

# **Inflation Monitor**

**July 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 9.3 percent on year-on-year basis in July 2020 as compared to 8.6 percent in the previous month and 8.4 percent during the corresponding month of last year.
- b) National CPI inflation on month-on-month basis is recorded at 2.5 percent in July 2020 as compared to 0.8 percent in the previous month and 1.8 percent during the corresponding month of last year. Seasonally adjusted month-on-month CPI inflation is recorded at 1.46 percent in July 2020 compared to 0.71 percent in the previous month.
- c) Urban CPI inflation (2015-16=100) is recorded at 7.8 percent on year-on-year basis in July 2020 as compared to 7.6 percent in the previous month and 8.7 percent during the corresponding month of last year.
- d) Urban CPI inflation on month-on-month basis is recorded at 2.2 percent in July 2020 as compared to 0.7 percent in the previous month and 2.0 percent during corresponding month of last year. Seasonally adjusted month-on-month Urban CPI inflation is recorded at 1.18 percent in July 2020 compared to 0.70 percent in the previous month.
- e) Rural CPI inflation (2015-16=100) is recorded at 11.6 percent on year-on-year basis in July 2020 as compared to 10.0 percent during the previous month. It was 7.9 percent during the corresponding month of last year.
- f) Rural CPI inflation on month-on-month basis is recorded at 3.0 percent in July 2020 as compared to 1.0 percent in the previous month and 1.6 percent during the corresponding month of last year. Seasonally adjusted month-on-month Rural CPI inflation is recorded at 1.88 percent in July 2020 compared to 0.73 percent in the previous month.

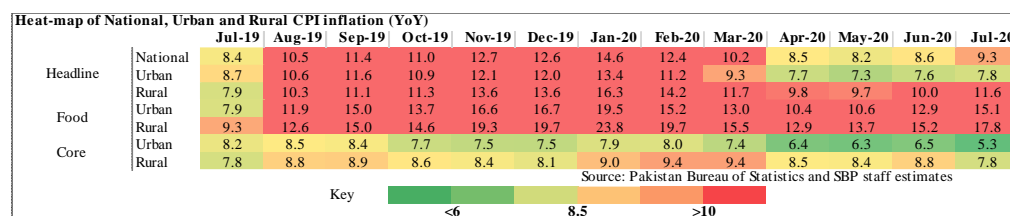
- g) Urban Core inflation (trimmed) on year-on-year basis is recorded at 6.7 percent in July 2020 as compared to 7.4 percent in the previous month and 7.8 percent during the corresponding month of last year.
- h) On month-on-month basis, the Urban Core inflation (trimmed) is recorded at 0.9 percent in July 2020 as compared to 0.4 percent in the previous month and 1.4 percent during the corresponding month of last year.
- i) Rural Core inflation (trimmed) on year-on-year basis is recorded at 9.8 percent in July 2020 as compared to 9.9 percent in the previous month and 7.4 percent during the corresponding month of last year.
- j) On month-on-month basis, the Rural Core inflation (trimmed) is recorded at 1.5 percent in July 2020 as compared to 0.9 percent in the previous month and 1.6 percent during the corresponding month of last year.
- k) Urban Core (Non-food, non-energy (NFNE)) inflation on year-on-year basis is recorded at 5.3 percent in July 2020 as compared to 6.5 percent in the previous month. It was 8.2 percent during the corresponding month of last year.
- l) Urban Core (NFNE) inflation on month-on-month basis recorded at 0.6 percent in July 2020 as compared to 0.4 percent in the previous month and 1.8 percent during the corresponding month of last year.
- m) Rural Core (NFNE) inflation on year-on-year basis is recorded at 7.8 percent in July 2020 as compared to 8.8 percent in the previous month and was at same level during the corresponding month of last year.
- n) Rural Core (NFNE) inflation on month-on-month basis recorded at 1.1 percent in July 2020 as compared to 0.7 percent in the previous month and 2.0 percent during the corresponding month of last year.



- o) WPI inflation on year-on-year basis recorded at 3.2 percent in July 2020 as compared to 0.9 percent in the previous month and 13.3 percent during the corresponding month of last year.
- p) WPI inflation on month-on-month basis recorded at 5.4 percent in July 2020 as compared to -0.3 percent in the previous month. It was 3.1 percent in the corresponding month of last year.
- q) SPI inflation on year-on-year basis recorded at 10.4 percent in July 2020 as compared to 9.3 percent in the previous month. It was 11.6 percent in the corresponding month of last year.
- r) SPI inflation on month-on-month basis recorded at 3.8 percent in July 2020 as compared to 0.5 percent in the previous month. It was 2.8 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, July 2020

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

		Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20
Headline	National	1.8	1.6	0.8	1.8	1.3	-0.3	2.0	-1.0	0.0	-0.8	0.3	0.8	2.5
	Urban	2.0	1.5	0.7	1.6	1.0	-0.4	1.7	-1.1	0.1	-0.7	0.3	0.7	2.2
	Rural	1.6	1.9	0.8	2.2	1.9	-0.3	2.4	-1.0	-0.1	-1.1	0.3	1.0	3.0
Food	Urban	1.0	3.1	2.0	1.4	2.4	-1.7	2.7	-1.4	0.6	-1.0	1.5	1.8	3.0
	Rural	1.7	2.9	1.8	2.6	3.4	-1.1	3.4	-1.6	-0.3	-1.7	1.4	2.0	4.0
Core	Urban	1.8	0.4	0.4	0.5	0.3	0.4	1.1	0.2	0.3	0.2	0.4	0.4	0.6
	Rural	2.0	1.0	0.3	0.7	0.5	0.3	1.0	0.5	0.6	0.3	0.4	0.7	1.1

Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: <0.00 0.75 >1.50

Heat-map of National CPI inflation (YoY)

	Weights	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20
National	100.00	8.4	10.5	11.4	11.0	12.7	12.6	14.6	12.4	10.2	8.5	8.2	8.6	9.3
Food and non-alcoholic Beverages	34.58	8.3	12.6	15.8	15.0	19.4	19.7	23.7	18.4	14.7	11.7	12.2	14.6	17.8
Alcoholic Beverages, Tobacco	1.02	29.3	29.8	30.0	20.3	18.7	18.3	17.9	18.5	18.6	19.6	19.5	14.2	5.0
Clothing and footwear	8.60	7.5	8.9	8.9	9.3	9.4	9.7	9.6	10.1	11.0	10.2	10.3	11.0	10.3
Housing, water, Elec., Gas and other fuels	23.63	6.1	7.1	6.6	7.2	8.8	8.5	9.6	6.8	4.9	5.1	6.4	5.4	4.2
Furnishing and household equipment maintenance	4.10	11.0	11.6	11.7	11.3	10.8	10.4	10.1	10.0	10.1	9.0	8.7	8.8	7.8
Health	2.79	11.6	11.9	11.7	12.2	11.4	11.3	11.8	12.0	12.4	10.5	9.8	9.3	7.8
Transport	5.91	16.8	18.5	17.8	16.5	14.0	14.7	18.6	19.2	11.5	3.4	-7.5	-10.2	-4.5
Communication	2.21	4.4	4.3	4.3	4.0	4.0	4.0	4.0	3.9	3.9	1.7	1.6	1.6	0.3
Recreation and culture	1.59	7.1	7.7	7.8	7.4	6.8	6.8	6.5	6.6	5.9	5.1	4.9	4.8	3.8
Education	3.79	6.8	6.9	6.2	6.0	6.1	6.0	7.3	7.4	4.5	3.2	2.0	2.0	1.1
Restaurants and hotels	6.92	5.8	6.2	6.1	6.0	6.4	6.1	7.4	8.7	8.7	8.5	8.6	9.0	7.5
Misc. goods and services	4.87	10.8	13.2	13.4	12.5	11.8	10.7	11.4	11.4	11.8	11.9	11.9	11.6	11.7

Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: <6 8.5 >10

Heat-map of Urban CPI inflation (YoY)

	Weights	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20
Urban	100.00	8.7	10.6	11.6	10.9	12.1	12.0	13.4	11.2	9.3	7.7	7.3	7.6	7.8
Food and non-alcoholic Beverages	30.42	7.7	12.6	16.3	15.0	18.6	18.8	22.0	16.4	13.7	10.7	10.9	13.8	16.9
Alcoholic Beverages, Tobacco	0.85	28.4	28.5	28.7	18.5	16.7	16.6	16.8	17.7	17.8	18.8	19.0	13.3	4.7
Clothing and footwear	8.01	7.5	9.1	9.0	9.0	9.1	9.6	9.0	9.6	9.9	9.5	9.5	10.1	9.4
Housing, water, Elec., Gas and other fuels	27.03	7.9	8.6	8.4	8.2	9.6	9.4	9.7	6.9	5.1	5.1	6.5	5.6	3.6
Furnishing and household equipment maintenance	4.09	12.3	12.4	12.5	11.6	11.2	11.0	10.4	10.0	9.8	8.3	7.7	7.7	6.3
Health	2.31	12.1	11.7	11.1	11.2	10.5	10.9	11.5	11.7	12.2	9.4	8.7	8.4	5.9
Transport	6.14	17.5	19.0	18.6	17.5	15.0	15.6	19.4	19.9	12.2	4.1	-6.5	-9.5	-4.8
Communication	2.35	5.7	5.5	5.6	5.2	5.1	5.3	5.3	5.3	5.1	2.3	2.2	2.1	0.4
Recreation and culture	1.73	6.8	7.5	7.7	6.7	6.5	6.4	6.1	6.1	5.6	4.9	4.6	4.4	3.1
Education	4.88	7.3	7.4	6.4	6.2	6.3	6.3	7.5	7.5	4.5	3.4	1.9	1.9	1.1
Restaurants and hotels	7.41	5.4	5.0	5.0	4.9	5.2	4.9	6.5	7.7	7.5	7.4	7.2	7.7	6.7
Misc. goods and services	4.77	10.8	12.6	13.1	12.0	11.0	10.1	10.7	10.1	10.6	11.0	10.9	10.6	10.4

Source: Pakistan Bureau of Statistics and SBP staff estimates

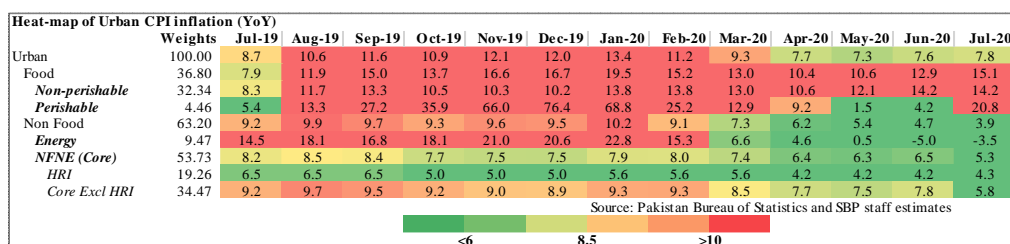
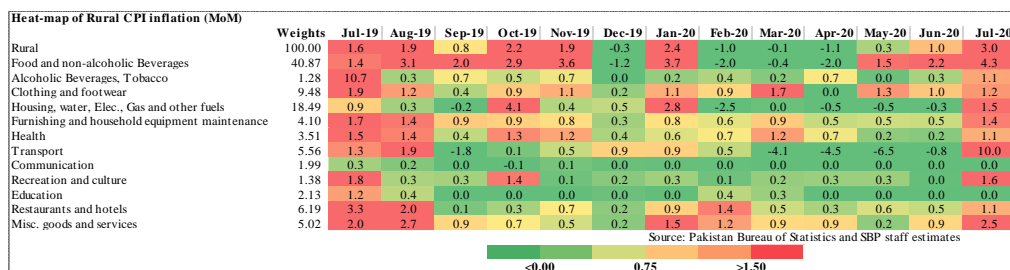
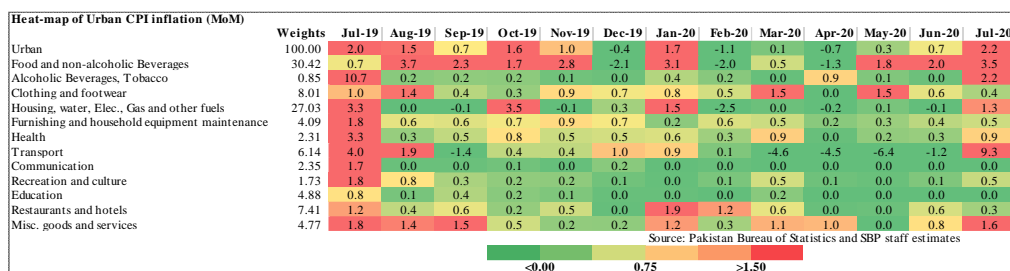
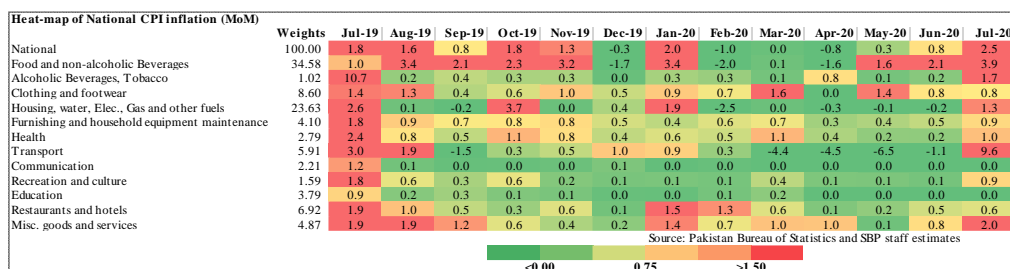
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Heat-map of Rural CPI inflation (YoY)

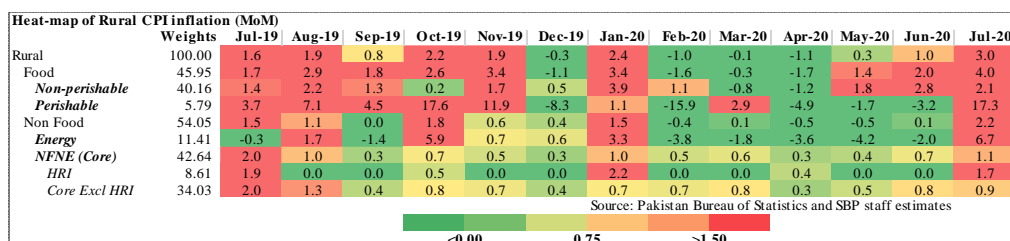
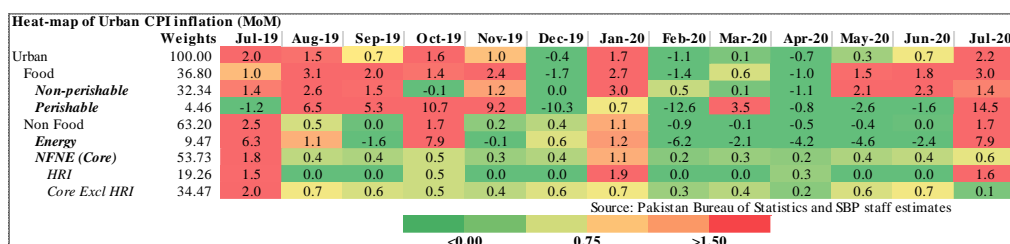
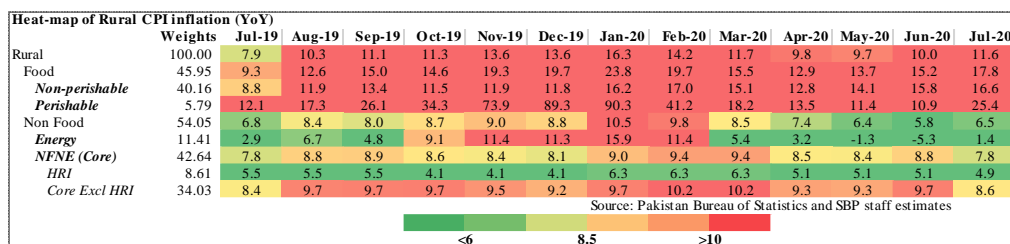
	Weights	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20
Rural	100.00	7.9	10.3	11.1	11.3	13.6	13.6	16.3	14.2	11.7	9.8	9.7	10.0	11.6
Food and non-alcoholic Beverages	40.87	8.9	12.6	15.3	15.1	20.3	20.8	25.5	20.6	15.8	12.8	13.7	15.5	18.7
Alcoholic Beverages, Tobacco	1.28	30.4	31.3	31.4	22.4	21.0	20.2	19.2	19.4	19.5	20.4	20.1	15.3	5.4
Clothing and footwear	9.48	7.5	8.7	8.9	9.7	9.8	9.9	10.2	10.8	12.3	11.0	11.4	12.2	11.5
Housing, water, Elec., Gas and other fuels	18.49	2.0	3.7	2.8	4.9	6.9	6.6	9.4	6.6	4.6	5.2	6.0	4.9	5.5
Furnishing and household equipment maintenance	4.10	9.1	10.2	10.5	10.9	10.2	9.6	9.7	9.9	10.6	10.1	10.2	10.4	10.1
Health	3.51	11.1	12.2	12.2	13.1	12.3	11.7	12.1	12.4	12.6	11.6	10.9	10.1	9.7
Transport	5.56	15.7	17.6	16.4	14.7	12.2	13.1	17.2	18.0	10.2	2.3	-9.0	-11.5	-3.8
Communication	1.99	2.0	2.1	2.0	2.0	1.9	1.7	1.7	1.6	1.6	0.8	0.7	0.6	0.3
Recreation and culture	1.38	7.7	8.0	8.0	8.9	7.4	7.5	7.3	7.3	6.5	5.4	5.5	5.5	5.2
Education	2.13	4.9	5.3	5.3	5.3	5.3	5.0	6.7	7.1	4.5	2.5	2.4	2.4	1.2
Restaurants and hotels	6.19	6.4	8.1	8.1	8.0	8.5	8.3	8.9	10.3	10.8	10.4	11.1	11.3	9.0
Misc. goods and services	5.02	10.7	14.1	13.9	13.2	12.9	11.6	12.5	13.4	13.6	13.2	13.5	13.2	13.8

