

# **Inflation Monitor**

**March 2020**

**(New Base: 2015-16)**



**State Bank of Pakistan**

**Statistics & DWH Department**

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## **Review**

### **1. Inflation in Brief**

- a) National CPI inflation (2015-16=100) is recorded at 10.2 percent on year-on-year basis in March 2020 as compared to 12.4 percent in the previous month and 8.6 percent during the corresponding month of last year.
- b) National CPI inflation on month-on-month basis is recorded at 0.04 percent in March 2020 as compared to -1.0 percent in the previous month and 2.0 percent during the corresponding month of last year. Seasonally adjusted month-on-month CPI inflation is recorded at 0.03 percent in March 2020 compared to -0.54 percent in the previous month.
- c) Urban CPI inflation (2015-16=100) is recorded at 9.3 percent on year-on-year basis in March 2020 as compared to 11.2 percent in the previous month and 8.9 percent during the corresponding month of last year.
- d) Urban CPI inflation on month-on-month basis is recorded at 0.1 percent in March 2020 as compared to -1.1 percent in the previous month and 1.9 percent during the corresponding month of last year. Seasonally adjusted month-on-month Urban CPI inflation is recorded at 0.15 percent in March 2020 compared to -0.62 percent in the previous month.
- e) Rural CPI inflation (2015-16=100) is recorded at 11.7 percent on year-on-year basis in March 2020 as compared to 14.2 percent during the previous month. It was 8.2 percent during the corresponding month of last year.
- f) Rural CPI inflation on month-on-month basis is recorded at -0.1 percent in March 2020 as compared to -1.0 percent in the previous month and 2.2 percent during the corresponding month of last year. Seasonally adjusted month-on-month Rural CPI inflation is recorded at -0.14 percent in March 2020 compared to -0.41 percent in the previous month.

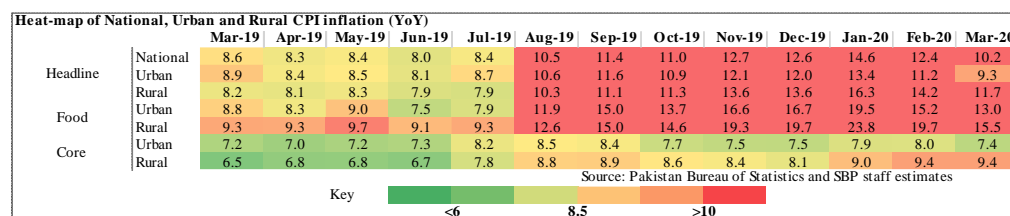
- g) Urban Core inflation (trimmed) on year-on-year basis is recorded at 8.7 percent in March 2020 as compared to 9.7 percent in the previous month and 7.3 percent during the corresponding month of last year.
- h) On month-on-month basis, the Urban Core inflation (trimmed) is recorded at 0.3 percent in March 2020 as compared to 0.1 percent in the previous month and 0.8 percent during the corresponding month of last year.
- i) Rural Core inflation (trimmed) on year-on-year basis is recorded at 11.4 percent in March 2020 as compared to 12.8 percent in the previous month and 6.5 percent during the corresponding month of last year.
- j) On month-on-month basis, the Rural Core inflation (trimmed) is recorded at 0.1 percent in March 2020 as compared to 0.6 percent in the previous month and corresponding month of last year.
- k) Urban Core (Non-food, non-energy (NFNE)) inflation on year-on-year basis is recorded at 7.4 percent in March 2020 as compared to 8.0 percent in the previous month. It was 7.2 percent during the corresponding month of last year.
- l) Urban Core (NFNE) inflation on month-on-month basis recorded at 0.3 percent in March 2020 as compared to 0.2 percent in the previous month and 0.8 percent during the corresponding month of last year.
- m) Rural Core (NFNE) inflation on year-on-year basis is recorded at 9.4 percent in March 2020 and was at the same level in the previous month and 6.5 percent during the corresponding month of last year.
- n) Rural Core (NFNE) inflation on month-on-month basis recorded at 0.6 percent in March 2020 as compared to 0.5 percent in the previous month and was at the same level during the corresponding month of last year.



- o) WPI inflation on year-on-year basis recorded at 9.2 percent in March 2020 as compared to 12.6 percent in the previous month and 16.6 percent during the corresponding month of last year.
- p) WPI inflation on month-on-month basis recorded at -0.9 percent in March 2020 as compared to -0.8 percent in the previous month. It was 2.2 percent in the corresponding month of last year.
- q) SPI inflation on year-on-year basis recorded at 12.2 percent in March 2020 as compared to 16.1 percent in the previous month. It was 11.9 percent in the corresponding month of last year.
- r) SPI inflation on month-on-month basis recorded at -1.1 percent in March 2020 as compared to -0.9 percent in the previous month. It was 2.3 percent in the corresponding month of last year.

## 2. Heat-maps of CPI inflation

The heat map visually elaborates the evolution of inflation. A heat-map for National, Urban and Rural CPI inflation (YoY/MoM) and their important sub-indexes for the time span of last thirteen months is presented. The inflation is compared with the benchmark of medium-term inflation target of 8.5 percent and 0.75 percent on YoY and MoM basis, respectively. Greener areas indicate low inflation pressures and increasing order of red (light to dark color spectrum i.e. light green to orange to brown to red) represents higher and higher inflationary pressures.

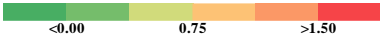


## Inflation Monitor, March 2020

**Heat-map of National, Urban and Rural CPI inflation (MoM)**

		Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
Headline	National	2.0	0.7	0.6	0.5	1.8	1.6	0.8	1.8	1.3	-0.3	2.0	-1.0	0.0
	Urban	1.9	0.8	0.7	0.3	2.0	1.5	0.7	1.6	1.0	-0.4	1.7	-1.1	0.1
	Rural	2.2	0.6	0.5	0.7	1.6	1.9	0.8	2.2	1.9	-0.3	2.4	-1.0	-0.1
Food	Urban	2.5	1.3	1.3	-0.3	1.0	3.1	2.0	1.4	2.4	-1.7	2.7	-1.4	0.6
	Rural	3.3	0.6	0.6	0.7	1.7	2.9	1.8	2.6	3.4	-1.1	3.4	-1.6	-0.3
Core	Urban	0.8	1.1	0.5	0.2	1.8	0.4	0.4	0.5	0.3	0.4	1.1	0.2	0.3
	Rural	0.6	1.2	0.4	0.3	2.0	1.0	0.3	0.7	0.5	0.3	1.0	0.5	0.6


Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: 

**Heat-map of National CPI inflation (YoY)**

	Weights	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
National	100.00	8.6	8.3	8.4	8.0	8.4	10.5	11.4	11.0	12.7	12.6	14.6	12.4	10.2
Food and non-alcoholic Beverages	34.58	9.4	9.1	9.9	8.4	8.3	12.6	15.8	15.0	19.4	19.7	23.7	18.4	14.7
Alcoholic Beverages, Tobacco	1.02	12.7	11.7	11.9	17.3	29.3	29.8	30.0	20.3	18.7	18.3	17.9	18.5	18.6
Clothing and footwear	8.60	6.7	6.4	6.9	6.4	7.5	8.9	8.9	9.3	9.4	9.7	9.6	10.1	11.0
Housing, water, Elec., Gas and other fuels	23.63	10.1	8.1	6.5	6.9	6.1	7.1	6.6	7.2	8.8	8.5	9.6	6.8	4.9
Furnishing and household equipment maintenance	4.10	8.8	9.1	9.1	9.3	11.0	11.6	11.7	11.3	10.8	10.4	10.1	10.0	10.1
Health	2.79	6.3	8.1	8.7	9.4	11.6	11.9	11.7	12.2	11.4	11.3	11.8	12.0	12.4
Transport	5.91	9.6	13.7	17.8	17.2	16.8	18.5	17.8	16.5	14.0	14.7	18.6	19.2	11.5
Communication	2.21	2.0	4.1	4.0	4.1	4.3	4.3	4.3	4.0	4.0	4.0	4.0	3.9	3.9
Recreation and culture	1.59	7.3	5.7	5.5	5.5	7.1	7.7	7.8	7.4	6.8	6.8	6.5	6.6	5.9
Education	3.79	6.9	5.4	5.9	5.8	6.8	6.9	6.2	6.0	6.1	6.0	7.3	7.4	4.5
Restaurants and hotels	6.92	5.0	5.0	4.2	4.0	5.8	6.2	6.1	6.0	6.4	6.1	7.4	8.7	8.7
Misc. goods and services	4.87	9.2	8.9	8.6	9.4	10.8	13.2	13.4	12.5	11.8	10.7	11.4	11.4	11.8


Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: 

**Heat-map of Urban CPI inflation (YoY)**

	Weights	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
Urban	100.00	8.9	8.4	8.5	8.1	8.7	10.6	11.6	10.9	12.1	12.0	13.4	11.2	9.3
Food and non-alcoholic Beverages	30.42	9.4	8.7	9.7	7.7	7.7	12.6	16.3	15.0	18.6	18.8	22.0	16.4	13.7
Alcoholic Beverages, Tobacco	0.85	11.4	10.9	10.8	16.3	28.4	28.5	28.7	18.5	16.7	16.6	16.8	17.7	17.8
Clothing and footwear	8.01	6.5	5.8	7.0	6.8	7.5	9.1	9.0	9.0	9.1	9.6	9.0	9.6	9.9
Housing, water, Elec., Gas and other fuels	27.03	10.7	8.8	7.2	7.6	7.9	8.6	8.4	8.2	9.6	9.4	9.7	6.9	5.1
Furnishing and household equipment maintenance	4.09	9.4	9.8	10.2	10.5	12.3	12.4	12.5	11.6	11.2	11.0	10.4	10.0	9.8
Health	2.31	5.7	7.7	8.5	9.0	12.1	11.7	11.1	11.2	10.5	10.9	11.5	11.7	12.2
Transport	6.14	10.3	14.5	18.2	17.4	17.5	19.0	18.6	17.5	15.0	15.6	19.4	19.9	12.2
Communication	2.35	2.5	5.3	5.2	5.2	5.7	5.5	5.6	5.2	5.1	5.3	5.3	5.3	5.1
Recreation and culture	1.73	7.2	5.1	5.1	5.3	6.8	7.5	7.7	6.7	6.5	6.4	6.1	6.1	5.6
Education	4.88	7.2	5.7	6.4	6.4	7.3	7.4	6.4	6.2	6.3	6.3	7.5	7.5	4.5
Restaurants and hotels	7.41	5.4	5.2	4.5	4.5	5.4	5.0	5.0	4.9	5.2	4.9	6.5	7.7	7.5
Misc. goods and services	4.77	10.0	9.3	8.8	9.7	10.8	12.6	13.1	12.0	11.0	10.1	10.7	10.1	10.6


Source: Pakistan Bureau of Statistics and SBP staff estimates

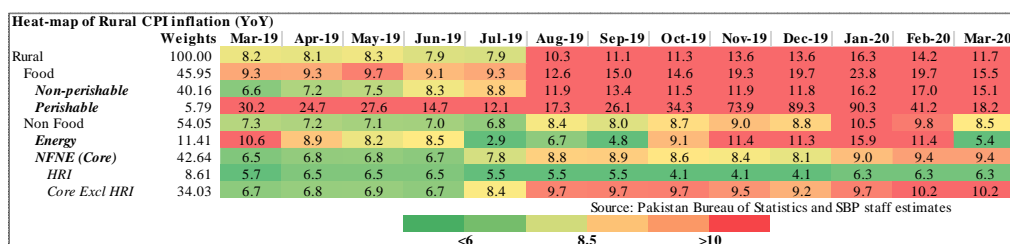
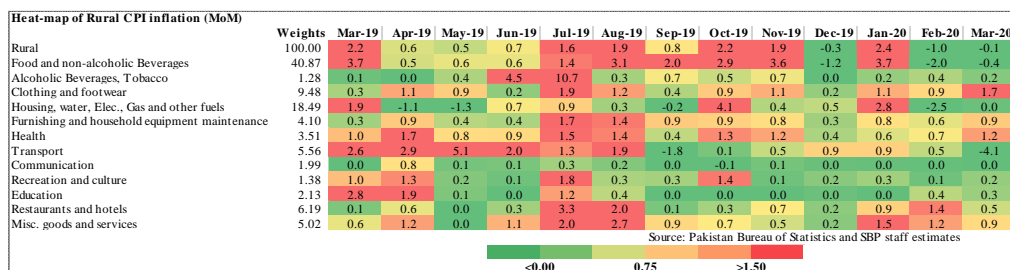
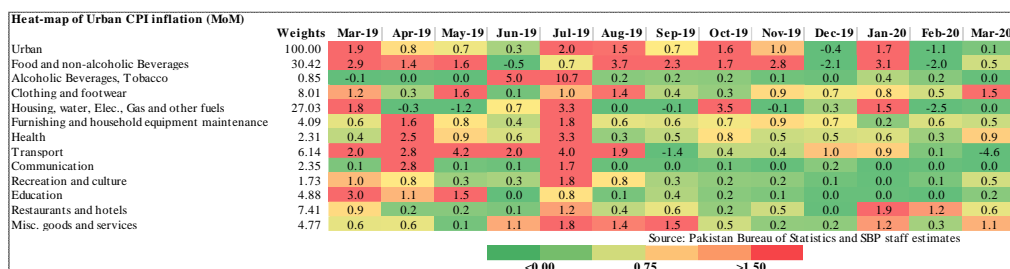
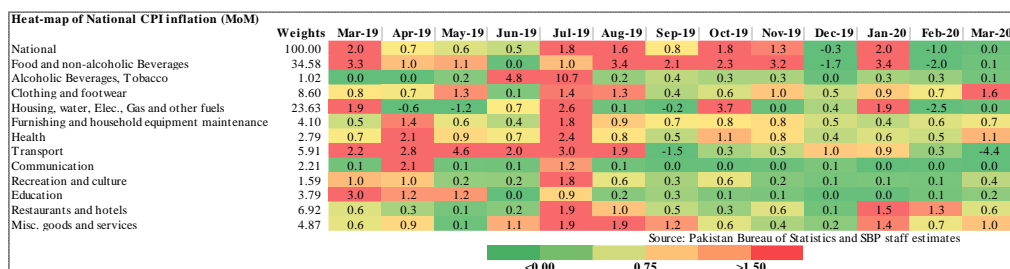
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**Heat-map of Rural CPI inflation (YoY)**

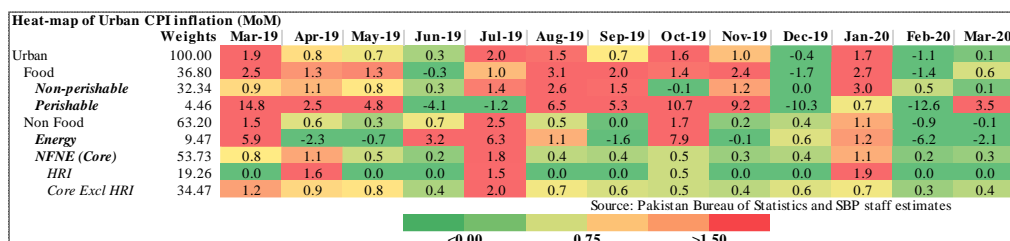
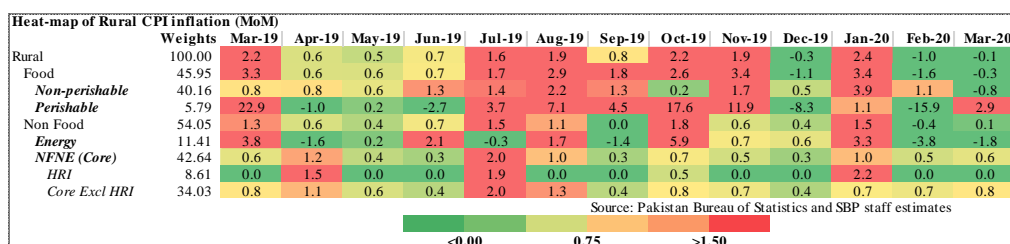
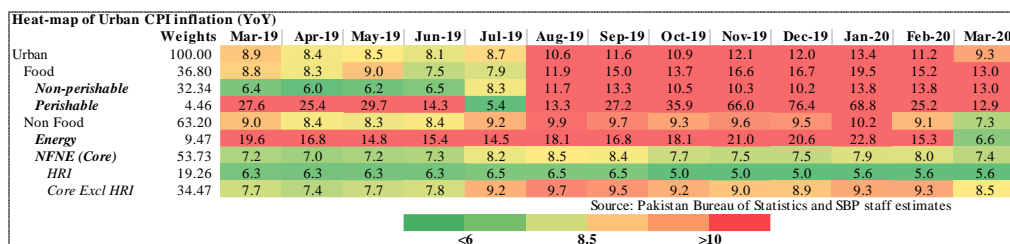
	Weights	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
Rural	100.00	8.2	8.1	8.3	7.9	7.9	10.3	11.1	11.3	13.6	13.6	16.3	14.2	11.7
Food and non-alcoholic Beverages	40.87	9.5	9.5	10.1	9.3	8.9	12.6	15.3	15.1	20.3	20.8	25.5	20.6	15.8
Alcoholic Beverages, Tobacco	1.28	14.2	12.6	13.3	18.4	30.4	31.3	31.4	22.4	21.0	20.2	19.2	19.4	19.5
Clothing and footwear	9.48	6.9	7.1	6.9	6.0	7.5	8.7	8.9	9.7	9.8	9.9	10.2	10.8	12.3
Housing, water, Elec., Gas and other fuels	18.49	8.6	6.6	5.0	5.3	2.0	3.7	2.8	4.9	6.9	6.6	9.4	6.6	4.6
Furnishing and household equipment maintenance	4.10	7.8	8.0	7.4	7.6	9.1	10.2	10.5	10.9	10.2	9.6	9.7	9.9	10.6
Health	3.51	6.9	8.5	8.9	9.8	11.1	12.2	12.2	13.1	12.3	11.7	12.1	12.4	12.6
Transport	5.56	8.3	12.5	17.2	16.9	15.7	17.6	16.4	14.7	12.2	13.1	17.2	18.0	10.2
Communication	1.99	1.2	2.0	2.1	2.1	2.0	2.1	2.0	2.0	1.9	1.7	1.7	1.6	1.6
Recreation and culture	1.38	7.5	6.7	6.4	5.9	7.7	8.0	8.0	8.9	7.4	7.5	7.3	7.3	6.5
Education	2.13	5.9	4.1	3.9	3.6	4.9	5.3	5.3	5.3	5.0	6.7	7.1	7.1	4.5
Restaurants and hotels	6.19	4.3	4.4	3.6	2.9	6.4	8.1	8.1	8.0	8.5	8.3	8.9	10.3	10.8
Misc. goods and services	5.02	8.0	8.4	8.3	9.0	10.7	14.1	13.9	13.2	12.9	11.6	12.5	13.4	13.6

