economy, or in important industries, face a lack of demand for their products.

Keynes' Law

Keynes' law: "Demand creates its own supply."

- The day-to-day production in an economy takes place in response to the demand for good and services; it is not primarily determined by the potential of what the economy can supply.
- Keynesian economists: tend to emphasize aggregate demand when determining the size of the macroeconomy over the **short run**.
  - The **short run** refers to periods of **months to years**,
  - when many firms experience either a drop in demand for their output during a recession, or so much demand that they have trouble producing enough during an economic boom.
- **However**, if demand was all that mattered, then government could make the economy larger through increases in government spending or large tax cuts to push up consumption.
  - Economies do face genuine limits to how much they can produce.

24.2 Building a Model of Aggregate Demand and Aggregate Supply

- **Aggregate demand/aggregate supply model** - a model that shows what determines total supply or total demand for the economy, and how total demand and total supply interact at the macroeconomic level.

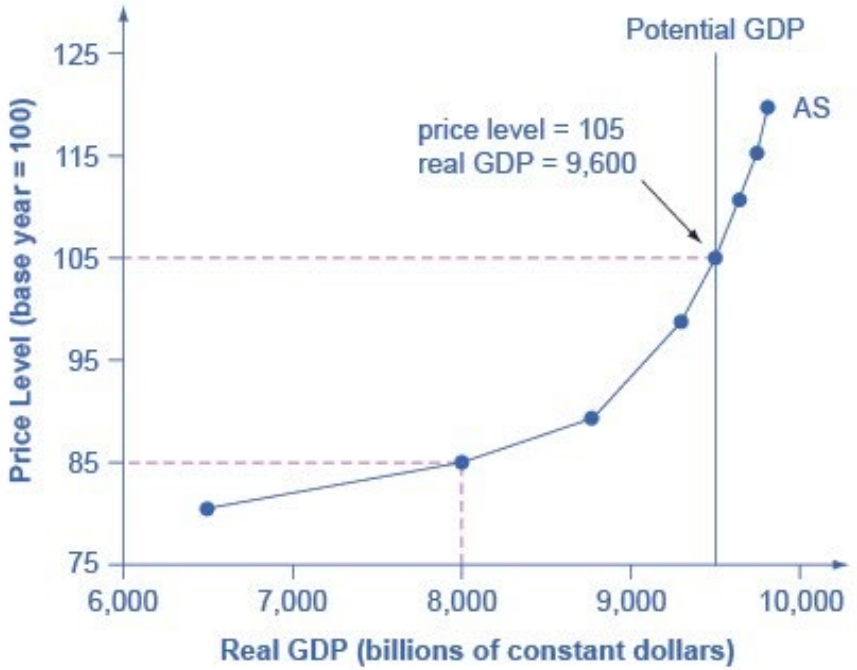
Aggregate Supply

- **Aggregate supply (AS)** - the total quantity of output (i.e. real GDP) firms will produce and sell.
- **Aggregate supply (AS) curve** - shows the total quantity of output (i.e. real GDP) that firms will produce and sell at each price level.

Potential GDP

- **Potential GDP** - the maximum quantity that an economy can produce given full employment of its existing levels of labor, physical capital, technology, and institutions.
- **Potential GDP:** when the economy is producing at its potential and unemployment is at the natural rate of unemployment. (We will refer to this as **full employment**.)

