Report On

INFLATION, IT'S EFFECTS AND POLICIES TO TACKLE IT

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Introduction :-

Definition:

Inflation is defined as a sustained increase in the general level of prices for goods and services in a county, and it is measured as an annual percentage change. Under conditions of inflation, the prices of things rise over time i.e., as inflation rises, every unit of money buys a smaller percentage of a good or service.

Inflation can take place when

- Price of goods or services increases
- Value of money reduces

Inflation is calculated using CPI, WPI or RPI values. These indices measures changes in the price level of market basket of goods and services purchased. Annual percentage change in these values gives the inflation rate.

Formula : $(\frac{b-a}{a})$ *100

Where

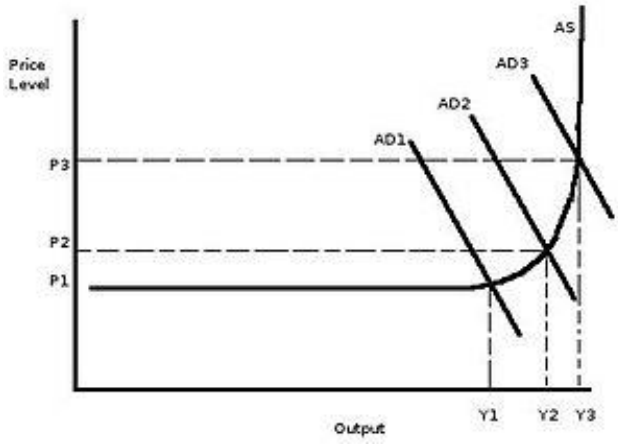
b = CPI of year 2
a = CPI of year 1

Types of inflation:

There are two main types of inflation

1. **Demand-pull inflation** – this occurs when the economy grows quickly and starts to 'overheat'. Aggregate demand (AD) will be increasing faster than aggregate supply (LRAS).

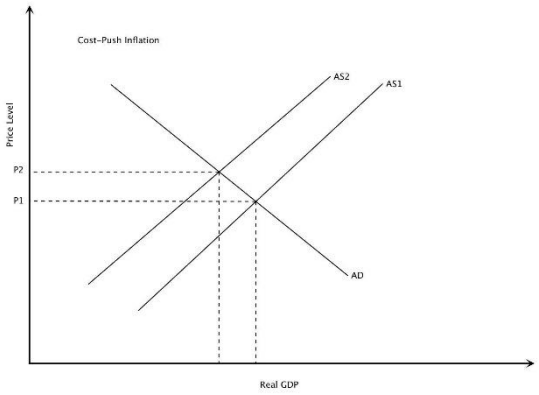
Causes for demand pull inflation



- There is a quick increase in consumption and investment along with an extremely confident firms.
- There is a sudden increase in exports which might lead to a huge under-valuation of the currency.
- There is a lot of government spending.
- The expectation that inflation will rise often leads to a rise in inflation. Workers and firms will increase their prices to 'catch up' to inflation.
- There is excessive monetary growth, when there is too much money in the system chasing too few goods. The 'price' of a good will thus increase.

2. **Cost-push inflation -** is a type of inflation caused by substantial increases in the cost of important goods or services where no suitable alternative is available i.e supply shock

   Example : oil crisis of 1970.



There are also other types of inflation which can cause due to above factors indirectly like

3. **Wage push inflation** – Rising wages tend to cause inflation. In effect, this is a combination of demand pull and cost push inflation. Rising wages increase costs for firms, and so these are passed onto consumers in the form of higher prices. Also rising wages give consumers greater disposable income and therefore cause increased consumption and AD.

4. **Imported inflation** – A depreciation in the exchange rate will make imports more expensive. Therefore, the prices will increase solely due to this exchange rate effect. A depreciation will also make exports more competitive so will increase demand.

The inflation can further be divided based on the intensity of the inflation rate as

1. **Hyperinflation** is the most extreme inflation phenomenon, with yearly price increases of three digits percentage points and an explosive acceleration.

2. **Extremely high inflation** could range anywhere between 50% and 100%.

3. **High inflation** is a situation of price increase of, say, 30%-50% a year.

4. **Moderate inflation** can be differently defined around the world, given the different inflation histories. As an indication only, one could consider an inflation as moderate when it ranges from 5% to 25-30%. For some countries, the higher part of this range is already "high inflation".

5. **Low inflation** can be characterized from 1-2% to 5%. Around zero there is no inflation (price stability).
6. **Deflation** – when the inflation is below zero.

The measure of inflation for the long the run is called as core inflation This is the inflation rate that excludes temporary 'volatile' factors, such as energy and food prices.

Effects Of Inflation

Positive Effects:-

- Better Savings Account Rates
- It's Cheaper to Travel Abroad
- It Offsets Negative Effects of Deflation
- Wages Will Be Higher
- Get Cost-of-Living Adjustments

Negative Effects:-

- General Costs raise
- Borrowing Money Is More Expensive
- Adjustable-Rate Mortgage Rates Might Go Up
- Hoarding Could Result
- Long-Term Savings Might Erode

The inflation rate is widely calculated by calculating the movement or change in a price index. There are various price indices which are used by various countries like

- Consumer price index
- Producer price index
- Retail price index
- Wholesale price index

Generally CPI is most widely used price index for calculations

Consumer price index (CPI) - measures changes in the price level of market basket of consumer goods and services purchased by households.

