

Equilibrium

by Sophia



WHAT'S COVERED

This tutorial will cover the topic of equilibrium, focusing on the intersection of the short-run and long-run aggregate supply curves, which represent the economy's current equilibrium price level and real GDP level.

Our discussion breaks down as follows:

1. Aggregate Supply/Aggregate Demand
 - a. AD/AS Model
 - b. Aggregate Demand
 - c. Aggregate Supply
2. Equilibrium
 - a. Short Run Equilibrium
 - b. Long Run Equilibrium
3. Equilibrium During Recession
4. Equilibrium During Expansion

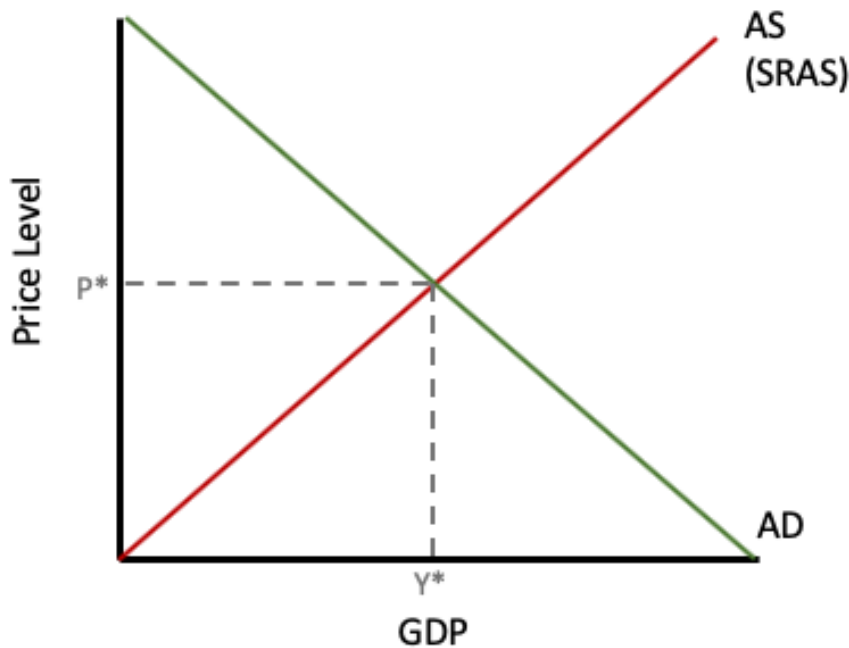
1. Aggregate Supply/Aggregate Demand

Let's briefly review aggregate supply/aggregate demand.

1a. AD/AS Model

The x-axis, in microeconomics, generally represents quantity, as in the quantity of one specific item. In this case, though, it represents *overall* quantity or all output in an economy, which is GDP.

The y-axis represents the overall price level, not just the price of a specific item.



HINT

This is the most common graph used in macroeconomics to show overall, or macroeconomic, activity. Now, real GDP, which is the x-axis, is defined as the real gross domestic product, or **RGDP**. This is the sum of the final value of goods and services produced over a specific time interval, within a country's borders. It is calculated across time periods using a constant price level--which is where the "real" aspect enters the equation.

It means we are adjusting for inflation and evaluating whether we have been more or less productive, as evidenced by our gross domestic product.

The **price level** on the y-axis is an aggregate index value that provides an indication of the increase in prices from one period to another. It is used to evaluate inflation across periods.

