

MODULE 40: ECONOMIC GROWTH IN MACROECONOMIC MODELS

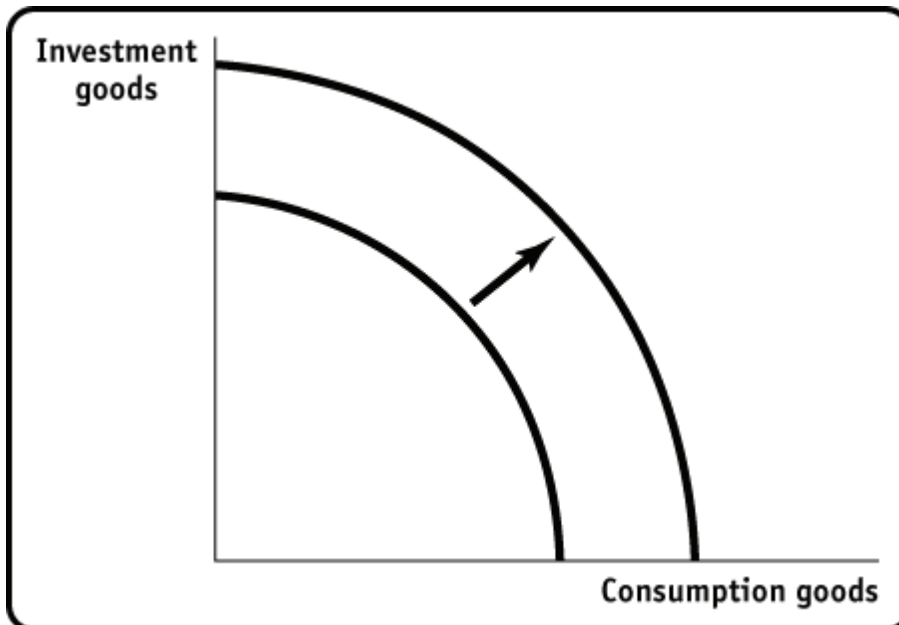
The purpose of this module is to incorporate the concept of economic growth in the models that have been developed throughout the course.

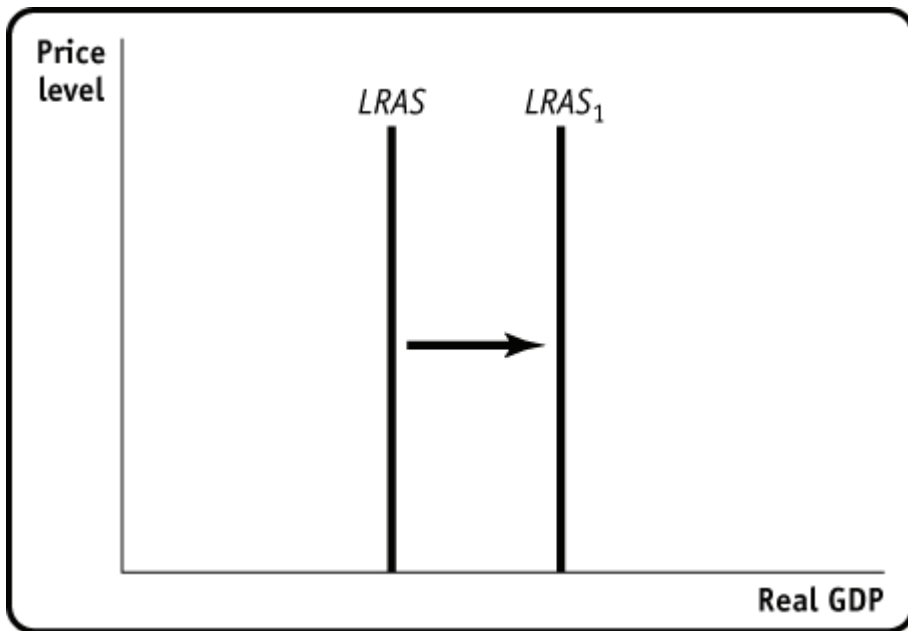
Student learning objectives:

- How long-run economic growth is represented in macroeconomic models.
- How to model the effects of economic growth policies.

