MANAGERIAL ECONOMICS

INFLATION: THEORIES AND CONTROL MEASURES II

Topic 4 – Part II

ITM BUSINESS SCHOOL
PGDM 2021 - 2023 - SEM I
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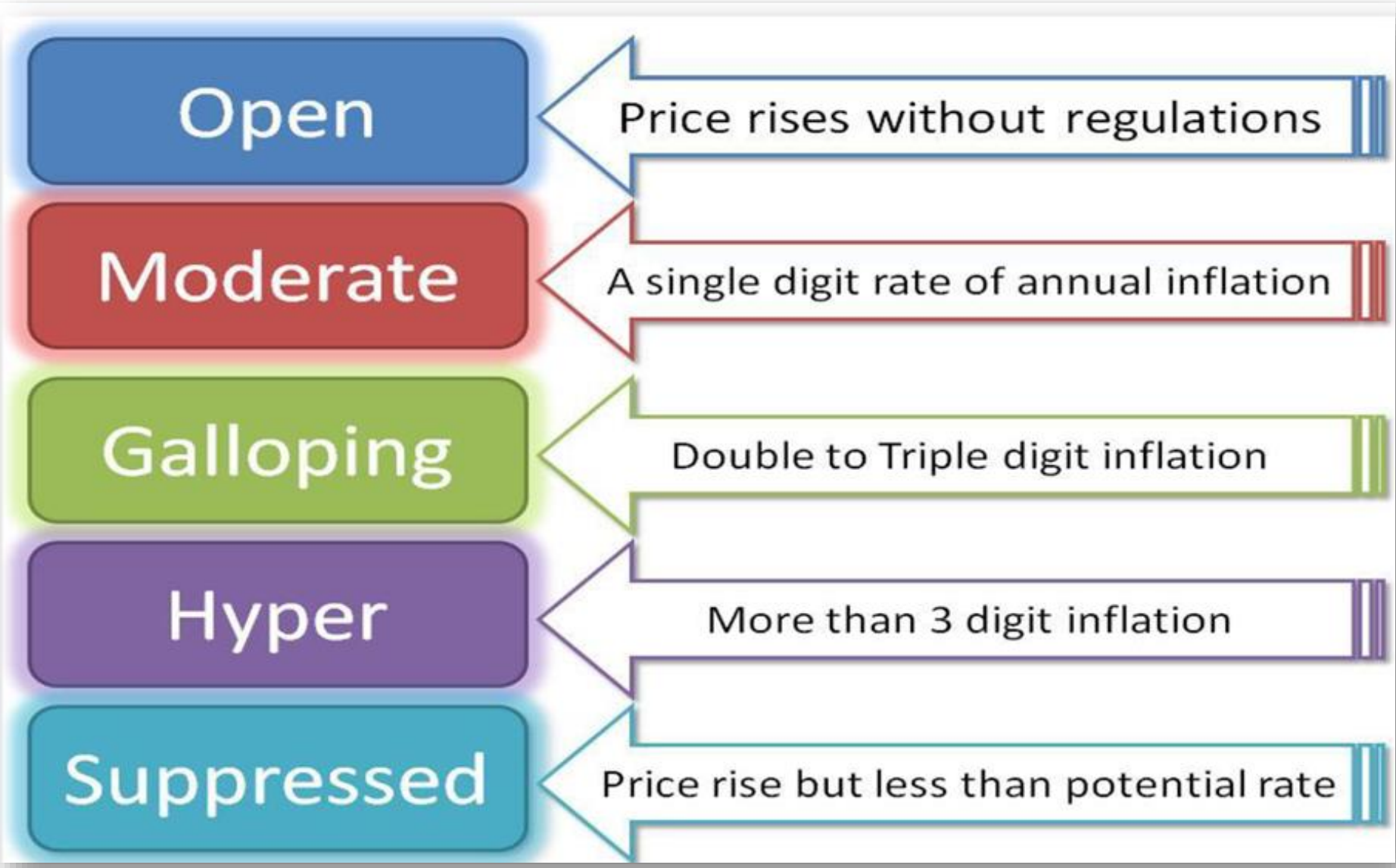
Degrees of Inflation



Degrees of Inflation

Creeping inflation: a low rate of inflation.

- A low and stable rate, of for instance 2%, is generally regarded not to be a problem. Indeed, seeing a low and steady rise in prices may encourage firms to produce more. Such a rate of inflation is sometimes known as creeping inflation.

Hyperinflation: an exceptionally high rate of inflation, which may result in people losing confidence in the currency.

- In contrast to a low rate of inflation is hyperinflation. This is often taken to be an inflation rate that exceeds 50% but it can go much higher.
- At the start of the twenty-first century, Zimbabwe experienced an inflation rate so high that economists had difficulty measuring it. It has been estimated that it reached in 2008 anywhere between 200 million per cent and 89 sextrillion per cent.
- Hyperinflation occurs when inflation gets out of control and sometimes results in people resorting to barter. In such cases the currency usually has to be replaced by a new currency unit.

Case 1

Hyperinflation in Zimbabwe

Large govt budget deficits led to the creation of large quantities of money and high inflation rates.

date	*Zim$ per US$*
Aug 2007	245
Apr 2008	29,401
May 2008	207,209,688
June 2008	4,470,828,401
July 2008	26,421,447,043
Feb 2009	37,410,030
Sept 2009	355

Sign posted in public restroom

Hyperinflation in Zimbabwe

Case 2

Hyperinflation in Venezuela

The **annual inflation rate in Venezuela fell to 282,973 in April 2019 from 329,568 in the previous month,** according to the Central Bank. Inflation Rate in Venezuela averaged **4374.19 percent from 1973 until 2019, reaching an all time high of 815194 percent in May of 2019** and a record low of 3.22 percent in February of 1973.

Venezuela Prices	Last	Previous	Highest	Lowest	Unit	
Inflation Rate	282972.80	329567.60	344509.50	3.22	percent	[+]
Inflation Rate Mom	33.80	34.80	196.60	0.80	percent	[+]
Consumer Price Index CPI	1268517191.00	948197209.50	1268517191.00	0.10	Index Points	[+]
Core Consumer Prices	594.30	582.30	594.30	18.20	Index Points	[+]
Core Inflation Rate	60.30	60.90	60.90	20.20	percent	[+]
Food Inflation	276776.00	346775.10	371545.60	17.89	percent	[+]
CPI Transportation	692742985.90	461628618.20	692742985.90	103.40	Index Points	[+]

