MANAGERIAL ECONOMICS

INFLATION: THEORIES AND CONTROL MEASURES I

Topic 4 - Part I

ITM BUSINESS SCHOOL
PGDM 2021 - 2023 - SEM I
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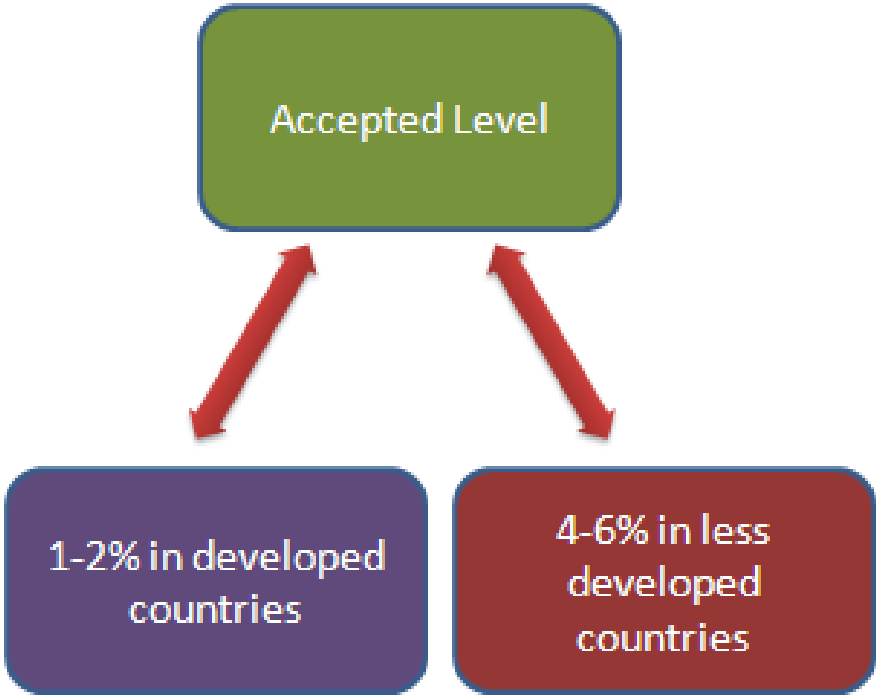
Inflation

Inflation means **'persistent' and appreciable increase** in **general level of prices** over a **period of time**

Inflation is Desirable because

Keeping economic outlook optimistic and helping production and employment

Promoting mobilization of resources by inflationary method of financing



Deflation and Disinflation

Deflation: a sustained fall in the price level

- Deflation is sometimes taken to mean a lower level of economic activity, which might be the result of government policy. Indeed, deflationary policy measures are those designed to reduce aggregate demand. However, deflation is now more commonly taken to refer specifically to a sustained fall in the price level. It results in a rise in the value of money, with each currency unit having greater purchasing power. Deflation involves a negative inflation rate, for example, –3%.

Disinflation: a fall in the inflation rate

- In contrast, disinflation occurs when the inflation rate falls but is still positive. For instance, the inflation rate may decline from 8% to 6%. In this case, the price level is still rising but at a slower rate.

Deflation and Disinflation

Stagflation: is a situation in an economy when inflation and unemployment both are at higher levels, contrary to conventional belief.

- Such a situation first arose in the 1970s in the US economy (average unemployment rate above 6 per cent and the average rate of inflation above 7 per cent)34 and in many Euro-American economies. This took place as a result of oil price increases of 1973 and 1979 and anticipation of higher inflation. The stagflationary situation continued till the early 1980s. Conventional thinking that a trade-off existed between inflation and unemployment (i.e., Phillips Curve) was falsified and several economies switched over to alternative ways of economic policies, such as monetaristic and supply-side economics.
- When the economy is passing through the cycle of stagnation (i.e., long period of low aggregate demand in relation to its productive capacity) and the government shuffles with the economic policy, a sudden and temporary price rise is seen in some of the goods—such inflation is also known as stagflation. Stagflation is basically a combination of high inflation and high growth.

Deflation and Disinflation

Reflation is a situation often deliberately brought by the government to reduce unemployment and increase demand by going for higher levels of economic growth.

- Governments go for higher public expenditures, tax cuts, interest rate cuts, etc. Fiscal deficit rises, extra money is generally printed at higher level of growth, wages increase and there is almost no improvement in unemployment.
- Reflation can also be understood from a different angle—when the economy is crossing through the cycle of recession (low inflation, high unemployment, low demand, etc.) and government takes some economic policy decisions to revive the economy from recession, certain goods see sudden and temporary increase in their prices, such price rise is also known as reflation.

Methods of Measuring Inflation

GENERAL PRICE LEVEL MEASUREMENT

There are three different measures of general price level. These are:

- Consumer Price Index (CPI),
- Wholesale Price Index (WPI), and
- GDP Deflator.

- Each is a weighted average of several prices and is presented in the form of index numbers.

Methods of Measuring Inflation

CPI

- CPI signals changes in prices **facing the consumer.**

WPI

- WPI signals changes in prices **facing the producer.**

GDP Deflator

- GDP deflator signals **overall national price changes.**

Each in its own way provides a measure of inflation in the economy. None is a perfect measure.

Methods of Measuring Inflation

Change in Price Index Numbers (PIN) (CPI or WPI)

$$\frac{\text{CPI JULY 2020} - \text{CPI JULY 2019}}{\text{CPI JULY 2019}} \times 100$$

$$\frac{\text{WPI JULY 2020} - \text{WPI JULY 2019}}{\text{WPI JULY 2019}} \times 100$$

Change In GDP Deflator

$$\frac{\text{GDP Deflator 2020} - \text{GDP Deflator 2019}}{\text{GDP Deflator 2019}} \times 100$$

PIN_t is the Wholesale Price Index(WPI) for the year selected **t=2019**.
PIN_{t-1} is the Wholesale Price Index(WPI) for the year selected **t-1=2018**

$$\text{Rate of Inflation} = \frac{PIN_t - PIN_{t-1}}{PIN_{t-1}} \times 100$$

$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

Methods of Measuring Inflation

Item (1)	Base year (2012) quantity (2)	Base year (2012) prices (3)	Base year (2012) weights (4)	Current year (2020) prices (5)	Price relatives, (Col. 5/Col. 3 x 100) (6)
Rice	15 kg	Rs. 10/kg		Rs.15/kg	
Wheat	10 kg	Rs. 8/kg		Rs.10/kg	
Milk	40 L	Rs. 5/L		Rs.7/L	
Cloth	10 m	Rs.8/m		Rs.10/m	
House	Two room	Rs. 200		Rs. 400	

Methods of Measuring Inflation

Item (1)	Base year (2012) quantity (2)	Base year (2012) prices (3)	Base year (2012) weights (4)	Current year (2014/15) prices (5)	Price relatives, (Col. 5/Col. 3 x 100) (6)
Rice	15 kg	Rs. 10/kg	0.16	Rs.15/kg	150
Wheat	10 kg	Rs. 8/kg	0.09	Rs.10/kg	125
Milk	40L	Rs. 5/L	0.22	Rs.7/L	190
Cloth	10 m	Rs.8/m	0.09	Rs.10/m	125
House	Two room	Rs. 200	0.44	Rs. 400	200

Methods of Measuring Inflation

Item (1)	Base year (2012) quantity (2)	Base year (2012) prices (3)	Base year (2012) weights (4)	Current year (2014/15) prices (5)	Price relatives, (Col. 5/Col. 3 x 100) (6)
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Wheat	10 kg	Rs. 8/kg	0.09	Rs.10/kg	125
Milk	40L	Rs. 5/L	0.22	Rs.7/L	140
Cloth	10 m	Rs.8/m	0.09	Rs.10/m	125
House	Two room	Rs. 200	0.44	Rs. 400	200

CPI/WPI = (150 x 0.16) + (125 x 0.09) + (140 x 0.22) + (125 x 0.09) + (200 x 0.44) = **165.3**

Methods of Measuring Inflation

The steps involved in the construction of CPI can be explained with the help of the above table as follows:

1. Find the typical consumption basket in the base year (column 1). This will include both goods and services. In the table we have considered only 5 items for illustration; in reality there are many more.

2. For each item in the consumption basket, find the base year quantity consumed (column 2) and base year retail prices (column 3). Data on items in the basket, quantity consumed of each item and its price can be obtained from the comprehensive consumption surveys conducted by the Central Statistical Organization and reported approximately every five years.

Methods of Measuring Inflation

The steps involved in the construction of CPI can be explained with the help of the above table as follows:

3. Find out the weight of each item in the consumption basket in the base year (column 4). First, find out the total expenditure on the basket (Rs. 910) by multiplying the quantity of each item (column 2) by its price (column 3) and then summing it up. Then see the share (weight) of each item's expenditure in the total expenditure. Thus, the weight of rice in the consumption basket, obtained as Rs. 150/Rs. 910, is 0.16, and similarly, for other items. The sum of the weights must add to 1.

Methods of Measuring Inflation

The steps involved in the construction of CPI can be explained with the help of the above table as follows:

4. Assume the base year weights hold in the current year also. This is a crucial assumption in the construction of the CPI. What it means is that the consumption basket and the proportionate share of each item in the basket do not change from the base year to the current year. Once we assume that all we need to do, for each item, is to divide the current year prices (column 5) with the base year prices (column 3) and multiply by 100 and obtain column 6. The ratio of prices is called the price relative.

5. Column 6 tells us the increase in price of each item in the consumption basket between the base year and the current year. For example, an index of 150 in case of rice tells us that between 2012 and 2014/15, the price of rice has gone up by 50%, and so on for other items.

Methods of Measuring Inflation

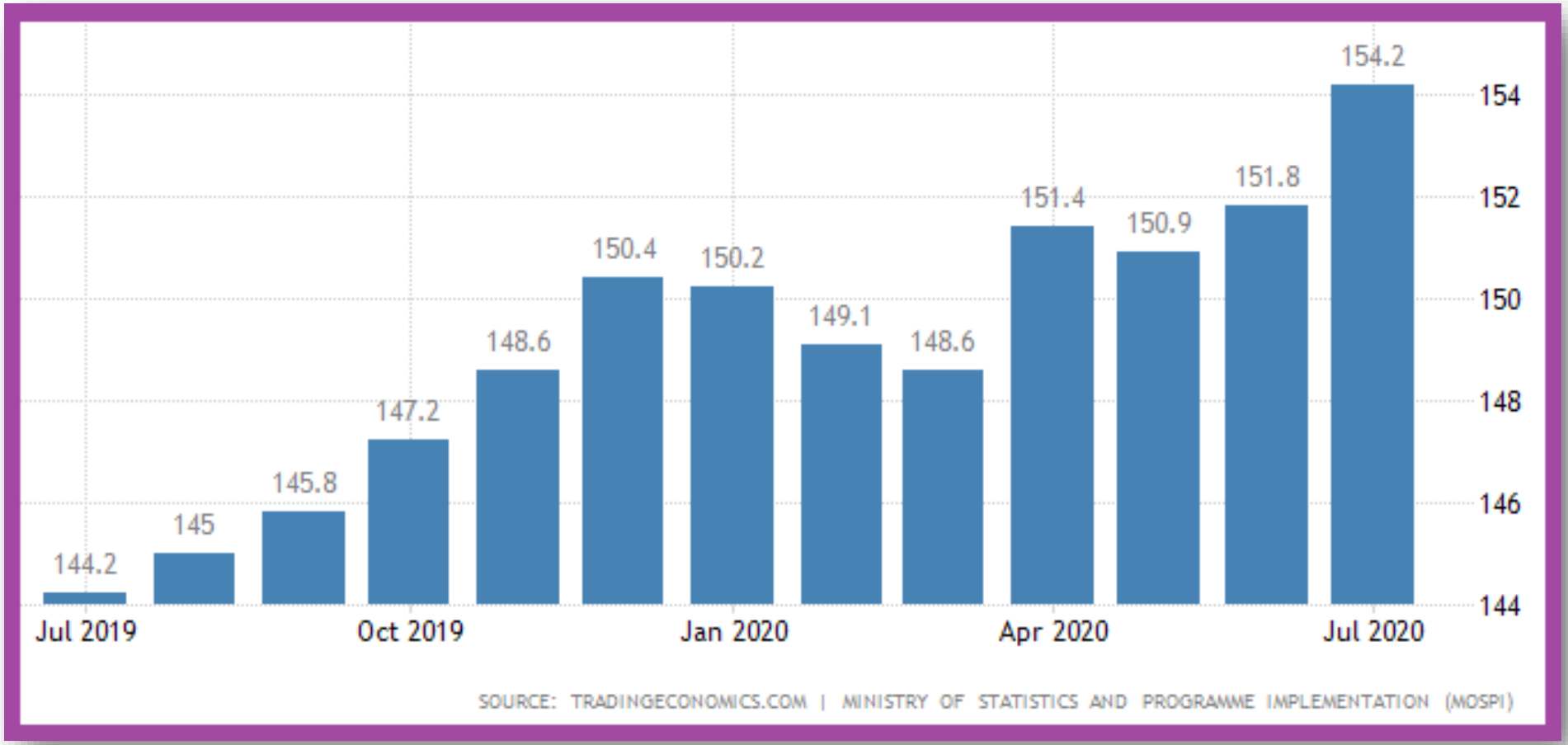
The steps involved in the construction of CPI can be explained with the help of the above table as follows:

We, however, need a composite index to know what the increase in the cost of the basket is in 2014/15, compared to 2012. Since quantity weights (column 4) are constant, we multiply each item's index in the current period (column 6) by its weight (column 4) and add those up to obtain a weighted average for the entire basket. This gives us an index of 165.3.12

What this means is that, between the base year and current year, the cost of the entire basket has gone up by 65.3%.

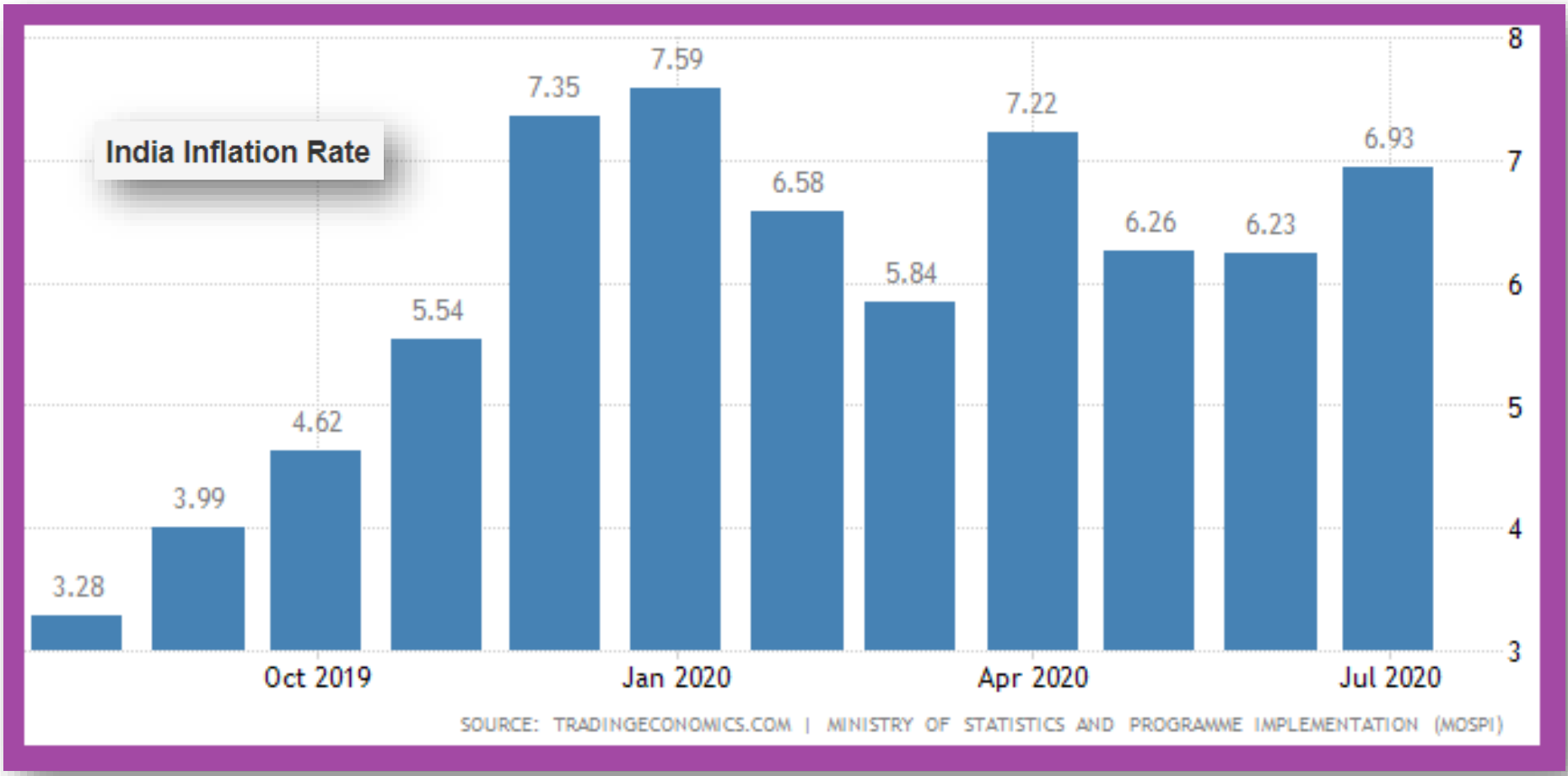
India - Consumer Price Index (CPI)

Consumer Price Index CPI in India increased to 154.20 points in July from 151.80 points in June of 2020.



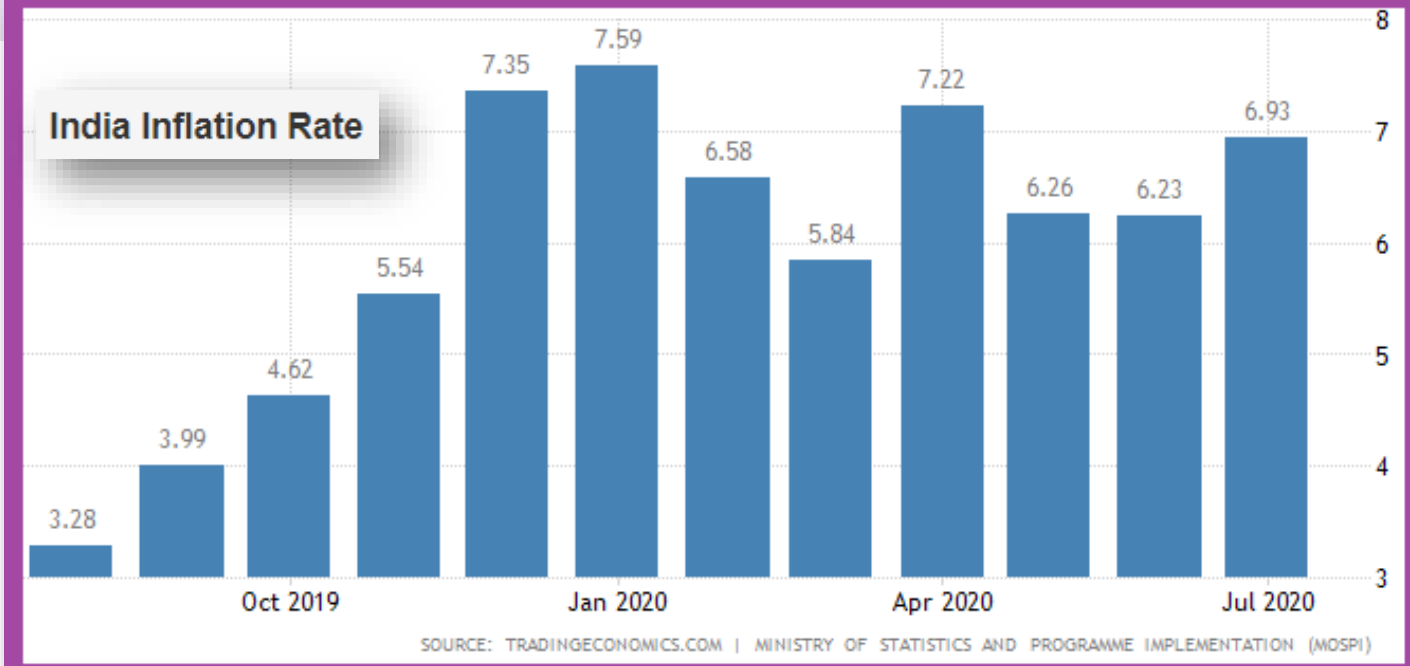
Annualized Inflation of India – Retail Inflation Based on CPI

India's retail price inflation climbed to 6.93 percent year-on-year in July 2020 from an upwardly revised 6.23 percent in the previous month and easily beating market expectations of 6.15 percent.



Annualized Inflation of India – Retail Inflation Based on CPI

The reading remained also above the Reserve Bank of India's medium-term target of 4 percent, as food prices continued to soar (9.62 percent vs 8.72 percent in June) due to disrupted supply chains. Additional upward pressure came from pan, tobacco and intoxicants (12.35 percent), housing (3.25 percent), clothing and footwear (2.91 percent), fuel and light (2.80 percent), and miscellaneous (6.95 percent) mainly boosted by personal care and effects (13.63 percent) and transport and communication (9.95 percent).



1 - Method of Measuring Inflation: WPI

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Major Group/ Group	Weights		No. of Items		No. of Quotations	
	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
ALL COMMODITIES	100	100	676	697	5482	8331
PRIMARY ARTICLES	20.118	22.62	102	117	579	983
FUEL&POWER	14.910	13.15	19	16	72	442
MANUFACTURED PRODUCTS	64.972	64.23	555	564	4831	6906

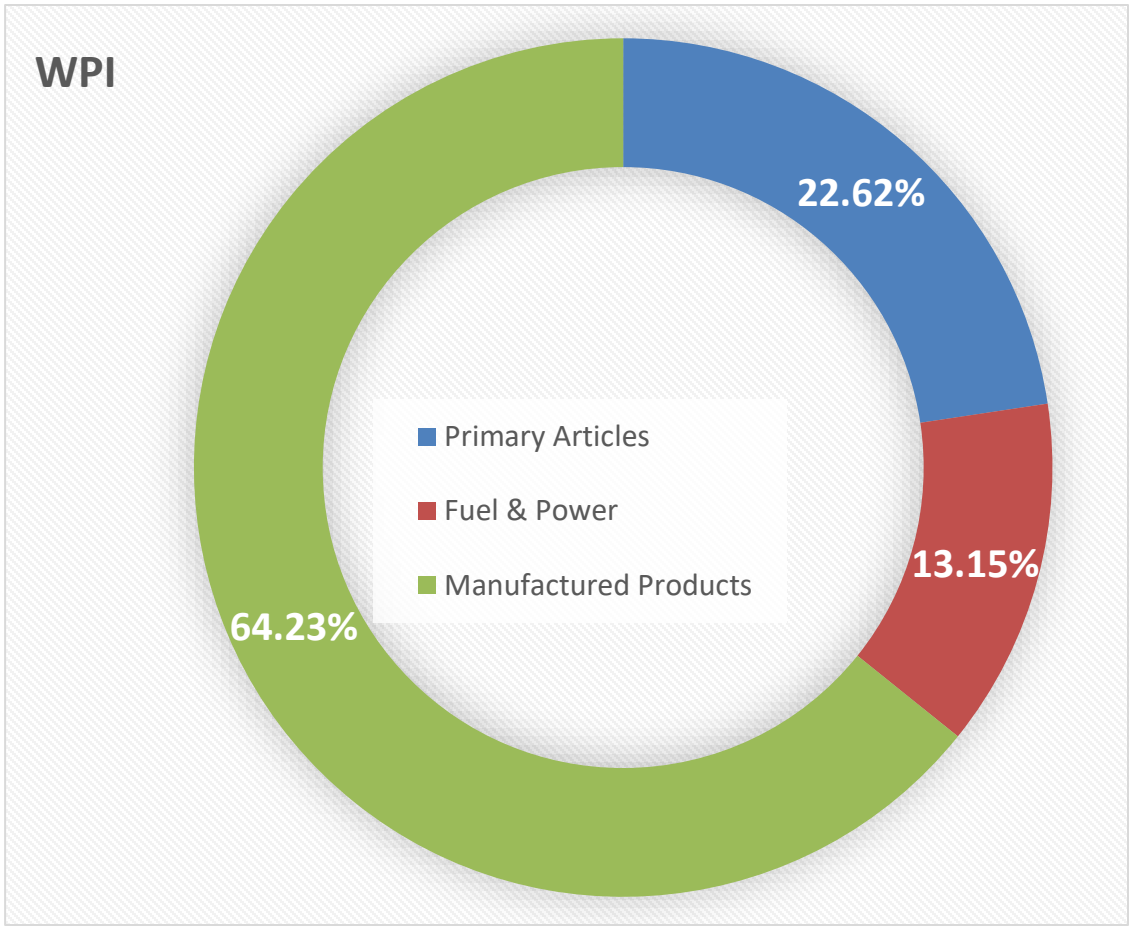
- Item basket consist of 697 items (against 676 in existing base) with following changes.
- Deletion and addition of items is based on their relative importance in the commodity basket.