TERMS TO KNOW

RGDP

Real Gross Domestic Product; Gross Domestic Product (the sum of the final value of goods and services produced over a specific time interval and within a country's national borders) calculated across time periods using a constant price level

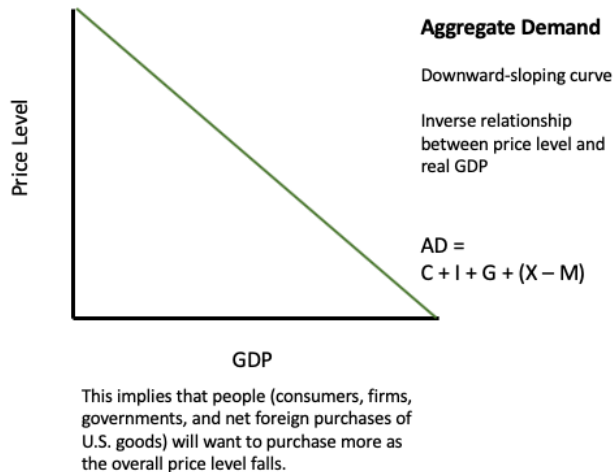
Price Level

An aggregate index value that provides an indication of the increase in prices from one period to another; used to evaluate inflation across periods

1b. Aggregate Demand

Aggregate demand is the total amount of goods and services demanded in the economy at a specific point in time and at a prevailing price level.

Here is our aggregate demand curve. Notice that it is a downward sloping curve, which shows an inverse relationship between the two axes, price level, and real GDP.



This indicates that people will want to purchase more as the overall price level falls. So, as prices go down, people want to buy more.

However, it is important to note that when we say "people" want to purchase more, we are actually referring to different groups of people, which comprise the aggregate demand formula.



FORMULA TO KNOW

Aggregate Demand

$$AD = C + I + G + (X - M)$$

where:

C = Consumption or consumers

I = Investment, referring to businesses or firms

G = Governments

$X - M$ = Exports minus Imports = Net foreign purchases of domestic goods

Now, in a different tutorial, we cover the reasons why people want to purchase more as the overall price level falls, but basically it is due to three different effects--the wealth effect, the interest rate effect, and exchange rate effect.



TERM TO KNOW

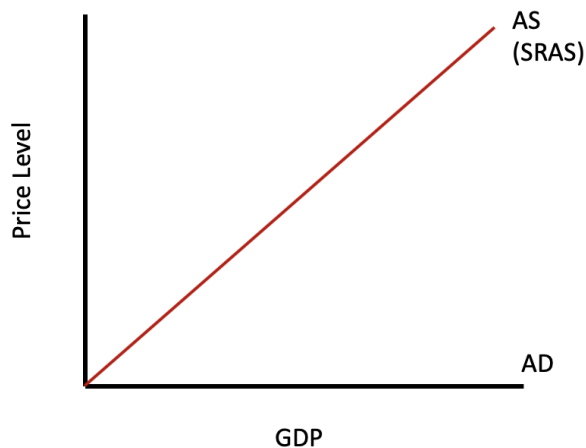
Aggregate Demand

The total amount of goods and services demanded in an economy at a specific point in time and at a prevailing price level

1c. Aggregate Supply

Short run aggregate supply, or **SRAS**, the other curve on this model, is assumed to maintain the positive price and quantity correlation. More can be produced through increased resource utilization, technological improvements, or other factors.

For these reasons, the short-run aggregate supply curve is, in fact, an upward sloping curve. It represents the total amount produced at various price levels.



In the short run, if prices go up, businesses can take advantage of this and produce more. They will not have to necessarily pay their workers more immediately, because as prices go up, wages will not immediately adjust. In addition, businesses can use the inventories that they already have.

Therefore, this is why it is possible for aggregate supply to slope upwards in the short run.



TERM TO KNOW

SRAS

Short-Run Aggregate Supply; assumed to maintain the positive price and quantity correlation; more can be produced through increased resource utilization, technological improvements or other factors.