Purchasing power - Purchasing power is the value of a currency expressed in terms of the amount of goods or services that one unit of money can buy.

Calculation of CPI

The Labour Bureau has been compiling and maintaining three different series of Consumer Price Index numbers viz.

I. Consumer Price Index Numbers for Industrial Workers (CPI-IW) on base 2001 is 100
II. Consumer Price Index Numbers for Agricultural Labourer on base 1986-87 is 100
III. Consumer Price Index Numbers for Rural Labourer on base 1986-87 is 100.

These index numbers measure a temporal change in prices of fixed basket of goods and services consumed by the target groups and are compiled on the basis of the prices of selected goods and services which are collected every week/month and the weights assigned to them. Weights to the selected items are assigned on the basis of the expenditure incurred on them as revealed by the surveys conducted for the purposes.

The index numbers for centre/state are compiled in several stages i.e.

- Sub-group,
- Group and
- General level.

These centre/state level indices are then weighed to work out all-India indices.

- ✓ The weights (Group / Sub-group wise) under CPI for Industrial Workers on base 2001 is 100 and
- ✓ Consumer Price Index Numbers for Agricultural Labourer / Rural Labourer on base 1986-87 is 100 are given in the table below.

The services like education, health/medicine, transportation are included in the compilation of all three Consumer Price Index Numbers. The details of the weights assigned to services like education, health/medicine, transportation, etc. are given in the table below

There is substantial increase in the weights attached to services like education, health/medicine, transportation in successive series of CPI number for Industrial Workers which is revealed from the statement given below:

- Consumer Price Index numbers for Industrial Workers on base 2001 is 100

Group/Sub-group	**Weights**		**Percentage increase / decrease**
	Base 1982=100	**Base 2001=100**	
Medical Care	2.59	4.56	76.06
Education, Recreation & Amusement	3.14	6.18	96.82
Transport & Communication	2.65	4.87	83.77
Personal Care & Effects	3.31	4.22	27.49

- For Consumer Price Index Numbers for Agricultural Labourer / Rural Labourer on base 1986-87 is 100, there was no separate sub-groups in respect of Education, Health / Medicine and Transportation in the previous series i.e. 1960-61 is 100. However, the weights assigned to them during the current series i.e. 1986-87 is 100 are as under:

Group / Sub-groups	Weights	
	AL	RL
Medical Care	4.38	4.23
Education, Recreation & Amusement	0.94	0.99
Transport & Communication	1.67	1.80
Personal Care & Effects	2.04	2.28

- All India weights Group / Sub group wise for Consumer Price Index Number for Industrial Worker on base 2001 is 100 and
- Consumer Price Index Number for Agricultural & Rural Labourers on base 1986-87 is 100.

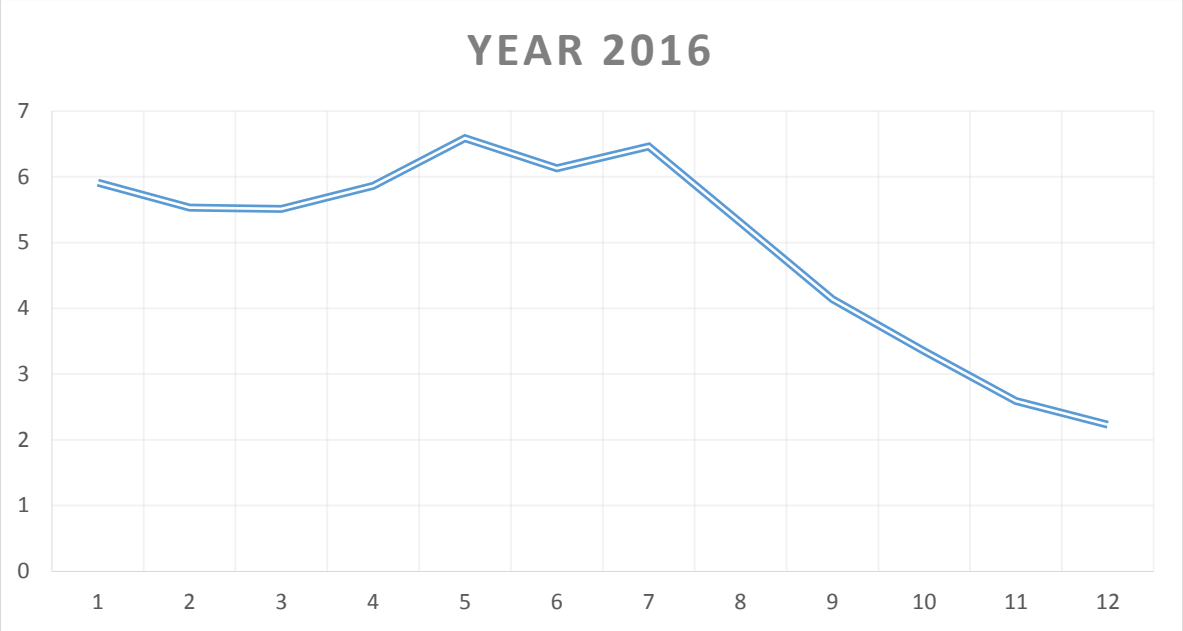
Sl. No.	Group / Sub group	Weight for		
		CPI-IW 2001=100	CPI-AL 1986-87=100	CPI-RL 1986-87=100
I	Food Group			
	Cereals and Products	13.48	40.94	38.15
	Pulse and Products	2.91	3.39	3.40
	Oil and Fats	3.23	3.83	3.79
	Meat, Fish and Eggs	3.97	3.10	3.31
	Milk and Product	7.31	3.74	3.94
	Condiments and Spices	2.57	4.12	3.92
	Vegetable and Fruits	6.05	5.06	5.05
	Other food	6.68	4.97	5.21
	Total Food Group	46.20	69.15	66.77
	Pan, Supari, tobacco and intoxicants	2.27	3.79	3.70
II	Fuel and Light	6.43	8.35	7.90
III	Housing Group	15.27	-	-
IV	Clothing, Bedding and Footwear	6.57	6.98	9.76
V	Miscellaneous			
	Medical Care	4.56	4.38	4.23
	Education, Recreation and Amusement	6.18	0.94	0.99

