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Analyze the Factor Responsible for Change in Price Index to Measure Inflation in India

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Abstract: ***This research deals with the probable reasons, benefits obtained behind this change in price index and try to study the impact it will have on different components. The main objective of the research work is to analyze the factors responsible for change in price index to measure inflation in India. Various components of Consumer price Index and Wholesale price Index is analyzed in order to find out the rationale behind change in price index.To do so data has been collected from government portals for CPI and WPI for the duration of three years starting from 2014 to 2016. Analysis of data is done by comparing the means of the various components of CPI and WPI with means of Index itself. Major findings of the research was food and beverages are the component having maximum impact on inflation in our country. Vegetables, pulses are the major contributor to the food inflation in our country. Tobacco products are also have significant role to play in rising inflation in our country. Food and beverages given less weightage in Wholesale price Index and exclusion of service sector in calculating the Wpi inflation are majorly responsible for change in price index to measure inflation in India.***

Keywords: Consumer price index, Wholesale price index, Food inflation

1. Introduction

Inflation can be defined as the rate at which the general prices for goods and services is rising and in return the purchasing power of the currency falls. Central banks tries to restrict the inflation, and try to avoid deflation, in order to keep the economy stable..

Demand-pull inflation is the situation when the aggregate demand in the economy outshines the aggregate supply or in other words seller is not able to keep tracks with high and rising demand for the product.Demand-pull inflation is constructive in nature and with high demand there is scope of increasing your business with proper utilization of resource at your disposal. It helps in attracting more investment and broadens the market. Demand-pull theory states that the rate of inflation accelerates whenever aggregate demand is increased beyond the ability of the economy to produce (its potential output). Hence, any factor that increases aggregate demand can cause inflation.In order to stay competitive in the market, marketer needs to innovate and try to keep his growth rate higher than that of market growth rate.This way he will be able to cope up with increasing demand.

Cost- Push inflation is another name for "supply shock inflation", is caused by a decrease in aggregate supply. There are many reason which could be held accountable for cost pull inflation such as natural disasters, increased prices of inputs etc.Best example of cost-pull inflation could be decresase in supply of oil resulting in constant increase in the prices of oil witnessed in the global scenario.

Inflation could be caused by either of external or internal events.Some inflationary pressure can be caused due to political decisions such as distributing essential resources like water and gas at previous year price knowing it went up can cause the price to go up in future. Revision of indirect taxes under GST regime where some of the product shifted to lower tax rate and some shifted to higher causing decrease and increase in price respectively.Inflation can also come from external sources, for example a sustained rise in the price of crude oil or other imported commodities, foodstuffs and beverages. Change in international prices such as price of gold, oil can effect the prices of the gold and oil in our country thus causing inflation in our country.

2. Literature Review

Harendra Behera, Gareema Wahi and Muneesh Kapur (2017) conducted a study whose objective was to model the CPI inflation and to explore the Philip curve relationship using sub national data for the durarion of 8 years starting from 2010 to 2017 with data collected was secondary in nature and was taken from various public domain website of RBI, IMF,CSO etc. and found out that excess demand condition have hardening effect on inflation and Exchange rate comes out to be significant contributor on inflation.

Jaromir benes, Kevin Clinton, Asish Thomas George (2016) conducted a study based on the concept of flexible inflation targeting (FIT) in Indian circumstances whose objective were to determine the impact of monetory policy in different economic scenarios and to illustrate the structural characteristic of india under FIT for the duration of 17 years starting from 2000 to 2016. and found out that under the framework of flexible inflation targeting, it acts as strong anchor which helps in decreasing shock supply and also improve the macroeconomic stability in the country which leads monetary policy to give results as desired

Jaromir benes, Kevin Clinton, Asish Thomas George (2016) conducted the study with concept of quarterly projection model in Indian context whose objective were to know the impact of agriculture sector and food prices on inflation and to know the impact of QPM on monetary policies of the country and found out that large minimum support price(MSP), deficit monsoon and supply shock in onion price resulted in food inflation and also provided evidence of causal factor to the historical evidence of evolution of macroeconomic variables.

V Dhanya (2016) conducted the study to know the impact of MGNREGS on labour market wages, consumption expense

in kerela whose objective was to determine the impact of the impact of MGNREGS on labour short economy of kerela and the study was conducted for the duration of three years starting from 2011 to 2014 and found that There is no significant or in other words partial impact on labour market and wages in kerela which helps in financial inclusion and improvement of health standard of the labours and also found out that there was an increase in consumption expenditure in Kerala.

