

Business Analysis for Engineers
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Lecture -40
Macroeconomic Variables


Good morning. In the previous classes on Economics, I have told that, the important measure, that signals a strong or a weak economy, lies in the wealth, that a particular nation or economy is able to generate. And, while measuring the wealth, the qualitative nature of growth, lies in the output that the economy is able to generate. And, that is why, I was insisting, that it is the output, that actually measures the real wealth of an economy, then just the circulation of money.

However, that does not mean, that money is not important. It is that one particular form of wealth, that is essential, for any economy to function. So, although output is more important than wealth, in the study of Macroeconomics, we need to understand, the importance of money. Because, that is one particular form of wealth, that actually ties together, various Macroeconomic Variables. Let us understand, why.

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Money

- Although output is more important than wealth in study of macroeconomics, one particular form of wealth is very important – Money
- Why?
- Fuel for economic growth
- Facilitates exchange of goods and services – complicated trade in the absence of money
- From Barter system to currency –
- Every country has its own currency
- Dollar as universal currency – USD History



Now, if you ask the question, why is that the study of money, is very important. There are, a number of reasons for that. As I said before, it is money that actually acts as the fuel, for any economic activity. And, for the economic activity to grow, or if an economic activity falls, it is

because, either there is money, or there is no money. So, we must understand, that it is the fuel, that actually runs the economic engine. Now, in the absence of money, let us think, how an economy will function.

An economy functions because, people and institutions, buy or sell goods and services. And, the transaction that involves, the buying and selling, gets complicated, in the absence of money. Let us assume that, there is no money in an economy. And that, I am a farmer. And, I grow grain. And, once the cultivation period is over, I will have to sell the grains. Then, I will have to look for a purchaser, who is willing to accept grains, and in return, give me something that is useful for my personal consumption, in the absence of money.

So, if I feel that at that point of time, that I need furniture to build a house, I am willing to give my grain to somebody, who is willing to exchange grain, in return for furniture. Likewise, I need, let us say, some basic necessities, for domestic survival. So, I need to just look for somebody else, who is willing to again, accept the grain that I have, in exchange of some of the domestic necessities, that I need. So, this form of exchange between products, to secure an alternate product, gets a little complicated. It does not mean, it is not possible, but it is little complicated.

Now, we need to link, all such products and services, and facilitate a system in which, a barter system, that I explained before, is replaced by an easy exchange of goods and services, that can be purchased and sold, by a common currency, a common unit, in this case, is money. So, when we need to migrate from a barter system, to a currency system, everybody needs to accept one form of currency, in exchange of goods and services. So, I have grains with me, I just sell it to somebody else, who is ready to give me, money for that.

And, with that money, I purchase furniture, I purchase domestic supplies, that I need for my domestic survival. So, an exchange, a migration from, a complicated barter system, wherein goods were sold and purchased, by exchanging goods and services, to a system where, the same thing happens, but in return, it is the currency, that gets transacted. As a result of which, today, we see every country has its own currency. And, it is that currency, that is used, to facilitate trade, that facilitates the exchange of goods and services.

And, every country's currency, the strength or weakness of a country's currency, is measured against, a universal currency. And, in today's perspective, the US Dollar is the universal currency. And, there is a history to the emergence of US Dollar, as the universal currency. I am not just going to go, and explain. But, it is enough for you to understand that, the US Dollar, is accepted as the universal currency, against which, every country's currency, strength or weakness is measured, relative to.

And, if we need to import or export, it is the Dollar, that acts as the common denominator. In fact, after the world wars, it was the American economy, that actually took a great risk because, we needed to have a common currency. And, the American Government, decided to pledge its entire Gold reserves, which actually, if these Gold reserves were reduced, to a rope of a half inch thickness, it was enough to go around the world, twice.

So, that is the extent of the Gold reserve, that the American Government had at that point of time. And then, it decided to pledge the entire Gold reserves, to hedge the US Dollar. So, the US Dollar, at that point of time, for one ounce of Gold, 35 Dollars was the equivalent amount. So, that was the risk, the American Government took, at that point of time, to ensure, that the US Dollar is accepted, as a global currency. And, anybody with Gold, let us say, one ounce of Gold if you give, you get 35 Dollars.

