

# **Inflation Monitor**

**August 2020**

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



**State Bank of Pakistan**

**Statistics & DWH Department**

ISSN 1992-8327 (print)

ISSN 1992-8335 (online)

The analysis in this document is based on data

- Provided by Pakistan Bureau of Statistics (PBS), for domestic inflation analysis
- Retrieved from IMF & World Bank websites for global inflation analysis

[http://www.sbp.org.pk/publications/inflation\\_Monitor](http://www.sbp.org.pk/publications/inflation_Monitor)

## Contents

1.	Inflation in Brief.....	1
2.	Heat-maps of CPI inflation.....	3
3.	Trends in Inflation.....	7
4.	Movement in Price Indices (Moving Averages).....	8
5.	Movement in Price Indices (Month-on-Month).....	9
6.	Trends in Consumer Price Indices and Inflation.....	10
7.	Weighted Contribution.....	13
8.	Inflation Diffusion Index.....	16
9.	Domestic Commodity Prices.....	18
10.	Inflation in Global Context.....	19
11.	Global Commodity Prices.....	20
12.	Seasonal Adjustment in CPI.....	21
	<b>Annexure A.....</b>	<b>26</b>
	Table A1: National CPI Inflation by Groups (YoY and MoM in percent).....	26
	Table A2: Urban CPI Inflation by Groups (YoY and MoM in percent).....	26
	Table A3: Rural CPI Inflation by Groups (YoY and MoM in percent).....	27
	Table A4: Top Ten Contributors to Urban CPI Inflation (YoY) in August 2020.....	28
	Table A5: Top Ten Contributors to Urban CPI Inflation (MoM) in August 2020.....	29
	Table A6: Top and Bottom Fifteen Contributors to Urban CPI Inflation (YoY) in August 2020.....	30
	Table A7: Top and Bottom Fifteen Contributors to Urban CPI Inflation (MoM) in August 2020.....	31
	Table A8: Top and Bottom Fifteen Contributors to MoM Urban CPI Food Inflation in August 2020.....	32
	Table A9: Top and Bottom Fifteen Contributors to MoM Urban CPI Non-food Inflation in August 2020.....	33
	Table A10: Top Ten Contributors to Rural CPI Inflation (YoY) in August 2020.....	34
	Table A11: Top Ten Contributors to Rural CPI Inflation (MoM) in August 2020.....	35
	Table A12: Top and Bottom Fifteen Contributors to Rural CPI Inflation (YoY) in August 2020.....	36
	Table A13: Top and Bottom Fifteen Contributors to Rural CPI Inflation (MoM) in August 2020.....	37
	Table A14: Top and Bottom Fifteen Contributors to MoM Rural CPI Food Inflation in August 2020.....	38
	Table A15: Top and Bottom Fifteen Contributors to MoM Rural CPI Non-food Inflation in August 2020.....	39
	Table A16: Distribution of Price Changes (YoY) - Selected Urban CPI Items: August 2020.....	40
	Table A17: Distribution of Price Changes (YoY) - Selected Rural CPI Items: August 2020.....	41
	Table A18: Distribution of Price Changes (YoY) - WPI Items: August 2020.....	42

## *Inflation Monitor, August 2020*

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Table A19: International Commodity Prices/Indices .....	43
Table A20: National CPI Data Series Original and Seasonally Adjusted.....	44
Table A21: Urban CPI Data Series Original and Seasonally Adjusted .....	45
Table A22: Rural CPI Data Series Original and Seasonally Adjusted .....	46
Table A23: National CPI Monthly & Average Seasonal Factors .....	47
Table A24: Urban CPI Monthly & Average Seasonal Factors.....	47
Table A25: Rural CPI Monthly & Average Seasonal Factors .....	48
Table A26: National CPI (Month-on-Month) Original & Seasonally Adjusted .....	49
Table A27: Urban CPI (Month-on-Month) Original & Seasonally Adjusted Series .....	50
Table A28: Rural CPI (Month-on-Month) Original & Seasonally Adjusted.....	51
Figure A1: National CPI Non-food Inflation (YoY, 12mma, MoM in percent).....	52
Figure A2: Urban CPI Non-food Inflation (YoY, 12mma, MoM in percent).....	53
Figure A3: Rural CPI Non-food Inflation (YoY, 12mma, MoM in percent).....	54
Figure A4: Frequency Distribution of Price Changes of Urban CPI Items (YoY) .....	55
Figure A5: Frequency Distribution of Price Changes of Rural CPI Items (YoY) .....	56
Figure A6: Frequency Distribution of Price Changes of Urban CPI Items (MoM) .....	57
Figure A7: Frequency Distribution of Price Changes of Rural CPI Items (MoM) .....	58
Figure A8: Frequency Distribution of Price Changes of WPI Commodities (YoY).....	59
<b>Annexure B .....</b>	<b>60</b>
Technical Notes, Definitions and Methodologies .....	60
a) Technical Notes .....	60
b) Methodology for Estimating Inflation Diffusion Index for Pakistan .....	63

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## **Review**

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

- a) National CPI inflation (2015-16=100) is recorded at 8.2 percent on year-on-year basis in August 2020 as compared to 9.3 percent in the previous month and 10.5 percent during the corresponding month of last year.
- b) National CPI inflation on month-on-month basis is recorded at 0.6 percent in August 2020 as compared to 2.5 percent in the previous month and 1.6 percent during the corresponding month of last year. Seasonally adjusted month-on-month CPI inflation is recorded at 0.76 percent in August 2020 compared to 1.48 percent in the previous month.
- c) Urban CPI inflation (2015-16=100) is recorded at 7.1 percent on year-on-year basis in August 2020 as compared to 7.8 percent in the previous month and 10.6 percent during the corresponding month of last year.
- d) Urban CPI inflation on month-on-month basis is recorded at 0.8 percent in August 2020 as compared to 2.2 percent in the previous month and 1.5 percent during corresponding month of last year. Seasonally adjusted month-on-month Urban CPI inflation is recorded at 0.89 percent in August 2020 compared to 1.20 percent in the previous month.
- e) Rural CPI inflation (2015-16=100) is recorded at 9.9 percent on year-on-year basis in August 2020 as compared to 11.6 percent during the previous month. It was 10.3 percent during the corresponding month of last year.
- f) Rural CPI inflation on month-on-month basis is recorded at 0.4 percent in August 2020 as compared to 3.0 percent in the previous month and 1.9 percent during the corresponding month of last year. Seasonally adjusted month-on-month Rural CPI inflation is recorded at 0.54 percent in August 2020 compared to 1.90 percent in the previous month.