Source: Pakistan Bureau of Statistics and SBP staff estimates

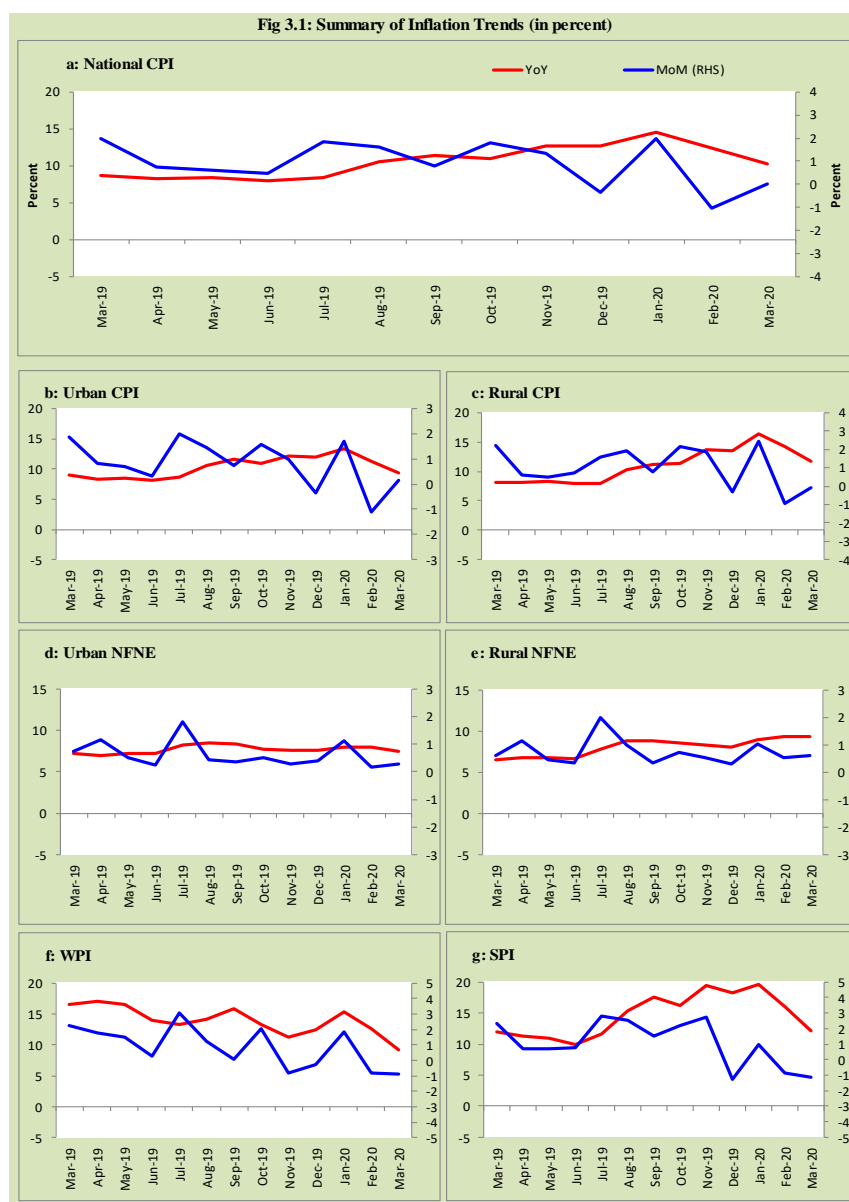
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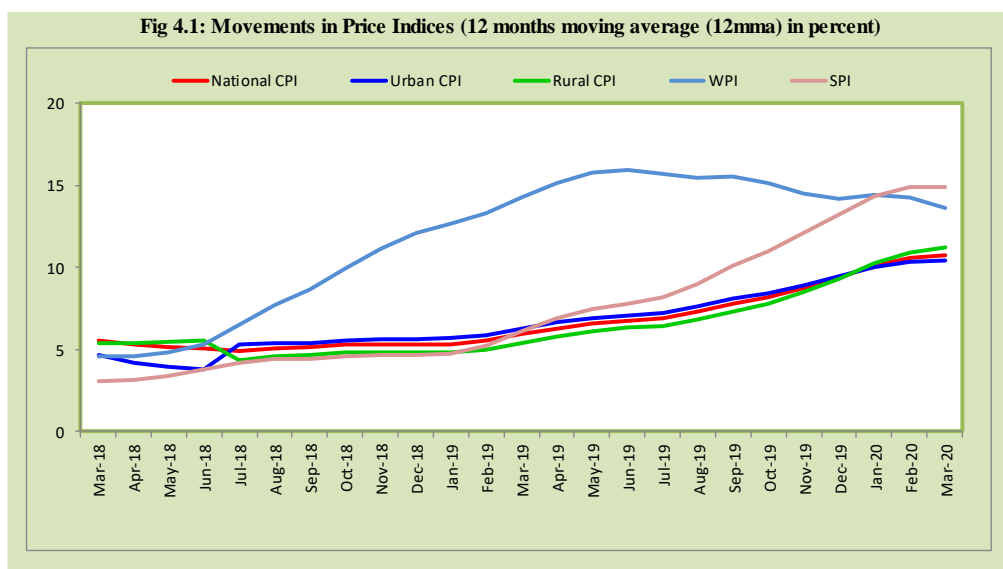
## Inflation Monitor, March 2020



### 3. Trends in Inflation



#### 4. Movement in Price Indices (Moving Averages)



## 5. Movement in Price Indices (Month-on-Month)

Fig 5.1: Movements in Price Indices (MoM in percent)

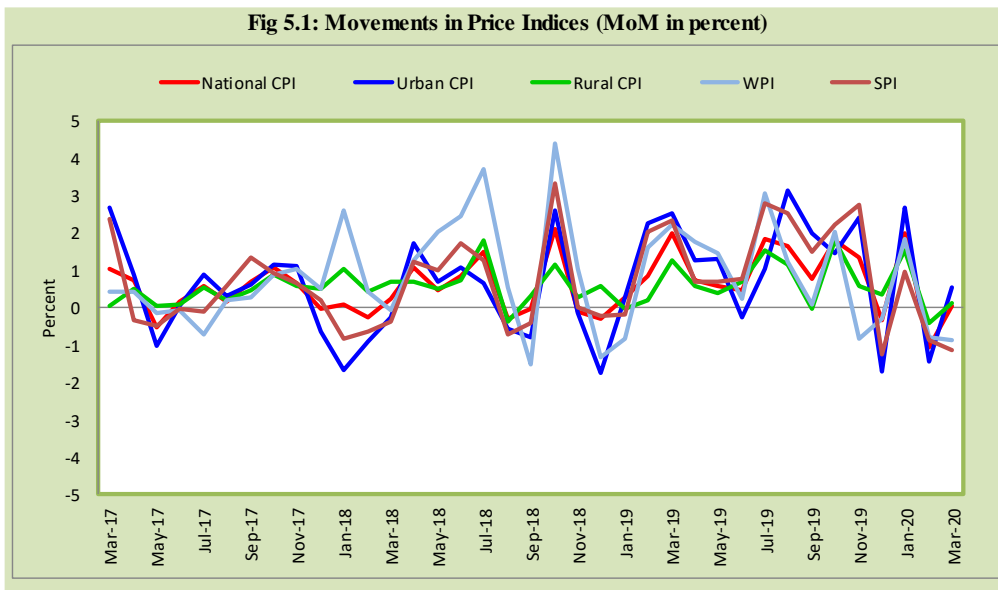
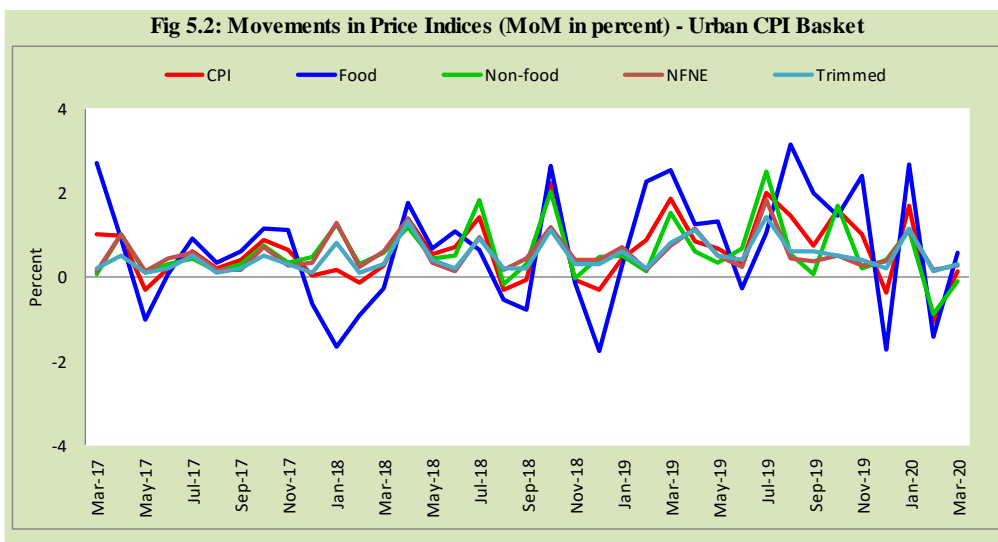
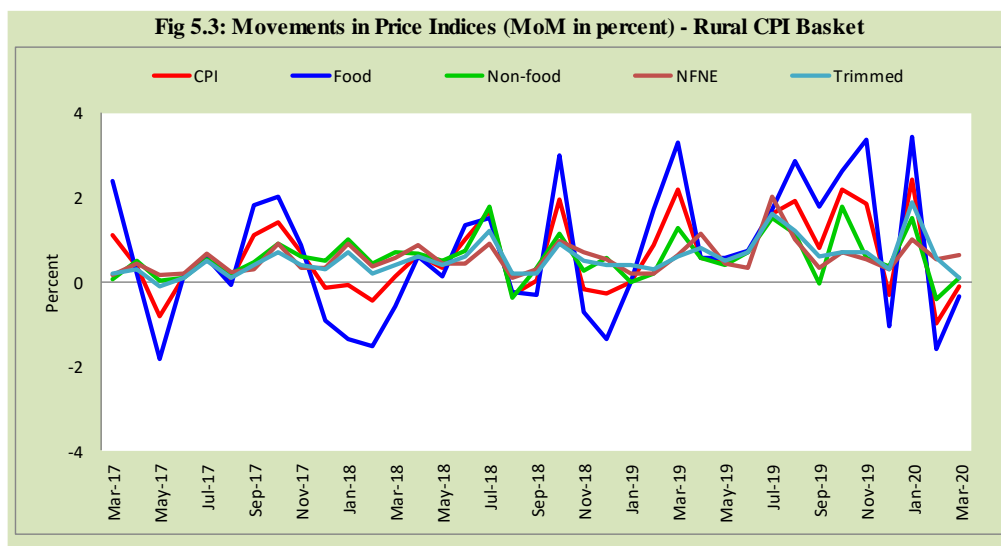


Fig 5.2: Movements in Price Indices (MoM in percent) - Urban CPI Basket



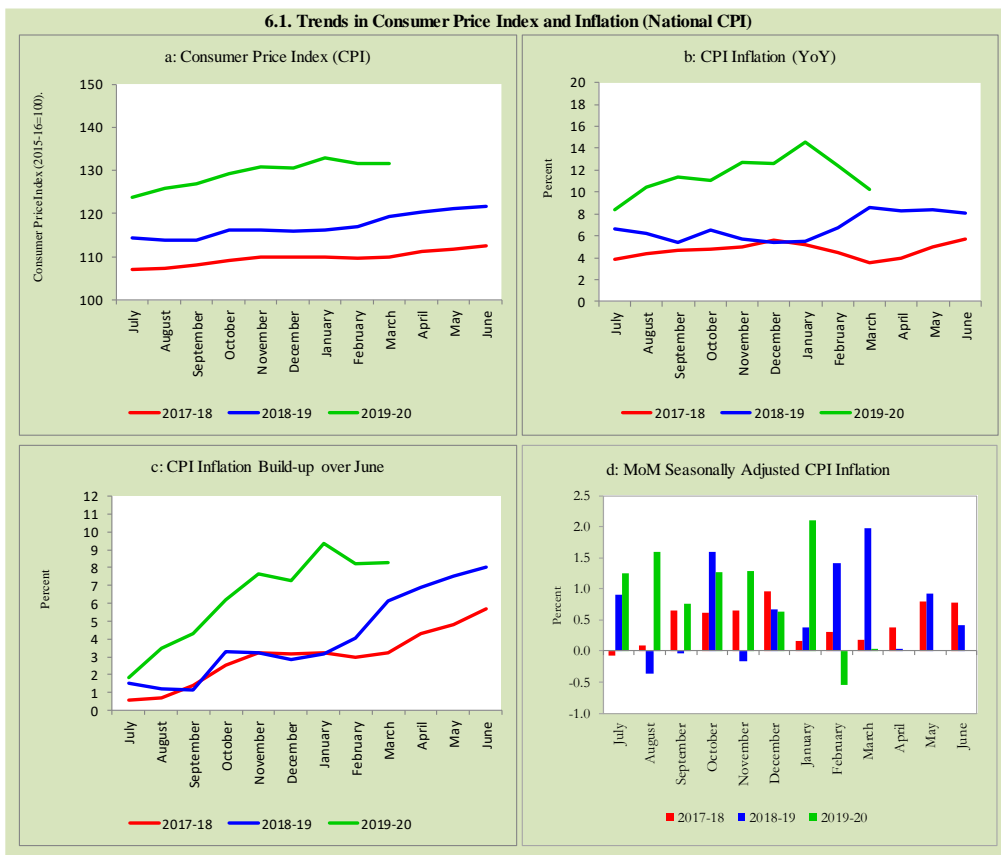


## 6. Trends in Consumer Price Indices and Inflation

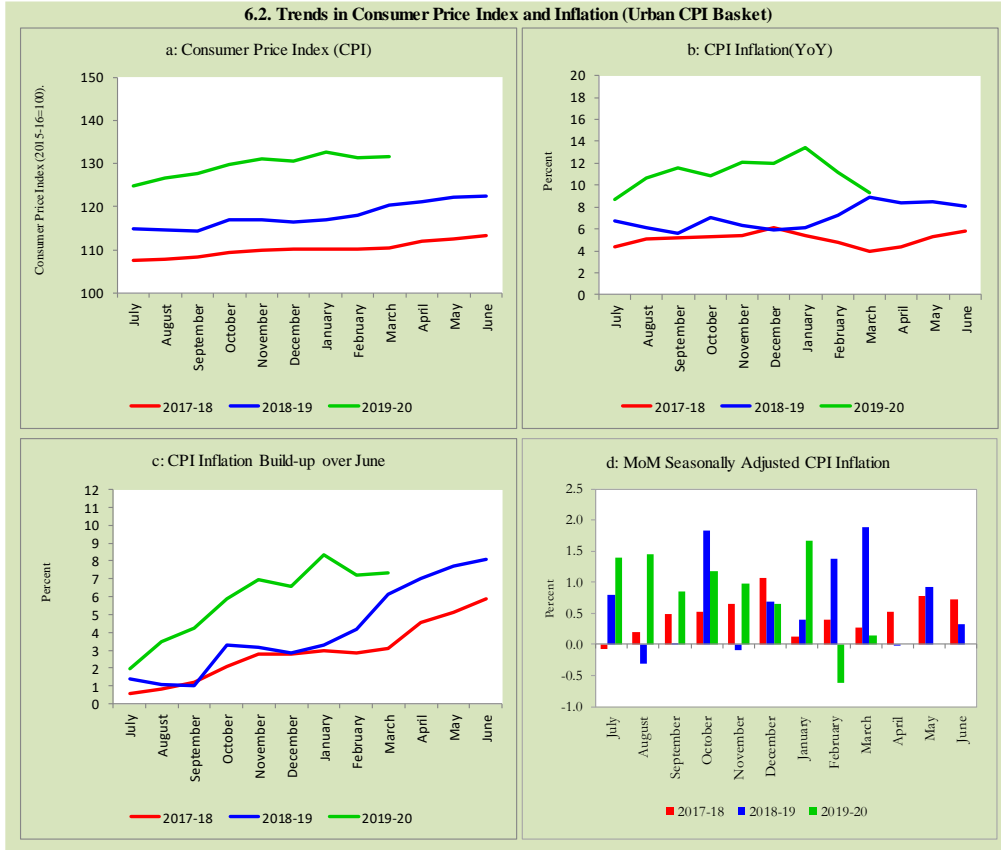
Monthly Consumer Price Indices, YoY growth rates and inflation build up over June along with seasonally adjusted (MoM) growth rates in CPI (National, Urban and Rural) is summarized in the following graphs (Figure 6.1 to 6.3).



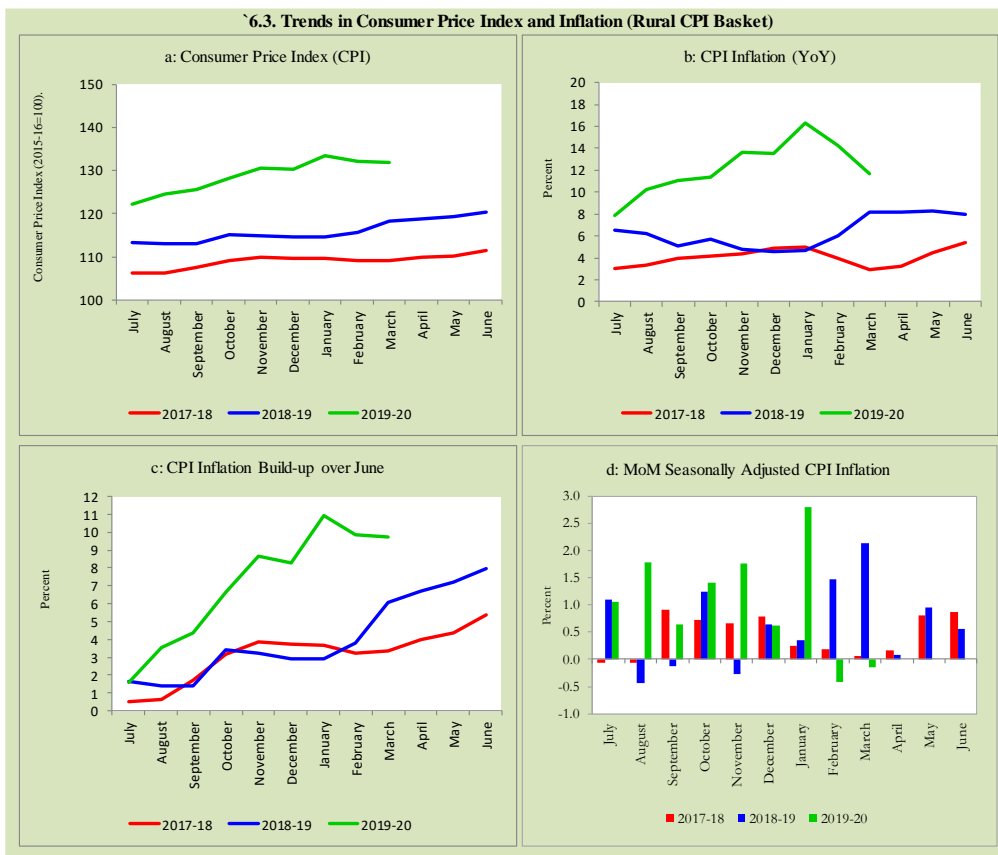
### 6.1. Trends in Consumer Price Index and Inflation (National CPI)



**6.2. Trends in Consumer Price Index and Inflation (Urban CPI Basket)**



6.3. Trends in Consumer Price Index and Inflation (Rural CPI Basket)



## 7. Weighted Contribution

The weighted contribution of food group in the overall urban CPI inflation increased to 49.4 percent during March 2020 from 47.7 percent in previous month. It was 35.0 percent during corresponding month of last year. The weighted contribution of non-food group decreased to 50.7 percent in March 2020 from 52.3 percent in previous month. Non-food group was 65.0 percent during corresponding month of last year. Table 7.1 provide the historical perspective of weighted contribution of food group and non-food group and their respective sub-indexes (Perishable food, Non-Perishable food, Energy, Core Inflation (NFNE), NFNE excluding HRI and HRI) in

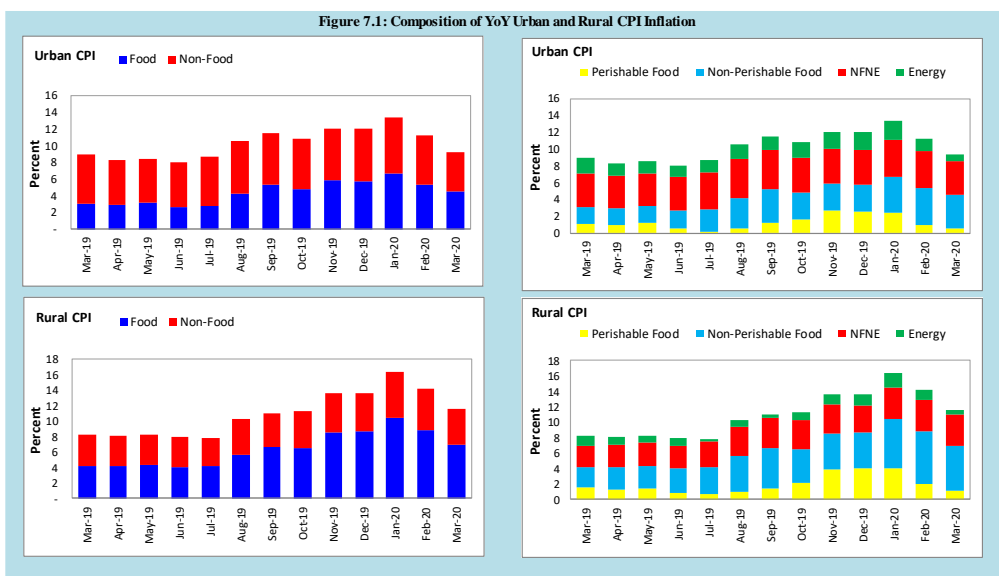
the overall inflation for urban basket. Figure 7.1 provides a graphical presentation of composition of YoY urban CPI inflation cascaded in food group and non-food groups and their respective sub-indexes.