So, this is the history of how, the US Dollar gained significance, as the global currency. And, of course, after the Vietnam war, and other economic activities, then it was decided that, no longer the American Government could offer to pledge its Gold reserves, to maintain the relative strength of the US Dollar. It decided to take, the Gold reserves out. And then, came the Washington consensus, and all these things, that were the freely floating currencies of individual nations, against the US Dollar, all of this happened.

But, it is enough for you to understand, that no longer was, the American Gold reserves protecting, the strength of the US Dollar. Then, in this free market economy, it was the relative strength of each country's currency, vis-a-vis, the USD currency, which is still the global

currency. That was the one, that decided, whether a particular country's currency, is gaining strength, or losing strength, vis-a-vis, the American Dollar. Now, let us get back, to the discussion on money. It is enough for you to understand, that for global trade, we need US Dollars

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Money linked variables

Money affects many economic variables of which 3 macroeconomic variables are important – interest rate, exchange rate & inflation (aggregate price level)


All these 3 in a way constitute price of money

Interest rate –
cost of holding money or cost of investment funds

Many prefer receiving Rs.100 now than Rs.100 cash one year from now – this trade-off is Time value of money

Interest rate vs RoI – consumer/business borrow

Interest rate rises – money is expensive, consumerism or business investment drops



Now, I said, the understanding of money is very important. Because, the money affects many economic variables. And, I am going to just concentrate on, 3 Macroeconomic Variables, namely the, interest rate, the exchange rate, and inflation. How money affects, these 3 Macroeconomic Variables. Because, to me, all these 3, in a way constitute, the cost of money. Let us see, how. Let us begin with, interest rate.

Now, interest rate, a simple definition is, cost of holding money, or the cost of investment funds. Suppose, I decide to put, some deposit in a bank. The return that I get, is measured by the interest rate, that the bank is willing to give, on the deposits, that I have with the bank. Or, suppose, I need to borrow money, from the bank, as a business. The cost of borrow, is measured, in terms of the interest rate, based on which, I will have to pay, interest as an expense, for borrowing the money from the bank.

This is the simple definition of interest rate. But, if you look at the, consumption of money. Now, many would prefer, receiving Rupees 100 now, then the same Rupees 100, one year from now, as

cash. The reason is, the value of money itself, will change over a period of time. And, that is called, the time value of money. And now, what decides the value of money, is the interest rate. Today, if I have 100 Rupees, I am not sure whether, one year later, the value of this 100 Rupees, is the same 100. Whether, it has increased, or decreased, depends on, the prevailing interest rate.


And, it is this interest rate, that actually makes businesses or individual consumers, to take decisions, whether they need to borrow now to consume, or borrow now to invest in a business. If I have a business proposal, in which I feel that the return on investment, that I am going to get on the business proposal, is more than the prevailing interest rates, then I borrow, and put that money in my business. As a result of which, I earn returns. The returns are more than the interest rates, so I am able to compensate, for my interest expense.

So, it is this interest rate, that is actually, the cost of money. Now, if interest rate rises, it means the cost of money rises, it means money is getting expensive. Now, if money is getting expensive, then there is a direct impact on consumerism. So, I would not be borrowing more, to engage in consumerism, nor our businesses interested in borrowing, at higher costs. As a result of which, business investment drops. So, we need to understand that, interest rate is one Macroeconomic Variable, which is affected by, the excess or the lower supply of money.

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Exchange rates

- Exchange rate – price of one currency with respect to another
- Rs.50: USD 1 – Rupee-Dollar Exchange rate is 50
- Currency depreciation & appreciation
- Currency depreciates – good news for exporters, foreign tourists and bad for importers as foreign purchases become expensive thereby reducing overall purchasing power
- Appreciates – good for importers and outbound tourists



The second variable, that we need to understand is the, exchange rate. As, I said before, it is the

price of one particular currency, with respect to another. And, as I said, the US Dollar is the global currency. Usually, the strength of a currency is measured, against the US Dollar. In this case, let us for example say that, the Rupee Dollar exchange rate is 50. Which means, for every Dollar, Rupees 50 is the value. Now, either a currency, will strengthen or weaken, against the US Dollar.

It means, either the currency, appreciates, or depreciates. Now, for an economy, an economy as I said before, is an aggregate of, different types of economic activities. There is agriculture. There is service. There is industry. And, within this, there is exports, there is imports. So, the movements in the currency, vis-a-vis, the US Dollar, measured as, whether it is depreciating or appreciating, affects different economic players, in different ways. Let us for example say, understand what happens, when a currency depreciates.