Key Economic Concepts For This Module:

- Long-run economic growth is seen as either an outward shift of the nation's PPC, or an outward shift in the *LRAS* curve.
- Nations that invest in more physical capital, human capital, or technological R & D should see the PPC shift outward faster than a nation that invests primarily in consumer goods.
- Short-run economic fluctuations in the business cycle are seen as movements from within a fixed PPC, or as shifts in either the *AD* or *SRAS* curves.
- Key graphs are seen below.





Common Student Difficulties:

- If real GDP is increasing in the AD/AS model, students assume that the economy has experienced growth. This is only true if the LRAS curve has shifted outward.

In-Class Presentation of Module and Sample Lecture

Suggested time: This module can be covered in one hour-long class session. Much of this module is good review of previous models and highlighting the role of growth in those models so the instructor may even cover this material out of class in a review homework assignment.

- I. Long-run Economic Growth and the Production Possibilities Curve
- II. Long-run Economic Growth and the Aggregate Demand and Supply Model
- III. Distinguishing Between Long-run Growth and Short-run Fluctuations

I. Long-run Economic Growth and the Production Possibilities Curve

Long-run economic growth is the sustained rise in the quantity of goods and services the economy produces, as opposed to the short-run ups and downs of the business cycle.

One of the earlier models discussed in the course was the PPC.

Note: as a quick review, ask the students to choose any two goods/services and draw a PPC that illustrates increasing opportunity costs. They should be able to draw a concave PPC.

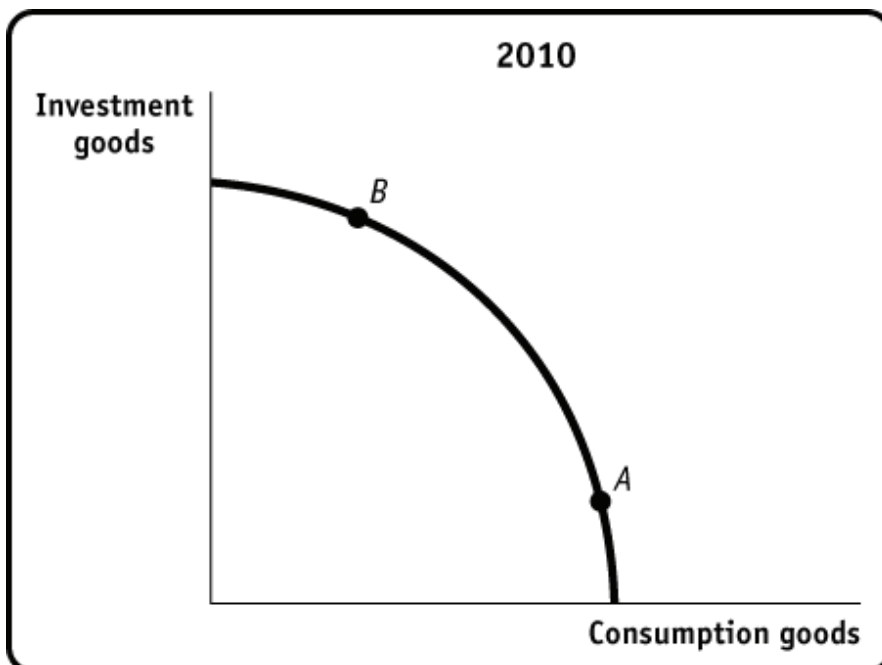
Then ask them to identify a point in the graph that is currently unattainable. How would this economy ever hope to reach this unattainable combination of your two products?