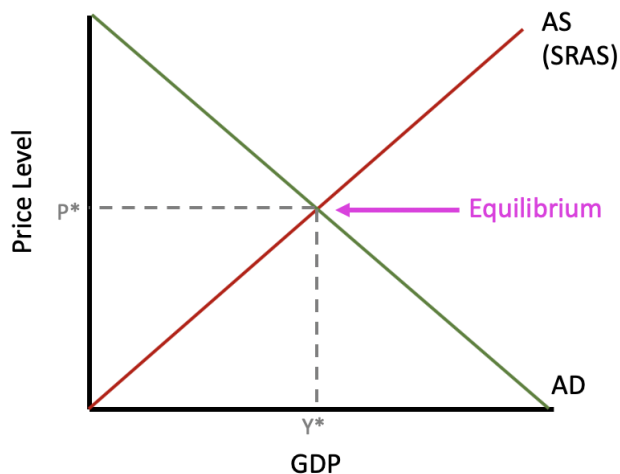
SRAS is an upward sloping curve

2. Equilibrium

This tutorial, though, is about equilibrium, so let's shift our focus.

2a. Short Run Equilibrium

In the short run, the point where aggregate demand and short-run aggregate supply intersect will give us equilibrium.



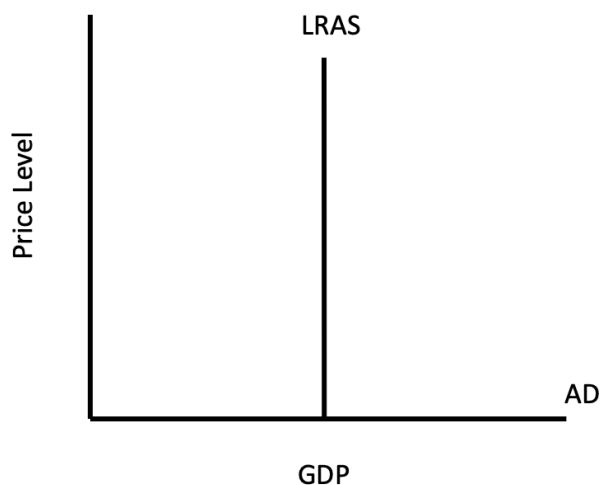
The Y^* --note that it is now on the x-axis--represents the equilibrium level of production or output, also known as real GDP. This is how much is currently being produced in the economy.

P^* on the y-axis represents our current price level or the prevailing price level.

2b. Long Run

However, the other part of aggregate supply is the long run aggregate supply, or **LRAS**, curve. There is not a positive relationship between the overall price level and quantity, or real GDP, in the long run.

The long-run aggregate supply is assumed to be constant in the long run, because there are only so many resources that an economy has at a given point in time. Therefore, there is no potential to increase capacity unless more resources are found. For this reason, the long run aggregate supply curve is a vertical line.



DID YOU KNOW

The LRAS curve is also known as the Solow growth curve.

The LRAS curve represents our economy's full potential; this is the quantity of GDP that we can produce if we are utilizing all of our current resources.

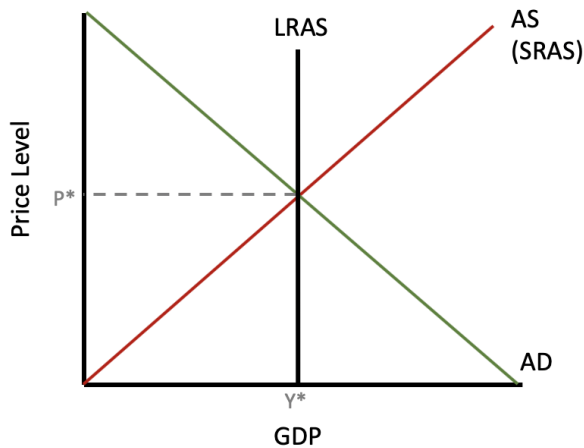
In the short run, we can ramp up our production, but this can really only get us so far. In the long run, we have a limited amount of resources, such as materials and workers.

Therefore, that vertical line represents the current potential for how much we can produce.



Think of this curve as our economy producing as much as possible, given what we have. In other words, given all of our current resources, this represents our full production potential.

So, combining all three of these things--aggregate demand, short-run aggregate supply, and long-run aggregate supply--we can see how our economy is doing at any given point in time.