Hyperinflation in Venezuela

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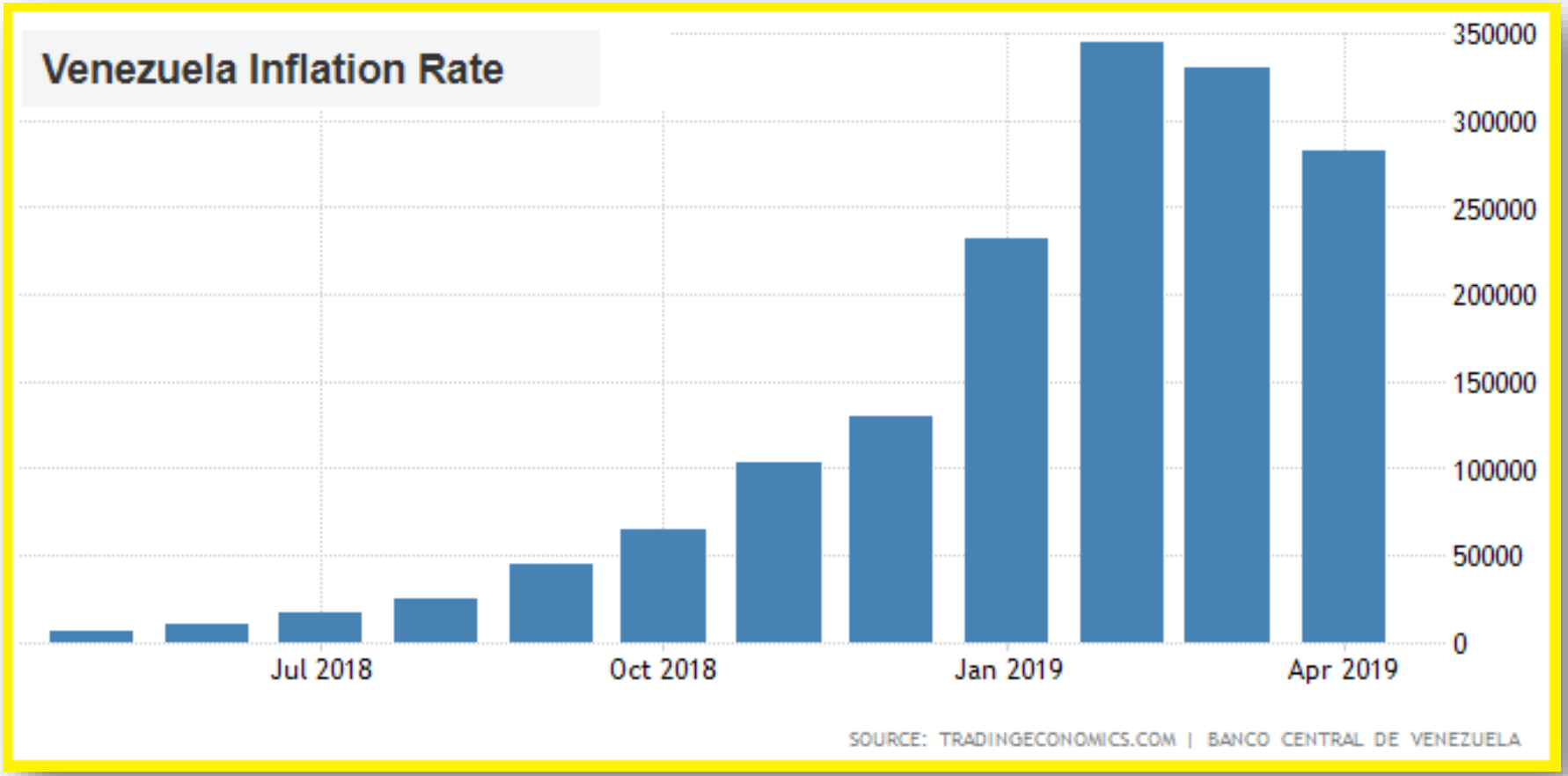
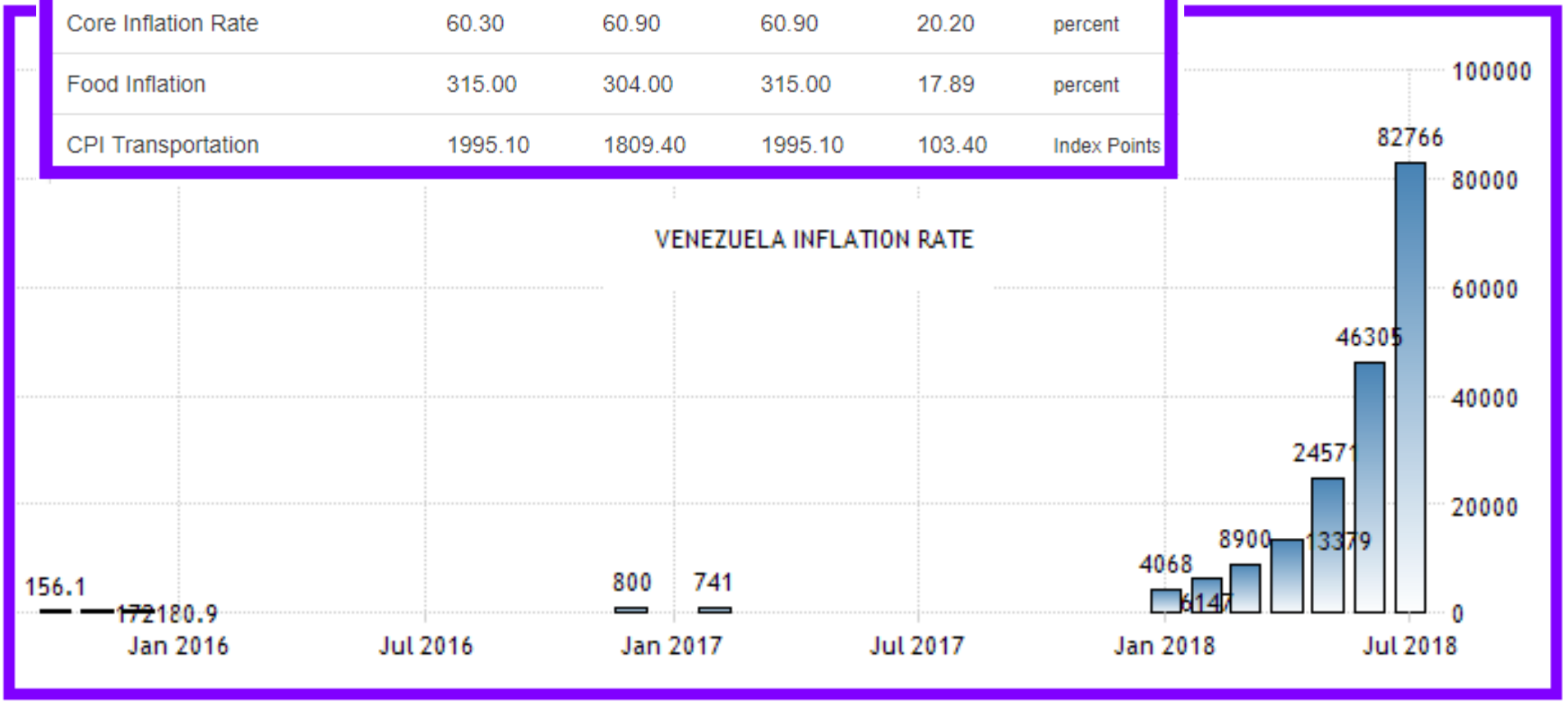
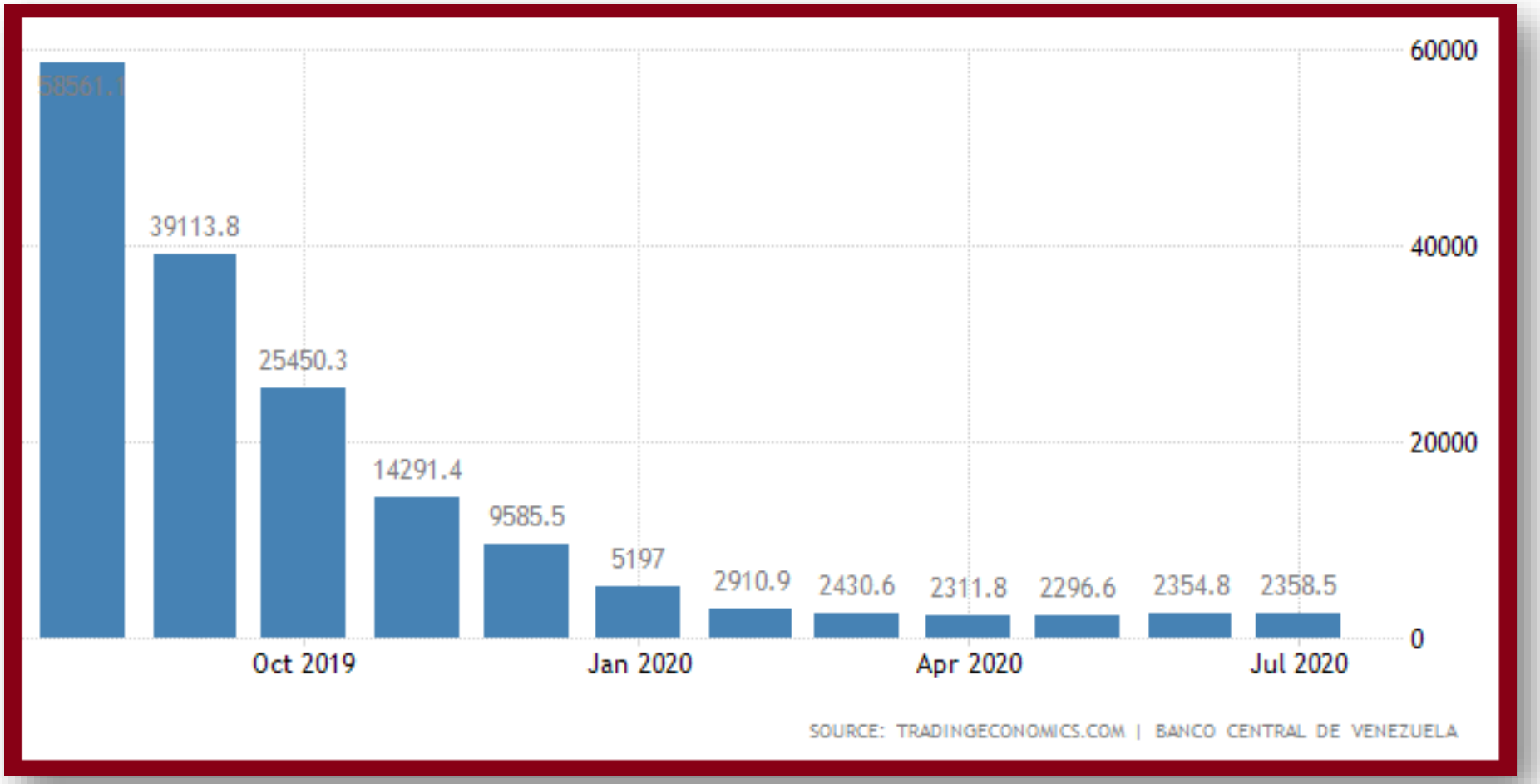


Hyperinflation in Venezuela

Venezuela Prices	Last	Previous	Highest	Lowest	Unit
Inflation Rate	82766.00	46305.00	82766.00	3.22	percent
Inflation Rate Mom	125.00	128.40	128.40	0.80	percent
Consumer Price Index CPI	2146.10	2010.70	2146.10	0.10	Index Points
Core Consumer Prices	594.30	582.30	594.30	18.20	Index Points
Core Inflation Rate	60.30	60.90	60.90	20.20	percent
Food Inflation	315.00	304.00	315.00	17.89	percent
CPI Transportation	1995.10	1809.40	1995.10	103.40	Index Points



Hyperinflation in Venezuela



Hyperinflation in Venezuela

- The annual inflation rate in Venezuela fell to 2358.5 percent in July 2020 from 2354.8 percent in the previous month, according to the Central Bank. The government announced new price controls on food products on April 24th, the first time in two years, as the coronavirus outbreak and an acute gasoline shortage cause inflation to accelerate.
- The government relaxed almost two decades of stringent economic regulation last year, abandoning enforcement of price controls and allowing dollar transactions. Also, the government has sharply curtailed circulation of the domestic currency, which helped limit prices but left many people struggling to obtain bolivars. On a monthly basis, consumer prices rose 19.6 percent in July, after a 25.1 percent gain in the prior month.

The Distinction Between Money Values and Real Values

Money values or nominal values : values at the prices operating at the time.

Real values: values adjusted for inflation.

- In contrast, real values have been adjusted for inflation. To convert money values into real values, the figures are multiplied by the price index in the current year and divided by the price index in the base year.
- For example, a worker's wages may rise from Rs.5,000 in 2015 to Rs.6,000 in 2016. The worker may think he has received a 20% pay rise. He has in money terms but not in real terms if inflation has occurred.
- If the consumer price index was 100 in 2015 and 125 in 2016, his wages in real terms would have changed to: Rs.6,000 × 100/125 = Rs.4,800. So in real terms, his income has fallen by 4%. With an inflation rate of 25%, a 20% pay rise will mean that the worker will be able to buy fewer goods and services.