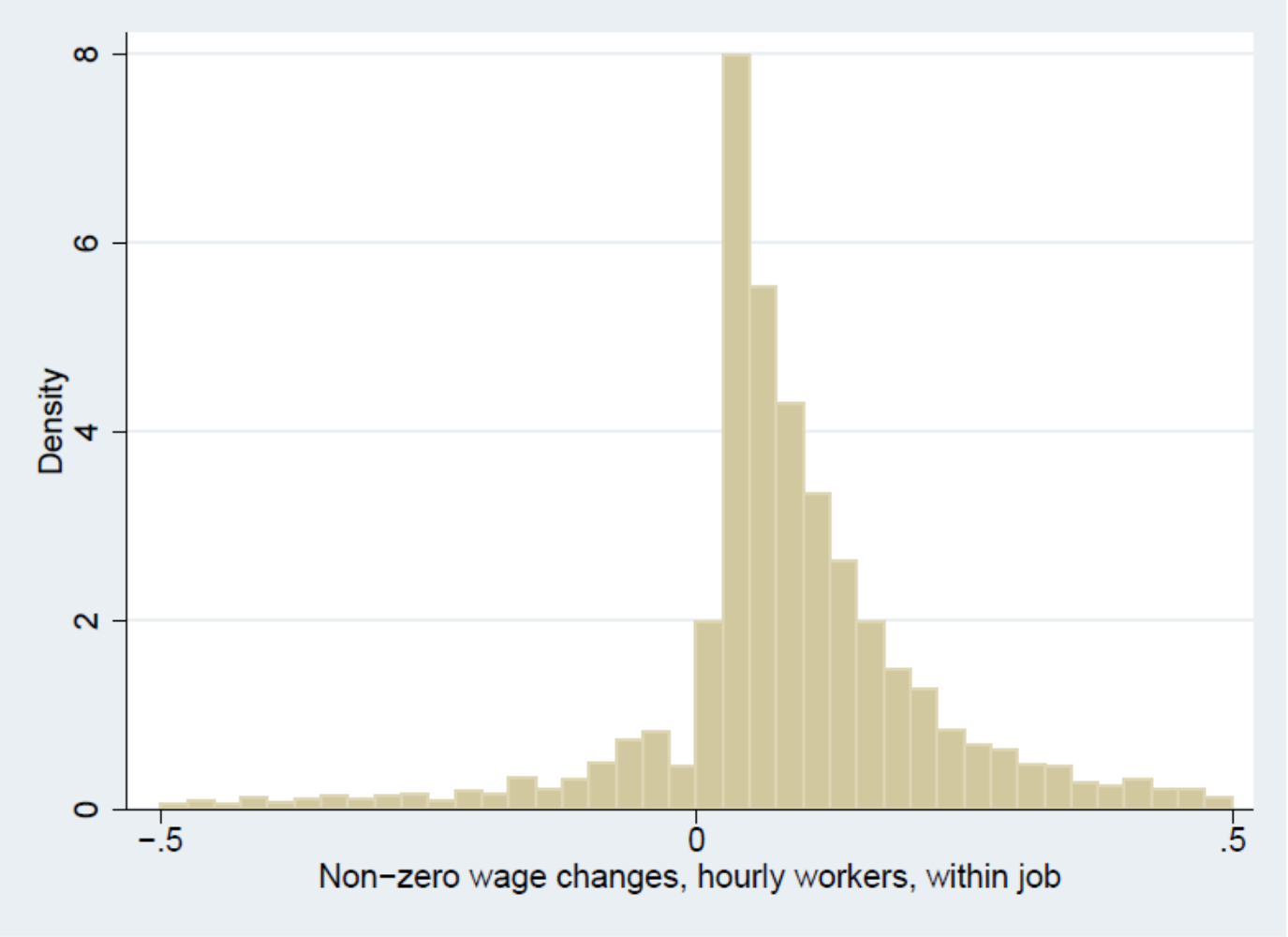
Aggregate Supply Curve



- Aggregate supply (AS) slopes up, because as the price level for outputs rises, with the price of inputs remaining fixed, firms have an incentive to produce more to earn higher profits.
- The potential GDP line shows the maximum that the economy can produce with sustainable full employment of workers and physical capital.
- AS can crosses potential GDP in the SR, but becomes quite steep.

Sticky Wages

Wages are an import “input price”, and they appear to be sticky downwards. That is, actual Wage cuts are relatively rare.



Source: Barattieri et al (2014 AEJ)

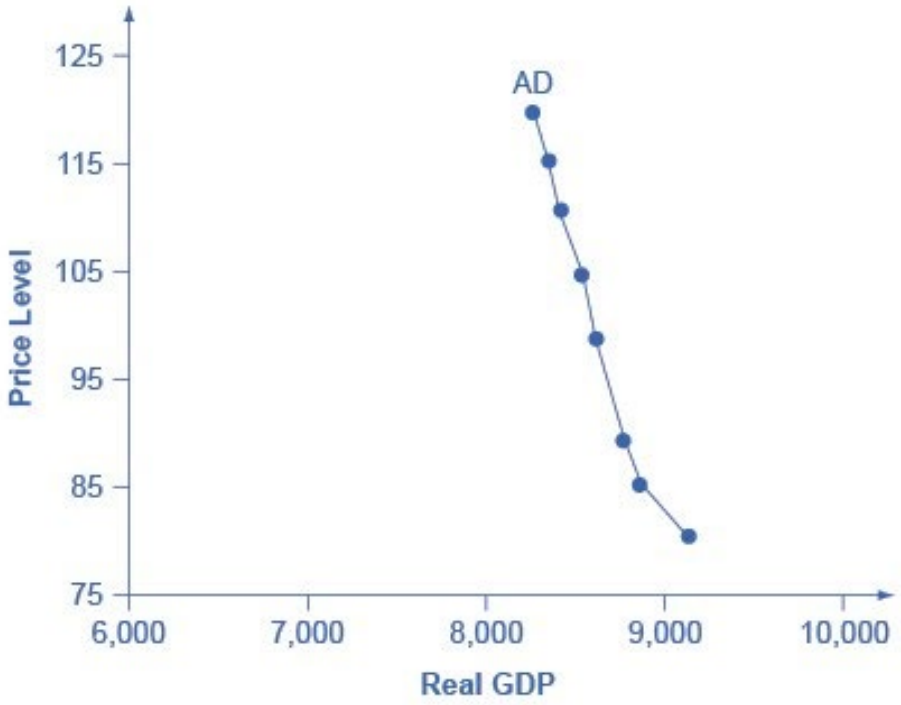
The Aggregate Demand Curve

- **Aggregate demand (AD):** the amount of total spending on domestic goods and services in an economy.

- **AD** includes all four components of demand: consumption, investment, government spending, and net exports (exports minus imports).
  - AD = C+I+G+(X-M)

- **Aggregate demand (AD) curve:** shows the total spending on domestic goods and services at each price level.