<b>Table 7.1 Weighted Contribution (in percent) to Urban CPI Inflation (YoY)</b>									
Period	Overall CPI	Food Group			Non-Food Group				
		Food	Perishable food	Non-Perishable food	Non-food	Energy	Core Inflation (NFNE)	NFNE excl HRI	HRI
	a=(b+e)	b=(c+d)	c	d	e=(f+g)	f	g=(h+i)	h	i
Mar-19	100	35.0	12.5	22.6	65.0	20.2	44.8	30.5	14.3
Apr-19	100	35.3	12.6	22.7	64.6	18.4	46.3	31.0	15.2
May-19	100	37.6	14.6	23.0	62.4	15.9	46.4	31.6	14.8
Jun-19	100	33.2	8.0	25.2	66.8	17.7	49.1	33.6	15.5
Jul-19	100	32.3	3.0	29.3	67.7	16.4	51.3	36.5	14.8
Aug-19	100	39.7	6.0	33.7	60.3	16.5	43.8	31.6	12.2
Sep-19	100	45.8	10.5	35.3	54.2	14.1	40.1	28.9	11.2
Oct-19	100	44.7	14.9	29.7	55.4	16.8	38.6	29.3	9.2
Nov-19	100	48.7	22.1	26.6	51.3	17.1	34.2	25.9	8.3
Dec-19	100	48.4	21.8	26.6	51.7	17.1	34.6	26.2	8.4
Jan-20	100	50.5	18.4	32.1	49.6	16.8	32.8	24.3	8.5
Feb-20	100	47.7	9.4	38.3	52.3	13.3	39.0	29.0	10.1
Mar-20	100	49.4	6.5	42.8	50.7	7.2	43.4	31.5	11.9

Also, for rural basket, the weighted contribution of food group in the overall rural CPI inflation decreased to 59.9 percent during March 2020 from 61.7 percent in previous month. It was 50.4 percent during corresponding month of last year. On the other hand, the weighted contribution of non-food group increased to 40.2 percent in March 2020 from 38.2 percent in previous month. Non-food group was 49.6 percent during corresponding month of last year. Table 7.2 provide the historical perspective of weighted contribution of food group (Perishable food, Non-Perishable food) and non-food group (Energy, Core Inflation (NFNE), NFNE excluding HRI and HRI) in the overall inflation for rural basket. Figure 7.1 provides a graphical display of composition of YoY rural CPI inflation distributed in food group and non-food groups and their respective sub-indexes.

Period	Overall CPI	Food Group			Non-Food Group				
		Food	Perishable food	Non-Perishable food	Non-food	Energy	Core Inflation (NFNE)	NFNE excl HRI	HRI
		a=(b+e)	b=(c+d)	c	d	e=(f+g)	f	g=(h+i)	h
Mar-19	100	50.4	18.6	31.8	49.6	14.9	34.7	28.4	6.3
Apr-19	100	50.7	15.7	35.0	49.2	12.6	36.6	29.4	7.3
May-19	100	52.4	16.9	35.5	47.6	11.5	36.2	29.0	7.1
Jun-19	100	50.9	10.0	40.9	49.2	12.4	36.7	29.4	7.3
Jul-19	100	52.4	8.7	43.7	47.6	4.4	43.2	36.9	6.4
Aug-19	100	54.8	9.8	45.1	45.2	7.7	37.5	32.6	4.9
Sep-19	100	60.0	13.3	46.7	40.0	5.1	34.9	30.4	4.5
Oct-19	100	57.8	18.5	39.3	42.2	9.5	32.7	29.5	3.3
Nov-19	100	63.3	28.7	34.5	36.7	9.8	26.9	24.2	2.7
Dec-19	100	63.9	29.4	34.5	36.1	9.8	26.3	23.6	2.8
Jan-20	100	64.2	24.8	39.3	35.8	11.4	24.4	20.9	3.5
Feb-20	100	61.7	14.6	47.1	38.2	9.3	28.9	24.9	4.0
Mar-20	100	59.9	9.5	50.4	40.2	5.5	34.7	29.9	4.8

Figure 7.1: Composition of YoY Urban and Rural CPI Inflation



## 8. Inflation Diffusion Index

Inflation diffusion index (IDI) is the difference (MoM change) between the share of items with increasing prices (i.e. depicting inflation) and the share of items with falling prices (i.e. depicting deflation) in CPI basket for which prices have reported. IDI for urban and rural baskets (CPI, Core and twelve groups) is presented in Table 8.1(a & b) for the last thirteen months.

<b>Table 8.1(a) Inflation Diffusion Index for Urban CPI Basket - based on MoM change</b>													
	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
General	55.6	31.7	39.3	52.5	61.5	65.2	52.8	61.8	55.3	43.5	56.2	52.5	45.8
Food & Non-Alcoholic Beverages	46.7	24.4	47.8	43.3	50.0	65.6	50.0	67.8	45.6	35.6	66.7	35.6	31.1
Alcoholic Beverages & Tobacco	-33.3	0.0	0.0	100.0	100.0	66.7	100.0	100.0	100.0	66.7	100.0	66.7	66.7
Clothing & Footwear	60.0	27.5	40.0	60.0	70.0	80.0	57.5	72.5	80.0	72.5	75.0	75.0	67.5
Housing, Water, Elect, Gas & other Fuels	51.7	-24.1	3.4	65.5	44.8	37.9	10.3	55.2	24.1	20.7	3.4	6.9	27.6
Furnishing & Household Equip. Maintenance etc.	76.2	64.3	54.8	90.5	76.2	88.1	97.6	88.1	95.2	76.2	71.4	92.9	64.3
Health	50.0	100.0	50.0	75.0	0.0	100.0	0.0	100.0	50.0	25.0	75.0	75.0	100.0
Transport	50.0	100.0	50.0	75.0	0.0	100.0	0.0	100.0	50.0	25.0	75.0	75.0	100.0
Communication	20.0	40.0	20.0	20.0	40.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Recreation & Culture	64.0	60.0	44.0	36.0	56.0	60.0	32.0	24.0	32.0	20.0	20.0	28.0	20.0
Education	43.8	50.0	56.3	0.0	56.3	56.3	62.5	6.3	25.0	12.5	6.3	0.0	31.3
Restaurant & Hotels	50.0	28.6	35.7	50.0	78.6	85.7	78.6	78.6	71.4	28.6	71.4	85.7	64.3
Miscellaneous	41.4	55.2	48.3	82.8	69.0	79.3	96.6	79.3	65.5	34.5	82.8	75.9	69.0
NFNE	60.0	38.3	40.4	55.7	68.1	68.1	59.1	58.3	63.0	48.1	55.3	62.6	53.2

**Table 8.1(b) Inflation Diffusion Index (CPI Rural Basket) - based on MoM change**

	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
General	49.2	49.2	41.4	46.7	73.0	60.7	34.4	64.3	50.8	36.9	56.6	48.0	41.8
Food & Non-Alcoholic Beverages	44.3	30.4	30.4	36.7	65.8	55.7	22.8	69.6	46.8	25.3	67.1	32.9	16.5
Alcoholic Beverages & Tobacco	20.0	0.0	20.0	100.0	100.0	100.0	80.0	100.0	80.0	0.0	60.0	100.0	60.0
Clothing & Footwear	55.6	81.5	77.8	63.0	85.2	81.5	66.7	77.8	59.3	48.1	77.8	85.2	70.4
Housing, Water, Elect, Gas & other Fuels	43.5	0.0	-4.3	60.9	39.1	52.2	-4.3	82.6	34.8	39.1	8.7	0.0	39.1
Furnishing & Household Equip. Maintenance etc.	61.5	88.5	65.4	42.3	84.6	88.5	73.1	84.6	80.8	57.7	69.2	73.1	80.8
Health	50.0	71.4	64.3	57.1	78.6	57.1	35.7	50.0	78.6	57.1	42.9	42.9	71.4
Transport	87.5	56.3	56.3	56.3	75.0	50.0	12.5	37.5	43.8	25.0	43.8	43.8	12.5
Communication	0.0	40.0	40.0	20.0	40.0	20.0	0.0	-20.0	20.0	20.0	20.0	20.0	0.0
Recreation & Culture	55.6	66.7	27.8	11.1	72.2	11.1	22.2	27.8	11.1	27.8	22.2	33.3	27.8
Education	80.0	80.0	60.0	0.0	80.0	20.0	0.0	0.0	0.0	20.0	0.0	80.0	40.0
Restaurant & Hotels	28.6	50.0	21.4	35.7	85.7	57.1	21.4	42.9	42.9	35.7	78.6	71.4	78.6
Miscellaneous	47.1	64.7	64.7	76.5	100.0	88.2	70.6	70.6	64.7	58.8	70.6	82.4	52.9
NFNE	50.7	67.6	55.9	47.8	81.6	63.2	49.3	58.1	55.1	44.9	52.2	58.1	55.9

See annexure B (Technical Notes) for the methodology of Inflation Diffusion Index.

## 9. Domestic Commodity Prices

Inflation in domestic food commodities (YoY and MoM in percent) for selected essential food items covering both urban and rural CPI baskets is given in table 9.1.

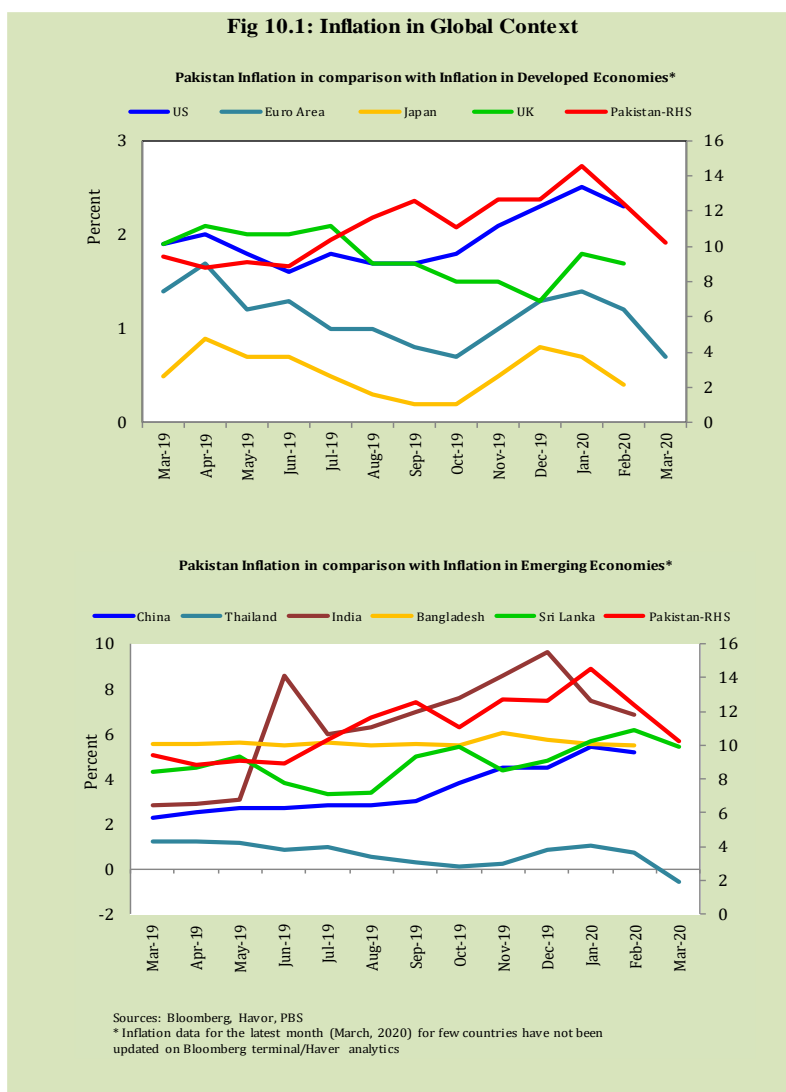
Table 9.1 Inflation in Domestic Urban and Rural CPI Food Commodities (in percent) - March, 2020						
S. No	Item	Unit	Urban CPI		Rural CPI	
			YoY	MoM	YoY	MoM
1	Wheat	10 Kg	19.3	-8.4	24.3	-7.4
2	Wheat Flour Bag	20 Kg	10.6	-3.4	15.1	-2.5
3	Rice Basmati Broken (Superior/Average Quality) *	1 Kg	10.8	0.2	8.2	0.2
4	Beef with Bone (Average Quality)	1 Kg	15.7	0.8	9.9	0.9
5	Mutton (Average Quality)	1 Kg	10.6	0.9	11.5	1.1
6	Chicken Farm Broiler (Live)	1 Kg	4.2	3.2	-2.4	-4.8
7	Milk Fresh (Un-Boiled)	1 Litre	9.5	0.7	8.5	0.3
8	Eggs Farm	Dozen	-0.1	1.6	-3.1	-3.2
9	Vegetable Ghee Dalda/Habib Or Other Superior Quality 1 Kg Pouch	Each	33.6	0.6	32.1	0.1
10	Pulse Masoor (Washed)	1 Kg	17.2	-3.4	26.5	-3.5
11	Pulse Moong (Washed)	1 Kg	69.7	0.0	72.3	-0.5
12	Pulse Mash (Washed)	1 Kg	47.2	-2.3	49.4	-2.0
13	Pulse Gram	1 Kg	16.8	-5.1	19.8	-5.1
14	Potatoes	1 Kg	113.9	11.2	123.5	6.9
15	Onions	1 Kg	92.2	35.1	100.9	41.0
16	Tomatoes	1 Kg	-71.1	-23.3	-72.9	-36.4
17	Sugar Refined	1 Kg	30.9	-0.5	109.9	-3.4
18	Garlic (Lehsun)	1 Kg	99.0	-8.4	31.4	-0.7
19	Ginger (Adrak)	500 Gm	84.0	-0.6	108.5	-9.3
20	Tea Lipton Yellow Label 190 Gm Packet	Each	9.6	0.0	9.7	0.0

\*Superior Quality for Urban CPI Basket and Average Quality for Rural CPI Basket



## 10. Inflation in Global Context

In global context, Pakistan witnessed highest inflation not only in comparison with developed economies but also with emerging economies (See figure 10.1).

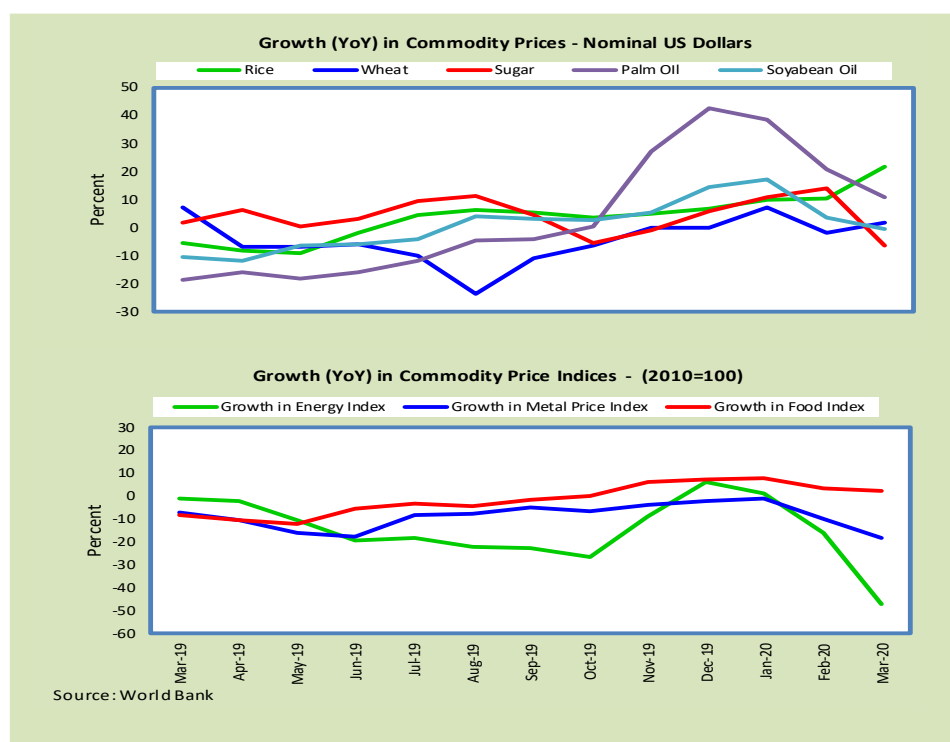


## 11. Global Commodity Prices

Global commodity prices and various group indexes have a relation with domestic inflation. In this context, changes in major global commodity prices and indexes along with price trends are given in table 11.1 and figure 11.1.