- g) Urban Core inflation (trimmed) on year-on-year basis is recorded at 7.0 percent in August 2020 as compared to 6.7 percent in the previous month and 8.5 percent during the corresponding month of last year.
- h) On month-on-month basis, the Urban Core inflation (trimmed) is recorded at 1.3 percent in August 2020 as compared to 0.9 percent in the previous month and 0.6 percent during the corresponding month of last year.
- i) Rural Core inflation (trimmed) on year-on-year basis is recorded at 9.3 percent in August 2020 as compared to 9.8 percent in the previous month and 8.7 percent during the corresponding month of last year.
- j) On month-on-month basis, the Rural Core inflation (trimmed) is recorded at 1.0 percent in August 2020 as compared to 1.5 percent in the previous month and 1.2 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 5.6 percent in August 2020 as compared to 5.3 percent in the previous month. It was 8.5 percent during the corresponding month of last year.
- l) Urban Core (NFNE) inflation on month-on-month basis recorded at 0.7 percent in August 2020 as compared to 0.6 percent in the previous month and 0.4 percent during the corresponding month of last year.
- m) Rural Core (NFNE) inflation on year-on-year basis is recorded at 7.6 percent in August 2020 as compared to 7.8 percent in the previous month and 8.8 percent during the corresponding month of last year.
- n) Rural Core (NFNE) inflation on month-on-month basis recorded at 0.8 percent in August 2020 as compared to 1.1 percent in the previous month and 1.0 percent during the corresponding month of last year.



- o) WPI inflation on year-on-year basis recorded at 3.3 percent in August 2020 as compared to 3.2 percent in the previous month and 14.1 percent during the corresponding month of last year.
- p) WPI inflation on month-on-month basis recorded at 1.3 percent in August 2020 as compared to 5.4 percent in the previous month. It was 1.2 percent in the corresponding month of last year.
- q) SPI inflation on year-on-year basis recorded at 8.7 percent in August 2020 as compared to 10.4 percent in the previous month. It was 15.3 percent in the corresponding month of last year.
- r) SPI inflation on month-on-month basis recorded at 0.8 percent in August 2020 as compared to 3.8 percent in the previous month. It was 2.5 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.

Heat-map of National, Urban and Rural CPI inflation (YoY)														
		Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Headline	National	10.5	11.4	11.0	12.7	12.6	14.6	12.4	10.2	8.5	8.2	8.6	9.3	8.2
	Urban	10.6	11.6	10.9	12.1	12.0	13.4	11.2	9.3	7.7	7.3	7.6	7.8	7.1
	Rural	10.3	11.1	11.3	13.6	13.6	16.3	14.2	11.7	9.8	9.7	10.0	11.6	9.9
Food	Urban	11.9	15.0	13.7	16.6	16.7	19.5	15.2	13.0	10.4	10.6	12.9	15.1	11.3
	Rural	12.6	15.0	14.6	19.3	19.7	23.8	19.7	15.5	12.9	13.7	15.2	17.8	13.5
Core	Urban	8.5	8.4	7.7	7.5	7.5	7.9	8.0	7.4	6.4	6.3	6.5	5.3	5.6
	Rural	8.8	8.9	8.6	8.4	8.1	9.0	9.4	9.4	8.5	8.4	8.8	7.8	7.6

Source: Pakistan Bureau of Statistics and SBP staff estimates

Key

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## Inflation Monitor, August 2020

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

		Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Headline	National	1.6	0.8	1.8	1.3	-0.3	2.0	-1.0	0.0	-0.8	0.3	0.8	2.5	0.6
	Urban	1.5	0.7	1.6	1.0	-0.4	1.7	-1.1	0.1	-0.7	0.3	0.7	2.2	0.8
	Rural	1.9	0.8	2.2	1.9	-0.3	2.4	-1.0	-0.1	-1.1	0.3	1.0	3.0	0.4
Food	Urban	3.1	2.0	1.4	2.4	-1.7	2.7	-1.4	0.6	-1.0	1.5	1.8	3.0	-0.3
	Rural	2.9	1.8	2.6	3.4	-1.1	3.4	-1.6	-0.3	-1.7	1.4	2.0	4.0	-0.9
Core	Urban	0.4	0.4	0.5	0.3	0.4	1.1	0.2	0.3	0.2	0.4	0.4	0.6	0.7
	Rural	1.0	0.3	0.7	0.5	0.3	1.0	0.5	0.6	0.3	0.4	0.7	1.1	0.8

Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: <0.00 0.75 >1.50

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

	Weights	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
National	100.00	10.5	11.4	11.0	12.7	12.6	14.6	12.4	10.2	8.5	8.2	8.6	9.3	8.2
Food and non-alcoholic Beverages	34.58	12.6	15.8	15.0	19.4	19.7	23.7	18.4	14.7	11.7	12.2	14.6	17.8	12.9
Alcoholic Beverages, Tobacco	1.02	29.8	30.0	20.3	18.7	18.3	17.9	18.5	18.6	19.6	19.5	14.2	5.0	5.8
Clothing and footwear	8.60	8.9	8.9	9.3	9.4	9.7	9.6	10.1	11.0	10.2	10.3	11.0	10.3	9.2
Housing, water, Elec., Gas and other fuels	23.63	7.1	6.6	7.2	8.8	8.5	9.6	6.8	4.9	5.1	6.4	5.4	4.2	6.0
Furnishing and household equipment maintenance	4.10	11.6	11.7	11.3	10.8	10.4	10.1	10.0	10.1	9.0	8.7	8.8	7.8	7.5
Health	2.79	11.9	11.7	12.2	11.4	11.3	11.8	12.0	12.4	10.5	9.8	9.3	7.8	7.7
Transport	5.91	18.5	17.8	16.5	14.0	14.7	18.6	19.2	11.5	3.4	-7.5	-10.2	-4.5	-3.4
Communication	2.21	4.3	4.3	4.0	4.0	4.0	4.0	3.9	3.9	1.7	1.6	1.6	0.3	0.3
Recreation and culture	1.59	7.7	7.8	7.4	6.8	6.8	6.5	6.6	5.9	5.1	4.9	4.8	3.8	3.5
Education	3.79	6.9	6.2	6.0	6.1	6.0	7.3	7.4	4.5	3.2	2.0	2.0	1.1	1.0
Restaurants and hotels	6.92	6.2	6.1	6.0	6.4	6.1	7.4	8.7	8.7	8.5	8.6	9.0	7.5	8.0
Misc. goods and services	4.87	13.2	13.4	12.5	11.8	10.7	11.4	11.4	11.8	11.9	11.9	11.6	11.7	13.6

Source: Pakistan Bureau of Statistics and SBP staff estimates

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

	Weights	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Urban	100.00	10.6	11.6	10.9	12.1	12.0	13.4	11.2	9.3	7.7	7.3	7.6	7.8	7.1
Food and non-alcoholic Beverages	30.42	12.6	16.3	15.0	18.6	18.8	22.0	16.4	13.7	10.7	10.9	13.8	16.9	11.9
Alcoholic Beverages, Tobacco	0.85	28.5	28.7	18.5	16.7	16.6	16.8	17.7	17.8	18.8	19.0	13.3	4.7	5.5
Clothing and footwear	8.01	9.1	9.0	9.0	9.1	9.6	9.0	9.6	9.9	9.5	9.5	10.1	9.4	8.0
Housing, water, Elec., Gas and other fuels	27.03	8.6	8.4	8.2	9.6	9.4	9.7	6.9	5.1	5.1	6.5	5.6	3.6	5.4
Furnishing and household equipment maintenance	4.09	12.4	12.5	11.6	11.2	11.0	10.4	10.0	9.8	8.3	7.7	7.7	6.3	6.2
Health	2.31	11.7	11.1	11.2	10.5	10.9	11.5	11.7	12.2	9.4	8.7	8.4	5.9	6.7
Transport	6.14	19.0	18.6	17.5	15.0	15.6	19.4	19.9	12.2	4.1	-6.5	-9.5	-4.8	-3.7
Communication	2.35	5.5	5.6	5.2	5.1	5.3	5.3	5.3	5.1	2.3	2.2	2.1	0.4	0.4
Recreation and culture	1.73	7.5	7.7	6.7	6.5	6.4	6.1	6.1	5.6	4.9	4.6	4.4	3.1	2.7
Education	4.88	7.4	6.4	6.2	6.3	6.3	7.5	7.5	4.5	3.4	1.9	1.9	1.1	1.0
Restaurants and hotels	7.41	5.0	5.0	4.9	5.2	4.9	6.5	7.7	7.5	7.4	7.2	7.7	6.7	8.2
Misc. goods and services	4.77	12.6	13.1	12.0	11.0	10.1	10.7	10.1	10.6	11.0	10.9	10.6	10.4	12.6

Source: Pakistan Bureau of Statistics and SBP staff estimates

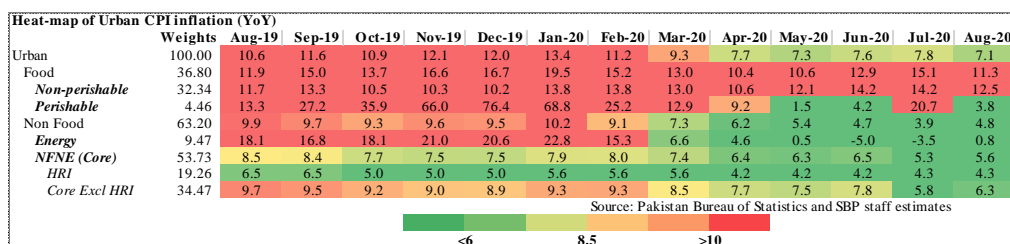
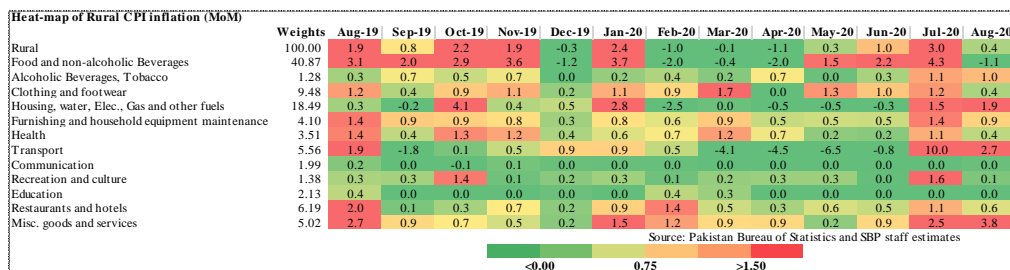
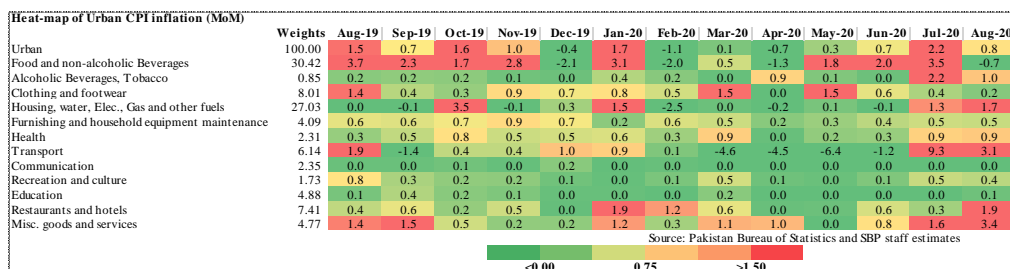
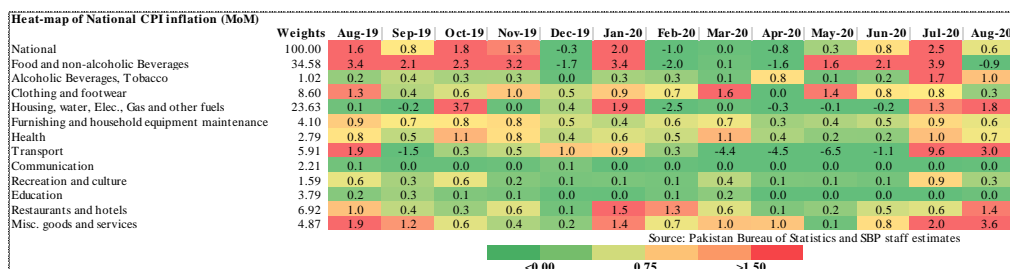
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**Heat-map of Rural CPI inflation (YoY)**