Modern Theories of Inflation

What Causes Inflation?

Inflation can be caused by demand factors, referred to as "demand-pull" inflation or by cost factors, referred to as "cost-push“ inflation.

Demand-pull inflation can be caused by an increase in any of the components of aggregate demand, i.e., consumer demand (C),investment demand (I), government demand (G) or net foreigners’ demand (X - M) or some combination of above.

Usually however, it is an increase in G, which is the primary cause of demand-pull inflation. When the demand increases, the extent of price increase depends on the supply situation.

Modern Theories of Inflation

What Causes Inflation?

At one extreme, let us, assume that there is massive excess capacity all around the economy and the suppliers in the economy can meet the excess demand for goods and service without resorting to increase in prices, then we may not see any rise price consequent to an increase in demand.

At the other extreme, let us assume that the economy is operating at its full capacity and there is no scope for increasing production. In that case, the entire increase in demand will be dissipated by way of a rise in prices.

In real life, we neither, encounter economy-wide massive excess capacity nor do we come across a situation where output cannot be increased at all.

In real life, as demand increases, prices and output both increase; when the economy is closer to capacity output, price rise is steeper and, vice versa, when there is some excess capacity in the economy.

Demand-Pull

Caused by increase in aggregate income increases much faster than aggregate supply

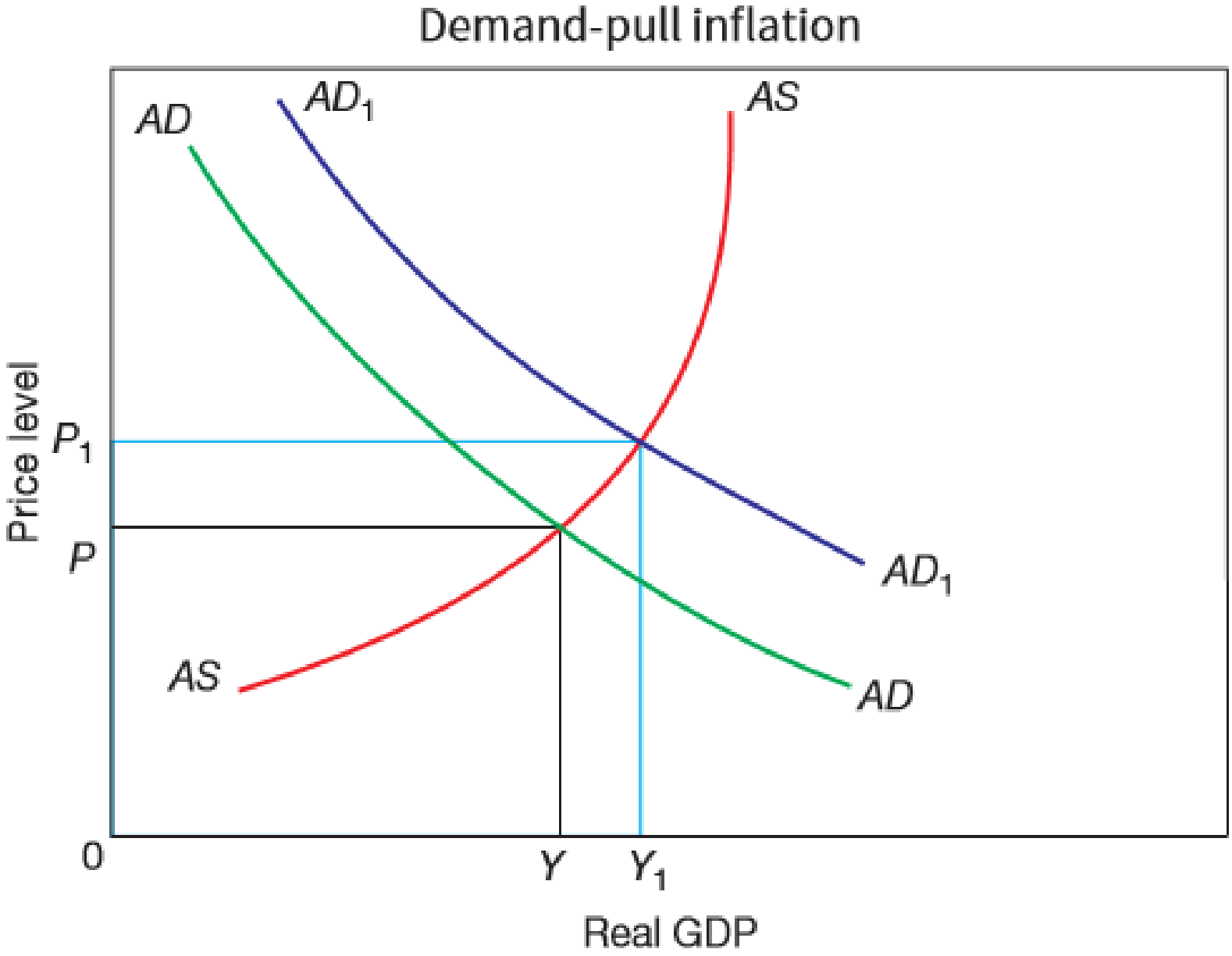
Monetary Factors

- Increase in Money Supply
- Decline in Interest Rate
- Increase in Investment and Income Level
- Increase in Aggregate Demand

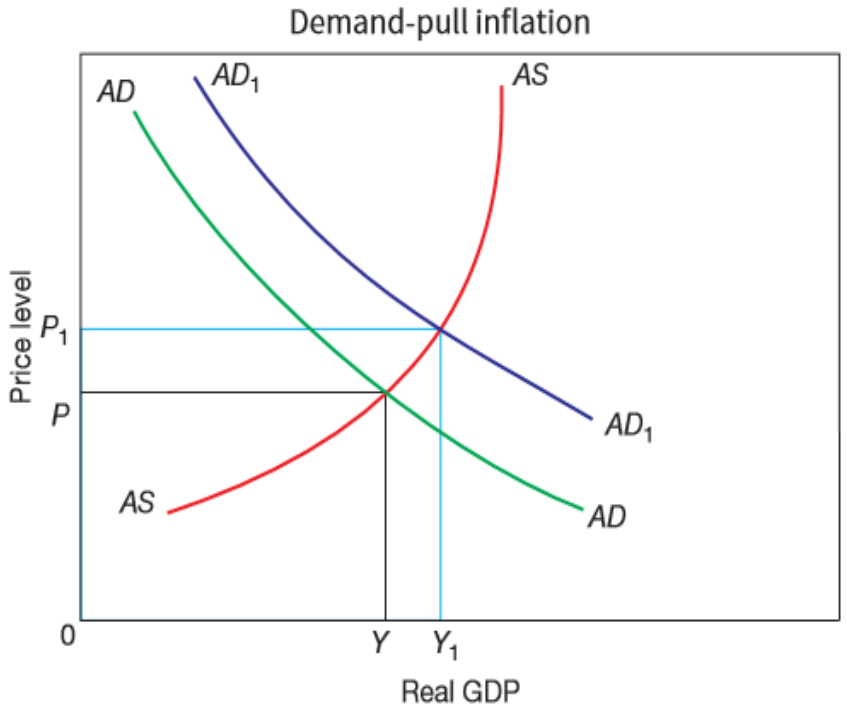
Real Factors

- Downward Shift of Saving or Import Function
- Upward Shift in Investment or Export Function
- Cut in Taxes
- Increase in Government Expenditure

Demand-Pull


Demand-pull inflation
AD
AD1
AS
AS
AD1
AD
P1
P
Price level
0
Y
Y1
Real GDP

Demand-Pull



Increases in aggregate demand may result from monetary or real factors, for instance, a consumer boom, a rise in government spending, higher business confidence resulting in an increase in investment or an increase in net exports.

This occurs when prices are pulled up by increases in aggregate demand that are not matched by equivalent increases in aggregate supply. Figure shows that an increase in aggregate demand has caused a rise in the price level from P to P1. A rise in aggregate demand will have a greater impact on the price level, the closer the economy comes to full capacity.

Case 3

Low Inflation in India May Be a Sign of Something Far Worse

Anirban Nag

Bookmark

Published on July 15 2019, 3:37 PM
Last Updated on July 16 2019, 10:54 AM

Bloomberg) -- India's policy makers are hailed for slaying the inflation dragon. But there's a dark side to that success. After posting double-digit inflation rates at the start of the decade, consumer-price growth has steadily declined over time to hover around 3% now. While much of the recent slowdown was due to a slump in food prices, businesses are starting to worry that the data is signalling a worsening in the economy's growth outlook.

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Low inflation's often a good thing. But like blood pressure, it may not always be a sign of health if it keeps falling. Moderately high inflation signals growing consumption & spurs investment. Some pump-priming via lower interest rates & measures to increase consumption may help twitter.com/BloombergQuint…

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Replying to @BloombergQuint

Inflation measured by the Wholesale Price Index fell to 2.02% in June from 2.45% in May. April WPI inflation rate has been revised to 3.24% from 3.07% reported earlier.

♡ 660 1:48 PM - Jul 15, 2019

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Low Inflation in India May Be a Sign of Something Far Worse

Anirban Nag Bookmark

Published on July 15 2019, 3:37 PM
Last Updated on July 16 2019, 10:54 AM

Anand Mahindra, chairman of India's largest tractor and SUV maker Mahindra & Mahindra Ltd., said on Monday low inflation isn't always a good thing.

