

Cooleconomics Principles of Economics

Model #5: AD/AS/LRAS Model, Part 2

Introduction

In the notes file *prin-model5-part1*, we used the AD/AS/LRAS model to forecast how events change equilibrium in the short run and long run. In these notes, we will do much more thorough forecasts of how many economic variables respond to events in the short run and long run.

Things that influence economic variables in the short run and long run

Below, let's list some important economic variables and the things that influence them. (This is mostly a review—but [note the comments in blue.](#))

i) Events which change Consumption and personal savings:

Very powerful

- a change in consumer confidence
- a change in household wealth
- a change in transfer payments
- a change in household tax rates

Powerful

- a change in national income (Y)

ii) Events which change Investment:

Very Powerful

- a change in profit expectations

Very Powerful in the short run, but only [powerful in the long run](#)

- a change in the money supply (usually by the Central Bank, affecting r)

Powerful

- a change in the average price level (P) (Affects money demand and r)

Less Powerful

- a change in national income (Y) (Affects money demand and r)

iii) Events which change the budget surplus (or budget deficit)

Very powerful

- lawmakers change the law to change in G, tax rates, or transfer payment

Powerful

- a change in national income (the tax base)

iv) Events which change the trade deficit (or trade surplus) and external debt:

Very powerful

- a change in spending on exports by foreigners, due to their changing incomes

Very powerful in the short run, but only [powerful in the long run](#)

- a change in the money supply (which affects r and exchange rates)

Powerful

- a change in the average price level (Affects money demand, r and exchange rates)

Less Powerful

- a change in national income (Y) (Affects money demand, r and exchange rates)

v) Events which change interest rates

Very powerful in the short run, but only [powerful in the long run](#)

- a change in the money supply by the Central Bank (Fed)

Powerful

- a change in the price level (Affects money demand)

Less powerful

--a change in Y (Affects money demand)

vi) Events which change unemployment

Very powerful

--a change in Y

Important note! In the long run, a change in the money supply by the Central Bank has equal power over interest rates as a change in the price level. (This means that one may cancel out the other one in the long run)

The Whole Enchilada: In depth analysis of Business Cycles Using the AD/AS/LRAS model

For our purposes, a business cycle occurs in the following sequence:

1st: The economy begins at rest in long run equilibrium (at point A on an AD/AS/LRAS graph). Then, an event occurs.

2nd: Short run effects: The economy is affected by the event over 6-12 months, as Y, P and other things change. (On an AD/AS/LRAS graph, the economy moves from point A to point B.)

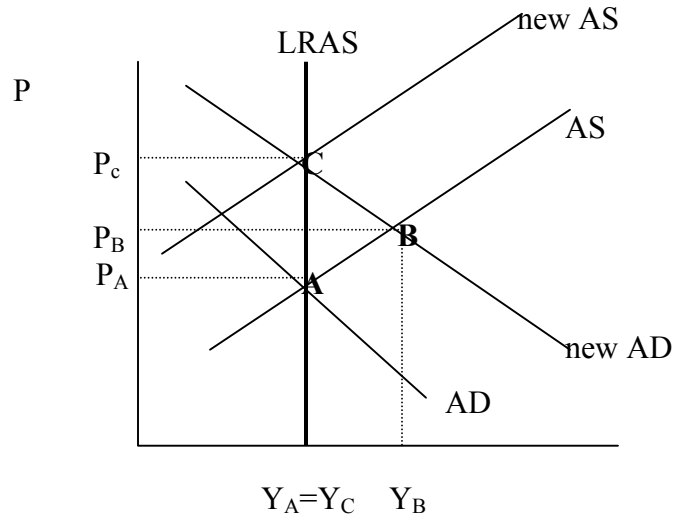
3rd: Transition: Over 12-24 months, other things (described in transitions 1-6 in the notes file prin-model5-part1) occur to bring the economy back to full employment real GDP. (On an AD/AS/LRAS graph, the economy moves from point B to point C.)

4th: The economy has returned to full employment real GDP.
(But the COMPOSITION of aggregate expenditures (the portion of Y attributed to C, I, G, and (EX-IM)) may be different from its original composition. More on this in later in the notes.)

There are tons and tons of different possible business cycles. It is impossible to review them all. Let's do a few to give you the idea. You should then be able to analyze all sorts of business cycles on your own.

Business cycle example #1: A permanent reduction in the personal savings rate. (No government intervention in the transition from short run to long run.)

Graph of business cycle example #1:



1st: The economy begins at rest in long run equilibrium. Then, households permanently reduce their savings rates.

2nd: Short run effects. (Movement from A to B on the graph)

Consumption rises, causing an increase in aggregate demand. The AD curve shifts to the right, and the economy moves from A to B. Y rises beyond its full employment level and P rises.