Harendra Kumar Behera, Sitikantha Pattanaik and Rajesh Kavediya (2015) conducted a study to assess the stance of Indian monetory policy under uncertain conditions whose objective was to determine the impact of natural interest rate on monetory policy of India under uncertain conditions for the duration of 20 years starting from 1996 to 2015 and found out that natural real interest rate lied in the range of 0.6 % to 3.1% in Q4 of 2014-15 whereas core estimates points towards range of 1.6% to 1.8% and difference in both the rates shows that monetory policy stance was accommodative rather than anti inflammatory.

Thangzason Sonna, Dr. Himanshu Joshi, Alice Sebastian and Upasana Sharma (2014) conducted a study which deals with analytics of food inflation in India whose objectives were to examine the relevance of Minimum support price (MSP) and rural wage in determining the the food inflation in India with duration of the study was from 1990 to 2012 and tools used for analytics were johnsen multivariate co integration and augmented Dickey fuller unit root test and found that MGNREGS doesn't effect food inflation significantly on the other hand agricultural productivity and real wages are significant determinant of food inflation in India.

3. Research Methodology

- **Type of research**

Descriptive Research Method
Descriptive research design deals with collecting and representing the data. It helps in quantifying the data that is converting into numerical form so that it could be easily analyzed and represented. It is basically concerned with the understanding the situation or condition under study.

Type of Data: Secondary data has been used.

Source of the Data: Secondary data collected from the
1) RBI Journal HANDBOOK FOR STATISTICS OF INDIAN ECONOMY.
2) Data.gov.in
3) Eaindustry.nic.in

- **Duration:** Data collected for analysis for three year that is from 2014 to 2016 both year included.

- **Gap Area**: There was a trend of measuring inflation on the basis of Wholesale price index (WPI) until 2014 when this practice was changed to Consumer price index (CPI) for measuring the inflation. This research deals with the probable reasons, benefits obtained behind this change and try to study the impact it will have on different components.

- **Objective of the Study:**
1. To analyze the impact of various components on Consumer price Index (CPI).
2. To analyze the impact of various component of food and beverages on food inflation.
3. To analyze the impact of various components on Wholesale price Index (WPI)

- Research Tool : Descriptive statistics

Compared the mean of different components of the variables to know the effect on the variable itself

1) For the Year 2014:

Table 4.1: Mean Values for CPI Inflation for Rural and Urban Population

	Rural .(mean value)	Urban. (mean value)
Cpi Inflation	117.89	116.74
Food and Beverages	120.8	122.06
Pan, Tobacco and Intoxicant	117.55	120.69
Clothing	120.06	117.73
Footwear	117.65	113.5
Clothing and Footwear	119.71	117.07
Fuel and Light	114.86	111.58
Household Goods and Services	-	114.5
Health	113.24	111.6
Transport and Communication	111.88	111.15
Recreation and Amusement	111.55	112.17
Education	114.72	116.13
Personel Care	108.87	109.44
Miscellaneous	112.58	112.47

Table 4.2: Mean Values for Food Inflation for Rural and Urban Population In 2014

	Rural (mean value)	Urban (mean value)
Food Inflation	120.8	122.06
Cereals and Product	121.09	123.28
Meat and Fish	120.73	124.38
Eggs	118.9	119.7
Milk and Products	119.7	120.05
Oils and Fats	110	103.2
Fruits	125.35	124.15
Vegetables	137.42	142.17
Pulses and Product	112.88	113.58
Sugar and Confectionary	103.14	99.8
Spices	113.02	119.14
Non Alcoholic Beverages	114.97	113.77
Prepared Meals, Snacks, Sweets,Etc.	120.75	123.18

Rural

- Table no. 4.1 shows that food and beverages is having highest mean value that is mean value of 120.8 which is greater than mean value of CPI inflation.
- Food and beverage is followed by cloths and footwear and pan, tobacco, intoxicants with mean values of 119.71 and 117.55.
- Table no. 4.2 depicts that components responsible for high food inflation as per CPI is primarily vegetables followed by fruits with mean scores of 137 and 125 approximately respectively.
- Other contributing factors are packed sweets and cereals with mean scores of 120.75 and 121.09 respectively

Urban

- Food and beverage are the major contributor to the CPI inflation followed by pan, tobacco,intoxicants with mean score of 122 and 120 approximately respectively.
- Other contributors to CPI are clothing, education with approximate mean score of 120 and 116.13 respectively.
- Major contributor to food inflation are vegetables, meat, and fruits with mean score of 142 and 124 respectively.
- Other contributors are cereals, packed sweets with mean scores of 123.28 and123.18 respectively.