Source: Pakistan Bureau of Statistics and SBP staff estimates

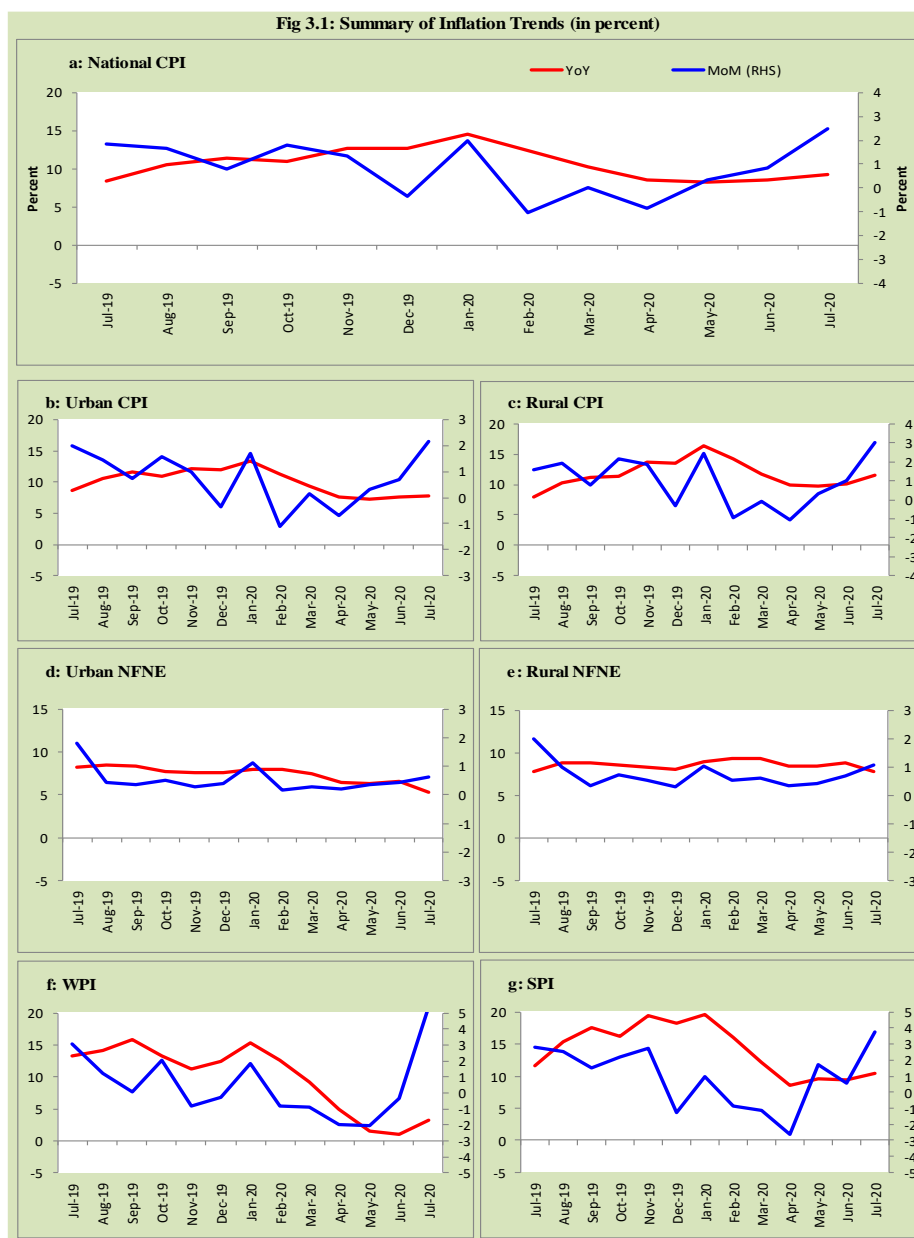
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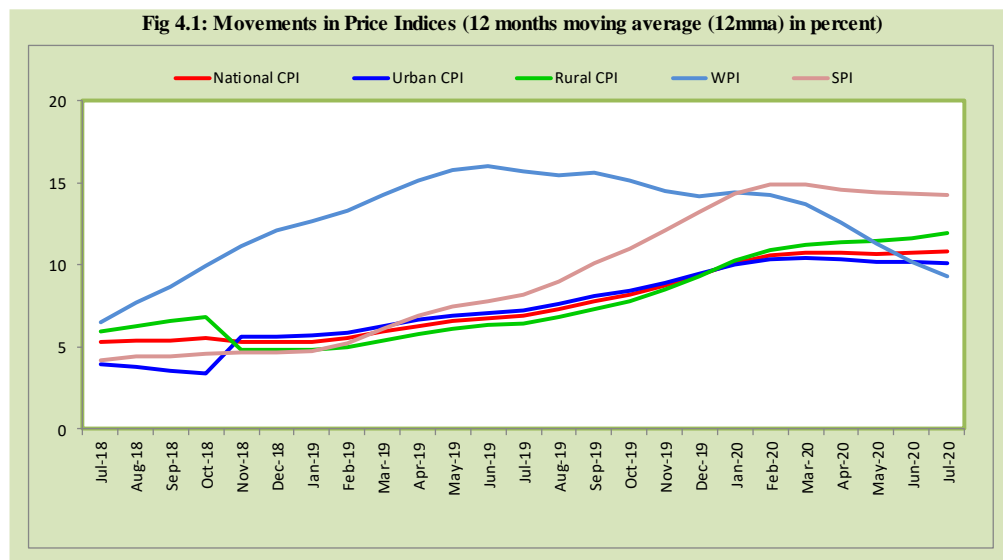
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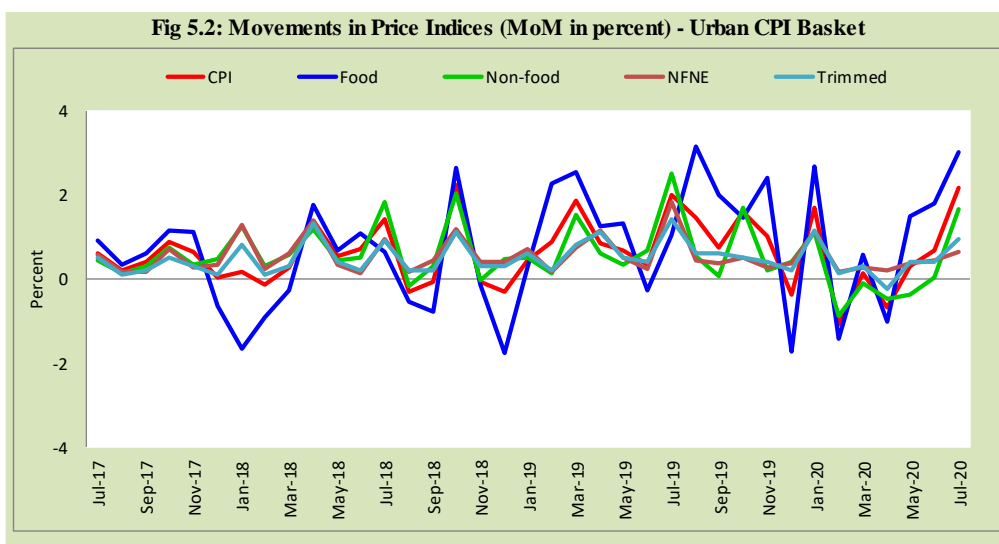
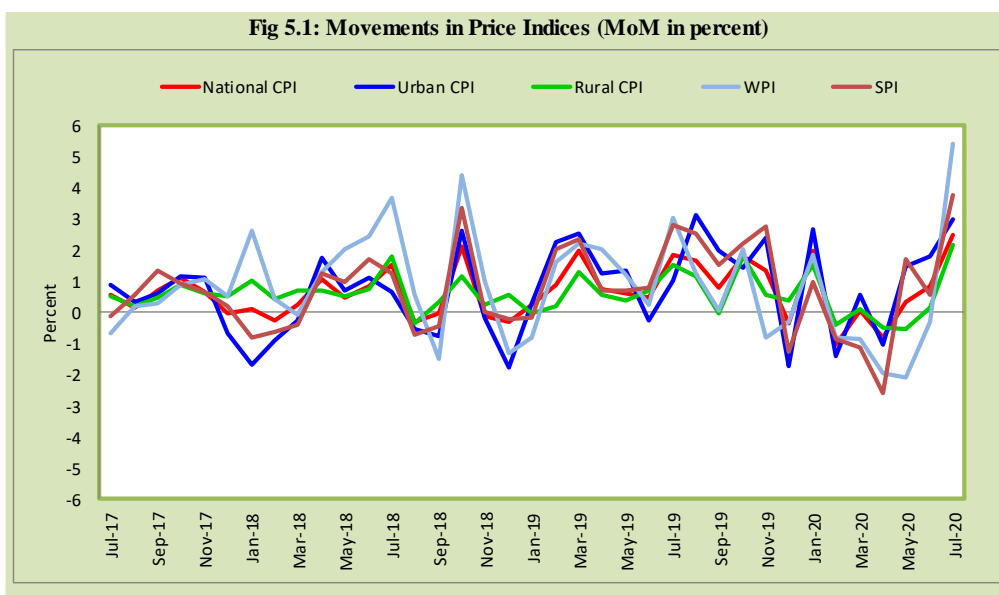
### 3. Trends in Inflation

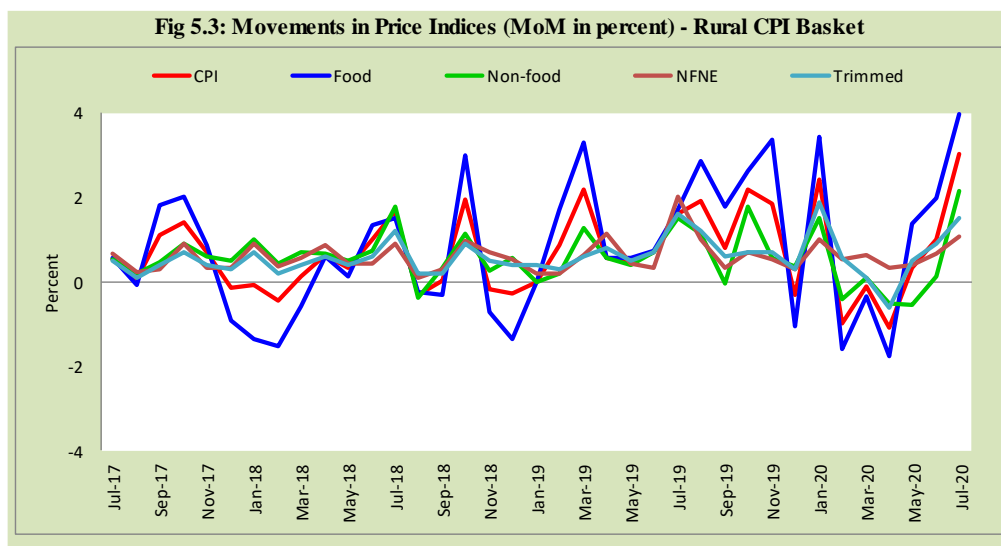


#### 4. Movement in Price Indices (Moving Averages)



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



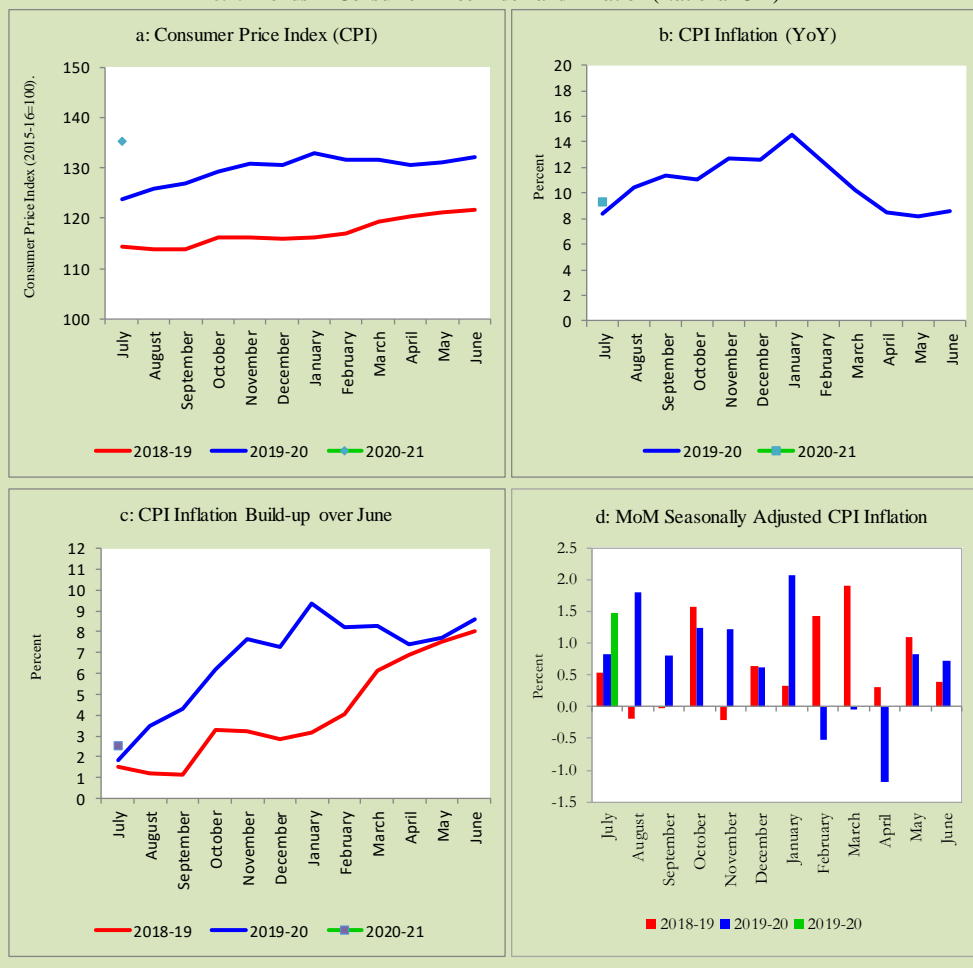


## 6. Trends in Consumer Price Indices and Inflation

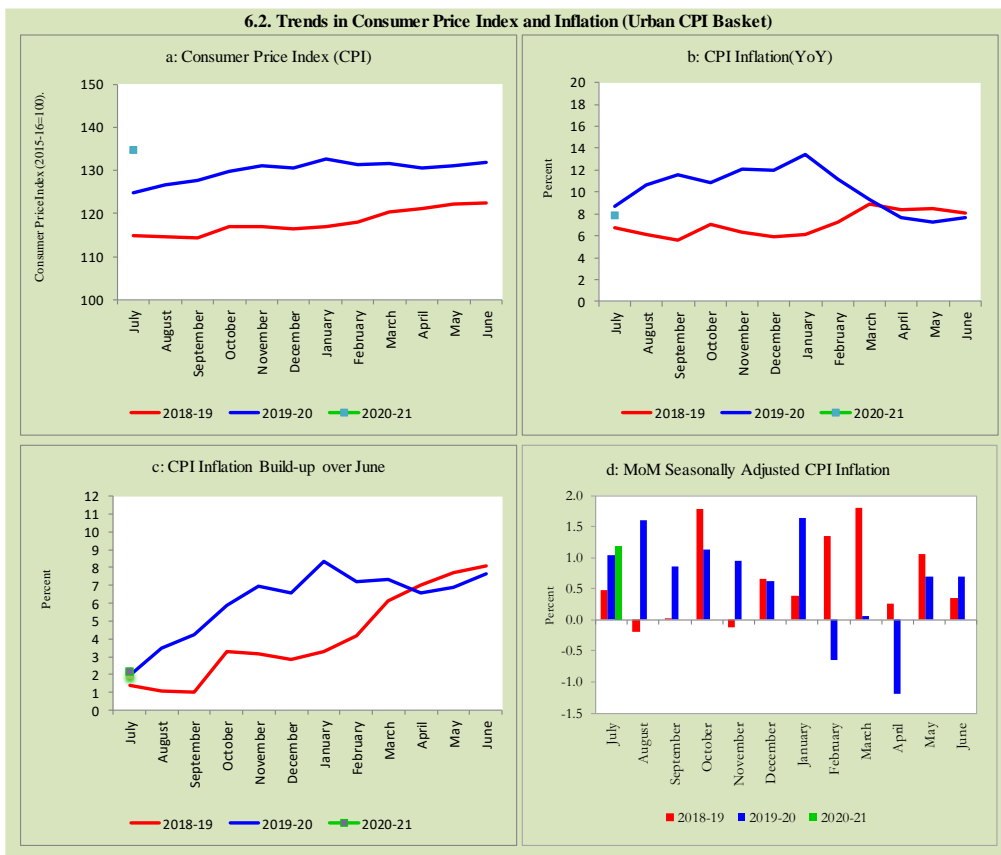
Monthly Consumer Price Indices, YoY growth rates and inflation build up over June along with seasonally adjusted (MoM) growth rates in CPI (National, Urban and Rural) is summarized in the following graphs (Figure 6.1 to 6.3).