	Transport and Communicatio n	4.87	1.67	1.80
	Personal Care and Effects	4.22	2.04	2.28
	Others	3.43	2.70	2.57
	Total Miscellaneous Group	23.2 6	11.7 3	11.8 7
	Total	100	100	100

Calculation of CPI Inflation 2016

Monthly basis	Inflation	Yearly basis	inflation
January 2016 - December 2015	0.00 %	January 2016 - January 2015	5.91 %
February 2016 - January 2016	-0.74 %	February 2016 - February 2015	5.53 %
March 2016 - February 2016	0.37 %	March 2016 - March 2015	5.51 %
April 2016 - March 2016	1.12 %	April 2016 - April 2015	5.86 %
May 2016 - April 2016	1.48 %	May 2016 - May 2015	6.59 %
June 2016 - May 2016	0.73 %	June 2016 - June 2015	6.13 %
July 2016 - June 2016	1.08 %	July 2016 - July 2015	6.46 %
August 2016 - July 2016	-0.71 %	August 2016 - August 2015	5.30 %
September 2016 - August 2016	-0.36 %	September 2016 - September 2015	4.14 %
October 2016 - September 2016	0.36 %	October 2016 - October 2015	3.35 %
November 2016 - October 2016	-0.36 %	November 2016 - November 2015	2.59 %
December 2016 - November 2016	-0.72 %	December 2016 - December 2015	2.23 %

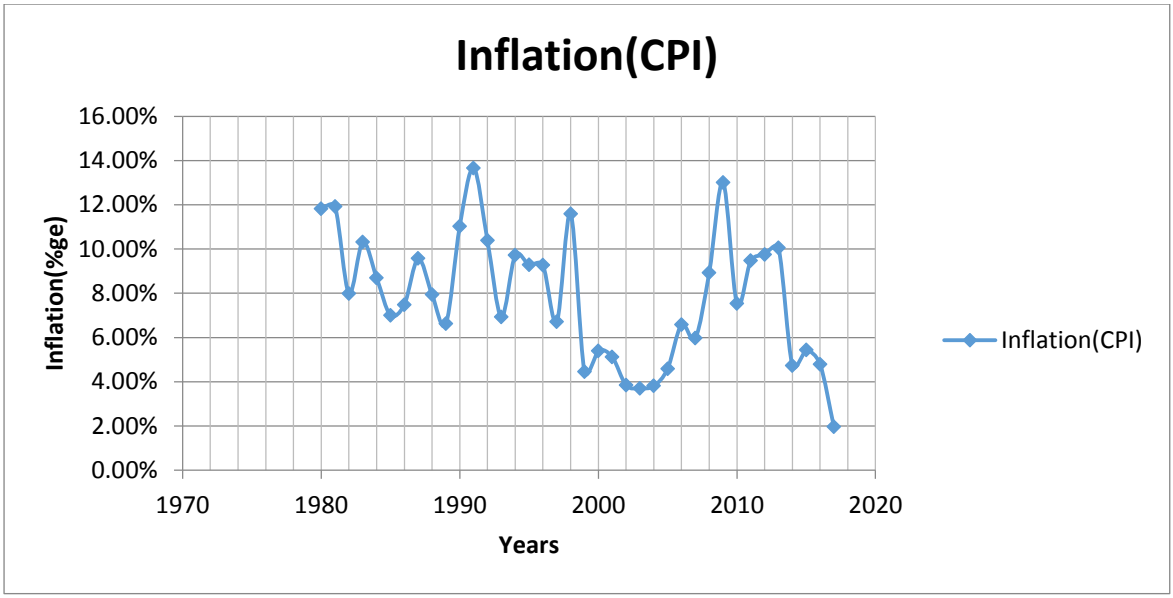
From above table the average inflation rate of 2016 can be calculated. The overall percentage from December 2015 to December 2016 is 4.97% when calculated which is same as the inflation rate for year 2016. And also from the table the yearly inflation rate as calculated we get as 2.26% which is same as December 2016- December 2015. The plot of inflation for year 2016 is given below.