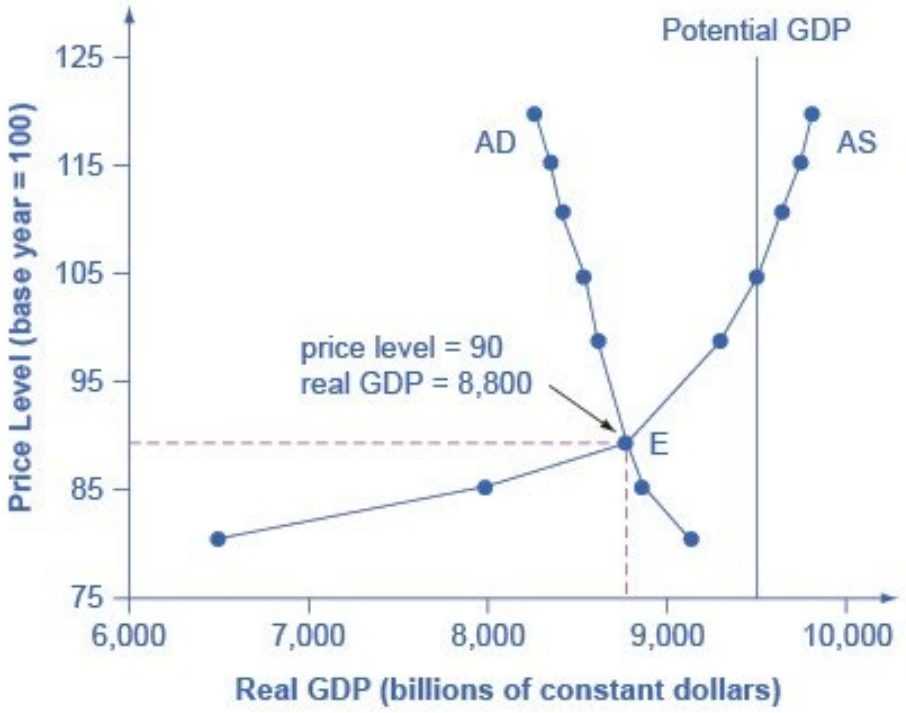
The Aggregate Demand Curve, Continued



Aggregate demand (AD) slopes down: as the price level (P) rises, the total spending on domestic goods and services declines.

- wealth effect: ↑ P → nominal wealth decreases → lower C
- interest-rate effect: ↑ P → interest rates rise → lower I
- foreign-price effect: ↑ P → our exports are more expensive → lower X

AD/AS Equilibrium



- Equilibrium: the intersection of the aggregate supply and aggregate demand curves marks
  - the equilibrium level of real GDP, and
  - the equilibrium price level.
- Here, AS=AD when price level of 90, and output level of 8,800.
  - far below potential GDP (where AS will become steep)
  - therefore, high unemployment and low price pressure

Defining SRAS and LRAS

- **Short run aggregate supply (SRAS) curve:**
  - upward sloping (given the prices of inputs)
  - positive short run relationship between the price level for output and real GDP (holding the prices of inputs **fixed**)

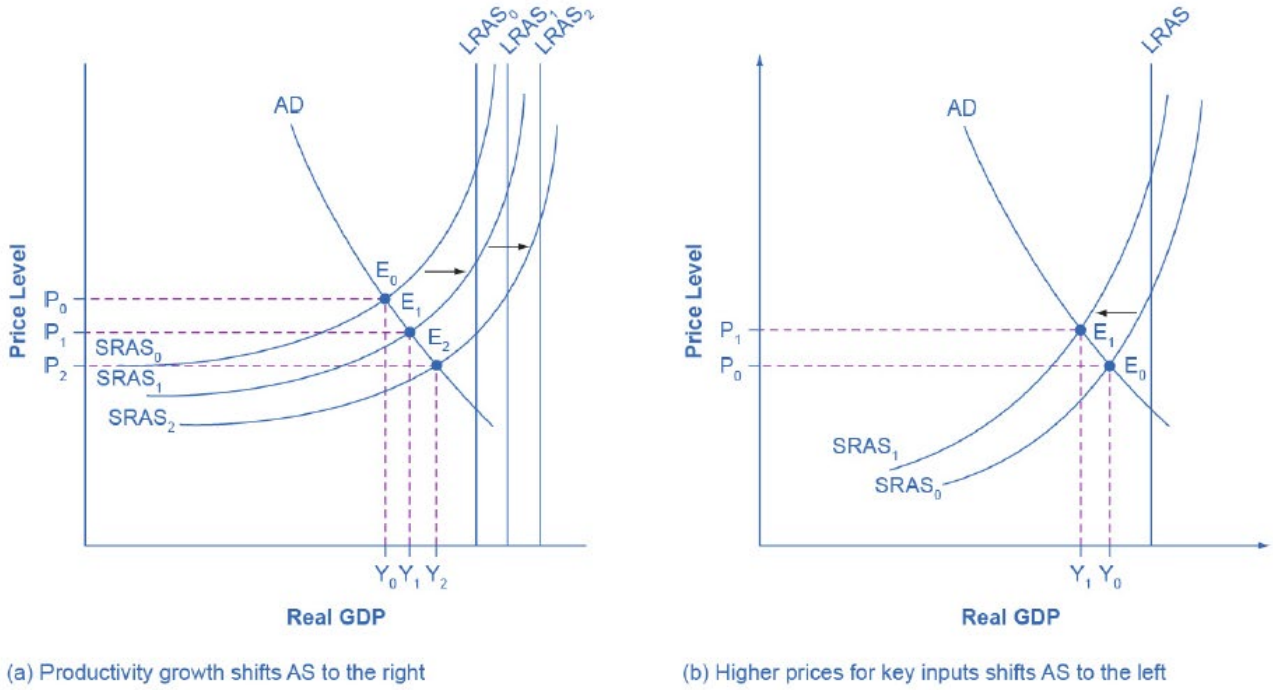
- **Long run aggregate supply (LRAS) curve:**
  - vertical line at potential GDP
  - no relationship between the price level for output and real GDP in the long run.
  - the relationship when all input prices adjust

24.3 Shifts in Aggregate Supply

- Key factors that can lead to shifts in the AS curve:
  - productivity growth
  - changes in input prices