2) For The Year 2015

Table 4.3: Mean Value for CPI Inflation for Rural and Urban Population in 2015

	Rural (Mean values)	Urban (Mean values)
CPI Inflation	124.31	121.69
Food and Beverages	127.26	128.31
Pan, Tobacco and Intoxicants	128.29	132.57
Clothing	128.52	123.14
Footwear	125.19	117.83
Clothing and Footwear	128.04	122.33
Fuel and Light	122.57	114.85
Household Goods and Services	-	119.31
Health	120.15	115.92
Transport and Communication	113.01	109.36
Recreation and Amusement	117.81	116.45
Education	122.18	123.92
Personel Care	112.5	112.3
Miscellaneous	117.45	115.35

Table 4.4: Mean Values for Food Inflation for Rural and Urban Population in 2015

Food Inflation	127.26	128.32
Cereals and Product	124.37	123.75
Meat and Fish	128.45	129.67
Eggs	120.79	118.29
Milk and Products	127.94	127.21
Oils and Fats	113.9	106.56
Fruits	132.4	126.32
Vegetables	140.95	148.13
Pulses and Product	135.37	153.08
Sugar and Confectionary	96.2	90.55
Spices	122.93	131.56
Non Alcoholic Beverages	120.78	118.23
Prepared Meals, Snacks, Sweets, Etc.	130.75	130.96

Rural

- Table no. 4.3, shows that Pan, tobacco and intoxicants is having highest mean score of 128 and it is having average value greater than average value of the price index.
- Clothing is having individual mean score of 128.52 which is highest but when combined with footwears, its mean value drops to 128.04.
- Pan, tobacco and intoxicants is followed by foods and beverages and cloths and footwear with mean score of 127.26 and 128.04.
- Table no.4.4 shows that components responsible for high food inflation as per CPI is primarily vegetables followed by fruits with mean scores of 140.95 and 132.40 approximately respectively.
- Other contributing factors are packed sweets, meat products and pulses with mean scores of 130, 128 and 135 respectively.

Urban

- Pan tobacco and intoxicants are the major contributor to the CPI inflation followed by food and beverages with mean score of 132 and 128 approximately respectively.
- Other contributors to CPI are clothing, education with approximate mean score of 123 and 123 respectively.
- Major contributor to food inflation are pulses and vegetables with mean score of 153 and 148 respectively.
- Other contributors are packed sweets, meat and spices with approximate mean scores are 130,129 and 131 respectively

3) FOR THE YEAR 2016

Table 4.5: Mean Values for CPI Inflation for Rural and Urban Population in 2016

	Rural (Mean values)	Urban (Mean values)
CPI Inflation	131.275	126.82
Food and Beverages	134.58	134.26
Pan, Tobacco and Intoxicants	137.75	142.54
Clothing	136.8	127.8
Footwear	132.07	121.06
Clothing and Footwear	136.14	126.79
Fuel and Light	128.51	115.58
Household Goods and Services	-	123.4
Health	126.58	120.74
Transport and Communication	115.9	111.1
Recreation and Amusement	124.51	120.16
Education	130.31	129.51
Personel Care	120.1	118.85
Miscellaneous	123.38	119.3

Table 4.6: Mean Values for Food Inflation for Rural and Urban Population in 2016

Food Inflation	134.58	134.26
Cereals and Product	129.24	126.92
Meat and Fish	136.8	139.15
Eggs	128.03	130.33
Milk and Products	133.55	131.28
Oils and Fats	119.48	110.66
Fruits	136.34	129.45
Vegetables	142.76	148.11
Pulses and Product	167.35	178.35
Sugar and Confectionary	107.85	109.94
Spices	133.6	142.79
Non Alcoholic Beverages	126.88	121.66
Prepared Meals, Snacks, Sweets, Etc.	139.61	137.46

Rural

- Table no. 4.5 shows that Pan, tobacco and intoxicants is having the highest mean score and it's average value is greater than average value of the price index. Mean score of pan, tobacco and intoxicants is 137 approximately.
- Pan, tobacco and intoxicants is followed by clothing & footwear and food & beverages with mean score of 136.14 and 134.58 respectively.
- We can also see that year by year education is growing expensive in rural areas.