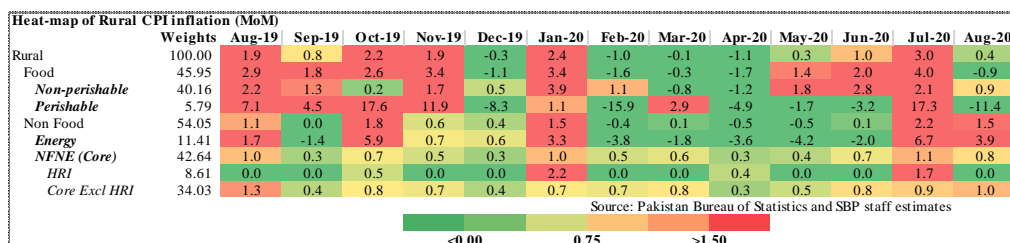
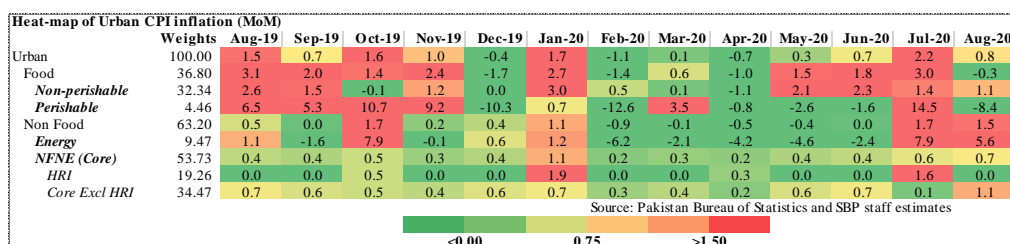
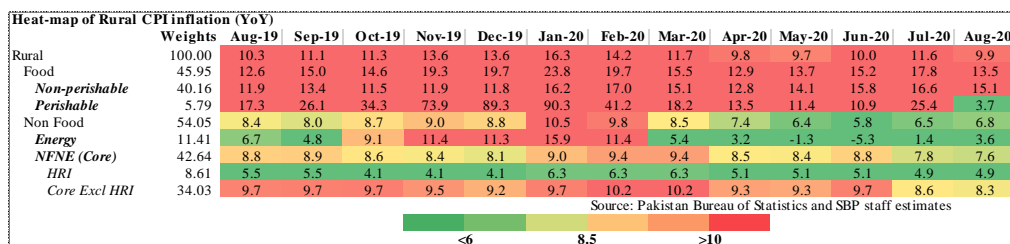
	Weights	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Rural	100.00	10.3	11.1	11.3	13.6	13.6	16.3	14.2	11.7	9.8	9.7	10.0	11.6	9.9
Food and non-alcoholic Beverages	40.87	12.6	15.3	15.1	20.3	20.8	25.5	20.6	15.8	12.8	13.7	15.5	18.7	14.0
Alcoholic Beverages, Tobacco	1.28	31.3	31.4	22.4	21.0	20.2	19.2	19.4	19.5	20.4	20.1	15.3	5.4	6.1
Clothing and footwear	9.48	8.7	8.9	9.7	9.8	9.9	10.2	10.8	12.3	11.0	11.4	12.2	11.5	10.6
Housing, water, Elec., Gas and other fuels	18.49	3.7	2.8	4.9	6.9	6.6	9.4	6.6	4.6	5.2	6.0	4.9	5.5	7.2
Furnishing and household equipment maintenance	4.10	10.2	10.5	10.9	10.2	9.6	9.7	9.9	10.6	10.1	10.2	10.4	10.1	9.5
Health	3.51	12.2	12.2	13.1	12.3	11.7	12.1	12.4	12.6	11.6	10.9	10.1	9.7	8.7
Transport	5.56	17.6	16.4	14.7	12.2	13.1	17.2	18.0	10.2	2.3	-9.0	-11.5	-3.8	-3.0
Communication	1.99	2.1	2.0	2.0	1.9	1.7	1.7	1.6	1.6	0.8	0.7	0.6	0.3	0.2
Recreation and culture	1.38	8.0	8.0	8.9	7.4	7.5	7.3	7.3	6.5	5.4	5.5	5.5	5.2	5.0
Education	2.13	5.3	5.3	5.3	5.0	5.0	6.7	7.1	4.5	2.5	2.4	2.4	1.2	0.7
Restaurants and hotels	6.19	8.1	8.1	8.0	8.5	8.3	8.9	10.3	10.8	10.4	11.1	11.3	9.0	7.5
Misc. goods and services	5.02	14.1	13.9	13.2	12.9	11.6	12.5	13.4	13.6	13.2	13.5	13.2	13.8	15.0