More short run forecasts (comparing values at point A to values at point B):

- Since Y is higher, unemployment is lower in the short run
- Since Y is higher (and neither tax rates nor transfer payments have been changed by government officials), disposable personal income is higher in the short run.
- Since prices are higher, money demand is higher, causing interest rates to be higher in the short run.
- Since interest rates are higher, investment is lower in the short run.
- Since interest rates are higher, the economy's currency appreciates in the short run.
- Since the currency has appreciated, net exports are lower (or the trade deficit is bigger) in the short run.
- Since Y , the tax base, is larger (and since government hasn't passed any laws changing tax rates or transfer payments), the budget surplus is larger (or the budget deficit is smaller) in the short run.

3rd: Transition: (movement from B to C on the graph)

Overworked workers demand and get higher wages, pushing up production costs—the AS curve shift up. Producers are forced to raise prices. Higher prices push interest rates up even higher. Higher interest rates cause investment to go down even more. Even the higher consumption is tempered by the higher interest rates (though it is still higher than its original level at point A). Producers respond to the now waning spending by reducing production and workers. The economy moves from point B to point C.

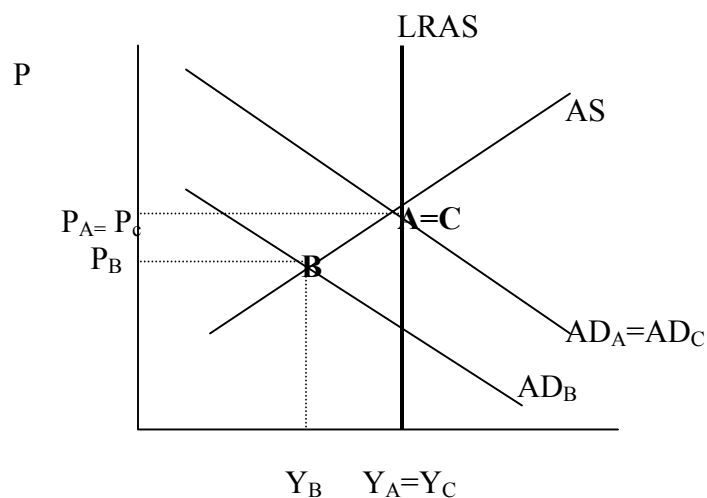
4th: The long run: Output returns to its full employment level, but inflation is higher.

More long run forecasts (comparing variables at the initial point, A, to the final point, C):

- Y has returned to its initial (full employment) level in the long run.
- P is higher in the long run
- Because Y is at its original level, unemployment is also at its original (full employment) level in the long run.
- Since Y is at its original level (and neither tax rates nor transfer payments have been changed by government officials), disposable personal income is at its original level in the long run.
- Since the savings rate is lower and Y is at its initial level, consumption is higher than its original level and personal savings is lower than its original level in the long run
- Since prices are higher, money demand is higher, causing interest rates to be higher in the long run.
- Since interest rates are higher, investment is lower in the long run.
- Since interest rates are higher, the economy's currency appreciates in the long run.
- Since the currency has appreciated, net exports are lower (or the trade deficit is bigger) in the long run.
- Since Y, the tax base, is unchanged from its initial level (and since government hasn't passed any laws changing tax rates or transfer payments), the budget surplus is the same size (or the budget deficit is the same size) in the long run.

Business cycle example #2: Reverse mania causes the stock market to crash and remain low for a long long time. Government intervenes by cutting household taxes to hasten transition from short run to long run

Graph of business cycle example #2:



1st: The economy begins at rest in long run equilibrium. Then, the stock market crashes and stays low for a long long time.

2nd: Short run effects. (Movement from A to B on the graph)

Consumption falls (the wealth effect), causing a reduction in aggregate demand. The AD curve shifts to the left, and the economy moves from A to B. Y falls below its full employment level and P falls.

More short run forecasts (comparing values at point A to values at point B):

- Since Y is lower, unemployment is higher in the short run
- Since Y is lower (and neither tax rates nor transfer payments have been changed by government officials), disposable personal income is lower in the short run.
- Since prices are lower, money demand is lower, causing interest rates to be lower in the short run.
- Since interest rates are lower, investment is higher in the short run.
- Since interest rates are lower, the economy's currency depreciates in the short run.
- Since the currency has depreciated, net exports are higher (or the trade deficit is smaller) in the short run.
- Since Y, the tax base, is smaller (and since government hasn't passed any laws changing tax rates or transfer payments), the budget surplus is smaller (or the budget deficit is larger).

3rd: Transition: (Movement from B to C on the graph)

Government cuts taxes, restoring consumption to its original level before the crash. The AD curve shifts back to where it was before the crash. Prices and Y return to their pre-crash levels.

4th: The Long Run: Output returns to its full employment level. Prices are unchanged from point A.