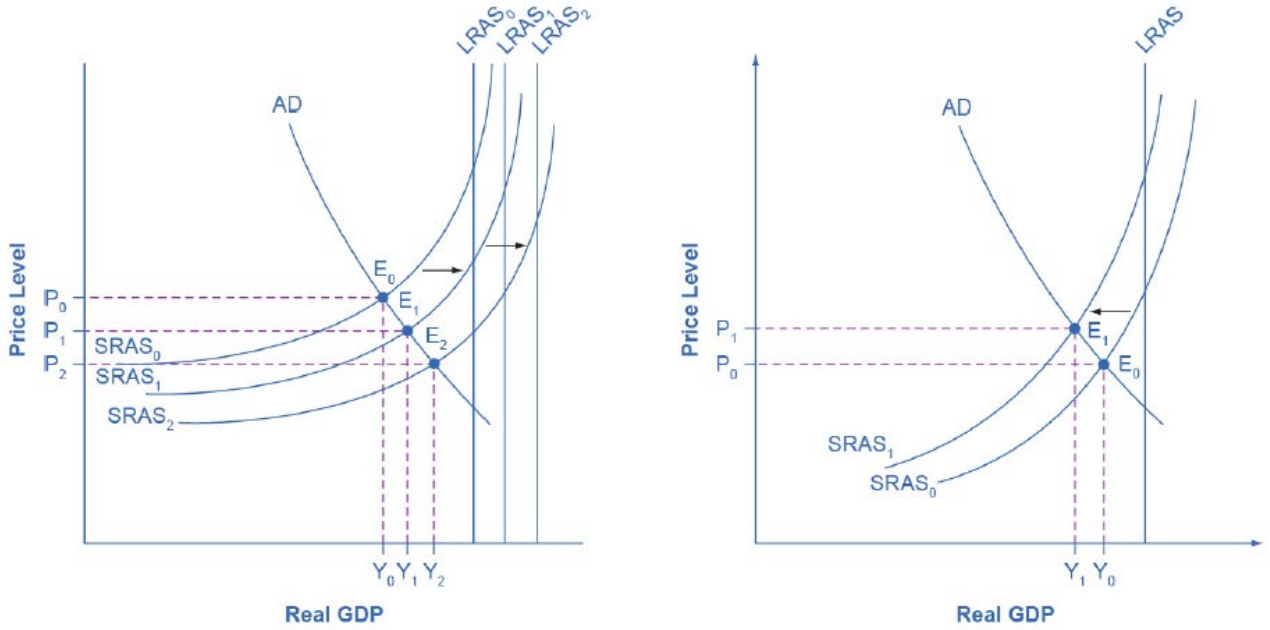
- The aggregate supply curve can also shift due to unexpected shocks to input goods or labor.
    - large weather events affecting crops or
    - an overseas war that requires a large number people to fight instead of work.

Shifts in Aggregate Supply (a): Productivity Increases



- **Graph (a):** The rise in productivity causes the SRAS curve to shift to the right. The original equilibrium E_0 is at the intersection of AD and $SRAS_0$.
- When SRAS shifts right, then the new equilibrium E_1 is at the intersection of AD and $SRAS_1$, and then yet another equilibrium, E_2, is at the intersection of AD and $SRAS_2$.
- Shifts in SRAS to the right, lead to a greater level of output and to downward pressure on the price level.

Shifts in Aggregate Supply (b) Negative Supply Shock



- **Graph (b):** A higher price for inputs means that at any given price level for outputs, a lower real GDP will be produced so aggregate supply will shift to the left from $SRAS_0$ to $SRAS_1$.
- The new equilibrium, E_1, has a reduced quantity of output and a higher price level than the original equilibrium (E_0).
- **Stagflation:** an economy experiences stagnant growth and higher inflation at the same time.

24.4 Shifts in Aggregate Demand

- Remember that the components of aggregate demand are:
  - consumption spending (C)
  - investment spending (I)
  - government spending (G)
  - net export spending (X-M)

- A shift of the AD curve to the right means that at least one of these components increased
  - a greater amount of total spending occurs at every price level.

- A shift of the AD curve to the left means that at least one of these components decreased
  - a lesser amount of total spending occurs at every price level.

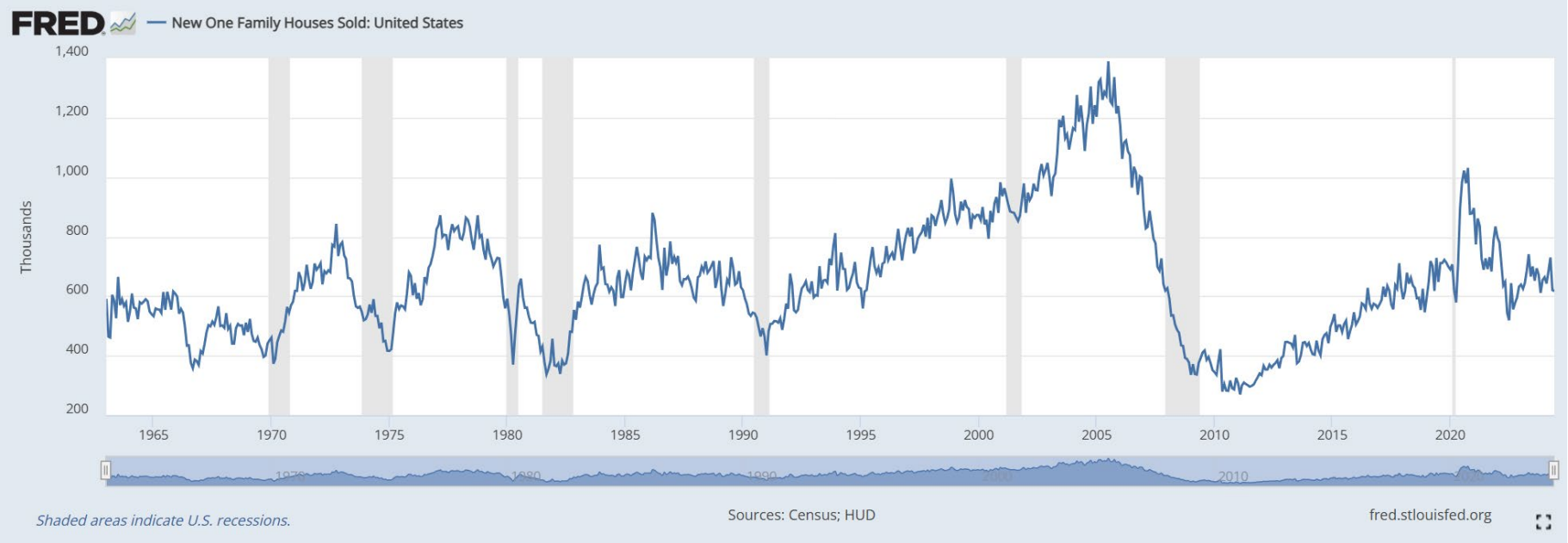
New Home Construction

Credit: modification of work by Tim Pierce/Flickr Creative Commons

New residential housing is part of investment (I).