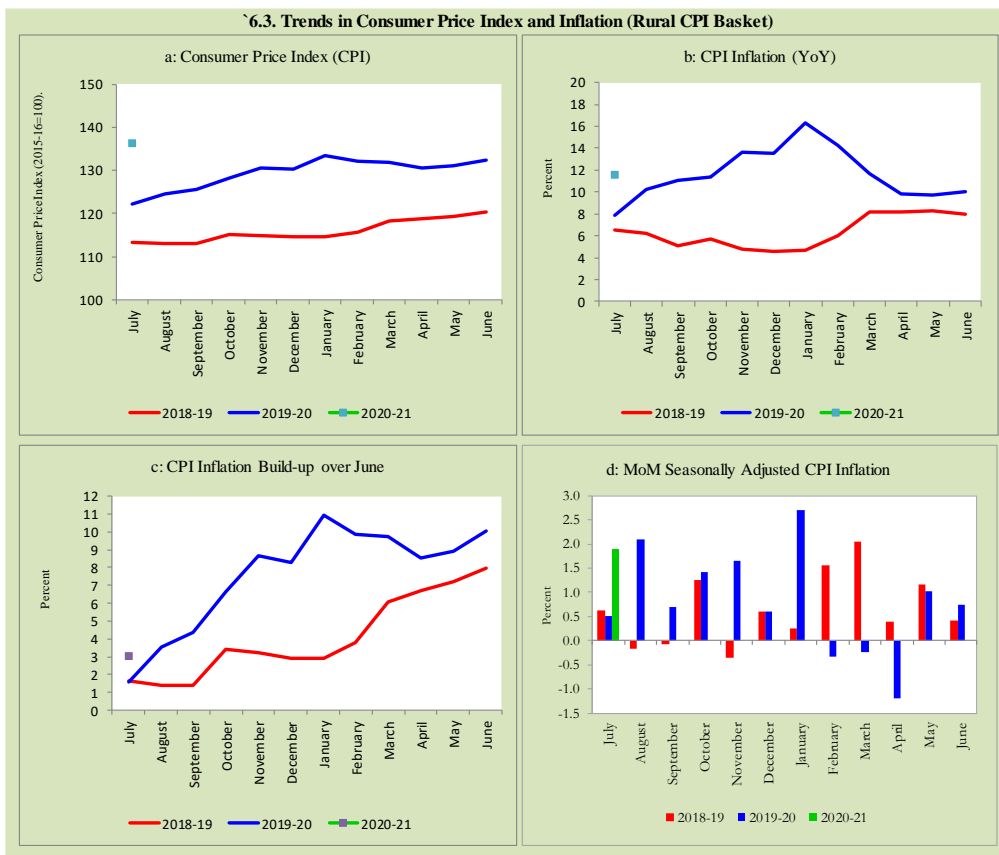
### 6.1. Trends in Consumer Price Index and Inflation (National CPI)



### 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 68.0 percent during July 2020 from 60.0 percent in previous month. It was 32.3 percent during corresponding month of last year. The weighted contribution of non-food group decreased to 32.1 percent in July 2020 from 40.0 percent in previous month. Non-food group was 67.7 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

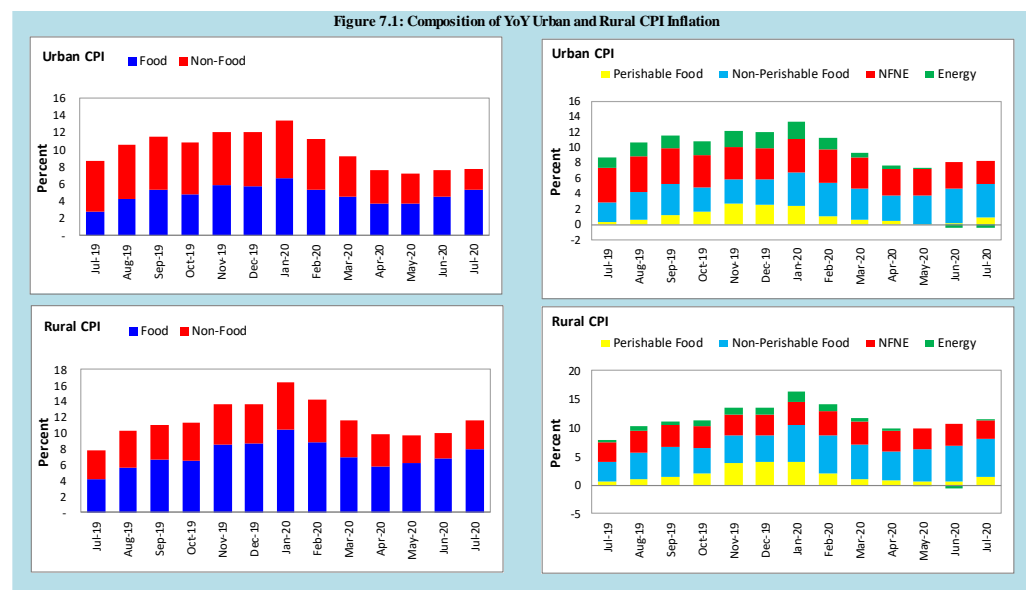
the overall inflation for urban basket. Figure 7.1 provides a graphical presentation of composition of YoY urban CPI inflation cascaded in food group and non-food groups and their respective sub-indexes.

Table 7.1 Weighted Contribution (in percent) to Urban CPI Inflation (YoY)									
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
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
Apr-20	100	48.3	5.8	42.5	51.7	5.9	45.8	35.0	10.8
May-20	100	52.2	1.0	51.1	47.8	0.7	47.1	35.8	11.4
Jun-20	100	60.0	2.6	57.4	40.0	-6.5	46.4	35.7	10.8
Jul-20	100	68.0	12.3	55.7	32.1	-4.7	36.7	26.0	10.7

Also, for rural basket, the weighted contribution of food group in the overall rural CPI inflation increased to 69.3 percent during July 2020 from 68.2 percent in previous month. It was 52.4 percent during corresponding month of last year. On the other hand, the weighted contribution of non-food group decreased to 30.7 percent in July 2020 from 31.8 percent in previous month. Non-food group was 47.6 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	i
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
Apr-20	100	58.8	8.2	50.6	41.2	3.8	37.5	32.8	4.7
May-20	100	63.8	7.0	56.9	36.2	-1.6	37.8	33.0	4.7
Jun-20	100	68.2	6.3	61.9	31.8	-6.2	38.0	33.4	4.5
Jul-20	100	69.3	12.9	56.4	30.7	1.4	29.3	25.5	3.8

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.

**Table 8.1(a) Inflation Diffusion Index for Urban CPI Basket - based on MoM change**

	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20
General	61.5	65.2	52.8	61.8	55.3	43.5	56.2	52.5	45.8	19.9	30.1	41.0	55.3
Food & Non-Alcoholic Beverages	50.0	65.6	50.0	67.8	45.6	35.6	66.7	35.6	31.1	26.7	4.4	34.4	42.2
Alcoholic Beverages & Tobacco	100.0	66.7	100.0	100.0	100.0	66.7	100.0	66.7	66.7	100.0	66.7	66.7	66.7
Clothing & Footwear	70.0	80.0	57.5	72.5	80.0	72.5	75.0	75.0	67.5	10.0	67.5	57.5	67.5
Housing, Water, Elect, Gas & other Fuels	44.8	37.9	10.3	55.2	24.1	20.7	3.4	6.9	27.6	24.1	17.2	10.3	27.6
Furnishing & Household Equip. Maintenance etc.	76.2	88.1	97.6	88.1	95.2	76.2	71.4	92.9	64.3	19.0	61.9	90.5	81.0
Health	0.0	100.0	0.0	100.0	50.0	25.0	75.0	75.0	100.0	-25.0	0.0	25.0	100.0
Transport	0.0	100.0	0.0	100.0	50.0	25.0	75.0	75.0	100.0	-25.0	0.0	25.0	100.0
Communication	40.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	-20.0	20.0
Recreation & Culture	56.0	60.0	32.0	24.0	32.0	20.0	20.0	28.0	20.0	12.0	20.0	24.0	60.0
Education	56.3	56.3	62.5	6.3	25.0	12.5	6.3	0.0	31.3	0.0	0.0	0.0	0.0
Restaurant & Hotels	78.6	85.7	78.6	78.6	71.4	28.6	71.4	85.7	64.3	14.3	57.1	71.4	64.3
Miscellaneous	69.0	79.3	96.6	79.3	65.5	34.5	82.8	75.9	69.0	37.9	41.4	72.4	86.2
NFNE	68.1	68.1	59.1	58.3	63.0	48.1	55.3	62.6	53.2	19.6	40.4	43.8	60.9

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

	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20
General	73.0	60.7	34.4	64.3	50.8	36.9	56.6	48.0	41.8	23.4	32.4	28.7	60.7
Food & Non-Alcoholic Beverages	65.8	55.7	22.8	69.6	46.8	25.3	67.1	32.9	16.5	25.3	8.9	17.7	48.1
Alcoholic Beverages & Tobacco	100.0	100.0	80.0	100.0	80.0	0.0	60.0	100.0	60.0	60.0	20.0	60.0	100.0
Clothing & Footwear	85.2	81.5	66.7	77.8	59.3	48.1	77.8	85.2	70.4	0.0	85.2	48.1	85.2
Housing, Water, Elect, Gas & other Fuels	39.1	52.2	-4.3	82.6	34.8	39.1	8.7	0.0	39.1	34.8	17.4	0.0	52.2
Furnishing & Household Equip. Maintenance etc.	84.6	88.5	73.1	84.6	80.8	57.7	69.2	73.1	80.8	23.1	53.8	65.4	88.5
Health	78.6	57.1	35.7	50.0	78.6	57.1	42.9	42.9	71.4	42.9	50.0	35.7	57.1
Transport	75.0	50.0	12.5	37.5	43.8	25.0	43.8	43.8	12.5	-6.3	0.0	18.8	43.8
Communication	40.0	20.0	0.0	-20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Recreation & Culture	72.2	11.1	22.2	27.8	11.1	27.8	22.2	33.3	27.8	22.2	11.1	5.6	44.4
Education	80.0	20.0	0.0	0.0	0.0	20.0	0.0	80.0	40.0	0.0	0.0	0.0	0.0
Restaurant & Hotels	85.7	57.1	21.4	42.9	42.9	35.7	78.6	71.4	78.6	28.6	64.3	57.1	64.3
Miscellaneous	100.0	88.2	70.6	70.6	64.7	58.8	70.6	82.4	52.9	41.2	70.6	35.3	88.2
NFNE	81.6	63.2	49.3	58.1	55.1	44.9	52.2	58.1	55.9	24.3	50.0	36.0	66.2

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.

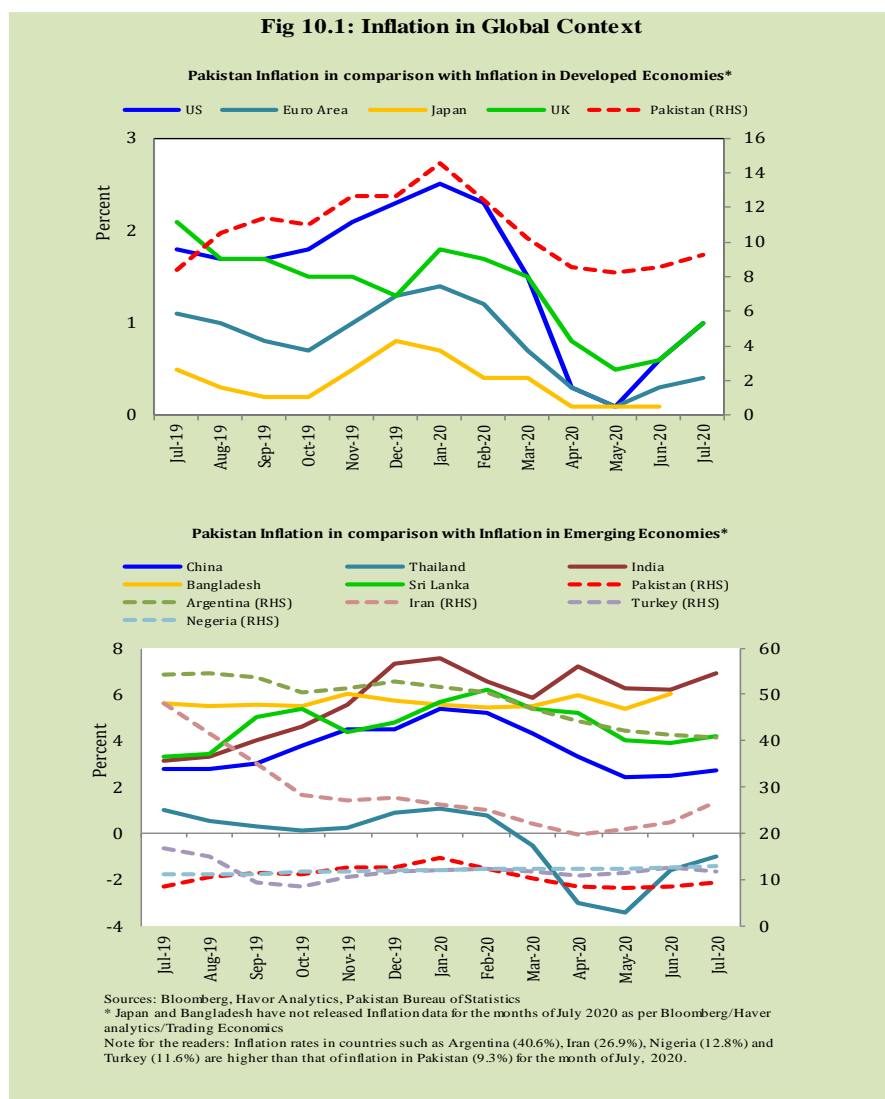
Table 9.1 Inflation in Domestic Urban and Rural CPI Food Commodities (in percent) - July 2020						
S. No	Item	Unit	Urban CPI		Rural CPI	
			YoY	MoM	YoY	MoM
1	Wheat	10 Kg	28.5	7.4	30.4	10.8
2	Wheat Flour Bag	20 Kg	16.1	-3.4	21.0	1.0
3	Rice Basmati Broken (Superior/Average Quality)*	1 Kg	6.2	0.5	10.0	1.6
4	Beef with Bone (Average Quality)	1 Kg	14.5	4.4	10.0	2.3
5	Mutton (Average Quality)	1 Kg	10.9	3.4	9.5	0.6
6	Chicken Farm Broiler (Live)	1 Kg	36.7	2.6	35.7	2.6
7	Milk Fresh (Un-Boiled)	1 Litre	9.9	1.4	7.7	1.2
8	Eggs Farm	Dozen	43.1	10.8	41.1	13.8
9	Vegetable Ghee Dalda/Habib Or Other Superior Quality 1 Kg Pouch	Each	21.6	0.0	23.3	0.5
10	Pulse Masoor (Washed)	1 Kg	23.8	-6.3	30.8	-4.1
11	Pulse Moong (Washed)	1 Kg	46.3	-10.7	51.7	-13.4
12	Pulse Mash (Washed)	1 Kg	35.8	-2.7	37.1	-4.0
13	Pulse Gram	1 Kg	9.8	-2.4	11.1	-5.0
14	Potatoes	1 Kg	64.8	4.7	89.2	5.4
15	Onions	1 Kg	-19.6	16.6	-20.9	25.6
16	Tomatoes	1 Kg	100.2	179.2	129.3	241.4
17	Sugar Refined	1 Kg	17.0	3.8	-0.7	-6.7
18	Garlic (Lehsun)	1 Kg	-0.7	-4.3	16.5	3.7
19	Ginger (Adrak)	500 Gm	39.7	16.1	48.0	7.6
20	Tea Lipton Yellow Label 190 Gm Packet	Each	9.6	0.0	9.6	0.0

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



## 10. Inflation in Global Context

In global context, Pakistan's inflation in comparison with inflation in selected developed and emerging economies is given in figure 10.1.