Data collection and their behaviour over years :-

Year	CPI index	Inflation(CPI)	WPI index	Inflation(WPI)	GDP percentage change
1980	10.1215	11.82%	14.17		5.281
1981	11.3283	11.92%	15.9	12.20889203	6.006
1982	12.2335	7.99%	16.29	2.452830189	3.476
1983	13.4953	10.31%	17.57	7.857581338	7.289
1984	14.6688	8.70%	18.79	6.943653956	3.821
1985	15.6956	7.00%	19.67	4.683342203	5.254
1986	16.8691	7.48%	20.76	5.541433655	4.777
1987	18.4827	9.57%	22.2	6.936416185	3.965
1988	19.9495	7.94%	24.14	8.738738739	9.628

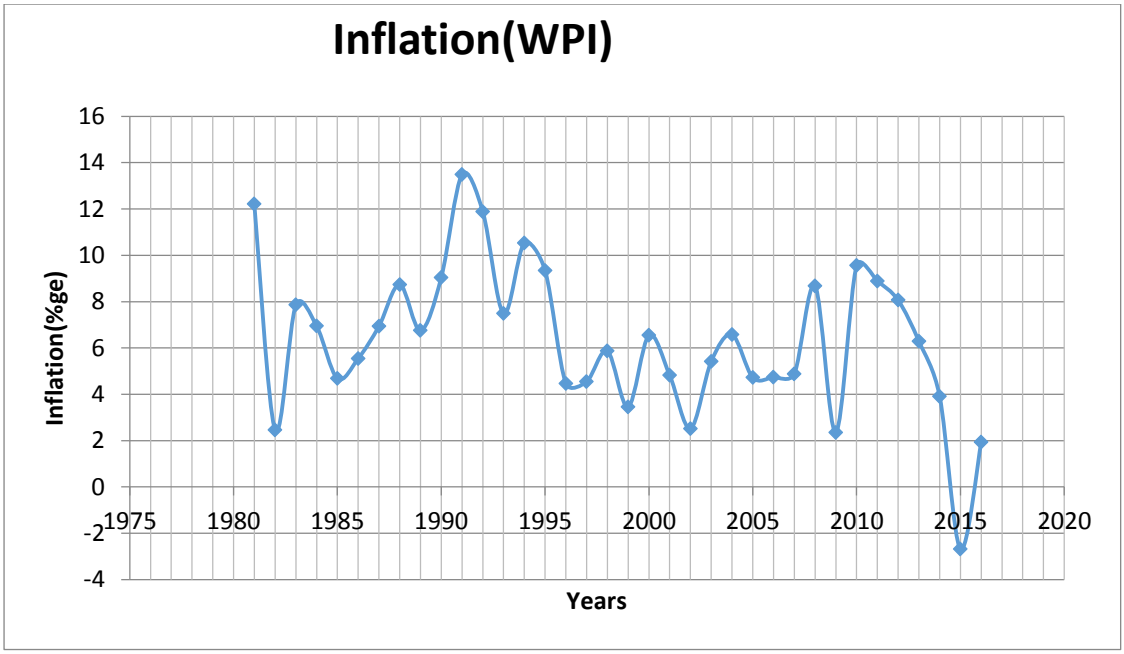
1989	21.2697	6.62%	25.77	6.752278376	5.947
1990	23.6167	11.03%	28.1	9.041521149	5.534
1991	26.8438	13.66%	31.89	13.48754448	1.057
1992	29.6309	10.38%	35.68	11.88460332	5.482
1993	31.6845	6.93%	38.35	7.483183857	4.75
1994	34.765	9.72%	42.39	10.5345502	6.659
1995	37.9921	9.28%	46.35	9.341825902	7.575
1996	41.5126	9.27%	48.42	4.466019417	7.55
1997	44.2997	6.71%	50.62	4.543577034	4.05
1998	49.4338	11.59%	53.59	5.867246148	6.184
1999	51.6341	4.45%	55.44	3.452136593	8.463
2000	54.4211	5.40%	59.07	6.547619048	3.975
2001	57.2082	5.12%	61.92	4.824784154	4.944
2002	59.4085	3.85%	63.48	2.519379845	3.907
2003	61.6088	3.70%	66.92	5.419029616	7.944
2004	63.9558	3.81%	71.32	6.575014943	7.849
2005	66.8896	4.59%	74.69	4.725182277	9.285
2006	71.2902	6.58%	78.23	4.739590307	9.264
2007	75.5442	5.97%	82.05	4.883037198	9.801
2008	82.2918	8.93%	89.17	8.677635588	3.891
2009	93	13.01%	91.27	2.355052148	8.48
2010	100	7.53%	100	9.565026843	10.26
2011	109.474	9.47%	108.89	8.89	6.638
2012	120.147	9.75%	117.67	8.063183029	5.456
2013	132.229	10.06%	125.07	6.288773689	6.386
2014	138.481	4.73%	129.96	3.909810506	7.505
2015	146	5.43%	126.47	-2.685441674	8.01
2016	153	4.79%	128.908	1.927729896	7.107
2017	155	1.96%			6.717



Observations:

