

Sustainable Economic Growth

by Sophia Tutorial



WHAT'S COVERED

This tutorial will cover the topic of sustainable economic growth, by comparing short-term increases in GDP with long-term economic growth, and applying it to the idea of sustainable growth.

Our discussion breaks down as follows:

1. Economic Growth
2. Short Run Aggregate Supply
3. Long Run Aggregate Supply
 - a. Long Run Economic Growth
4. Sustainable vs. Unsustainable Economic Growth
5. Recession and Sustainable Growth
6. Debate Over Sustainability: Non-Renewable Energy

1. Economic Growth

Let's begin by discussing why we measure GDP. We know that if **real GDP** rises from one year to the next, we can feel confident that the economy is more productive than the year before, or growing.

If GDP falls, it is an indication that the economy is slowing.

Remember, real GDP or RGDP, is gross domestic product adjusted for inflation. It shows real growth between periods, holding price levels constant.

Economic growth is defined as the measure of the change in real GDP, then, over periods of time. It is a percentage change in the value of the sum of all goods and services produced in a country's natural borders over a specified time interval.

Now, there are many ways that an economy can produce more. However, producing or consuming more does not necessarily equate to long term economic growth, which is important to keep in mind throughout this tutorial.

First, though, we need to distinguish between the short-run aggregate supply curve and the long run

aggregate supply curve.



TERMS TO KNOW

Real GDP

Gross domestic product adjusted for inflation— shows real growth between periods holding price level constant (also known as RGDP).

Economic Growth

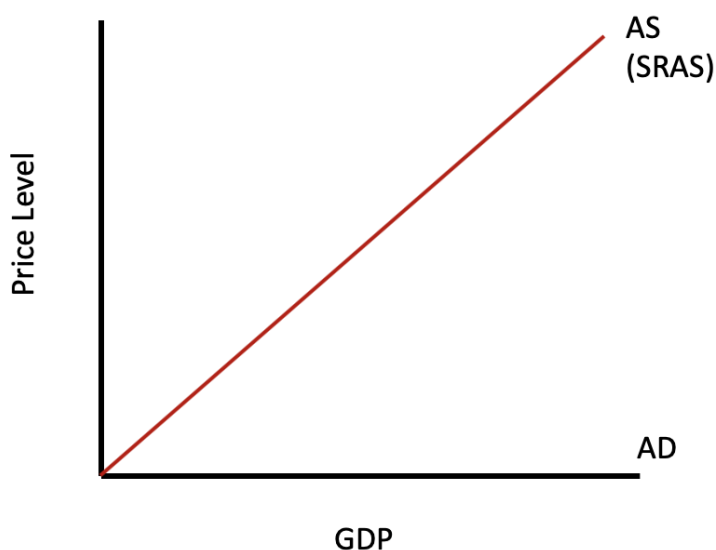
Measure of the change in real GDP over periods of time; percent change in value of the sum of goods and services produced in a country's natural borders over a specified time interval

2. Short Run Aggregate Supply

In review, this is the short-run aggregate supply curve, which can vary in the long run with the price level.

In the short run, businesses can produce more as prices go up because they will not have to pay their workers more immediately as prices are rising and they can use their existing inventories.

This is why it is possible for aggregate supply to slope upwards in the short run.



🔗 **EXAMPLE** Suppose you pull an all-nighter to study for an exam. If you stay up all night, you can likely accomplish more than you usually would be able to do in 24 hours. However, this level of activity would not be sustainable for night after night, or indefinitely.

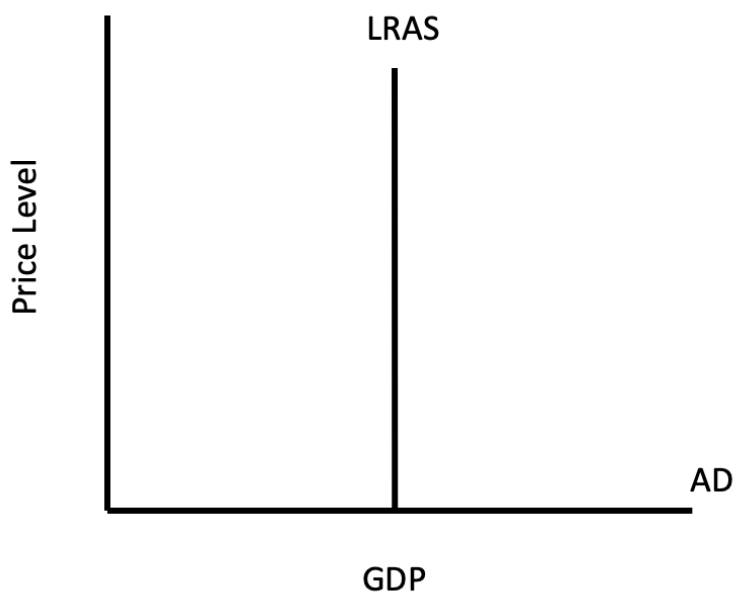
The same is true with employers. If employers want to take advantage of higher prices in the short run, they can hire workers to work overtime and draw down their inventories to try to produce more immediately. However, at some point, there is a limit to the number of resources, because we have limited land, labor, and capital.

