Long Run vs. Short Run

by Sophia Tutorial

WHAT'S COVERED

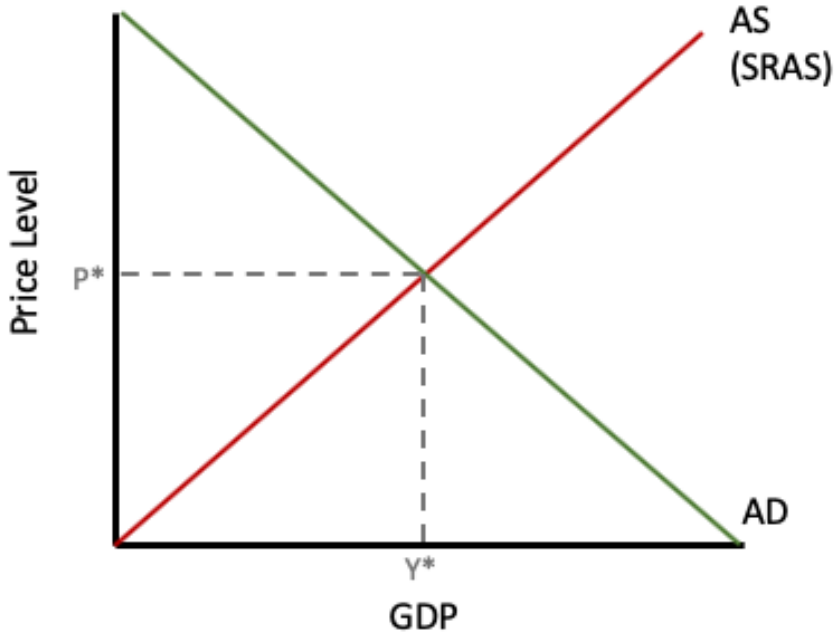
This tutorial will cover aggregate supply, comparing short run and long run aggregate supply curves.

Our discussion breaks down as follows:

1. Aggregate Supply/Aggregate Demand Model
2. Aggregate Supply
   a. SRAS
   b. LRAS
3. Economic Growth and LRAS Movement

1. Aggregate Supply/Aggregate Demand Model

This is the aggregate supply and aggregate demand model. In this tutorial, we will be focusing on aggregate supply, represented by the red line, but it is helpful to see how the whole model will eventually come together.



Notice that in microeconomics, the x-axis generally represents quantity, as in the quantity of one specific item, but here it represents overall quantity or all output in an economy, which is real GDP.

The y-axis represents the overall price level, not just 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 actually 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

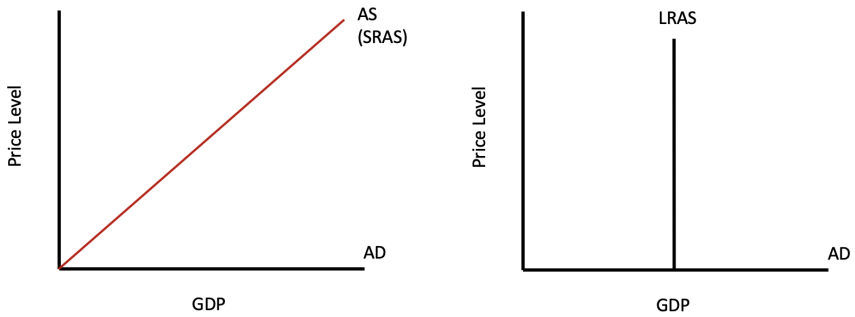
RGDP
Real Gross Domestic Product; Gross Domestic Product (the sum of the final value of goods and services produced over a specific time interval and within a country's national borders) calculated across time periods using a constant price level

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

2. Aggregate Supply

Aggregate supply involves the relationship between the two axes, price level and the total amount of real GDP that producers are willing to produce.

This relationship changes over time, so it is important to distinguish between the short run and the long run.