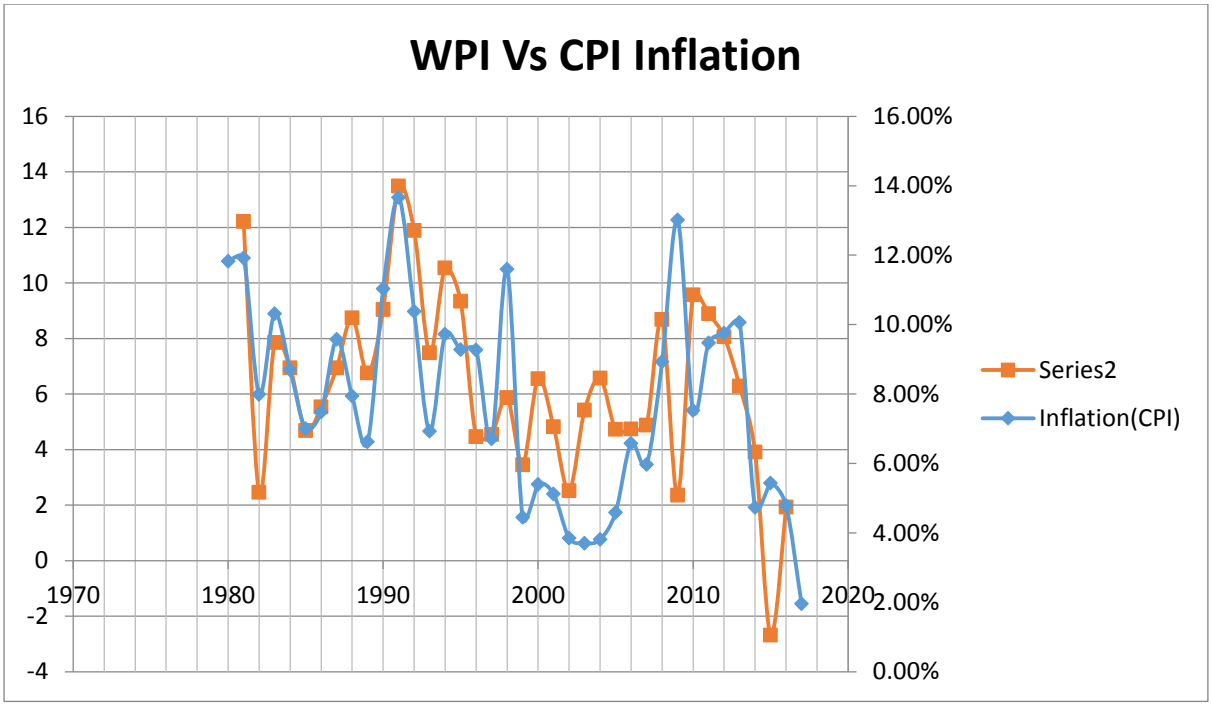
- From the above observations we can see the inflation rates are relatively high over the years. Average inflation(CPI) from 1980 till 2017 is 8.03%. We can see high inflation from 1980s to 1990s and from there decreasing and stabilizing with peak again at 2008-09.
- the period from 1994 to 2004 shows a consistent 10-year decline in inflation rates with exception of 1998
- inflation volatility rate decreased from 1992 with exceptions during 1998 and 2009.
- The CPI values are calculated weekly and their change is taken for inflation calculation.
- high inflation in India has been accounted for three factors: poor agricultural productivity and high dependence on monsoon; commodity price shocks, mainly oil prices; global business cycles and wars
- high inflation during 1991 is due to supply shocks and disintegration of USSR, an important ally of India into various countries thus giving a supply shock.
- During the 1970s and the early 1980s, OPEC price hike and inconsistent oil supply was one of the major factors that led to higher inflation in India.
- In the 1980s and the early 1990s, supply shocks (food shortages and oil price rise due to US-Iraq war) were accompanied by demand pressures of high fiscal deficit in the 1980s and growing GDP in the 1990s.

- The declining trend in inflation during 1994-95 to 2004-05 was the result of structural changes in the macroeconomic framework due to liberalisation.
- Post 2004-05, we observe demand conditions (especially non-government) influencing inflation along with the supply side. Indian economy grew at an average rate of 8.24 per cent between 2004-05 and 2009-10, fuelled by the growth rate in the services sector.
- Increase in income raised aggregate demand, which the supply side found difficult to match, at least in the short run. Accompanying this increasing demand were the increases in prices of food and fuel in 2008.
- the drought of 2009 followed by the uneven rainfall in 2010 and increase in aggregate demand have kept food prices inflation in double digits.
- The recent Middle East political crisis has added to the inflation pressures. These uncertain times have also increased volatility, in CPI and recently in WPI.