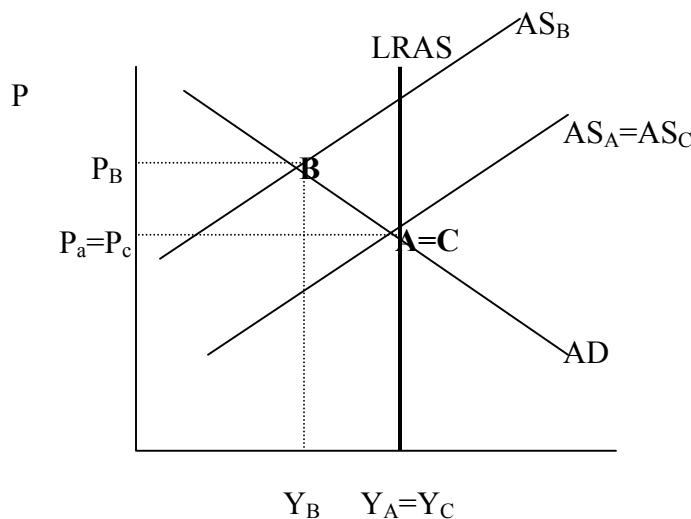
More long run forecasts (comparing variables at the initial point, A, to the final point, C):

- Y has returned to its initial (full employment) level in the long run.
- P is at its initial level in the long run
- Because Y is at its original level, unemployment is also at its original (full employment) level in the long run.
- Since Y is at its original level and tax rates have been cut by government officials, disposable personal income is higher than its initial level in the long run.
- Since prices are at their initial levels, money demand is at its initial level, causing interest rates to be at their original levels in the long run.
- Since interest rates are at their original levels, investment is at its original level in the long run.
- Since interest rates are at their original levels, the economy's currency is at its initial level in the long run.
- Since the currency is at its initial level, net exports are at their initial levels (or the trade deficit is at its initial level) in the long run.
- Since Y, the tax base, is unchanged from its initial level and since government has cut tax rates, the budget surplus is smaller (or the budget deficit is larger) in the long run.

More analysis: The proper response by the fiscal and monetary authorities may have prevented the Great Depression and all of its associated suffering.

Business cycle example #3: Government forces all employers to pay for all of their workers' health care costs. (No government intervention in the transition from short run to long run.)

Here's a graph of business cycle #3:



1st: Economy begins in long run equilibrium at A. Then, the unfunded government mandate drives production costs higher.

2nd: Short run effects (from A to B on the graph): Higher production costs force firms to raise prices. The AS (short run) curve shifts up. Firms respond by reducing output and laying off workers, so real GDP falls. The economy moves from point A to point B.

More short run forecasts (comparing values at point A to values at point B):

- Since Y is lower, unemployment is higher in the short run
- Since Y is lower (and neither tax rates nor transfer payments have been changed by government officials), disposable personal income is lower in the short run.
- Since disposable personal income is lower, both consumption and personal savings are lower in the short run.
- Since prices are higher, money demand is higher, causing interest rates to be higher in the short run.
- Since interest rates are higher, investment is lower in the short run.
- Since interest rates are higher, the economy's currency appreciates in the short run.
- Since the currency has appreciated, net exports are lower (or the trade deficit is larger) in the short run.
- Since Y , the tax base, is smaller (and since government hasn't passed any laws changing tax rates or transfer payments), the budget surplus is smaller (or the budget deficit is larger).

3rd: Transition (from point B to point C): The unemployed offer to work for less than their previous pay rates. Production costs fall back to their original levels, allowing firms to reduce prices to their original levels--the AS curve shifts back to where it was originally. Real GDP returns to its original level.

4th: The Long run: The economy is back at full employment. Workers have their health care “paid” by their employers, but workers’ wages have fallen. (Indeed, if we were using equations to do this model then we would see that workers wages fall by exactly the cost of the health care. So who really pays?)

More long run forecasts (comparing values at point A to values at point C):

- Since Y is unchanged, unemployment is unchanged in the long run
- Since Y is unchanged (and neither tax rates nor transfer payments have been changed by government officials), disposable personal income is unchanged in the long run.
- Since disposable personal income is unchanged, both consumption and personal savings are unchanged in the long run.
- Since prices are unchanged, money demand is unchanged, causing interest rates to be unchanged in the long run.
- Since interest rates are unchanged, investment is unchanged in the long run.
- Since interest rates are unchanged, the economy’s currency is unchanged on foreign exchange markets in the long run.
- Since the currency is unchanged, net exports are unchanged (or the trade deficit is unchanged) in the long run.
- Since Y , the tax base, is unchanged (and since government hasn’t passed any laws changing tax rates or transfer payments), the budget surplus is unchanged (or the budget deficit is unchanged) in the long run.