- Table no. 4.6 depicts that components responsible for high food inflation as per CPI is primarily Pulses and products followed by vegetables with mean scores of 167 and 142 approximately respectively.
- Other contributing factors are packed sweets, meat and spices with mean scores of 139, 137and 133 respectively.
- There are some significant contributors such as milk and dairy product and fruits having mean scores approximately 133 and 136 respectively.

Urban

- Pan tobacco and intoxicants is having highest mean score followed by food and beverages with mean score of 142 and 134 approximately respectively.
- Other contributors to CPI are clothing, education with approximate mean score of 126 and 129 respectively.
- Major contributor to food inflation are pulses followed by vegetables with mean score of 178 and 148 respectively.
- Other contributors are packed sweets, meat and spices with approximate mean scores are 137,1139 and 142 respectively
- Milk and dairy products also contributing significantly to the food inflation wit having mean score of approximately 131.

4) Analysis of Wholesale price index for the year 2014

Table 4.7: Mean Values of Different Components of WPI for the Year 2014

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	Mean
AC	113.6	113.6	114.3	114.1	114.8	115.2	116.7	117.2	116.4	115.6	114.1	112.1	114.8
PA	121.2	121.1	121.4	121.5	124.0	125.7	130.1	131.5	129.4	127.3	126.5	123.1	125.2
FA	122.7	122.2	122.9	123.1	126.3	129.7	136.3	138.5	136.0	134.8	134.5	131.0	129.8
NFA	116.7	118.1	118.2	117.3	117.6	116.9	117.3	117.1	114.8	113.7	113.1	114.1	116.2
FLP	119.9	118.9	119.3	116.5	116.2	115.1	117.1	116.6	114.9	112.6	106.6	101.3	114.6
MP	109.5	109.9	110.7	111.0	111.3	111.5	111.8	112.3	112.2	112.1	111.3	110.5	111.2

- Table no. 4.4 shows that Food article has the highest mean value as compared to other components of wholesale price index having mean value of 129.8 which means food article is having maximum impact on inflation based on WPI.
- Food article is followed by primary article having mean value of 125.2
- Lowest mean value is of manufactured products with mean value of 111.2 which imply that manufactured product is having least impact on the overall inflation based on WPI
- Mean value of WPI for all commodities is 114.8
- Mean value of Manufactured product and fuel is less than All commodities whereas food article, non food article and primary article is greater then all commodities mean value

4) Analysis of Wholesale price index for the year 2015

Table 4.8: Mean Values of Different Components of WPI for the Year 2015

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	Mean
AC	110.8	109.6	109.9	110.2	111.4	111.8	111.1	110.0	109.9	110.1	109.9	109.4	110.3
PA	120.8	120.7	120.1	121.5	123.4	124.9	124.3	125.4	125.9	126.4	127.1	126.7	123.9
FA	130.1	129.1	128.7	130.7	131.9	133.6	133.8	135.9	136.2	137.8	138.6	137.5	133.7
NFA	113.9	113.1	111.7	112.2	116.2	117.0	116.1	118.2	118.6	120.2	121.1	122.2	116.7
FLP	94.5	88.5	92.0	91.3	95.5	96.4	93.8	87.6	85.7	85.6	85.5	84.8	90.1
MP	110.6	110.1	110.0	110.1	110.5	110.3	109.9	109.2	109.2	109.4	108.8	108.4	109.7

- Table no. 5 shows that food article has the highest mean value as compared to other components of wholesale price index having mean value of 133.7 which means food article is having maximum impact on inflation based on WPI.
- Food article is followed by primary article having mean value of 123.9
- Lowest mean value is of fuel, lubrication, power with mean value of 90.1 which decreased significantly compared to previous year shows less impact of this component on overall inflation.
- Mean score of manufactured product decreased even further than the previous year to 109.7
- Mean value of WPI for all commodities is 110.3
- Mean value of Manufactured product and fuel is less than All commodities whereas food article, non food article and primary article is greater then all commodities mean value.
- WPI for all commodities decreased significantly to 110.3 from 114.8 which shows there is a decrease in inflation.