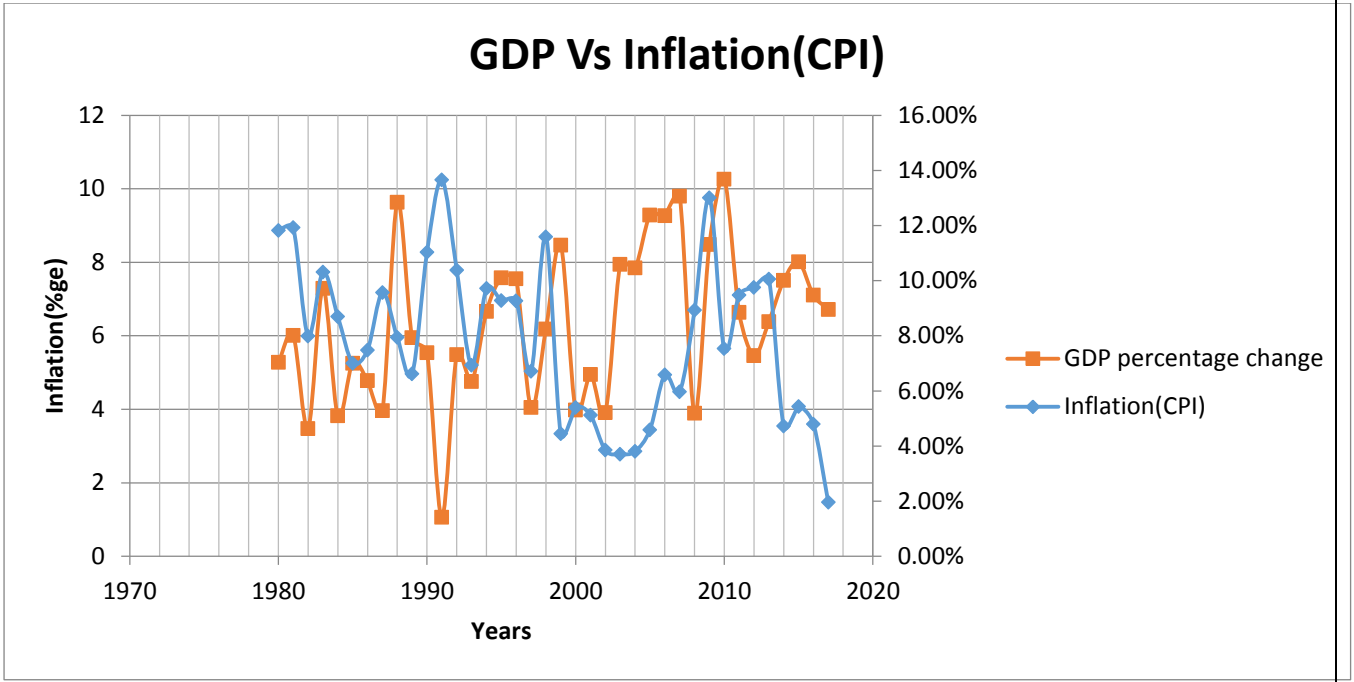
Observations:

- Inflation calculated from wpi values is also higher but relatively lower than that calculated from CPI values.
- The average inflation based on WPI values is 6.55% from 1980 to 2017.
- Here also we can see similar peaks and lows in inflation to that of inflation calculated from that of CPI values. So the same causes can be accounted for inflation calculated from WPI values.
- But in addition we see negative inflation(deflation) during 2015 which can be accounted for Lehman crisis, which acted as a negative demand shock and thus bringing inflation to low levels.



Observations:

- From above graphs it can be observed that both inflation rates moves in similar direction.
- The volatility of CPI one is higher than that of the WPI based because WPI gives less weight to food and rental prices, while services do not get any weights at all.
- The WPI are calculated weekly whereas CPI are calculated monthly. Which makes CPI more time lagging making it unsuitable for policy use.
- Post 1999, the graphs show mismatch, thus prompting the government to take new Index called as CPI combined from April 2014.



Observations:

- From the above graph we can find that the inflation and GDP are related.
- But mostly the GDP growth is undermined by Inflation in terms of percentage points. Which means the inflation has higher volatility compared to that of GDP.
- As inflation increases people spend more as the money will become less valuable in future thus increasing the GDP in short term and thus further price increases.
- We can observe that there is higher inflation giving higher growth in GDP and also low inflation giving lower growth in GDP.
- There is supply shock in 1991 thus there is high inflation but the GDP growth is high during that year which is due to price increase in the previous years. Supply shock on GDP growth can be seen in subsequent years.
- But during period 2001-02 to 2007-08 there is mismatch between them because observe a new phenomenon— demand conditions (especially non-government) influencing inflation along with the supply side. The Indian economy grew at an average rate of 8.24 per cent between 2004-05 and 2009-10, fuelled by the growth rate in the services sector. India experienced growth rates of above 9 per cent for three years from 2005-06 to 2007-08. This implied a rise in real per capita income, as inflation was below 6 per cent during those three years.

Policies to Control Inflation :-

Inflation can be reduced by policies that slow down the growth of Aggregate Demand(AD) and/or boost the rate of growth of aggregate supply (AS).There are many methods used to control inflation, including some that work and some that don't work without damaging consequences such as a recession. For example, controlling inflation through wage and price controls can cause a recession and hurt the people whose jobs are lost because of it.

Few policies that most of the governments follow to control inflation.

Contractionary monetary policy

The goal of a contractionary policy is to reduce the money supply within an economy by decreasing bond prices and increasing interest rates. This helps reduce spending because when there is less money to go around, those who have money want to keep it and save it, instead of spending it. It also means less available credit, which also reduces spending. Reducing spending is important during inflation because it helps halt economic growth and, in turn, the rate of inflation.

There are three main ways to carry out a contractionary policy.

- The first is to increase interest rates through the Federal Reserve. The Federal Reserve rate is the rate at which banks borrow money from the government, but, in order to make money, they must lend it at higher rates. So, when the Federal Reserve increases its interest rate, banks have no choice but to increase their rates as well. When banks increase their rates, less people want to borrow money because it costs more to do so if that money accrues interest. So, spending drops, prices drop and inflation slows.

- The second method is to increase reserve requirements on the amount of money banks are legally required to keep on hand to cover withdrawals. The more money banks are required to hold back, the less they have to lend to consumers. If they have less to lend, consumers will borrow less, which will decrease spending.

