Y = I + C + G +NX

Exports: goods and services produced domestically and sold abroad.

Imports: goods and services produced abroad and sold to domestic consumers.

Net exports: The value of a nation’s exports minus the value of its imports.

Trade Surplus: When a country has NX > 0

Trade deficit: When a country has NX < 0

Net capital outflow (NCO): The purchase of foreign assets by domestic residents minus the purchase of domestic assets by foreigners.

The acquisition of foreign currency by domestic residents minus the acquisition of domestic currency by foreigners

Net lending to the rest of the world

NCO = NX

Net dollars spent by the rest of the world on domestic goods and services equals net dollars spent by the domestic country on assets from the rest of the world

U.S. imports $1 million dollars worth of goods from Canada.

NX = 0-1 = -1

NCO = -1

-1 Million dollars are going abroad

Y = I + C + G + NX

National savings = Y – C – G = I + NX = I + NCO

Trade deficit: NX < 0 => NCO <0

S = Y- C – G = I + NCO

NCO < 0 => I > S

Trade deficits allow far a greater level of investment than domestic savings alone.

Running a trade deficit means that a country is acting as a net borrower

These borrowed funds increase investment.

This increases the capital stock.

This increases productivity.

Exchange rates:

Nominal exchange rate €: the rate at which a person can trade the currency of one country for the currency of another.

How many units of foreign currency will $1 but?

Appreciation: An increase in the value of a currency as measured by the amount of foreign currency it can buy.

Depreciation: A decrease in the value of a foreign currency as measured by the amount of foreign currency it can buy.

Real exchange rate: The rate at which a person can trade goods and services in one country for the goods and services of another.

Real exchange rate = Nominal exchange rate \* domestic price level (P) / foreign price level (p\*)

= ep / p\*

Purchasing Power parity (PPP): A theory of exchange that says a unit of any currency should be able to buy the same quantity of goods and services in all countries.

The law of one price: A good should have the same price in all locations.

When the law of one price doesn’t hold opportunities exist for arbitrage.

Arbitrage: The process of taking advantage of differing prices for the same good in different markets.

Implications of PPP: You have $1 domestically you can buy 1/p goods. You could exchange this $1 for e units of foreign currency.

The foreign price level is p\*, so with e units of foreign currency, you could buy e/p\* goods. PPP says that 1/p = e/p\* => e = p\*/p.

The nominal exchange is equal to the ratio of the two price level under PPP.

Exchange rates should only change when price levels change.

e = p\*/p => % change in e = % change in p\* - % change in p

The domestic currency appreciates at a rate equal to the foreign inflation rate minus the domestic inflation rate.

Another cost of inflation: It depreciates the value of domestic currency. Domestic currency can now buy fewer units of foreign currency.

U.S. has inflation of 3%

U.K. has inflation of 1%

The U.S. dollar appreciates by -2% that is it depreciates by 2% as a result of inflation.

Limitations of PPP:

1. Some goods and services are difficult to trade internationally.
2. Goods produced in different countries are not identical

EX: Cadillac VS. BMW

% change in e 约等于 % change in foreign prices - % change in domestic prices.

Even without PPP1 hits is still a good approximation

Aggregate supply and demand:

Aggregate demand curve (AD): A curve that shows the quantity of goods and services that households, firms, the government and foreign customers want to buy at each price.

Aggregate supply curve (AS): A curve that shows the quantity of goods and services that firms choose to sell at each price.

Supply and demand models for single good markets, depend on the ability of consumers and producers to switch markets.

That’s not possible here.

Why is AD downward sloping?

Y = C + I + G + NX

Each of theses are components of aggregate demand.

G is fixed. The government bases its purchase on policy not the price level.

P and C: The wealth effect.

When price rise, each dollar that consumers buys less. When prices rise, the real wealth of households falls.

Less wealthy households consume less.

P goes up, C goes down.

P and I: The interest rate effect.

When prices rise, households need more money to spend on goods and services. Thus, these households have less money to lend out.

This decreases the supply of loanable funds.

This increases the interest rate.

It is more costly to borrow and firms invest less.

P , I .

P and NX: The exchange effect.

Real exchange rate = (nominal exchange rate \* domestic price level) / foreign price level

P , real exchange rate 

Foreign goods can now be traded for fewer domestic goods.

Exports fall because the foreign country now has to give up more for domestic goods.

Imports rise because domestic goods can be used to acquire more foreign goods.

P up, NX down.

AD is downward sloping.

P up, I down.

What shifts AD?

The price level does not shift AD.

Changes in price represent movement along an AD curve.

Changes in C:

Saving goes up, C goes down, AD goes down.

Taxes go down, C goes up, AD goes up.

Changes in I:

Technology goes up, I goes up, AD goes up.

Taxes go down, I goes up, AD goes up.

Money supply goes down, r goes up, I goes down, AD goes down.

Changes in NX:

Foreign income fall, NX go down, AD go down.

Changes in G: Direct effect.

G go up, AD go up.

Why is AS vertical in the long run?

Consistent with monetary neutrality and quantity theory of money.

In the long run, real output is determined only by the amount of labor, capital, natural resources, and the level of technology.

In the long run, prices don’t impact real output, because everyone adjusts to changes in the price level.