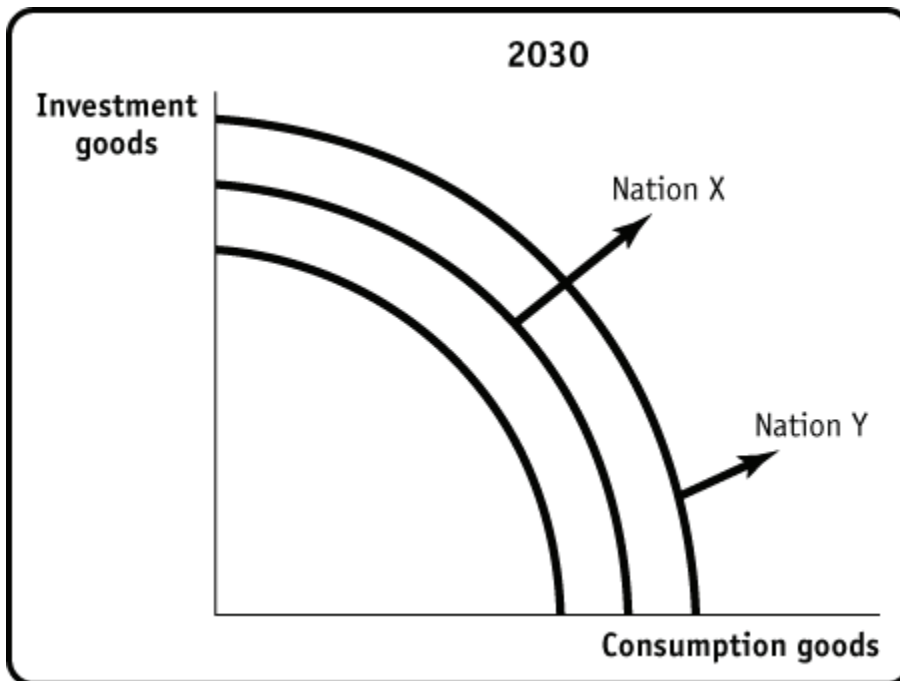
Create an example similar to the one given in the text. An economy can choose to produce consumption goods (food, clothing, entertainment) or investment goods (physical capital).

Example Two nations, nation X and nation Y, have the same PPC in 2010.

Suppose nation X chooses a point like A, where most of the resources are used to produce consumption goods.

Nation Y chooses a point like B, where most of the resources are used to produce investment goods. Where will these PPC's lie in 20 years?





Both nations will experience growth in the PPC, but Nation Y experiences more growth over time because investments in physical capital goods produce other goods.

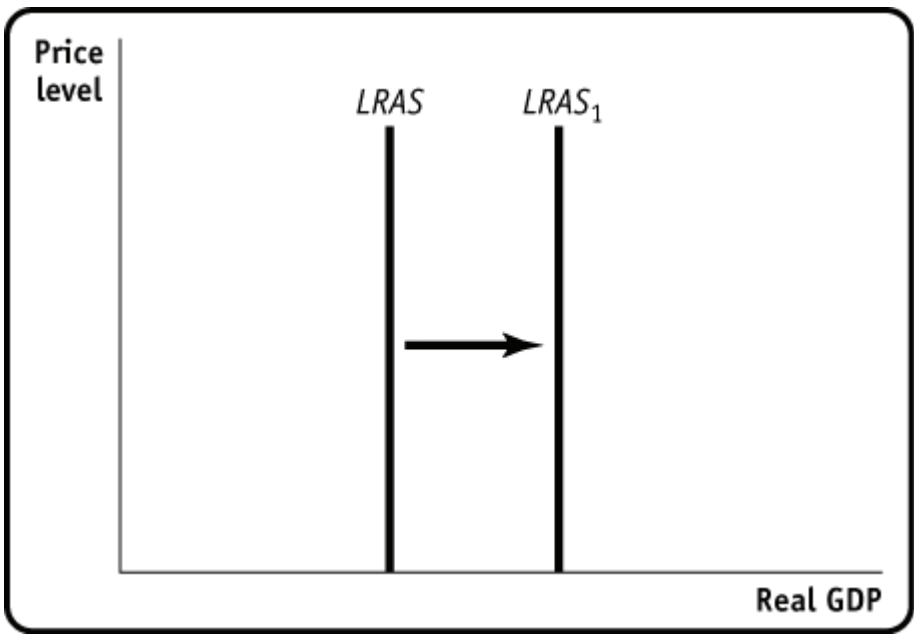
In fact, if a nation like Nation X focuses solely on consumption goods, their current stock of physical capital will begin to depreciate. Machinery used to produce other goods eventually wears out and becomes useless. If this were to happen the PPC could even shift inward.

II. Long-run Economic Growth and the Aggregate Demand and Supply Model

In the aggregate demand and aggregate supply model, the long-run aggregate supply curve shows the relationship between the aggregate price level and the quantity of aggregate output supplied when all prices including nominal wages are flexible.