An economy with **moderately high inflation "signals growing consumption and spurs investment,"** he said in a Twitter post. **"Some pump-priming via lower interest rates and measures to increase consumption may help."**

Mahindra's comments were in response to a report on Monday that wholesale prices rose at the slowest pace in almost two years in June. Figures on Friday showed consumer-price inflation accelerated to 3.18% in June, though remained below the Reserve Bank of India's medium-term target of 4% for an 11th straight month.

Core inflation, which strips out volatile food and fuel prices, and is seen as an indicator of demand in the economy, slowed to an almost **two-year low of 4.1% in June.** **The core CPI inflation rose to 4.24% in July 2019 compared with 4.13% in June 2019.**

Case 4

India's low inflation — the good, the bad and the ugly

1 min read . Updated: 17 Jul 2019, 09:50 AM IST

Asit Ranjan Mishra

Low inflation's often a good thing, said Anand Mahindra. Photo: Mint

India's wholesale price index-based inflation in June, which came in at a 23-month low of 2.02%, and core inflation, at 31-month low of 0.8%, have raised concerns on whether the country has a low inflation problem now.

- While a low inflation is good for the consumers, it is also a sign of weak demand
- Crisil chief economist D.K. Joshi said retail inflation has dramatically come down because of low food inflation

"Low inflation is often a good thing. But like blood pressure, it may not always be a sign of health if it keeps falling. Moderately high inflation signals growing consumption and spurs investment. Some pump-priming via lower interest rates & measures to increase consumption may help," chairman of the Mahindra Group, Anand Mahindra tweeted on Monday.

India's low inflation — the good, the bad and the ugly

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Low inflation's often a good thing, said Anand Mahindra. Photo: Mint

However, retail inflation that the Reserve Bank of India (RBI) tracks for monetary policy decisions in fact inched to an eight month high of 3.18% in June though core inflation slowed to 4.11%.

While a low inflation is good for consumers, it is also a **sign of weak demand and thus takes away the pricing power of producers, discouraging fresh investments and job creation.** So a **moderate level of inflation that does not pinch the consumer and encourages business activity is usually considered good for the economy.** As part of the Monetary Policy Framework, the government has mandated the RBI to keep retail inflation at 4%, within a band of 2 percentage points.

Crisil Ltd chief economist D.K. Joshi said retail inflation has dramatically come down because of **low food inflation which has implications for farmers and demand in the rural areas.** "When food prices go up, it (retail inflation) will also cross 4%. But right now, low inflation has given a unique opportunity to cut policy rates and prop up the economy," he added.

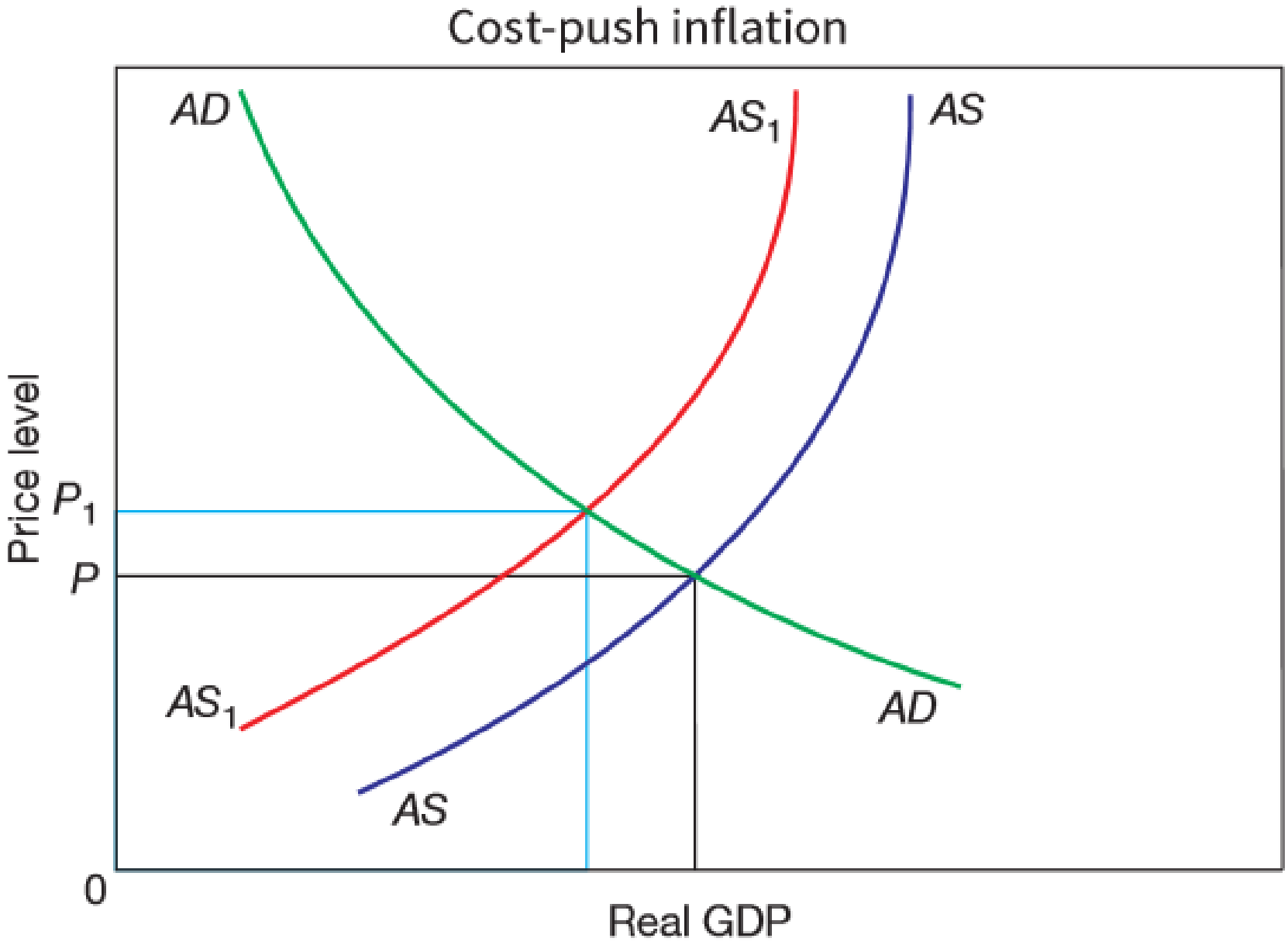
The RBI is often criticised for relying too heavily on the headline retail inflation in which the food basket has around 55% weight, to decide its monetary policy. Since **food prices have their own seasonality and remain volatile**, RBI's inflation forecasts have often gone wrong on the higher side.

Cost Push Inflation

Cost-push inflation: inflation caused by increases in costs of production.

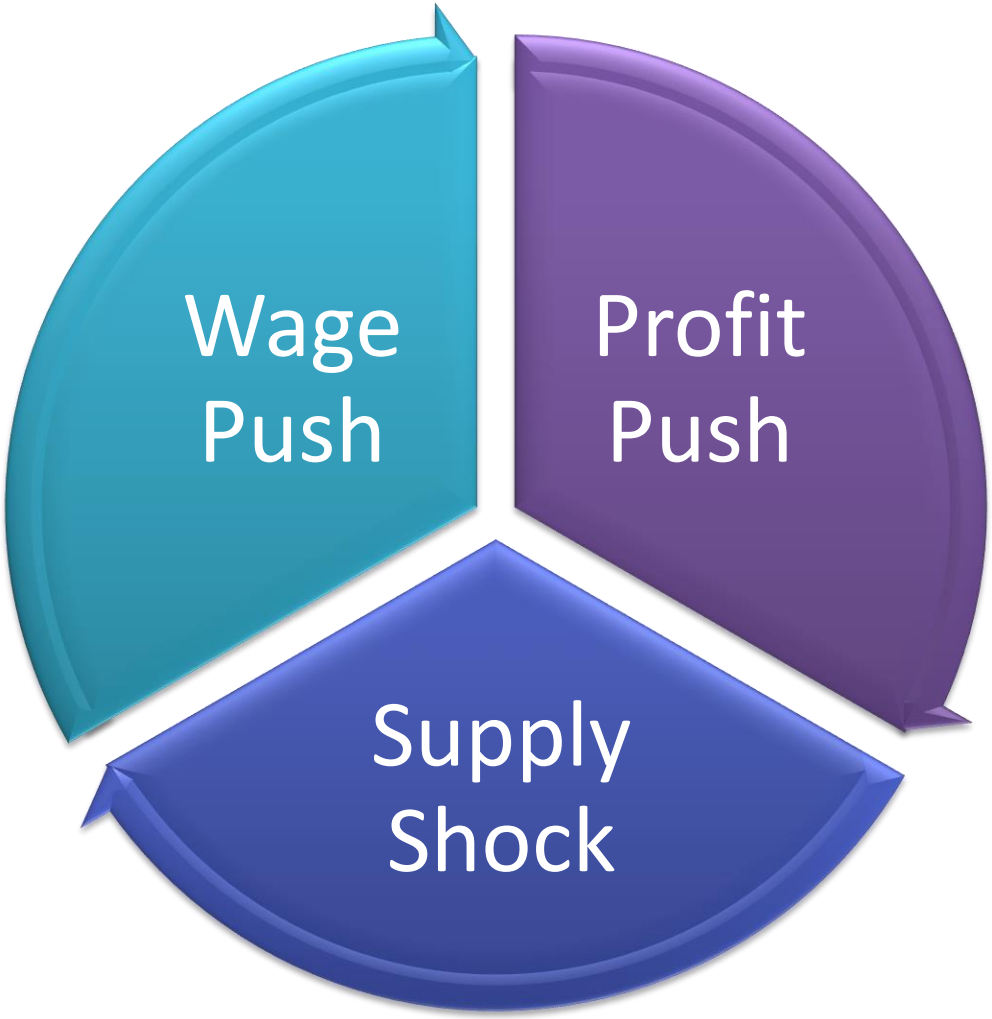
- This occurs when prices are pushed up by increases in the cost of production.
- Figure shows that a decrease in aggregate supply caused by higher costs of production pushes up the price level, causes a contraction in aggregate demand and reduces real GDP.