Source: Pakistan Bureau of Statistics and SBP staff estimates

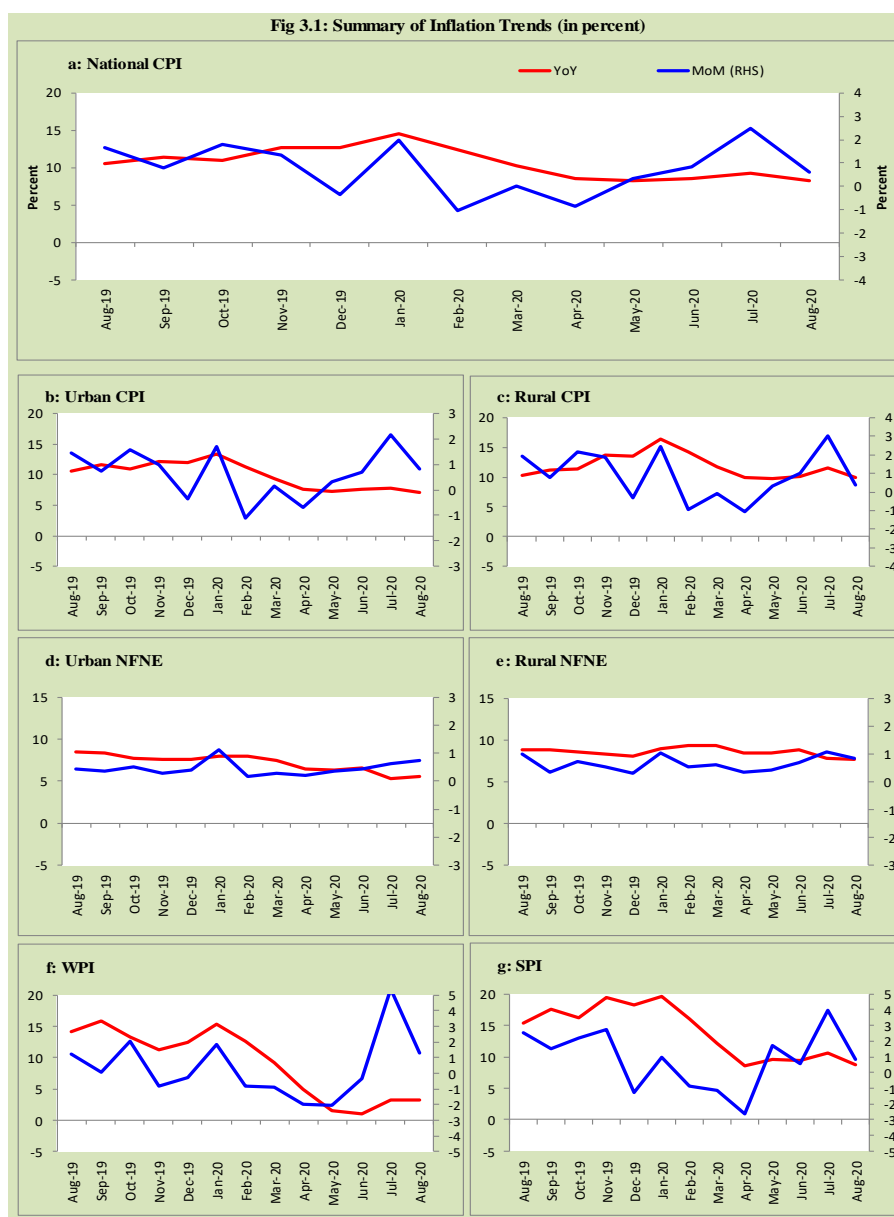
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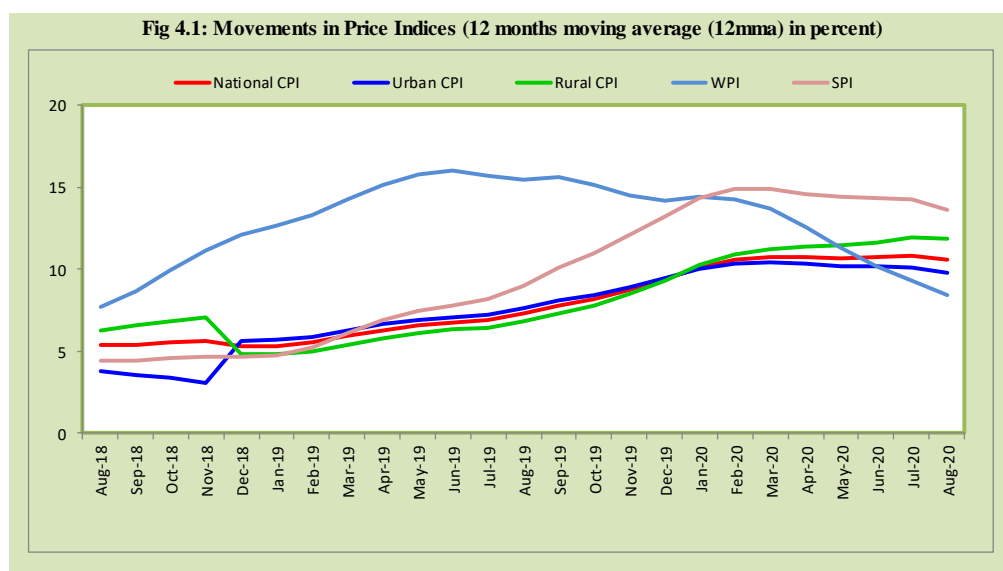
## Inflation Monitor, August 2020