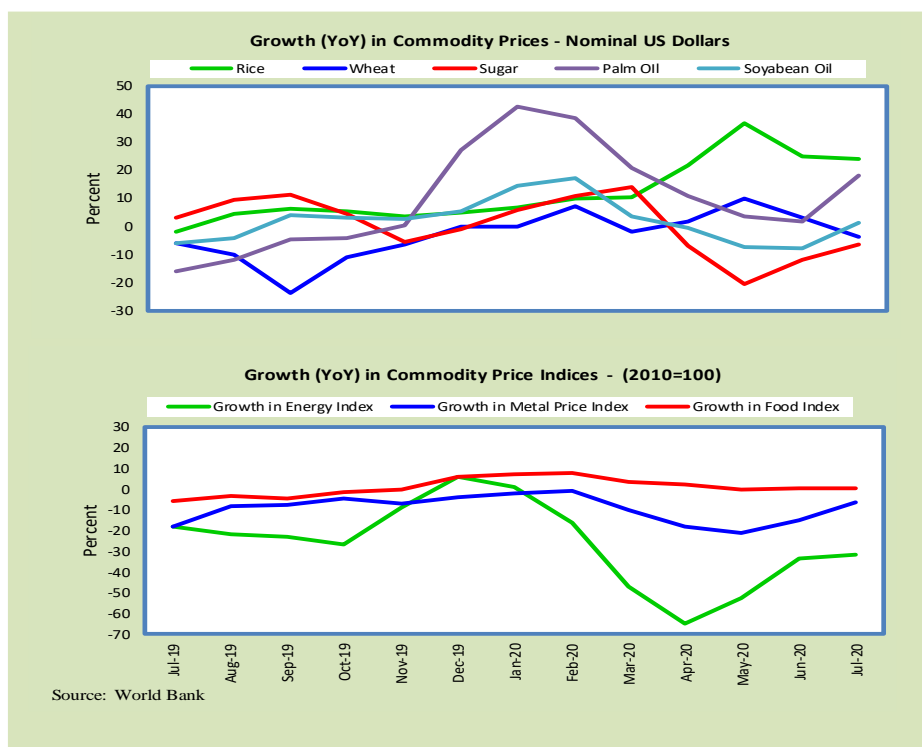


## 11. Global Commodity Prices

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	July-19		June-20		July-20	
	YoY	MoM	YoY	MoM	YoY	MoM
Food	-3.5	-1.4	0.2	3.3	1.8	0.2
Metals	-8.3	1.6	-6.4	7.9	-0.7	7.9
Energy	-18.4	2.5	-33.8	24.6	-31.5	6.1
Agricultural	-3.5	-1.4	-1.2	2.4	0.8	0.6
Cotton	-21.5	-2.7	-12.7	3.2	-9.3	1.1



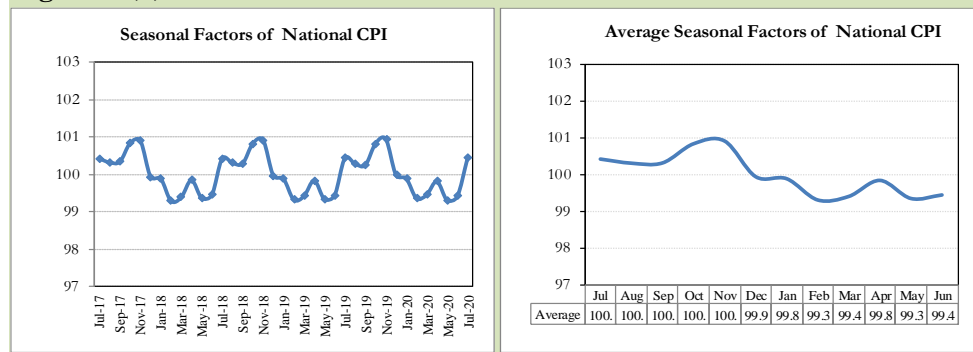
## **12. Seasonal Adjustment in CPI**

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.

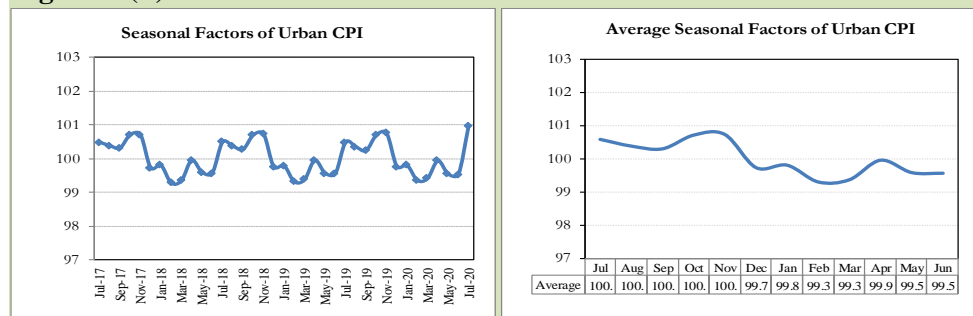
The changes in consumer prices are normally reported in terms of year-on-year and month-on-month basis. Seasonal adjustment is particularly useful for analyzing month-on-month changes. The monthly data series of Consumer Price Indices (National CPI, Urban CPI and Rural CPI) from July 2008 to July 2020 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 June not necessarily show the same seasonal pattern.

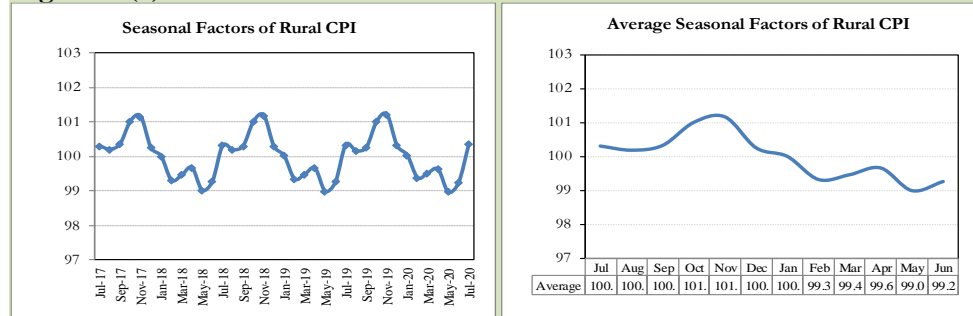
**Fig. 12.1 (a) Seasonal Factors of National CPI**



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

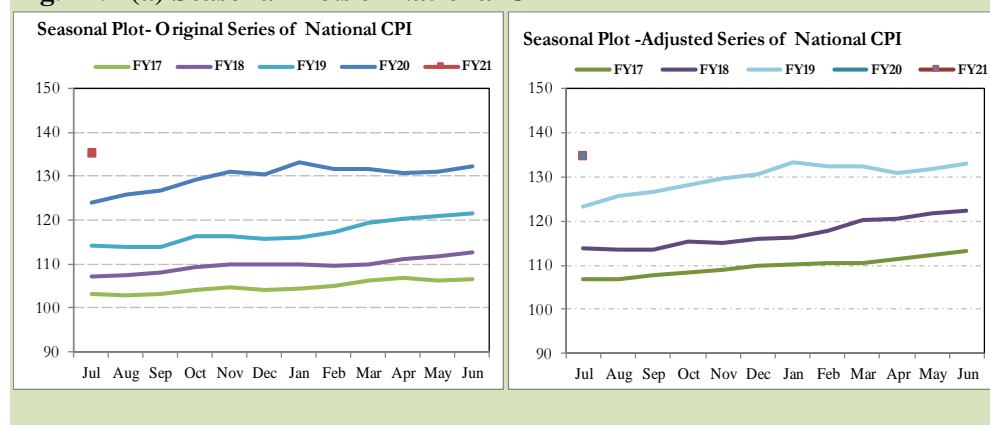


**Fig. 12.1 (c) Seasonal Factors of Rural CPI**

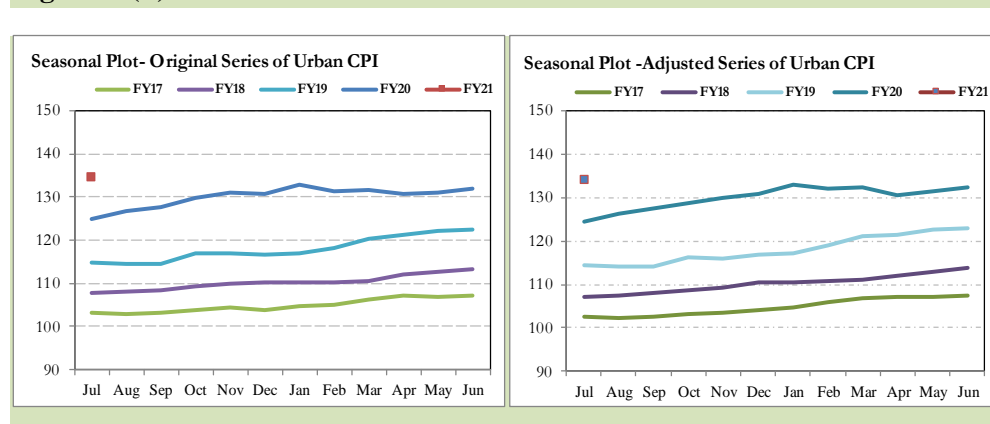


Figures 12.2 show that seasonally adjusted series are relatively smoother than the original series due to the removal of the seasonal variations. The trend follows the long-term movement in original series, and is smoother than the original series because some irregular fluctuations have been removed.

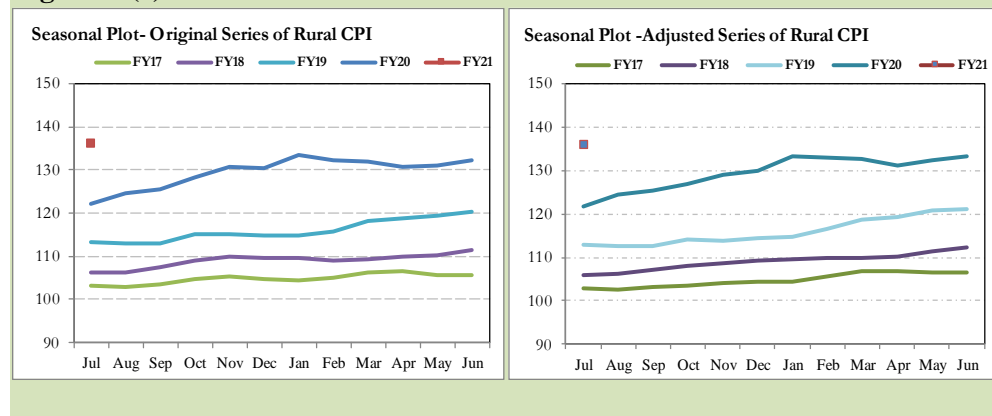
**Fig. 12.2 (a) Seasonal Plots of National CPI**



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



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



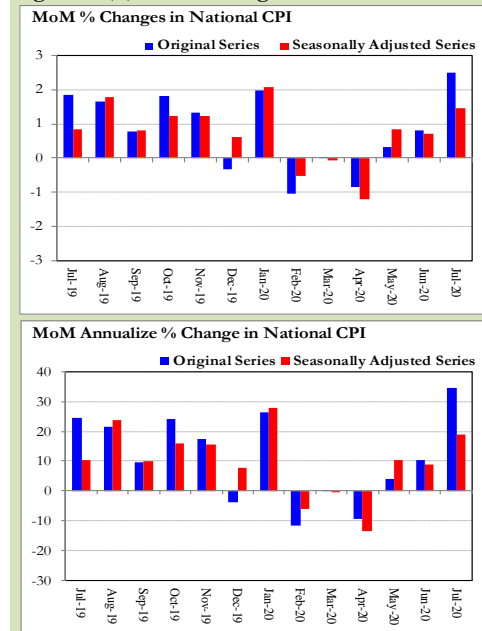
Seasonally adjusted National CPI for July 2020 stood at 134.79 against 135.38 in original series showing a decrease of 0.59 on account of adjustment of upward seasonality in July 2020.

Seasonally adjusted Urban CPI for July 2020 stood at 134.07 against 134.73 in original series showing a decrease of 0.66 on account of adjustment of upward seasonality in July 2020.

Seasonally adjusted Rural CPI for July 2020 stood at 135.89 against 136.36 in original series showing a decrease of 0.47 on account of adjustment of upward seasonality in July 2020.

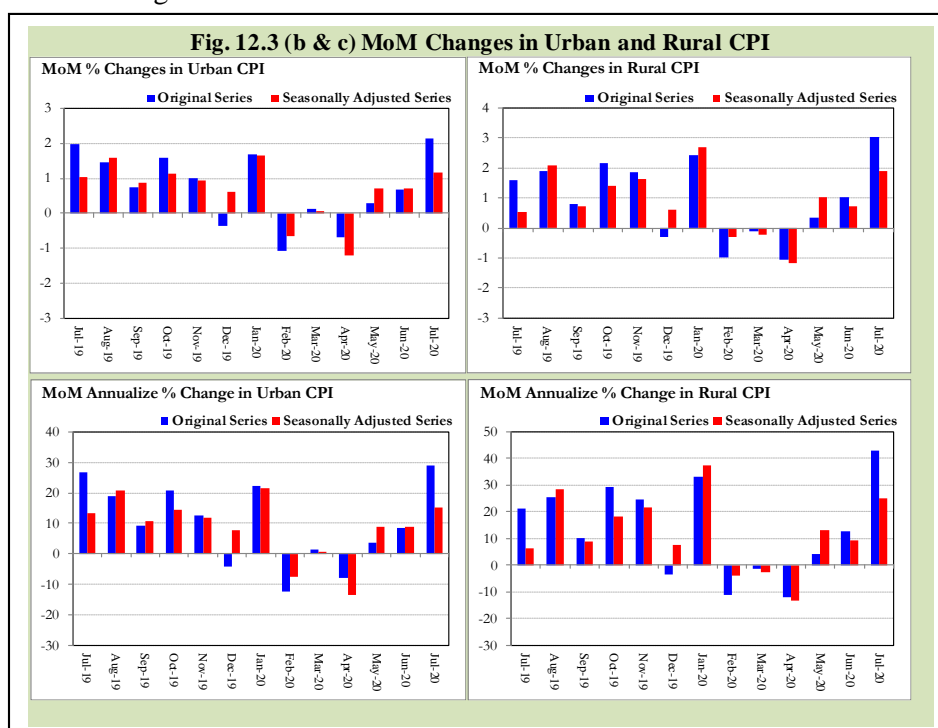
Month-on-month change of seasonally adjusted National CPI series stood at 1.46% reflecting an increase during July 2020 over previous month and an increase of 2.50% in original series.

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



Month-on-month change of seasonally adjusted Urban CPI series stood at 1.18% reflecting an increase during July 2020 over previous month and an increase of 2.15% in original series.

Month-on-month change of seasonally adjusted Rural CPI series stood at 1.88% reflecting an increase during July 2020 over previous month and an increase of 3.02% 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 July 2020 (corresponding to the seasonally adjusted month-on-month rate) is 19.01 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>Jul-19</b>	<b>Jun-20</b>	<b>Jul-20</b>	<b>Jul-19</b>	<b>Jun-20</b>	<b>Jul-20</b>
Food & Non-Alcoholic Beverages	34.6	1.0	2.1	3.9	8.3	14.6	17.8
Alcoholic Beverages & Tobacco	1.0	10.7	0.2	1.7	29.3	14.2	5.0
Clothing & Footwear	8.6	1.4	0.8	0.8	7.5	11.0	10.3
Housing, Water, Elec, Gas & other Fuels	23.6	2.6	-0.2	1.3	6.1	5.4	4.2
Furnishing & Household Equip. Maintenance	4.1	1.8	0.5	0.9	11.0	8.8	7.8
Health	2.8	2.4	0.2	1.0	11.6	9.3	7.8
Transport	5.9	3.0	-1.1	9.6	16.8	-10.2	-4.5
Communication	2.2	1.2	0.0	0.0	4.4	1.6	0.3
Recreation & Culture	1.6	1.8	0.1	0.9	7.1	4.8	3.8
Education	3.8	0.9	0.0	0.0	6.8	2.0	1.1
Restaurants & Hotels	6.9	1.9	0.5	0.6	5.8	9.0	7.5
Miscellaneous	4.9	1.9	0.8	2.0	10.8	11.6	11.7
<b>Overall National CPI</b>	<b>100.0</b>	<b>1.8</b>	<b>0.8</b>	<b>2.5</b>	<b>8.4</b>	<b>8.6</b>	<b>9.3</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>Jul-19</b>	<b>Jun-20</b>	<b>Jul-20</b>	<b>Jul-19</b>	<b>Jun-20</b>	<b>Jul-20</b>
<b>I. Food Group</b>	<b>36.8</b>	<b>1.0</b>	<b>1.8</b>	<b>3.0</b>	<b>7.9</b>	<b>12.9</b>	<b>15.1</b>
Food & Non-Alcoholic Beverages	30.4	0.7	2.0	3.5	7.7	13.8	16.9
Alcoholic Beverages & Tobacco	0.9	10.7	0.0	2.2	28.4	13.3	4.7
Restaurant & Hotels (Food Component)	5.5	1.3	0.7	0.4	6.1	8.0	7.0
<b>II. Non-Food Group</b>	<b>63.2</b>	<b>2.5</b>	<b>0.0</b>	<b>1.7</b>	<b>9.2</b>	<b>4.7</b>	<b>3.9</b>
Clothing & Footwear	8.0	1.0	0.6	0.4	7.5	10.1	9.4
Housing, Water, Elec, Gas & other Fuels	27.0	3.3	-0.1	1.3	7.9	5.6	3.6
Furnishing & Household Equip. Maintenance	4.1	1.8	0.4	0.5	12.3	7.7	6.3
Health	2.3	3.3	0.3	0.9	12.1	8.4	5.9
Transport	6.1	4.0	-1.2	9.3	17.5	-9.5	-4.8
Communication	2.4	1.7	0.0	0.0	5.7	2.1	0.4
Recreation & Culture	1.7	1.8	0.1	0.5	6.8	4.4	3.1
Education	4.9	0.8	0.0	0.0	7.3	1.9	1.1
Restaurants & Hotels (Non-food Component)	1.9	0.8	0.0	0.0	3.5	6.8	6.0
Miscellaneous	4.8	1.8	0.8	1.6	10.8	10.6	10.4
<b>Overall Urban CPI</b>	<b>100.0</b>	<b>2.0</b>	<b>0.7</b>	<b>2.2</b>	<b>8.7</b>	<b>7.6</b>	<b>7.8</b>