**Table 11.1 Changes in Major Global Indices (percent)**

Item/ Group	Mar-19		Feb-20		Mar-20	
	YoY	MoM	YoY	MoM	YoY	MoM
Food	-5.9	0.6	3.5	-3.6	2.2	-2.7
Metals	-12.6	4.2	-10.2	-5.6	-18.2	-7.3
Energy	-3.9	4.9	-16.0	-12.7	-47.4	-35.3
Agricultural	-5.5	0.3	2.7	-2.8	0.5	-3.1
Cotton	-8.1	-1.5	-5.6	-3.2	-18.9	-11.2



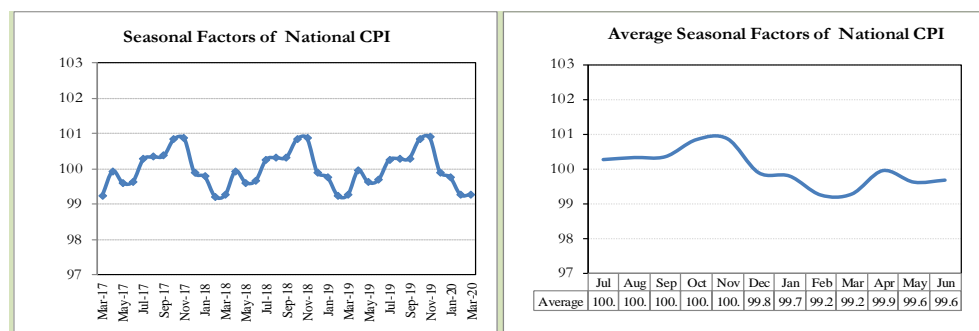
## **12. Seasonal Adjustment in CPI**

Seasonal adjustment is the process of estimating and removing the seasonal effects from a time series after decomposing it into seasonal, trend, cycle and irregular components. The purpose is to identify the different components of the time series and thus provide a better understanding of its underlying behavior. Seasonally adjusted changes are usually preferred for analyzing general price trends in the economy because these eliminate the effect of changes that normally occur at the same time and in about the same magnitude every year. Various statistical methods can be used to decompose a time series into its constituent components. The State Bank of Pakistan uses X-12- ARIMA Seasonal Adjustment Method for this purpose.

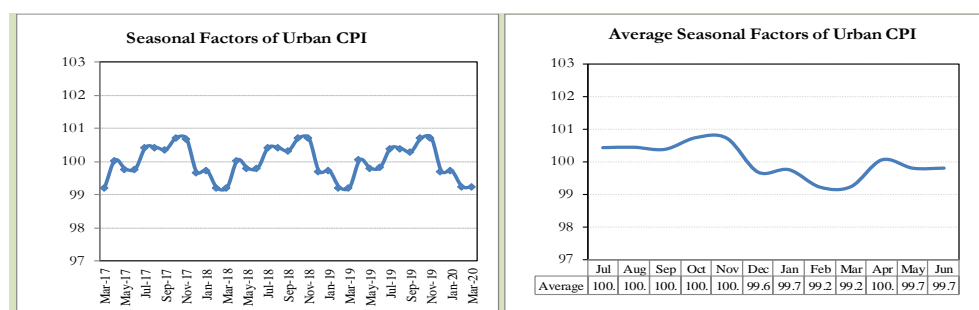
The changes in consumer prices are normally reported in terms of year-on-year and month-on-month basis. Seasonal adjustment is particularly useful for analyzing month-on-month changes. The monthly data series of Consumer Price Indices (National CPI, Urban CPI and Rural CPI) from July 2008 to March 2020 has been used for seasonal adjustment analysis. The seasonal analysis is carried out without taking trading-day or Islamic calendar month's effects.

Figure 12.1 reveals that seasonality in all CPI series has been increasing over the period. Average seasonal factors reveal strong seasonality during the calendar year. There is an upward seasonality during the months from July to December and downward seasonality in the remaining months of the year. Upward and downward seasonality is above and below the trend line respectively. It is important to note that seasonal factors are estimate historical data and that the future data may not necessarily show the same seasonal pattern.

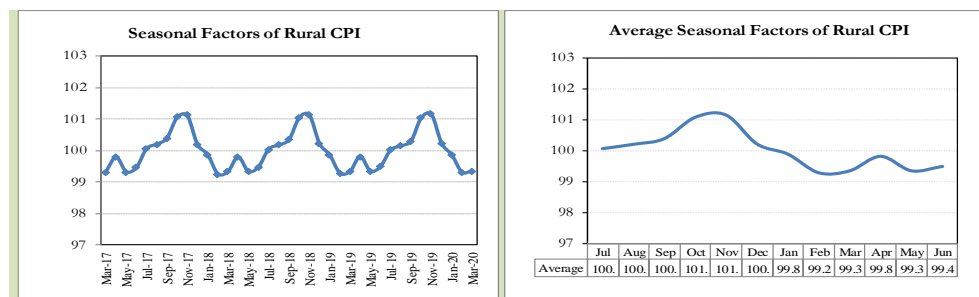
**Fig. 12.1 (a) Seasonal Factors of National CPI**



**Fig. 12.1 (b) Seasonal Factors of Urban CPI**

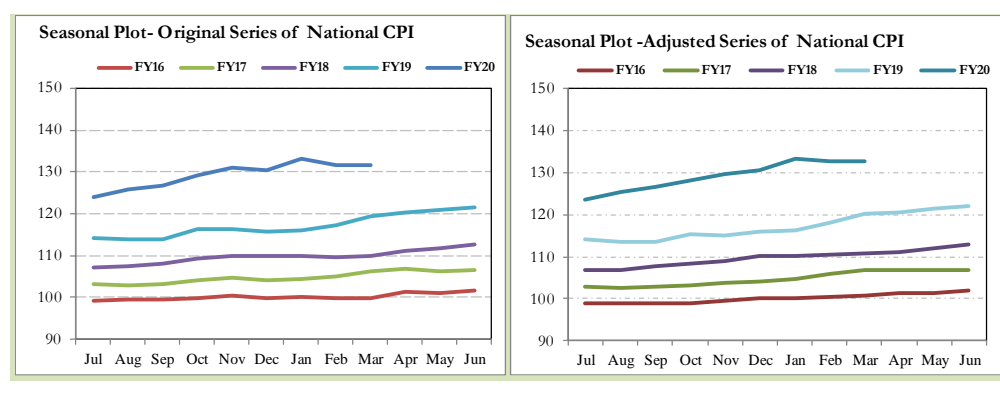


**Fig. 12.1 (c) Seasonal Factors of Rural CPI**

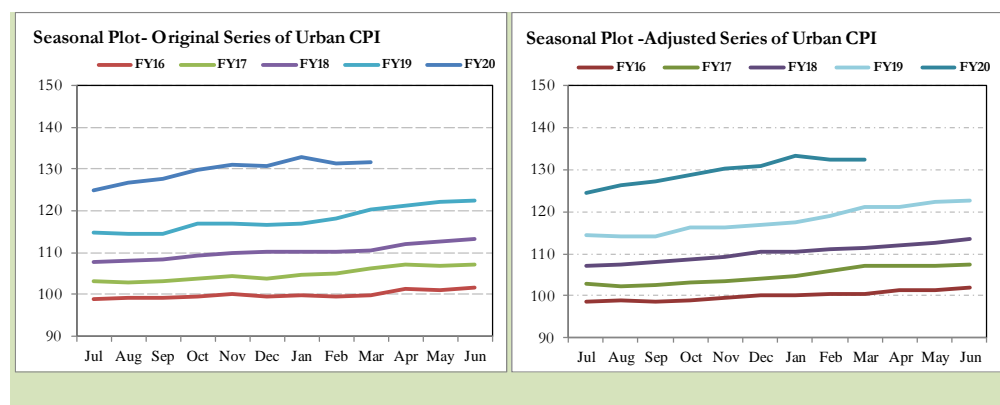


Figures 12.2 show that seasonally adjusted series are relatively smoother than the original series due to the removal of the seasonal variations. The trend follows the long-term movement in original series, and is smoother than the original series because some irregular fluctuations have been removed.

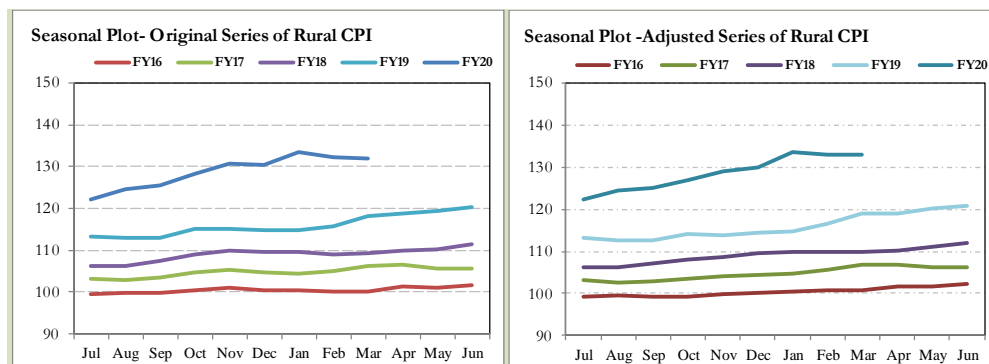
**Fig. 12.2 (a) Seasonal Plots of National CPI**



**Fig. 12.2 (b) Seasonal Plots of Urban CPI**



**Fig. 12.2 (c) Seasonal Plots of Rural CPI**



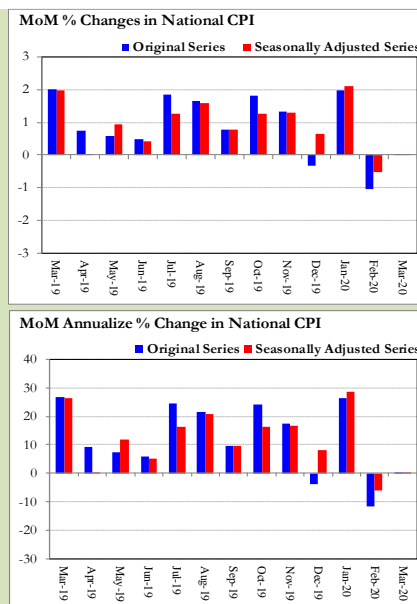
Seasonally adjusted National CPI for March 2020 stood at 132.66 against 131.64 in original series showing an increase of 0.97 on account of adjustment of downward seasonality in March 2020.

Seasonally adjusted Urban CPI for March 2020 stood at 132.52 against 131.49 in original series showing an increase of 1.03 on account of adjustment of downward seasonality in March 2020.

Seasonally adjusted Rural CPI for March 2020 stood at 132.88 against 132.00 in original series showing an increase of 0.88 on account of adjustment of downward seasonality in March 2020.

Month-on-month change of seasonally adjusted National CPI series stood at 0.03% reflecting a marginal increase during March 2020 over previous month and

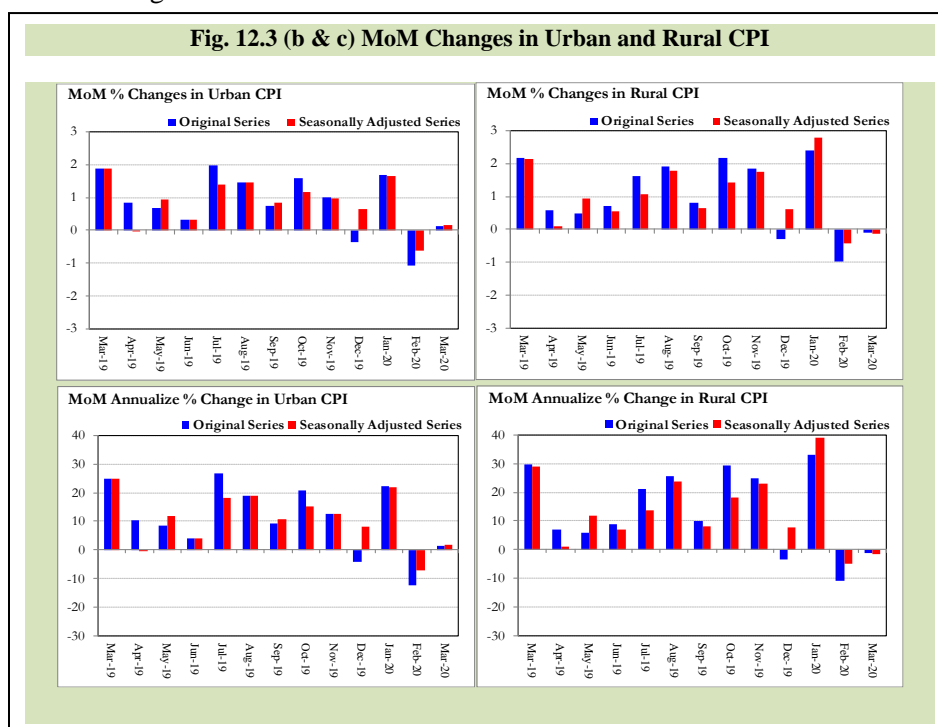
**Fig. 12.3 (a) MoM Changes in National CPI**



an increase of 0.04% in original series.

Month-on-month change of seasonally adjusted Urban CPI series stood at 0.15% reflecting an increase during March 2020 over previous month and an increase of 0.13% in original series.

Month-on-month change of seasonally adjusted Rural CPI series stood at -0.14% reflecting a decrease during March 2020 over previous month and a decrease of 0.10% in original series.



It is pertinent to note that in case of MoM inflation, seasonally adjusted rates provide important information. The most recent annual rate of inflation is usually indicated by annualizing the seasonally adjusted month-on-month rate. Annualized rate of National CPI inflation in March 2020 (corresponding to the seasonally adjusted month-on-month rate) is 0.41 percent.

## **Annexure A**

<b>Table A1: National CPI Inflation by Groups (YoY and MoM in percent)</b>							
	<b>Weights</b>	<b>MoM change</b>			<b>YoY change</b>		
		<b>Mar-19</b>	<b>Feb-20</b>	<b>Mar-20</b>	<b>Mar-19</b>	<b>Feb-20</b>	<b>Mar-20</b>
Food & Non-Alcoholic Beverages	34.6	3.3	-2.0	0.1	9.4	18.4	14.7
Alcoholic Beverages & Tobacco	1.0	0.0	0.3	0.1	12.7	18.5	18.6
Clothing & Footwear	8.6	0.8	0.7	1.6	6.7	10.1	11.0
Housing, Water, Elec, Gas & other Fuels	23.6	1.9	-2.5	0.0	10.1	6.8	4.9
Furnishing & Household Equip. Maintenance	4.1	0.5	0.6	0.7	8.8	10.0	10.1
Health	2.8	0.7	0.5	1.1	6.3	12.0	12.4
Transport	5.9	2.2	0.3	-4.4	9.6	19.2	11.5
Communication	2.2	0.1	0.0	0.0	2.0	3.9	3.9
Recreation & Culture	1.6	1.0	0.1	0.4	7.3	6.6	5.9
Education	3.8	3.0	0.1	0.2	6.9	7.4	4.5
Restaurants & Hotels	6.9	0.6	1.3	0.6	5.0	8.7	8.7
Miscellaneous	4.9	0.6	0.7	1.0	9.2	11.4	11.8
<b>Overall National CPI</b>	<b>100.0</b>	<b>2.0</b>	<b>-1.0</b>	<b>0.0</b>	<b>8.6</b>	<b>12.4</b>	<b>10.2</b>

<b>Table A2: Urban CPI Inflation by Groups (YoY and MoM in percent)</b>							
	<b>Weights</b>	<b>MoM change</b>			<b>YoY change</b>		
		<b>Mar-19</b>	<b>Feb-20</b>	<b>Mar-20</b>	<b>Mar-19</b>	<b>Feb-20</b>	<b>Mar-20</b>
<b>I. Food Group</b>	<b>36.8</b>	<b>2.5</b>	<b>-1.4</b>	<b>0.6</b>	<b>8.8</b>	<b>15.2</b>	<b>13.0</b>
Food & Non-Alcoholic Beverages	30.4	2.9	-2.0	0.5	9.4	16.4	13.7
Alcoholic Beverages & Tobacco	0.9	-0.1	0.2	0.0	11.4	17.7	17.8
Restaurant & Hotels (Food Component)	5.5	1.2	1.6	0.8	5.4	8.6	8.2
<b>II. Non-Food Group</b>	<b>63.2</b>	<b>1.5</b>	<b>-0.9</b>	<b>-0.1</b>	<b>9.0</b>	<b>9.1</b>	<b>7.3</b>
Clothing & Footwear	8.0	1.2	0.5	1.5	6.5	9.6	9.9
Housing, Water, Elec, Gas & other Fuels	27.0	1.8	-2.5	0.0	10.7	6.9	5.1
Furnishing & Household Equip. Maintenance	4.1	0.6	0.6	0.5	9.4	10.0	9.8
Health	2.3	0.4	0.3	0.9	5.7	11.7	12.2
Transport	6.1	2.0	0.1	-4.6	10.3	19.9	12.2
Communication	2.4	0.1	0.0	0.0	2.5	5.3	5.1
Recreation & Culture	1.7	1.0	0.1	0.5	7.2	6.1	5.6
Education	4.9	3.0	0.0	0.2	7.2	7.5	4.5
Restaurants & Hotels (Non-food Component)	1.9	0.0	0.0	0.2	5.5	5.4	5.5
Miscellaneous	4.8	0.6	0.3	1.1	10.0	10.1	10.6
<b>Overall Urban CPI</b>	<b>100.0</b>	<b>1.9</b>	<b>-1.1</b>	<b>0.1</b>	<b>8.9</b>	<b>11.2</b>	<b>9.3</b>



**Table A3: Rural CPI Inflation by Groups (YoY and MoM in percent)**

	Weights	MoM change			YoY change		
		Mar-19	Feb-20	Mar-20	Mar-19	Feb-20	Mar-20
<b>I. Food Group</b>	<b>45.9</b>	<b>3.3</b>	<b>-1.6</b>	<b>-0.3</b>	<b>9.3</b>	<b>19.7</b>	<b>15.5</b>
Food & Non-Alcoholic Beverages	40.9	3.7	-2.0	-0.4	9.5	20.6	15.8
Alcoholic Beverages & Tobacco	1.3	0.1	0.4	0.2	14.2	19.4	19.5
Restaurant & Hotels (Food Component)	3.8	0.2	2.2	0.7	6.1	11.0	11.5
<b>II. Non-Food Group</b>	<b>54.1</b>	<b>1.3</b>	<b>-0.4</b>	<b>0.1</b>	<b>7.3</b>	<b>9.8</b>	<b>8.5</b>
Clothing & Footwear	9.5	0.3	0.9	1.7	6.9	10.8	12.3
Housing, Water, Elec, Gas & other Fuels	18.5	1.9	-2.5	0.0	8.6	6.6	4.6
Furnishing & Household Equip. Maintenance	4.1	0.3	0.6	0.9	7.8	9.9	10.6
Health <sup>etc</sup>	3.5	1.0	0.7	1.2	6.9	12.4	12.6
Transport	5.6	2.6	0.5	-4.1	8.3	18.0	10.2
Communication	2.0	0.0	0.0	0.0	1.2	1.6	1.6
Recreation & Culture	1.4	1.0	0.1	0.2	7.5	7.3	6.5
Education	2.1	2.8	0.4	0.3	5.9	7.1	4.5
Restaurants & Hotels (Non-food Component)	2.4	0.0	0.0	0.2	1.3	9.2	9.4
Miscellaneous	5.0	0.6	1.2	0.9	8.0	13.4	13.6
<b>Overall Rural CPI</b>		<b>2.2</b>	<b>-1.0</b>	<b>-0.1</b>	<b>8.2</b>	<b>14.2</b>	<b>11.7</b>

Table A4: Top Ten Contributors to Urban CPI Inflation (YoY) in March 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Mar-19	Mar-20	
A. Ranked by Weighted Contribution					
1	House Rent	19.26	6.34	5.63	11.88
2	Gas Charges	1.08	38.63	54.84	7.41
3	Milk Fresh	7.11	5.18	9.37	6.61
4	Motor Fuel	2.91	7.02	16.33	5.54
5	Readymade Food	5.52	5.42	8.23	4.83
6	Onions	0.59	14.74	92.18	4.34
7	Condiments And Spices	1.33	17.33	27.02	4.10
8	Wheat Flour	3.01	2.43	13.51	3.74
9	Potatoes	0.45	-11.71	107.51	3.62
10	Vegetable Ghee	1.03	7.15	33.01	3.48
Total		42.29			55.55
B. Ranked by Percentage Change					
1	Potatoes	0.45	-11.71	107.51	3.62
2	Onions	0.59	14.74	92.18	4.34
3	Pulse Moong	0.17	18.04	69.70	0.90
4	Gas Charges	1.08	38.63	54.84	7.41
5	Pulse Mash	0.12	1.56	47.19	0.31
6	Butter	0.09	5.63	43.76	0.42
7	Vegetable Ghee	1.03	7.15	33.01	3.48
8	Gur	0.04	22.66	32.97	0.12
9	Sugar	1.11	17.71	30.86	3.00
10	Condiments And Spices	1.33	17.33	27.02	4.10
Total		6.02			27.70
C. Ranked by Weights					
1	House Rent	19.26	6.34	5.63	11.88
2	Milk Fresh	7.11	5.18	9.37	6.61
3	Readymade Food	5.52	5.42	8.23	4.83
4	Education	4.88	7.17	4.52	2.73
5	Electricity Charges	4.56	26.87	-13.92	-7.11
6	Wheat Flour	3.01	2.43	13.51	3.74
7	Appliances/Articles/Products For P	2.98	9.93	8.44	2.64
8	Motor Fuel	2.91	7.02	16.33	5.54
9	Cotton Cloth	2.22	6.92	11.82	2.70
10	Meat	2.04	8.54	13.51	3.11
Total		54.48			36.68
Note: Weighted contribution is estimated by multiplying the weights by the price change of an item; this is then reported as a share in YoY change in Urban CPI, which is 9.3 percent in March 2020.					