### 3. Trends in Inflation

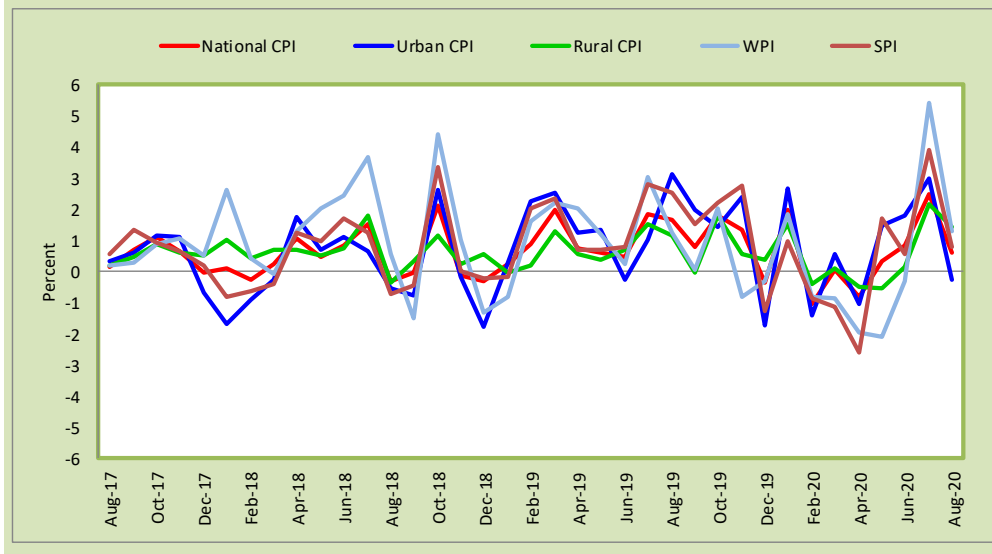


#### 4. Movement in Price Indices (Moving Averages)

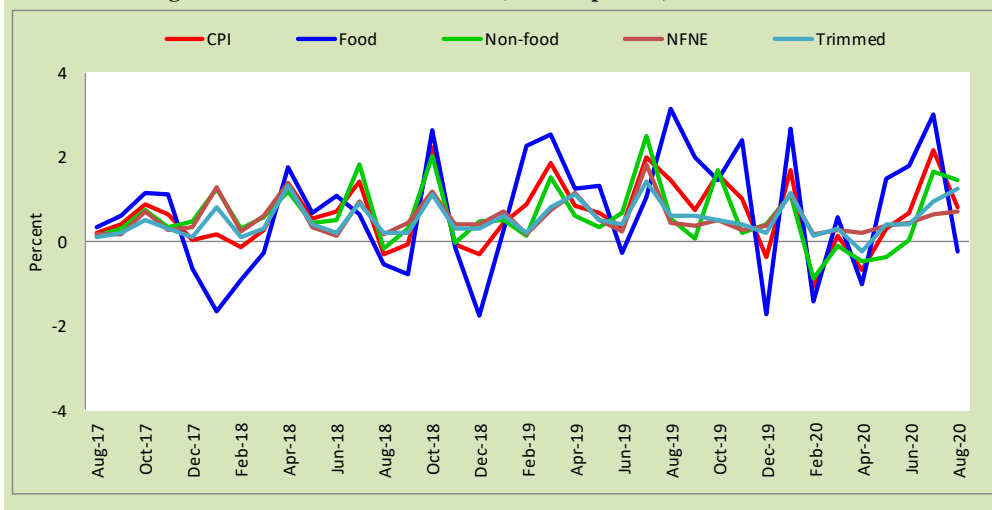


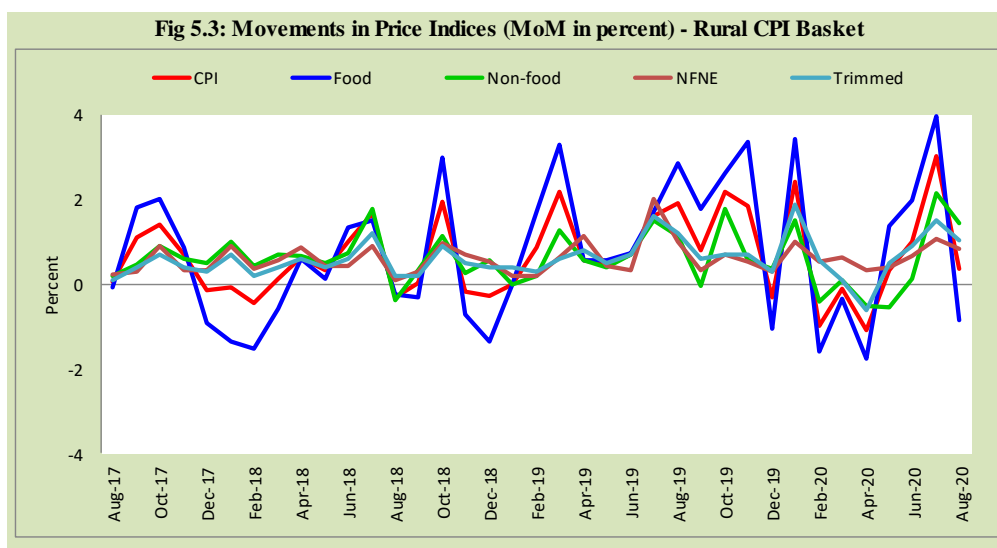
## 5. Movement in Price Indices (Month-on-Month)