	No. of items	(weight)
Common	498	85.78
New	199	14.22
Dropped	146	11.97

1 - Method of Measuring Inflation: WPI

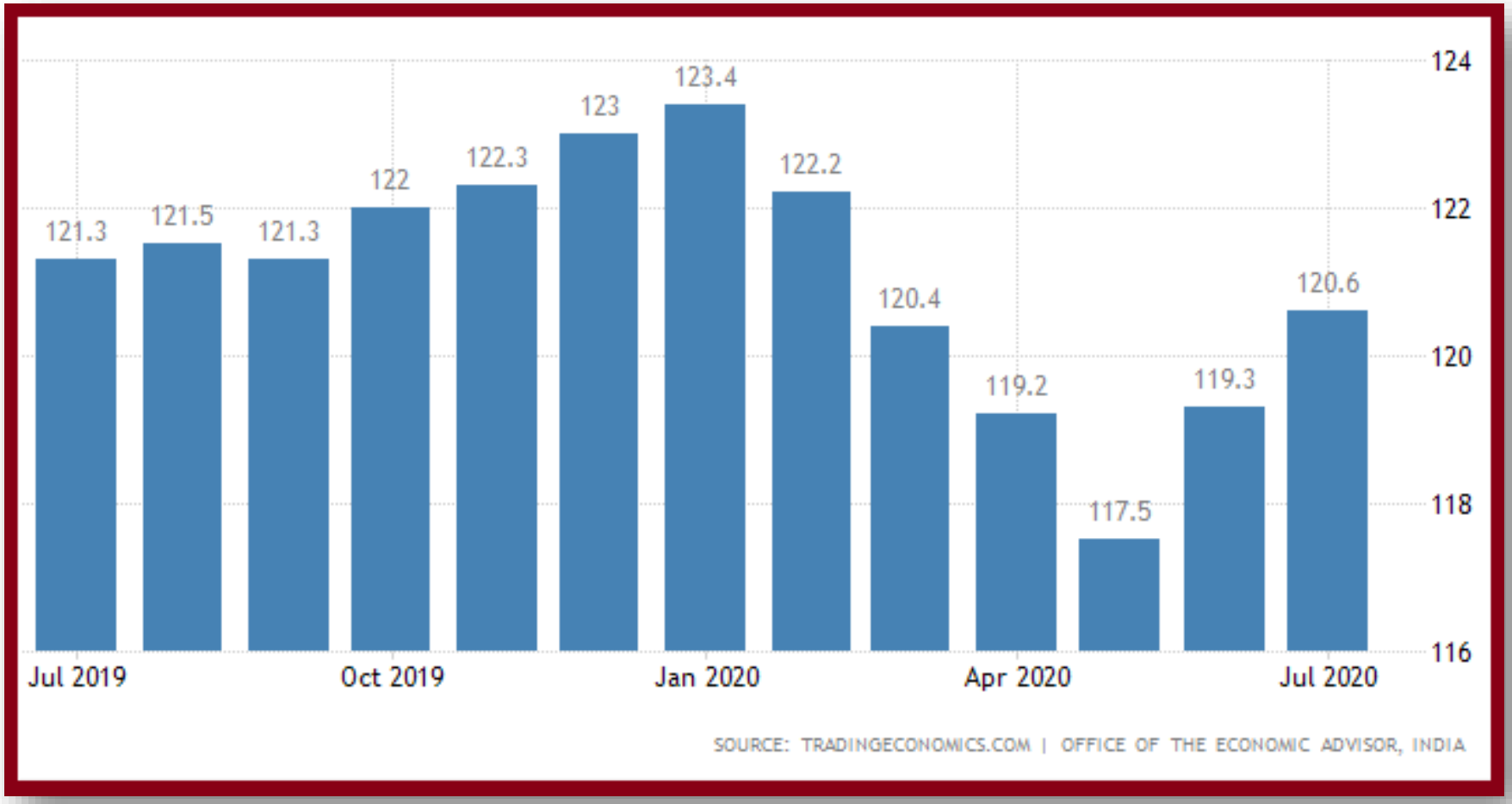
Base Year : 2012

Calculated by Economic Adviser in the commerce ministry using same Laspeyres formula



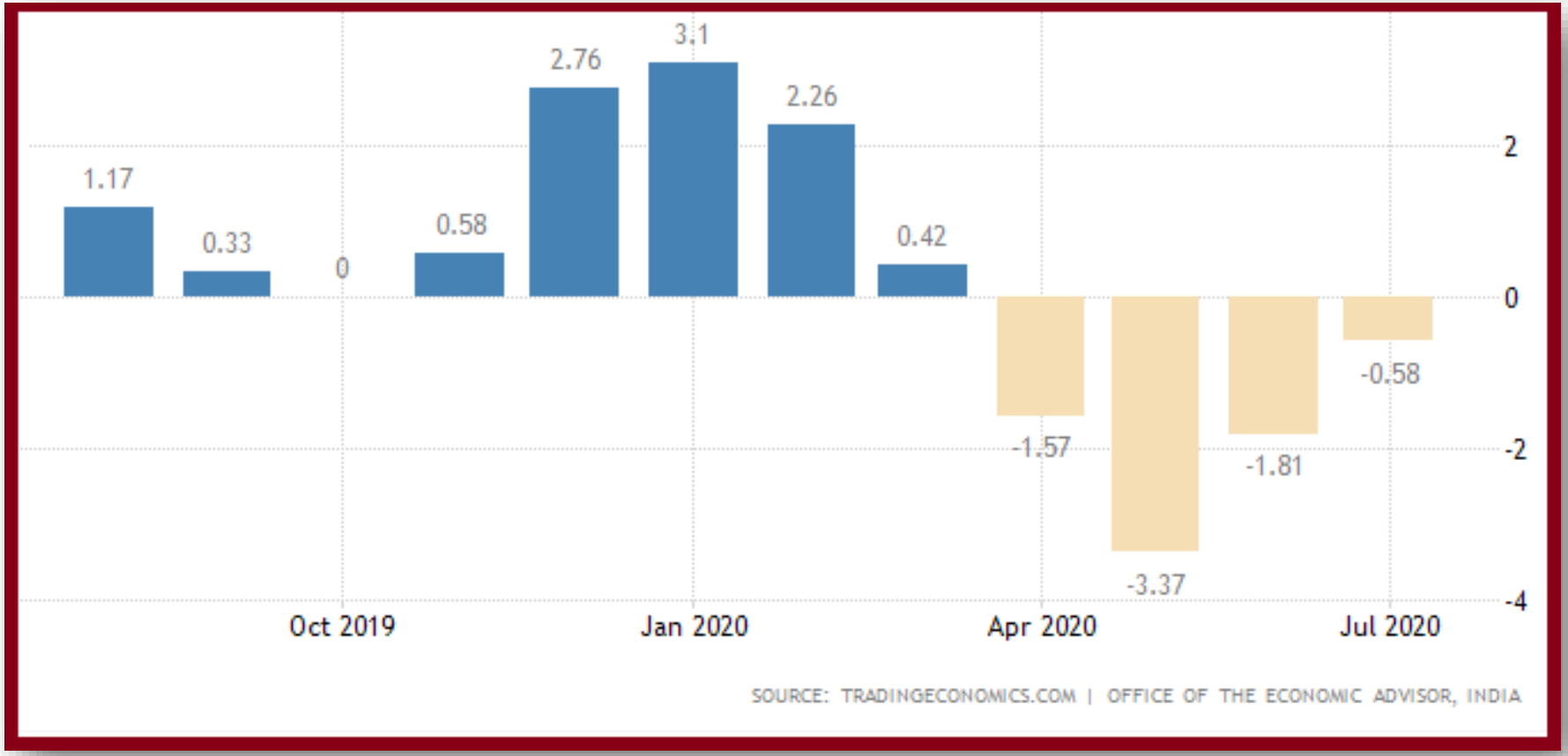
1 - Method of Measuring Inflation: WPI

Producer Prices in India increased to 120.60 points in July from 119.30 points in June of 2020.



1 - Method of Measuring Inflation: WPI

India's wholesale prices dropped 0.58 percent from a year earlier in July 2020, easing from a 1.81 percent decline in the previous month and compared to market expectations of a 1 percent fall. Cost for fuel and power was down 9.84 percent, softer than a 13.6 percent slump in June. At the same time, prices rose at a faster pace for food articles (4.08 percent vs 2.04 percent) and manufactured products (0.51 percent vs 0.08 percent)



1 - Method of Measuring Inflation: WPI

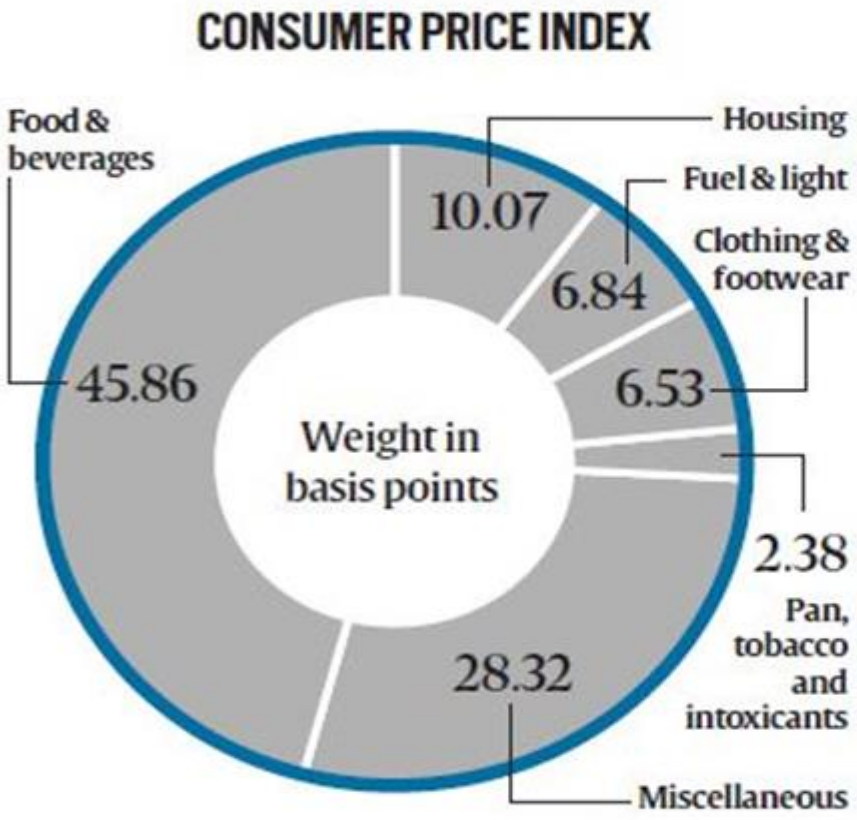
India Prices	Last	Previous	Highest	Lowest	Unit
Inflation Rate	6.93	6.23	12.17	1.54	percent
Consumer Price Index CPI	154.20	151.80	154.20	86.81	points
GDP Deflator	138.80	134.80	146.50	100.00	points
Producer Prices	120.60	119.30	123.40	62.44	points
Producer Prices Change	-0.58	-1.81	34.68	-11.31	percent
Export Prices	376.00	372.00	376.00	100.00	points
Import Prices	513.00	523.00	523.00	100.00	points
Food Inflation	9.62	8.72	14.72	-2.65	percent
Inflation Expectations	10.20	9.00	16.00	7.90	percent
Inflation Rate Mom	1.58	0.60	2.25	-1.55	percent
Cpi Housing Utilities	155.50	154.70	155.60	100.30	points
CPI Transportation	138.10	135.00	138.10	103.20	points

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Base year- 2012

Calculated by – Central Statistical Organization (CSO) in Ministry of Statistics and Programme Implementation (MoSPI) using **Laspeyres formula** (basically our weighted average formula)



2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Weighting Diagram for CPI (Base Year : 2012)

State
Maharashtra

Group	Item	Rural	Urban
1	Food and beverages	54.28	34.38
2	Pan, tobacco and intoxicants	2.72	.97
3	Clothing and footwear	7.56	5.14
4	Housing		24.74
5	Fuel and light	7.86	5.21
6	Miscellaneous	27.58	29.56
	General Index (All Groups)	100.00	100.00

All India Sub-group/Group Weights

Group Code	Sub-group Code	Description	Rural	Urban	Combined
	1.1.01	Cereals and products	12.35	6.59	9.67
	1.1.02	Meat and fish	4.38	2.73	3.61
	1.1.03	Egg	0.49	0.36	0.43
	1.1.04	Milk and products	7.72	5.33	6.61
	1.1.05	Oils and fats	4.21	2.81	3.56
	1.1.06	Fruits	2.88	2.90	2.89
	1.1.07	Vegetables	7.46	4.41	6.04
	1.1.08	Pulses and products	2.95	1.73	2.38
	1.1.09	Sugar and Confectionery	1.70	0.97	1.36
	1.1.10	Spices	3.11	1.79	2.50
	1.2.11	Non-alcoholic beverages	1.37	1.13	1.26
	1.1.12	Prepared meals, snacks, sweets etc.	5.56	5.54	5.55
1		**Food and beverages**	**54.18**	**36.29**	**45.86**
2		**Pan, tobacco and intoxicants**	**3.26**	**1.36**	**2.38**
	3.1.01	Clothing	6.32	4.72	5.58
	3.1.02	Footwear	1.04	0.85	0.95
3		**Clothing and footwear**	**7.36**	**5.57**	**6.53**
4		**Housing**	--	**21.67**	**10.07**
5		**Fuel and light**	**7.94**	**5.58**	**6.84**
	6.1.01	Household goods and services	3.75	3.87	3.80
	6.1.02	Health	6.83	4.81	5.89
	6.1.03	Transport and communication	7.60	9.73	8.59
	6.1.04	Recreation and amusement	1.37	2.04	1.68
	6.1.05	Education	3.46	5.62	4.46
	6.1.06	Personal care and effects	4.25	3.47	3.89
6		**Miscellaneous**	**27.26**	**29.53**	**28.32**
All Groups			**100.00**	**100.00**	**100.00**

-- : CPI (Rural) for housing is not compiled.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Share of CPI (Rural) and CPI (Urban) in CPI (Combined)

State/UT Code	State/UT	Percent Share	
		Rural	Urban
01	Jammu and Kashmir	64.72	35.28
02	Himachal Pradesh	81.87	18.13
03	Punjab	55.24	44.76
04	Chandigarh	5.70	94.30
05	Uttarakhand	62.69	37.31
06	Haryana	53.13	46.87
07	Delhi	5.36	94.64
08	Rajasthan	64.37	35.63
09	Uttar Pradesh	64.15	35.85
10	Bihar	85.40	14.60
11	Sikkim	67.39	32.61
12	Arunachal Pradesh	73.68	26.32
13	Nagaland	57.49	42.51
14	Manipur	68.36	31.64
15	Mizoram	38.98	61.02
16	Tripura	74.18	25.82
17	Meghalaya	68.96	31.04
18	Assam	79.41	20.59
19	West Bengal	52.80	47.20
20	Jharkhand	61.84	38.16
21	Odisha	72.05	27.95
22	Chhattisgarh	61.29	38.71
23	Madhya Pradesh	58.81	41.19
24	Gujarat	43.38	56.62
25	Daman and Diu	58.13	41.87
26	Dadra and Nagar Haveli	33.26	66.74
27	Maharashtra	33.50	66.50
28	Andhra Pradesh	63.08	36.92
29	Karnataka	46.24	53.76
30	Goa	38.72	61.28
31	Lakshadweep	48.90	51.10
32	Kerala	64.68	35.32
33	Tamil Nadu	41.01	58.99
34	Puducherry	25.53	74.47
35	Andaman and Nicobar Islands	49.16	50.84
36	Telangana	45.16	54.84
All India		53.52	46.48

7 Kinds of Inflation

WHOLESALE INFLATION

- Wholesale inflation is measured on the basis of the changes in wholesale price index (WPI). Since it is based on the wholesale prices, it helps the government to spot the price rise in advance.
- However, wholesale inflation lost its relevance after the government decided to change the frequency of reviewing the index from a weekly to monthly basis, and the Reserve Bank of India shifted its monetary focus from wholesale to retail inflation.

RETAIL INFLATION

Retail inflation or headline inflation is calculated on the basis of changes in the Consumer Price Index (CPI). Since it measures the impact of price rise, it is more relevant for financial planning for the average investor.

While people from big cities should use the urban variant, those from villages and smaller cities can use the rural one.

7 Kinds of Inflation

FOOD INFLATION

- Food inflation is a subset of headline inflation and is expected to rise further in the coming months due to a deficit in the monsoon rains.
- Given the large number of people below the poverty line, it is a major cause for concern for developing countries like India. It is essential for investors to take this inflation into account while planning their finances.

HOUSING INFLATION

- Housing inflation is another subset of headline inflation. It is rising at a faster clip compared with the headline inflation and was above 15% two years ago.
- The cost of housing is a major expenditure for city dwellers and is more important for them. This is why one must consider it while planning for the real estate goals.

7 Kinds of Inflation

LIFESTYLE INFLATION

- As an individual's income increases, there is a gradual improvement in lifestyle—bigger house, branded clothes, better car. These additional expenses result in what is termed as lifestyle inflation.
- So the expenses increase not just on account of the rise in prices, but also due to a better lifestyle. Since the rise depends on the individual, it is not possible to put a number that is applicable to all.
- However, one must consider it while computing long-term goals, such as retirement planning or children's wedding.

EDUCATION INFLATION

- Though education inflation is also a subset of headline inflation, it only measures the increase in cost of education and stationery.
- It is essential to provide for this inflation while planning for your child's studies because most of the higher education is now subsidized and the subsidy might not be available by the time your ward reaches adulthood.

7 Types of Inflation

MEDICAL INFLATION

- Medical inflation is relatively under control in India due to the government restrictions on drug price rise and technological innovation to keep a tab on medical equipment costs.

- However, medical expenses are bound to rise as you grow older and you need to consider a higher rate of inflation so that you face any problem during your sunset years.

CPI Indexes

Index Numbers

Index Number	Base Year	All India General Index	
		June 2020	July 2020
Consumer Price Index Numbers for Industrial Workers - CPI(IW)	2001=100	332	336
		June 2020	July 2020
Consumer Price Index Numbers for Agricultural Labourers	1986-87=100	1018	1021
Consumer Price Index Numbers for Rural Labourers	1986-87=100	1024	1028

CPI Indexes

Consumer Price Index Numbers for Industrial workers on Base 2001 = 100 for Year 2020

State	Centre Desc	Jan	Feb	Mar	Apr	May	Jun
MHR	MUMBAI	322	319	319	320	324	326
	NAGPUR	406	405	402	404	406	410
	NASIK	380	377	377	381	384	385
	PUNE	362	360	360	367	367	367
	SHOLAPUR	350	349	348	349	352	353

कृषिएवं ग्रामीण श्रमिकों के लिए उपभोक्ता मूल्य सूचकांक-जुलाई, 2020

CONSUMER PRICE INDEX NUMBERS FOR AGRICULTURAL AND RURAL LABOURERS
(*आधार*BASE : 1986-87=100) JULY, 2020

क्र. सं.	राज्य	कृषि श्रमिक AGRICULTURAL LABOURERS				ग्रामीण श्रमिक RURAL LABOURERS				STATE	Sl. No.
		सामान्य/General		खाद्य/Food		सामान्य/General		खाद्य/Food			
		जून June, 2020	जुलाई July, 2020	जून June, 2020	जुलाई July, 2020	जून June, 2020	जुलाई July, 2020	जून June, 2020	जुलाई July, 2020		
11	महाराष्ट्र	1162	1163	1223	1223	1148	1147	1198	1195	Maharashtra	11

CPI Indexes

CPI-IW: The Consumer Price Index for the industrial workers (CPI-IW) has 260 items (plus the services) in its basket with 2001 as the base year (the first base year was 1958–59). The data is collected at 76 centres with one month's frequency and the index has a time lag of one month.

- Basically, this index specifies the government employees (other than banks' and embassies' personnel).
- The wages/salaries of the central government employees are revised on the basis of the changes occurring in this index, the dearness allowance (DA) is announced twice a year. When the Pay Commission recommends pay revisions, the base is the CPI (IW).

CPI Indexes

CPI-AL: The Consumer Price Index for Agricultural Labourers (CPI-AL) has 1986–87 as its base year with 260 commodities in its basket. The data is collected in 600 villages with a monthly frequency and has three weeks time lag.

- This index is used for revising minimum wages for agricultural labourers in different states. As the consumption pattern of agricultural labourers has changed since 1986–87 (its base year), the Labour Bureau proposes to revise the existing base year of this index. For the revision, the consumer expenditure data collected by the NSSO during its 61st NSS Round (2004–05) is proposed to be used.
- The governments at the Centre and states remain vigilant regarding the changes in this index as it shows the price impact on the most vulnerable segment of the society, this segment spends almost 75 per cent of its total income on the purchase of food articles. Governments' failure to stabilise the index in the long range can make them politically volatile and be translated into political debacles. That is why the FCI is always kept ready to supply cheaper foodgrains in the situations of any price rise.

CPI Indexes

CPI-RL: There is yet another Consumer Price Index for the Rural Labourers (CPI-RL) with 1983 as the base year, data is collected at 600 villages on monthly frequency with three weeks time lag, its basket contains 260 commodities.

- The agricultural and rural labourers in India create an overlap, i.e., the same labourers work as the rural labourers once the farm sector has either low or no employment scope. Probably, due to this reason this index was dropped by the government in 2001–02. But after the government government change at the Centre the index was revived again.

3 - Methods of Measuring Inflation: GDP Deflator

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GDP Deflator

GDP deflator is nominal GDP divided by real GDP.

In the estimation of GDP deflator quantity weights are not fixed. They vary each year. We come to know of the quantity of goods and services produced each year only at the end of the year.

GDP deflator, therefore, comes with a one-year time lag.