Cost Push Inflation



Cost Push Inflation

Caused by monopolistic forces of the societies like labour unions and cartels



Cost Push Inflation

Wages more than Productivity

- For instance, wages may increase more than labour productivity and so result in a rise in labour costs. Indeed, higher wages can cause a wage price spiral. Workers gain a wage rise, which causes prices to increase, then workers seek higher wages to restore their real value and so on.
- Conceptually, the contribution that a factor of production, say, labour, makes to the revenue of a firm is the additional output that the firm gets by employing that labour times the price of the output. The wage that the labour gets, therefore, is supposed to reflect this. Now, if, because of union pressures wages are pushed up, without any increase in the worker's contribution to the output, per unit cost of production goes up at each level of output. If firms face a rise in costs, they will respond partly by raising prices and passing the cost on to their consumers and partly by cutting back on production.

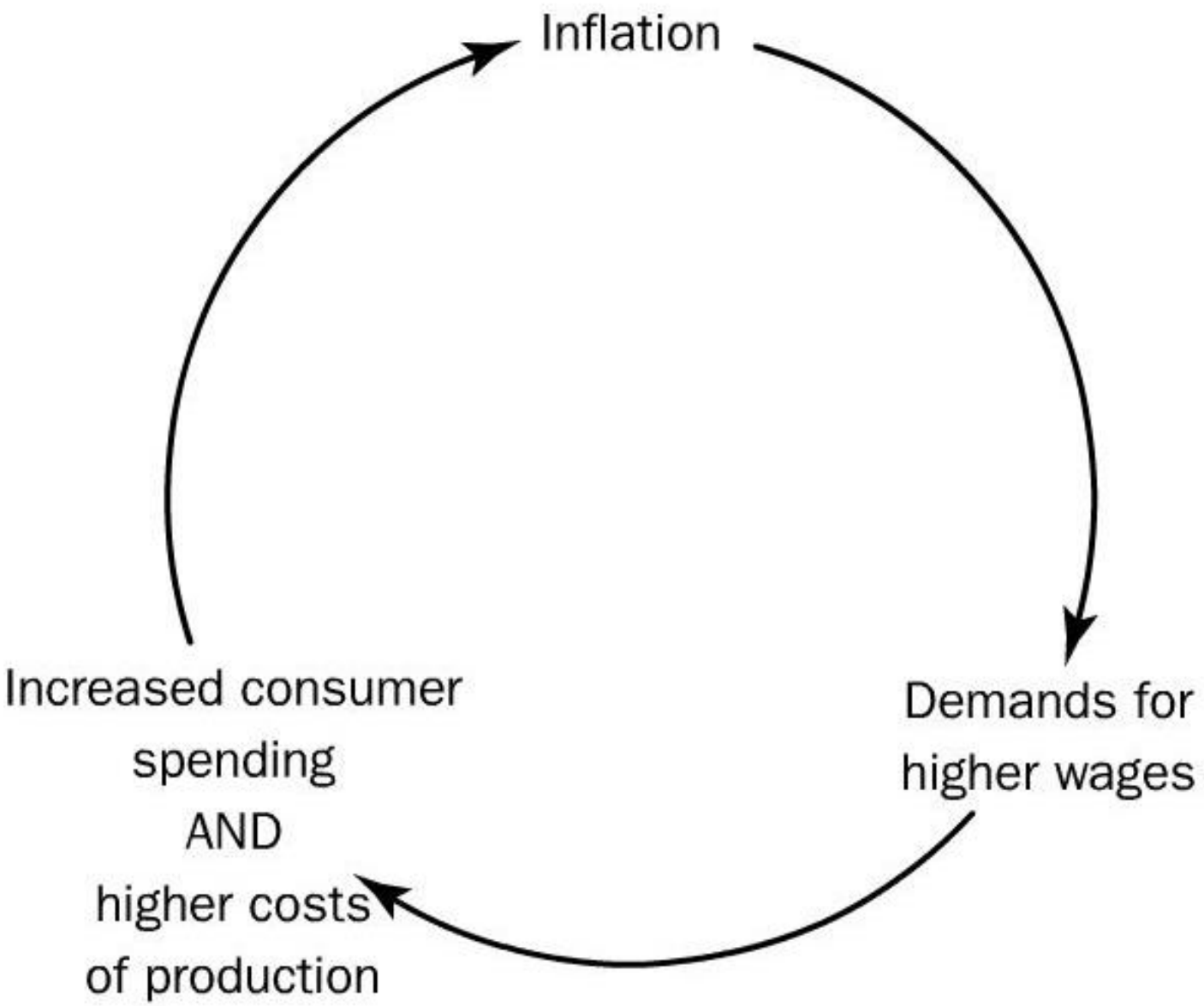
Cost Push Inflation

Wage-Push Inflation is attributed to the exercise of monopoly power by the labour unions to get their money wages enhanced more than the competitive labour market conditions would permit without matching increase in labour productivity.

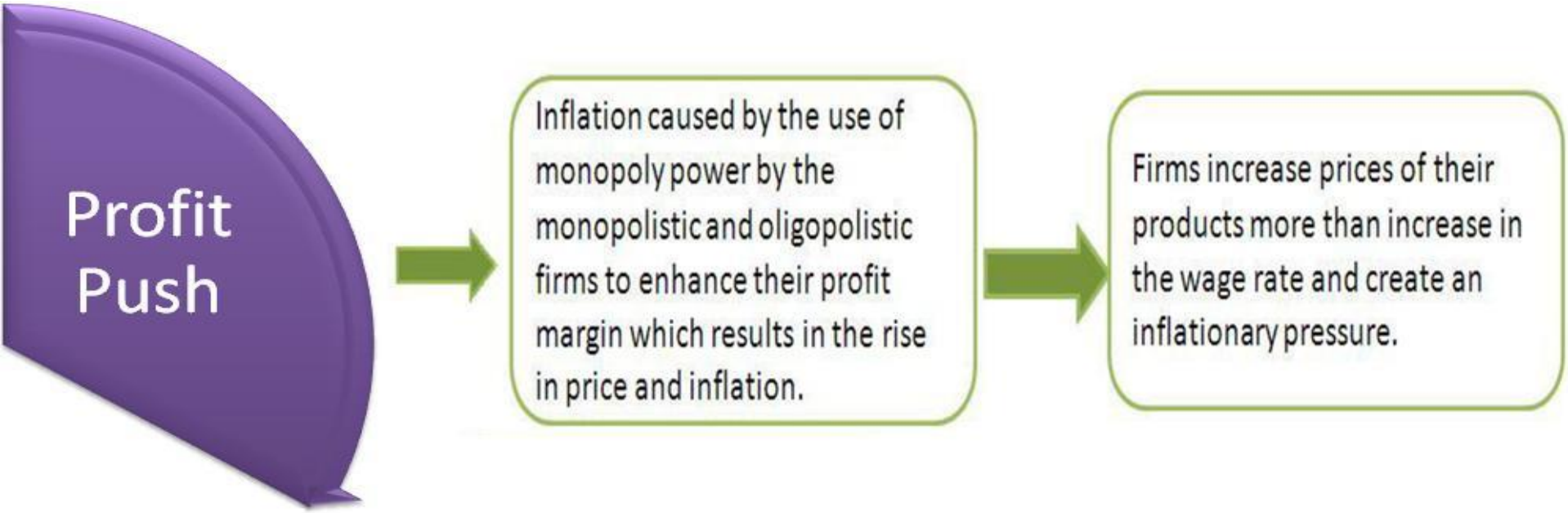
Increase in money wages causes an equal increase in the cost of production.

Increase in cost of production causes the aggregate supply to decrease which leads to upward movement in the price level.

Cost Push Inflation



Cost Push Inflation



Cost Push Inflation

Supply shock is generally caused by unexpected decline in the supply of major consumer goods or key industrial inputs.

Rise in price caused by supply bottlenecks in the domestic economy or international events causing bottlenecks in the movement of internationally traded goods and causing thereby shortage of supply and rise in imported industrial inputs.

Cost Push Inflation

There are a number of costs that may rise.

Increase in Material Cost

- Increases in real material costs and fuel can also push up prices.

Rupee Depreciation

- In some cases, these increases may be caused by a fall in the exchange rate. For example, if the value of the Indian rupee falls, the price of oil imported into the country will rise.

Transport and Production Cost

- This, in turn, will result in higher transport and production costs, which will lead to higher prices.

Demand-Pull v/s Cost Push Inflation

Unlike demand-pull inflation where both prices and output go up, cost-push inflation results in a rise in prices and a fall in output.

We have taken the example of labor costs here, but costs could also go up because of an increase in material costs, import costs, due to increase in oil prices, strong bargaining power of producers. In short, any increase in costs or money gain, greater productivity will result in increase in prices.

Demand-Pull v/s Cost Push Inflation

Demand-pull and cost-push are, of course, convenient starting points for explaining what causes inflation. Beyond a stage the distinction between the two gets blurred.

What may have started as a demand pull-inflation may turn into a cost-push inflation as workers demand higher wages, suppliers want higher prices for raw materials. Again, cost-push inflation may turn into a demand-pull inflation if the government ('G' is a component of aggregate demand) ends up spending more to give more dearness allowance to its staff, or bail out some units adversely affected by cost-push inflation.

Monetarist View of Inflation

Monetarists: economists who consider that inflation is caused by an excessive growth in the money supply

- Monetarists argue that the key cause of higher aggregate demand is increases in the money supply. They suggest that if the money supply grows more rapidly than output, the greater supply of money will drive up the price level.