At the peak of the housing bubble, many people across the country were able to secure the loans necessary to build new houses.

New Single Family Houses Sold



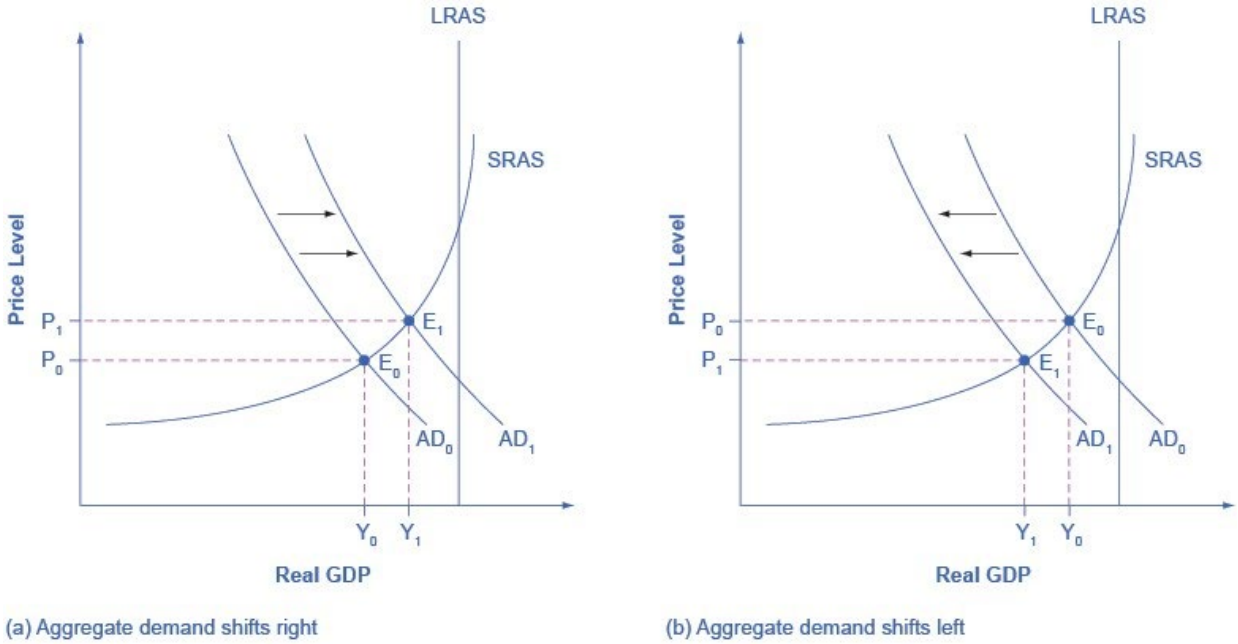
Source: FRED HSN1F

- From the early 1990s up through 2005, the number of new single family houses sold rose steadily.
- In 2006, the number dropped dramatically and this dramatic decline continued through 2011.
- By 2014, the number of new houses sold had begun to climb back up, but the levels are still below the early 1990s.

How Confidence Can Affect AD

- When consumers feel more confident about the future of the economy, they tend to consume more: ↑ C → ↑ AD.
- If business confidence is high, firms tend to spend investment, believing that the future payoff will be substantial: ↑ I → ↑ AD.
- Conversely, if consumer or business confidence drops, then consumption and investment spending declines.

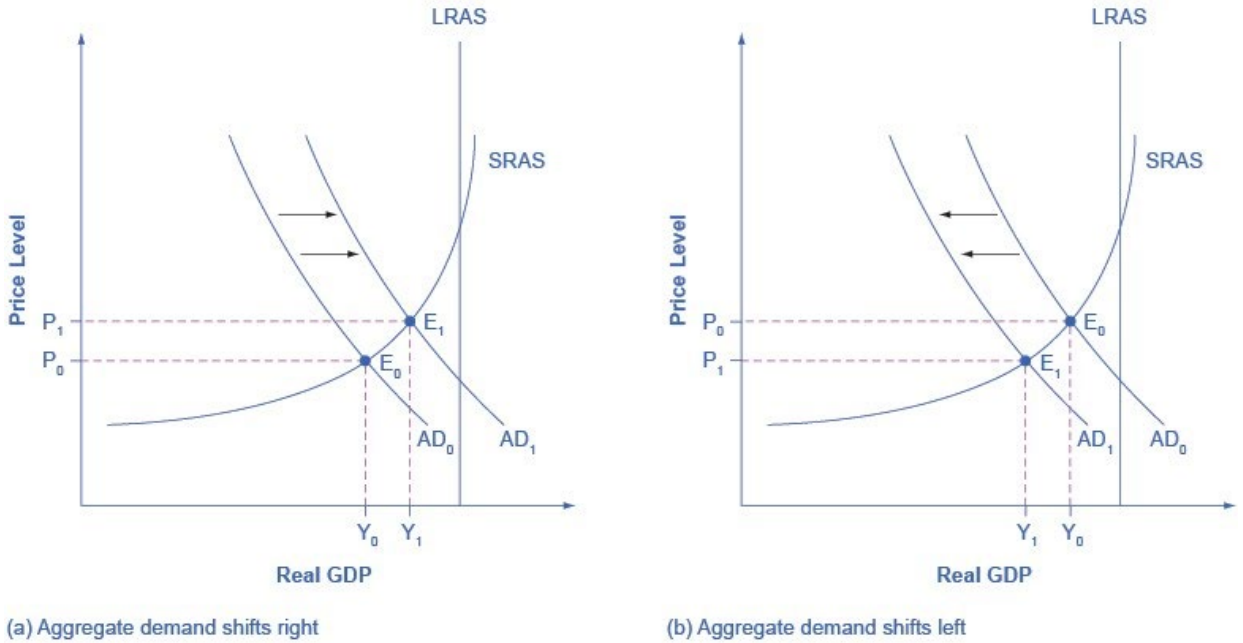
Shifts in Aggregate Demand (a): Increased Spending



Graph (a): An increase in consumer confidence or business confidence can shift AD to the right, from AD_0 to AD_1. An increase in government spending or a cut in taxes that leads to a rise in consumer spending can also shift AD to the right.