It means that, if today, the value of Rupee, against the Dollar is like, for a Dollar, as I said is 50 Rupees. And, if the currency depreciates, it means that, the Rupee is losing its value, vis-a-vis, the US Dollar. Now, how is it going to affect different economic players. It is good news for exporters. Because, for every Dollar of business, that they export, they are going to get, more Rupee denominated revenue. Because, no longer is Rupees 50, let us say, it is 60 Rupees. So, for every Dollar exports, instead of receiving 50 Rupees, they receive 60 Rupees.

It is good news for foreign tourists, who are coming here to India. Which means, for a Dollar that they give, in return, they get more Indian currency, that they can spend on Indian soil. But, it is bad for importers because, the foreign purchases, now become expensive. Thereby, it reduces the overall purchasing power. Which means, today, if I am paying 50 Rupees for a Dollar purchase, I have to shell out more. Which means, I will have to pay Rupees 60, for the same Dollar purchase, if I am importing goods and services.

As a result of which, a currency depreciation, is bad news for importers. Now, contrary to that, if a currency appreciates, then the exact opposite. It is good news for importers. Suppose, I want to go on a foreign vacation. I need to purchase Dollars. Which means, I will have to pay less, than 50 Rupees, to purchase one Dollar, if my currency appreciates. So, as somebody, who wants to


go on a foreign vacation, it is good news for me.

So, the fluctuations in the exchange rate, because of which, the domestic currency, either loses or gains strength, vis-à-vis, the US Dollar, affects different business enterprises, different economic activities, in different ways. It is based on, who the economic entity is. Whether, it is an exporter, or an importer, or a foreign tourist, or an Indian, who wants to go abroad, on vacation. So, different stakeholders, are affected, different ways, because of fluctuations in, exchange rate. And, an exchange rate, is again affected by, money.

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Inflation

- Aggregate price level, also called price deflator - average price of all goods & services
- Not price of one good but a weighted average price rise of a basket of goods
 - housing, clothing, food, medicine, etc.
- Price of goods/services in terms of money
- In healthy economy – price keep changing all times – some rise, some fall
- Inflation – across the board (almost all) price rise
- Deflation – across the board price fall
- What happens to value of money with price change?



The third Macroeconomic Variable is the, inflation. Now, inflation at a very broad sense, is the aggregate price level. It is the average price of all goods and services. It is not just price of one good. It is a weighted average. Inflation actually measures, the weight. If I say 6%, what does it mean. It means, it measures the weighted average price rise, of a basket of goods, when compared to what it was before.

So, it is actually the basket of goods and services, that are included in calculating the weighted average price. It is symbolic of the, nation's economy. It would include housing, it would include food prices, medicine, oil, clothing, all this. So, it is that price of goods and services, expressed in terms of money, which either rises, or goes down, is actually inflation.

And, if you look at, a functioning economy, a healthy economy, you would find that, price keeps changing all times. Sometimes, the price may rise. Sometimes, the price may fall, sometimes, price may rise, for particular commodities. Price may fall, for certain set of commodities. But, if let us say, there is a prevailing inflation, in the economy. Then, we would find across the board, almost the price of all the goods and services, will increase.

And, if it is deflation, likewise across the board, the price of all the goods and services, will fall. Now, what happens to the value of money, with price change. I will just give you an example, for you to understand. Let us say, I have a house, which I purchase 10 years back, for 100,000 Rupees, 1 Lakh. And today, the value of the house is, 10 Lakhs. Now, people call this as the, value of the house. The house has remained the same.

I purchased it for 1 Lakh, 10 years back. And today, it is 10 Lakhs. The value appreciation in the house, people take it as, as if the house has acquired some value. Actually, it means that, 10 years back, with 1 Lakh of Rupees, I was able to purchase this house. And, 10 years later, with the same 1 Lakh of Rupees, I am not able to purchase this house. It essentially means, that the purchasing power of the money, has reduced.

Of course, people think that, the value of the house has increased. Not disagreeing to that. We must understand that, with the same 1 Lakh, the purchasing power of the same house, has reduced by $1/10^{\text{th}}$. Which means, the value of the money, has reduced. We will understand about this, as we go further in understanding, the concepts of inflation. Now, there are actually, two reasons for inflation.