Otherwise, it is perhaps the most comprehensive measure of changes in the general price level as it considers all domestically produced final goods and services.

3 - Methods of Measuring Inflation: GDP Deflator

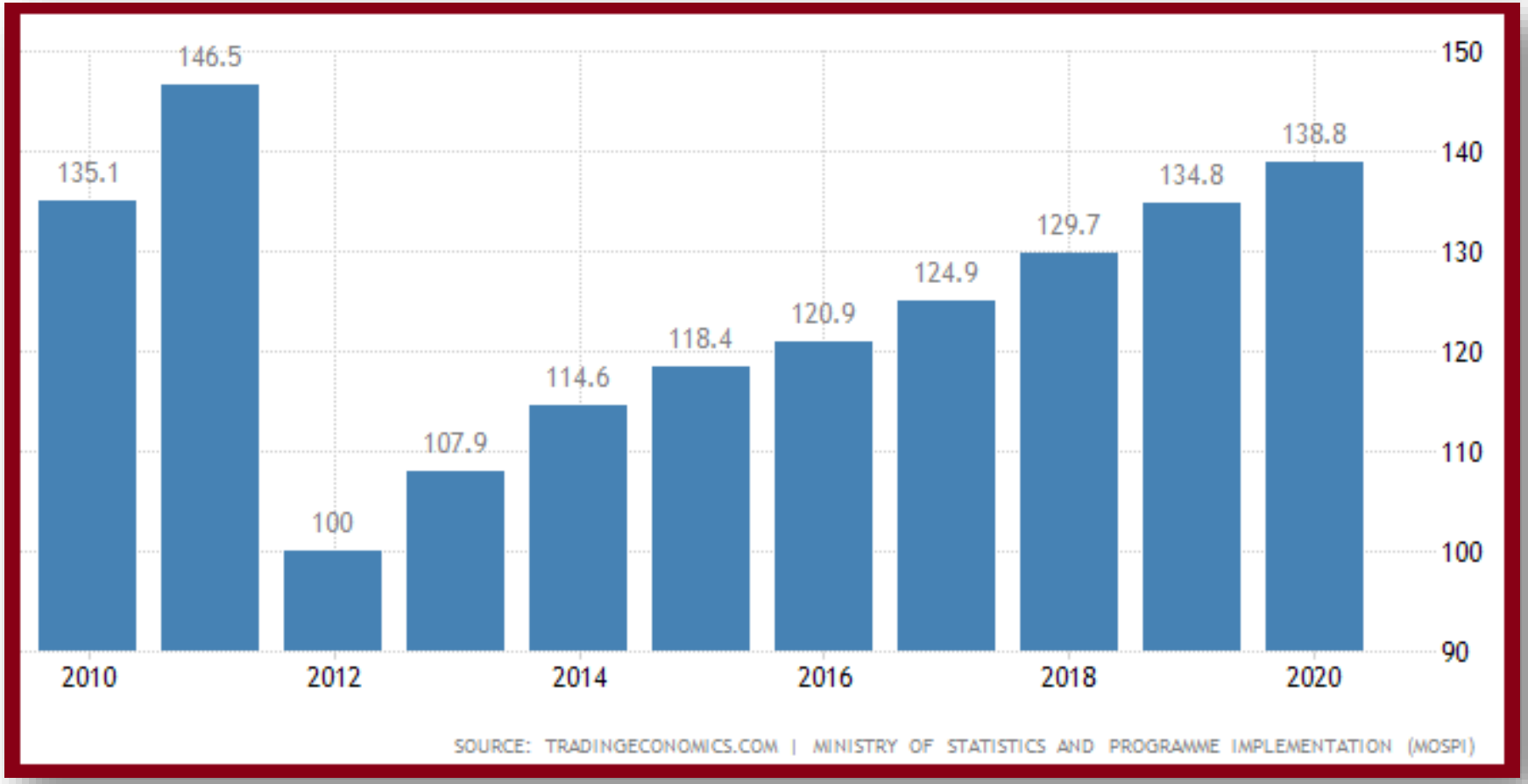
$$GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP} \times 100$$

- Inflation Rate = (Current Year's GDP Deflator – Previous Year's GDP Deflator) / Previous Year's GDP Deflator X 100

According to the Economists, Rate of Inflation measured on GDP Deflator is more realistic than on CPI or WPI.But in India we use CPI for calculating Inflation rate.

3 - Methods of Measuring Inflation: GDP Deflator

GDP Deflator in India increased to 138.80 points in 2020 from 134.80 points in 2019.



Comparison of 3 Methods Measuring Inflation

The CPI time lag is 1 month. Besides, considering the rapidity with which consumption habits are changing, using a fixed quantity weight for an extended period of time may be questionable. Also, them is no composite CPI covering the whole of India.

WPI suffers from a major flaw in that it does not consider services. With service sector accounting for more than half of India's GDP, this omission is serious. The inclusion of intermediate goods also leads to cascading effect on prices.

WPI scores over both CPI and GDP deflator as it is available with the least time lag of two weeks. GDP deflator is the broadest indicator of changes in the domestic price level. But it is an implicit measure and comes with a longer lag. Also, the data is subject to frequent revisions with revision in GDP figures.

Comparison of 3 Methods Measuring Inflation

Price indices: A comparison

Price Index (1)	Basis (2)	Prices (3)	Basket (4)	Weights (5)	Lag (6)
Consumer Price Index	$\frac{\Sigma p_t q_0}{\Sigma p_0 q_0}$	Retail	Consumption goods and services; Includes imports	Fixed quantity weights	One month
Wholesale Price index	$\frac{\Sigma p_t q_0}{\Sigma p_0 q_0}$	Whole-sale	Larger basket of goods, including inter-mediate goods. But no services	Fixed quantity weights	One month
GDP Deflator	$\frac{\Sigma p_t q_t}{\Sigma p_0 q_t}$	Retail	All domestically produced final goods and services	Quantity weights not fixed	one year

Difference between CPI and Core CPI

- The **personal consumption expenditure** (PCE) measure is the component statistic for consumption in GDP. It consists of the actual and imputed expenditures of households and includes data pertaining to durable and non-durable goods and services. It is essentially a measure of goods and services targeted towards individuals and consumed by individuals.
- The difference between CPI and PCE seemed relatively insignificant. However, a big issue is the difference between CPI and Core CPI.

- CPI is the consumer price index. A measure of the cost of living for the typical person.

Core CPI is the CPI – energy and food prices.

- Energy and food prices are removed because they have tendency to be highly volatile.

Difference between CPI and Core CPI

Policy Implications of Core CPI

- This clearly has policy implications. If we look only at CPI, monetary authorities may be inclined to change interest rates more frequently. For example, in 2008, we had a rise in energy prices causing cost push inflation of 5%, a few months later we were in deep recession.
- In other words CPI can give a misleading impression of underlying inflationary pressures. If you tighten monetary policy because of temporary food and energy inflation, you create potential for slowing down economy. Similarly when there is a slump in energy and food prices, there is a danger monetary policy can become too lax, creating future underlying inflation.
- It is true that consumers have to face rising food prices and rising energy prices. Linking pensions to Core CPI. This could give pensioners an increase in benefits less than there cost of living.
- However, it is important for the RBI and monetary authorities. It explains why the RBI haven't been increasing interest rates in response to inflation above target.
- There is a danger temporary cost push inflation could lead to higher inflation expectations. But, this is not convincing.

Discussion

(Not for examination)

1 - Method of Measuring Inflation: WPI

- Measure of **average change in wholesale price.**
- First published from the week commencing **10th January 1942 (Base year 1939).**
- WPI has been revised with base years **1952-53, 1961-62, 1970-71, 1981-82, 1993-94, 2004-05.**
- Current series of **WPI (Base 2004-05) was launched on September 2010.**
- **Seventh revision is with base year 2011-12** synchronized with base year of other important indicators such as GDP, IIP etc
- New series based on the recommendation of the Working Group chaired by Late Dr. Saumitra Chaudhari.

1 - Method of Measuring Inflation: WPI

Definition of Wholesale price

- **Price for bulk sale at the first stage of transaction**
- Existing formula (WPI Base 2004-05) = Basic Price (*ex factory price, ex mine price or mandi price)* + Excise Duty- Trade discount
- **New Formula (WPI Base 2011-12)= Basic price -Trade Discount**
- New WPI is not influenced by fiscal policy

Weighting Structure

- Shows relative importance of **an item in a basket based on its availability in the Indian economy** as reflected by **Net traded value**
- **Net traded value = Gross Value of Output + Import – Export**

Methodology

- Compilation of item level indices based on **Geometric Mean**

1 - Method of Measuring Inflation: WPI

Major Group/ Group	Weights		No. of Items		No. of Quotations	
	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
ALL COMMODITIES	100	100	676	697	5482	8331
PRIMARY ARTICLES	20.118	22.62	102	117	579	983
FUEL&POWER	14.910	13.15	19	16	72	442
MANUFACTURED PRODUCTS	64.972	64.23	555	564	4831	6906

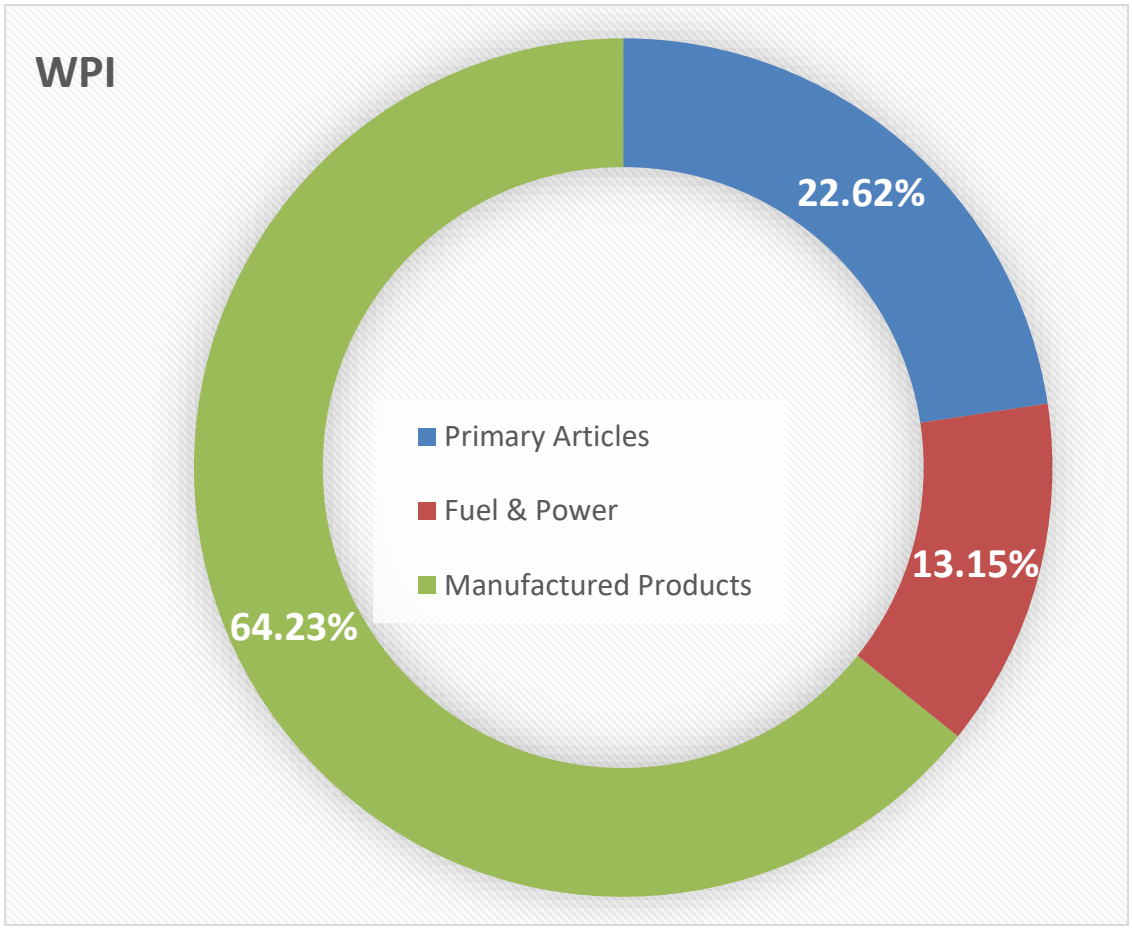
- Item basket consist of 697 items (against 676 in existing base) with following changes.
- Deletion and addition of items is based on their relative importance in the commodity basket.

	No. of items	(weight)
Common	498	85.78
New	199	14.22
Dropped	146	11.97

1 - Method of Measuring Inflation: WPI

Base Year : 2012

Calculated by Economic Adviser in the commerce ministry using same Laspeyres formula



Primary Articles

A. Food Articles

- Prices of seasonal fruits and vegetables now available for longer period
- **7** new fruits and **9** new vegetables added
- New fruits added include *Mosambi (Sweet Orange), Pomengranate, Amla, Jackfruit, Pear Almond, and Walnut.*
- New vegetables added include *Radish, Carrot, Cucumber, Pointed gourd, Bitter gourd, Bottle gourd, Beans, Pumpkin and Drumstick*.

B. Minerals

- **New minerals added** : Copper Concentrate, Lead Concentrate, and Garnet
- **Minerals removed** : Copper Ore, Graphite, Fireclay, Magnesite , *Gypsum, Kaolin, Dolomite, Barytes and Steatite*

C. Crude Petroleum and Natural Gas

- **Natural Gas** added because of its increasing importance

Fuel & Power

Coal

- Trifurcation of Non coking coal (Based on Gross Calorific Value)
  - Non-Coking Coal G1 to G6 [GCV exceeding 5500 Kcal/kg.]
  - Non-Coking Coal G7 to G14 [GCV 3100 Kcal/kg. to 5500 Kcal/kg.]
  - Non-Coking Coal G15 to G17 [GCV < 3100 Kcal/kg.]
- Coke deleted from sub group 'Coal' of Fuel and Power because of its decreasing importance

B. Mineral Oils

- Petroleum coke introduced because of its increasing importance
- Light Diesel Oil (LDO) dropped because of its decreasing importance

Electricity

- 1 item group for Electricity sector
- Monthly average rate of sale of power of 49 generating stations from Central, state and private sector covering Hydro and Thermal is used
- To reflect the price change at bulk transaction level

Manufactured Products

New series (2011-12), **22** two digit groups based on NIC classification (2008)
Selection of items from the Annual Survey of Industries (ASI) data by covering at least 80 percent of the output of each 2 digit group.

	2011-12	2004-05
1	Food Products	Food Products
2	Beverages	Beverages, Tobacco and Tobacco Products
3	Tobacco Products	
4	Textiles	Textiles
5	Wearing Apparel	
6	Leather and related products	Leather and Leather Products
7	Wood and products of wood and cork	Wood and Wood Products
8	Paper and Paper products	Paper and Paper Products
9	Printing and Reproduction of Recorded media	
10	Chemical and Chemical Products	Chemical and Chemical Products
11	Pharmaceuticals, Medicinal, Chemical and Botanical Products	
12	Rubber and Plastic Products	Rubber and Plastic Products
13	Other Non Metallic Mineral Products	Non metallic mineral Products
14	Basic Metals	Basic Metals, Alloys and Metal Products
15	Fabricated Metal Products, Except Machinery and Equipment	
16	Computer, Electronic and Optical products	Machinery and Machine Tools
17	Electrical Equipment	
18	Machinery and Equipment	
19	Motor Vehicles, Trailers and Semi Trailers	Transport Equipment and Parts
20	Other Transport Equipment	
21	**Furniture**	
22	**Other Manufacturing**	

1 - Method of Measuring Inflation: WPI

WPI Food Index

- A new WPI Food index to be compiled on a monthly basis to estimate the WPI based inflation in food items
- This index is estimated by taking the aggregate of WPI for Food Products (9.12) and Food Articles (15.26)
- The total weight of WPI Food Index will be 24.38
- Effective monitoring of food inflation at wholesale level

High Level Technical Review Committee has been set up

- Committee to **review periodically the list of products in the item basket of WPI** to **keep pace with the dynamic changes in the economy**
- **Committee to suggest methodology for inclusion of new and important items in and exclusion of outdated items** from the existing basket as and when warranted.
- Committee is to be headed by Secretary, DIPP. Other Members of the Committee are Secretary MoSPI, Chief Economic Adviser, MoF and Principal Adviser DIPP.

Data Source

Primary Articles

Directorate of Economics and Statistics, and National Horticulture Board, M/o Agriculture and Farmers Welfare

Tea Board & Coffee Board, Department of Commerce

Directorate of Sugar and Vanaspati, Department of Food, Ministry of Consumer Affairs

East India Cotton Association, Mumbai

Textile Commissioner, Mumbai

Central Silk Board, Bengaluru

National Dairy Development Board,

Rubber Board, Kottayam

Indian Bureau of Mines, Nagpur

Ministry of Petroleum & Natural Gas

Gas Authority of India Ltd

Fuel & Power

Coal India Ltd, Ministry of Coal

Bharat Petroleum Corporation Ltd

Hindustan Petroleum Corporation Ltd

Indian Oil Corporation Ltd

Mangalore Refinery and Petrochemical Ltd.

Central Electricity Authority

Manufactured Products

(No. of factories increased from 3744 to 5788)

Different Private and Public sector units producing respective goods taken from the Annual Survey of Industries frame.

Directorate of Economics and Statistics (DES), Ministry of Agriculture & Farmers Welfare

Textiles Commissioner

Joint Plant Committee, Ministry of Steel

Annual Growth Rates (%)- WPI Major Groups Base 2011-12 vis-à-vis 2004-05

Base Year	Commodity Groups	Weights (%)	2012-13	2013-14	2014-15	2015-16	2016-17
2011-12	All commodities	100	6.9	5.2	1.2	-3.7	1.7
2004-05		100	7.4	6.0	2.0	-2.5	3.7
2011-12	Primary Articles	22.618	11.4	9.9	2.2	-0.4	3.5
2004-05		20.118	9.8	9.8	3.0	0.3	4.7
2011-12	Fuel & Power	13.152	7.1	7.1	-6.1	-19.7	-0.1
2004-05		14.910	10.4	10.1	-0.9	-11.6	5.6
2011-12	Manufactured Products	64.231	5.3	3.0	2.5	-1.8	1.4
2004-05		64.972	5.4	3.0	2.4	-1.1	2.6

1 - Method of Measuring Inflation: WPI

Procedure for Estimation for Non- response and Data Substitution

II. Substitution and replacement: First of all it should be ensured that the prices of both the price quotations, outgoing quotation (old price) and incoming quotation (new price) are collected concurrently for some time and respective price movements observed for any extreme variation. Splicing is done by working out a ratio (linking coefficient) of concurrent price quotations and multiplied by the base price as below:

III. Price relatives are worked out by dividing the current price with the updated base price. Splicing can be done other way round, wherein, linking coefficient can be worked out by dividing old price (outgoing quote) with the new price (incoming quote) and multiplied by the current price.

IV. In WPI the substitution is effected from the date final indices are compiled. The effective date and the splicing ratio are documented properly.

$$\frac{\text{Price of New Quotation (Incoming Price)}}{\text{Price of old quotation (Outgoing Price)}} \times \text{Base Price of the item}$$

1 - Method of Measuring Inflation: WPI

Linking Factor

- In order to maintain continuity in the time series data on wholesale price index, it is vital to provide a linking factor so that the new series, when released, may be compared with the outgoing one.
- The Office of the Economic Adviser have been using the arithmetic conversion method to link the various prices index series. The linking factor for the three broad groups of commodities WPI are as follows. However, the detailed individual commodities indices and their weights are available from 2004-05 onwards.

	WPI (Base2004-05) for 2011-12	Linking Factor
All Commodities	156.1	1.561
Primary articles	200.3	2.003
Fuel & Power	169.0	1.690
Manufactured Products	139.5	1.395

Methodology of Index Calculation

Quotation No.	Base Price	Current Price	Price relative=(current price/base price)x100
01	2989.04	6150.00	205.75168
02	2777.31	7000.00	252.04244
03	2987.31	3500.00	117.16226
04	2848.94	6050.00	212.35968
05	3120.65	5500.00	176.24533
06	1900.00	3800.00	200.00000
07	2741.57	5800.00	211.55761
08	2875.58	5200.00	180.83308
09	2639.90	6300.00	238.64540
10	2710.38	2950.00	108.84083
11	1343.37	4300.00	320.09052
		Average of Price Relatives =	202.13898

1 - Method of Measuring Inflation: WPI

Scrutiny of Data

1st stage, once the price data are scrutinized, price relative for each price quote is calculated. Price relative is calculated as the ratio of the current price to the base price multiplied by 100 i.e. $(P_1/P_o)X100$.

2nd stage, commodity/item level index is arrived at as the simple arithmetic average of the price relatives of all the varieties (each quote) included under that commodity. Since quantities produced at unit level are not equal the average of price relatives method is preferred to arrive at item level index in WPI.

3rd stage, the indices for the sub groups/groups/ major groups are compiled and the aggregation method is based on **Laspeyres formula as below:**

$$I = \sum (I_i \times W_i) / \sum W_i$$

Where,

I = Index numbers of wholesale prices of a sub- group/group/ major group/ all commodities

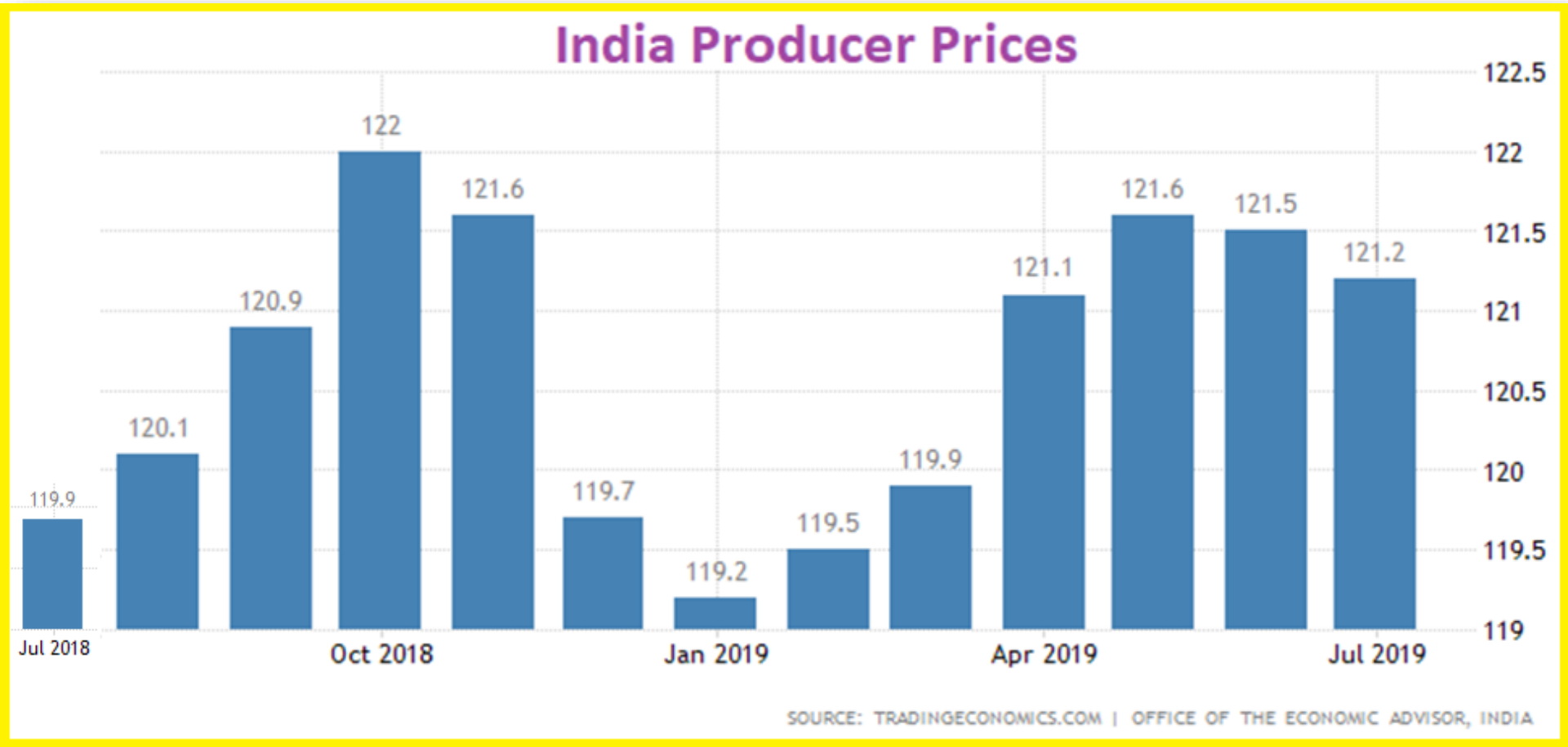
I_i = Index of the ith item / sub- group/ group/ major group.