Table A3: Rural CPI Inflation by Groups (YoY and MoM in percent)							
	Weights	MoM change			YoY change		
		Jul-19	Jun-20	Jul-20	Jul-19	Jun-20	Jul-20
<b>I. Food Group</b>	<b>45.9</b>	<b>1.7</b>	<b>2.0</b>	<b>4.0</b>	<b>9.3</b>	<b>15.2</b>	<b>17.8</b>
Food & Non-Alcoholic Beverages	40.9	1.4	2.2	4.3	8.9	15.5	18.7
Alcoholic Beverages & Tobacco	1.3	10.7	0.3	1.1	30.4	15.3	5.4
Restaurant & Hotels (Food Component)	3.8	2.0	0.8	1.7	7.0	12.4	12.0
<b>II. Non-Food Group</b>	<b>54.1</b>	<b>1.5</b>	<b>0.1</b>	<b>2.2</b>	<b>6.8</b>	<b>5.8</b>	<b>6.5</b>
Clothing & Footwear	9.5	1.9	1.0	1.2	7.5	12.2	11.5
Housing, Water, Elec, Gas & other Fuels	18.5	0.9	-0.3	1.5	2.0	4.9	5.5
Furnishing & Household Equip. Maintenance etc.	4.1	1.7	0.5	1.4	9.1	10.4	10.1
Health	3.5	1.5	0.2	1.1	11.1	10.1	9.7
Transport	5.6	1.3	-0.8	10.0	15.7	-11.5	-3.8
Communication	2.0	0.3	0.0	0.0	2.0	0.6	0.3
Recreation & Culture	1.4	1.8	0.0	1.6	7.7	5.5	5.2
Education	2.1	1.2	0.0	0.0	4.9	2.4	1.2
Restaurants & Hotels (Non-food Component)	2.4	5.4	0.0	0.0	5.4	9.4	3.8
Miscellaneous	5.0	2.0	0.9	2.5	10.7	13.2	13.8
<b>Overall Rural CPI</b>		<b>1.6</b>	<b>1.0</b>	<b>3.0</b>	<b>7.9</b>	<b>10.0</b>	<b>11.6</b>

Table A4: Top Ten Contributors to Urban CPI Inflation (YoY) in July 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Jul-19	Jul-20	
A. Ranked by Weighted Contribution					
1	House Rent	19.26	6.46	4.29	10.69
2	Milk Fresh	7.11	4.10	10.11	8.36
3	Condiments And Spices	1.33	18.90	39.48	7.29
4	Wheat Flour	3.01	8.44	18.52	6.17
5	Chicken	1.36	-4.14	36.69	5.29
6	Readymade Food	5.52	6.13	6.99	4.82
7	Potatoes	0.45	15.79	62.98	4.29
8	Meat	2.04	11.71	13.00	3.69
9	Tomatoes	0.35	-15.01	100.16	3.50
10	Fresh Vegetables	1.53	-10.46	17.83	3.40
Total		41.96			57.50
B. Ranked by Percentage Change					
1	Tomatoes	0.35	-15.01	100.16	3.50
2	Potatoes	0.45	15.79	62.98	4.29
3	Pulse Moong	0.17	45.45	46.25	0.84
4	Eggs	0.51	-12.51	43.11	2.30
5	Condiments And Spices	1.33	18.90	39.48	7.29
6	Chicken	1.36	-4.14	36.69	5.29
7	Pulse Mash	0.12	22.50	35.86	0.32
8	Beans	0.04	9.47	34.30	0.16
9	Wheat	0.61	9.67	28.52	1.93
10	Butter	0.09	24.96	25.70	0.33
Total		5.03			26.26
C. Ranked by Weights					
1	House Rent	19.26	6.46	4.29	10.69
2	Milk Fresh	7.11	4.10	10.11	8.36
3	Readymade Food	5.52	6.13	6.99	4.82
4	Education	4.88	7.27	1.05	0.75
5	Electricity Charges	4.56	-7.26	-0.19	-0.10
6	Wheat Flour	3.01	8.44	18.52	6.17
7	Appliances/Articles/Products For P	2.98	9.98	7.04	2.58
8	Motor Fuel	2.91	18.96	-9.79	-4.56
9	Cotton Cloth	2.22	11.94	10.93	3.07
10	Meat	2.04	11.71	13.00	3.69
Total		54.48			35.47
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 7.8 percent in July 2020.					

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

Case 100 - Top Ten Contributors to Urban Pollution (2019) as of July 2020					
Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Jun-20	Jul-20	
A. Ranked by Weighted Contribution					
1	Motor Fuel	2.91	-7.29	27.01	30.76
2	Tomatoes	0.35	13.09	179.19	15.48
3	Fresh Vegetables	1.53	4.05	23.84	14.89
4	House Rent	19.26	0.00	1.58	13.97
5	Condiments And Spices	1.33	5.44	7.57	6.24
6	Milk Fresh	7.11	1.53	1.37	4.25
7	Meat	2.04	0.63	3.97	4.21
8	Onions	0.59	-17.07	16.61	2.91
9	Personal Effects N.E.C.	0.94	2.08	4.85	2.90
10	Eggs	0.51	21.71	10.82	2.57
		36.57			98.17
B. Ranked by Percentage Change					
1	Tomatoes	0.35	13.09	179.19	15.48
2	Motor Fuel	2.91	-7.29	27.01	30.76
3	Fresh Vegetables	1.53	4.05	23.84	14.89
4	Onions	0.59	-17.07	16.61	2.91
5	Eggs	0.51	21.71	10.82	2.57
6	Condiments And Spices	1.33	5.44	7.57	6.24
7	Wheat	0.61	10.83	7.42	2.07
8	Liquefied Hydrocarbons	0.51	-5.46	7.27	1.57
9	Ice Cream	0.10	0.24	5.42	0.25
10	Garbage Collection	0.11	1.52	4.98	0.30
		8.55			77.03
C. Ranked by Weights					
1	House Rent	19.26	0.00	1.58	13.97
2	Milk Fresh	7.11	1.53	1.37	4.25
3	Readymade Food	5.52	0.74	0.42	1.07
4	Education	4.88	0.00	0.00	0.00
5	Electricity Charges	4.56	0.00	0.00	0.00
6	Wheat Flour	3.01	11.92	-1.51	-2.09
7	Appliances/Articles/Products For P	2.98	0.26	0.49	0.66
8	Motor Fuel	2.91	-7.29	27.01	30.76
9	Cotton Cloth	2.22	1.76	0.45	0.49
10	Meat	2.04	0.63	3.97	4.21
		54.48			53.32

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 2.2 percent in July 2020.

Table A6: Top and Bottom Fifteen Contributors to Urban CPI Inflation (YoY) in July 2020					
Top 15 Contributors		YoY Change		Weighted Contribution (%)	
Items/ Contributors	Weights	Jul-19	Jul-20		
Ranked by Weighted Contribution					
1	House Rent	19.26	6.46	4.29	10.69
2	Milk Fresh	7.11	4.10	10.11	8.36
3	Condiments And Spices	1.33	18.90	39.48	7.29
4	Wheat Flour	3.01	8.44	18.52	6.17
5	Chicken	1.36	-4.14	36.69	5.29
6	Readymade Food	5.52	6.13	6.99	4.82
7	Potatoes	0.45	15.79	62.98	4.29
8	Meat	2.04	11.71	13.00	3.69
9	Tomatoes	0.35	-15.01	100.16	3.50
10	Fresh Vegetables	1.53	-10.46	17.83	3.40
11	Personal Effects N.E.C.	0.94	16.81	22.05	3.29
12	Cotton Cloth	2.22	11.94	10.93	3.07
13	Vegetable Ghee	1.03	13.12	22.29	2.86
14	Appliances/Articles/Products For P	2.98	9.98	7.04	2.58
15	Cooking Oil	1.10	14.72	17.28	2.37
Total		50.24			71.67
Bottom 15 Contributors					
1	Motor Fuel	2.91	18.96	-9.79	-4.56
2	Onions	0.59	56.44	-19.59	-1.44
3	Transport Services	1.75	13.50	-3.96	-0.88
4	Fish	0.39	12.62	-6.22	-0.30
5	Liquefied Hydrocarbons	0.51	5.67	-3.65	-0.26
6	Electricity Charges	4.56	-7.26	-0.19	-0.10
7	Postal Services	0.02	0.73	0.00	0.00
8	Newspapers	0.07	26.29	0.00	0.00
9	Motor Vehicle Tax	0.05	19.81	0.00	0.00
10	Communication Services	1.88	4.14	0.00	0.00
11	Gas Charges	1.08	114.64	0.00	0.00
12	Therapeutic Appliances And	0.01	0.19	5.60	0.00
13	Accommodation Services	0.13	1.12	0.35	0.01
14	Dental Services	0.02	-1.62	3.59	0.01
15	Major Tools & Equipments	0.01	4.79	6.77	0.01
Total		13.96			-7.51

Table A7: Top and Bottom Fifteen Contributors to Urban CPI Inflation (MoM) in July 2020					
Top 15 Contributors			MoM Change		Weighted Contribution (%)
Items/ Contributors	Weights		Jun-20	Jul-20	
Ranked by Weighted Contribution					
1	Motor Fuel	2.91	-7.29	27.01	30.76
2	Tomatoes	0.35	13.09	179.19	15.48
3	Fresh Vegetables	1.53	4.05	23.84	14.89
4	House Rent	19.26	0.00	1.58	13.97
5	Condiments And Spices	1.33	5.44	7.57	6.24
6	Milk Fresh	7.11	1.53	1.37	4.25
7	Meat	2.04	0.63	3.97	4.21
8	Onions	0.59	-17.07	16.61	2.91
9	Personal Effects N.E.C.	0.94	2.08	4.85	2.90
10	Eggs	0.51	21.71	10.82	2.57
11	Wheat	0.61	10.83	7.42	2.07
12	Sugar	1.11	-0.53	3.82	1.95
13	Chicken	1.36	1.54	2.60	1.72
14	Potatoes	0.45	2.00	4.58	1.67
15	Liquefied Hydrocarbons	0.51	-5.46	7.27	1.57
Total		40.61			107.16
Bottom 15 Contributors					
1	Transport Services	1.75	7.28	-7.55	-6.03
2	Fresh Fruits	1.44	-4.36	-6.24	-5.10
3	Wheat Flour	3.01	11.92	-1.51	-2.09
4	Pulse Moong	0.17	-2.63	-10.72	-1.10
5	Cooking Oil	1.10	0.03	-1.34	-0.75
6	Pulse Masoor	0.16	-3.57	-6.27	-0.40
7	Vegetable Ghee	1.03	0.01	-0.61	-0.33
8	Pulse Gram	0.17	-5.84	-2.39	-0.17
9	Besan	0.08	-4.18	-3.72	-0.13
10	Pulse Mash	0.12	-2.98	-2.71	-0.12
11	Gram Whole	0.09	-1.06	-2.70	-0.11
12	Fish	0.39	0.11	-0.58	-0.09
13	Woolen Readymade Garments	0.43	0.00	0.00	0.00
14	Tea	0.84	0.00	0.00	0.00
15	Postal Services	0.02	0.00	0.00	0.00
Total		10.79			-16.41

Table A8: Top and Bottom Fifteen Contributors to MoM Urban CPI Food Inflation in July 2020					
Top 15 Contributors					
Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Jun-20	Jul-20	
Ranked by Weighted Contribution					
1	Tomatoes	0.35	13.09	179.19	15.48
2	Fresh Vegetables	1.53	4.05	23.84	14.89
3	Condiments And Spices	1.33	5.44	7.57	6.24
4	Milk Fresh	7.11	1.53	1.37	4.25
5	Meat	2.04	0.63	3.97	4.21
6	Onions	0.59	-17.07	16.61	2.91
7	Eggs	0.51	21.71	10.82	2.57
8	Wheat	0.61	10.83	7.42	2.07
9	Sugar	1.11	-0.53	3.82	1.95
10	Chicken	1.36	1.54	2.60	1.72
11	Potatoes	0.45	2.00	4.58	1.67
12	Readymade Food	5.52	0.74	0.42	1.07
13	Cigarettes	0.72	0.07	2.88	0.98
14	Rice	1.18	0.89	0.91	0.51
15	Milk Products	0.64	0.74	1.74	0.49
Total		25.06			61.01
Bottom 15 Contributors					
1	Fresh Fruits	1.44	-4.36	-6.24	-5.10
2	Wheat Flour	3.01	11.92	-1.51	-2.09
3	Pulse Moong	0.17	-2.63	-10.72	-1.10
4	Cooking Oil	1.10	0.03	-1.34	-0.75
5	Pulse Masoor	0.16	-3.57	-6.27	-0.40
6	Vegetable Ghee	1.03	0.01	-0.61	-0.33
7	Pulse Gram	0.17	-5.84	-2.39	-0.17
8	Besan	0.08	-4.18	-3.72	-0.13
9	Pulse Mash	0.12	-2.98	-2.71	-0.12
10	Gram Whole	0.09	-1.06	-2.70	-0.11
11	Fish	0.39	0.11	-0.58	-0.09
12	Tea	0.84	0.00	0.00	0.00
13	Marriage Hall Charges	1.75	0.00	0.00	0.00
14	Pan Prepared	0.14	0.00	0.00	0.00
15	Dessert Preparation	0.04	0.85	0.18	0.00
Total		10.52			-10.38

Table A9: Top and Bottom Fifteen Contributors to MoM Urban CPI Non-food Inflation in July 2020					
Top 15 Contributors		MoM Change			
Items/ Contributors		Weights	Jun-20	Jul-20	Weighted Contribution (%)
Ranked by Weighted Contribution					
1	Motor Fuel	2.91	-7.29	27.01	30.76
2	House Rent	19.26	0.00	1.58	13.97
3	Electrical Appliances For Personal	0.94	2.08	4.85	2.90
4	Liquefied Hydrocarbons	0.51	-5.46	7.27	1.57
5	Personal Grooming Services	2.98	0.26	0.49	0.66
6	Drugs And Medicines	1.07	0.24	1.04	0.55
7	Cotton Cloth	2.22	1.76	0.45	0.49
8	Household Servant	0.77	0.15	1.14	0.41
9	Woolen Cloth	0.84	0.70	1.08	0.40
10	Text Books	0.67	0.00	1.20	0.33
11	Doctor (Mbbs) Clinic Fee	0.40	0.06	1.36	0.33
12	Garbage Collection	0.11	1.52	4.98	0.30
13	Household Equipments	1.00	0.85	0.65	0.30
14	Hosiery	0.41	0.42	0.87	0.16
15	Furniture And Furnishing	0.48	0.72	0.70	0.15
Total		34.56			53.27
Bottom 15 Contributors					
1	Transport Services	1.75	7.28	-7.55	-6.03
2	Woolen Readymade Garments	0.43	0.00	0.00	0.00
3	Personal Effects N.E.C.	0.00	0.00	0.00	0.00
4	Appliances/Articles/Products For P	0.00	0.00	0.00	0.00
5	Postal Services	0.02	0.00	0.00	0.00
6	Motor Vehicle Tax	0.05	0.00	0.00	0.00
7	Newspapers	0.07	0.00	0.00	0.00
8	Communication Services	1.88	0.00	0.00	0.00
9	Gas Charges	1.08	0.00	0.00	0.00
10	Electricity Charges	4.56	0.00	0.00	0.00
11	Education	4.88	0.00	0.00	0.00
12	Water Supply	0.53	0.00	0.00	0.00
13	Accommodation Services	0.05	0.09	0.03	0.00
14	Solid Fuel	0.42	0.01	0.01	0.00
15	Communication Apparatus	0.45	0.00	0.01	0.00
Total		16.16			-6.02

Table A10: Top Ten Contributors to Rural CPI Inflation (YoY) in July 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Jun-19	Jun-20	
A. Ranked by Weighted Contribution					
1	Wheat	3.47	8.93	30.40	8.05
2	Condiments And Spices	1.49	11.48	59.59	7.58
3	Milk Fresh	10.38	4.21	7.75	6.66
4	Potatoes	0.74	10.41	88.13	6.59
5	Wheat Flour	3.43	10.30	21.63	5.72
6	Vegetable Ghee	2.38	13.09	23.06	5.00
7	Cotton Cloth	2.84	8.24	17.34	4.67
8	Solid Fuel	4.48	2.01	12.34	4.52
9	Readymade Food	3.80	6.98	12.02	4.10
10	Tomatoes	0.51	-19.42	129.30	4.07
Total		33.52			56.96
B. Ranked by Percentage Change					
1	Tomatoes	0.51	-19.42	129.30	4.07
2	Potatoes	0.74	10.41	88.13	6.59
3	Condiments And Spices	1.49	11.48	59.59	7.58
4	Pulse Moong	0.25	46.22	51.73	1.00
5	Water Supply	0.06	18.06	48.16	0.31
6	Eggs	0.57	-12.41	41.10	1.65
7	Pulse Mash	0.15	26.00	37.07	0.29
8	Chicken	1.46	-8.13	35.69	4.07
9	Beans	0.09	8.66	34.57	0.27
10	Pulse Masoor	0.21	12.38	30.77	0.38
Total		5.53			26.22
C. Ranked by Weights					
1	Milk Fresh	10.38	4.21	7.75	6.66
2	House Rent	8.61	5.51	4.94	3.79
3	Solid Fuel	4.48	2.01	12.34	4.52
4	Readymade Food	3.80	6.98	12.02	4.10
5	Wheat	3.47	8.93	30.40	8.05
6	Electricity Charges	3.44	-7.26	-0.19	-0.05
7	Wheat Flour	3.43	10.30	21.63	5.72
8	Cotton Cloth	2.84	8.24	17.34	4.67
9	Motor Fuels	2.49	18.34	-9.98	-2.73
10	Vegetable Ghee	2.38	13.09	23.06	5.00
Total		45.32			39.72
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 11.6 percent in July 2020.					