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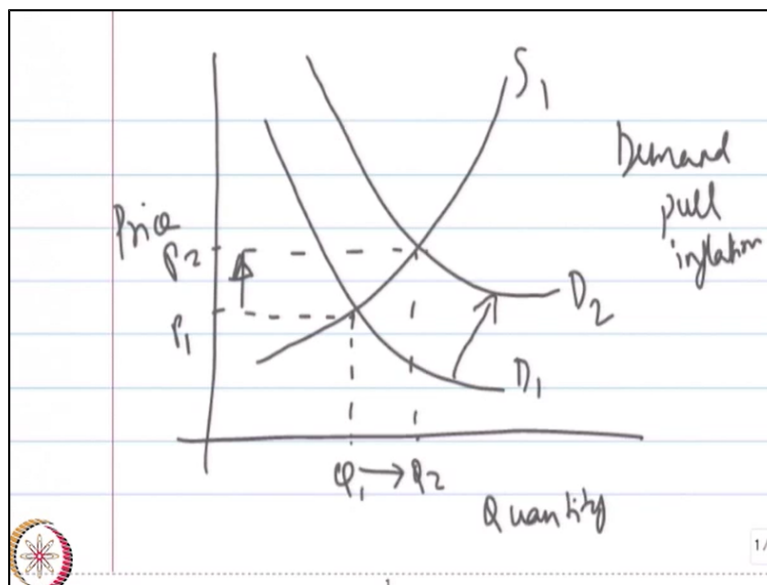
Two reasons for inflation

- Demand pull inflation – total demand is more than supply. This is usually due to excess money supply due to a loose monetary supply
- Cost push inflation – prices rise even when economy is not operating full capacity. This is due to crop failure, currency devaluation, expensive imports, wage increases but no productivity increase, etc.
- Demand pull addressed by tighter fiscal & monetary policy
- Cost push by cost efficiency & higher productivity
- Price controls to rein in inflation



One is the, demand pull inflation. A demand pull inflation is an inflation, in which there is more demand, than the supply. Typically, such a situation will arise, when there is excess money supply, due to a loose monetary policy. I will explain, what it is, later. But, let us understand, through a graph, how the demand pull inflation can be explained.

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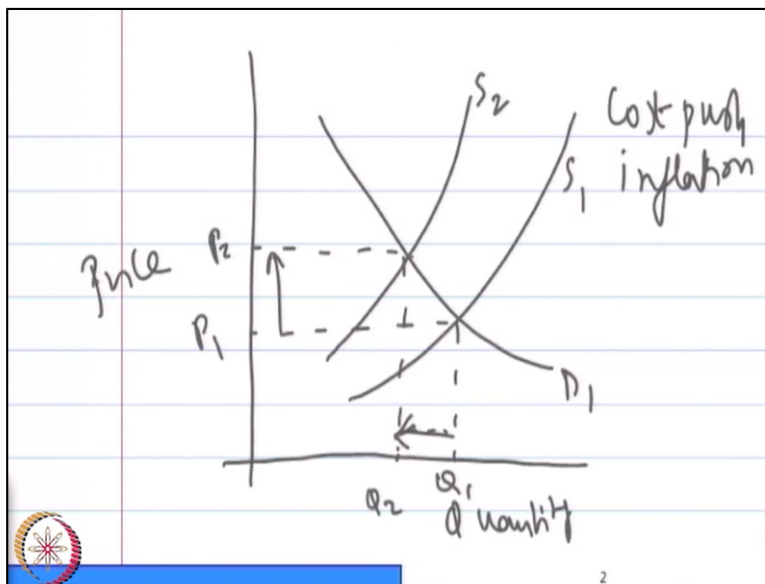
Suppose, as I said before, a demand pull inflation normally resourced from excess demand, generated by a loose monetary policy, where there is less supply, more demand. So previously, we know that, our supply demand curve is like this. So, this is the price, this is the quantity. And, I am trying to explain, the demand pull inflation. And, this is because of, an increase in demand.

So, notice that, the demand has increased, from D1 to D2. An inflation means, rise in price.

So, you notice that, the price has increased from, P1 to P2. So, as demand shifts from D1 to D2, we notice that, the price shifts from P1 to P2, with no change in supply. Because, volumes cannot increase sufficiently, to accommodate additional demand, especially at a time when, the economy is functioning at its maximum capacity. So, this is an inflation, that is called, a demand pull inflation, which is basically, the demand is more than supply, and it is because of the excess money supply.