W_i = Weight assigned to the ith item of sub- group/group/ major group.

India Wholesale Inflation Slows to Over 2-Year Low

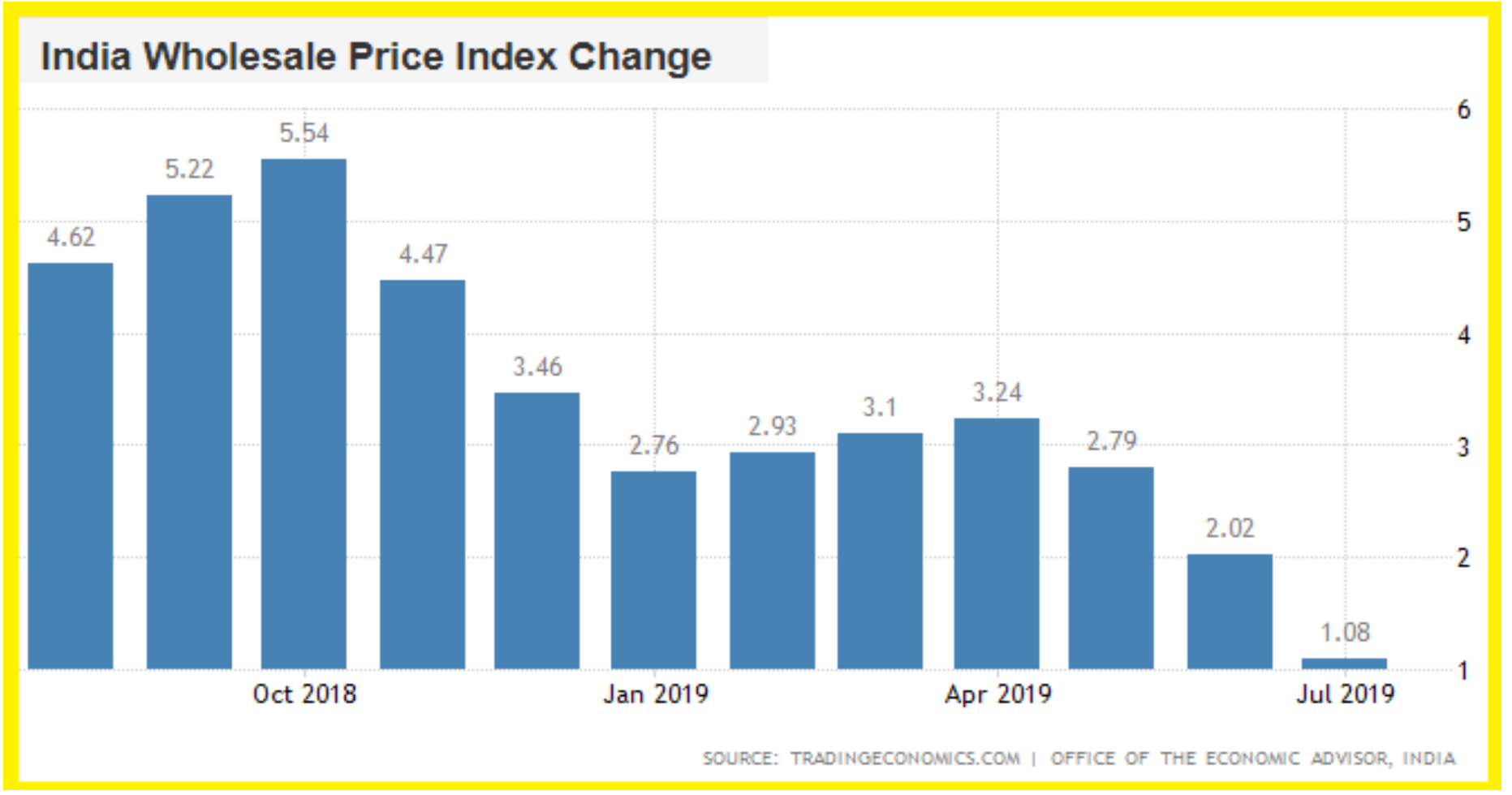
Producer Prices in India decreased to 121.20 Index Points in July from 121.50 Index Points in June of 2019. Producer Prices in India averaged 95.40 Index Points from 2004 until 2019, reaching an all time high of 122 Index Points in October of 2018 and a record low of 62.44 Index Points in April of 2004.

In India, the Producer Price Index measures the average change in price of goods and services sold by manufacturers and producers in the wholesale market during a given period.



India Wholesale Inflation Slows to Over 2-Year Low

Wholesale prices in India rose by 1.08 percent year-on-year in July 2019, slowing from a 2.02 percent gain in the previous month and missing market expectations of 1.93 percent. It was the lowest wholesale rate since June 2017, mainly due to a slowdown in manufacturing inflation and a decline in fuel prices. Producer Prices Change in India averaged 7.01 percent from 1969 until 2019, reaching an all time high of 34.68 percent in September of 1974 and a record low of -11.31 percent in May of 1976.



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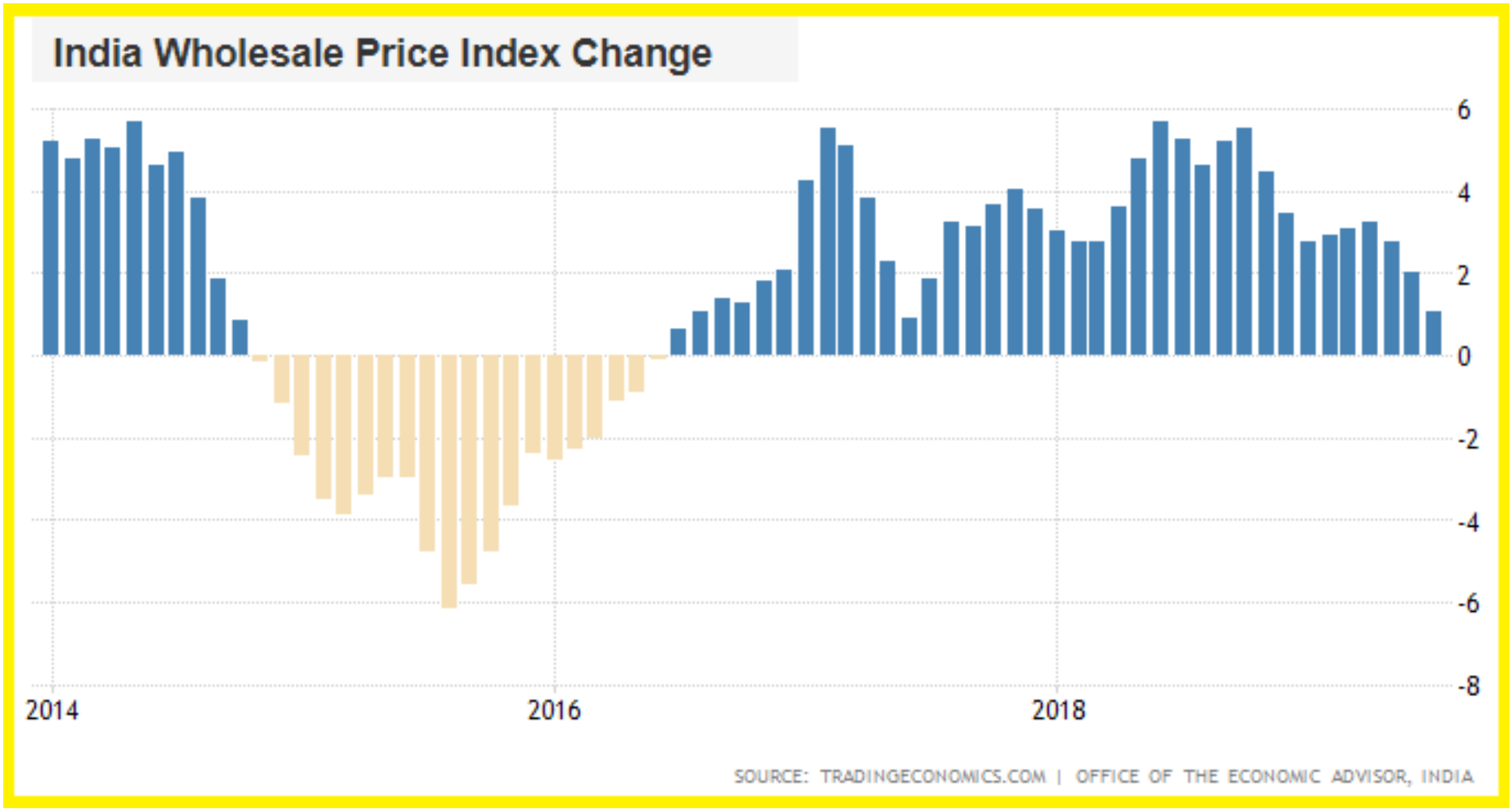

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Wholesale prices in India rose by 1.08 percent year-on-year in July 2019, slowing from a 2.02 percent gain in the previous month and missing market expectations of 1.93 percent. It was the lowest wholesale inflation rate since June 2017.

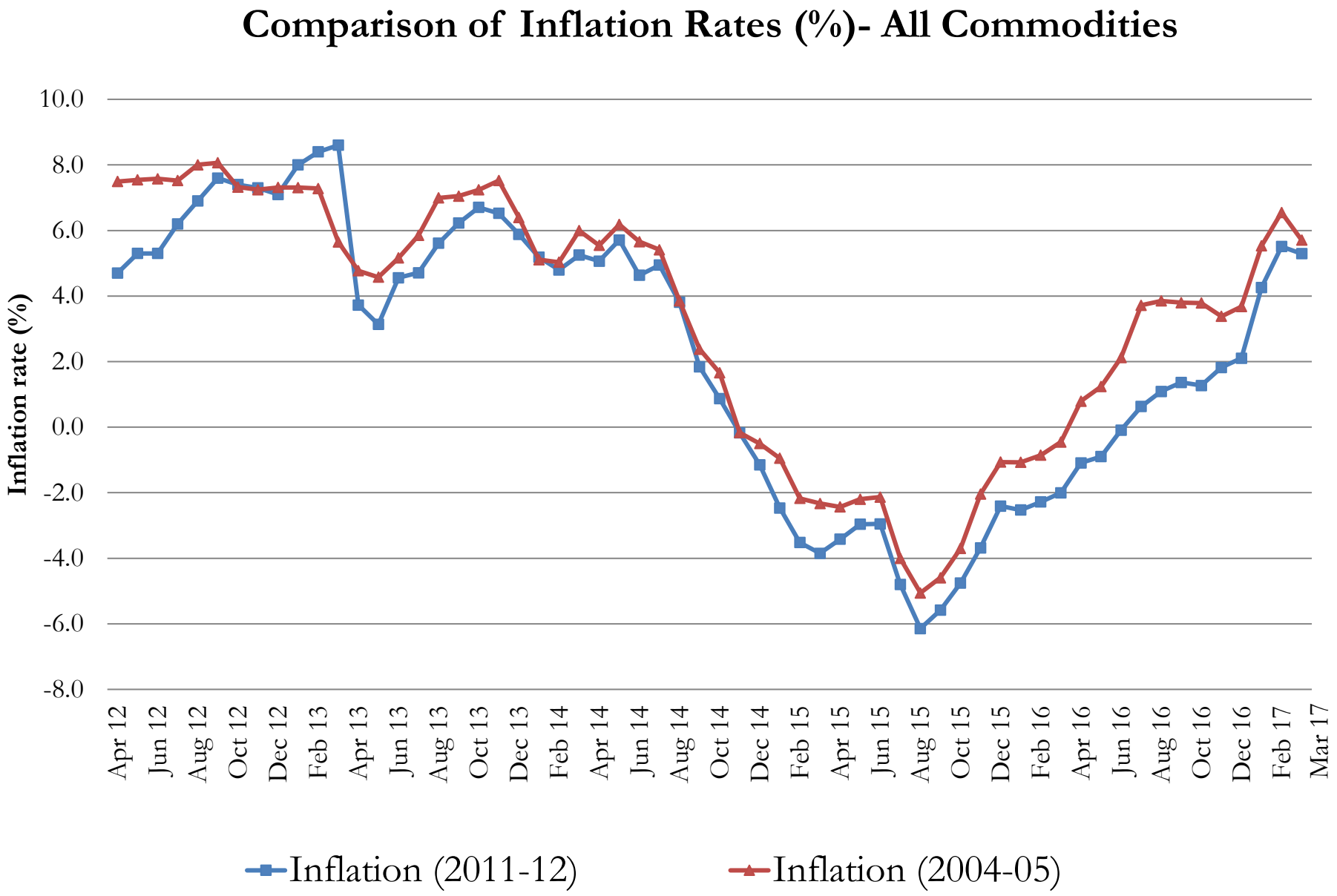
Manufacturing inflation, which contributes around 64 percent to the wholesale price index, slowed to 0.34 percent in July from 0.94 percent in June, as prices increased at a softer rate for chemical & chemical products (0.42 percent vs 1.45 percent), textiles (1.36 percent vs 2.67 percent), and wood and products of wood and cork (1.36 percent vs 1.43 percent). In addition, prices fell for both rubber and plastics (-0.27 percent vs 0.18 percent) and basic metals (-4.28 percent vs -3.72 percent).

Prices of primary articles advanced 5.03 percent, compared to 6.72 percent a month earlier, as cost of food articles rose less (6.15 percent vs 6.98 percent in June), in particular vegetables (10.67 percent vs 24.76 percent), pulses (20.08 percent vs 23.06 percent) and milk (0.28 percent vs 0.91 percent). On the other hand, there were declines in sugar cost (-0.94 percent vs 4.01 percent) and potato prices (-23.63 percent vs -24.27 percent).

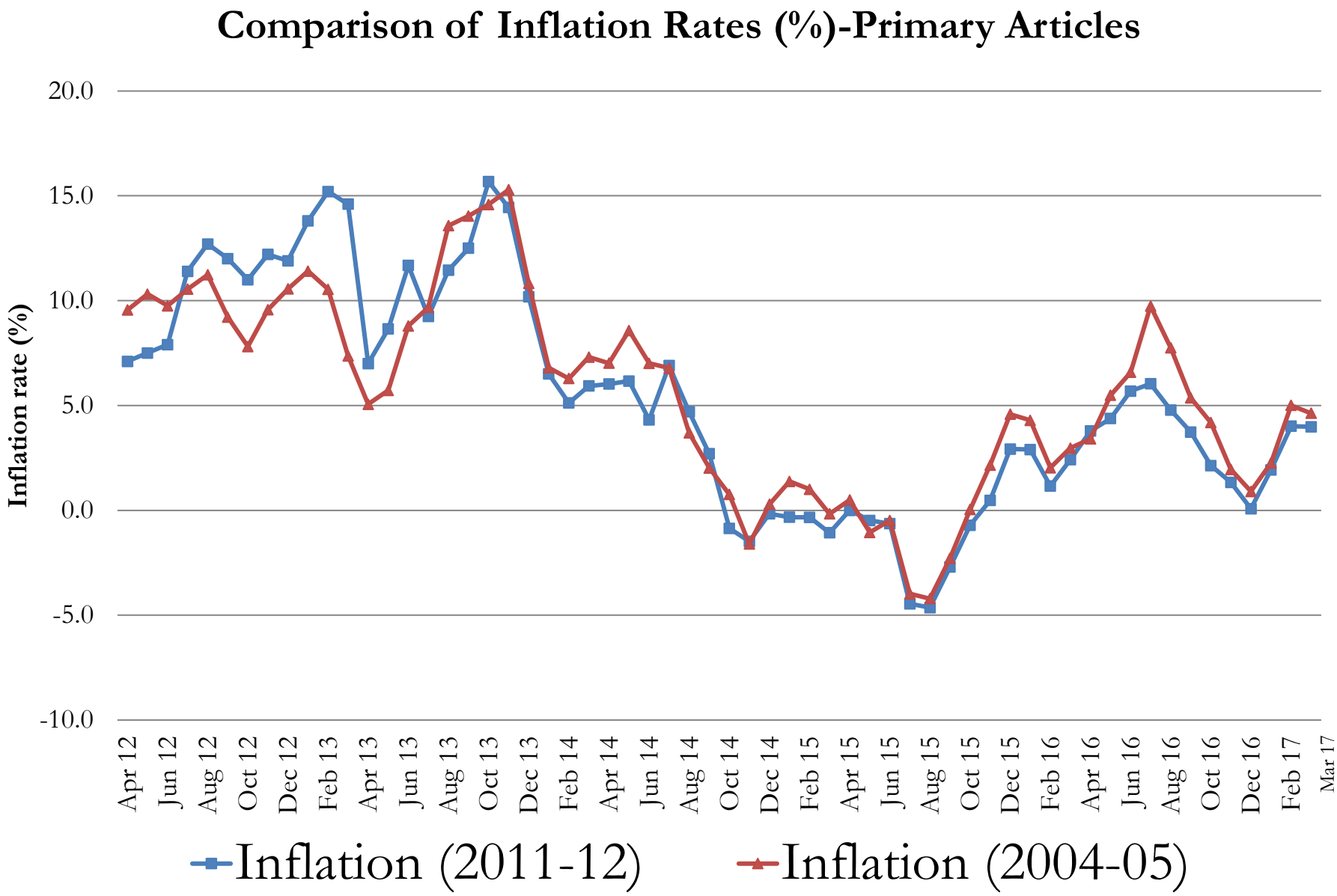
Meanwhile, wholesale prices of fuel products, including petrol, diesel and cooking gas, fell further (-3.64 percent vs -2.20 percent).

On a monthly basis, wholesale prices fell by 0.2 percent in July, following a 0.2 percent gain in June.

Inflation Rate Calculated by WPI



Inflation Rate Calculated by WPI



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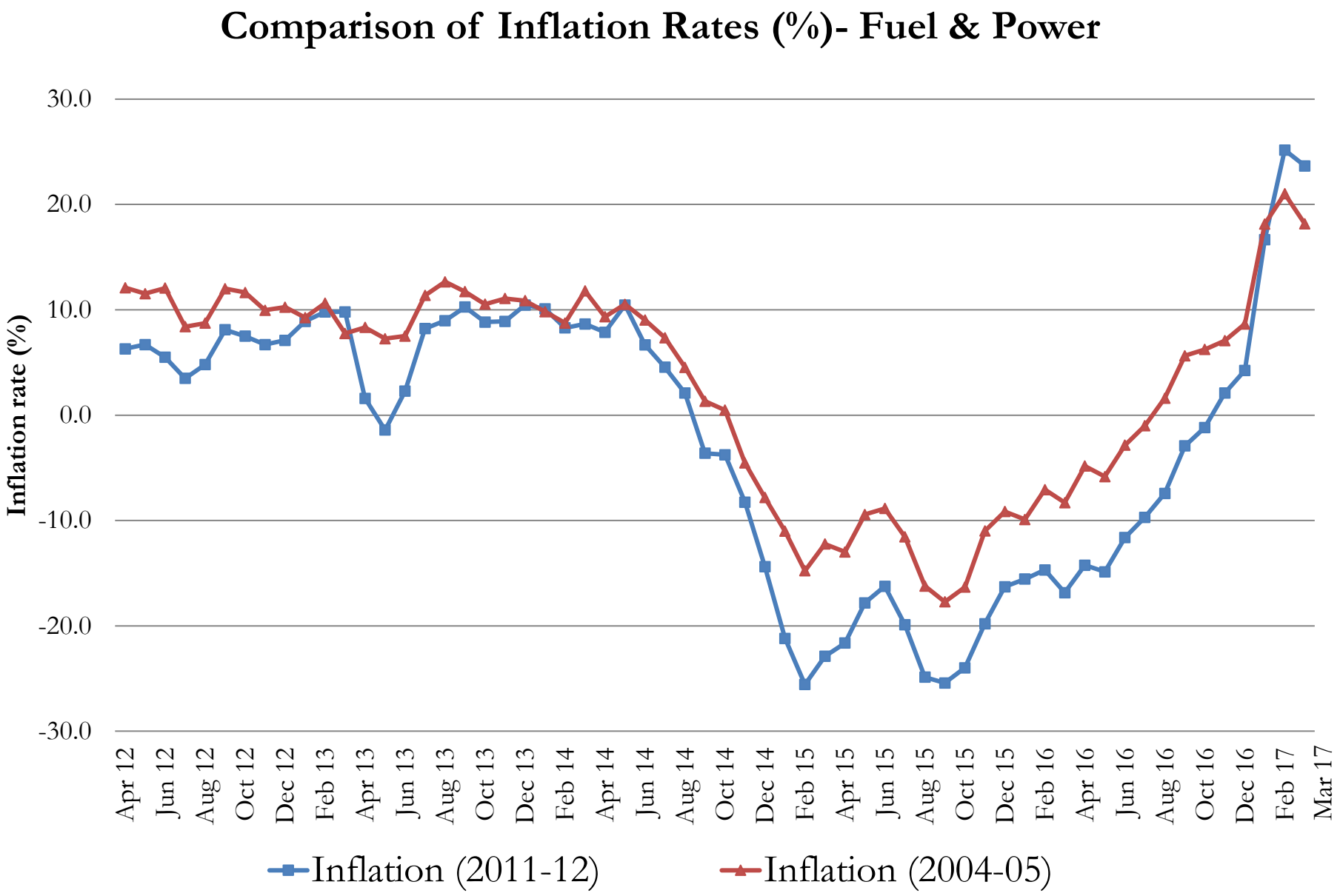
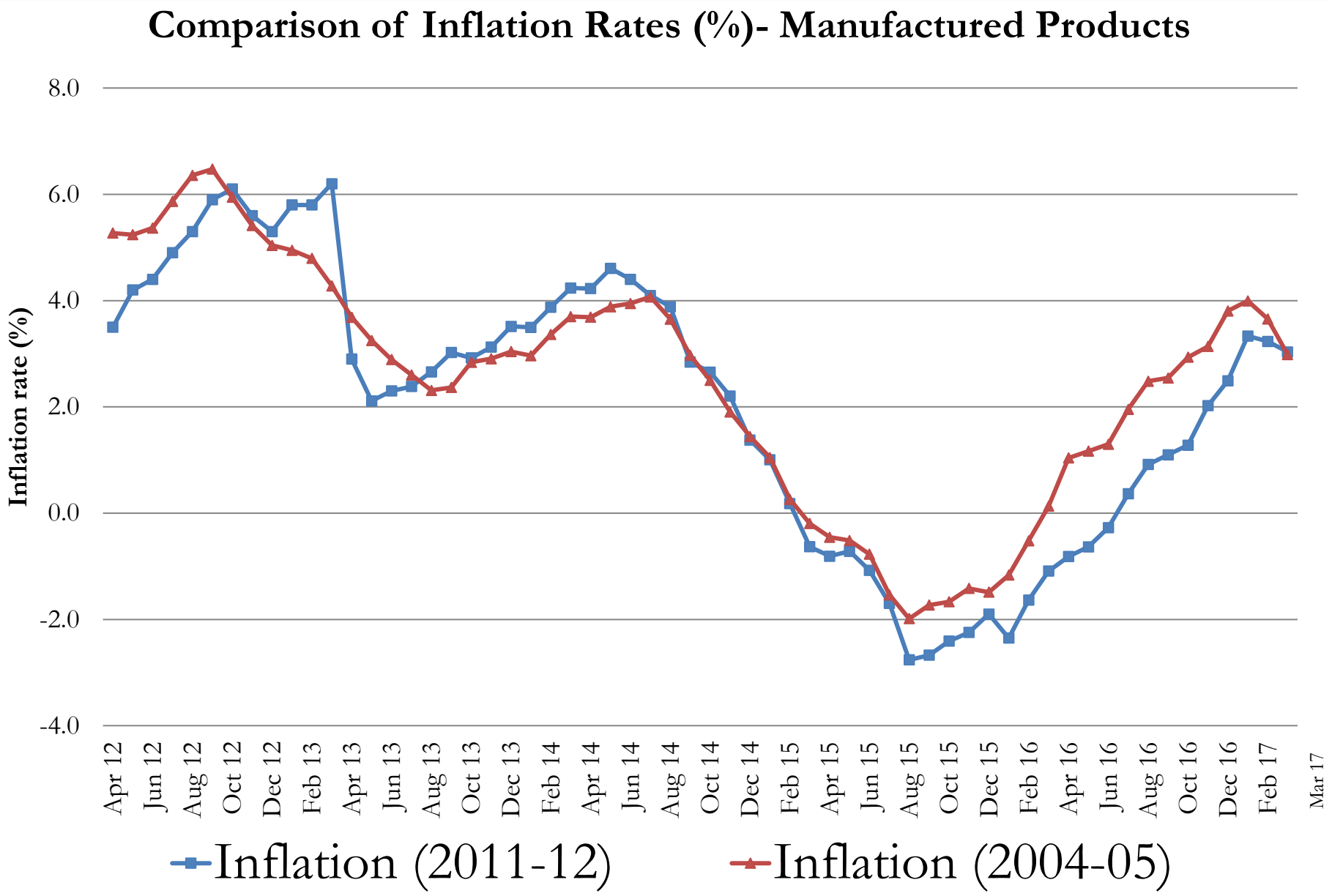