Inflation and Money Supply

The question we are asking is: what makes price rise continuous, which is the definition of inflation? The answer is that while the initial increase in prices, whether driven by demand-pull or cost-push factors may take some time to get fully absorbed by the economy, and therefore, one may observe rising prices for some time, such a rise in prices cannot be sustained for long, unless there is further spending of money.

In other words, if money supply is held constant, then, beyond a stage, there is no scope for her spending of money and inflation will fizzle out.

Inflation and Money Supply

However, the central bank may have to increase the money supply to meet the growing demand for government spending to pay additional dearness allowance to its employees who have been hit by an increase in the price level or for meeting other commitments. This makes the price rise continuous. By implication, then, what we are saying is that a continuous rise in prices is possible only if it is accommodated by an increase in money supply.

Indeed, inflation, in the long run, is a monetary phenomenon. It is sustained by an increase in money supply."

Effects of Inflation

The consequences of inflation

There are a number of possible costs of inflation but also some potential benefits. The potential costs include:

A reduction in net exports	• Inflation may reduce the international competitiveness of a country's products and so increase import expenditure and lower export revenue. This may result in balance of payments problems.
An unplanned redistribution of income	• Some people may gain and some people may lose as a result of inflation. For instance, if the rate of interest does not rise in line with inflation, borrowers will gain and lenders (savers) will lose. This is because borrowers will pay back less in real terms and lenders will receive less.

Effects of Inflation

Arbitrary redistributions of wealth

- **Higher-than-expected inflation** transfers purchasing power from creditors to debtors: Debtors get to repay their debt with Rupees that aren't worth as much.
- **Lower-than-expected** inflation transfers purchasing power from debtors to creditors.
- **High inflation is more variable and less predictable than low inflation**. So, these arbitrary redistributions are frequent when inflation is high.
- All these **costs are quite high for economies experiencing hyperinflation**. For economies with low inflation (< 10% per year), these costs are probably much smaller, tough their exact size is open to debate.

Effects of Inflation

Menu costs

- These affect firms and are the costs involved in changing prices. For example, catalogues, price tags, bar codes and advertisements have to be changed. This involves staff time and is unpopular with customers.

Shoe leather costs

- Refer to the time and energy devoted to reducing money holdings in an inflationary environment, not just the wear and tear on your shoes!
- The inconveniences associated with minimizing money holdings are known as shoe-leather costs.
- These are the costs involved in moving money from one financial institution to another in search of the highest rate of interest.

Effects of Inflation

Fiscal drag

- This is now sometimes referred to as 'bracket creep'. It occurs when the income levels corresponding to different tax rates are not adjusted in line with inflation.
- As a result, people and firms are dragged into higher tax brackets. It can be argued, however, that this is a cost of an inefficient tax system rather than a cost of inflation.

Discouragement of investment

- Unanticipated inflation can create uncertainty and so make it more difficult for firms to plan ahead. This may dissuade firms from investing, which will have an adverse effect on economic growth.

Effects of Inflation

Inflationary noise

- This is also called **'money illusion'.** This arises when inflation causes consumers and firms to confuse price signals.
- Inflation can make it difficult to assess what is happening to relative prices. A rise in the price of a product may not mean that it has become more expensive relative to other products. Indeed, the product may have risen in price by less than inflation and so may have become relatively cheaper.
- Inflationary noise can result in consumers and firms making the wrong decisions. For example, firms seeing the price of their products rising may increase output when the higher price is the result of inflation rather than increased demand for their products. This may result in a **misallocation of resources.**

Effects of Inflation

Inflation causing inflation

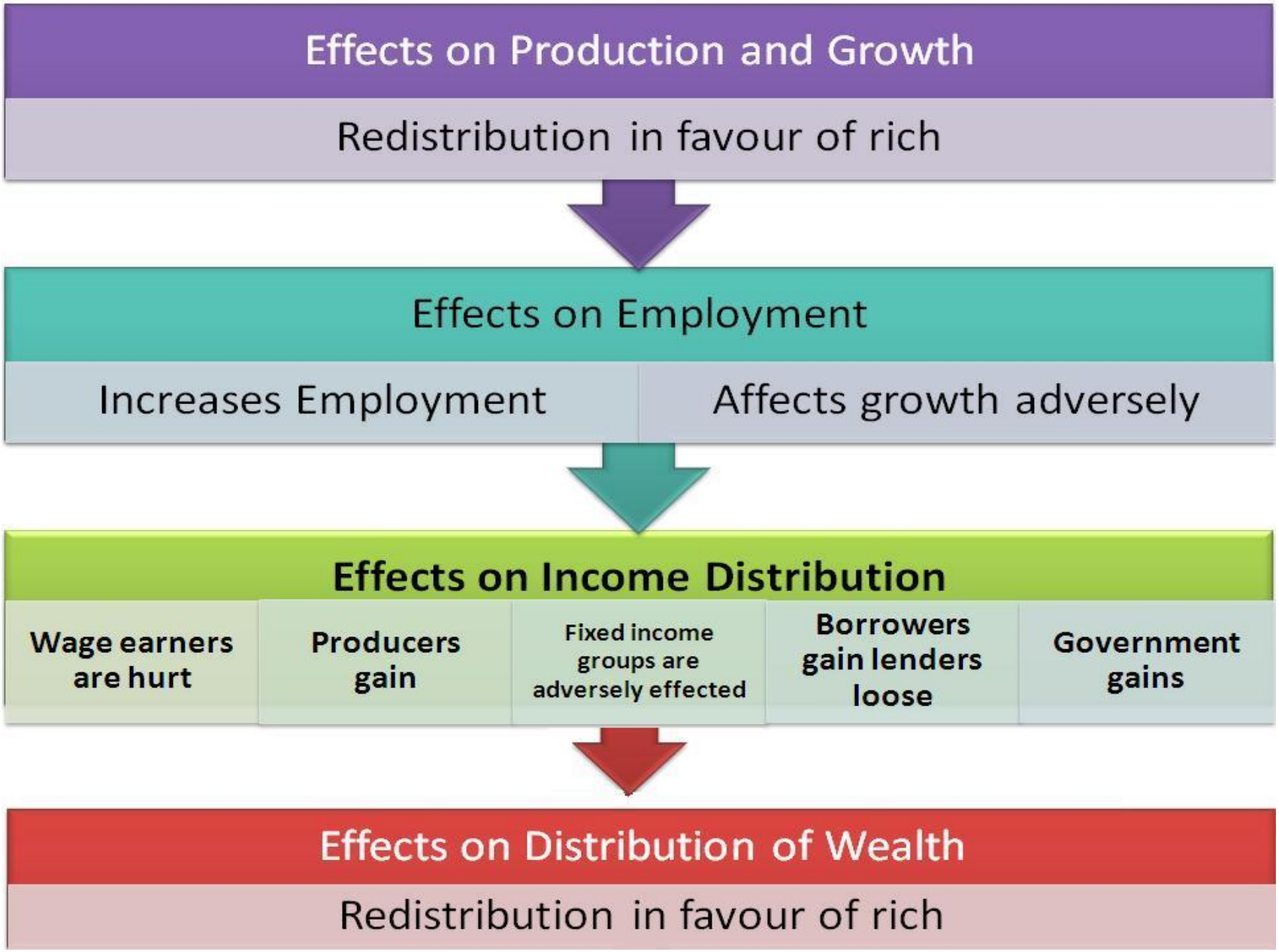
- Inflation may generate further inflation as **consumers, workers and firms** will come to **expect prices to rise.** As a result, they may act in a way that will cause inflation.
- For example, **workers may press for higher wages**, **firms may raise prices to cover expected higher costs** and **consumers may seek to purchase products now before their prices rise further.**

Effects of Inflation

Expectation

- The rule of thumb is that if **output and prices are both increasing**, **demand side factors predominate.**
- On the other hand, if a **rise in prices is accompanied by a fall in output**, it is the **cost factors** which are more important.
- Inflation can, also, be expectation driven. If people expect inflation to be say, x%, then based on this expectation, people will revise prices and actually take the inflation to x%.
- Expectations are formed **based on past inflation rates**.
- **Policy challenge**, under the circumstances, lies in finding ways to **douse the expectations**. The key is **policy credibility.** Otherwise, **expected inflation may drive actual inflation.**

Effects of Inflation



The Potential Benefits

Stimulating output:

- **A low and stable inflation rate caused by increasing demand** may make **firms feel optimistic about the future**. In addition, if **prices rise by more than costs, profits will increase, which will provide funds for investment.**

Reduce the burden of debt:

- **Real interest rates may fall due to inflation or may even become negative. This is because nominal interest rates do not tend to rise in line with inflation**. As a result, **debt burdens may fall.**
- For example, those who have borrowed money to buy a house may experience a fall in their mortgage payments in real terms. A reduction in the debt burden may stimulate consumer expenditure that, in turn, could lead to higher output and employment.