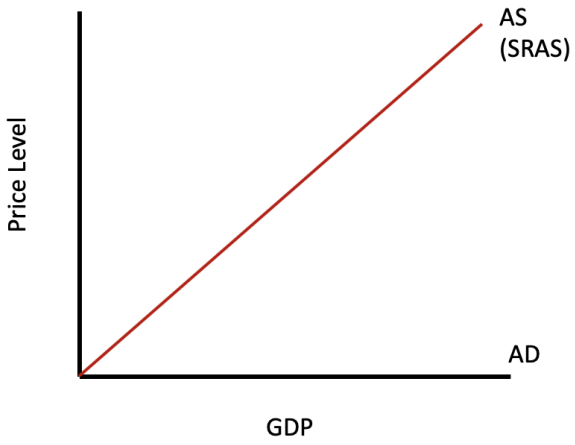
In the short run, you will see that there is a relationship between prices and GDP. As prices go up, producers will want and be able to produce more to take advantage of higher prices.

In the long run, however, there is not a relationship between the price level and real GDP. No matter how high prices are, there is a fixed amount that can actually be produced in a sustainable manner.

Let's discuss each supply curve in further detail.

2a. SRAS

Short run aggregate supply, or **SRAS**, is assumed to maintain the positive price and quantity correlation, meaning that more can be produced through increased resource utilization, technological improvements, or other factors.
For these reasons, short run aggregate supply is an upward sloping curve.



Again, this is a positive relationship between the overall price level and the total amount that producers can produce by real GDP.

In the short run, if prices go up, businesses can take advantage of this and produce more. They won't have to necessarily pay their workers more immediately, because as prices go up, wages won't 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.

IN CONTEXT

Suppose you pull an all-nighter to study for an exam. If you stay up all night, you can likely accomplish more than you normally would be able to do in a 24-hour period. However, would this level of activity be sustainable for you night after night indefinitely? You might be able to pull it off for two nights in a row, but by the third night, you would likely be exhausted.

The same is true with employers. If employers want to take advantage of higher prices in the short run, they can certainly do that. They can hire workers to work overtime, they can draw down their inventories to try to produce more immediately. However, at some point, there is a limit to the amount of resources--land, labor, and capital--which leads us to the idea of long run aggregate supply, which we will cover next.

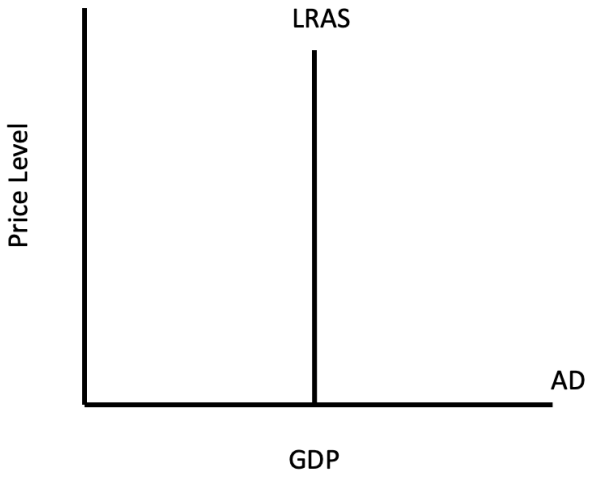
TERM TO KNOW

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

2b. LRAS

Now, long run aggregate supply, or **LRAS**, is assumed to be constant in the long run, as the long run, resources are assumed to be used optimally, leaving no potential for increasing capacity.
Because there is a fixed amount that we can ultimately produce given our land, labor, and capital, the long run aggregate supply curve is a vertical curve.



So LRAS curve represents our economy's full potential in terms of our production, given our current resources. When we have no cyclical unemployment at all, meaning we only have those normal types of unemployment like frictional and structural, this means that all of our land, labor, and capital are fully employed.

We have low unemployment rate in the economy and resources are fully employed, we are on this long run aggregate supply curve.

So, our production capacity is actually fixed unless something changes our ability to produce more. Certainly, as prices go up, producers would like to produce more--and as mentioned, in the short run, they can. However, at some point, it will simply revert to the long run unless something actually changes to increase our ability to produce more into the long run.