**Table A5: Top Ten Contributors to Urban CPI Inflation (MoM) in March 2020**

Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Feb-20	Mar-20	
A. Ranked by Weighted Contribution					
1	Onions	0.59	-8.79	35.07	154.96
2	Fresh Fruits	1.44	4.16	8.53	86.85
3	Footwear	1.48	0.02	5.84	62.31
4	Milk Fresh	7.11	-0.01	0.96	48.49
5	Potatoes	0.45	-12.91	10.93	45.30
6	Readymade Food	5.52	1.64	0.81	33.47
7	Chicken	1.36	2.35	3.25	30.95
8	Condiments And Spices	1.33	2.35	1.58	19.77
9	Personal Effects N.E.C.	0.94	-0.05	2.10	19.56
10	Meat	2.04	0.20	0.84	14.41
		22.27			516.09
B. Ranked by Percentage Change					
1	Onions	0.59	-8.79	35.07	154.96
2	Potatoes	0.45	-12.91	10.93	45.30
3	Fresh Fruits	1.44	4.16	8.53	86.85
4	Footwear	1.48	0.02	5.84	62.31
5	Chicken	1.36	2.35	3.25	30.95
6	Doctor (Mbbs) Clinic Fee	0.40	0.18	3.24	12.58
7	Liquefied Hydrocarbons	0.51	-13.53	2.27	10.90
8	Personal Effects N.E.C.	0.94	-0.05	2.10	19.56
9	Dental Services	0.02	0.22	2.05	0.22
10	Milk Powder	0.31	1.54	1.86	4.33
		7.51			427.98
C. Ranked by Weights					
1	House Rent	19.26	0.00	0.00	0.00
2	Milk Fresh	7.11	-0.01	0.96	48.49
3	Readymade Food	5.52	1.64	0.81	33.47
4	Education	4.88	0.00	0.19	7.75
5	Electricity Charges	4.56	-13.48	0.00	0.00
6	Wheat Flour	3.01	-5.29	-3.17	-67.76
7	Appliances/Articles/Products For P	2.98	0.51	0.65	14.38
8	Motor Fuel	2.91	0.17	-6.17	-170.93
9	Cotton Cloth	2.22	0.64	0.78	13.07
10	Meat	2.04	0.20	0.84	14.41
		54.48			-107.12
Note: Weighted contribution is estimated by multiplying the weights by the price change of an item; this is then reported as a share in MoM change in Urban CPI, which is 0.1 percent in March 2020.					

Table A6: Top and Bottom Fifteen Contributors to Urban CPI Inflation (YoY) in March 2020					
Top 15 Contributors			YoY Change		Weighted Contribution (%)
Items/ Contributors	Weights	Mar-19	Mar-20		
Ranked by Weighted Contribution					
1	House Rent	19.26	6.34	5.63	11.88
2	Gas Charges	1.08	38.63	54.84	7.41
3	Milk Fresh	7.11	5.18	9.37	6.61
4	Motor Fuel	2.91	7.02	16.33	5.54
5	Readymade Food	5.52	5.42	8.23	4.83
6	Onions	0.59	14.74	92.18	4.34
7	Condiments And Spices	1.33	17.33	27.02	4.10
8	Wheat Flour	3.01	2.43	13.51	3.74
9	Potatoes	0.45	-11.71	107.51	3.62
10	Vegetable Ghee	1.03	7.15	33.01	3.48
11	Meat	2.04	8.54	13.51	3.11
12	Cooking Oil	1.10	10.44	26.73	3.05
13	Sugar	1.11	17.71	30.86	3.00
14	Education	4.88	7.17	4.52	2.73
15	Cotton Cloth	2.22	6.92	11.82	2.70
Total		53.65			70.15
Bottom 15 Contributors					
1	Electricity Charges	4.56	26.87	-13.92	-7.11
2	Tomatoes	0.35	289.31	-71.11	-5.81
3	Fish	0.39	10.66	-1.06	-0.04
4	Eggs	0.51	7.93	-0.08	0.00
5	Postal Services	0.02	12.32	0.00	0.00
6	Newspapers	0.07	26.29	0.00	0.00
7	Therapeutic Appliances And	0.01	1.92	0.21	0.00
8	Dental Services	0.02	6.13	1.30	0.00
9	Major Tools & Equipments	0.01	5.48	8.06	0.01
10	Accommodation Services	0.13	3.36	0.55	0.01
11	Electrical Appliances For Personal	0.05	1.23	2.17	0.01
12	Motor Vehicle Tax	0.05	17.24	2.19	0.01
13	Carpets	0.03	3.07	5.40	0.02
14	Plastic Products	0.05	5.40	3.25	0.02
15	Mustard Oil	0.01	2.37	17.42	0.02
Total		6.24			-12.88

**Table A7: Top and Bottom Fifteen Contributors to Urban CPI Inflation (MoM) in March 2020**

<u>Top 15 Contributors</u>		<u>MoM Change</u>		Weighted Contribution (%)	
Items/ Contributors	Weights	Feb-20	Mar-20		
Ranked by Weighted Contribution					
1	Onions	0.59	-8.79	35.07	154.96
2	Fresh Fruits	1.44	4.16	8.53	86.85
3	Footwear	1.48	0.02	5.84	62.31
4	Milk Fresh	7.11	-0.01	0.96	48.49
5	Potatoes	0.45	-12.91	10.93	45.30
6	Readymade Food	5.52	1.64	0.81	33.47
7	Chicken	1.36	2.35	3.25	30.95
8	Condiments And Spices	1.33	2.35	1.58	19.77
9	Personal Effects N.E.C.	0.94	-0.05	2.10	19.56
10	Meat	2.04	0.20	0.84	14.41
11	Appliances/Articles/Products For P	2.98	0.51	0.65	14.38
12	Cotton Cloth	2.22	0.64	0.78	13.07
13	Doctor (Mbbs) Clinic Fee	0.40	0.18	3.24	12.58
14	Liquefied Hydrocarbons	0.51	-13.53	2.27	10.90
15	Readymade Garments	1.32	0.85	1.00	10.01
Total		29.71			577.04
Bottom 15 Contributors					
1	Motor Fuel	2.91	0.17	-6.17	-170.93
2	Fresh Vegetables	1.53	-11.48	-7.78	-109.48
3	Transport Services	1.75	0.10	-5.45	-71.63
4	Wheat Flour	3.01	-5.29	-3.17	-67.76
5	Tomatoes	0.35	-60.27	-23.29	-47.23
6	Wheat	0.61	-3.52	-8.43	-41.51
7	Fish	0.39	-0.84	-9.25	-26.60
8	Pulse Gram	0.17	-2.34	-5.13	-6.46
9	Sugar	1.11	8.45	-0.54	-4.52
10	Solid Fuel	0.42	1.19	-1.13	-3.25
11	Pulse Masoor	0.16	0.37	-3.39	-3.14
12	Dry Fruits	0.33	0.35	-1.20	-3.12
13	Pulse Mash	0.12	1.14	-2.33	-1.53
14	Besan	0.08	-2.33	-1.86	-1.15
15	Gram Whole	0.09	0.32	-0.93	-0.64
Total		13.02			-558.96

Table A8: Top and Bottom Fifteen Contributors to MoM Urban CPI Food Inflation in March 2020					
Top 15 Contributors			MoM Change		Weighted Contribution (%)
Items/ Contributors	Weights	Feb-20	Mar-20		
Ranked by Weighted Contribution					
1	Onions	0.59	-8.79	35.07	154.96
2	Fresh Fruits	1.44	4.16	8.53	86.85
3	Milk Fresh	7.11	-0.01	0.96	48.49
4	Potatoes	0.45	-12.91	10.93	45.30
5	Readymade Food	5.52	1.64	0.81	33.47
6	Chicken	1.36	2.35	3.25	30.95
7	Condiments And Spices	1.33	2.35	1.58	19.77
8	Meat	2.04	0.20	0.84	14.41
9	Eggs	0.51	-26.36	1.62	5.59
10	Beverages	0.89	0.09	0.87	5.55
11	Milk Products	0.64	0.02	0.93	4.33
12	Milk Powder	0.31	1.54	1.86	4.33
13	Vegetable Ghee	1.03	13.15	0.38	3.46
14	Sweet Meat	0.35	1.29	0.84	2.41
15	Marriage Hall Charges	1.75	0.04	0.17	2.27
Total		25.33			462.17
Bottom 15 Contributors					
1	Fresh Vegetables	1.53	-11.48	-7.78	-109.48
2	Wheat Flour	3.01	-5.29	-3.17	-67.76
3	Tomatoes	0.35	-60.27	-23.29	-47.23
4	Wheat	0.61	-3.52	-8.43	-41.51
5	Fish	0.39	-0.84	-9.25	-26.60
6	Pulse Gram	0.17	-2.34	-5.13	-6.46
7	Sugar	1.11	8.45	-0.54	-4.52
8	Pulse Masoor	0.16	0.37	-3.39	-3.14
9	Dry Fruits	0.33	0.35	-1.20	-3.12
10	Pulse Mash	0.12	1.14	-2.33	-1.53
11	Besan	0.08	-2.33	-1.86	-1.15
12	Gram Whole	0.09	0.32	-0.93	-0.64
13	Tea	0.84	0.08	0.00	0.00
14	Cigarettes	0.72	0.01	0.01	0.04
15	Pulse Moong	0.17	2.27	0.05	0.07
Total		9.67			-313.03

**Table A9: Top and Bottom Fifteen Contributors to MoM Urban CPI Non-food Inflation in March 2020**

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Feb-20	Mar-20	
Ranked by Weighted Contribution					
1	Footwear	1.48	0.02	5.84	62.31
2	Electrical Appliances For Personal	0.94	-0.05	2.10	19.56
3	Personal Grooming Services	2.98	0.51	0.65	14.38
4	Cotton Cloth	2.22	0.64	0.78	13.07
5	Doctor (Mbbs) Clinic Fee	0.40	0.18	3.24	12.58
6	Liquefied Hydrocarbons	0.51	-13.53	2.27	10.90
7	Readymade Garments	1.32	0.85	1.00	10.01
8	Household Equipments	1.00	0.41	1.22	9.09
9	Education	4.88	0.00	0.19	7.75
10	Recreation And Culture	0.65	0.22	1.33	5.53
11	Washing Soap/Detergents/Match Box	1.41	0.68	0.44	4.65
12	Drugs And Medicines	1.07	0.46	0.45	3.92
13	Household Textiles	0.34	0.46	0.50	1.27
14	Woolen Cloth	0.84	0.88	0.17	1.08
15	Dopatta	0.17	1.50	0.80	0.99
Total		20.23			177.09
<u>Bottom 15 Contributors</u>					
1	Motor Fuel	2.91	0.17	-6.17	-170.93
2	Transport Services	1.75	0.10	-5.45	-71.63
3	Solid Fuel	0.42	1.19	-1.13	-3.25
4	Woolen Readymade Garments	0.43	0.00	-0.01	-0.03
5	Water Supply	0.53	0.27	0.00	0.00
6	Plastic Products	0.05	0.65	0.00	0.00
7	Garbage Collection	0.11	0.00	0.00	0.00
8	Personal Effects N.E.C.	0.00	0.00	0.00	0.00
9	Appliances/Articles/Products For P	0.00	0.00	0.00	0.00
10	Postal Services	0.02	0.00	0.00	0.00
11	Motor Vehicle Tax	0.05	0.00	0.00	0.00
12	Newspapers	0.07	0.00	0.00	0.00
13	Communication Services	1.88	0.00	0.00	0.00
14	Gas Charges	1.08	0.00	0.00	0.00
15	Accommodation Services	0.05	0.00	0.00	0.00
Total		9.34			-245.84

<b>Table A10: Top Ten Contributors to Rural CPI Inflation (YoY) in March 2020</b>					
<b>Items/ Contributors</b>		<b>Weights</b>	<b>YoY Change</b>		<b>Weighted Contribution (%)</b>
			<b>Mar-19</b>	<b>Mar-20</b>	
<b>A. Ranked by Weighted Contribution</b>					
1	Milk Fresh	10.38	3.92	8.53	7.28
2	Vegetable Ghee	2.38	7.26	32.79	6.84
3	Wheat	3.47	4.73	24.28	6.45
4	Onions	0.90	7.71	100.90	5.46
5	Potatoes	0.74	-12.73	120.67	5.28
6	House Rent	8.61	5.74	6.29	4.78
7	Solid Fuel	4.48	1.43	12.72	4.74
8	Wheat Flour	3.43	2.42	18.00	4.56
9	Sugar	2.03	17.94	31.36	4.54
10	Cotton Cloth	2.84	10.10	16.53	4.31
<b>Total</b>		<b>39.26</b>			<b>54.23</b>
<b>B. Ranked by Percentage Change</b>					
1	Potatoes	0.74	-12.73	120.67	5.28
2	Onions	0.90	7.71	100.90	5.46
3	Pulse Moong	0.25	17.77	72.29	1.18
4	Pulse Mash	0.15	0.87	49.43	0.34
5	Condiments And Spices	1.49	17.24	34.04	4.22
6	Vegetable Ghee	2.38	7.26	32.79	6.84
7	Postal Services	0.01	0.08	31.47	0.02
8	Sugar	2.03	17.94	31.36	4.54
9	Water Supply	0.06	0.00	30.55	0.17
10	Beans	0.09	7.28	29.91	0.23
<b>Total</b>		<b>8.10</b>			<b>28.27</b>
<b>C. Ranked by Weights</b>					
1	Milk Fresh	10.38	3.92	8.53	7.28
2	House Rent	8.61	5.74	6.29	4.78
3	Solid Fuel	4.48	1.43	12.72	4.74
4	Readymade Food	3.80	6.11	11.54	3.89
5	Wheat	3.47	4.73	24.28	6.45
6	Electricity Charges	3.44	26.87	-13.92	-4.36
7	Wheat Flour	3.43	2.42	18.00	4.56
8	Cotton Cloth	2.84	10.10	16.53	4.31
9	Motor Fuels	2.49	6.38	15.74	3.69
10	Vegetable Ghee	2.38	7.26	32.79	6.84
<b>Total</b>		<b>45.32</b>			<b>42.17</b>
Note: Weighted contribution is estimated by multiplying the weights by the price change of an item; this is then reported as a share in YoY change in Rural CPI, which is 11.7 percent in March 2020.					



**Table A11: Top Ten Contributors to Rural CPI Inflation (MoM) in March 2020**

Items/ Contributors	Weights	MoM Change		Weighted Contribution (%)	
		Feb-20	Mar-20		
A. Ranked by Weighted Contribution					
1	Wheat	3.47	1.64	-7.39	279.49
2	Motor Fuels	2.49	0.12	-6.69	206.36
3	Tomatoes	0.51	-57.55	-36.43	159.24
4	Fresh Vegetables	2.09	-13.94	-5.64	146.47
5	Wheat Flour	3.43	-3.57	-2.52	82.05
6	Chicken	1.46	5.76	-4.85	70.84
7	Transport Services	1.80	1.22	-3.43	60.48
8	Eggs	0.57	-20.16	-3.17	16.34
9	Sugar	2.03	8.00	-0.72	14.68
10	Pulse Gram	0.28	-1.48	-5.07	13.82
		18.13			1049.77
B. Ranked by Percentage Change					
1	Onions	0.90	-11.39	40.95	-335.15
2	Dental Services	0.02	0.00	8.04	-1.27
3	Fresh Fruits	1.45	3.56	8.04	-107.00
4	Potatoes	0.74	-15.43	6.82	-65.33
5	Hosiery	0.43	1.75	4.79	-23.64
6	Beans	0.09	2.99	3.77	-3.77
7	Ice Cream	0.06	0.00	3.16	-1.69
8	Footwear	1.92	0.89	2.93	-54.10
9	Medical Tests	0.40	0.00	2.70	-11.38
10	Mechanical Services	0.36	0.35	2.53	-10.57
		6.37			-613.91
C. Ranked by Weights					
1	Milk Fresh	10.38	0.14	0.29	-27.95
2	House Rent	8.61	0.00	0.00	0.00
3	Solid Fuel	4.48	1.64	0.05	-2.07
4	Readymade Food	3.80	2.21	0.70	-27.77
5	Wheat	3.47	1.64	-7.39	279.49
6	Electricity Charges	3.44	-13.48	0.00	0.00
7	Wheat Flour	3.43	-3.57	-2.52	82.05
8	Cotton Cloth	2.84	1.30	1.88	-59.38
9	Motor Fuels	2.49	0.12	-6.69	206.36
10	Vegetable Ghee	2.38	6.23	1.05	-30.53
		45.32			420.21
Note: Weighted contribution is estimated by multiplying the weights by the price change of an item; this is then reported as a share in MoM change in Rural CPI, which is -0.1 percent in March 2020.					