- the new equilibrium (E_1) will have a higher quantity of output and also a higher price level compared with the original equilibrium (E_0).
- In this example, the new equilibrium (E_1) is also closer to potential GDP.

Shifts in Aggregate Demand (b): Decreased Spending



Graph (b): A decrease in consumer confidence or business confidence can shift AD to the left, from AD_0 to AD_1. A decrease in government spending or higher taxes that leads to a fall in consumer spending can also shift AD to the left.

- When AD shifts to the left, the new equilibrium (E_1) will have a lower quantity of output and also a lower price level compared with the original equilibrium (E_0).
- In this example, the new equilibrium (E_1) is also farther below potential GDP.

How Government Macroeconomic Policy Choices Can Shift AD

- Higher government spending (G) will cause AD to shift to the right: ↑G → ↑AD
- Tax increases for consumers will tend to decrease consumption demand (C), causing AD to shift left: ↑T → ↓ AD
- Conversely, lower government spending will cause AD to shift to the left, while lower taxes shift AD to the right.
- Tax policy can also pump up investment demand by offering lower tax rates for corporations or tax reductions that benefit specific kinds of investment: ↓ T → ↑ AD
- During a recession, when unemployment is high and many businesses are suffering low profits or even losses, the U.S. often passes tax cuts.

Kennedy-Johnson Tax Cut

In 1962, with the economy struggling, President Kennedy promised (at the Economic Club of New York) "an across-the-board, top-to-bottom cut in personal and corporate income taxes." The tax system, mostly designed during World War II, "reduces the financial incentives for personal effort, investment, and risk-taking".

Kennedy urged a skeptical Congress to try to stimulate the economy by passing a “liberal” agenda that included:

Increasing the minimum wage.

Expanding unemployment benefits.

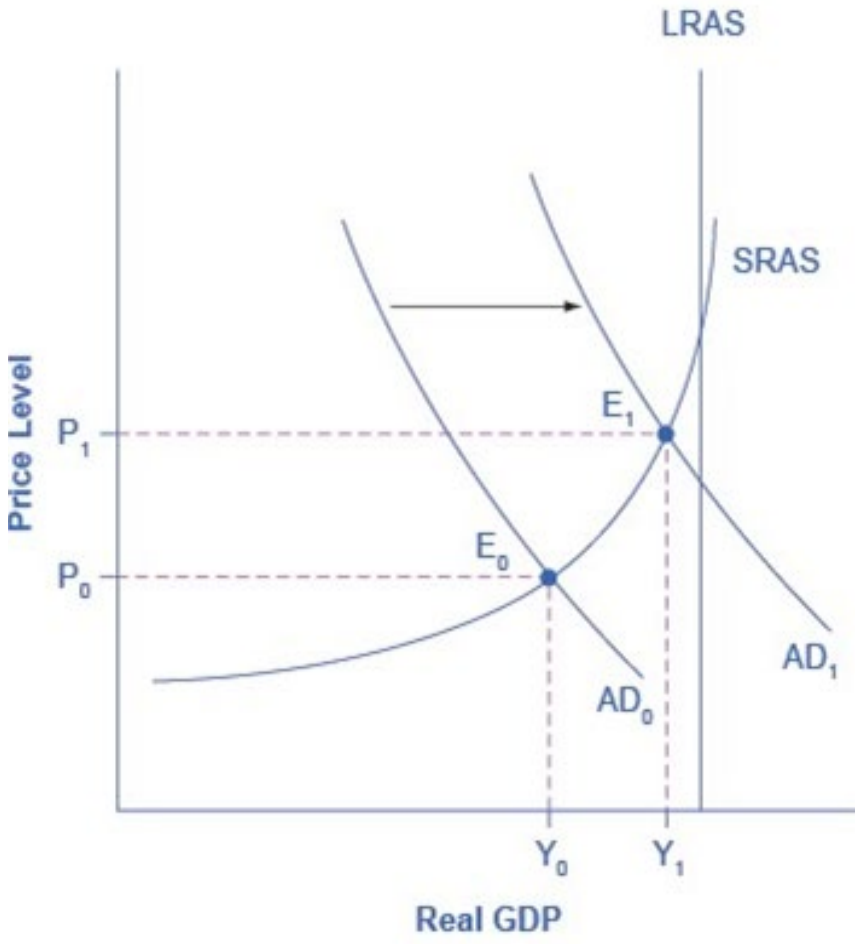
Boosting Social Security benefits to encourage workers to retire earlier.

Spending more for highway construction.

But also: much lower tax rates.

The “Tax Reduction Act” was signed by under President Johnson in early 1964. By 1966, the economy was booming.

Recession and Full Employment in the AD/AS Model



- Whether the economy is in a recession is illustrated in the AD/AS model by how close the equilibrium is to the potential GDP line as indicated by the vertical LRAS line.
- In this example, the level of output Y_0 at the equilibrium E_0 is relatively far from the potential GDP line, so it can represent an economy in recession, well below the full employment level of GDP.
- In contrast, the level of output Y_1 at the equilibrium E_1 is relatively close to potential GDP, and so it would represent an economy with a lower unemployment rate.