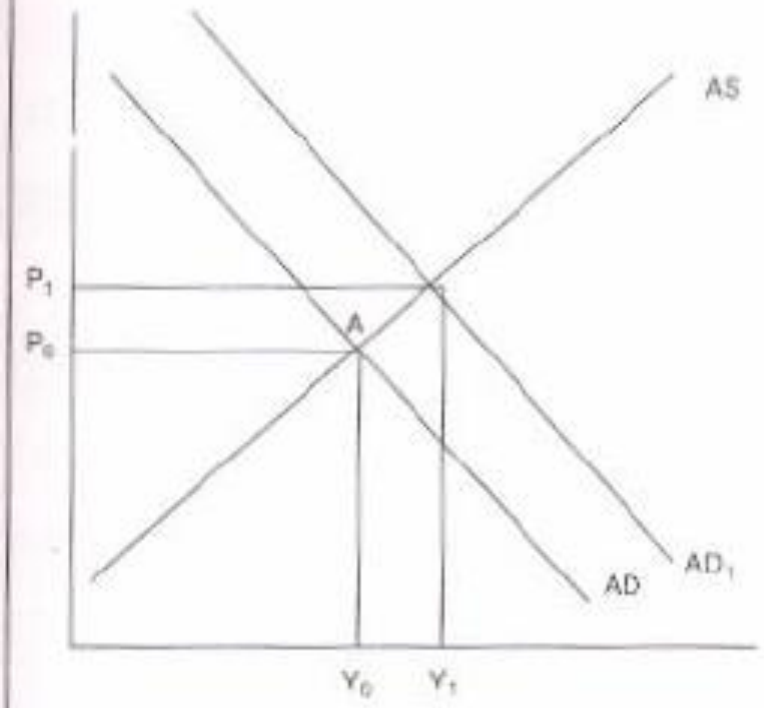
The Potential Benefits

Prevent some unemployment

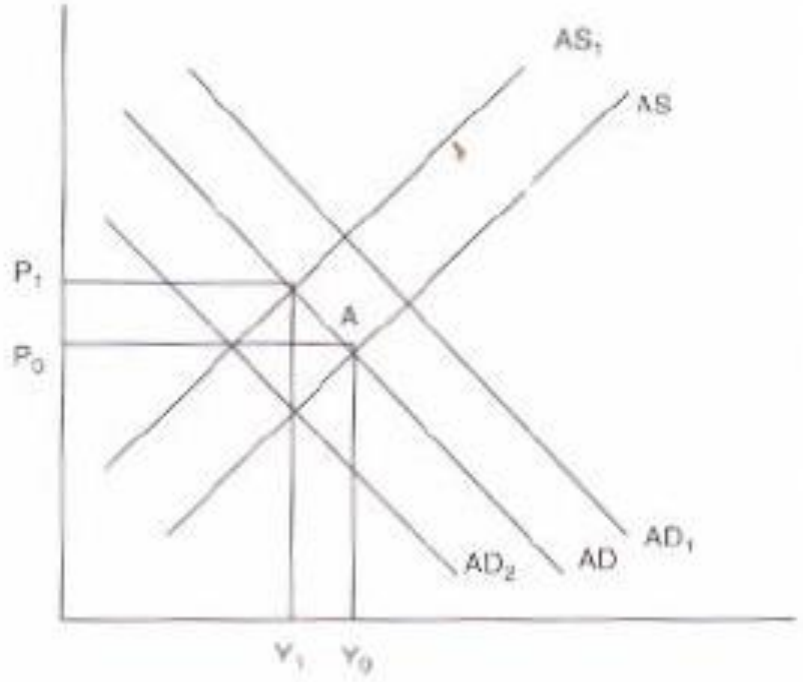
- Firms in difficulties may have to reduce their costs to survive. For many firms, wages form a significant proportion of their total costs. With **zero inflation**, firms may have to cut their labour force.
- However, **inflation** would enable them to reduce the real costs of labour by either keeping nominal (money) wages constant or by not raising them in line with inflation. During inflation, workers with strong bargaining power are more likely to be able to resist cuts in their real wages than workers who lackbargaining power.

Demand & Supply Side Inflation

- Demand Side Inflation



- Supply Side Inflation



Structuralists' Approach

Inflation in Less Developed Countries result of ambitious development programmes and structural imbalance

Structural Imbalance

- ✓**Food Scarcity:** imbalance between demand for and supply of food.
- ✓**Input Imbalance:** shortage of capital ,fuel and oil.
- ✓**Foreign Exchange Bottleneck:** imbalance between export and import and BOP deficit.
- ✓**Infrastructural bottleneck:** inadequate electricity, transport and communication and telecommunications.
- ✓**Social and Political constraints**

Hence LDCs try to achieve High Growth Rate through the public sector investments

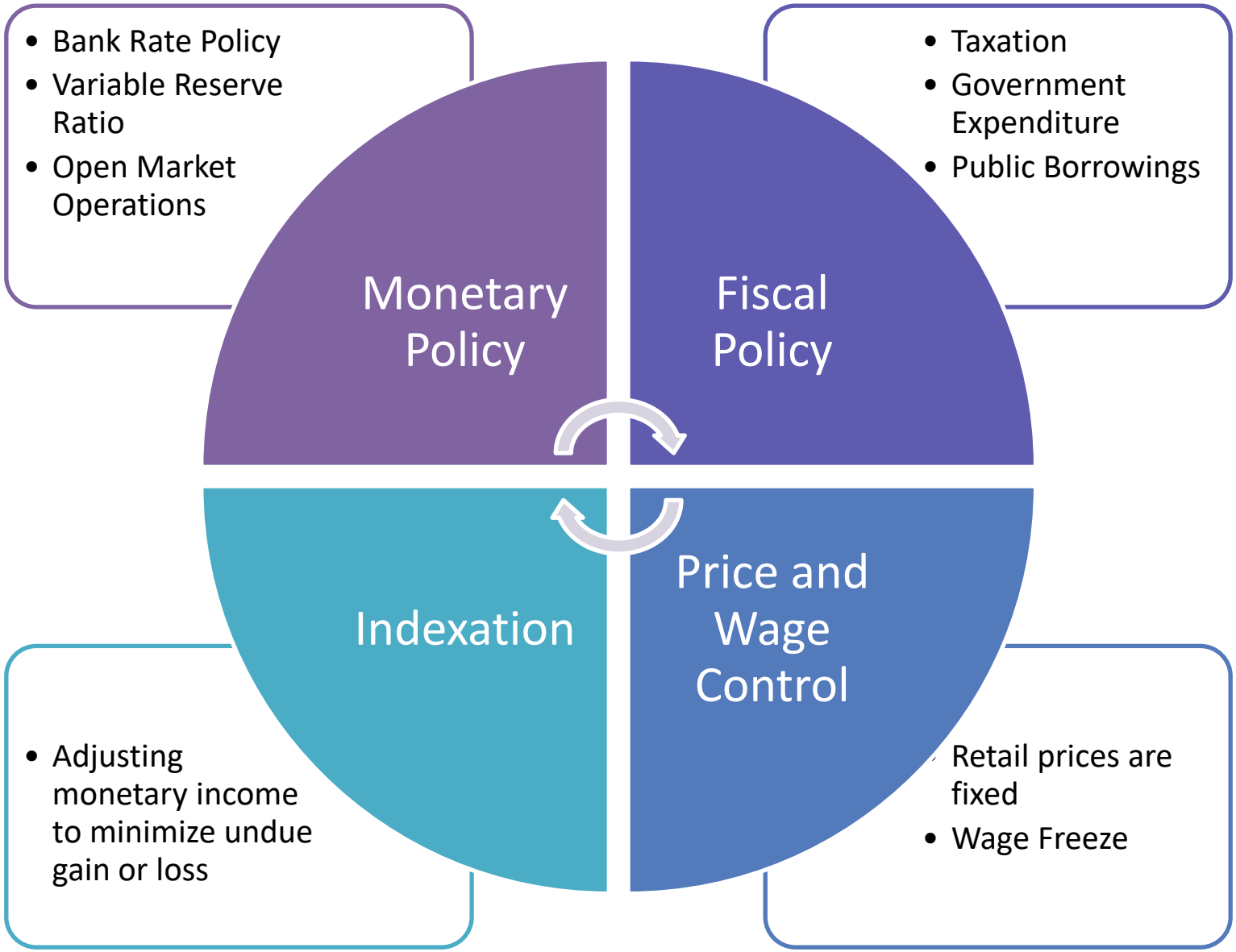
Policy Measures to Control Inflation

- Economists agree that inflation beyond a moderate rate is undesirable as it can often prove disastrous, and therefore, it must be kept under control.
- Economists agree also that an appropriate mix of fiscal and monetary policies can be helpful in controlling inflation. However, there is divergence of opinion on the effectiveness and primacy of fiscal and monetary policies in the policy mix, while monetarists argue that monetary measures should be given prime role in the anti-inflationary policy-mix, fiscalist argue, on the contrary, that fiscal policy is more effective in controlling inflation.
- Besides, every the very issue of controlling inflation poses a dilemma because controlling; inflation involves the risk of accentuating the problem of unemployment.

The various anti-inflation measures are generally classified as follows.

- Monetary measures
- Fiscal measures
- Price and wage, and
- Indexation

Policy Measures to Control Inflation



Inflation and Interest Rates

- When tax revenue is inadequate and ability to borrow is limited, government may print money to pay for its spending.
- Almost all hyperinflations start this way.
- The revenue from printing money is the **inflation tax**: printing money causes inflation, which is like a tax on everyone who holds money.

Rearrange the definition of the real interest rate:

$$\text{Nominal interest rate} = \text{Inflation rate} + \text{Real interest rate}$$

- The real interest rate is determined by saving & investment in the loanable funds market.
- Money supply growth determines inflation rate.
- So, this equation shows how the nominal interest rate is determined.

The Inflation Tax

$$\text{Nominal interest rate} = \text{Inflation rate} + \text{Real interest rate}$$

- In the long run, money is neutral, so a change in the money growth rate affects the inflation rate but not the real interest rate.
- So, the nominal interest rate adjusts one-for-one with changes in the inflation rate.
- This relationship is called the **Fisher effect** after Irving Fisher, who studied it.
- The inflation tax applies to people's holdings of money, not their holdings of wealth.
- The Fisher effect: an increase in inflation causes an equal increase in the nominal interest rate, so the real interest rate (on wealth) is unchanged.

Inflation and Interest Rates

- We said that real interest rate is equal to nominal interest rate minus expected inflation.
- We also said that because of difficulties in arriving at expected inflation, actual inflation is sometimes used as a proxy.
- Symbolically $\mathbf{r = i - \pi^e}$ where r is the real interest rate, i is the nominal interest rate and π^e is the expected inflation.
- Now, let us rewrite the equation as: $\mathbf{i = r + \pi^e}$**.** This says that nominal interest rate is equal to real interest rate plus inflationary expectations. And, as before, actual inflation can be used as a proxy for inflationary expectations.