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

Table 10: Top Ten Contributors to Rural Off-Farm Income (MoM) in July 2020					
Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Jun-20	Jul-20	
A. Ranked by Weighted Contribution					
1	Motor Fuels	2.49	-7.62	29.61	19.93
2	Tomatoes	0.51	12.31	241.40	18.05
3	Wheat	3.47	9.61	10.84	11.94
4	Fresh Vegetables	2.09	-1.27	21.63	11.93
5	House Rent	8.61	0.00	1.70	4.76
6	Onions	0.90	-25.40	25.57	4.20
7	Milk Fresh	10.38	2.04	1.23	3.97
8	Personal Effects N.E.C.	1.21	1.99	6.02	3.10
9	Cotton Cloth	2.84	2.70	2.45	2.67
10	Potatoes	0.74	7.34	5.33	2.52
33.24					83.07
B. Ranked by Percentage Change					
1	Tomatoes	0.51	12.31	241.40	18.05
2	Water Supply	0.06	0.00	33.99	0.87
3	Motor Fuels	2.49	-7.62	29.61	19.93
4	Onions	0.90	-25.40	25.57	4.20
5	Fresh Vegetables	2.09	-1.27	21.63	11.93
6	Eggs	0.57	13.15	13.84	2.44
7	Wheat	3.47	9.61	10.84	11.94
8	Liquefied Hydrocarbons	1.00	-6.92	9.25	2.51
9	Personal Effects N.E.C.	1.21	1.99	6.02	3.10
10	Potatoes	0.74	7.34	5.33	2.52
13.05					77.48
C. Ranked by Weights					
1	Milk Fresh	10.38	2.04	1.23	3.97
2	House Rent	8.61	0.00	1.70	4.76
3	Solid Fuel	4.48	0.42	0.00	0.00
4	Readymade Food	3.80	0.75	1.72	2.28
5	Wheat	3.47	9.61	10.84	11.94
6	Electricity Charges	3.44	0.00	0.00	0.00
7	Wheat Flour	3.43	10.43	1.73	1.93
8	Cotton Cloth	2.84	2.70	2.45	2.67
9	Motor Fuels	2.49	-7.62	29.61	19.93
10	Vegetable Ghee	2.38	-0.67	0.33	0.31
45.32					47.79

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 3.0 percent in July 2020.

<b>Table A12: Top and Bottom Fifteen Contributors to Rural CPI Inflation (YoY) in July 2020</b>					
<b><u>Top 15 Contributors</u></b>			<b><u>YoY Change</u></b>		
<b>Items/ Contributors</b>	<b>Weights</b>		<b>Jul-19</b>	<b>Jul-20</b>	<b>Weighted Contribution (%)</b>
<b>Ranked by Weighted Contribution</b>					
1 Wheat	3.47		8.93	30.40	8.05
2 Condiments And Spices	1.49		11.48	59.59	7.58
3 Milk Fresh	10.38		4.21	7.75	6.66
4 Potatoes	0.74		10.41	88.13	6.59
5 Wheat Flour	3.43		10.30	21.63	5.72
6 Vegetable Ghee	2.38		13.09	23.06	5.00
7 Cotton Cloth	2.84		8.24	17.34	4.67
8 Solid Fuel	4.48		2.01	12.34	4.52
9 Readymade Food	3.80		6.98	12.02	4.10
10 Tomatoes	0.51		-19.42	129.30	4.07
11 Chicken	1.46		-8.13	35.69	4.07
12 House Rent	8.61		5.51	4.94	3.79
13 Personal Effects N.E.C.	1.21		22.10	25.07	3.10
14 Sugar	2.03		31.59	16.55	2.77
15 Fresh Vegetables	2.09		1.14	15.66	2.57
<b>Total</b>	<b>48.92</b>				<b>73.25</b>
<b><u>Bottom 15 Contributors</u></b>					
1 Motor Fuels	2.49		18.34	-9.98	-2.73
2 Onions	0.90		68.82	-20.90	-1.54
3 Liquefied Hydrocarbons	1.00		-1.67	-4.12	-0.36
4 Fish	0.26		14.63	-4.21	-0.10
5 Electricity Charges	3.44		-7.26	-0.19	-0.05
6 Motor Vehicle Tax	0.02		17.87	0.00	0.00
7 Newspapers	0.02		33.33	0.00	0.00
8 Accommodation Services	0.14		0.00	0.00	0.00
9 Postal Services	0.01		31.58	0.00	0.00
10 Communication Services	1.65		1.15	0.00	0.00
11 Garbage Collection	0.01		1.03	7.77	0.01
12 Dessert Preparation	0.01		4.84	10.25	0.01
13 Dental Services	0.02		4.01	8.87	0.01
14 Honey	0.03		5.91	5.36	0.01
15 Mustard Oil	0.01		6.58	11.98	0.01
<b>Total</b>	<b>10.01</b>				<b>-4.73</b>

<b>Table A13: Top and Bottom Fifteen Contributors to Rural CPI Inflation (MoM) in July 2020</b>				
<b><u>Top 15 Contributors</u></b>				
<b>Items/ Contributors</b>	<b>Weights</b>	<b><u>MoM Change</u></b>		<b>Weighted Contribution (%)</b>
		<b>Jun-20</b>	<b>Jul-20</b>	
<b>Ranked by Weighted Contribution</b>				
1 Motor Fuels	2.49	-7.62	29.61	19.93
2 Tomatoes	0.51	12.31	241.40	18.05
3 Wheat	3.47	9.61	10.84	11.94
4 Fresh Vegetables	2.09	-1.27	21.63	11.93
5 House Rent	8.61	0.00	1.70	4.76
6 Onions	0.90	-25.40	25.57	4.20
7 Milk Fresh	10.38	2.04	1.23	3.97
8 Personal Effects N.E.C.	1.21	1.99	6.02	3.10
9 Cotton Cloth	2.84	2.70	2.45	2.67
10 Potatoes	0.74	7.34	5.33	2.52
11 Liquefied Hydrocarbons	1.00	-6.92	9.25	2.51
12 Sugar	2.03	-0.12	3.67	2.44
13 Eggs	0.57	13.15	13.84	2.44
14 Readymade Food	3.80	0.75	1.72	2.28
15 Rice	1.55	1.63	2.96	1.94
<b>Total</b>	<b>42.19</b>			<b>94.67</b>
<b><u>Bottom 15 Contributors</u></b>				
1 JUn	1.45	-5.99	-6.62	-4.00
2 Transport Services	1.80	7.52	-5.17	-3.07
3 Pulse Moong	0.25	0.02	-13.42	-1.60
4 Pulse Gram	0.28	-3.57	-4.98	-0.42
5 Pulse Masoor	0.21	-1.62	-4.06	-0.24
6 Pulse Mash	0.15	3.07	-4.04	-0.16
7 Gram Whole	0.11	-1.41	-4.00	-0.14
8 Besan	0.07	-2.56	-4.42	-0.10
9 Gur	0.15	2.27	-1.11	-0.06
10 Fish	0.26	-2.56	-0.39	-0.03
11 Hospitals Services	1.01	0.00	0.00	0.00
12 Mechanical Services	0.36	0.00	0.00	0.00
13 Education	2.13	0.00	0.00	0.00
14 Marriage Hall Charges	2.25	0.00	0.00	0.00
15 Dental Services	0.02	0.00	0.00	0.00
<b>Total</b>	<b>10.50</b>			<b>-9.83</b>

<b>Table A14: Top and Bottom Fifteen Contributors to MoM Rural CPI Food Inflation in July 2020</b>				
<b>Top 15 Contributors</b>				
<b>Items/ Contributors</b>	<b>Weights</b>	<b>MoM Change</b>		<b>Weighted Contribution (%)</b>
		<b>Jun-20</b>	<b>Jul-20</b>	
<b>Ranked by Weighted Contribution</b>				
1 Tomatoes	0.51	12.31	241.40	18.05
2 Wheat	3.47	9.61	10.84	11.94
3 Fresh Vegetables	2.09	-1.27	21.63	11.93
4 Onions	0.90	-25.40	25.57	4.20
5 Milk Fresh	10.38	2.04	1.23	3.97
6 Potatoes	0.74	7.34	5.33	2.52
7 Sugar	2.03	-0.12	3.67	2.44
8 Eggs	0.57	13.15	13.84	2.44
9 Readymade Food	3.80	0.75	1.72	2.28
10 Rice	1.55	1.63	2.96	1.94
11 Wheat Flour	3.43	10.43	1.73	1.93
12 Chicken	1.46	4.13	2.58	1.37
13 Meat	1.71	0.94	1.82	1.15
14 Condiments And Spices	1.49	5.30	1.48	1.04
15 Cigarettes	1.24	0.36	0.99	0.40
<b>Total</b>	<b>35.38</b>			<b>67.60</b>
<b>Bottom 15 Contributors</b>				
1 Fresh Fruits	1.45	-5.99	-6.62	-4.00
2 Pulse Moong	0.25	0.02	-13.42	-1.60
3 Pulse Gram	0.28	-3.57	-4.98	-0.42
4 Pulse Masoor	0.21	-1.62	-4.06	-0.24
5 Pulse Mash	0.15	3.07	-4.04	-0.16
6 Gram Whole	0.11	-1.41	-4.00	-0.14
7 Besan	0.07	-2.56	-4.42	-0.10
8 Gur	0.15	2.27	-1.11	-0.06
9 Fish	0.26	-2.56	-0.39	-0.03
10 Marriage Hall Charges	2.25	0.00	0.00	0.00
11 Tea	1.26	0.00	0.00	0.00
12 Mustard Oil	0.01	0.96	0.17	0.00
13 Nimco	0.08	0.14	0.09	0.00
14 Dessert Preparation	0.01	1.50	0.72	0.00
15 Milk Powder	0.11	0.27	0.20	0.01
<b>Total</b>	<b>6.65</b>			<b>-6.74</b>

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

<u>Top 15 Contributors</u>		<u>MoM Change</u>			Weighted Contribution (%)
Items/ Contributors	Weights	Jun-20	Jul-20		
Ranked by Weighted Contribution					
1	Motor Fuels	2.49	-7.62	29.61	19.93
2	House Rent	8.61	0.00	1.70	4.76
3	Personal Effects N.E.C.	1.21	1.99	6.02	3.10
4	Cotton Cloth	2.84	2.70	2.45	2.67
5	Liquefied Hydrocarbons	1.00	-6.92	9.25	2.51
6	Household Equipments	1.28	0.90	2.47	1.06
7	Doctor (Mbbs) Clinic Fee	0.51	0.21	4.51	0.93
8	Appliances/Articles/Products For	2.27	0.47	1.26	0.87
9	Water Supply	0.06	0.00	33.99	0.87
10	Woolen Cloth	1.10	0.72	1.42	0.50
11	Text Books	0.50	0.00	3.05	0.42
12	Personal Grooming Services	1.54	0.31	0.64	0.34
13	Hosiery	0.43	0.33	1.93	0.33
14	Washing Soaps, Detergents And	1.70	0.19	0.61	0.32
15	Furniture And Furnishing	0.58	0.71	1.53	0.29
Total		26.12			38.90
<u>Bottom 15 Contributors</u>					
1	Transport Services	1.80	7.52	-5.17	-3.07
2	Hospitals Services	1.01	0.00	0.00	0.00
3	Mechanical Services	0.36	0.00	0.00	0.00
4	Education	2.13	0.00	0.00	0.00
5	Dental Services	0.02	0.00	0.00	0.00
6	Woolen Readymade Garments	0.54	0.00	0.00	0.00
7	Communication Apparatus	0.34	0.00	0.00	0.00
8	Accommodation Services	0.14	0.00	0.00	0.00
9	Postal Services	0.01	0.00	0.00	0.00
10	Communication Services	1.65	0.00	0.00	0.00
11	Newspapers	0.02	0.00	0.00	0.00
12	Motor Vehicle Tax	0.02	0.00	0.00	0.00
13	Electricity Charges	3.44	0.00	0.00	0.00
14	Solid Fuel	4.48	0.42	0.00	0.00
15	Garbage Collection	0.01	0.00	3.01	0.01
Total		15.96			-3.07

**Table A16: Distribution of Price Changes (YoY) - Selected Urban CPI Items: July 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	Onions, Lemon, Fish Rahu (Medium Size), Gram Whole Yellow (Average Quality), Garlic (Lehsun)	Cumin Seed (Zeera) White National 50 Gm Packet, Mineral Water Nestle 1.5 Liter	Curd, Milk Fresh (Un-Boiled), Honey Marhaba Bottle 500 Gm, Pulse Gram, Rusk (Papay) (Average Quality)	Tomatoes, Cardamom Small (Average Quality), Chillies Powder National 200 Gm Packet, Potatoes, Pulse Moong (Washed), Eggs Farm, Ginger (Adrak), Chicken Farm Broiler (Live)
Alcoholic Beverages & Tobacco		Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet	Pan Prepared (Sweet With Beetle Nuts)	
Clothing & Footwear	Gents Sponge Chappal Bata, Ladies Sandal Bata, Ladies Sponge Chappal Bata	School Uniform Boys (Part & Shirt) 24"/26", Pant Cloth Wash & Wear (Average Quality), Shirt Boy Length 24"/26", Lawn Printed Gul Ahmed/Al Karam	& Shirting (Average Quality), Shoe Repair Full Sole, Children Shoes Power Lite Bata, Tailoring Charges Simple Suit (Female), Pullover Gents (Average Quality)	Gents Shoes Servis, Gents Sandal Bata, Cheetah 50 Size 3-5 Servis, Dopatta Cotton (Average Quality), Gents Shoes Paul Bata, Long Cloth 57" Gul Ahmed/Al Karam, Heavy Weight Suiting Lawrance Pur (Average Quality), Georgette (Average Quality), Linen
Housing, Water, Elect, Gas & other Fuels	Cement (Local) 50 Kg Bag, Lpg 11.67 Kg Cylinder, Electricity Charges 51-100 Units, Bajri, Electricity Charges 101-300 Units	House Rent Combined, Bricks New 1st Class, Plumber Wage Rate, Electricity Charges Above 700 Units, Cement Blocks (6"X8"X12")	Synthetic Enamel Ici Balti 3.64 Litre, Unskilled Labor Wage Rate, Sand (Black Pit), Firewood Whole, Painter Wage Rate, Mason Wage Rate	Water Charges Per House, Charges For Refuse/Waste Collection, Electrician Charges
Furnishing & Household Equip. Maintenance etc		Frying Pan Non-Stick Medium Size Sonex, Refrigerator Dawlance/Pel 10 Cubic Feet Double Door	Chair Sheesham Wood With Arm, Dinner Set Plastic 72 Pieces Super Quality, Cot Iron (Charpai), Boot Polish Cherry/Kiwi 42 Ml	Tube Light Philips 40 Watt, Phenyl Tyfon/Finis 2.75 Litre Bottle, Robin Blue Liquid 75 Ml Bottle, Geyser Super Asia Large Size 30 Gallons (Gas), Central Table Set With Glass Top, Chair Plastic (Chairman) (Average Quality)
Health	Hydriyllin Syrup 120 Ml Bottle, Johar Joshanda Instant (Sachet) Packet	Electronic Bp Checking Apparatus, Panadol Tablets Plain, Dental Extraction Fee, X-Ray (Chest) Charges	Betnovate-N Ointment 10 Gm Tube, Flagyl Tablets 400 Mg, Cac 1000 Tablets Sandobz Bottle	Ventolin Tablets 2 Mg, Septtran Tablets, Lederplex Syrup Bottle, Dettol Medium Bottle, Doctor (Mbbs) Clinic Fee, Urine Test (Dr) Charges, Glaxose-D 400 Gm Packet
Transport	Air Fare Economy Class Per Kilometer (National Average), Hi-Speed Diesel, Cng, Petrol Super, Train Fare Ac Sleeper Per Person	Suzuki Fare Minimum Within City, Bus Fare Outside City (Ac), Motorcycle Honda Cd 70, Auto Rickshaw Fare	Bus Fare Maximum Within City, Car Suzuki 1000 Cc, Mini Bus Fare Maximum Within City, Mobil Oil (Havoline 20W-50)	Tire Car Puncture Charges, Suzuki Fare Maximum Within City, Taxi Four Seater Fare, Bicycle, Tire Car Mehran Tubeless (General)
Communication	Courier Charges Minimum Within Zone Outside City (Tcs), Telephone Call Charges	Mobile Set With Rear Camera And Without Touch Screen		
Recreation & Culture	Newspaper Daily Jang, Mag The Weekly (Magazine), Newspaper Daily Dawn, Akhbar-E-Jehan Weekly	English Book Ba/B.Sc, Pen Ink Dollar 57 Ml Bottle, English Book Class Vi, Recreational Park Charges (Minimum Playland Ticket), Ballpoint Pen Local	Lead Pencil Goldfish, Photostat Paper 70 Gm, Led Sony/Samsung 32" Colored, Urdu Book Class Xi/Inter, Personal Computer With Led Monitor (17") Dell/Hp/Acer	
Education	Vocational Training Basic Computer Short Course Fee (3 Months) , Government College Fee First Year	Private Engineering University Tuition Fee For Be (1st Year)	Tuition Fee Private University M.Sc./M.A., Government Engineering University Tuition Fee For Be (1st Year)	
Restaurant & Hotels		Cooked Chicken At Average Hotel, Chicken Biryani Full/Double	Tea Prepared Ordinary, Bread Tandoori Standard Size	Cooked Daal At Average Hotel, Cooked Beef At Average Hotel
Miscellaneous		Tissue Paper Perfumed Box 100 Napkins, Toilet Soap Lifebuoy 115 Gm	Tooth Paste Colgate 75 Gm, Hair Oil (Kala Kda Hair Tonic)	Gold Tezabi 24 Carett, Silver Tezabi 24 Carett, Pampers (Medium Size), Lipstick Swiss Miss/Medora (Medium)