3. Long Run Aggregate Supply

Long run aggregate supply, or **LRAS**, then, is assumed to be constant in the long run since resources are assumed to be used optimally, leaving no potential for increasing capacity.

The long-run aggregate supply curve is a vertical line, and it shows our economy's full potential in terms of production, given today's current resources.

It is the amount of production possible when resources are fully employed and there is zero cyclical unemployment.



So, our production capacity is essentially fixed unless something changes to increase our ability to produce more.

Ramping up our production in the short run can only get us so far because, again, we have limited resources like materials and workers.

So, the amount of production that producers can sustain is fixed, which is the essence of the concept of **sustainability**. It is the ability to utilize resources in the current timeframe without sacrificing the opportunity for future use and without disturbance to the ecosystem.

🔗 **EXAMPLE** If many producers use our resources like timber faster than these resources are being replaced, this rate of growth is unsustainable.



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

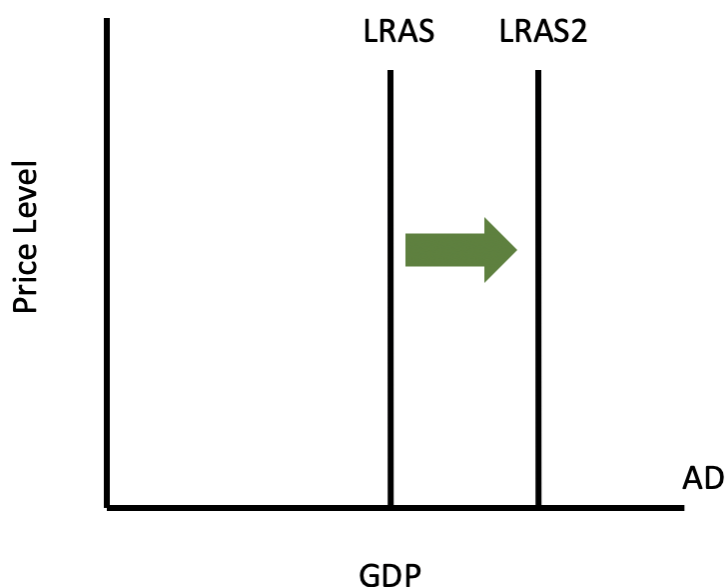
The ability to utilize resources in the current timeframe without sacrificing the opportunity for future use and without disturbance to the ecosystem

3a. Long Run Economic Growth

How, then, does our economy actually grow over time and not just simply produce more in the short run? Well, we have to figure out a way for our long-run aggregate supply curve to move, which *is* possible. One way is if we find more land, labor or capital:

- Population changes. If there is a greater number of people in the workforce, this presents more resources in terms of labor.
- Discover of new resources.
- Advancement in technology. More efficient production techniques allow us to produce more, given the resources that we already have.

These changes would shift our long-run aggregate supply curve, giving us the ability to produce more into the long run.



4. Sustainable vs. Unsustainable Economic Growth

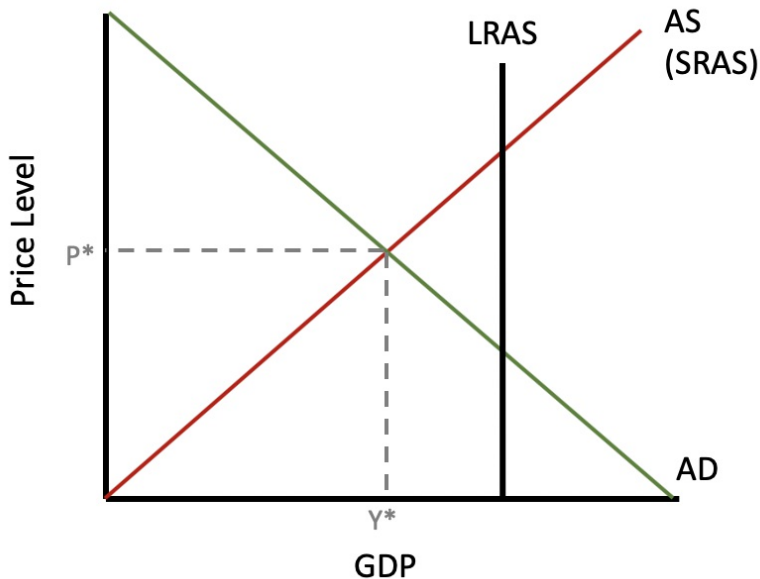
Now let's look at sustainable versus unsustainable economic growth by comparing two examples.