Table A12: Top and Bottom Fifteen Contributors to Rural CPI Inflation (YoY) in March 2020					
Top 15 Contributors		YoY Change		Weighted Contribution (%)	
Items/ Contributors	Weights	Mar-19	Mar-20		
Ranked by Weighted Contribution					
1	Milk Fresh	10.38	3.92	8.53	7.28
2	Vegetable Ghee	2.38	7.26	32.79	6.84
3	Wheat	3.47	4.73	24.28	6.45
4	Onions	0.90	7.71	100.90	5.46
5	Potatoes	0.74	-12.73	120.67	5.28
6	House Rent	8.61	5.74	6.29	4.78
7	Solid Fuel	4.48	1.43	12.72	4.74
8	Wheat Flour	3.43	2.42	18.00	4.56
9	Sugar	2.03	17.94	31.36	4.54
10	Cotton Cloth	2.84	10.10	16.53	4.31
11	Condiments And Spices	1.49	17.24	34.04	4.22
12	Fresh Vegetables	2.09	34.52	20.61	3.95
13	Readymade Food	3.80	6.11	11.54	3.89
14	Motor Fuels	2.49	6.38	15.74	3.69
15	Personal Effects N.E.C.	1.21	14.00	24.79	2.85
Total		50.34			72.83
Bottom 15 Contributors					
1	Tomatoes	0.51	316.34	-72.94	-7.06
2	Electricity Charges	3.44	26.87	-13.92	-4.36
3	Chicken	1.46	-0.92	-2.41	-0.32
4	Eggs	0.57	9.28	-3.13	-0.15
5	Motor Vehicle Tax	0.02	17.87	0.00	0.00
6	Newspapers	0.02	33.33	0.00	0.00
7	Accommodation Services	0.14	0.00	0.00	0.00
8	Garbage Collection	0.01	0.00	1.15	0.00
9	Dessert Preparation	0.01	4.01	6.53	0.01
10	Honey	0.03	7.67	2.85	0.01
11	Major Tools And Equipments	0.03	1.99	3.35	0.01
12	Mustard Oil	0.01	4.67	16.15	0.02
13	Postal Services	0.01	0.08	31.47	0.02
14	Dental Services	0.02	0.06	13.17	0.02
15	Cleaning And Laundering	0.02	1.70	13.73	0.02
Total		6.30			-11.80

**Table A13: Top and Bottom Fifteen Contributors to Rural CPI Inflation (MoM) in March 2020**

<u>Top 15 Contributors</u>		<u>MoM Change</u>		Weighted Contribution (%)	
Items/ Contributors	Weights	Feb-20	Mar-20		
Ranked by Weighted Contribution					
1	Wheat	3.47	1.64	-7.39	279.49
2	Motor Fuels	2.49	0.12	-6.69	206.36
3	Tomatoes	0.51	-57.55	-36.43	159.24
4	Fresh Vegetables	2.09	-13.94	-5.64	146.47
5	Wheat Flour	3.43	-3.57	-2.52	82.05
6	Chicken	1.46	5.76	-4.85	70.84
7	Transport Services	1.80	1.22	-3.43	60.48
8	Eggs	0.57	-20.16	-3.17	16.34
9	Sugar	2.03	8.00	-0.72	14.68
10	Pulse Gram	0.28	-1.48	-5.07	13.82
11	Pulse Masoor	0.21	4.27	-3.45	5.70
12	Liquefied Hydrocarbons	1.00	-6.70	-0.34	3.84
13	Gram Whole	0.11	0.75	-2.58	2.83
14	Pulse Mash	0.15	5.13	-2.05	2.28
15	Gur	0.15	-5.54	-1.02	1.58
Total		19.75			1066.01
<u>Bottom 15 Contributors</u>					
1	Onions	0.90	-11.39	40.95	-335.15
2	Fresh Fruits	1.45	3.56	8.04	-107.00
3	Potatoes	0.74	-15.43	6.82	-65.33
4	Cotton Cloth	2.84	1.30	1.88	-59.38
5	Footwear	1.92	0.89	2.93	-54.10
6	Personal Effects N.E.C.	1.21	0.23	2.28	-33.97
7	Vegetable Ghee	2.38	6.23	1.05	-30.53
8	Milk Fresh	10.38	0.14	0.29	-27.95
9	Readymade Food	3.80	2.21	0.70	-27.77
10	Hosiery	0.43	1.75	4.79	-23.64
11	Meat	1.71	0.02	0.97	-18.20
12	Readymade Garments	1.13	0.27	1.59	-18.15
13	Washing Soaps, Detergents And	1.70	0.55	1.00	-15.81
14	Drugs And Medicines	1.58	0.45	0.84	-14.33
15	Hospitals Services	1.01	0.20	1.41	-13.64
Total		33.18			-844.96

Table A14: Top and Bottom Fifteen Contributors to MoM Rural CPI Food Inflation in March 2020					
Top 15 Contributors		MoM Change			Weighted Contribution (%)
Items/ Contributors	Weights	Feb-20	Mar-20		
Ranked by Weighted Contribution					
1	Wheat	3.47	1.64	-7.39	279.49
2	Tomatoes	0.51	-57.55	-36.43	159.24
3	Fresh Vegetables	2.09	-13.94	-5.64	146.47
4	Wheat Flour	3.43	-3.57	-2.52	82.05
5	Chicken	1.46	5.76	-4.85	70.84
6	Eggs	0.57	-20.16	-3.17	16.34
7	Sugar	2.03	8.00	-0.72	14.68
8	Pulse Gram	0.28	-1.48	-5.07	13.82
9	Pulse Masoor	0.21	4.27	-3.45	5.70
10	Gram Whole	0.11	0.75	-2.58	2.83
11	Pulse Mash	0.15	5.13	-2.05	2.28
12	Gur	0.15	-5.54	-1.02	1.58
13	Pulse Moong	0.25	3.94	-0.46	1.37
14	Besan	0.07	1.96	-1.76	1.30
15	Wheat Products	0.11	0.39	-0.10	0.10
Total		14.89			798.09
Bottom 15 Contributors					
1	Onions	0.90	-11.39	40.95	-335.15
2	Fresh Fruits	1.45	3.56	8.04	-107.00
3	Potatoes	0.74	-15.43	6.82	-65.33
4	Vegetable Ghee	2.38	6.23	1.05	-30.53
5	Milk Fresh	10.38	0.14	0.29	-27.95
6	Readymade Food	3.80	2.21	0.70	-27.77
7	Meat	1.71	0.02	0.97	-18.20
8	Rice	1.55	0.47	0.59	-11.33
9	Marriage Hall Charges	2.25	0.00	0.21	-4.51
10	Beans	0.09	2.99	3.77	-3.77
11	Bakery And Confectionary	0.37	2.50	0.75	-2.65
12	Beverages	0.55	0.18	0.43	-2.26
13	Sweet Meat	0.40	1.41	0.57	-2.17
14	Ice Cream	0.06	0.00	3.16	-1.69
15	Cooking Oil	0.60	2.54	0.24	-1.66
Total		27.23			-641.96

**Table A15: Top and Bottom Fifteen Contributors to MoM Rural CPI Non-food Inflation in March 2020**

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Feb-20	Mar-20	
Ranked by Weighted Contribution					
1	Motor Fuels	2.49	0.12	-6.69	206.36
2	Transport Services	1.80	1.22	-3.43	60.48
3	Liquefied Hydrocarbons	1.00	-6.70	-0.34	3.84
4	Motor Vehicles	0.73	0.04	-0.06	0.45
5	Electricity Charges	3.44	-13.48	0.00	0.00
6	House Rent	8.61	0.00	0.00	0.00
7	Garbage Collection	0.01	0.00	0.00	0.00
8	Motor Vehicle Tax	0.02	0.00	0.00	0.00
9	Newspapers	0.02	0.00	0.00	0.00
10	Communication Services	1.65	0.00	0.00	0.00
11	Postal Services	0.01	0.00	0.00	0.00
12	Water Supply	0.06	0.00	0.00	0.00
13	Accommodation Services	0.14	0.00	0.00	0.00
14	Communication Apparatus	0.34	0.08	0.00	0.00
15	Stationery	0.37	0.16	0.00	0.00
Total		20.69			271.14
<u>Bottom 15 Contributors</u>					
1	Cotton Cloth	2.84	1.30	1.88	-59.38
2	Footwear	1.92	0.89	2.93	-54.10
3	Personal Effects N.E.C.	1.21	0.23	2.28	-33.97
4	Hosiery	0.43	1.75	4.79	-23.64
5	Readymade Garments	1.13	0.27	1.59	-18.15
6	Washing Soaps, Detergents And	1.70	0.55	1.00	-15.81
7	Drugs And Medicines	1.58	0.45	0.84	-14.33
8	Hospitals Services	1.01	0.20	1.41	-13.64
9	Household Equipments	1.28	0.44	0.92	-11.89
10	Medical Tests	0.40	0.00	2.70	-11.38
11	Mechanical Services	0.36	0.35	2.53	-10.57
12	Appliances/Articles/Products For	2.27	1.05	0.50	-10.50
13	Woolen Cloth	1.10	0.07	0.79	-8.26
14	Education	2.13	0.42	0.27	-5.91
15	Construction Input Items	0.63	-1.36	0.93	-5.34
Total		19.99			-296.88

**Table A16: Distribution of Price Changes (YoY) - Selected Urban CPI Items: March 2020**

Groups	Decrease or no change	Subdued increase (Greater than 0% but less than 5%)	Moderate increase (5% but less than 10%)	Double digit increase (10% or more)
Food & Non-Beverages	Tomatoes, Cucumber (Kheera), Chilies (Green), Gram Whole Yellow (Average Quality)	Chilies Powder National 200 Gm Packet, Chicken Farm Broiler (Live), Lemon, Chips (Loose)	Tea Lipton Yellow Label 190 Gm Packet, Milk Fresh (Un-Boiled), Jam-E-Shireen Standard Size (800 MI), Curd	Cardamom Small (Average Quality), Potatoes, Garlic (Lehsun), Onions, Ginger (Adrak), Pulse Moong (Washed), Pulse Mash (Washed), Butter Local Packed 50 Gm
Alcoholic Beverages & Tobacco			Pan Prepared (Sweet With Beetle Nuts)	Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet
Clothing & Footwear	Gents Sponge Chappal Bata, Ladies Sandal Bata, Ladies Sponge Chappal Bata	Vest "Baniyan" For Men Average Quality, Pant Cloth Wash & Wear (Average Quality), Brassier (Average Quality), Socks Nylon Local (Average Quality)	Tailoring Charges Awami Suit (Male), Shirt Boy Length 24"/26", Awami Suit Gents Wash & Wear (Average Quality), Chaddar (Wash-N-Wear) (2X2.5 Meter)	Gents Shoes Servis, Gents Sandal Bata, Cheetah 50 Size 3-5 Servis, Heavy Weight Suiting Lawrance Pur (Average Quality), Shoe Repair Full Sole, Georgette (Average Quality), Dopatta Cotton (Average Quality), Gents Shoes Paul Bata, Long Cloth 57" Gul Ahmed/Al Karam
Housing, Water, Elect, Gas & other Fuels	Electricity Charges 51-100 Units, Electricity Charges 101-300 Units, Electricity Charges 301-700 Units, Electricity Charges Combined	Cement Blocks (6"X8"X12")	Water Charges Per House, Unskilled Labor Wage Rate, Mason Wage Rate, Charges For Refuse/Waste Collection, Painter Wage Rate, Sand (Black Pit), Bajri	Gas Charges 6.7438 - 10.1157 Mmbtu, Gas Charges 10.1157 - 13.4876 Mmbtu, Gas Charges Combined, Gas Charges Above 13.4876 Mmbtu, Synthetic Enamel Ici Balti 3.64 Litre, Bricks New 1St Class, Lpg 11.67 Kg Cylinder, Iron Bars (M.S. Bar) 1/2 " 40 Grade
Furnishing & Household Equip. Maintenance etc		Sofa Set Five Seater, Lota Plastic Medium Size (Average Quality), Surf Excel 500 Gm Polybag	Sewing Machine (Sn) Without Cover, Steel Almirah, Air Cooler Super Asia Ecm-4000/Jc-1000	Tube Light Philips 40 Watt, Phenyl Tyfon/Finis 2.75 Litre Bottle, Robin Blue Liquid 75 MI Bottle, Geyser Super Asia Large Size 30 Gallons (Gas), Ceiling Fan 56" Pak/Younas/Millat, Central Table Set With Glass Top
Health	Dental Extraction Fee, Hydryllin Syrup 120 MI Bottle, Johar Joshanda Instant (Sachet) Packet	X-Ray (Chest) Charges, Ecg Charges, Entox Tablets, Cost Of Surgery (C-Section), Sugar Test (Random/Fasting)	Panadol Tablets Plain, Betnovate-N Ointment 10 Gm Tube, Dental Surgeon Fee Per Visit, Blood Test (Cp)	Daonil Tablets 5 Mg, Septran Tablets, Inderal Tablets 10 Mg, Calpol Syrup 100 MI Bottle, Phenergan Syrup 120 MI Bottle, Ventolin Tablets 2 Mg, Dettol Medium Bottle
Transport	Air Fare Economy Class Per Kilometer (National Average), Bus Fare Outside City (Non Ac)	Bus Fare Outside City (Ac), Motorcycle United/Unique 70 Cc, Tire Motorcycle Cd 70 (Back Wheel), Car Tax 800 Cc To 1500 Cc	Train Fare Economy Per Person, Train Fare Ac Lower Per Person, Auto Rickshaw Fare, Motorcycle Honda Cd 70	Suzuki Fare Maximum Within City, Bus Fare Maximum Within City, Car Honda Civic Turbo 1.5 Vtec, Mini Bus Fare Maximum Within City, Car Suzuki 1000 Cc, Suzuki Fare Minimum Within City, Car Toyota 1300 Cc Xli
Communication	Courier Charges Minimum Within Zone Outside City (Tcs), Telephone Call Charges		Mobile Set With Rear Camera And Without Touch Screen	Internet Charges (Dsl) 1 Mb (Unlimited)
Recreation & Culture	Newspaper Daily Jang, Mag The Weekly (Magazine), Newspaper Daily Dawn, Akhbar-E-Jehan Weekly	Exercise Book (With Lines) 80 To 100 Pages, English Book Ba/B.Sc, English Book Class Xi Complete Set, Mathematics Book Class V (Text Book Board)	Urdu Book Ba/B.Sc, Mathematics Book Class IX And X (Text Book Board), Lead Pencil Goldfish, Mathematics Book Class Xi (Text Book Board)	English Book Class IX And X, Ballpoint Pen Local, Photostat Paper 70 Gm, English Book Class Vi, Urdu Book Class Xi/Inter, Led Sony/Samsung 32" Colored
Education	Government University Fee M.S.C / M.A.	Private School Fee English Medium Average Standard (Class X), Government College Fee First Year	Government Engineering University Tuition Fee For Be (1St Year)	Government Medical College/University Tuition Fee For Mbbs (1St Year), Private Engineering University Tuition Fee For Be (1St Year)
Restaurant & Hotels		Chicken Biryani Full/Double, Cooked Chicken At Average Hotel	Bread Tandoori Standard Size, Tea Prepared Ordinary	Cooked Daal At Average Hotel, Cooked Beef At Average Hotel
Miscellaneous		Wall Clock Quartz (Average Quality), Purse Ladies Medium Size (Average Quality)	Hair Color (Kala Kola), Toilet Soap Lifebuoy 115 Gm, Disposable Razor Gillette Blue Li	Gold Tezabi 24 Carett, Pampers (Medium Size), Silver Tezabi 24 Carett, Tooth Brush (Shield), Lipstick Swiss Miss/Medora (Medium), Hair Oil (Kala Kola Hair Tonic)

**Table A17: Distribution of Price Changes (YoY) - Selected Rural CPI Items: March 2020**

Groups	Decrease or no change	Subdued increase (Greater than 0% but less than 5%)	Moderate increase (5% but less than 10%)	Double digit increase (10% or more)
Food & Non-Alcoholic Beverages	Tomatoes, Cucumber (Kheera), Cauliflower (Phool Gobhi)	Fish Fresh, Honey Marhaba Bottle 500 Gm, Nimko (Loose, Average Quality), Peas (Matar)	Beef With Bone (Average Quality), Tea Lipton Yellow Label 190 Gm Packet, Radish (Mooli)	Potatoes, Garlic (Lehsun), Ginger (Adrak), Onions, Pulse Moong (Washed), Pulse Mash (Washed), Chilies Powder Loose, Carrot (Gajar), Vegetable Ghee Dalda/Habib 2.5 Kg Tin
Alcoholic Beverages & Tobacco			Tobacco Hukka Twisted	Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet, Chewing Tobacco (Niswar), Pan Prepared (Sweet With Beetle Nuts)
Clothing & Footwear		Tailoring Charges Simple Suit (Female)	Socks Nylon Local (Average Quality), Linen, Ladies (Average Quality), Footware Gents Local (Average Quality), Pullover Ladies (Average Quality)	Brassier (Average Quality), Shirting (Average Quality), Dopatta Cotton (Average Quality), Full Pant Boy Length 24"/26", Long Cloth, Lawn Printed (Average Quality), Shirt Boy Length 24"/26", Washing Charges Shalwar Kameez, Dopatta Georgette (Average Quality)
Housing, Water, Elect, Gas & other Fuels	Electricity Charges 51-100 Units, Electricity Charges 101-300 Units, Electricity Charges 301-1000 Units, Electricity Charges Combined	Charges For Refuse/Waste Collection	Mason Wage Rate, Bajri, Kerosene Oil, House Rent Combined	Water Charges Per House, Sand (Black Pit), Lpg 11.67 Kg Cylinder, Bricks New 1St Class, Carpenter Wage Rate, Unskilled Labor Wage Rate, Coal, Painter Wage Rate, Firewood Whole, Electrician Charges, Plumber Wage Rate
Furnishing & Household Equip. Maintenance etc		Readymade Quilt (3 Kg), Water Pump Golden Monoblock/Donkey 0.5 H.P	Lota Plastic Medium Size (Average Quality), Sewing Machine (Sn) Without Cover, Water Set (Omroc) 6 Glass	Tube Light Philips 40 Watt, Robin Blue Liquid 75 Ml Bottle, Washing Soap 250 Gm Cake (Specify Name), Match Box, Towel Medium Size (2' X 3'), Aluminium Cooking Pan (Degchi)
Health	Hydriyllin Syrup 120 Ml Bottle	Physiotherapist Fee Per Visit, Johar Joshanda Instant (Sachet) Packet	Cost Of Surgery (C-Section)	Daonil Tablets 5 Mg, Inderal Tablets 10 Mg, Amoxil Capsule 250 Mg, Cac 1000 Tablets Sandoz Bottle, Doctor (Mbbs) Clinic Fee, Blood Test (Cp) Charges, Dettol Medium Bottle
Transport	Air Fare Economy Class Per Kilometer, Car Tax 800 Cc To 1500 Cc, Bus Fare Outside City (Non Ac)		Train Fare Economy Per Person, Tire Cycle, Motorcycle Honda Cd 70, Hi-Speed Diesel, Motorcycle Service Charges	Cng, Tire Car Mehran Tubeless (General), Petrol Super, Mobil Oil (Havoline 20W-50), Car Suzuki 800 Cc Without Ac, Chingchi Rickshaw Charges, Minimum, Tire Motorcycle Cd 70 (Back Wheel), Bicycle
Communication	Telephone Call Charges, Mobile Call Charges	Mobile Set With Rear Camera And Without Touch Screen		Postal Registration Charges, Internet Charges (Dsl) 1 Mb (Unlimited)
Recreation & Culture	Newspaper Daily Jang	English Books Class Xi Complete Set, Lead Pencil Goldfish, Personal Computer With Led Monitor (17") Dell/Hp/Acer Core I5	English Books Class Ix And X, Led Sony/Samsung 32" Colored, Urdu Books Class Ix And X (Text Book Board), Ballpoint Pen Local	Pets Feed, English Books Class Vi
Education	Vocational Training Basic Computer Short Course Fee (3 Months)	Coaching Fee For Class Ix/X Science Group	Private School Fee English Medium Average Standard (Class V)	
Restaurant & Hotels		Pizza Chicken Medium Size (Average Quality)	Cooked Chicken At Average Hotel, Cooked Beef At Average Hotel	Cooked Daal At Average Hotel, Chicken Biryani Full/Double, Tea Prepared Ordinary, Bread Tandoori Standard Size
Miscellaneous		Shampoo Sun Silk/Pantene 90 Ml Bottle	Purse Ladies Medium Size (Average Quality), Tooth Brush (Shield), Talcum Powder Viceroy/Black Cat	Gold Tezabi 24 Carett, Shaving Charges, Disposable Razor Gillette Blue li, Blade Treet Ordinary (10 No. Packet), Hair Cut Charges For Men, Hair Color (Kala Kola)