Inflation and Interest Rates

An economic interpretation of real interest rate

- **Real interest rate is nothing but the return on the stock of capital or, roughly, investment.**
- For the economy as a whole the return on the stock of capital over time is given by the real GDP growth. Therefore, GDP growth sets the limit for real interest rate. Or **r** can be roughly used as a proxy for real GDP growth.
- In a period of **slowdown** as GDP growth slows down, we have seen, expected inflation will be low and so will be nominal interest rate **i**.
- In a **booming** economy, as GDP growth accelerates, expected inflation will be higher and so will be the nominal interest rate.

Inflation and Interest Rates

- Finally, if we say that real interest rate, which is capturing the real GDP growth, is constant, there exists a relationship between expected inflation and nominal interest rates.
- One reason why interest rate (nominal) exists is inflation. People who lend money would like to be compensated for the loss of purchasing power of what they lend.
- Interest rates, therefore, will be low if inflationary expectations are low. Since inflationary expectations are formed based on current inflation rates, interest rates are low when inflation rate is low and interest rates are high when inflation rate is high.

ACTIVE LEARNING 3
Tax distortions

You deposit Rs.1000 in the bank for one year.

CASE 1: inflation = 0%, nom. interest rate = 10%

CASE 2: inflation = 10%, nom. interest rate = 20%

a. In which case does the real value of your deposit grow the most?

Assume the tax rate is 25%.

b. In which case do you pay the most taxes?

c. Compute the after-tax nominal interest rate, then subtract inflation to get the after-tax real interest rate for both cases.

ACTIVE LEARNING 3
Tax distortions

Deposit = Rs.1000.

CASE 1: inflation = 0%, nom. interest rate = 10%

CASE 2: inflation = 10%, nom. interest rate = 20%

a. In which case does the real value of your deposit grow the most?

In both cases, the real interest rate is 10%, so the real value of the deposit grows 10% (before taxes).

ACTIVE LEARNING 3
Tax distortions

Deposit = Rs.1000. Tax rate = 25%.

CASE 1: inflation = 0%, nom. interest rate = 10%

CASE 2: inflation = 10%, nom. interest rate = 20%

b. In which case do you pay the most taxes?

CASE 1: interest income = Rs.100,
so you pay Rs.25 in taxes.

CASE 2: interest income = Rs.200,
so you pay Rs.50 in taxes.

ACTIVE LEARNING 3
Tax distortions

Deposit = Rs.1000. Tax rate = 25%.

CASE 1: inflation = 0%, nom. interest rate = 10%

CASE 2: inflation = 10%, nom. interest rate = 20%

c. Compute the after-tax nominal interest rate, then subtract inflation to get the after-tax real interest rate for both cases.

CASE 1: nominal = 0.75 x 10% = 7.5%

real = 7.5% – 0% = 7.5%

CASE 2: nominal = 0.75 x 20% = 15%

real = 15% – 10% = 5%

ACTIVE LEARNING 3
Tax distortions

Deposit = Rs.1000. Tax rate = 25%.

CASE 1: inflation = 0%, nom. interest rate = 10%

CASE 2: inflation = 10%, nom. interest rate = 20%

Inflation…

- raises nominal interest rates (Fisher effect) but not real interest rates
- increases savers' tax burdens
- lowers the after-tax real interest rate

ACTIVE LEARNING 3
Tax distortions

Table 1

How Inflation Raises the Tax Burden on Saving

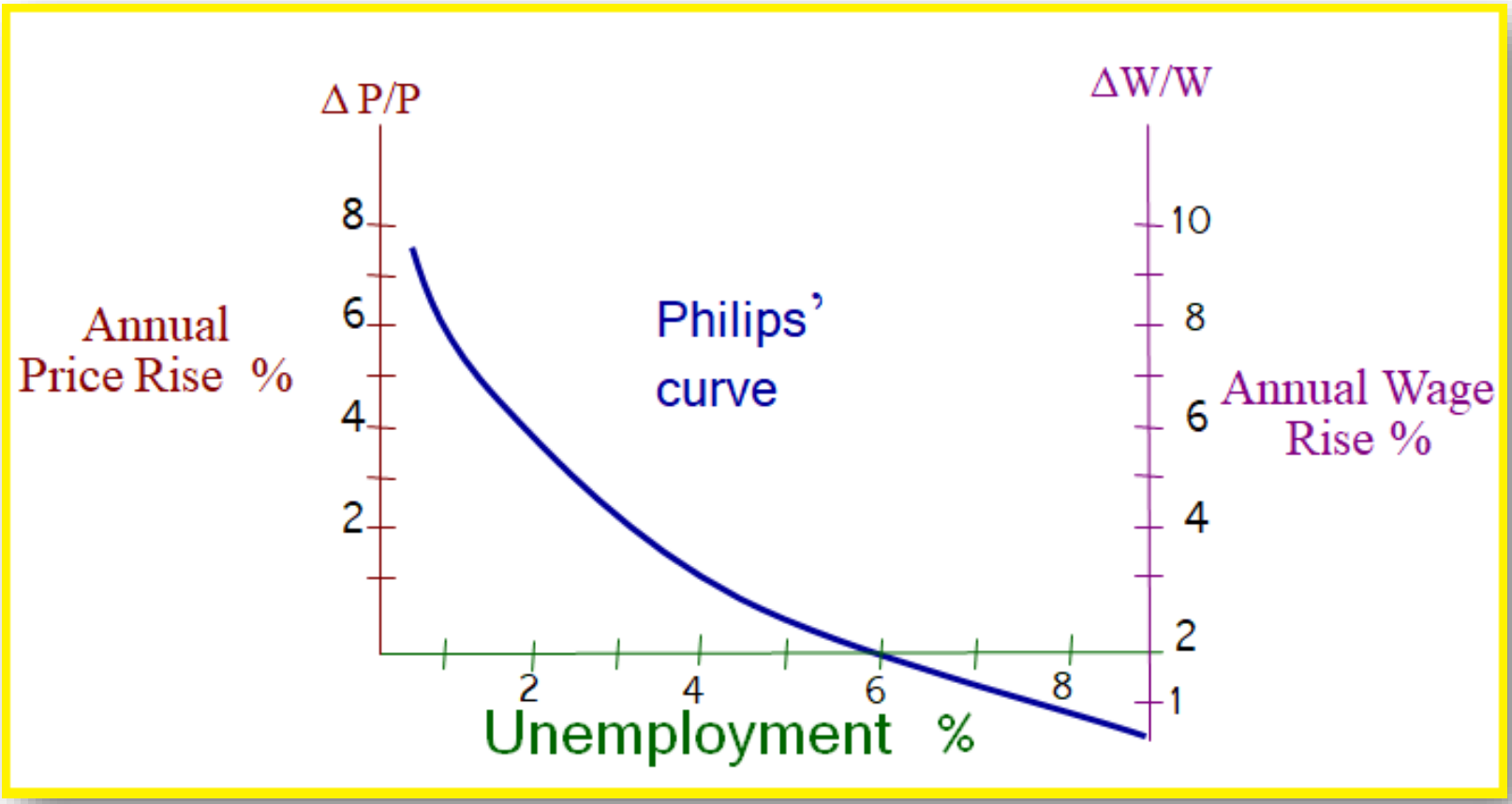
In the presence of zero inflation, a 25 percent tax on interest income reduces the real interest rate from 4 percent to 3 percent. In the presence of 8 percent inflation, the same tax reduces the real interest rate from 4 percent to 1 percent.

	Economy A (price stability)	Economy B (inflation)
Real interest rate	4%	4%
Inflation rate	0	8
Nominal interest rate (real interest rate + inflation rate)	4	12
Reduced interest due to 25 percent tax (0.25 × nominal interest rate)	1	3
After-tax nominal interest rate (0.75 × nominal interest rate)	3	9
After-tax real interest rate (after-tax nominal interest rate − inflation rate)	3	1

Inflation and Employment

- The main implication of **Philips curve is that the government has to choose between feasible combinations of unemployment and inflation.**
- Phillips studied the **relationship between unemployment and rate of changes in money wages in UK, for a period from 1862 to 1957.**
- Phillips postulated that the **lower the rate of unemployment, the higher is the rate of change of wages.**
- Labours accept jobs at **lower pay if they are unemployed and firms being more willing to hire due to low wages.**
- This effect dissipates as **inflation becomes more expected with trade unions pressurize employers to raise money wages.**
- The objectives of low unemployment and low rate of inflation may be inconsistent.

Philips' Curve



- Demand pull inflation refers to the effects of falling unemployment rates (rising real national income) in the curve.
- Cost push inflation and built in inflation will lead to *shifts* in the Phillips curve.

SUMMARY

- In demand pull inflation aggregate income increases much more than aggregate supply
- Cost Push Inflation is caused by monopolistic
- Policy measures to control inflation are monetary, fiscal, price and wage, indexation.
- To explain inflation in the long run, economists use the quantity theory of money. According to this theory, the price level depends on the quantity of money, and the inflation rate depends on the money growth rate.
- The classical dichotomy is the division of variables into real and nominal. The neutrality of money is the idea that changes in the money supply affect nominal variables but not real ones. Most economists believe these ideas describe the economy in the long run.
- The inflation tax is the loss in the real value of people's money holdings when the government causes inflation by printing money.
- The Fisher effect is the one-for-one relation between changes in the inflation rate and changes in the nominal interest rate.
- The costs of inflation include menu costs, shoeleather costs, confusion and inconvenience, distortions in relative prices and the allocation of resources, tax distortions, and arbitrary redistributions of wealth.