5) Analysis of Wholesale price index for the year 2016

Table 4.9: Mean Values of Different Components of WPI for the Year 2016

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	Mean
AC	108.0	107.1	107.7	109.0	110.4	111.7	111.8	111.2	111.4	111.5	111.9	111.7	110.3
PA	124.3	122.1	123.0	126.1	128.8	132.0	131.8	131.4	130.6	129.1	128.8	126.8	127.9
FA	136.1	133.2	133.4	137.8	140.9	144.0	144.5	142.6	141.9	141.9	142.0	137.6	139.7
NFA	121.3	118.4	117.4	121.4	120.9	124.2	126.5	125.1	123.0	120.0	117.7	119.4	121.3
FLP	79.8	75.5	76.5	78.3	81.3	85.2	84.7	81.1	83.2	84.6	87.3	88.4	82.2
MP	108.0	108.3	108.8	109.2	109.8	110.0	110.3	110.2	110.4	110.8	111.0	111.1	109.8

- Table no. 4.6shows that food article has the highest mean value as compared to other components of wholesale price index having mean value of 139.7 which means food article is having maximum impact on inflation based on WPI.
- Food article is followed by primary article having mean value of 127.9
- Lowest mean value is of fuel, lubrication, power with mean value of 82.2 which decreased further compared to its value in previous year.
- Mean score of manufactured product is same as the previous year to 109.7 which remain almost equal to value in the previous year.
- Mean value of WPI for all commodities is 110.3
- Mean value of Manufactured product and fuel is less than All commodities whereas food article, non food article and primary article is greater then all commodities mean value.
- Mean value of the WPI for All Commodities (AC) remain unchanged as compared to previous year

4. Findings

- Tobacco products are most significant contributor to the Consumer price index (CPI) inflation.
- FOOD and BEVERAGES also second most impacting component to the CPI inflation.
- There are some components significantly effecting the CPI in urban class such as clothing and footwear, education.
- Fuel and light, transportation, Personel care are components who are least impacting to the CPI inflation.
- Pulses and product are major reason for food inflation.
- Vegetables and fruit are highly inflated in both the region that is rural and urban. Milk and products are impacting the CPI majorly in rural areas.
- Spices, packed sweets, meat products are some significant components effecting the CPI inflation.
- From the study we found that food and beverage is one of the most important factors effecting inflation. Weightage given to Food Article in WPI is approximately 15.25% and it is witnessed that Food article is the factor impacting the WPI inflation the most whereas in CPI it has been allotted 49 % approximately.
- Weightage allotted to tobacco products is mere 1.7% as compared to CPI which is 2.3%. Tobacco products which shows maximum effect on inflation is correctly weighted in CPI.
- Manufactured product has been allotted maximum weightage that is of 64% approximately and after the data analysis, it was witnessed that the component always remain on least impacting components list.
- Fuel and power which is approximately 13.15% in WPI is instead carry 10% weightage in CPI and in this study it is witnessed that fuel and power are less significant as compared to other components.
- Biggest drawback of WPI is that it don't take services into account which CPI does and services like education, medical, recreation have a significant impact on inflation.
- WPI inflation for All Commodities is decreasing for 2015 as compared to 2014 and remaining constant for 2016 compared to 2015 showing decrease in inflation rate which actually is not the case in reality.

5. Conclusion

According to the study, Consumer price Index (CPI) is the correct measure of Inflation in India. Wholesale price index takes into account, the manufacturing side of the pricing scheme whereas real inflation is on the consumer side as there are various types of intermediaries present between a manufacturer and the consumer. What manufacturer priced the product has nothing to do with what consumer will be paying.

CPI takes into account consumer side inflation which is mainly caused by food articles and weight assigned to food article in WPI is way less as per the importance this factor carries in estimation of inflation. There are many components in the WPI such as chemicals, cement, steel and metals which common man don't purchase regularly so this type of components just shows the wrong picture about what actually consumers are paying.

There is difference in consumption pattern when we talk about the rural and urban population as there lifestyles are different. We can see that in the study that how products like spices, milk products are higher in rural areas whereas components such as clothing,education, healthcare, packed sweets are highly inflated in urban areas. This is due to the fact that demand of this type of products are much higher in urban areas than in rural areas. For example entertainment is inflated in urban areas as compared to rural areas because of demand and presence of higher disposable income.

Inflation is a tool which is used to direct the economy. Too much inflation is a bad situation for an economy and less inflation is also not ideal for the economy so government should try to keep the inflation under the control so that economy should prosper. Food inflation is the biggest drawback of the inflation as food article getting expensive is a nightmare for the middle and lower classes. Purchasing power of the currency gets decreased and therefore proper measures shouldbe taken regularly to keep inflation in control.

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