In the long run the economy produces at natural level of output: Production of goods and services that an economy achieves in the long run at the natural rate of unemployment.

What shifts long run AS?

Not a change in the price level. A change in the price level is a movement along an AS curve.

1. Labor

Labor supply goes up, long run AS goes up.

EX. Increases immigration

Natural rate of unemployment goes down, AS in the long run goes up

EX. Minimum wage goes down, natural rate of unemployment goes down, AS in long run goes up.

1. Capital increases, AS up
2. Natural resources increases, AS up

Can also depend on a country’s ability to import crucial natural resources.

4. Technology goes up, AS goes up

Why does AS slope upwards in the short run?

1. Sticky wages

When the price level increases, wages are slower to adjust. Since prices are higher but wages don’t increase, production is more profitable. So firms want to produce more.

1. Sticky prices

When the overall price level increases, some firms are not able to adjust their individual prices due to menu costs. The real price that these firms receive is smaller, so they produce less.

1. Misperceptions

A change in the overall price level may be mistaken for changes in relative prices.

Producers of a good, good x, they will notice changes in the price of x before they notice changes in other prices.

If firms believe relative prices have changed, they will tend to produce more of the relatively more expensive good.

y = yN + a (P - Pe)

y: real output

yN: natural level of output

a: A positive number that measures how much output responds to unexpected price level changes.

P: price level

Pe: expected price level

What shifts AS in the short run?

1. Changes in yN

EX. Changes to minimum wage

1. Changes in Pe

Pe up, AS down

Changes in AD or AS affect the equilibrium in the same way as changes in S or D in single good market.

Stagflation: A period of falling output and rising prices.

Theory of liquidity preference:

The interest rate adjusts to bring the money supply and money demand into balance.

Money supply: Set by the central bank based on policy.

Money demand: downward sloping

At higher interest rate, holding money causes you to forego more future consumption.

At r1, there is more money available than people wish to hold.

Households save this excess money.

This increases the supply of loanable funds, which decreases interest rates.

MS up, r down, AD up. Expansionary monetary policy.

MS down, r up, AD down. Contractionary monetary policy.

Monetary policy: Changes to the money supply made by the central bank.

The central banks usually select a target interest rate, and they adjust the money supply until the target interest rate is reached.

Fiscal policy: The setting of the level of government spending and taxation by policy makers.

G up or T down expansionary fiscal policy

G down or T up contractionar fiscal policy

Expansionary policy typically does not have a one to one effect on aggregate demand.

An increase in government spending of $1 will usually either increase AD by less than $1 or more than $1.

Why would expansionary fiscal policy have a greater than one to one effect?

Multiplier effect: The additional shifts in AD that result when expansionary fiscal policy increases income and consumer spending.

When the government spending it has a direct impact on AD.

The recipients of that spending will also spend some portion of this money on consumption.

Marginal propensity to consume (MPC): The portion of extra income spent on consumption.

MPC = change in consumption / change in income

If your income rises by $1, and you increase consumption spending by 70cents, you have an MPC of 0.7.

The multiplier process continues indefinitely.

EX. The government increases spending by $1 and MPC is 0.5.

The recipient of the $1 spends 50cents on additional consumption.

The recipient of that 50cents spends 25cents on additional consumption.

The total change in AD is 1+0.5+0.25+0.125

In general, a $1 increase in government spending will increase AD by 1+MPC+MPC2+MPC3+…

In general, for -1 < x < 1, 1 + x + x2+x3+… = 1/(1-x)

An increase in government spending of $1 increases AD by 1/(1-MPC)

The higher the MPC is the more impact each $1 of government spending has on AD.

Why would an increase in government spending have a less than one to one impact on AD?

The crowding out effect: when the government increases its deficit or decreases its surplus interest rates rise. r up, AD down.

Lags: Time between when a policy is enacted and when its intended effects occur.

Lags in monetary policy: Central banks can typically alter the money supply very quickly.

Firms and household often plan large changes in consumption or investment months in advance.

Lags in fiscal policy: changes in fiscal policy generally take a very long time to implement. These decisions generally must go through congress.

Fiscal policy often results in undesirable effects, because the situation has changed by the time it is implemented.

Automatic stabilizers: Changes in fiscal policy that stimulates AD when the economy goes into a recession without any deliberate by policy makers.

Phillies curve: A curve that shows the short-term tradeoff between inflation and unemployment.

U = Un + a(inflation – expected inflation)

Un: natural rate of unemployment

a: a number measuring how much unemployment changes in response to expected inflation.

What shifts the Phillips curve?

Long run: Changes to the natural rate of unemployment.

EX. Minimum wage

Short run: Changes to the natural rate of unemployment. Changes to expected inflation.

Expected inflation up, U up.

Long run Phillips curve is consistent quantity theory of money, as well as monetary neutrality.

When AS decreases, inflation occurs and output falls, unemployment rising.

Costs of fighting the inflation effects:

Sacrifice ratio: The % of annual output lost from reducing inflation by 1%.

Usually assumed to be ~5%.

Misery index: inflation rate + unemployment rate

Rational expectations: The theory that people use optimally all the information.

If expected inflation is high, people must have a good reason for predicting high future inflation.

If government were to credibly signal low inflation, expected inflation would fall.

SR Phillips curve shift left.

Some argue that the target inflation rate should be zero.