Inflation Rate Calculated by WPI



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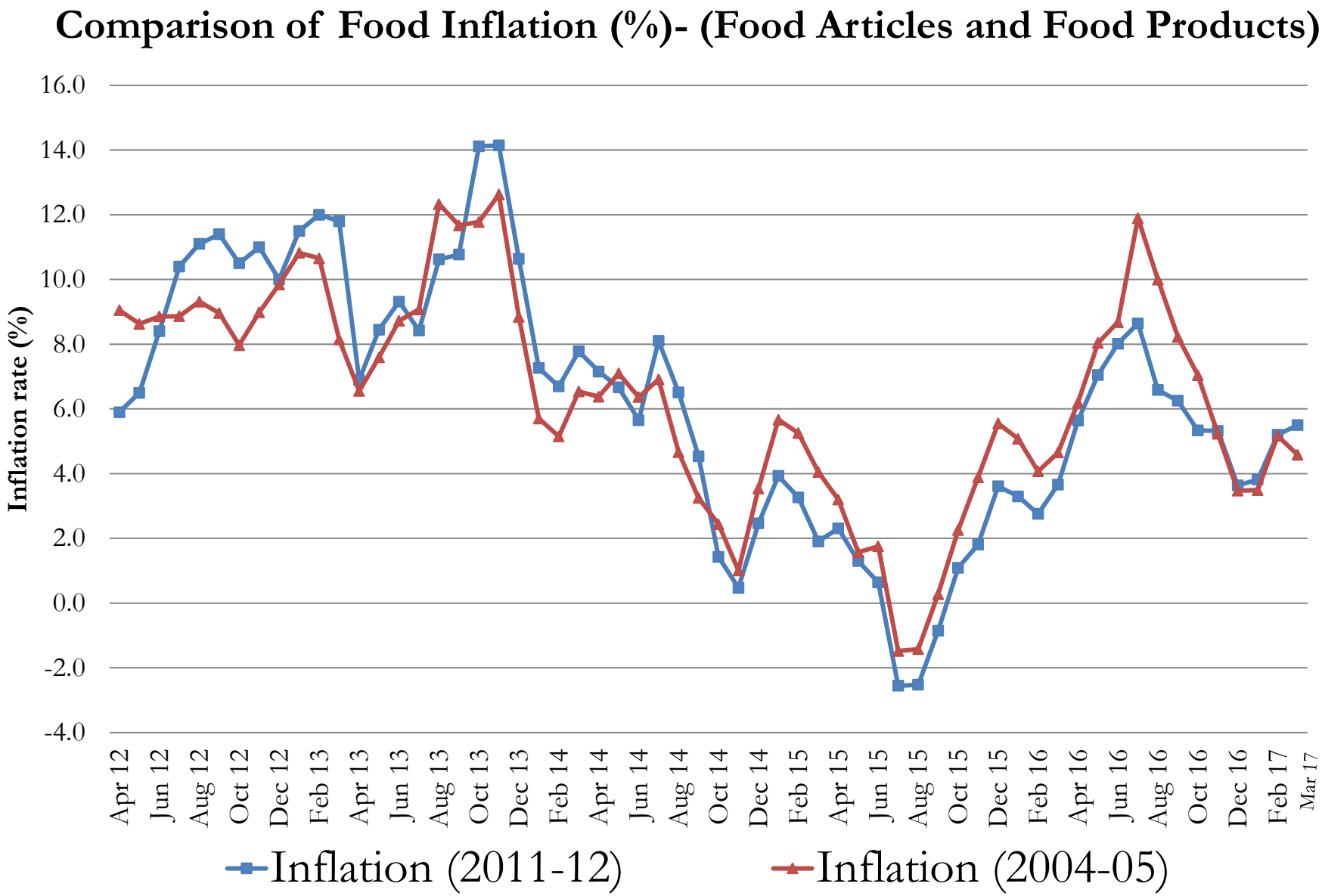


Monthly Wholesale Price Index

Name of Commodity : All commodities

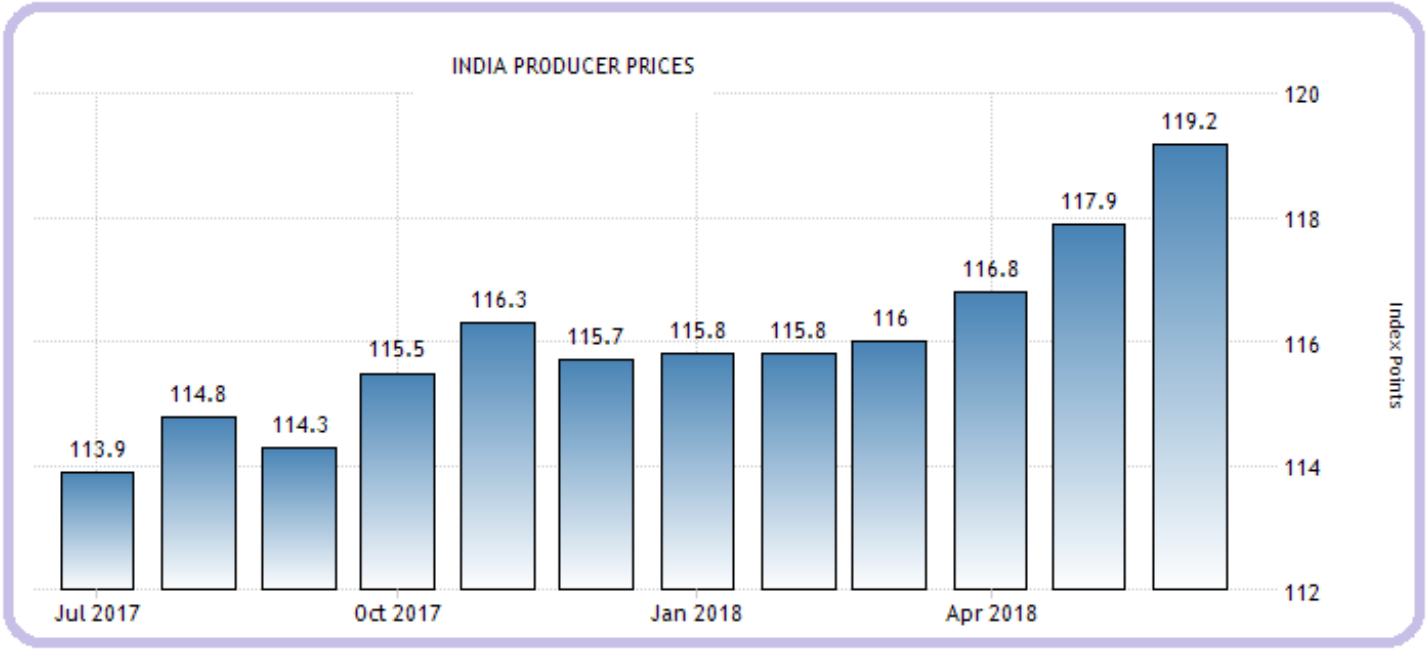
Type : Group Item

Weight : 100

Base Year : 2011-12 = 100

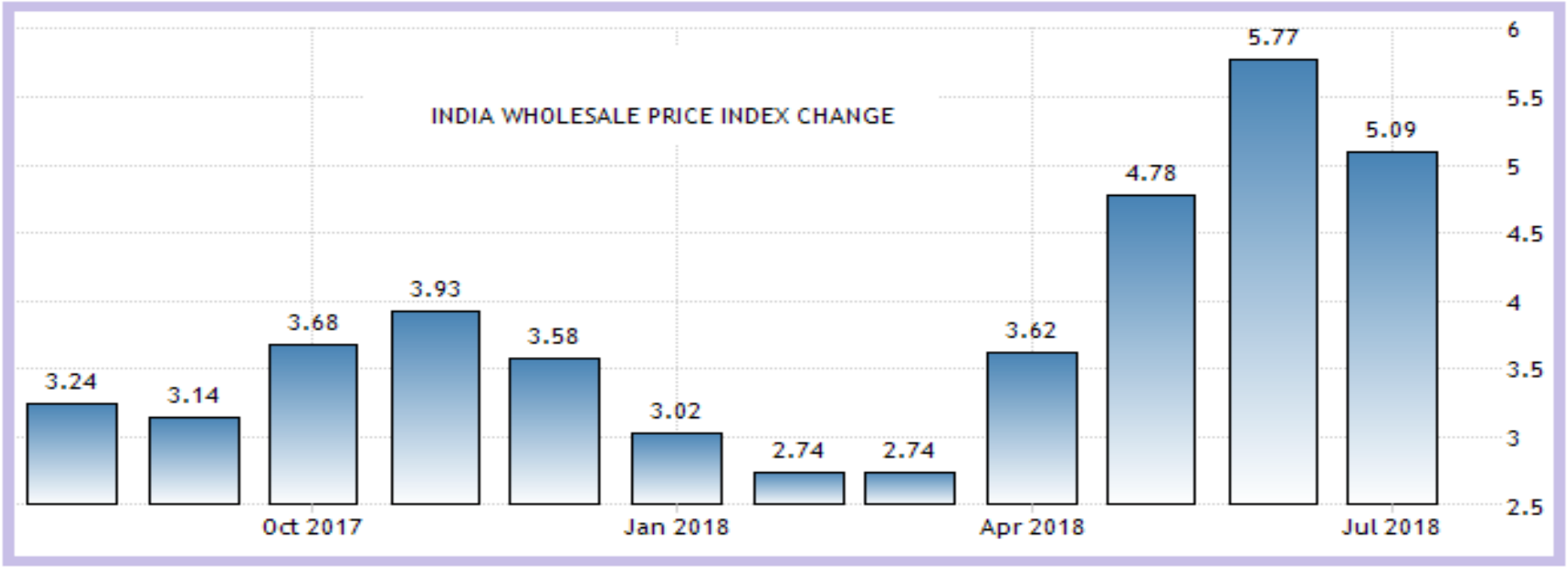
Month/Year	Jan	Feb	Mar	Apr	May	Jun	Jul
2018	116	116.1	116.3	117.3	118.3	119.2	119.7

Inflation Rate Calculated by WPI



Inflation Rate Calculated by WPI

India July Wholesale Inflation Slows to 5.09%



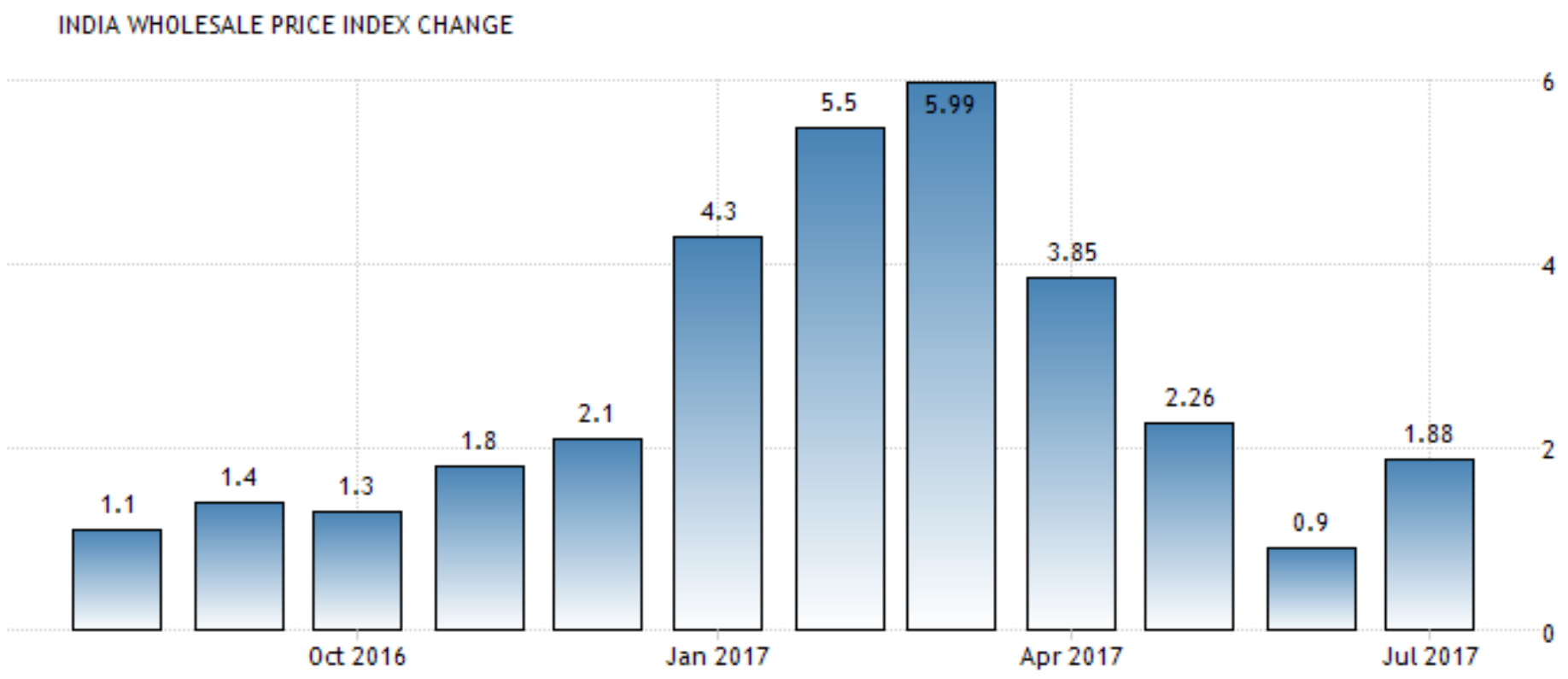
•Wholesale prices in India rose by 5.09 percent year-on-year in July of 2018, after a 5.77 percent gain in the prior month. Figure came in below market estimates of 5.24 percent, as prices of of food fell sharply while cost of manufactured products and fuel went up faster.

•In July, cost of primary articles increased much slower (1.7.3 percent from 5.3 percent in June), as cost of food declined (-2.16 percent from 1.8 percent in a month earlier), namely potato (-42.45 percent); onion (-9.5 percent)l and fruits (2.71 percent). Meantime, cost rose at a higher rate for manufactured products (4.26 percent from 417 percent), and fuel and power (18.10 from 16.18 percent).

•On a monthly basis, wholesale prices increased by 0.4 percent, compared to a 1.1 percent rise in June.

Inflation Rate Calculated by WPI

Inflation Rate Calculated by WPI

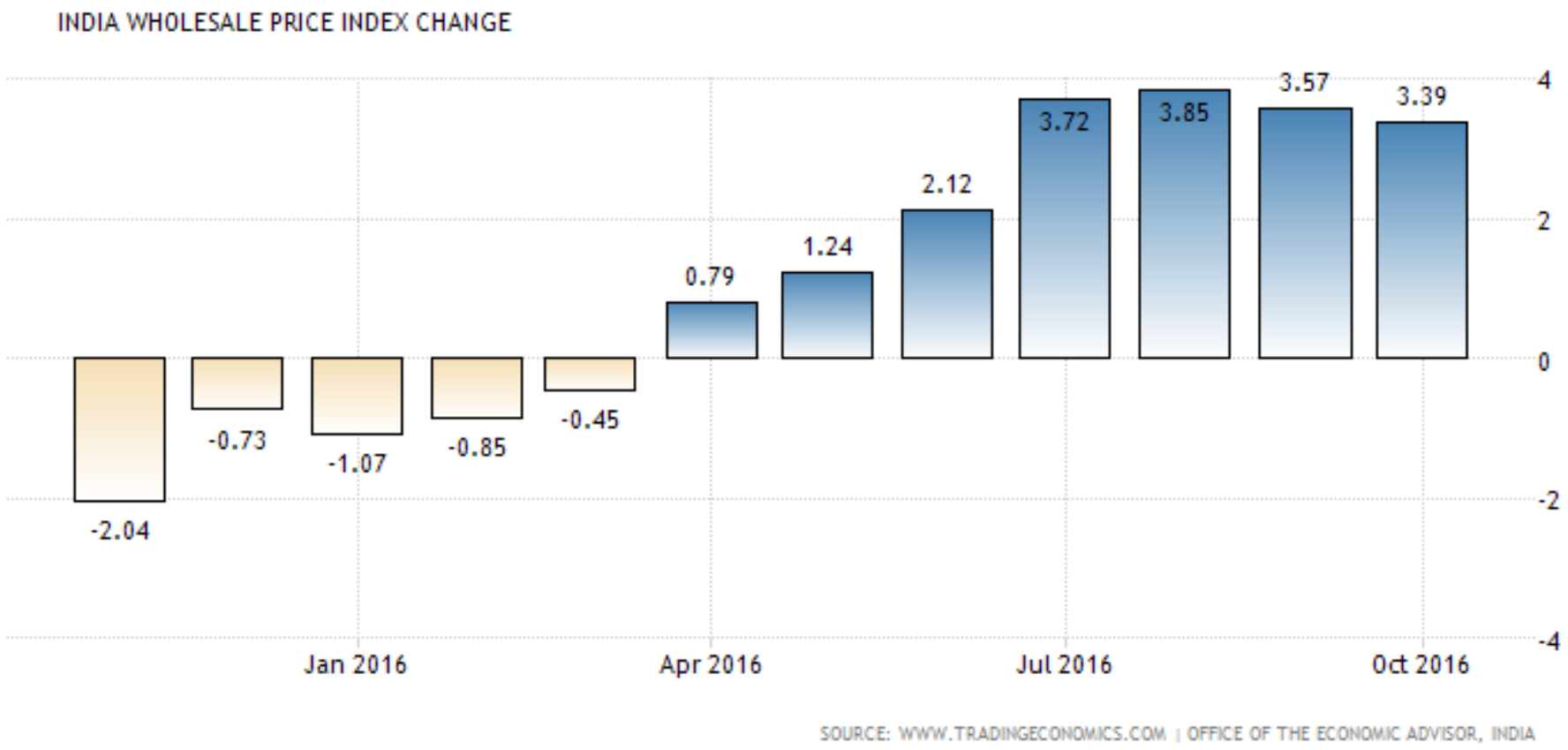


India WPI Rises More than Expected in July

- Wholesale prices in India **rose 1.88 percent year-on-year in July** of 2017, **compared to a 0.9 percent rise in the prior month** while market estimated a **1.3 percent rise.**
- **A surge in food prices offset a slowdown in cost of manufactured products and fuel.**
- In July, cost of primary articles increased by 0.46 percent (from -3.86 percent in June), mainly due to a **2.15 percent rise in cost of food** (from -3.48 percent in a month earlier), namely vegetables (**21.95 percent compared to -21.16 percent**). Meantime, cost went up less for: manufactured products (**2.18 percent from 2.27 percent**) and fuel and power (**4.37 percent from 5.28 percent**).
- On a monthly basis, **wholesale prices increased by 1.1 percent, after declining 0.1 percent in a month earlier**.
- In May 2017, the government revised the base year to 2011-12 from 2004-05, aiming to align it with the base year of other indicators like the GDP and the industrial production index.