This graph shows that our economy is producing. If you look at Y^* , you can see that we are producing where our long-run aggregate supply curve intersects.

This means that our economy is fully employed, we are utilizing all of our land, labor, and capital, and we are producing the maximum amount possible, given all of our current resources.

Generally speaking, though, this is not the case. Our economy is generally not producing the exact quantity of real GDP in the short run as represented by this long-run aggregate supply curve.

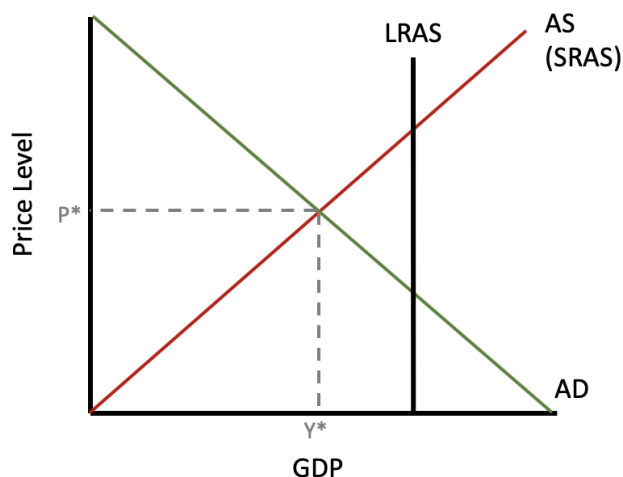


LRAS

Long-Run Aggregate Supply; assumed to be constant in the long run as in the long-run resources are assumed to be used optimally, leaving no potential for increasing capacity. LRAS is a vertical curve

3. Equilibrium During Recession

So, what would it look like if we are actually producing at a real GDP less than the LRAS? Well, here is one way that it could look.



At Y^* , you can see that we are producing, but our real GDP is less than our full potential.

This would occur during a recession. This means that the economy is not using all of its resources. It is not fully employed, so it is producing less than its full potential.

In turn, this means that resources are unemployed. **Unemployment** is measured as a percentage rate of the number of individuals that would like to work and are an active part of the labor force, compared to the number of individuals that comprise the active labor force.

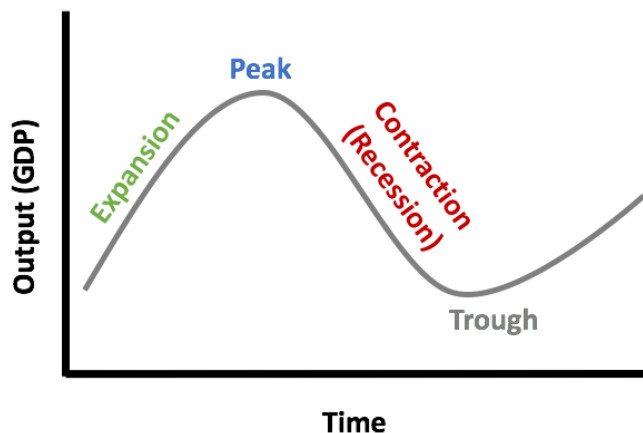
HINT

In a different tutorial, we discuss the different components of unemployment: frictional, structural, and cyclical. The important thing to remember, though, is that frictional and structural unemployment will always exist; they are standard parts of unemployment that will always be around. Cyclical unemployment, on the other hand, exists specifically during a recession.

If we are in a recession, we could be nearing a **trough**, which is the business cycle period that coincides with the lowest GDP for a given point in time.

Remember, here is what a business cycle looks like, and according to the National Bureau of Economic Research (NBER):

"A recession is a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales."



A recession would occur in a period where our GDP is less than our full potential. If we are at a trough, we are at the bottom of the recession.

Since the economy is operating at less than full employment, then, there would be some cyclical unemployment existing. If it lasts a long time, expansionary fiscal and monetary policies can be put in place to try to raise the economy out of this recession.