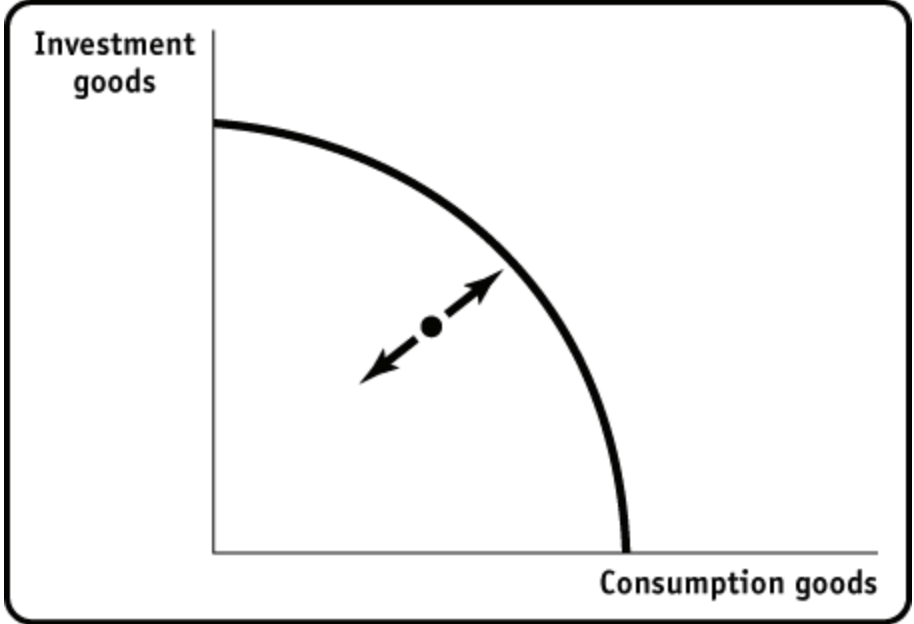
The long-run aggregate supply curve is vertical at the level of potential output.

While actual real GDP is almost always above or below potential output, reflecting the current phase of the business cycle, potential output is the level of output around which actual aggregate output fluctuates.



III. Distinguishing Between Long-run Growth and Short-run Fluctuations

Remember: Long-run economic growth is the sustained rise in the quantity of goods and services the economy produces, as opposed to the short-run ups and downs of the business cycle.



In the model of Production Possibilities, a short-run fluctuation is described as a movement along, or within the PPC.

As we showed above, long-run growth is a fundamental shift outward of the PPC.

In the *AD/AS* model, a short-run fluctuation of the business cycle would be seen as a shift of the *AD* curve or *SRAS* curve. For example, a recessionary gap is the result of a decrease in *AD* or a decrease in *SRAS*. The model predicts that in the long run the economy will adjust to full employment, which is identified by the vertical *LRAS* curve.

In-Class Activities and Demonstrations

Below are two teaching tips that may help students to remember the role of human capital and growth.

- **Human Capital** – Many students have a difficult time grasping what human capital is. Generally students understand that the purchase of a machine will add to the production of a firm, but have a more difficult time grasping that improvement in the knowledge or skills of a workforce will have the same effect. This is rather simple, but you can help your students better understand the term human capital if you use it frequently.

Ask students why they are in school. Most will respond “To get an education,” or “To get a diploma.”

Relate these answers to human capital.

Ask “Why do you want an education/diploma?” Typical responses will include “To go to college” or “To make more money.”

A diploma and a college degree are certificates of human capital.

As students near graduation (and near the AP Macroeconomics exam), frequently congratulating them on almost achieving their certificates of human capital will help them make this connection. If students do not do well on a particular test, suggest to them that they need to increase their human capital for the next test.

The familiarity of the term will grow if you use it in contexts that the students already understand.

- **Connecting Investment to Production Possibilities to Growth to *LRAS*** – Students need to make a connection between long-term growth and *LRAS*.

Remind students that any change in production possibilities will result in a change in *LRAS*.

Investment in physical or human capital will result in production possibilities increasing, thus *LRAS* shifting to the right.

Although a little simplistic, you might write on the board “Growth = *PPF* = *LRAS*” when covering this material.

When students see the word “growth” on the test, they will immediately look for things that make production possibilities expand (or shrink).