Inflation Rate Calculated by WPI

Inflation Rate Calculated by WPI



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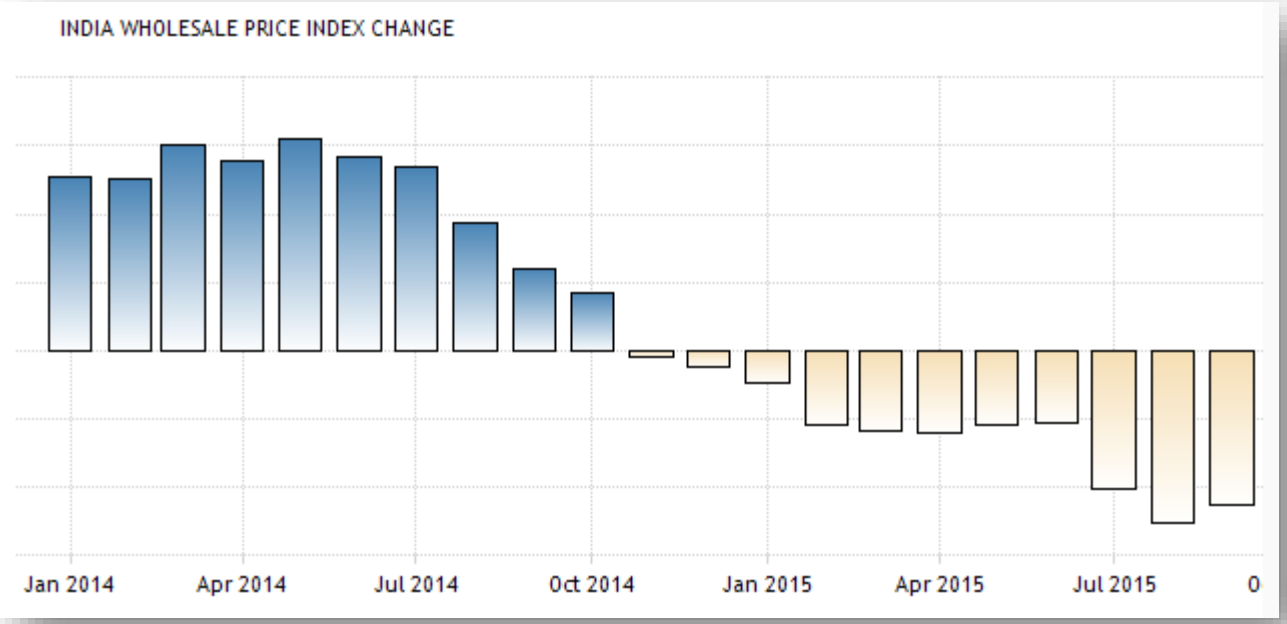
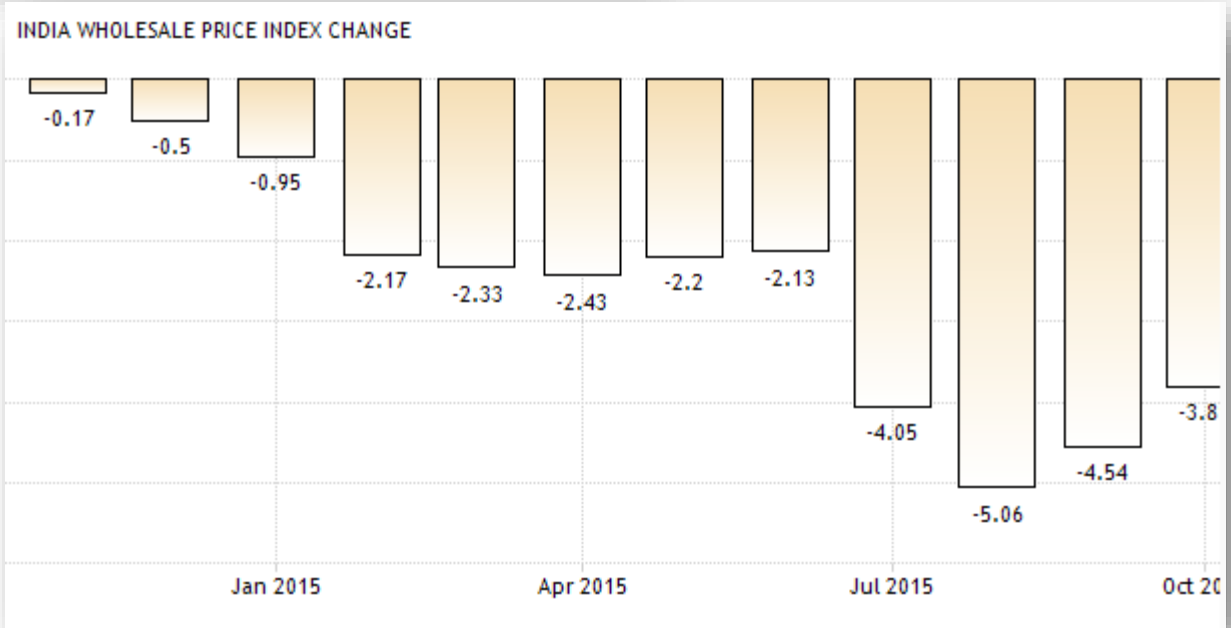




India WPI Rises the Least in 4 Months

- Indian wholesale prices rose 3.39 percent year-on-year in October of 2016, following a 3.57 percent gain in September while markets expected a 3.75 percent rise. It was the seventh straight month of increase but the lowest figure since June, as a slowdown in prices of food offset a faster rise in cost of manufactured products and petrol.
- In October, food prices went up 4.34 percent from a year earlier, following a 5.75 percent rise in the preceding month. Among food prices, potatoes recorded the highest rise (+60.58 percent), followed by pulses (+21.80 percent), fruits (+6.45 percent), wheat (+6.30 percent); egg, meat & fish (6.20 percent), cereals (+6.13 percent), rice (+4.57 percent) and milk (+4.19 percent). In contrast, prices declined for: onion (-65.97 percent) and vegetables (-9.97 percent).
- Cost of manufactured products increased by 2.67 percent, compared to a 2.48 percent rise in the previous month.
- Petrol prices went up 3.57 percent year-on-year, following a 1.25 percent gain in September. Cost of diesel also increased by 19.32 percent, as compared to a 19.08 percent rise in a month earlier.
- On a monthly basis, wholesale prices increased 0.1 percent, following a 0.2 percent drop in a month earlier.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

CPI

- A Consumer Price Index (CPI) is designed to **measure the changes over time in general level of retail prices of selected goods and services that households purchase for the purpose of consumption.** Such changes affect the real purchasing power of consumers' income and their welfare.
- The CPI measures price changes by comparing, through time, the cost of a fixed basket of commodities. The basket is based on the expenditures of a target population in a certain reference period. Since the basket contains commodities of unchanging or equivalent quantity and quality, the index reflects only pure price.
- Traditionally, CPI numbers were originally introduced to provide a measure of changes in the **living costs of workers**, so that their wages could be compensated to the changing level of prices.
- However, over the years, CPIs have been widely used as a **macroeconomic indicator of inflation**, and also as a tool by Government and Central Bank for targeting inflation and monitoring price stability.
- **CPI is also used as deflators** in the National Accounts. Therefore, CPI is considered as one of the most important economic indicators.

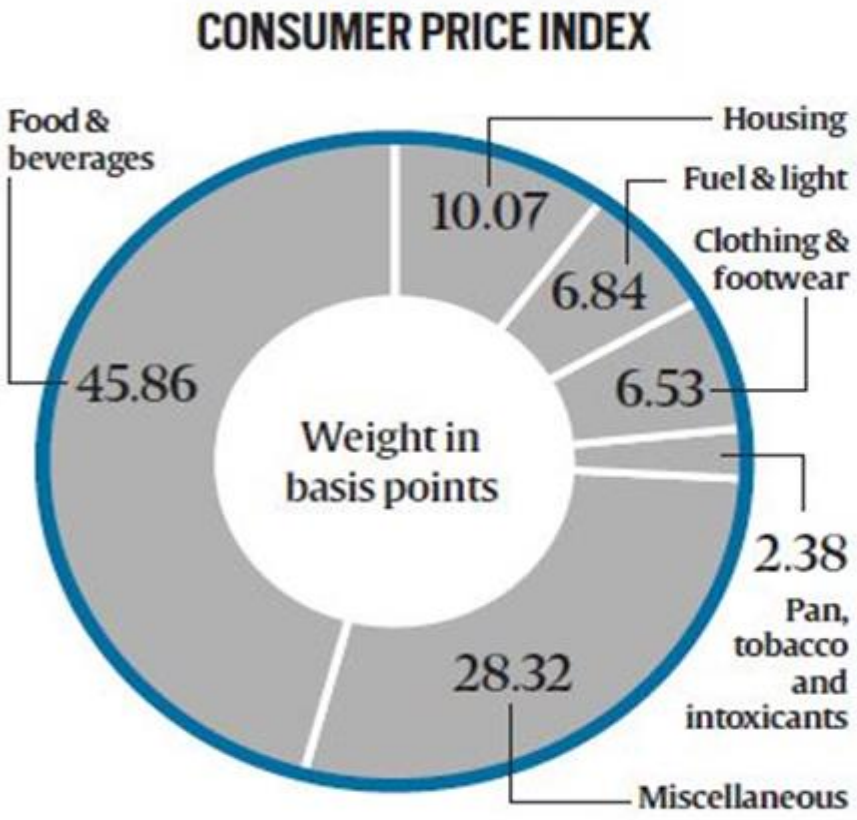
Weighing Diagram

- Weighing diagram gives the share of each item in the total consumption expenditure in a CES.
- The weighing diagrams for the CPI series (Base 2012=100) have been derived on the basis of average monthly consumer expenditure of an urban/rural household obtained from MMRP data of NSS 68th round Consumer Expenditure Survey (2011-12).
- Only consumption expenditure has been considered for the purpose of preparation of weighing diagrams. Non-consumption expenditures, like legal expenses etc. have been excluded.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Base year- 2012

Calculated by – Central Statistical Organization (CSO) in Ministry of Statistics and Programme Implementation (MoSPI) using **Laspeyres formula** (basically our weighted average formula)



2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Weighting Diagram for CPI (Base Year : 2012)

State
Maharashtra

Group	Item	Rural	Urban
1	Food and beverages	54.28	34.38
2	Pan, tobacco and intoxicants	2.72	.97
3	Clothing and footwear	7.56	5.14
4	Housing		24.74
5	Fuel and light	7.86	5.21
6	Miscellaneous	27.58	29.56
	General Index (All Groups)	100.00	100.00

All India Sub-group/Group Weights

Group Code	Sub-group Code	Description	Rural	Urban	Combined
	1.1.01	Cereals and products	12.35	6.59	9.67
	1.1.02	Meat and fish	4.38	2.73	3.61
	1.1.03	Egg	0.49	0.36	0.43
	1.1.04	Milk and products	7.72	5.33	6.61
	1.1.05	Oils and fats	4.21	2.81	3.56
	1.1.06	Fruits	2.88	2.90	2.89
	1.1.07	Vegetables	7.46	4.41	6.04
	1.1.08	Pulses and products	2.95	1.73	2.38
	1.1.09	Sugar and Confectionery	1.70	0.97	1.36
	1.1.10	Spices	3.11	1.79	2.50
	1.2.11	Non-alcoholic beverages	1.37	1.13	1.26
	1.1.12	Prepared meals, snacks, sweets etc.	5.56	5.54	5.55
1		**Food and beverages**	**54.18**	**36.29**	**45.86**
2		**Pan, tobacco and intoxicants**	**3.26**	**1.36**	**2.38**
	3.1.01	Clothing	6.32	4.72	5.58
	3.1.02	Footwear	1.04	0.85	0.95
3		**Clothing and footwear**	**7.36**	**5.57**	**6.53**
4		**Housing**	--	**21.67**	**10.07**
5		**Fuel and light**	**7.94**	**5.58**	**6.84**
	6.1.01	Household goods and services	3.75	3.87	3.80
	6.1.02	Health	6.83	4.81	5.89
	6.1.03	Transport and communication	7.60	9.73	8.59
	6.1.04	Recreation and amusement	1.37	2.04	1.68
	6.1.05	Education	3.46	5.62	4.46
	6.1.06	Personal care and effects	4.25	3.47	3.89
6		**Miscellaneous**	**27.26**	**29.53**	**28.32**
All Groups			**100.00**	**100.00**	**100.00**

-- : CPI (Rural) for housing is not compiled.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Share of CPI (Rural) and CPI (Urban) in CPI (Combined)

State/UT Code	State/UT	Percent Share	
		Rural	Urban
01	Jammu and Kashmir	64.72	35.28
02	Himachal Pradesh	81.87	18.13
03	Punjab	55.24	44.76
04	Chandigarh	5.70	94.30
05	Uttarakhand	62.69	37.31
06	Haryana	53.13	46.87
07	Delhi	5.36	94.64
08	Rajasthan	64.37	35.63
09	Uttar Pradesh	64.15	35.85
10	Bihar	85.40	14.60
11	Sikkim	67.39	32.61
12	Arunachal Pradesh	73.68	26.32
13	Nagaland	57.49	42.51
14	Manipur	68.36	31.64
15	Mizoram	38.98	61.02
16	Tripura	74.18	25.82
17	Meghalaya	68.96	31.04
18	Assam	79.41	20.59
19	West Bengal	52.80	47.20
20	Jharkhand	61.84	38.16
21	Odisha	72.05	27.95
22	Chhattisgarh	61.29	38.71
23	Madhya Pradesh	58.81	41.19
24	Gujarat	43.38	56.62
25	Daman and Diu	58.13	41.87
26	Dadra and Nagar Haveli	33.26	66.74
27	Maharashtra	33.50	66.50
28	Andhra Pradesh	63.08	36.92
29	Karnataka	46.24	53.76
30	Goa	38.72	61.28
31	Lakshadweep	48.90	51.10
32	Kerala	64.68	35.32
33	Tamil Nadu	41.01	58.99
34	Puducherry	25.53	74.47
35	Andaman and Nicobar Islands	49.16	50.84
36	Telangana	45.16	54.84
All India		53.52	46.48

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Following Four-fold Criteria have Been Adopted or this Purpose

I. include all PDS items(Public Distribution System (PDS) prices, also known as Fair Price Shop prices, are collected in respect of four items viz. Rice–PDS, Wheat/Wheat-atta–PDS, Sugar-PDS and Kerosene-PDS. These are collected in respect of three groups of beneficiary households viz. Above Poverty Line (APL), Below Poverty Line (BPL) and Antyodaya Anna Yojana(AAY) households.)

II. include all items accounting for 1% or more of total expenditure at subgroup level.

III. include all items accounting for more than specified percentage of total expenditure of all consumption items:

IV. include all items for which more than 75% households have reported consumption. Items satisfying any of the above four conditions were retained.

Sl. No.	Group	Group Description	Specified percentage out of total expenditure
(1)	(2)	(3)	(4)
1	Group 1, Group 2, Group 4, Group 6	Food and Beverages, Pan, Tobacco and Intoxicants, Housing and Miscellaneous excluding 'Bedding'	> 0.04%
2	Group 5	Fuel and light	> 0.03%
3	Group 3	Clothing and footwear, Section 'Bedding' under sub-group 'Household Goods and Services'	> 0.02%

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Selection of Towns and Villages for Price Collection

- Prices are collected from **1181 village markets** covering all districts and **1114 urban markets** distributed over **310 towns of the country**. These villages and towns have been selected from all States/UTs adopting the following sampling procedure:-

RURAL

All the districts of the country have been considered for collection of rural price.

(i) Within each State/UT, top fifty villages (if villages in a district are more than 50, all villages if it is less than 50) have been arranged in the descending order on the basis of Census 2001 population for each district.

(ii) Fifty villages selected above have been divided into two sets i.e. Set 1 and Set 2 (Set 1 consists of top 25 villages and Set 2 the remaining 25 villages).

(iii) Within a district two villages (one each from Set 1 and Set 2) have been selected randomly from different tehsils. In case, there is only one tehsil available in a district, both the villages have been selected from the same tehsil.

(iv) If in some UTs, the number of districts is less than three, minimum five villages were selected from within UT.

(v) Sample size in some States, wherever required, was adjusted on the basis of total rural population of the State.

(vi) Selected villages in a State/UT were distributed over four weeks of a month to take into account week to week variation in prices.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Selection of Towns and Villages for Price Collection

(vii) In the selected villages, market survey was undertaken for: (a) identification of popular markets, (b) selection of shops/outlets for different commodities in the selected markets, and (c) determination of specifications of commodities to be priced.

Number of village markets selected for CPI (Rural)

State/UT Code	State/UT	No. of Village markets
01	Jammu and Kashmir	28
02	Himachal Pradesh	24
03	Punjab	34
04	Chandigarh	5
05	Uttarakhand	26
06	Haryana	38
07	Delhi	14
08	Rajasthan	64
09	Uttar Pradesh	140
10	Bihar	74
11	Sikkim	8
12	Arunachal Pradesh	16
13	Nagaland	16
14	Manipur	18
15	Mizoram	16
16	Tripura	8
17	Meghalaya	14
18	Assam	46
19	West Bengal	64
20	Jharkhand	36
21	Odisha	49
22	Chhattisgarh	32
23	Madhya Pradesh	70
24	Gujarat	50
25	Daman and Diu	5
26	Dadra and Nagar Haveli	5
27	Maharashtra	66
28	Andhra Pradesh	34
29	Karnataka	54
30	Goa	6
31	Lakshadweep	5
32	Kerala	28
33	Tamil Nadu	58
34	Puducherry	5
35	Andaman and Nicobar Islands	5
36	Telangana	20
All India		1,181

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Selection of Towns and Villages for Price Collection

URBAN

(i) All cities/towns having population (Census, 2001) more than nine lakh and State/UT capitals not covered therein have been selected purposively. Price markets have been allotted to these cities/towns as per the following criteria –

Towns having population	No. of markets allotted
9 lakh – 25 lakh	8
25 lakh – 1 crore	12
More than 1 crore	24
Remaining State/UTs capitals	4

Selection of Towns and Villages for Price Collection

(ii) After selecting and allocating the markets in towns/cities, purposively (as stated above), remaining markets have been allocated to each State/ UTs in proportion to their urban population as per Census 2001. For allocation within State/UTs, remaining towns have been classified into four strata according to the population size, as given below:-

Stratum I	Remaining Class I towns (population more than 1 lakh but less than nine lakh)
Stratum II	All Class II towns (population 50000 – 1 lakh)
Stratum III	All Class III towns (population 20000 - 50000)
Stratum IV	All Class IV towns (population less than 20000)

Stratum allocation of markets has been done in proportion to the stratum population.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Selection of Towns and Villages for Price Collection

- In all, 310 towns have been selected covering all the States and UTs from which 1114 price quotations are to be canvassed every month.
- Markets allocated to a particular town have been distributed by ensuring both the geographical coverage of the selected town and the different segments of population living in the town (poor, middle and affluent). Further, markets allotted for the town have been distributed over the four weeks of a month to take into account week to week

Number of towns and urban markets selected for CPI (Urban)

State/UT Code	State/UT	No. of Towns	No. of Urban Markets
01	Jammu and Kashmir	11	28
02	Himachal Pradesh	7	16
03	Punjab	7	30
04	Chandigarh	1	12
05	Uttarakhand	12	32
06	Haryana	9	32
07	Delhi	1	24
08	Rajasthan	15	50
09	Uttar Pradesh	18	92
10	Bihar	11	38
11	Sikkim	3	8
12	Arunachal Pradesh	7	16
13	Nagaland	7	18
14	Manipur	7	16
15	Mizoram	7	16
16	Tripura	7	16
17	Meghalaya	7	18
18	Assam	11	28
19	West Bengal	13	64
20	Jharkhand	10	30
21	Odisha	9	26
22	Chhattisgarh	10	30
23	Madhya Pradesh	16	60
24	Gujarat	12	60
25	Daman and Diu	2	6
26	Dadra and Nagar Haveli	2	6
27	Maharashtra	15	86
28	Andhra Pradesh	9	34
29	Karnataka	17	60
30	Goa	7	18
31	Lakshadweep	1	4
32	Kerala	11	32
33	Tamil Nadu	16	62
34	Puducherry	4	12
35	Andaman and Nicobar Islands	3	8
36	Telangana	5	26
All India		310	1,114

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Fixing of Specifications

- For selected villages and towns, market survey has been undertaken for (a) identification of popular markets, (b) selection of shops/outlets for different commodities in the selected markets and (c) determination of specifications of commodities to be priced. Specification is Structured Product Description (SPD), which uniquely identifies a product/item. It contains price determining characteristic of an item e.g. brand, variety, unit, quantity etc. Rented dwellings, from which house rent data are to be collected, were also identified in all the selected towns during the market survey. A total of 13,368 dwelling units of different types, covering 310 towns, are in the sample for collection of rent data.

Web Portal for Data Transmission

- unique feature of the system of compilation of Consumer Price Index is the online transmission of price data. This is a completely paperless survey in the sense that no paper schedules are used for transmission of data. Two independent web portals for rural and urban price data have been developed by the National Informatics Centre (NIC). These portals are user id and password protected. Provision on web portal has also been made for (i) on line data entry, (ii) uploading of data entered in the off line mode, and (iii) generation of scrutiny tables (Diagnostic Tables) giving price variations exceeding certain limits for verification and updation of price data. Various activities like – data entry, uploading, scrutiny can be monitored with the help of these portals. Field work in urban and rural areas is undertaken by the Field Operations Division of National Sample Survey Office and Department of Posts, respectively.

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Base Year

Though the Weight Reference Year is July 2011 to June 2012 (reference period of NSS 68th Round), Price Reference Year (Base Year) has been chosen to be calendar year 2012. Reasons for this deviation are:

- Internationally, the calendar year is adopted as the base year.
- Taking July 2011 to June 2012 as Base Year would be too close to the Base Year of the existing series (which was 2010).
- Financial year April 2011 to March 2012 could not be considered as some months of the year preceded the Weight Reference Year.

Compilation of Indices

- Compilation of CPI numbers generally consists of two stages –
- (a) First, price indices are calculated for elementary aggregates, which are known as Item Level indices. These elementary indices are the lowest level of aggregation where prices are combined into price indices. It is also the lowest level of aggregation for which explicit expenditure weights are available.
- (b) Then, these elementary price indices are averaged (aggregated) to obtain higher level indices using consumption expenditure as weights, associated with each level. For this purpose, Laspeyeres index formula is used. This explains, why the CPI is often described as a fixed-weighted index or fixed-basket index.
- Laspeyres index formula can be expressed algebraically, in usual notations, as:

$$P_L = \sum_{i=1}^{n} \left(\frac{p_i^t}{p_i^o}\right) w_i \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(B)}$$

Where p_i^t = price for ith item at time 't' (current month)

p_i^0 = price for ith item at time '0', the price reference period (or base period)

$w_i = \frac{p_i^o q_i^o}{\sum_{i=1}^{n} p_i^o q_i^o}$ is the share of expenditure of ith item, also called weight for ith item.

Compilation of Indices

- Thus, equation (B) represents the weighted average of elementary price indices(/) relating to each individual item i. Theoretically, and are the averages of the prices collected from different markets for ith item in the current year and base year respectively. In our case,(in a given market), is the Geometric Mean (GM) of the monthly prices for the Base Year 2012 and is the corresponding current month price. As mentioned earlier, the specifications of ith item are different across markets/outlets, therefore, instead of the ratio of the averages of current period to base year prices, average of price relatives (current month price/base year price) has been taken as elementary index of ith item. It is important to mention here that GM has been used for averaging the price relatives of ith item across all markets/quotations. GM has the property that ratio of the averages and average of the ratios are same. Thus, the deviation from the theory is nullified by adopting GM for compilation of elementary indices. It may be noted that this is in consonance with the international practice.

Compilation of Indices

- If a non-seasonal item is temporarily out of stock and no price is reported, the price has to be imputed. A price may be considered as temporarily missing if the same product is likely to return to the market within reasonable time period. The current month price is imputed/derived by multiplying price of the same item in the previous month with average price relative of current month prices to last month prices for rest of markets of the same item where both current and previous month prices are available. The imputation is done within town in case of CPI (Urban) and within state in case of CPI (Rural). The formula is as given below:

$$(\text{Imputed Price})_t = (\text{Price})_{t-1} \times \text{Avg. of } [(\text{Price})_t / (\text{Price})_{t-1}]$$

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Compilation of Indices

- It happens many times that the particular specification of item becomes unpopular among consumers and disappears from market, or the selected outlet has stopped selling that product. In case of former, the item is to be substituted, whereas in later case shop is to be substituted. There may be the case when both are substituted. There is a provision to provide 'Special Codes', to indicate the cases, which are given below:

Cases	Special Codes
If there is no change in shop and item	0
If shop is changed from Original to Reserve	1
If item is substituted at Original shop	2
If item and shop, both are substituted	3

In the event of change of shop/item/both item and shop i.e. Special Code being other than 0, adjustment in Base Price is made in the following manner: -

$$\text{New Base Price} = \frac{\text{Price of new specification/shop/both of last month}}{\text{Price of old specification/shop/both of last month}} X \text{ Old Base Price}$$

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Dissemination of Indices

- The Consumer Price Index is released every month at 5.30 p.m. on 12th day of the following month. If it is a holiday, then it is released on the next working day. All-India CPIs (Rural, Urban, Combined) along with inflation rates for Sub-group, Group, CFPI and General Index (All-Groups) are released through a Press Note.