TERMS TO KNOW

Unemployment

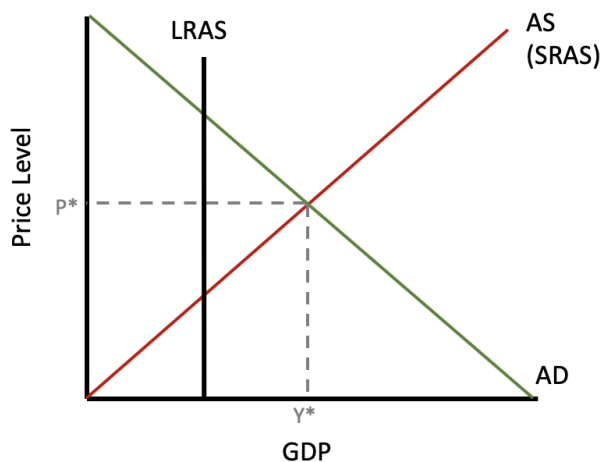
Measured as a percentage rate of the number of individuals that would like to work and are an active part of the labor force to the number of individuals that comprise the active labor force. Unemployment may be categorized as frictional, structural and cyclical components.

Trough

The business cycle period that coincides with the lowest GDP for a given point in time

5. Equilibrium During Expansion

Now, the opposite situation could also occur in the short run. This graph shows the economy currently producing at a real GDP greater than the LRAS.



So, how can we be producing beyond our full potential? Well, this can happen during a period of expansion.

During a period of expansion, GDP is growing at a rate faster than the overall time trend, as stated by the NBER:

"Converse to a recession, if GDP is growing at a rate faster than the overall time trend, we are said to be in an expansion."

An expansionary peak in the economy is possible only when producers are using resources faster than they are being replaced.

This would require a very low unemployment rate—less than 5%—which would be above full employment, or be a situation of negative cyclical unemployment.

This is not sustainable in the long run, only in the short run. Hence, it will go back to the long run equilibrium, because we cannot sustain this type of production into the long run.

Therefore, a **peak** is defined as the business cycle period that coincides with the maximum attainable GDP for a given point in time.



TERM TO KNOW

Peak

The business cycle period that coincides with the maximum obtainable GDP for a given point in time



SUMMARY

Today we looked at **equilibrium** on the **aggregate supply/aggregate demand** model. We learned that the intersection of the **short-run aggregate supply** curve and **aggregate demand** curve represents our economy's current equilibrium price level and level of real GDP. We also learned that the **long run aggregate supply** shows us the level of real GDP that is possible when our economy is fully employed.

When we combine all of these curves, we can see the following: our economy in long-run equilibrium, equilibrium during recession, and equilibrium during expansion.

Source: Adapted from Sophia instructor Kate Eskra.



TERMS TO KNOW

Aggregate Demand

The total amount of goods and services demanded in an economy at a specific point in time and at a prevailing price level.

LRAS

Long-Run Aggregate Supply; assumed to be constant in the long run as in the long-run resources are assumed to be used optimally, leaving no potential for increasing capacity. LRAS is a vertical curve.

Peak

The business cycle period that coincides with the maximum obtainable GDP for a given point in time.

Price Level

An aggregate index value that provides an indication of the increase in prices from one period to another; used to evaluate inflation across periods.

RGDP

Real Gross Domestic Product: Gross Domestic Product (the sum of the final value of goods and services produced over a specific time interval and within a country's national borders.) Calculated across time periods using a constant price level.

SRAS

Short-Run Aggregate Supply; assumed to maintain the positive price and quantity correlation; more can be produced through increased resource utilization, technological improvements or other factors. SRAS is an upward sloping curve.

Trough

The business cycle period that coincides with the lowest GDP for a given point in time.

Unemployment

Measured as a percentage rate of the number of individuals that would like to work and are an active part of the labor force to the number of individuals that comprise the active labor force. Unemployment may be categorized as frictional, structural and cyclical components.