**Table A17: Distribution of Price Changes (YoY) - Selected Rural CPI Items: July 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	Cauliflower (Phool Gothi), Spinach (Paalak), Turnip (Shalgham), Radish (Mooli), Peas (Matar), Carrot (Gajar)	Curd, Watermelon (Turbooz), Nimko (Loose, Average Quality), Karela	Rice Basmati Broken (Average Quality), Besan, Beef With Bone (Average Quality)	Tomatoes, Chilies Powder Loose, Potatoes, Lady Finger (Bhindi), Bottle gourd (Loki), Pulse Moong (Washed), Ginger (Adrak), Grapes (Angoor) (Average Quality) venge Quality)
Alcoholic Beverages & Tobacco		Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet		Pan Prepared (Sweet With Beetle Nuts), Chewing Tobacco (Niswar), Tobacco Hukka Twisted
Clothing & Footwear			Shoe Repair Full Sole, Georgette (Average Quality), Dopatta Georgette (Average Quality), Lungi/Dhoti Cotton (Average Quality)	Brassier (Average Quality), Shirting (Average Quality), Long Cloth, Lawn Printed (Average Quality), Washing Charges Shalwar Kameez, Footware Children Local (Average Quality), Vest "Baniyan" For Men Average Quality, Footware Ladies Local (Average Quality)
Housing, Water, Elect, Gas & other Fuels	Kerosene Oil, Cement (Local) 50 Kg Bag, Electricity Charges 51-100 Units, Electricity Charges 101-300 Units, Electricity Charges 301-1000 Units	House Rent Combined, Electricity Charges Above 1000 Units, Lpg 11.67 Kg Cylinder	Plumber Wage Rate, Unskilled Labor Wage Rate, Charges For Refuse/Waste Collection, Mason Wage Rate, Bajri	Water Charges Per House, Sand (Black Pit), Electrician Charges, Coal, Carpenter Wage Rate, Bricks New 1St Class, Firewood Whole, Painter Wage Rate
Furnishing & Household Equip. Maintenance etc.		Refrigerator Dawlance/Pel 10 Cubic Feet Double Door, Readymade Quilt (3 Kg), Cleanser Powder Vim 900 Gm Polybag	Water Cooler 9/10 Litre Plastic Super Quality, Dinner Set Plastic 72 Pieces Super Quality	Tube Light Philips 40 Watt, Robin Blue Liquid 75 Ml Bottle, Towel Medium Size (2 X 3'), Bucket (Balti) Plastic Medium Size, Ceiling Fan 56" Pak/Younas/Millat, Washing Soap 250 Gm Cake (Specify Name), Finis 400 Ml Bottle
Health		Cost Of Surgery (C-Section), Physiotherapist Fee Per Visit, Johar Joshanda Instant (Sachet) Packet	Amoxil Capsule 250 Mg, Dental Surgeon Fee Per Visit, X-Ray (Chest) Charges, Cac 1000 Tablets Sandoz Bottle	Dettol Medium Bottle, Doctor (Mbbs) Clinic Fee, Inderal Tablets 10 Mg, Daonil Tablets 5 Mg, Blood Test (Cp) Charges
Transport	Air Fare Economy Class Per Kilometer, Hi-Speed Diesel Cng, Petrol Super, Car Tax 800 Cc To 1500 Cc, Bus Fare Outside City (Non Ac)	Motorcycle Service Charges, Motorcycle Honda Cd 70 (Back Wheel)	Tire Cycle, Mobil Oil (Havoline 20W-50)	Tire Car Mehran Tubeless (General), Bicycle, Chingchi Rickshaw Charges, Minimum
Communication	Telephone Call Charges, Mobile Call Charges, Postal Registration Charges, Internet Charges (Dsl) 1 Mb	Mobile Set With Rear Camera And Without Touch Screen,		
Recreation & Culture	Newspaper Daily Jang	English Books Class Xi Complete Set, Urdu Books Class V (Text Book Board), English Books Class Ix And X	Led Sony/Samsung 32" Colored, Ballpoint Pen Local, English Books Class Vi, Exercise Book (With Lines) 80 To 100 Pages	Pets Feed
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		Marriage Hall Charges With Furniture	Bread Tandoori Standard Size, Cooked Chicken At Average Hotel	Cooked Daal At Average Hotel, Tea Prepared Ordinary, Chicken Biryani Full/Double, Pizza Chicken Medium Size (Average Quality)
Miscellaneous		Toilet Soap Lux 75 Gm, Shampoo Sun Silk/Pantene 90 Ml Bottle	Blade Treet Ordinary (10 No. Packet), Suitcase Ragzine (24"X16"X6") (Average Quality)	Gold Tezabi 24 Caratt, Shaving Charges, Hair Cut Charges For Men, Disposable Razor Gillette Blue II, Artificial Jewelry (Locket Set) (Average Quality), Tooth Paste Colgate 75 Gm

Table A18: Distribution of Price Changes (YoY) - WPI Items: July 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)
Agriculture Forestry & Fishery Products	Millet / Bajra, Hides, Skins & Fur Skins, Raw, Fibre Crops, Maize, Raw Animal Materials / Wool		Sugar Crops, Rice, Other Oil Seeds, Dry Fruits, Fish Live Fresh Or Chilled	Edible Roots / Potatoes, Stimulant & Spice Crops, Eggs, Wheat, Unmanufactured Tobacco, Poultry, Sorghum / Jowar, Raw Milk From Bovine Animals, Vegetables, Pulses, Fresh Fruits
Ores & Minerals, Electricity Gas & Water	Coal Not Agglomerated, Natural Gas Liquified	Electrical Energy		Salt & Pure Sodium Chloride
Food Products, Beverages and Tobacco, Textiles, Apparel and Leather Products	Cotton Yarn, Blended Yarn, Vegetables & Fruit Juice, Nylon Yarn, Tobacco Products	Beverages, Other Leather N.E.C, Quilts, Other Fabrics, Leather Without Hair, Chocolate	Woven Fabrics, Woolen Carpets, Synthetic Carpets, Fruit Juices, Other Cereal Flour, Vegetable Oils Refined, Other Food Products, Readymade Garments, Coffee & Tea, Dried Fruits & Nuts, Blankets, Dairy Products N.E.C, Milk & Cream In Solid Form, Mineral Water	Spices, Cotton Fabrics, Sugar Confectionary, Wheat Flour, Footwears, Sugar Refined, Meat Of Animals, Oil Cakes, Ice Cream, Silk & Reyon Fabrics, Towels, Vegetable Ghee, Bed Sheets, Processed Liquid Milk, Hosiery Products
Other Transportable Goods except Metal Products, Machinery and Equipments	Kerosine Oil, Diesel Oil, Furnace Oil, Motor Spirit, Fertilizers, Insecticides, Hard Board	Cement, Soaps & Detergents, Chemicals, Matches, Steel Bar & Sheets, Mobil Oil, Auto Tyres, Ceramics & Sanitary Fixture	Printing Paper, Plastic Products, Paints & Varnishes, Bricks, Blocks & Tiles, Glass Sheets	Dyeing Material, Pesticides, Timber, Bed Foam, Medicines, Other Glass Articles
Metal Product Machinery & Equipment	Vacuum Pumps, Engines & Motors, Concrete Mixture, Cultivators	Motor Vehicles, Motorcycles, Air Conditioners, Steel Products	Pipe Fittings, Radio & Television, Chuff Cutter, Lighting Equipments	Bicycles, Lathe Machines, Electric Wires, Tractors, Fridge, Washm, Sewm, Fans, Iron



Table A19: International Commodity Prices/Indices				
	Apr-20	May-20	Jun-20	Jul-20
<b>Energy</b>				
Crude Oil (US\$ per barrel) *	21.0	30.4	39.5	42.1
Energy Index (2010 = 100)	29.4	38.8	48.3	51.3
<b>Food</b>				
Rice (\$/MT)	564.0	510.0	520.0	480.0
Wheat (\$/MT)	219.0	205.8	198.4	198.4
Sugar (US cent/ pound)^	10.2	11.0	12.1	12.3
Palm Oil (\$/MT)	608.9	573.9	651.6	694.2
Soybean Oil (\$/MT)	680.0	683.5	751.5	821.1
<b>Non-Food Non-Energy</b>				
Cotton Outlook 'A' Index #^	63.5	65.7	67.8	68.5
Metal Price Index (2010 = 100)	67.3	68.9	74.3	80.2
Copper (\$/MT)	5,058.0	5,239.8	5,754.6	6,372.5
Aluminum (\$/MT)	1,459.9	1,466.4	1,568.6	1,643.8
Iron Ore (\$ cents/dry MT)	84.7	93.7	103.3	108.5
Tin (\$/MT)	14,952.8	15,401.9	16,837.8	17,469.9
Nickel (\$/MT)	11,804.0	12,179.6	12,727.2	13,402.3
Zinc (\$/MT)	1,903.4	1,975.3	2,025.7	2,177.2
Lead (\$/MT)	1,657.6	1,626.3	1,744.8	1,817.9
Uranium (\$/MT)@	33.3	33.9	32.8	32.5
DAP (\$/MT)	282.0	263.0	273.0	305.1
Urea (\$/MT)	235.0	201.9	202.0	214.4

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: 1 US \$ / 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 June 1981 strict middling 1-1/16 inch staple. Prior to 1968, Mexican 1-1/16.2/

DAP: Diammonium Phosphate

Table A20: National CPI Data Series Original and Seasonally Adjusted					
Original Series					
Period	FY17	FY18	FY19	FY20	FY21
Jul	103.17	107.15	114.29	123.86	135.38
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	131.59	
May	106.36	111.65	121.05	131.01	
Jun	106.54	112.58	121.63	132.08	
Seasonally Adjusted Series					
Jul	102.77	106.70	113.80	123.33	134.79
Aug	102.46	106.97	113.59	125.54	
Sep	102.83	107.68	113.57	126.54	
Oct	103.31	108.32	115.37	128.11	
Nov	103.78	108.98	115.12	129.68	
Dec	104.19	109.99	115.86	130.47	
Jan	104.65	110.13	116.25	133.16	
Feb	105.82	110.49	117.91	132.48	
Mar	106.82	110.63	120.15	132.41	
Apr	107.05	111.31	120.53	130.83	
May	107.01	112.36	121.85	131.91	
Jun	107.10	113.20	122.31	132.85	

Table A21: Urban CPI Data Series Original and Seasonally Adjusted					
Original Series					
Period	FY17	FY18	FY19	FY20	FY21
Jul	103.20	107.71	114.94	124.95	134.73
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	130.60	
May	106.86	112.53	122.11	130.99	
Jun	107.08	113.34	122.52	131.89	
Seasonally Adjusted Series					
Jul	102.72	107.18	114.37	124.33	134.07
Aug	102.31	107.50	114.15	126.32	
Sep	102.68	108.03	114.17	127.40	
Oct	103.12	108.56	116.22	128.84	
Nov	103.62	109.24	116.08	130.06	
Dec	104.06	110.37	116.85	130.86	
Jan	104.78	110.48	117.30	133.02	
Feb	105.91	110.91	118.88	132.16	
Mar	106.90	111.14	121.03	132.25	
Apr	107.22	111.98	121.34	130.67	
May	107.27	112.97	122.63	131.58	
Jun	107.51	113.82	123.06	132.50	

<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>	<b>FY21</b>
Jul	103.12	106.30	113.30	122.22	136.36
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	130.58	
May	105.60	110.33	119.45	131.03	
Jun	105.73	111.44	120.29	132.36	
<b>Seasonally Adjusted Series</b>					
Jul	102.85	105.98	112.95	121.81	135.89
Aug	102.68	106.16	112.75	124.37	
Sep	103.05	107.16	112.68	125.24	
Oct	103.61	107.96	114.09	127.02	
Nov	104.01	108.58	113.69	129.11	
Dec	104.39	109.41	114.37	129.88	
Jan	104.46	109.60	114.67	133.38	
Feb	105.68	109.87	116.44	132.96	
Mar	106.70	109.85	118.83	132.64	
Apr	106.78	110.31	119.30	131.07	
May	106.62	111.43	120.67	132.41	
Jun	106.48	112.26	121.19	133.38	

**Table A23: National CPI Monthly & Average Seasonal Factors**

Period	FY17	FY18	FY19	FY20	FY21	Average
Jul	100.39	100.42	100.43	100.43	100.44	100.42
Aug	100.33	100.32	100.30	100.28		100.31
Sep	100.39	100.34	100.29	100.25		100.32
Oct	100.85	100.83	100.82	100.82		100.83
Nov	100.88	100.89	100.92	100.94		100.91
Dec	99.89	99.94	99.97	99.99		99.95
Jan	99.88	99.89	99.89	99.90		99.89
Feb	99.26	99.30	99.33	99.37		99.32
Mar	99.37	99.40	99.42	99.46		99.41
Apr	99.87	99.85	99.84	99.82		99.84
May	99.39	99.37	99.35	99.32		99.36
Jun	99.48	99.46	99.44	99.42		99.45

**Table A24: Urban CPI Monthly & Average Seasonal Factors**

Period	FY17	FY18	FY19	FY20	FY21	Average
Jul	100.47	100.50	100.50	100.50	100.50	100.49
Aug	100.41	100.40	100.38	100.36		100.39
Sep	100.37	100.32	100.28	100.25		100.31
Oct	100.73	100.72	100.71	100.71		100.72
Nov	100.71	100.72	100.74	100.77		100.74
Dec	99.69	99.73	99.76	99.78		99.74
Jan	99.82	99.82	99.81	99.81		99.81
Feb	99.26	99.29	99.33	99.37		99.31
Mar	99.33	99.36	99.39	99.43		99.38
Apr	99.98	99.97	99.96	99.95		99.96
May	99.62	99.61	99.58	99.55		99.59
Jun	99.60	99.58	99.57	99.54		99.57

<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>FY21</b>	<b>Average</b>
Jul	100.26	100.30	100.31	100.33	100.34	100.31
Aug	100.22	100.20	100.18	100.16		100.19
Sep	100.42	100.36	100.30	100.25		100.33
Oct	101.03	101.01	101.00	100.99		101.01
Nov	101.13	101.15	101.18	101.21		101.17
Dec	100.19	100.25	100.29	100.31		100.26
Jan	99.98	100.00	100.01	100.03		100.01
Feb	99.27	99.31	99.34	99.38		99.33
Mar	99.43	99.45	99.48	99.51		99.47
Apr	99.71	99.68	99.66	99.63		99.67
May	99.04	99.01	98.99	98.96		99.00
Jun	99.30	99.27	99.26	99.24		99.27

Table A26: National CPI (Month-on-Month) Original & Seasonally Adjusted					
Original Series					
Period	FY17	FY18	FY19	FY20	FY21
Jul	1.44	0.57	1.51	1.83	2.50
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	-0.84	
May	-0.52	0.46	0.60	0.32	
Jun	0.17	0.83	0.48	0.82	
Seasonally Adjusted Series					
Jul	0.56	-0.37	0.54	0.83	1.46
Aug	-0.31	0.25	-0.19	1.79	
Sep	0.37	0.67	-0.02	0.80	
Oct	0.47	0.59	1.58	1.24	
Nov	0.45	0.60	-0.21	1.22	
Dec	0.40	0.93	0.64	0.61	
Jan	0.44	0.13	0.34	2.06	
Feb	1.11	0.33	1.43	-0.52	
Mar	0.95	0.12	1.90	-0.05	
Apr	0.22	0.62	0.31	-1.19	
May	-0.03	0.94	1.10	0.83	
Jun	0.08	0.75	0.38	0.71	

<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>	<b>FY21</b>
Jul	1.47	0.59	1.41	1.98	2.15
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	-0.68	
May	-0.32	0.53	0.68	0.30	
Jun	0.21	0.72	0.34	0.69	
<b>Seasonally Adjusted Series</b>					
Jul	0.63	-0.31	0.48	1.04	1.18
Aug	-0.40	0.31	-0.20	1.60	
Sep	0.37	0.49	0.02	0.86	
Oct	0.42	0.49	1.79	1.12	
Nov	0.49	0.62	-0.12	0.95	
Dec	0.42	1.04	0.66	0.62	
Jan	0.69	0.10	0.39	1.65	
Feb	1.07	0.39	1.35	-0.65	
Mar	0.93	0.21	1.81	0.07	
Apr	0.31	0.75	0.25	-1.19	
May	0.04	0.89	1.06	0.70	
Jun	0.22	0.75	0.35	0.70	