<b>Table A18: Distribution of Price Changes (YoY) - WPI Items: March 2020</b>				
<b>Groups</b>	<b>Decrease or no change</b>	<b>Subdued increase (Greater than 0% but less than 5%)</b>	<b>Moderate increase (5% but less than 10%)</b>	<b>Double digit increase (10% or more)</b>
<b>Agriculture Forestry &amp; Fishery Products</b>	Hides, Skins & Fur Skins, Raw, Millet / Bajra, Raw Animal Materials / Wool, Eggs, Poultry	Sugar Crops	Raw Milk From Bovine Animals, Vegetables, Dry Fruits, Fresh Fruits, Rice, Fuel Wood In Logs, Fibre Crops	Edible Roots / Potatoes, Stimulant & Spice Crops, Cotton Seeds, Sorghum / Jowar, Wheat, Unmanufactured Tobacco, Other Oil Seeds, Pulses, Fish Live Fresh Or Chilled, Maize
<b>Ores &amp; Minerals, Electricity Gas &amp; Water</b>	Coal Not Agglomerated	Electrical Energy		Natural Gas Liquefied, Salt & Pure Sodium Chloride
<b>Food Products, Beverages and Tobacco, Textiles, Apparel and Leather Products</b>	Vegetables & Fruit Juice, Nylon Yarn, Tobacco Products, Leather Without Hair	Bed Sheets, Hosiery Products, Other Leather N.E.C, Silk & Reyon Fabrics, Sugar Confectionary, Blended Yarn, Other Food Products, Other Fabrics, Quilts, Blankets	Ice Cream, Dairy Products N.E.C, Coffee & Tea, Fruit Juices, Mineral Water, Cotton Yarn, Beverages, Towels	Sugar Refined, Vegetable Ghee, Chocolate, Footwears, Oil Cakes, Wheat Flour, Other Cereal Flour, Milk & Cream In Solid Form, Vegetable Oils Refined, Synthetic Carpets, Processed Liquid Milk, Woven Fabrics, Meat Of Animals, Spices, Woolen Carpets, Dried Fruits & Nuts, Readymade Garments, Cotton Fabrics
<b>Other Transportable Goods except Metal Products, Machinery and Equipments</b>	Furnace Oil, Fertilizers, Kerosine Oil, Hard Board	Paints & Varnishes, Matches, Glass Sheets, Diesel Oil, Plastic Products, Cement, Insecticides, Soaps & Detergents, Timber	Auto Tyres, Other Glass Articles, Mobil Oil, Ceramics & Sanitary Fixture, Chemicals, Pesticides	Dyeing Material, Bed Foam, Medicines, Printing Paper, Motor Spirit, Steel Bar & Sheets, Bricks, Blocks & Tiles
<b>Metal Product Machinery &amp; Equipment</b>	Vacuum Pumps, Engines & Motors, Concrete Mixture, Tractors	Chuff Cutter, Radio & Television, Motorcycles	Lighting Equipments, Air Conditioners, Electric Wires	Lathe Machines, Fridge, Washm, Sewm, Fans, Iron, Motor Vehicles, Pipe Fittings, Cultivators, Bicycles, Steel Products



**Table A19: International Commodity Prices/Indices**

	Dec-19	Jan-20	Feb-20	Mar-20
<b>Energy</b>				
Crude Oil (US\$ per barrel) *	63.4	61.6	53.3	32.2
Energy Index (2010 = 100)	76.9	74.5	65.0	42.0
<b>Food</b>				
Rice (\$/MT)	432.0	451.0	450.0	494.0
Wheat (\$/MT)	210.9	224.5	215.3	209.1
Sugar (US cent/ pound)^	13.4	14.1	14.8	11.9
Palm Oil (\$/MT)	763.7	810.1	728.8	635.2
Soybean Oil (\$/MT)	833.5	875.6	800.4	747.8
<b>Non-Food Non-Energy</b>				
Cotton Outlook 'A' Index #^	75.8	79.1	76.6	68.0
Metal Price Index (2010 = 100)	80.7	80.5	76.0	70.5
Copper (\$/MT)	6,077.1	6,031.2	5,687.8	5,182.6
Aluminum (\$/MT)	1,771.4	1,773.1	1,688.1	1,610.9
Iron Ore (\$ cents/dry MT)	92.7	95.8	87.7	89.0
Tin (\$/MT)	17,141.1	17,029.2	16,480.3	15,290.9
Nickel (\$/MT)	13,829.4	13,506.9	12,715.6	11,846.2
Zinc (\$/MT)	2,272.5	2,354.3	2,113.2	1,903.6
Lead (\$/MT)	1,900.5	1,923.9	1,872.5	1,734.4
Uranium (\$/MT)@	24.9	24.6	24.8	27.4
DAP (\$/MT)	238.2	264.9	279.4	276.2
Urea (\$/MT)	217.5	215.4	214.4	231.1

Source: World Bank for all variables / indices except Uranium which is taken from Cameco (World Largest Uranium Producer)

@ Data has been taken from Cameco website as it is not available in World Bank dataset.

^ The measurement unit for sugar and Cotton is US cent/ pound in IMF data source, whereas it is US dollar / kg in World bank dataset. The result of two datasets can be reconciled using conversion formula: 1US \$ / kilogram = 45.359237 U.S. cents / pound. Both the variables have been converted to the measurement unit US cent/ pound.

\$/MT = US\$ per metric tonne.

\* Crude Oil (Petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai fateh

# Middling 1-3/32 inch staple, liverpool Index "A", average of the cheapest Cts/lb five of fourteen styles, CIF Liverpool (Cotton Outlook, Liverpool). From January 1968 to May 1981 strict middling 1-1/16 inch staple. Prior to 1968, Mexican 1-1/16.2/

DAP: Diammonium Phosphate

<b>Table A20: National CPI Data Series Original and Seasonally Adjusted</b>				
<b>Original Series</b>				
<b>Period</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>
Jul	103.17	107.15	114.29	123.86
Aug	102.80	107.31	113.93	125.89
Sep	103.23	108.05	113.90	126.86
Oct	104.19	109.22	116.32	129.16
Nov	104.69	109.95	116.18	130.90
Dec	104.08	109.92	115.82	130.45
Jan	104.53	110.01	116.12	133.03
Feb	105.04	109.72	117.12	131.64
Mar	106.14	109.96	119.46	131.69
Apr	106.91	111.15	120.33	
May	106.36	111.65	121.05	
Jun	106.54	112.58	121.63	
<b>Seasonally Adjusted Series</b>				
Jul	102.89	106.85	113.99	123.56
Aug	102.44	106.95	113.57	125.52
Sep	102.81	107.65	113.53	126.49
Oct	103.30	108.30	115.35	128.09
Nov	103.80	109.01	115.17	129.74
Dec	104.24	110.05	115.94	130.58
Jan	104.74	110.24	116.38	133.33
Feb	105.88	110.58	118.02	132.62
Mar	106.94	110.79	120.36	132.66
Apr	106.98	111.21	120.39	
May	106.79	112.09	121.52	
Jun	106.92	112.96	122.02	

Table A21: Urban CPI Data Series Original and Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	103.20	107.71	114.94	124.95
Aug	102.73	107.93	114.58	126.77
Sep	103.06	108.38	114.49	127.72
Oct	103.87	109.34	117.04	129.75
Nov	104.36	110.03	116.94	131.05
Dec	103.74	110.08	116.57	130.57
Jan	104.59	110.28	117.07	132.77
Feb	105.12	110.12	118.08	131.32
Mar	106.18	110.43	120.29	131.49
Apr	107.20	111.94	121.29	
May	106.86	112.53	122.11	
Jun	107.08	113.34	122.52	
Seasonally Adjusted Series				
Jul	102.77	107.26	114.47	124.46
Aug	102.28	107.48	114.11	126.28
Sep	102.65	108.00	114.13	127.36
Oct	103.12	108.57	116.23	128.85
Nov	103.65	109.28	116.13	130.12
Dec	104.11	110.44	116.93	130.97
Jan	104.86	110.57	117.40	133.15
Feb	105.99	111.01	119.01	132.32
Mar	107.02	111.31	121.25	132.52
Apr	107.16	111.90	121.24	
May	107.10	112.76	122.36	
Jun	107.33	113.58	122.75	

<b>Table A22: Rural CPI Data Series Original and Seasonally Adjusted</b>				
<b>Original Series</b>				
<b>Period</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>
Jul	103.12	106.30	113.30	122.22
Aug	102.90	106.37	112.96	124.56
Sep	103.49	107.54	113.01	125.55
Oct	104.68	109.05	115.23	128.28
Nov	105.18	109.83	115.03	130.67
Dec	104.59	109.68	114.70	130.28
Jan	104.44	109.60	114.68	133.42
Feb	104.91	109.11	115.68	132.13
Mar	106.09	109.25	118.21	132.00
Apr	106.47	109.95	118.89	
May	105.60	110.33	119.45	
Jun	105.73	111.44	120.29	
<b>Seasonally Adjusted Series</b>				
Jul	103.06	106.24	113.26	122.20
Aug	102.67	106.16	112.76	124.38
Sep	103.03	107.12	112.63	125.18
Oct	103.56	107.90	114.03	126.95
Nov	104.03	108.61	113.73	129.17
Dec	104.44	109.47	114.45	129.98
Jan	104.56	109.74	114.84	133.61
Feb	105.73	109.94	116.53	133.06
Mar	106.82	110.00	119.01	132.88
Apr	106.70	110.18	119.12	
May	106.33	111.08	120.25	
Jun	106.31	112.04	120.91	

Table A23: National CPI Monthly & Average Seasonal Factors					
Period	FY17	FY18	FY19	FY20	Average
Jul	100.28	100.28	100.26	100.25	100.27
Aug	100.35	100.33	100.32	100.29	100.32
Sep	100.41	100.37	100.33	100.29	100.35
Oct	100.87	100.85	100.84	100.84	100.85
Nov	100.86	100.86	100.88	100.89	100.87
Dec	99.85	99.88	99.90	99.91	99.88
Jan	99.80	99.79	99.78	99.77	99.78
Feb	99.20	99.22	99.24	99.27	99.23
Mar	99.25	99.25	99.26	99.27	99.26
Apr	99.94	99.94	99.95		99.94
May	99.59	99.61	99.62		99.61
Jun	99.64	99.66	99.68		99.66

Table A24: Urban CPI Monthly & Average Seasonal Factors					
Period	FY17	FY18	FY19	FY20	Average
Jul	100.42	100.42	100.41	100.39	100.41
Aug	100.44	100.42	100.41	100.39	100.42
Sep	100.40	100.35	100.32	100.29	100.36
Oct	100.73	100.71	100.70	100.70	100.72
Nov	100.69	100.69	100.70	100.71	100.70
Dec	99.65	99.67	99.69	99.69	99.66
Jan	99.74	99.73	99.72	99.72	99.74
Feb	99.18	99.19	99.22	99.24	99.20
Mar	99.21	99.21	99.21	99.22	99.21
Apr	100.03	100.04	100.04		100.04
May	99.78	99.79	99.80		99.78
Jun	99.77	99.79	99.81		99.78

<b>Table A25: Rural CPI Monthly &amp; Average Seasonal Factors</b>					
<b>Period</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>Average</b>
Jul	100.06	100.06	100.04	100.02	100.04
Aug	100.23	100.20	100.17	100.14	100.19
Sep	100.44	100.39	100.34	100.30	100.37
Oct	101.08	101.06	101.05	101.05	101.06
Nov	101.11	101.12	101.14	101.16	101.13
Dec	100.15	100.19	100.22	100.23	100.20
Jan	99.88	99.87	99.86	99.86	99.87
Feb	99.23	99.25	99.27	99.30	99.26
Mar	99.31	99.32	99.32	99.34	99.32
Apr	99.79	99.79	99.81		99.80
May	99.31	99.33	99.34		99.33
Jun	99.45	99.47	99.48		99.47

Table A26: National CPI (Month-on-Month) Original & Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	1.44	0.57	1.51	1.83
Aug	-0.36	0.15	-0.31	1.64
Sep	0.42	0.69	-0.03	0.77
Oct	0.93	1.09	2.12	1.81
Nov	0.47	0.66	-0.12	1.35
Dec	-0.58	-0.03	-0.30	-0.34
Jan	0.43	0.08	0.25	1.97
Feb	0.48	-0.26	0.87	-1.04
Mar	1.05	0.22	2.00	0.04
Apr	0.72	1.08	0.73	
May	-0.52	0.46	0.60	
Jun	0.17	0.83	0.48	
Seasonally Adjusted Series				
Jul	0.79	-0.07	0.91	1.26
Aug	-0.44	0.09	-0.36	1.59
Sep	0.36	0.65	-0.04	0.77
Oct	0.48	0.61	1.60	1.27
Nov	0.48	0.65	-0.16	1.29
Dec	0.43	0.96	0.67	0.64
Jan	0.48	0.17	0.38	2.11
Feb	1.09	0.31	1.41	-0.54
Mar	1.00	0.18	1.98	0.03
Apr	0.03	0.38	0.03	
May	-0.17	0.79	0.93	
Jun	0.12	0.78	0.41	

<b>Table A27: Urban CPI (Month-on-Month) Original &amp; Seasonally Adjusted Series</b>				
<b>Original Series</b>				
<b>Period</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>
Jul	1.47	0.59	1.41	1.98
Aug	-0.46	0.20	-0.31	1.46
Sep	0.32	0.42	-0.08	0.75
Oct	0.79	0.89	2.23	1.59
Nov	0.47	0.63	-0.09	1.00
Dec	-0.59	0.05	-0.32	-0.37
Jan	0.82	0.18	0.43	1.68
Feb	0.51	-0.15	0.86	-1.09
Mar	1.01	0.28	1.87	0.13
Apr	0.96	1.37	0.83	
May	-0.32	0.53	0.68	
Jun	0.21	0.72	0.34	
<b>Seasonally Adjusted Series</b>				
Jul	0.80	-0.06	0.79	1.40
Aug	-0.48	0.20	-0.31	1.46
Sep	0.36	0.49	0.02	0.86
Oct	0.46	0.53	1.84	1.17
Nov	0.51	0.65	-0.09	0.98
Dec	0.45	1.07	0.69	0.65
Jan	0.72	0.12	0.40	1.66
Feb	1.07	0.40	1.38	-0.62
Mar	0.98	0.27	1.88	0.15
Apr	0.13	0.53	-0.01	
May	-0.06	0.77	0.92	
Jun	0.21	0.72	0.32	



Table A28: Rural CPI (Month-on-Month) Original & Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	1.39	0.54	1.67	1.60
Aug	-0.21	0.07	-0.30	1.91
Sep	0.57	1.10	0.04	0.79
Oct	1.15	1.40	1.96	2.17
Nov	0.48	0.72	-0.17	1.86
Dec	-0.56	-0.14	-0.29	-0.30
Jan	-0.14	-0.07	-0.02	2.41
Feb	0.45	-0.45	0.87	-0.97
Mar	1.12	0.13	2.19	-0.10
Apr	0.36	0.64	0.58	
May	-0.82	0.35	0.47	
Jun	0.12	1.01	0.70	
Seasonally Adjusted Series				
Jul	0.77	-0.07	1.09	1.06
Aug	-0.38	-0.07	-0.43	1.79
Sep	0.36	0.91	-0.12	0.64
Oct	0.51	0.73	1.25	1.41
Nov	0.45	0.65	-0.26	1.75
Dec	0.40	0.79	0.63	0.63
Jan	0.12	0.25	0.34	2.79
Feb	1.11	0.18	1.47	-0.41
Mar	1.03	0.06	2.13	-0.14
Apr	-0.12	0.16	0.09	
May	-0.34	0.82	0.95	
Jun	-0.02	0.87	0.55	

**Figure A1: National CPI Non-food Inflation (YoY, 12MMA, MoM in percent)**



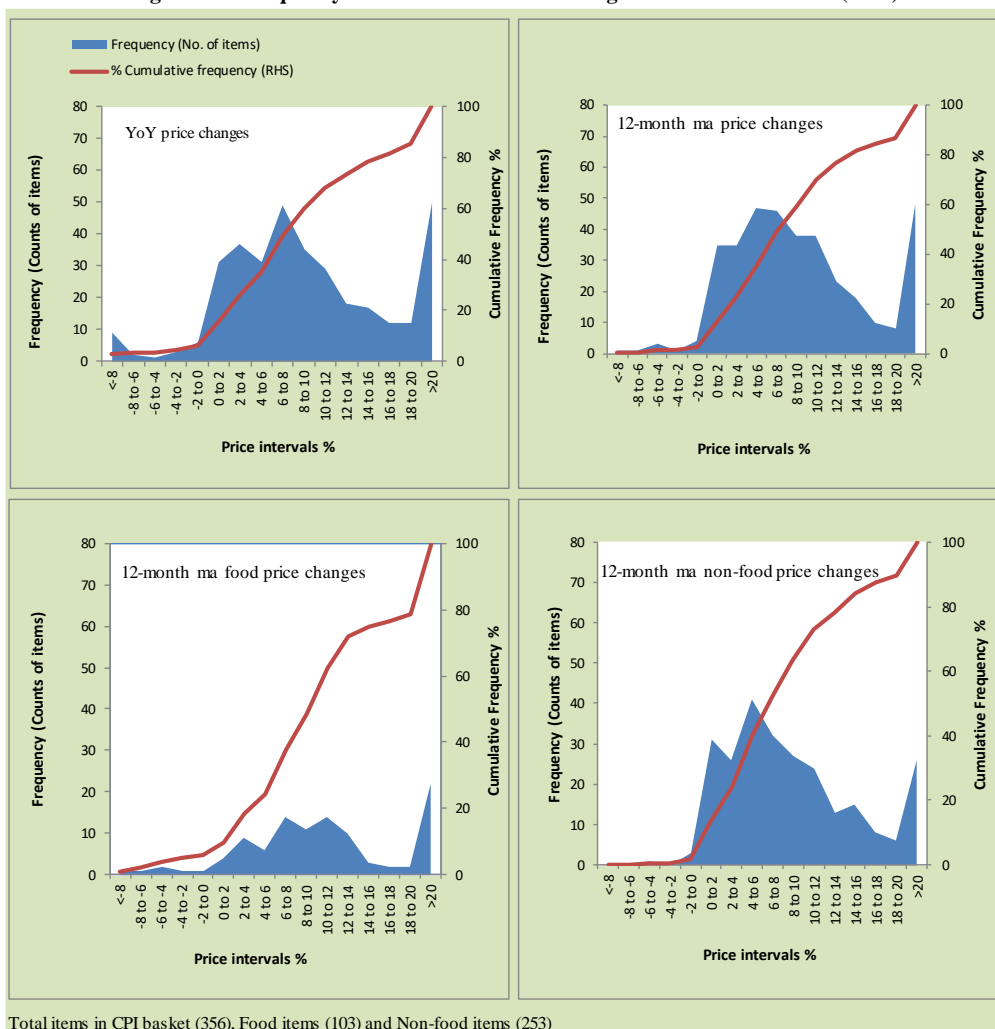
Figure A2: Urban CPI Non-food Inflation (YoY, 12MMA, MoM in percent)