24.5 Growth, Unemployment, and Inflation

Long-Run Growth:

- In the AD/AS diagram, long-run economic growth due to productivity increases over time will be represented by a gradual shift to the *right* of aggregate supply.

- The vertical line representing potential GDP (or the "full employment level of GDP") will gradually shift to the *right* over time as well.

Short-Run Growth:

- The AD/AS diagram illustrates recessions when the equilibrium level of real GDP is substantially below potential GDP.

- In years of resurgent economic growth the equilibrium moves closer to potential GDP.

Unemployment in the AD/AS Diagram

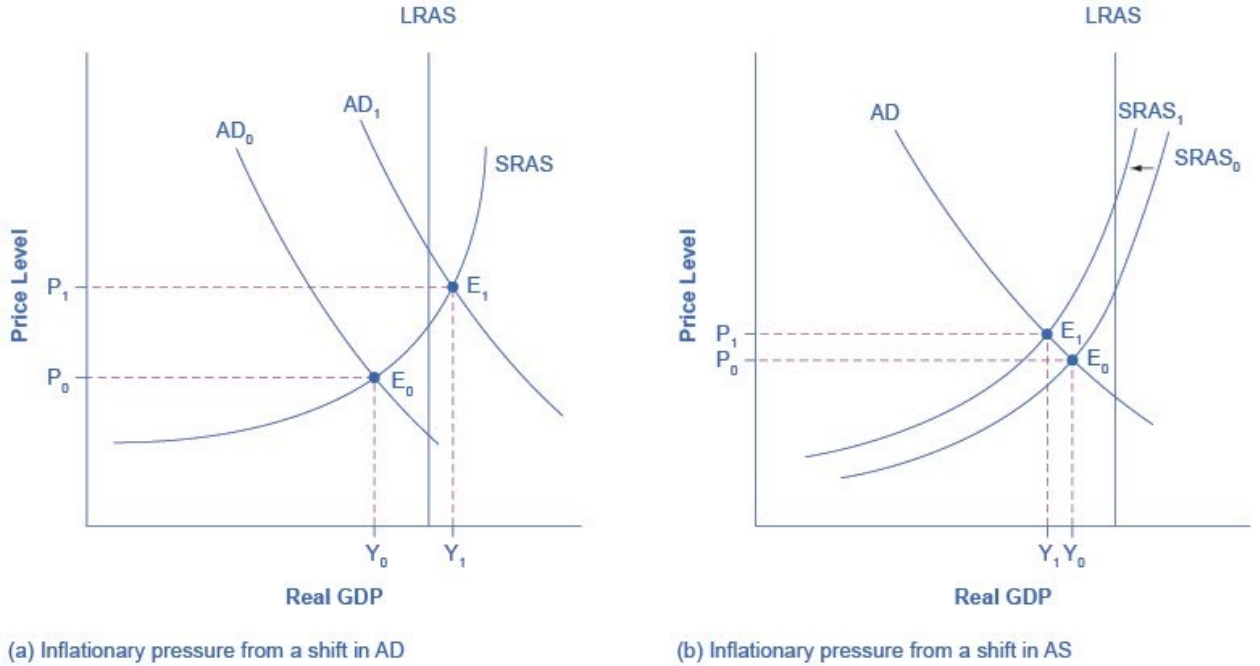
- Remember, there are two types of unemployment:
  - Short run variations in unemployment (cyclical unemployment) caused by the business cycle as economy expands and contracts.
  - Long run unemployment rate (typically hovers around 5% in U.S.) when the economy is healthy.

- The AD/AS diagram shows **cyclical unemployment** by how close the economy is to the potential or full GDP employment level.
  - Low cyclical unemployment for an economy occurs when the level of output is close to potential GDP.
  - High cyclical unemployment arises when the output is substantially to the left of potential GDP.

Inflationary Pressures in the AD/AS Diagram

- Inflation fluctuates in the short run.
- Higher inflation rates have most often occurred either during or just after economic booms.
- Rates of inflation generally decline during recessions.
- The AD/AS framework implies **two ways** that inflationary pressures may arise:
  - If the aggregate demand continues to shift to the *right* when the economy is already at or near potential GDP and full employment, thus pushing the equilibrium into the AS curve's steep portion.
  - A rise in input prices that affects many or most firms across the economy (e.g. oil or labor) and causes the aggregate supply curve to shift back to the left.