	Sustainable	Unsustainable
Example	Use of computers	Tax breaks/stimulus programs
Effect	Businesses can hire the same (if not fewer) workers today and accomplish much more in less time	Expansionary policies temporarily encourage more consuming or producing
Economic Impact	Shifts long-run aggregate supply	Shifts aggregate demand or short-run aggregate supply; no impact on LRAS

5. Recession and Sustainable Growth

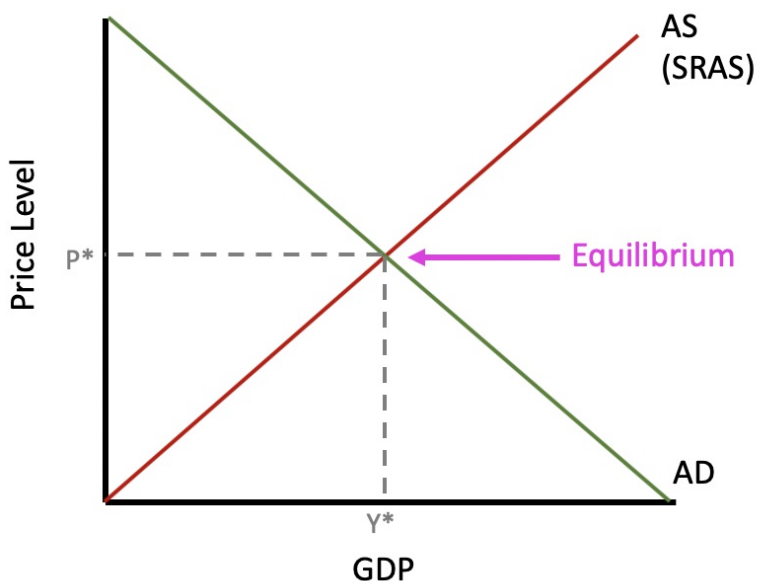
Now, if we are in a recession, as shown on this graph, these policies actually may be sustainable, because we are not at our full potential and they encourage the use of currently unutilized resources.

They can also help the economy get to full employment.



Unfortunately, economists debate on the exact location of the long run aggregate supply curve, though.

So, if we were already at equilibrium, as shown below, and we continued to stimulate aggregate demand through expansionary policies, anytime we push the short run equilibrium output beyond the potential long-run output, it is unsustainable.



It will cause prices to go up, and then aggregate supply will shift to the left again. This is why the long run aggregate supply curve is where it is, because it represents our potential today, given the resources that we

have.

If we are already at full employment, enacting those expansionary policies are not going to cause long term economic growth that is sustainable. It will merely increase output in the short term.


6. Debate Over Sustainability: Non-Renewable Energy

The debate over sustainability can lead to some difficult decisions. Let's walk through an example of non-renewable sources of energy, which illustrates why there is so much debate--and no easy answer.

Now, we know that coal and oil are technically considered nonrenewable. So, why do we use them if they are not renewable?

Well, the economic answer is that the opportunity cost today of using them is lower than adopting new methods.

However, we know that will not always be the case. There will eventually come a time when it is actually more expensive to find what is left than what we get out of it.

 **EXAMPLE** For example, at some point, it will use more energy to find the remaining coal underneath the earth's surface than the energy we will get out of it. If we are talking about oil, it will get to the point where it will cost more to extract the oil than what we can get from the well--either because it is so far beneath the earth's surface or we have to find new sources of it.

Some argue that we should stop relying on these unsustainable energy sources knowing that eventually, we will need to change.

However, switching now would still be more expensive and would cause prices to rise. Therefore, while it would be good for future generations, for our children, to do this sooner rather than later, it would be bad for older individuals today, who are living on fixed incomes.

It is impossible to say absolutely what is right because the costs and benefits vary for different groups of people. We can, though, look at these costs and benefits and have discussions about various policies.



BIG IDEA

When voters are informed--understanding that these decisions are difficult but the costs and benefits can be weighed--there will be more efficient outcomes through our democratic process.



SUMMARY

Today we began by discussing **economic growth** and comparing **short-run aggregate supply** and **long-run aggregate supply**. We learned about short term increases in GDP and how they are different from **long-run economic growth**, which is only sustainable when it shifts the long-run aggregate supply curve.

We learned about sustainable sources of growth, including changes in technology, population growth, or finding new resources, and compared **sustainable vs. unsustainable economic growth**. Finally, we ended with a discussion about the **debate over sustainability**, using the example of **non-renewable energy** to illustrate how it is difficult to assess public policies that discourage unsustainable sources of energy because the costs and benefits are different for various stakeholders.

Source: Adapted from Sophia instructor Kate Eskra.



TERMS TO KNOW

Economic Growth

Measure of the change in real GDP over periods of time; percent change in value of the sum of goods and services produced in a country's natural borders over a specified time interval.

LRAS

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Real GDP

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Sustainability

The ability to utilize resources in the current timeframe without sacrificing the opportunity for future use and without disturbance to the ecosystem.