And, this additional demand, is not being compensated by additional supplies, because already, the economy is at maximum capacity. As a result of which, the volumes cannot increase sufficiently, to meet the increase in demand. As a result of which, you here notice, this price increase, P1 to P2. So, this is the demand pull inflation. Now, just as we have, demand pull inflation, there is also another reason for inflation, which is the cost push inflation. Again, here in cost push inflation, the prices increase.

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I will again, try to explain this, using a graph, so that you will understand, that a cost push inflation is, prices rise even, when the economy is not operating at, full capacity. The reasons for that could be, either due to a crop failure, or currency devaluation, or imports getting expensive, or a wage increases, but there is no corresponding increase in productivity. So, these are all

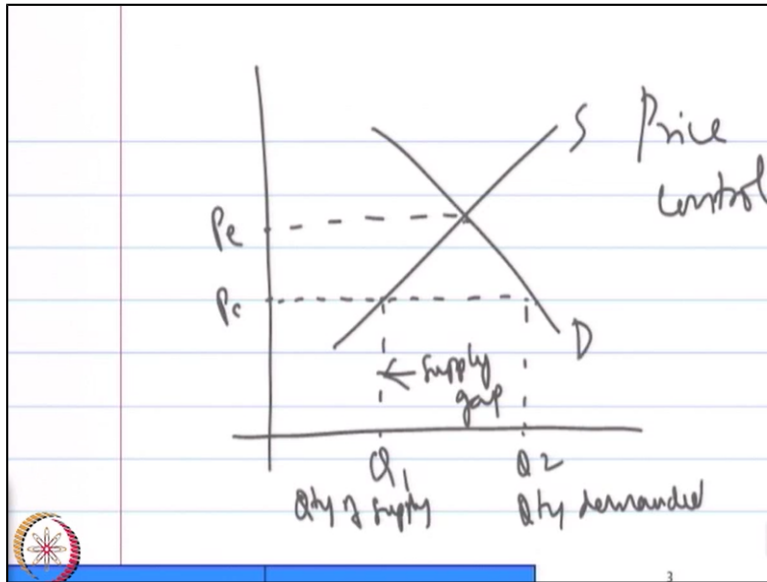
different reasons, for price increase, as a result of cost push inflation. Because, the economy is not at maximum, but still prices keep increasing.

So, what does that mean? So, I will just explain it again, using a graph. Price, quantity, to explain cost push inflation. What happens here is, demand, supply, for this one, the support price is, P_1 , Q_1 . Now, let us say, this is the new supply. As a result of which, P_2 , Q_2 . The product supply curve, shifts upward due to, higher costs. And, as a result of which, this one drops because, as cost increases, the output that is produced, will decrease. Because, we cannot produce, the same level of output, at higher input costs.

And, this is what you see, in this graph. As a result of which, the output reduces. And then, that hits the demand curve, at this price. You will notice that, P_1 has increased from P_2 . This explains, the cost push inflation, which results in price increase, as a result of increasing costs, and at a time when the economic activity, is not at its full capacity. Now, if there is a demand pull inflation, it is usually handled, by a tighter fiscal and monetary policy, that tries to control the availability of money.

And, this we will understand, when we talk about, the fiscal and monetary policies. A cost push inflation is handled, by ensuring, that there is either cost efficiency, either you reduce the cost of inputs, or increased productivity, or try to produce more. This is the way in which, we will handle, cost push. Now, instead of resorting to such, economically accepted ways of handling inflation, there is also another method by which, a direct intervention by the Government, through price controls, can also be a temporary measure, to address inflation.

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Here, let us say, this is the demand, supply. And, this is to explain, price control. This is the existing price. The Government occasionally resorts to price control, to prevent large price increases. But, price controls are basically, as I told you, temporary palliatives, to price surges of products and commodities. Now, if the Government says, this is the price, at which, things have to work, then there is this, supply gap. Because, this is the quantity of supply.

This is the, quantity. This becomes, the quantity demanded. So, price controls are short-term, and very counter-productive in a long term, because they discourage production, and worsen the gap between demand and supply. But, this is very rarely, an accepted form of, trying to combat inflation. Usually, inflation is handled by, a fiscal or a monetary policy, or attempts to be more cost efficient, and increase productivity.