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



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



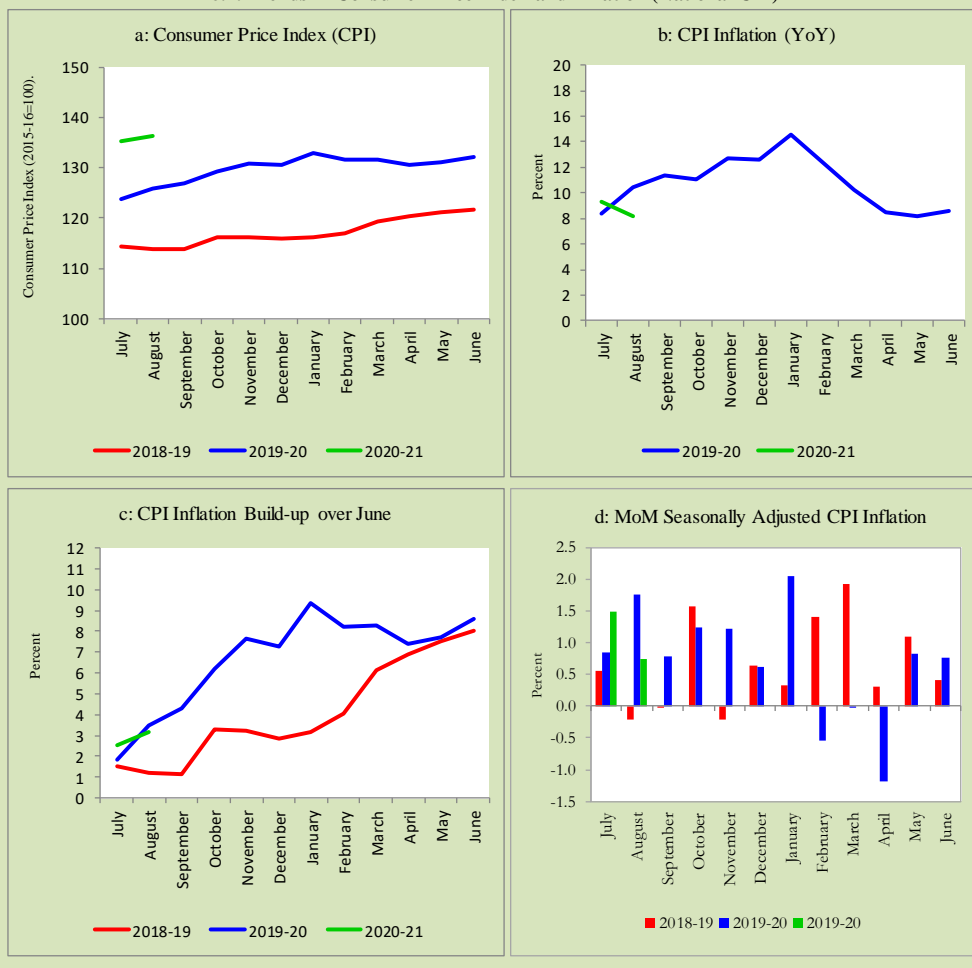


## 6. Trends in Consumer Price Indices and Inflation

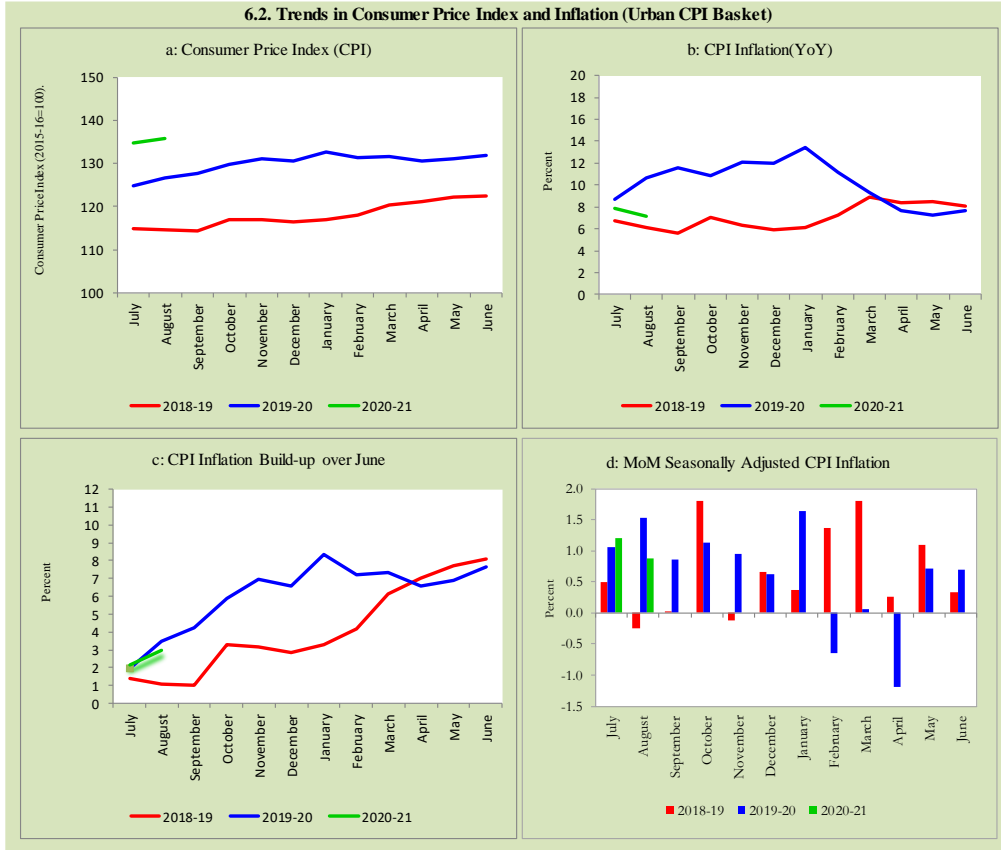
Monthly Consumer Price Indices, YoY growth rates and inflation build up over June along with seasonally adjusted (MoM) growth rates in CPI (National, Urban and Rural) is summarized in the following graphs (Figure 6.1 to 6.3).