Table A28: Rural CPI (Month-on-Month) Original & Seasonally Adjusted					
Original Series					
Period	FY17	FY18	FY19	FY20	FY21
Jul	1.39	0.54	1.67	1.60	3.02
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	-1.08	
May	-0.82	0.35	0.47	0.34	
Jun	0.12	1.01	0.70	1.02	
Seasonally Adjusted Series					
Jul	0.46	-0.46	0.61	0.52	1.88
Aug	-0.17	0.16	-0.17	2.10	
Sep	0.37	0.94	-0.07	0.71	
Oct	0.54	0.75	1.25	1.42	
Nov	0.38	0.57	-0.35	1.64	
Dec	0.37	0.77	0.61	0.60	
Jan	0.06	0.17	0.26	2.69	
Feb	1.17	0.25	1.55	-0.32	
Mar	0.97	-0.01	2.05	-0.23	
Apr	0.08	0.41	0.39	-1.19	
May	-0.15	1.02	1.15	1.02	
Jun	-0.14	0.74	0.43	0.73	

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



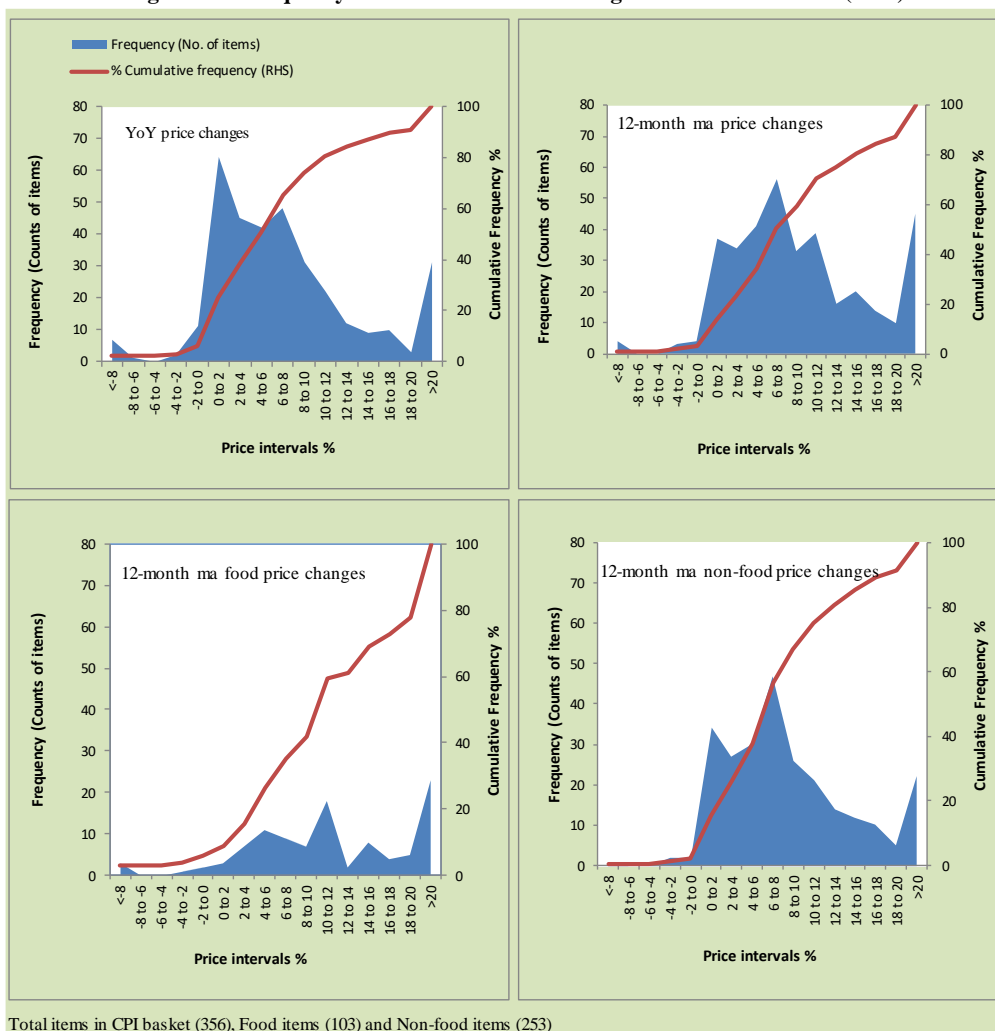
Figure A2: Urban CPI Non-food Inflation (YoY, 12MMA, MoM in percent)



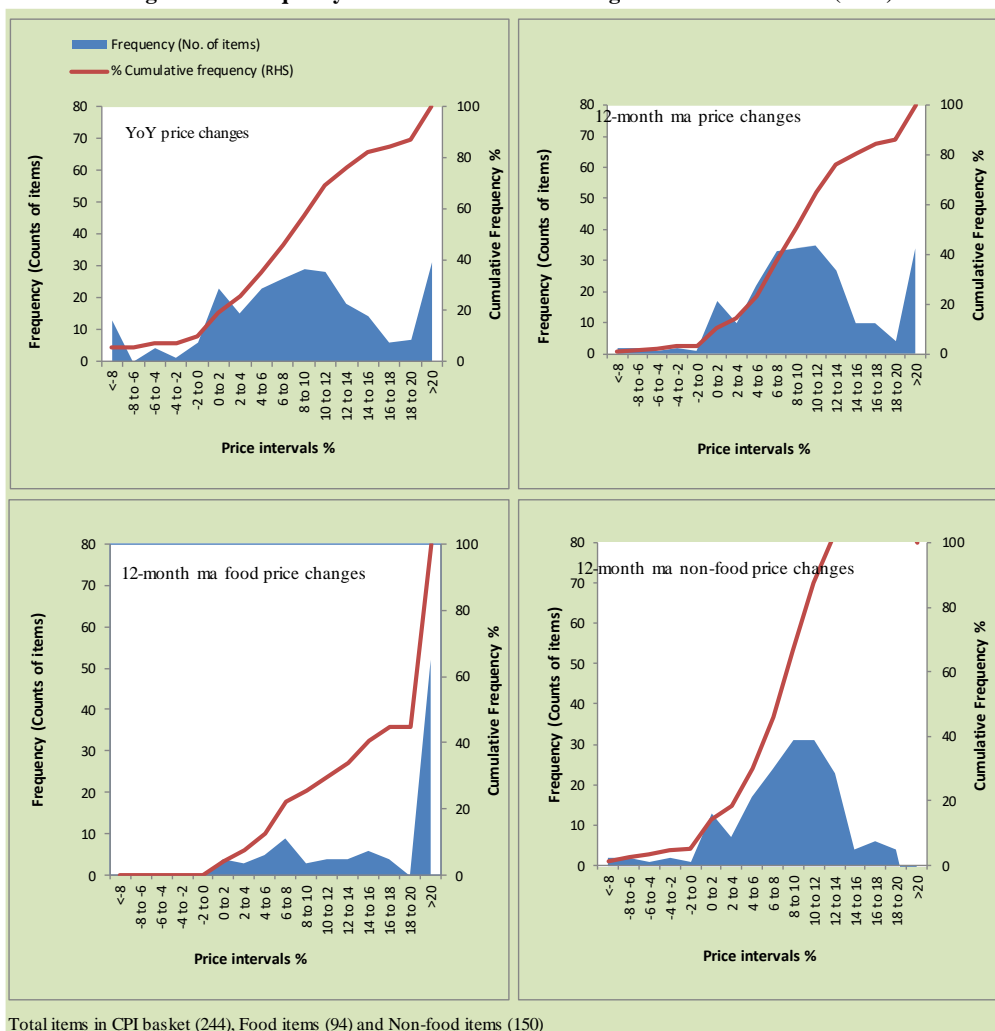
**Figure A3: Rural CPI Non-food Inflation (YoY, 12MMA, MoM in percent)**



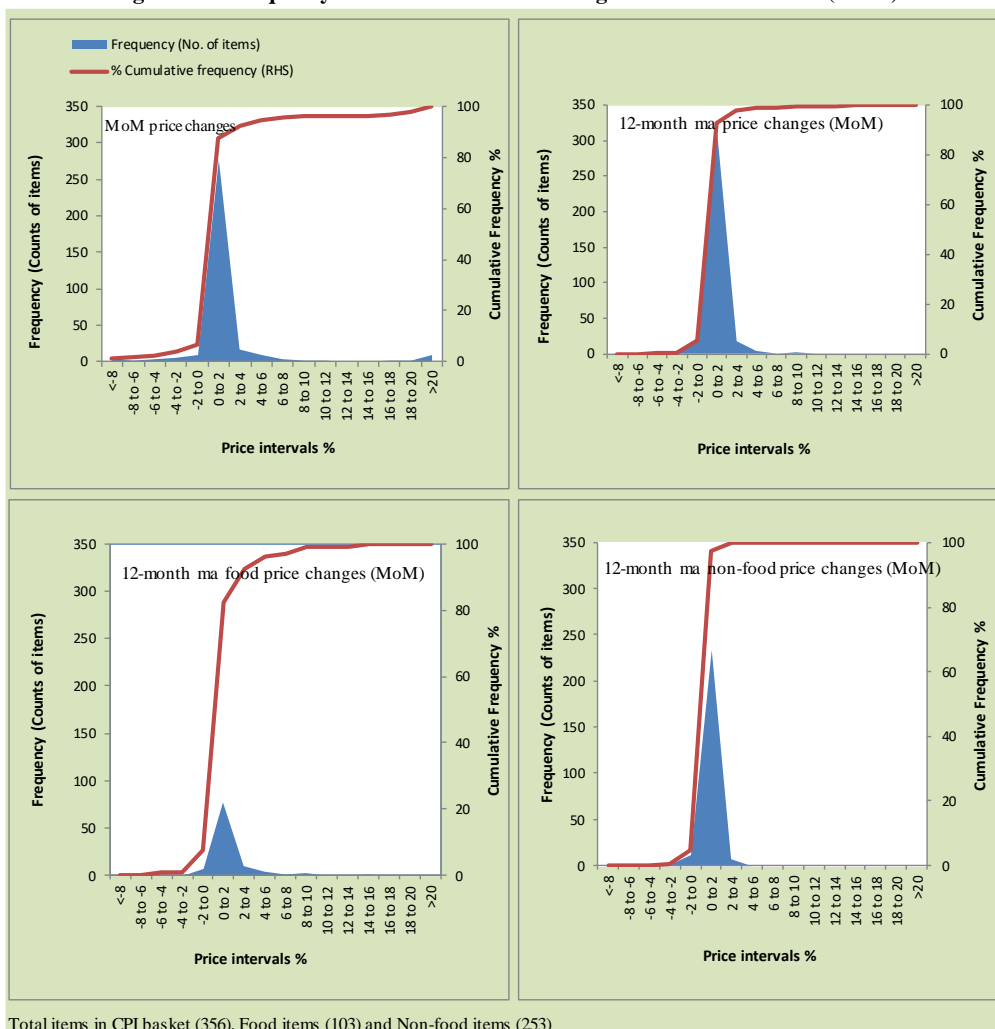
Figure A4: Frequency Distribution of Price Changes of Urban CPI Items (YoY)



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

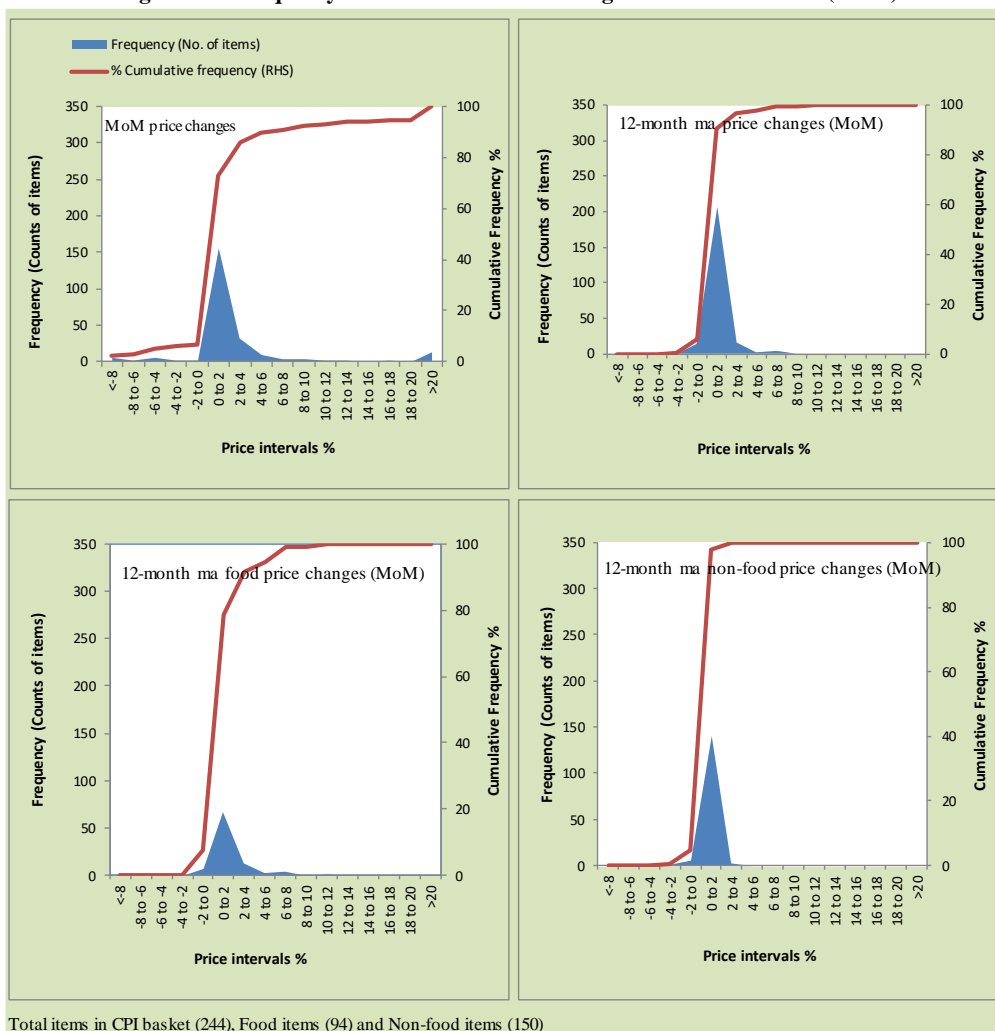


**Figure A6: Frequency Distribution of Price Changes of Urban CPI Items (MoM)**



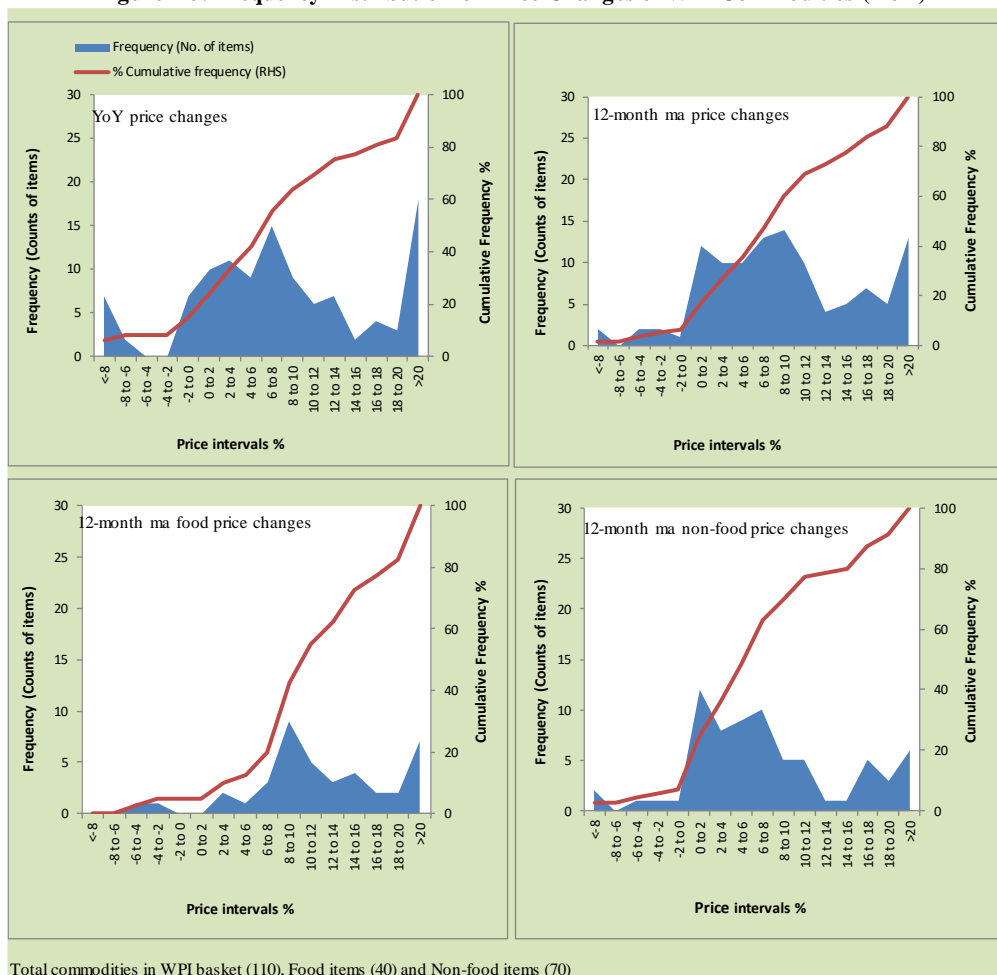
Total items in CPI basket (356), Food items (103) and Non-food items (253)

**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

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

**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.

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<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.