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Money supply vs 3 variables

- Changes in money supply affects these 3 variables
- Determination of interest rates, exchange rate is a complex subject
- Money supply increases –
 - Interest rate falls – Why? Just as price of goods fall if there is more supply, more money means fall in interest rate - more oil, prices fall
 - Exchange rate depreciates – law of s/d- demand for US goods all over, demand for dollar - USD appreciates. If USD supply increases relative to other currencies, USD depreciates
 - Increased money supply is inflationary – more money, more goods – price increase

So, this is about, inflation. The next, we know that money affects, three variables as I said before, the interest rate, the exchange rate, and inflation. And, I call that as, the three prices of money. One which is relative to time, which is the interest rate. The other, it is relative to a foreign currency, which is the exchange rate. And, a price, that is relative to all goods and services, that is the aggregate price level, or the inflation.

Now, how the quantity of money, affects all these three variables, is an interesting subject matter of study. We need to understand, how excessive money, or presence of limited amount of money, affects interest rates, exchange rate, or aggregate price level, or vice versa, as well. Now, let us first begin with, interest rates. Now, we need to understand that, changes of money supply, affects interest rate, exchange rate. And, the way in which, it changes, that is a complex subject of study by itself.

But, I will just try to explain at a very, very fundamental level, as to how money supply increases. If, let us say, money supply increases. What happens to interest rates? Now, suppose, money supply increases, the interest rate falls. Why? It is just as, if there is more number of goods, what happens to the price of the goods? It will fall down. Because, the price of good will fall down, if there is more of it available in the market. Likewise, more money means, the price of money in this case, is an interest rate, it will fall down.

Let us say, there is more oil, in the global market, the price of an oil barrel will fall down. Likewise, if there is more amount of money in circulation, then the cost at which, you need to purchase the money will, fall down. If there is more money, what happens to exchange rate. Let us understand the law of supply and demand, to explain this. Let us for example, say that, there is a policy, where for every automobile, I am just taking an automobile industry, to explain this, how, what happens to exchange rates.

Let us say, if every car manufacturer is supposed to source engine, from a particular manufacturer, in the US. As a result of which, the demand for that particular engine, will keep on increasing. And, if I need to purchase, that particular engine, from the US, I will have to have enough US Dollars, to purchase that engine. As a result of which, the demand for the US Dollar, will increase. So, the US Dollar will appreciate. So, what does it mean? My currency will depreciate.



So, this explains how, the demand for the US Dollar, will cause a depreciation of other currencies, relative to the US Dollar. The third thing is, increased money supply is also inflationary. What do I mean by that? It means that, if there is more money, without a proportionate increase in the output, means, more money is chasing, the same amount of goods. As a result of which, there is price increase. That is why, I said, increase in money supply is inflationary. More money chasing, fewer goods, results to price increase.

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So, there is a standard relationship, that we need to understand. The relationship is, if there is

Money: Standard Relationship

- Increase in Money supply
 - Interest rates fall
 - Exchange rate depreciates
 - Price level rises (inflation)
- Symmetry in relationship ensures that when there is decrease in money supply
 - Interest rates rises
 - Exchange rate appreciates
 - Price level falls (deflation)



increase in money supply, the interest rates will fall, the exchange rate will depreciate, or the price level will increase, or there is inflation. And, there is a symmetry in this relationship. As a result of which, the opposite, the contrary is also true. That is, when there is a decrease in money supply, you will find that the interest rate rises, the exchange rate appreciates, and price level falls. It is called, deflation. So, this is how, there is a relationship between, the supply of money, and the interest rate, exchange rate, and inflation.

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Nominal vs Real Interest

- Nominal interest rate – what banks quote or u read in news paper
- Example – loan of Rs.1,000 interest is 5%
- Suppose inflation is 3%
- Nominal interest is $5\%+3\% = 8\%$. Real interest rate = 5% only
- Cash to Cow Loan – Example
Borrow 10 cows and return 11 cows
Borrow cash instead and return cash (same 10 to 11 cows)
Cost of 1 Cow during time of borrowal – 1,000
Price increase is 10%. Cost of cow = 1,100
During repayment time, For 11,000 only 10 Cows can be bought
No interest at all!!!

Now, let us dissect this, to understand it better, by beginning with, interest rates. Now, what do I mean by, interest rate. What do you see in the newspaper, what do you hear in the news, that is the nominal interest rate. The rate that, the bank quotes, the rate that you see in the newspaper, these are all, nominal interest rates. Suppose, the bank says that, the cost of a loan is 5%. It means, the nominal rate of interest, for the loan is, 5%. Now, let us say, inflation is 3%.