Inflationary Pressure (a): High Demand

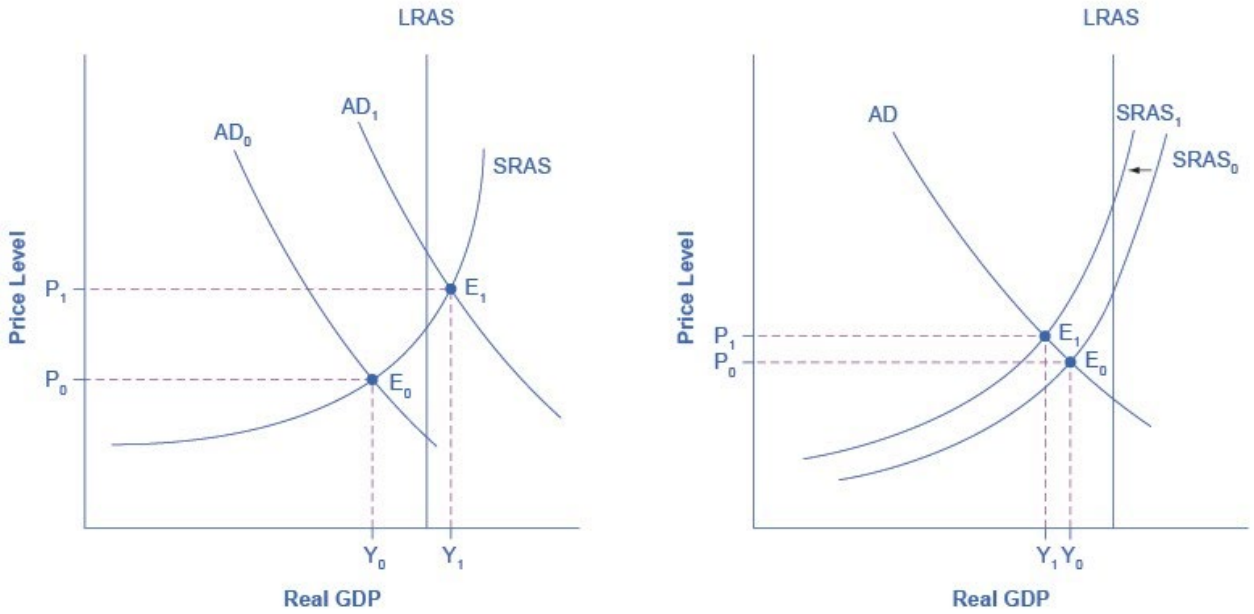


Graph (a):

- A shift in aggregate demand, from AD_0 to AD_1, when it happens in the area of the SRAS curve that is near potential GDP, will lead to a higher price level, leading to inflation.

- The new equilibrium (E_1) is at a higher price level (P_1) than the original equilibrium.

Inflationary Pressure (b): Supply Shock



(a) Inflationary pressure from a shift in AD

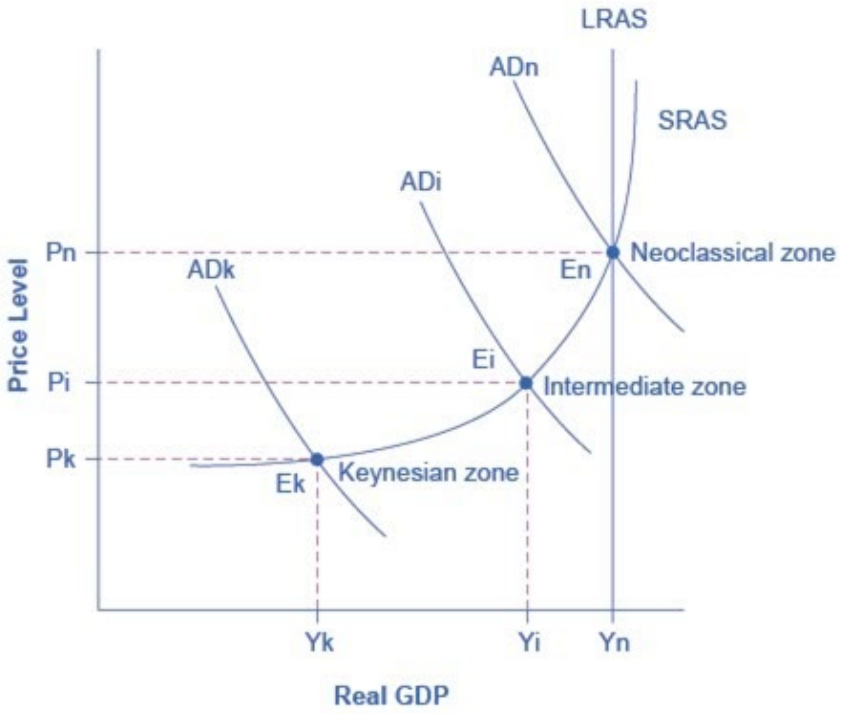
(b) Inflationary pressure from a shift in AS

Graph (b):

- A shift in aggregate supply, from $SRAS_0$ to $SRAS_1$, will lead to a lower real GDP and to pressure for a higher price level and short-run inflation.

- The new equilibrium (E_1) is at a higher price level (P_1), while the original equilibrium (E_0) is at the lower price level (P_0).

24.6 Keynes' Law and Say's Law Redux



- Use the AD/AS model to illustrate both Say's law and Keynes' law.
  - Divide the SRAS curve into different zones
  - Keynes's Law in the Keynesian zone (flat AD).
  - Say's Law in the Neoclassical zone (steep AD).

The Keynesian Zone

- **Keynesian zone** - portion of the SRAS curve where GDP is far below potential and the SRAS curve is flat

- If the AD curve crosses a portion of the SRAS curve in the Keynesian zone, the equilibrium level of real GDP is far below potential GDP, so:
  - the economy is in recession,
  - cyclical unemployment is high,
  - inflationary price pressure is not much of a worry
  - policy stimulus can raise outcomes (and lower unemployment)

The Neoclassical Zone

- **Neoclassical zone** - portion of the SRAS curve where GDP is at or near potential output where the SRAS curve is steep.

- If the AD curve crosses a portion of the SRAS curve in the neoclassical zone, the equilibrium is near potential GDP, so:
  - cyclical unemployment is low (structural unemployment may remain an issue),
  - the only way to increase the size of the real GDP is for AS to shift to the right,
  - increases in AD will create inflationary pressures

The Intermediate Zone

- **Intermediate zone** - portion of the SRAS curve where GDP is below potential but not so far below as in the Keynesian zone; the SRAS curve is upward-sloping, but not vertical in the intermediate zone.

- If the AD curve crosses a portion of the SRAS curve in the intermediate zone, we expect unemployment and inflation to move in opposing directions.
  - A shift of AD to the *right* will move output closer to potential GDP:
    - Reduce unemployment
    - Higher price level and upward pressure on inflation.
  - A shift of AD to the *left* will move output further from potential GDP:
    - Raise unemployment
    - Lower price level and downward pressure on inflation.

END