- The third method is to directly or indirectly reduce the money supply by enacting policies that encourage reduction of the money supply. Two examples of this include calling in debts that are owed to the government and increasing the interest paid on bonds so that more investors will buy them. The latter policy raises the exchange rate of the currency due to higher demand and, in turn, increases imports and decreases exports. Both of these policies will reduce the amount of money in circulation because the money will be going from banks, companies and investors pockets and into the government's pocket where they can control what happens to it.

Example Of UK and US :

In the UK and US, monetary policy is the most important tool for maintaining low inflation. In the UK, monetary policy is set by the MPC of the Bank of England. They are given an inflation target by the government. This inflation target is 2%+/-1, and the MPC use interest rates to try and achieve this target.

The first step is for the MPC to try and predict future inflation. They look at various economic statistics and try to decide whether the economy is overheating. If inflation is forecast to increase above the target, the MPC are likely to increase interest rates.

Increased interest rates will help reduce the growth of aggregate demand in the economy. The slower growth will then lead to lower inflation. Higher interest rates reduce consumer spending because:

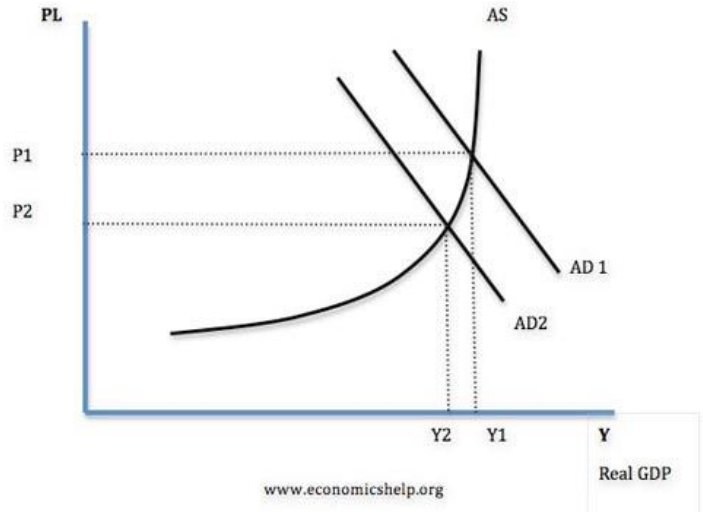
Increased interest rates increase the cost of borrowing, discouraging consumers from borrowing and spending.

Increased interest rates make it more attractive to save money

Increased interest rates reduce the disposable income of those with mortgages.

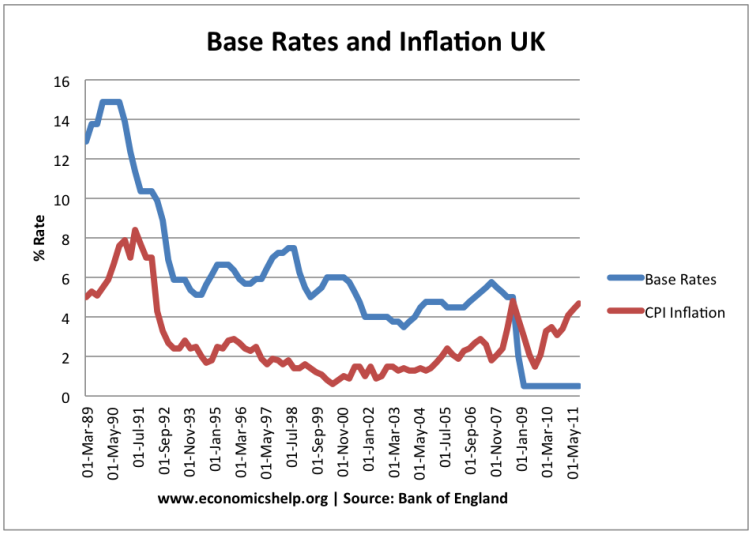
Higher interest rates increased the value of the exchange rate leading to lower exports and more imports.

Diagram showing fall in AD to reduce inflation



Base Rates and Inflation

Base interest rates were increased in the late 1980s / 1990 to try and control the rise in inflation.



Fiscal policy:

Controlling aggregate demand is important if inflation is to be controlled. If the government believes that AD is too high, it may choose to 'tighten fiscal policy' by reducing its own spending on public and merit goods or welfare payments

The consequence may be that demand and output are lower which has a negative effect on jobs and real economic growth in the short-term

Example :

Higher income tax and/or lower government spending, will reduce aggregate demand, leading to lower growth and less demand pull inflation.

Supply side economic policies:

Supply side policies aim to increase long term competitiveness and productivity- all of which can maintain lower prices. These are ways of controlling inflation in the medium term

For example, it was hoped that privatisation and deregulation would make firms more productive and competitive. Therefore, in the long run, supply side policies can help reduce inflationary pressures. However, supply side policies work very much in the long term; they cannot be used to reduce sudden increases in the inflation rate. Also, there is no guarantee government supply side policies will be successful in reducing inflation .

i.A reduction in company taxes to encourage greater investment

ii.A reduction in taxes which increases risk-taking and incentives to work – a cut in income taxes can be considered both a fiscal and a supply-side policy

iii.Policies to open a market to more competition to increase supply and lower prices

Rising productivity will cause an outward shift of aggregate supply

Examples : privatisation and deregulation may help reduce costs of business, leading to lower inflation.