Linking Factor

- It is also necessary to have a linking factor between the old series and the revised series, in order to project the old series from January 2015 onwards. Linking factors for Groups as well as All Groups are also released. These linking factors are the ratio of the GMs of the respective indices of the old series and revised series for the year 2014. The linking factors are as follows:

Linking Factor for Projecting Old Series using indices of Revised Series

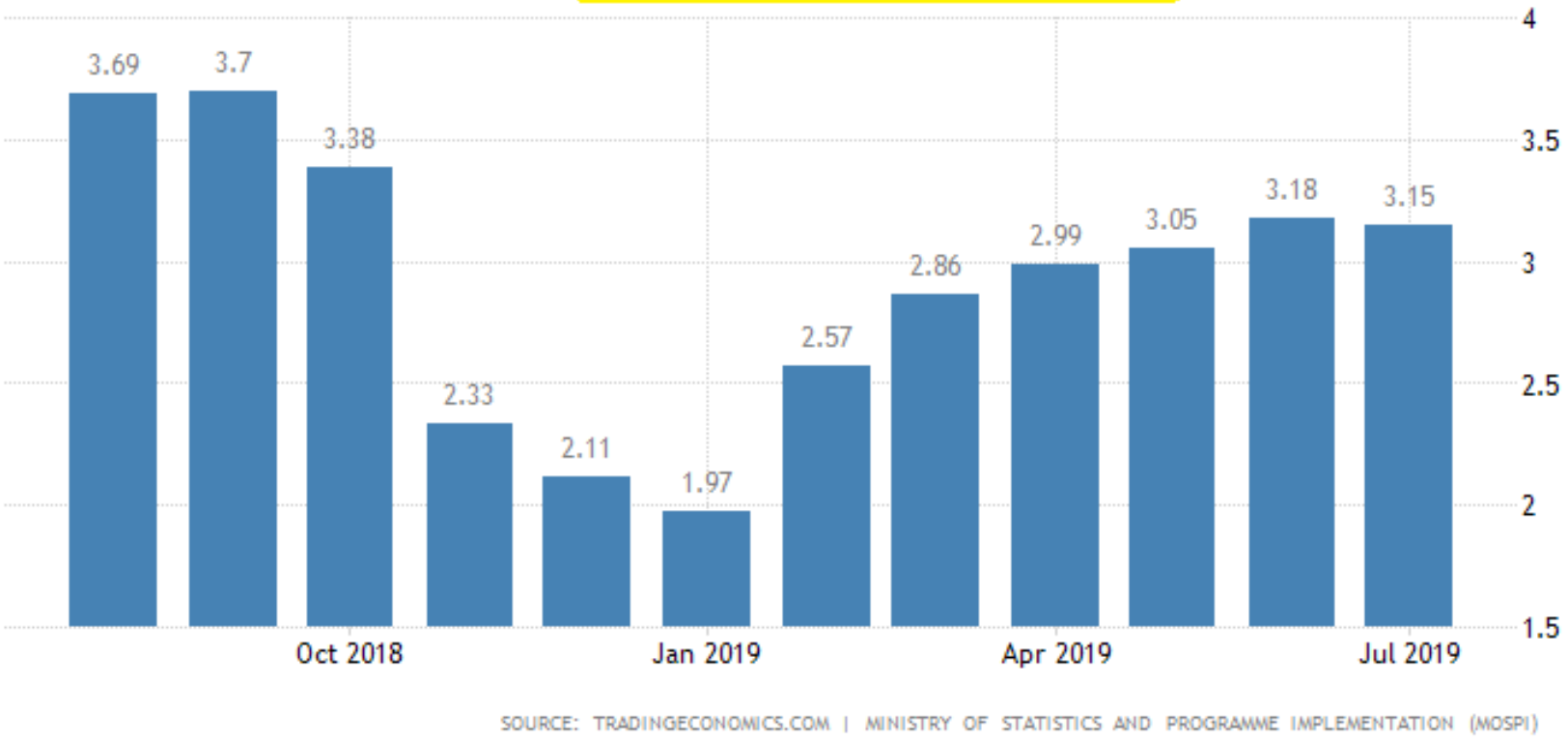
Group Code	Group Description	Rural	Urban	Combined
1	Food and beverages	1.21	1.18	1.20
2	Pan, tobacco and intoxicants	1.29	1.32	1.30
3	Clothing and footwear	1.28	1.29	1.29
4	Housing	--	1.24	1.24
5	Fuel and light	1.23	1.23	1.23
6	Miscellaneous	1.19	1.15	1.18
	All Groups	**1.22**	**1.20**	**1.21**

Impact of shifting from AM to GM for compilation of elementary/item indices

We know that the GM is least affected by the extreme values, therefore, it reduces the volatility of indices that may be caused due to inevitable outliers present in the data. Further, for all positive numbers, GM is always lesser than the AM. Therefore, the levels of indices based on GM of price relatives would always be lower than that of based on AMs.

Methods of Measuring Inflation

India's retail price inflation rate stood at 3.15 percent year-on-year in July 2019, little-changed from the previous month's 3.18 percent and slightly below market expectations of 3.20 percent. Inflation remained below the Reserve Bank of India's medium-term target of 4 percent for the twelfth consecutive month, despite recent interest rate cuts. Inflation Rate in India averaged 6.05 percent from 2012 until 2019, reaching an all time high of 12.17 percent in November of 2013 and a record low of 1.54 percent in June of 2017.



India Inflation Rate Below Forecasts

Methods of Measuring Inflation

India's retail price inflation rate stood at 3.15 percent year-on-year in July 2019, little-changed from the previous month's 3.18 percent and slightly below market expectations of 3.20 percent. Inflation remained below the Reserve Bank of India's medium-term target of 4 percent for the twelfth consecutive month, despite recent interest rate cuts.

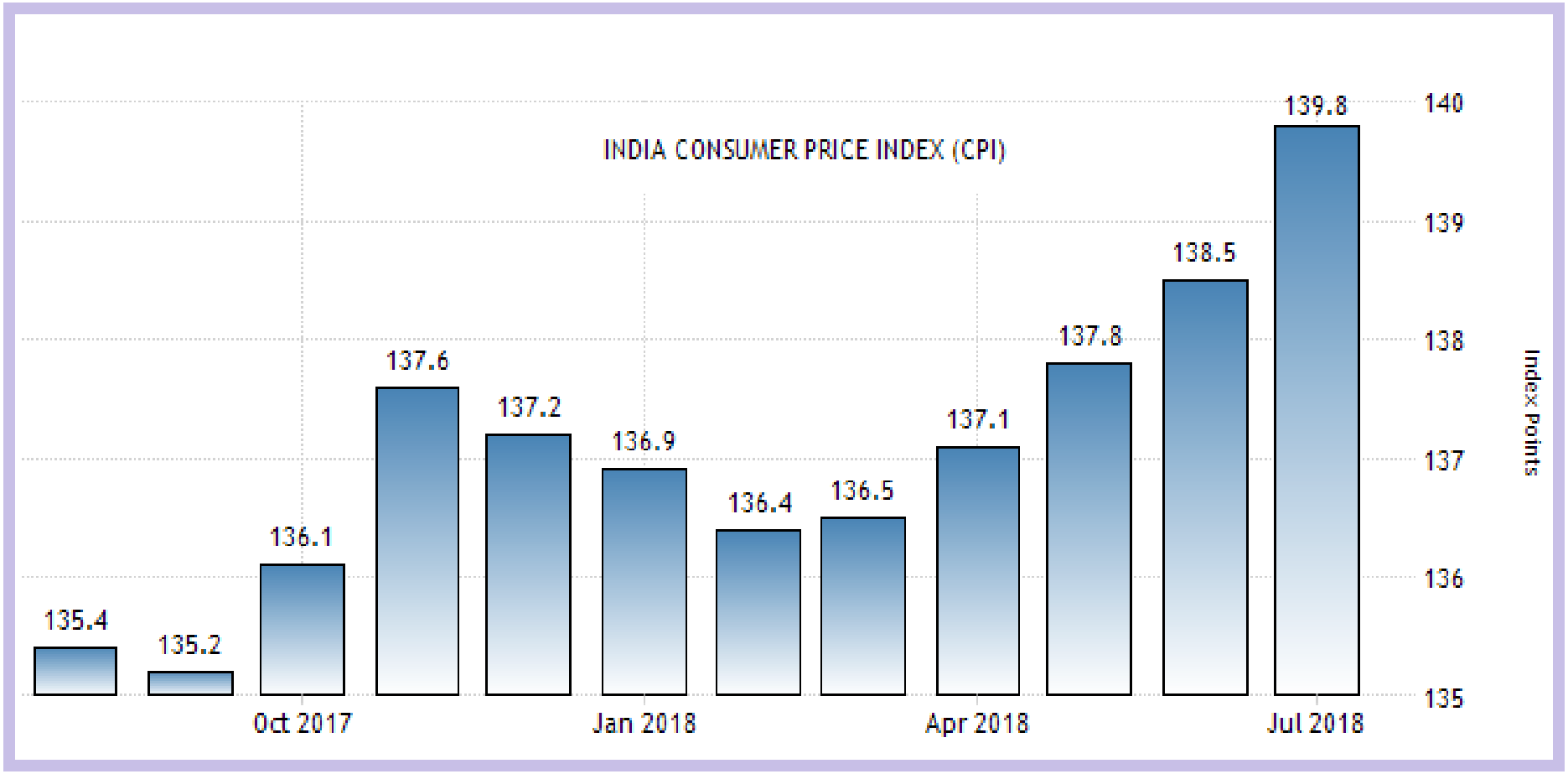
Food prices rose 2.36 percent from a year earlier in July, the biggest gain since June 2018. Also, the food & beverages index went up 2.33 percent, with main upward pressure coming from: meat & fish (9.05 percent); vegetables (2.82 percent); non-alcoholic beverages (3.38 percent); prepared meals, snacks, sweets etc. (2.56 percent); pulses & products (6.82 percent); egg (0.57 percent); cereals & products (1.31 percent); spices (2.02 percent); oils & fats (0.91 percent); and milk & products (0.98 percent). By contrast, fruits prices dropped 0.86 percent and sugar & confectionery costs fell 2.11 percent.

Among non-food products, prices increased for housing (4.87 percent); miscellaneous (4.65 percent); pan, tobacco and intoxicants (4.89 percent); and clothing and footwear (1.65 percent). Fuel & light prices were 0.36 percent lower.

The corresponding provisional inflation rates for rural and urban areas were 2.19 percent and 4.22 percent, compared with June's figures of 2.21 percent and 4.33 percent respectively.

On a monthly basis, consumer prices went up 0.91 percent in July.

Methods of Measuring Inflation



Methods of Measuring Inflation

India July Inflation Rate Weaker than Expected

India' annual inflation rate eased to 4.17 percent in July 2018 from a downwardly revised 4.92 percent in the previous month, and below market expectations of 4.51 percent. Still, inflation remained above the central bank's medium-term target of 4 percent for nine consecutive months.

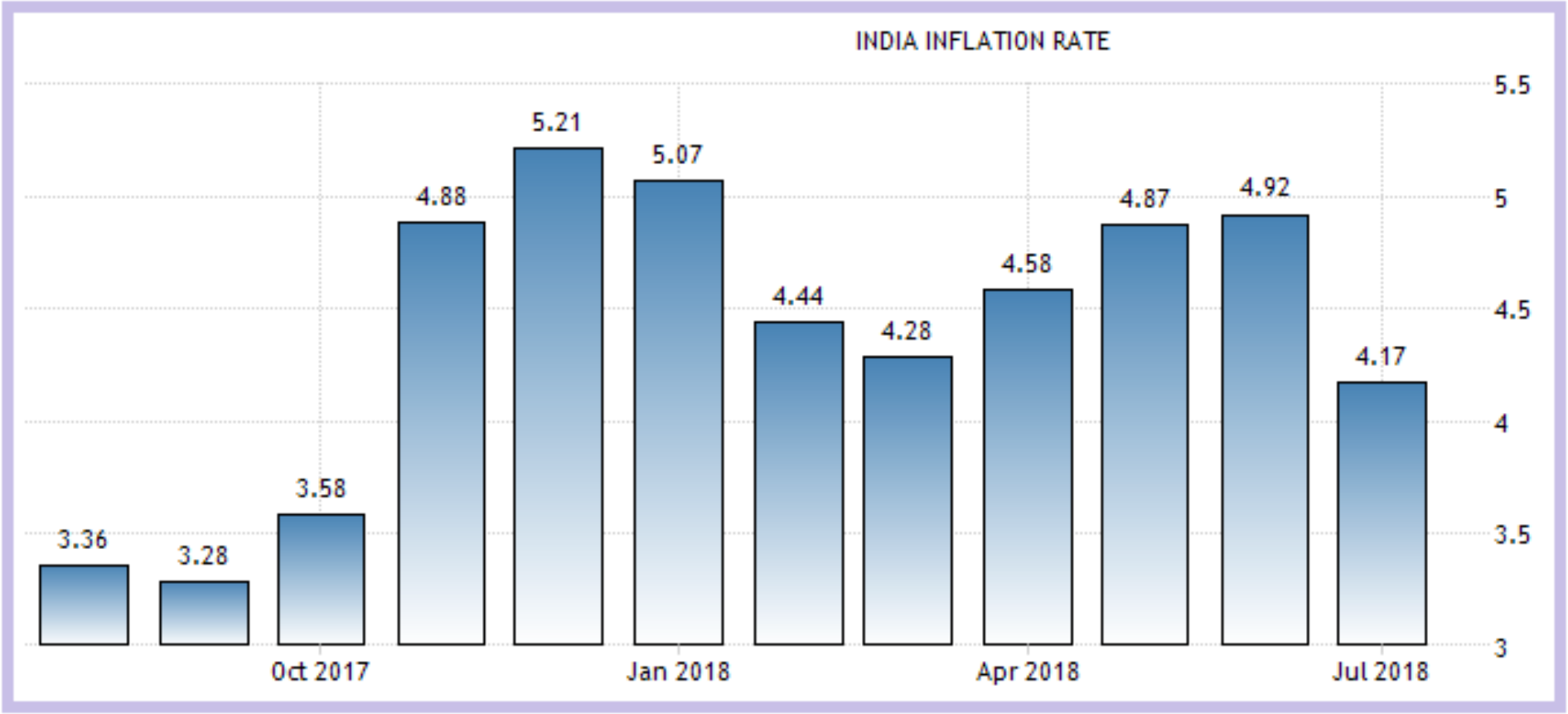
Food and beverages inflation went down to 1.73 percent in July from 3.11 percent in June, with the food index alone rising 1.37 percent (vs 2.91 percent in June). Inflation slowed for fruits (6.98 percent vs 10.06 percent); prepared meals, snacks, sweets etc. (4.46 percent vs 4.76 percent); milk and products (2.96 percent vs 3.04 percent); and non-alcoholic beverages (1.40 percent vs 1.96 percent). In addition, there was a decline in prices of vegetables (-2.19 percent vs 7.80 percent); pulses and products (-8.91 percent vs -10.87 percent); and sugar and confectionery (-5.81 percent vs -7.11 percent). On the other hand, inflation picked up for eggs (7.41 percent vs 5.85 percent); oils and fats (2.79 percent vs 2.62 percent); spices (2.66 percent vs 2.29 percent); and meat and fish (2.26 percent vs 2.20 percent).

Among non-food products, prices rose at a softer pace for: housing (8.30 percent vs 8.45 percent); clothing and footwear (5.28 percent vs 5.60 percent); and pan, tobacco and intoxicants (6.34 percent vs 8.05 percent). Inflation rose for both fuel and light (7.96 percent vs 7.22 percent); and miscellaneous (5.80 percent vs 5.66 percent).

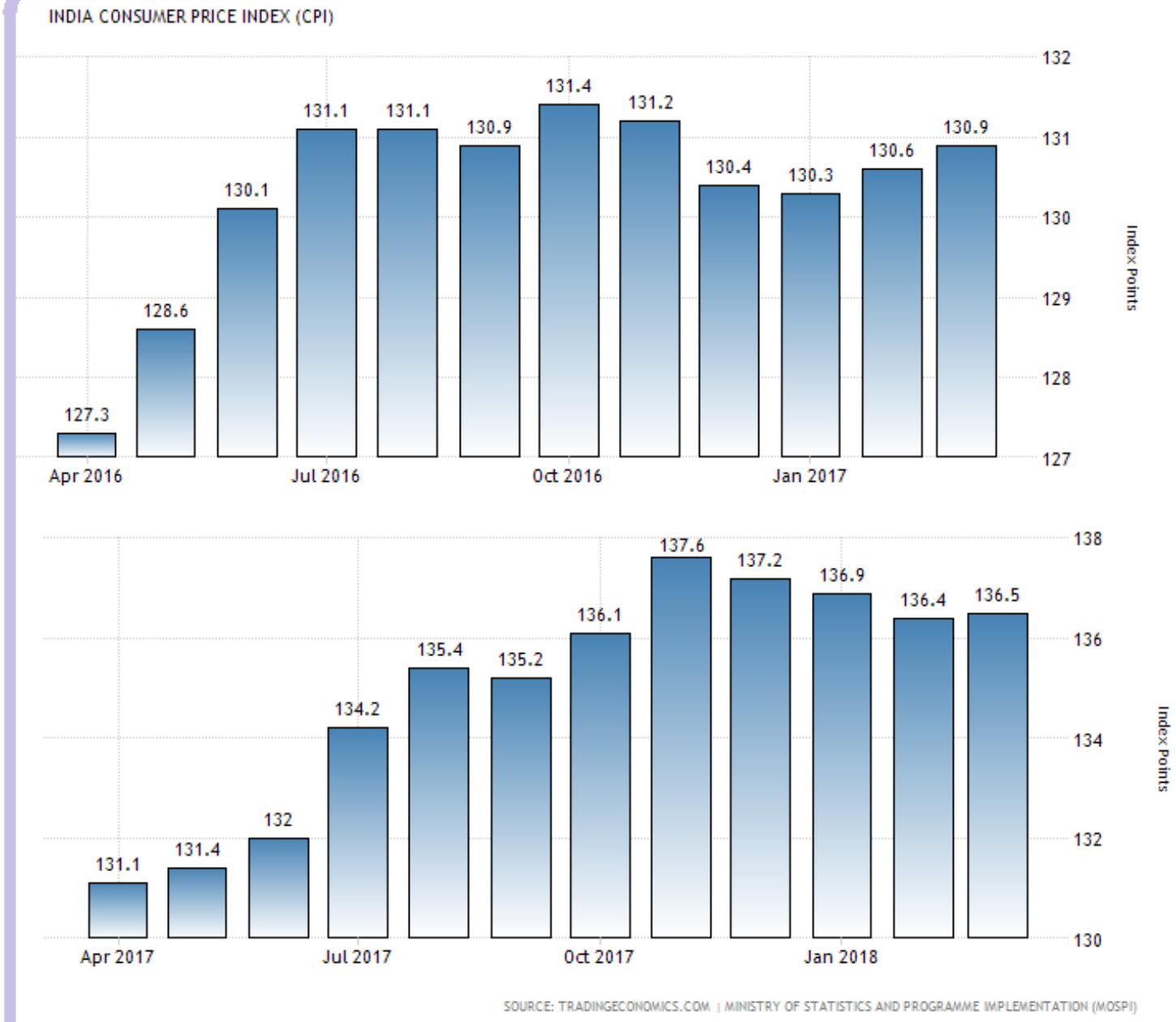
The corresponding provisional inflation rates for rural and urban areas were 4.11 percent and 4.32 percent, compared with June's figures of 4.93 percent and 4.85 percent respectively.

On a monthly basis, consumer prices increased 0.94 percent in July, after a revised 0.51 percent gain in June.

Methods of Measuring Inflation



Methods of Measuring Inflation



Methods of Measuring Inflation

Methods of Measuring Inflation

Methods of Measuring Inflation

Methods of Measuring Inflation

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

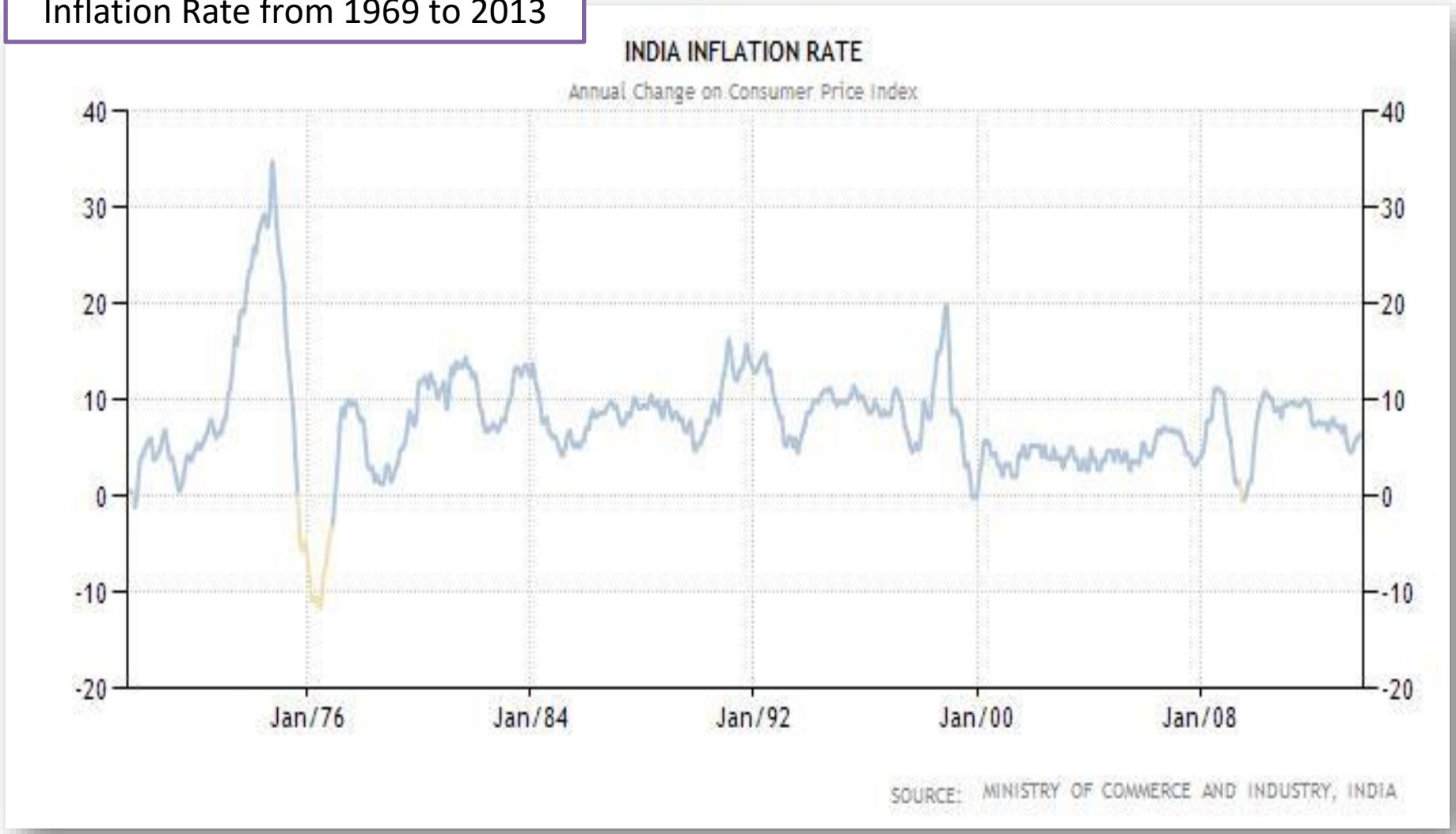
2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

India Inflation Rate Rises to 2.36% in July

- **India's consumer prices increased 2.36 percent year-on-year in July 2017,** beating **market expectations of 1.87 percent** and following a 1.54 percent gain in the previous month. **Cost of housing, energy and clothing rose further and food prices fell at a softer pace**.
- **Prices grew at a faster pace for:** Fuel and light (4.86 percent from 4.54 percent), clothing and footwear (4.22 percent from 4.17 percent) and housing (4.98 percent from 4.7 percent).
- Meanwhile, **cost of food fell at a slower 0.29 percent after declining by 2.12 percent in June**. While **prices of vegetables fell less** (-3.57 from -16.53 percent in June) and **fruits inflation was higher** (2.83 percent from 1.98 percent), cost of pulses declined further (-24.75 percent from -21.92 percent).
- The corresponding provisional inflation rates for **rural and urban areas are 2.41 percent and 2.17 percent** (1.52 percent and 1.41 percent respectively in June).