Let us assume now, the inflation is 3%. Now, what will happen to the, nominal interest rate. It is $5 + 3\%$. I had explained this concept before, when we are handling GDP, it becomes 8%. So, the real interest rate is 5%, only. The real interest rate is 5%. The resultant nominal interest rate is, to cover the inflation of 3%. I will just give you a small example, for you to understand this. Let us say, there were two people. And, one wanted to borrow cows, from the other.

Now, the understanding was, I borrow 10 cows from somebody, who was willing to lend me 10

cows. And, 1 year later, I was prepared to give, 11 cows in return. So, measured by way of the number of cows, borrowed, and returned, the cost of this transaction was 10%. Because, from 10 cows, I had to return him, 11 cows. And this, I did 1 year. At the end of the year, I gave back 11 cows. And, the cost of borrowing was, 10 %. Now, next year also, I wanted to do the same transaction. But, the difference was, instead of cows, I said, I will borrow cash, and return cash. Right.


So, let us say, the cost of 1 cow, at the time of borrowing was, Rupees 1000. So, which means, I borrowed 10,000. And, at the end of 1 year, I had to give, 11,000. Because, the cost of interest for the same borrowing was, 10%. Now, let us say, during this period, there was a price increase, of let us say 10%. And, the cost of the cow, at the end of 1 year was, 1100. It was 1000 before, and 1100. So, during repayment time, since I borrowed in cash, and I were agreed to repay in cash, I am repaying 11,000 Rupees. Right.

Now, with this 11000 Rupees, when I receive, let us say, I am the person, who loaned out 10,000 Rupees. And, at the end of one year, I received 11,000 Rupees. And, with this 11,000 Rupees, if I decide to buy 10 cows, how much will I have to spend? I will have to spend, the entire 11,000. Reason, the cost of the cow, was no longer 1000. Inflation has resulted, in an increase, in the price of cow. As a result of which, now, with the same 11,000, I can buy only 10 cows. Does it mean, that there was no interest at all, in this transaction. It appears to be.

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Effective real rate of interest

- What should be the nominal interest rate to gain effective real interest rate of 10%, that is with regard to output and not money
- Answer – 21%. At 21%, repayment in 12,100 (10,000 principal + 2,100 interest)
- $2,100 = 1,100 + 1,100 = \text{inflation } 10\% + \text{Real interest rate } 10\%$
- Focus is on real and not nominal rates - Output, not money matters most
- In assessing cost of borrowing, real rates is more important than nominal rates
- Money growth vs Interest rates – ambiguous relationship



money supply, short-term interest rates are expected to fall. I am talking about, nominal interest rates. However, growth in money supply, particularly if it is substantial, may also spark, some inflationary expectations. Right. So, inflation may rise. Because, if there is a substantive increase in the money supply, there is inflation. And, if inflation takes hold, short-term nominal interest rates will eventually rise, as well.

And, because of these conflicting pressures, the ultimate effect on the interest rate, and money supply, because of this large money supply. If we need to understand the relationship, it gets a little ambiguous. Because, as explained before, there is a pressure on, the real interest rates. Real interest rates, are very likely to fall. So, what happens to the nominal rate. Long term nominal rates may fall, rise, or stay the same, depending on what happens to the, inflationary expectations.

This relationship, is a little complicated. Because, as I said before, if you look at this, if there is an increase in money supply, short-term interest rates, will fall. And, if there is more increase in the money supply, the inflation will rise. As a result of which, if the short-term nominal interest should also have to rise. And, because of this conflicting pressures, the ultimate effect on the nominal interest rates, of a large increase in money supply, is a little ambiguous.

Now, this is a little complicated subject, to understand. But, we need to understand that, the relationship between, money supply and interest rate, is important, for any Macroeconomic decision-making. And, the rate at which, the interest rate changes, must also be understood, from the perspective of the inflation. Because, we are more interested in the real interest rate, and not the nominal rate of interest, as I explained before, in the examples of the cows.

In assessing the cost of borrowing, we should account for inflation. Because, it is the real rate, that is more important, than the nominal rates. So, now, this is the first Macroeconomic Variable, that is the interest rates. The next class, I will also discuss about, the other Macroeconomic Variables, namely the exchange rate, and how the exchange rate behaviour, also changes with inflation. Just as interest rate behaviour, changes with inflation, how exchange rate also changes, with inflation. Thank you.