Ramping up production in the short run can only get us so far. We have a limited amount of resources like materials and workers. Therefore, in the long run, the amount of production that producers can sustain is fixed.

Sustainability, then, is the idea that consumption and production does not stress or exceed the threshold required for natural regeneration of depleted resources.

> EXAMPLE For example, if producers were using a lot of resources like timber, for instance, to produce more in the short run, that would be fine. However, if they are producing faster than those resources are being replaced, this rate of growth is unsustainable. They cannot sustain that into the long run.

TERMS TO KNOW

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

Sustainability
Consumption and production that does not stress or exceed the threshold required for natural regeneration of depleted resources

3. Economic Growth and LRAS Movement

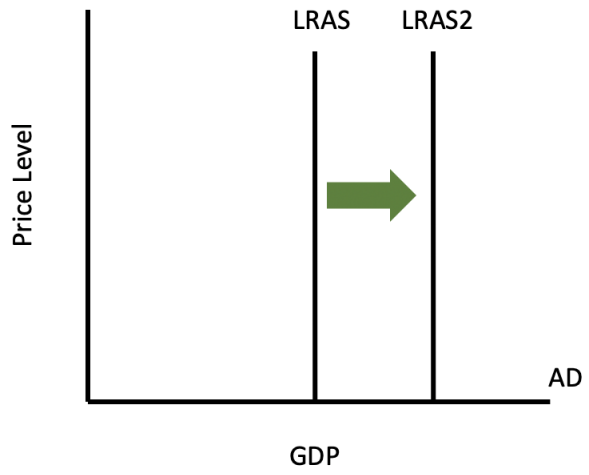
So, how does our economy grows over time? We know that it does, but If we're saying our growth is limited to the vertical curve in the long run by using all of our land, labor, and capital, then how is it that we grow from year to year and from decade to decade?

Well, the long run aggregate supply curve can actually move. Over time, it is possible for the economy to grow. We must find more land, labor, or capital.

This is possible, given the following sources:

- Population changes, leading to a greater amount of people in the workforce.
- Discovery of new resources
- Technological advances, which allow us to utilize what we have much more efficiently.

As you can see, if any of these things would happen, it would actually shift our long run aggregate supply curve to the right, giving us the ability to produce more into the long run.



This equates to **real GDP growth**, which shows the measure of the percentage change in real GDP from one period to another, where price level is held constant and the growth provides insight to the increase in the production of final goods and services over the interval evaluated.

Unfortunately, the long run aggregate supply curve can also shift to the left, which would happen if something reduces the amount of land, labor, and capital that we have.

EXAMPLE Examples of this include natural disasters or wars, unfortunately, which would be shown by movement to the left of the long run aggregate supply curve.

TERM TO KNOW

RGDP Growth

The measure of the percentage change in RGDP from one period to another where price level is held constant and the growth provides insight to the increase in the production of final goods and services over the interval evaluated

SUMMARY

We began today's lesson by looking at an **aggregate supply/aggregate demand model**, noting that the x-axis represents real GDP and the y-axis is the overall price level. We learned about **aggregate supply**, comparing the difference between short run aggregate supply (**SRAS**) and long run aggregate supply (**LRAS**). Remember, the short run aggregate supply curve does have a positive relationship between the price level and the real GDP, or the amount that producers are able to produce. We learned that in the long run, real GDP is actually fixed given our current land, labor, and capital, so the long run aggregate supply curve is a vertical curve. Finally, we learned how **long run aggregate supply movement** can change our country's production capabilities to allow**economic growth** over time.

Source: Adapted from Sophia instructor Kate Eskra.

TERMS TO KNOW

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.

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.

RGDP Growth

The measure of the percentage change in RGDP from one period to another where price level is held constant and the growth provides insight to the increase in the production of final goods and services over the interval evaluated.

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.

Sustainability
Consumption and production that does not stress or exceed the threshold required for natural regeneration of depleted resources.