Direct controls

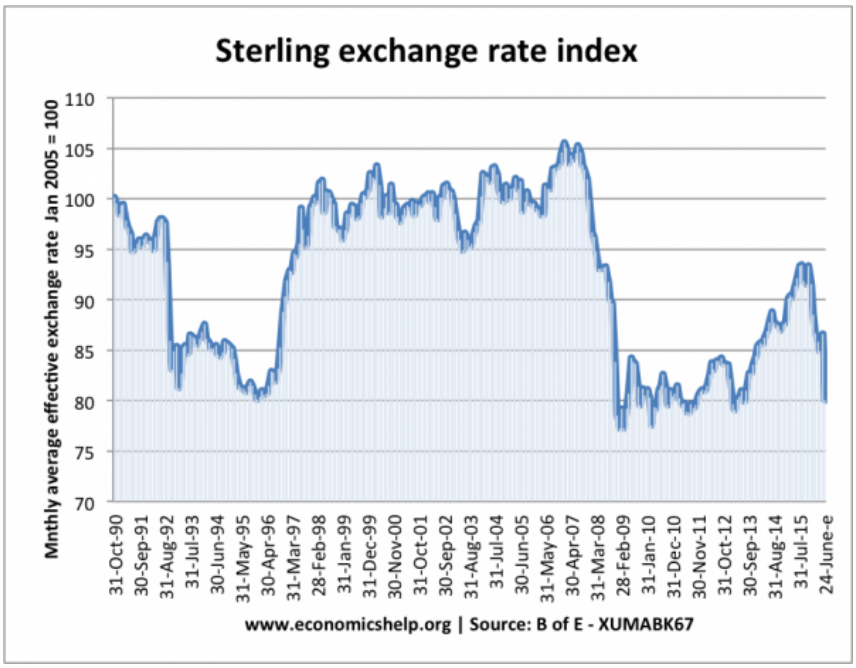
A government might choose to introduce direct controls on some prices and wages

Public sector pay awards – the annual increase in government sector pay might be tightly controlled or even froze (this means a real wage decrease).

The prices of some utilities such as water bills are subject to regulatory control – if the price capping regime changes, this can have a short-term effect on the rate of inflation

In the long run, it is the growth of a country's supply-side productive potential that gives an economy the flexibility to grow without suffering from acceleration in cost and price inflation.

4. Exchange rate policy



Sterling exchange rate index, which shows value of Sterling against basket of currencies.

In the late 1980s, the UK joined the ERM, as a means to control inflation. It was felt that by keeping the value of the pound high, it would help reduce inflationary pressures.

A stronger Pound makes imports cheaper (lower cost-push inflation)

Stronger Pound reduces domestic demand, leading to less demand-pull inflation.

A stronger Pound creates incentives for firms to cut costs in order to remain competitive.

The policy did reduce inflation but at the cost of a recession. To maintain the value of the £ against the DM, the government had to increase interest rates to 15%, and this contributed to the recession.

See: ERM crisis 1992

The UK no longer uses this as an anti-inflationary policy.

5. Wage Control

Wage growth is a key factor in determining inflation. If wages increase quickly, it will cause high inflation. In the 1970s, there was a brief attempt at wage controls which tried to limit wage growth. However, it was effectively dropped because it was difficult to enforce widely.

6. Targeting Money Supply (Monetarism)

In the early 1980s, the UK adopted a form of monetarism, where the government sought to control inflation through controlling the money supply. To control the money supply, the government adopted higher interest rates and reduced budget deficit. It did bring inflation down but at expense of deep recession. Monetarism was effectively abandoned because the link between money supply and inflation was weaker than expected.

how best can inflation be controlled?

The most appropriate way to control inflation in the short term is for the government and the central bank to keep control of aggregate demand to a level consistent with our productive capacity

AD is probably better controlled through the use of monetary policy rather than an over-reliance on using fiscal policy as an instrument of demand-management

Controlling demand to limit inflation is likely to be ineffective in the short run if the main causes are due to external shocks such as high world food and energy prices

The UK is an open economy in which inflation is strongly affected by events in the rest of the world

References

http://www.economicswebinstitute.org/glossary/inflat.htm

https://www.economicshelp.org/blog/2656/inflation/different-types-of-inflation/

https://en.wikipedia.org/wiki/Core_inflation

https://en.wikipedia.org/wiki/Cost-push_inflation

https://en.wikipedia.org/wiki/Demand-pull_inflation

http://www.investopedia.com/terms/i/inflation.asp

http://www.investopedia.com/terms/p/purchasingpower.asp

http://www.imf.org/external/pubs/ft/weo/2017/02/weodata/weoselser.aspx?c=534&t=1

http://www.thehindubusinessline.com/opinion/inflation-over-the-decades/article2085255.ece

http://pib.nic.in/newsite/PrintRelease.aspx?relid=86838

https://www.investopedia.com/ask/answers/111314/what-methods-can-government-use-control-inflation.asp

https://www.economicshelp.org/blog/42/C/economic-policies-to-reduce-inflation/

https://www.tutor2u.net/economics/reference/inflation-policies-to-control-inflation

http://www.inflation.eu/inflation-rates/india/historic-inflation/cpi-inflation-india-2016.aspx