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

Inflation Rate from 1969 to 2013



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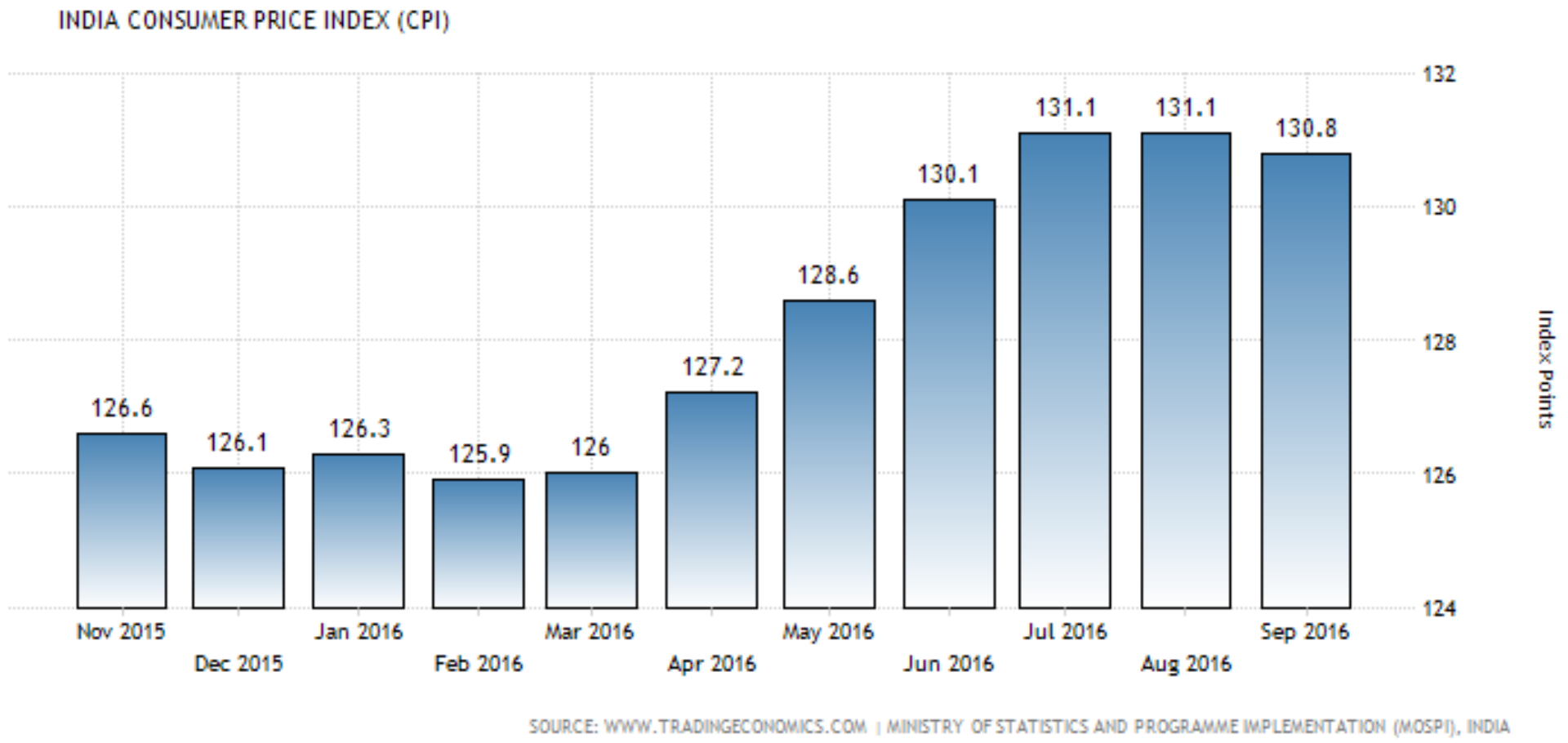

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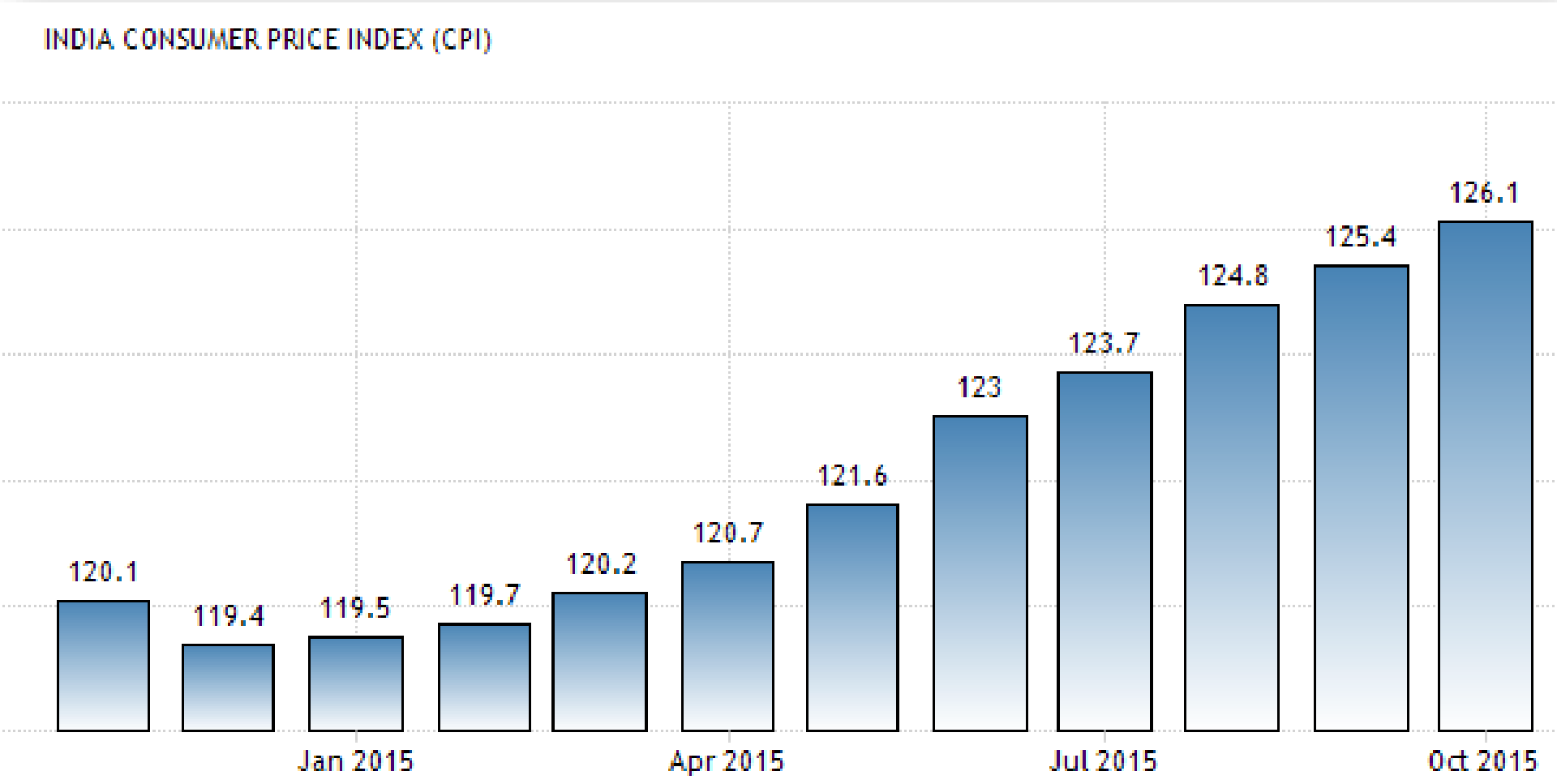

2 - Methods of Measuring Inflation : Consumer Price Indices (CPI)

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CPI Indexes

Consumer Price Index Numbers for Industrial workers on Base 2001 = 100 for Year 2019

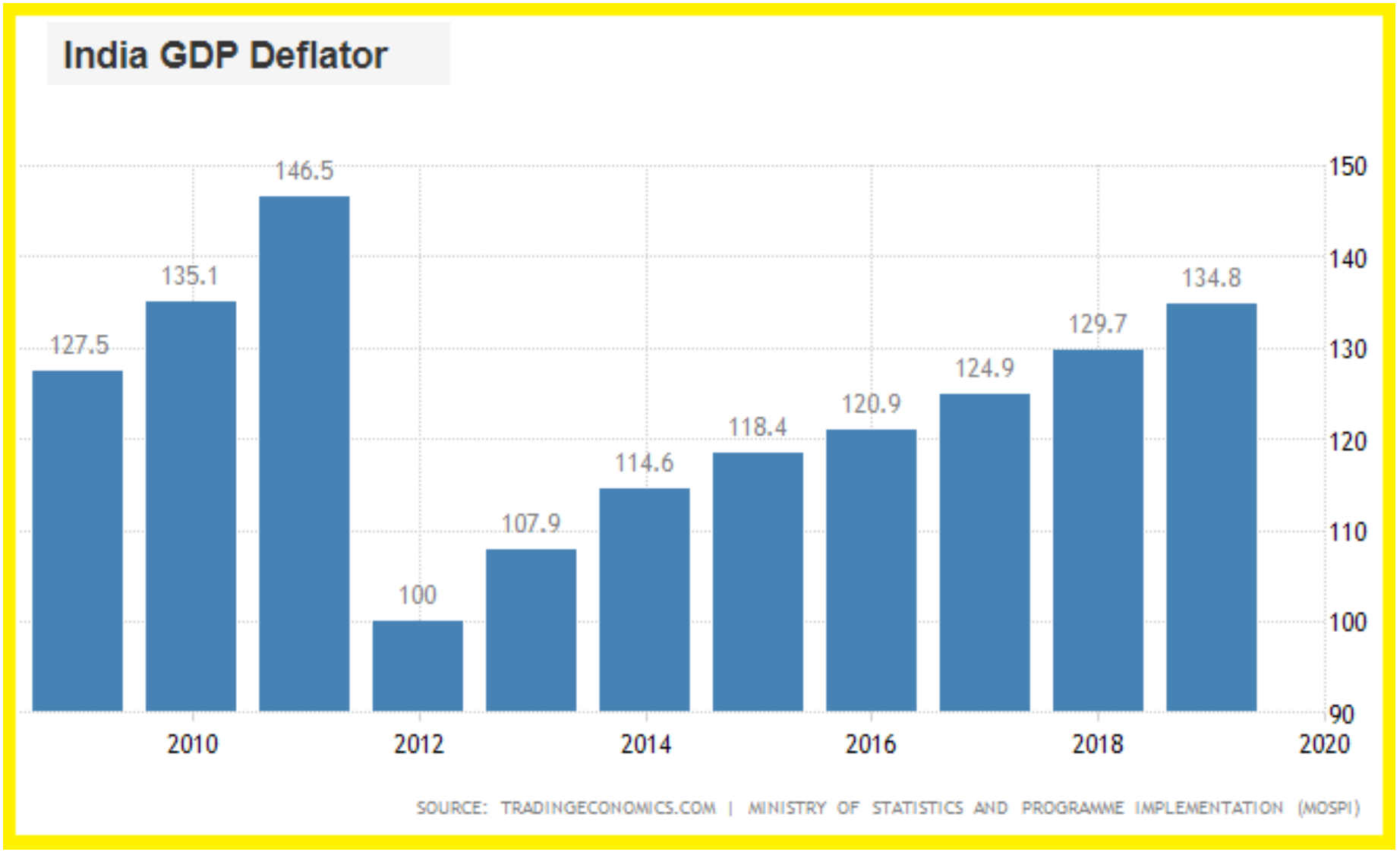
State	Centre Desc	Jan	Feb	Mar	Apr	May	Jun
MHR	MUMBAI	300	302	305	307	308	309
	NAGPUR	383	387	386	386	389	393
	NASIK	353	357	357	358	360	360
	PUNE	330	329	331	336	341	344
	SHOLAPUR	320	324	324	327	332	331

STATE-WISE CPI(AL/RL)

CONSUMER PRICE INDEX NUMBERS(GENERAL) FOR AGRICULTURAL AND RURAL LABOURERS (BASE 1986-87=100)

Sr.No.	State	Agricultural Labourers May 2019	Agricultural Labourers June. 2019	Rural Labourers May. 2019	Rural Labourers June. 2019
11	Maharashtra	1032	1057	1027	1049

GDP Deflator in India increased to 134.80 Index Points in 2019 from 129.70 Index Points in 2018. GDP Deflator in India averaged 119.53 Index Points from 2005 until 2019, reaching an all time high of 146.50 Index Points in 2011 and a record low of 100 Index Points in 2005.



3 - Methods of Measuring Inflation: GDP Deflator

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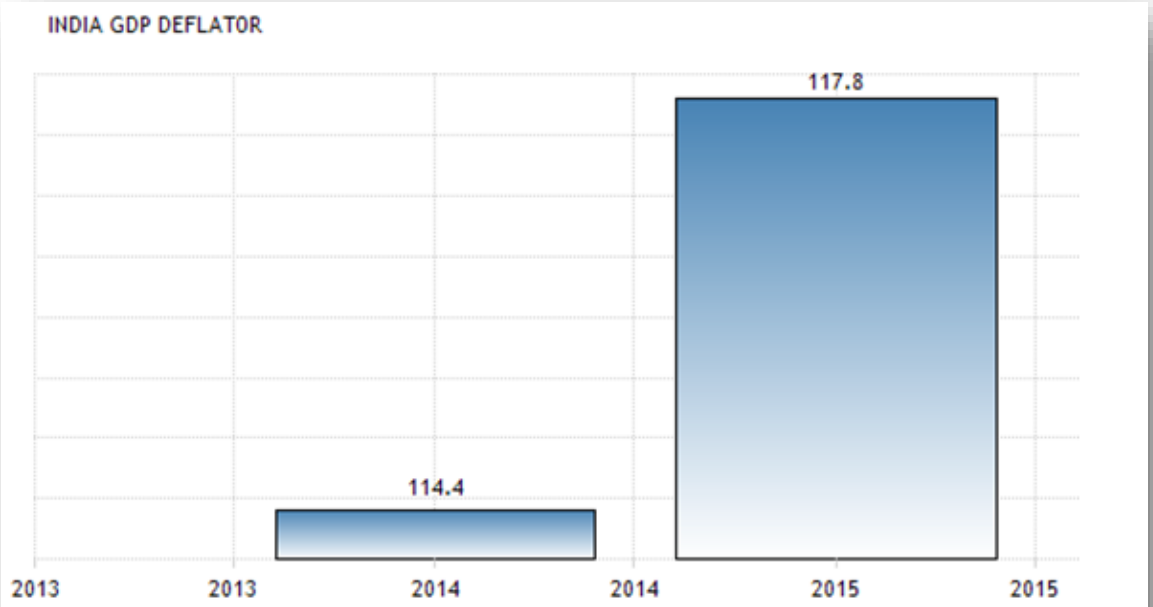

Case 1

New WPI series: India moves to concept of producer price index to better gauge actual price pressure in economy

By: FE Bureau | New Delhi | Updated: May 13, 2017 6:43 AM

The new wholesale price index (WPI) series with 2011-12 as base year, announced on Friday, departed from the established practice to scrap the indirect tax component from the price of goods to remove the impact of fiscal policy on inflation. The change signals India's move towards the concept of producers' price index to better gauge the actual price pressure in the economy at the wholesale level.

The removal of the duty component reflects the fact that WPI inflation, according to the new series, is much lower the level reported under the old series with 2004-05 as the base year — only 1.7% in 2016-17 against 3.7% reported earlier.

The move will also mean that when the goods and services tax (GST) is introduced from July, the WPI won't reflect it, while consumer price inflation will continue to capture such tax component built into the retail price of goods and services. This could potentially result in a sudden bout of WPI-CPI divergence.

New WPI series: India moves to concept of producer price index to better gauge actual price pressure in economy

Since WPI is used in the deflator to estimate real growth in gross domestic product and gross value added (GVA), the lower WPI numbers from 2012-13 to 2016-17 on a new base could lead to upward revision of such growth data. Since WPI is used as a part of the deflator to calculate the real growth of GVA, removing such tax component from the WPI is integral to the fact that the GVA doesn't factor in indirect taxes.

Chief statistician TCA Anant said: "Since the GST will be captured on the final point of sale, it will be reflected only in the CPI. So the GST will account for a certain degree of divergence between the new WPI data and the CPI data."

Also, the government will gauge the prices of seasonal fruits and vegetables for a much longer period, and not just during the season. A new WPI food index will also be launched, just like the one that tracks retail food inflation.

However, while the new WPI series will reflect more adequately the changing consumption pattern in the economy and better capture the price pressure at the producer/wholesale level, it may not necessarily narrow its huge divergence with the consumer price index-based inflation witnessed in recent years, partly due to the huge difference in the composition of the two price gauges.

Case 2

Reasons to Use WPI Instead of CPI to Calculate Inflation(before December 2014)?

Data on Wholesale Price Index (WPI) is available every week, while data on Consumer Price Index (CPI) is only available every month, so there is a time lag in CPI data availability compared to WPI data availability.

In India, we do not have one CPI calculated per se. we have three such CPIs, CPI for Industrial Workers (CPI-IW). CPI for agricultural laborers and CPI for rural laborers. The argument used therefore is that there is no one CPI value which can be used for decision making by either RBI or the Government of India.

WPI has a broader coverage compared to all the CPIs, in terms of the commodities covered, quotations, larger number of non-agricultural products and tradable items, which are missing in the CPIs.

Reasons to Use WPI Instead of CPI to Calculate Inflation(before December 2014)?

Interest rates which the RBI controls may not have much of a correlation with high food prices and therefore decision makers may feel that since they can't target inflation across major sections constituting the CPI, they would rather focus on WPI constituted of goods on whose demand interest rates may have a more significant impact.

WPI is calculated on an all India basis, while CPI is calculated for specific centers in India and then this is aggregated to an all India index.

Discussion

Why India is shifting from WPI to CPI for calculating Inflation?

Is CPI a better inflation indicator than WPI?

- Conceptually, retail inflation price rise driven by potential consumer demand and available supply is a better indicator of inflation for guiding monetary policy decisions than WPI inflation.

- Even the former RBI governor D Subbarao admitted as much. The release of CPI data, with a shorter time lag and availability of a single all-India measure of retail inflation, could prompt RBI to move towards CPI or its variation as a primary measure of inflation.

Is CPI a better inflation indicator than WPI?

So far, RBI chose the wholesale price index or WPI over CPI, largely for two reasons.

1. First, until 2011, there was no single CPI, representative of the whole country. There were three or four CPI measures, relevant for different segments of population. Now, we have one representative measure of retail inflation with further disaggregation to see how prices in rural and urban India are changing.
2. Second, WPI was earlier available with a shorter lag only a 2-week delay compared with CPI inflation which came with a 2-month lag. Now, CPI monthly inflation data is released(12^{th} of the month) couple of days prior to WPI inflation data(14^{th} of the month) for the same month.

Is CPI a better inflation indicator than WPI?

The conceptual case for moving to CPI rests on two points.

1. First, WPI excludes prices of services such as education, healthcare, and rents. However, services now account for nearly 60 per cent of GDP and a vast majority of these services are not traded with other countries. As a result, inflation in these services is largely determined by the domestic demand-supply situation. Conversely, the new CPI measure assigns nearly 36%weightage on services and includes price changes in housing, education, healthcare, transport and communication, personal care and entertainment. CPI, therefore, is a better reflector of demand side pressures in the economy, than wholesale prices.
2. Second, WPI assigns nearly 15% and 10.7% weightage for the fuel group and metal and metal products group, respectively. Any sharp movements in international prices of fuels and metals, therefore, lead to sharp changes in WPI. This was visible in calendar year 2009 when WPI inflation fell below.

Government sets up a panel to devise new Producer Price Index to replace Wholesale Price Index

Clocking the Economy

"The most important part of PPI will be services, as currently there is no index tracking inflation in the sector that CONTRIBUTES ABOUT 55% TO INDIA'S GDP."

MEMBER OF THE BN GOLDAR COMMITTEE

Why a PPI?

- **To track** pure price changes at producer level for goods as well as services
- **PPI prices** of many products and some services are from first commercial transaction
- **Unlike WPI,** it lacks tax component, keeping inflation free of tax fluctuations
- **Most major** economies have PPI instead of WPI

Challenges

- **Services sector data:** Though it contributes about 55% to economy, there is no services sector database
- **Govt has,** on an experimental basis, come out with a services price index for rlys, postal, banking & telecom
- **Agriculture data:** Most transactions happen at the mandi. Tracking producer-level prices is a challenge
- **Historical data:** WPI has been around for decades, with a large historical database, and will be difficult to replace

PPI

- The proposed index will seek to bring India's inflation gauge on a par with international standards, with PPI tracking changes at the producer level for both goods and services and CPI providing details of retail prices.
- The 13-member committee is headed by Professor BN Goldar and has representation from various central ministries and departments.
- WPI includes taxes while PPI tracks inflation minus tax component. The most important part of PPI will be services, as currently there is no index tracking inflation in the sector that contributes about 55% to India's GDP
- PPI will track average change over time in selling prices received by domestic producers for their output for both goods and services while WPI tracks transaction only at the wholesale level for goods.
- Prices included in PPI are from the first commercial transaction for many products and some services. The committee will outline methodology and timelines for launch of PPI series to initially run parallel to WPI and later replace it.

SUMMARY

- Inflation means ‘persistent’ and appreciable increase in general level of prices.
- Inflation is desirable at 1-2% in developed countries and 4- 6% in less developed countries.

$$\text{Rate of Inflation} = \frac{PIN_t - PIN_{t-1}}{PIN_{t-1}} \times 100$$

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

SUMMARY

The "Economics – Statistics" literature refers to a set of well-known criteria for the selection of a base year. These are as follows:

(i) The base year should be a normal i.e, a stable year in respect of economic activities like production, trade, etc and their prices. It should not suffer from business cycles,

(ii) Reliable price data must be reasonably available for the selected base year,

(iii) The base year should be as recent as possible so that by the time revised series of items and their prices are released, it should not have outlived its utility, and

(iv) The base year for closely related economic indicators should not be widely off the mark.