**Figure A3: Rural CPI Non-food Inflation (YoY, 12MMA, MoM in percent)**



Figure A4: Frequency Distribution of Price Changes of Urban CPI Items (YoY)



Total items in CPI basket (356), Food items (103) and Non-food items (253)

**Figure A5: Frequency Distribution of Price Changes of Rural CPI Items (YoY)**

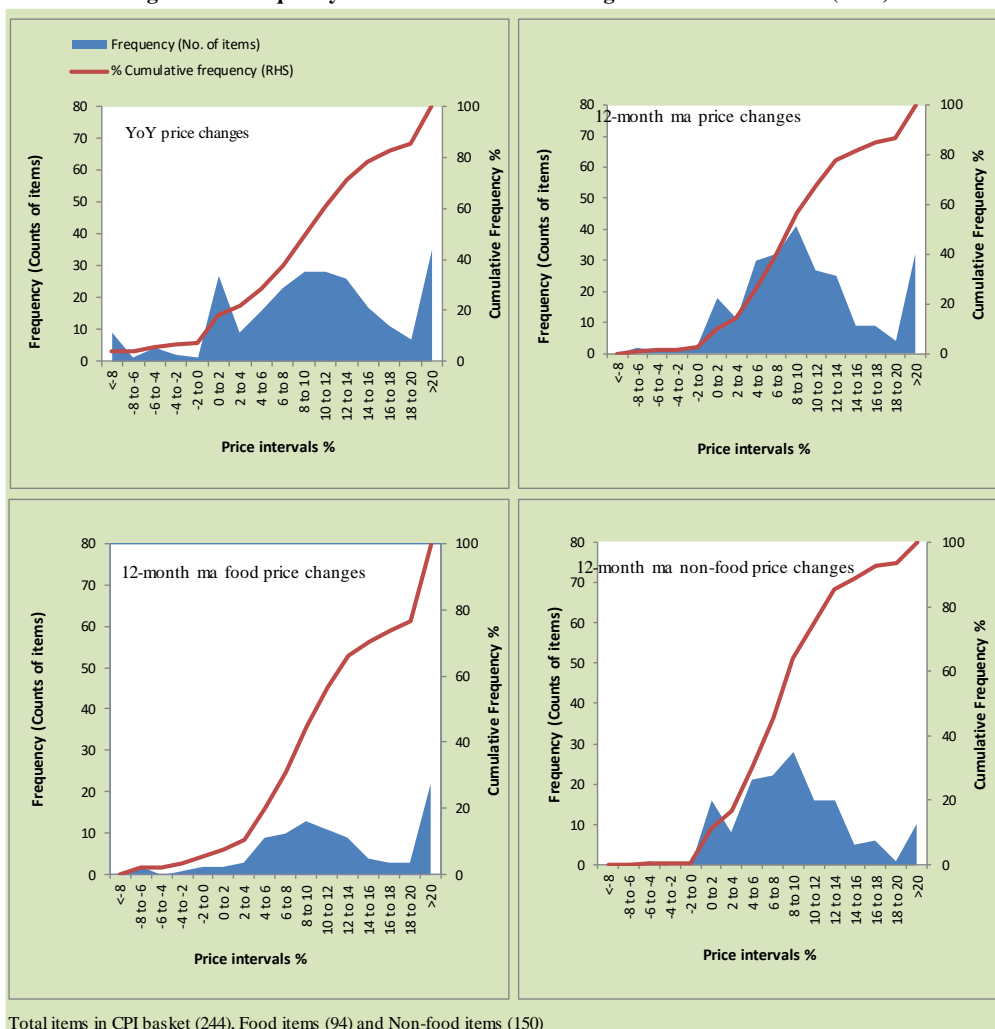
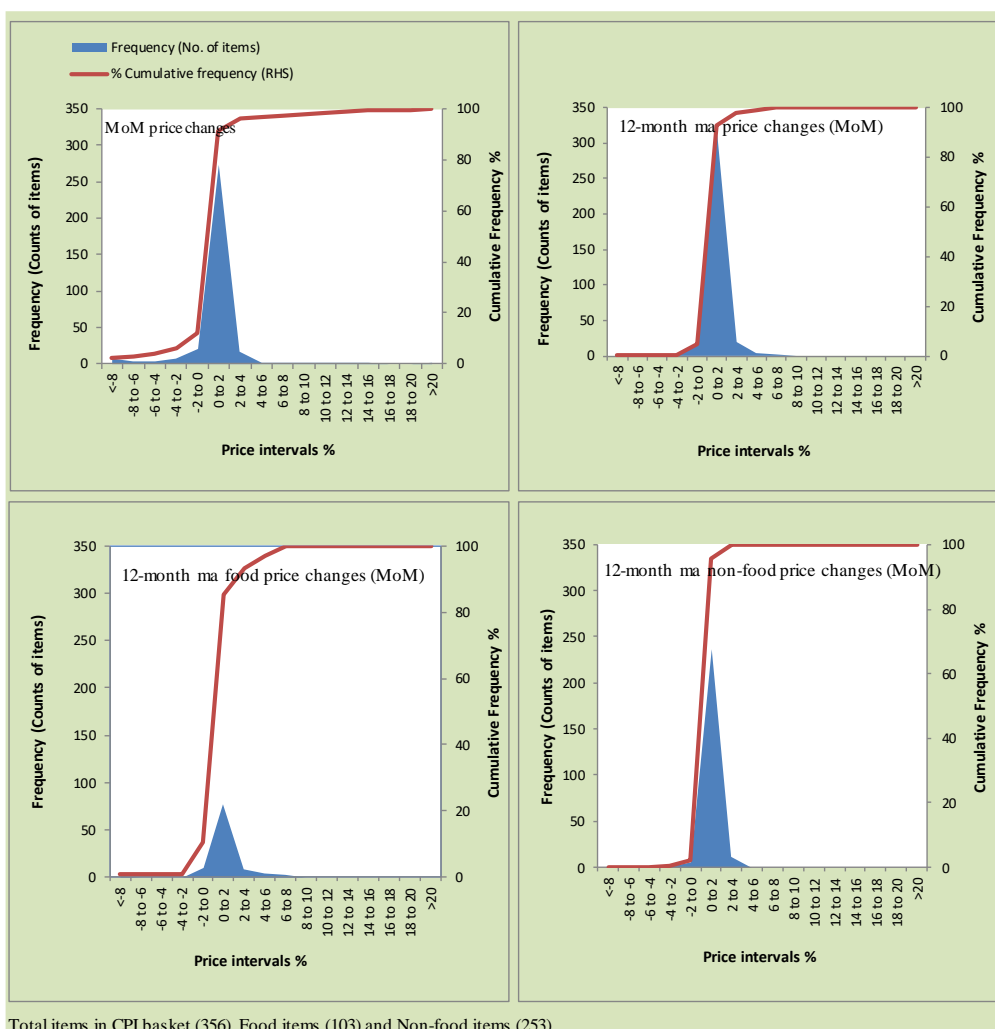
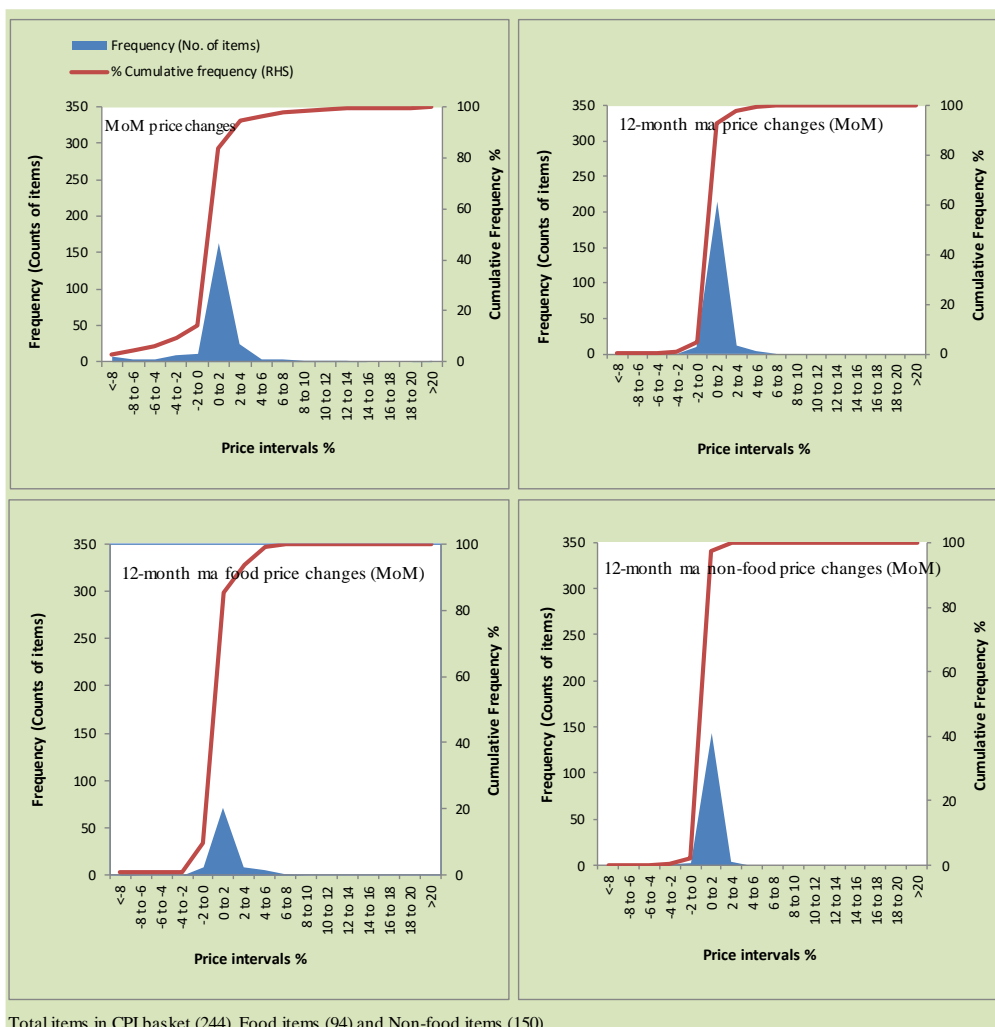


Figure A6: Frequency Distribution of Price Changes of Urban CPI Items (MoM)



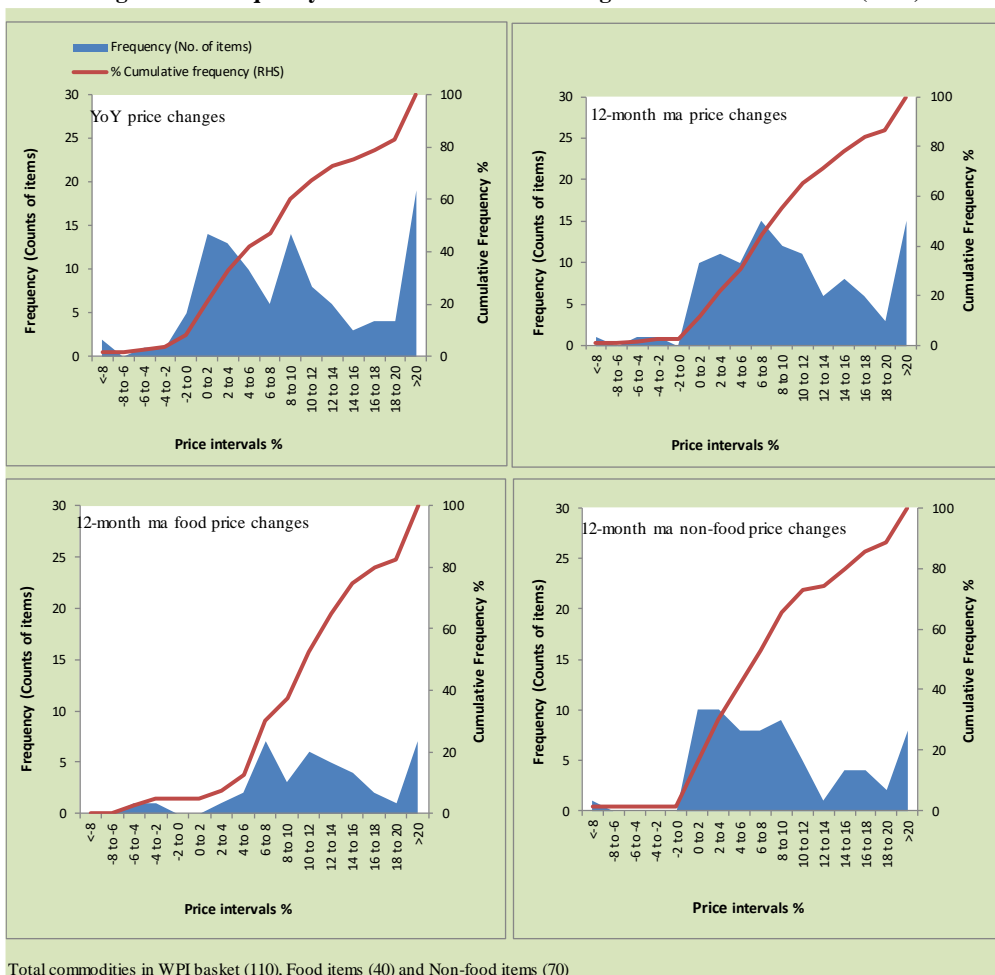
Total items in CPI basket (356), Food items (103) and Non-food items (253)

**Figure A7: Frequency Distribution of Price Changes of Rural CPI Items (MoM)**





**Figure A8: Frequency Distribution of Price Changes of WPI Commodities (YoY)**



Total commodities in WPI basket (110), Food items (40) and Non-food items (70)

## **Annexure B**

### **Technical Notes, Definitions and Methodologies**

#### **a) Technical Notes**

1. All the three measures of inflation, viz. CPI, WPI and SPI are computed by the following Laspeyres Index formula:

$$I_t = \sum_j w_0^j \left( \frac{P_t^j}{P_0^j} \right)$$

Where  $I_t$  is price index,  $w_0^j$  is weight of commodity  $j$  in the overall basket,  $P_t^j$  is price of commodity  $j$  in period  $t$  and  $P_0^j$  is its price in the base year.

2. Base year for all the indices is the year 2007-08.
3. CPI basket contains 487 consumers' goods; WPI basket contains 463 items; SPI contains 53 items.
4. YoY inflation is the percent change of an index in a given month over the index in the same month of the last year. It is computed as follows:

$$\pi_t = \left( \frac{I_t}{I_{t-12}} - 1 \right) \times 100$$

5. Period average inflation is the percent change of the average index during the period from July to the given month of a fiscal year over the average index during the corresponding period of the last year. It is computed as follows:

$$\bar{\pi}_t = \left( \frac{\sum_{i=0}^{t-v} I_{t-i}}{\sum_{i=0}^{t-12-v} I_{t-12-i}} - 1 \right) \times 100$$

Where  $v$  is the serial number of the month of July of current fiscal year in a given time series.

6. Monthly inflation is the percent change of an index in a given month over the index in the preceding month. It is computed as follows:

$$\pi_t = \left( \frac{I_t}{I_{t-1}} - 1 \right) \times 100$$

7. 12-month moving average inflation (Long-run trend inflation) is the percent change of 12-month moving average of a price index; it is computed as follows:

$$\tilde{\pi}_t = \left( \frac{\sum_{i=0}^{11} I_{t-i}}{\sum_{i=0}^{11} I_{t-12-i}} - 1 \right) \times 100$$

8. Core Inflation is defined as the persistent component of measured inflation that excludes volatile and controlled prices. It reflects the normal supply and demand conditions in the economy. Core inflation is computed by the following three methods:

- a) Non-food, Non-energy inflation (NFNE inflation); it is computed by excluding food group and energy items (kerosene oil, petrol, diesel, CNG, electricity and natural gas) from the CPI basket.
- b) 20% trimmed-mean inflation; it is computed through the following steps:
  - i. All CPI items are arranged in ascending order according to YoY/12-month moving average/monthly/period average changes in their price indices in a given month.
  - ii. 20 percent of the items showing extreme changes are excluded with 10 percent of the items at the top of the list (corresponding to cumulative weight of 90% or more) and 10 percent of the items at the bottom of the list (corresponding to cumulative weight of 10 percent or less).
  - iii. The weighted mean of the changes in price indices of the rest of the items is core inflation.
- c) Relatively Stable Component of CPI (RSC-CPI) developed by State Bank of Pakistan is a hybrid method based on permanent exclusion criteria. Volatile price items, to be excluded in the newly proposed measure RSC-CPI, are identified by analyzing the list and frequency

of commodities that have been trimmed frequently in the past while computing monthly weighted trimmed mean measure. Commodities that were trimmed out 13 and above times since July 2008 to February 2013 are selected for permanently excluding from the CPI basket. This newly developed component includes a mix of both food and non-food commodities that show persistent price behavior. Fifty Commodities included comprise relatively stable component (RSC-CPI) with a weight of 67.69. The detailed methodology of RSC-CPI and group wise items along their weights can be viewed at the following link;

<http://www.sbp.org.pk/publications/wpapers/2013/wp66.pdf>

9. Weighted contribution of different items (or sub-groups) to total inflation is worked out as below:

Let the overall index ( $I_t$ ) is the weighted average of price indexes of individual items or sub-groups ( $I_{it}$ ), i.e.

$$I_t = \sum_i w_i \cdot I_{it}$$

The weighted contribution of a single item (or a sub-group) to overall inflation is defined as below:

$$C_{it} = \alpha_{it-12} \cdot w_i \cdot \left( \frac{\pi_{it}}{\pi_t} \right)$$

Where  $C_{it}$  : Contribution of  $i^{\text{th}}$  item to the overall inflation

$$\alpha_{it-12} = \frac{I_{it-12}}{I_{t-12}}; \text{ i.e. ratio of item's index to overall index in the}$$

reference month

$w_i$  : Weights of  $i^{\text{th}}$  item

$\pi_{it}$  : Inflation of  $i^{\text{th}}$  item

$\pi_t$  : Overall inflation

10. Annualized rate of inflation (based on a month-on-month rate  $\pi$ ) is computed as follows

$$\text{Annualized } \pi = \left( \left( 1 + \frac{\pi}{100} \right)^{12} - 1 \right) \times 100$$

**b) Methodology for Estimating Inflation Diffusion Index for Pakistan**

We constructed an index to measure the spread of inflation in the 487 items of the CPI basket. It is based on month-on-month (MoM) change in the prices of these items and can be obtained by estimating what is known as an ‘inflation diffusion index’ (IDI) as below:

$$IDI = \frac{\text{No. of items with postive MoM change in price} - \text{No. of items with negative MoM change in price}}{\text{No. of items for which prices are reported}} * 100$$

Thus, it is the difference between the share of items with increasing prices (i.e. depicting inflation) and the share of items with falling prices (i.e. depicting deflation) in CPI amongst the items for which prices have altered or remained constant<sup>1</sup>.

Based upon item level prices data from July 2001 to February 2011 we computed inflation diffusion indices overall (general) CPI basket and for all groups in CPI basket (except House Rent Index being single item). A simple analysis<sup>2</sup> suggests that IDI is a leading indicator for Pakistan’s YoY inflation.

<sup>1</sup> We do not observe the prices of certain items (like the seasonal items) during certain periods of time. To calculate the inflation diffusion index we consider the items for which prices have been reported (irrespective of changed or not) during the month under review.

<sup>2</sup> Formal test shows one way ‘Granger’ causality from IDI to YoY inflation.