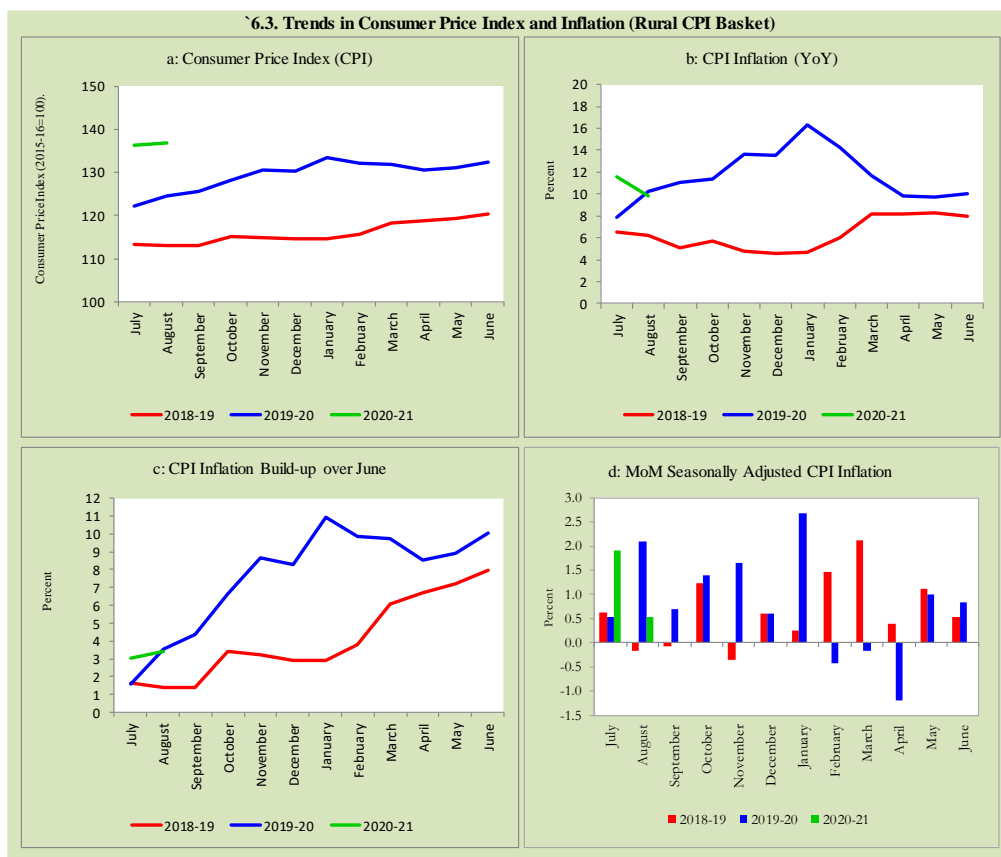


### 6.1. Trends in Consumer Price Index and Inflation (National CPI)



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





## 7. Weighted Contribution

The weighted contribution of food group in the overall urban CPI inflation decreased to 56.8 percent during August 2020 from 68.0 percent in previous month. It was 39.7 percent during corresponding month of last year. The weighted contribution of non-food group increased to 43.2 percent in August 2020 from 32.1 percent in previous month. Non-food group was 60.3 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

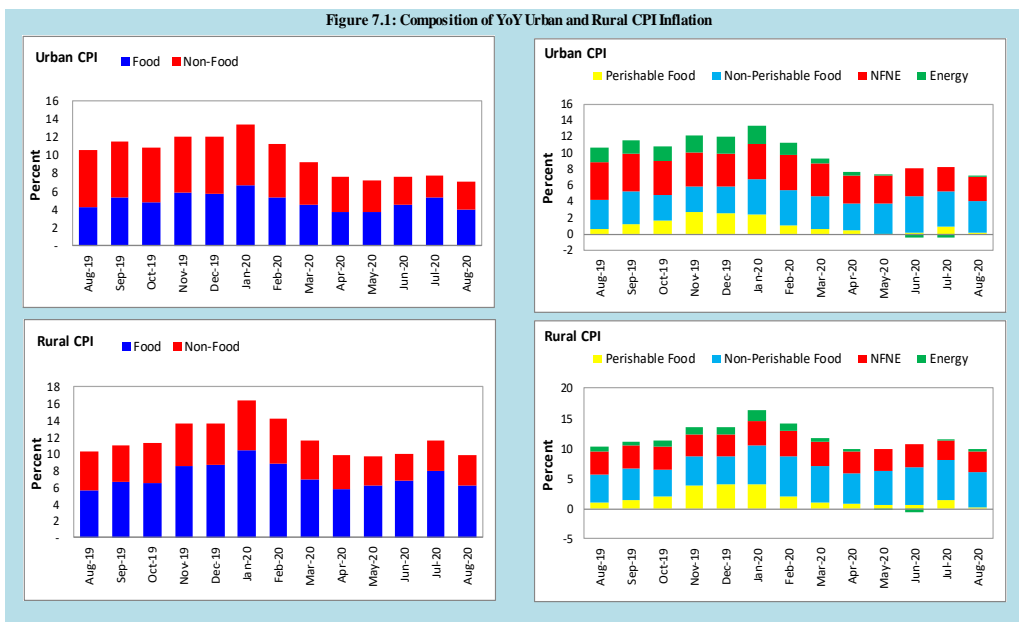
the overall inflation for urban basket. Figure 7.1 provides a graphical presentation of composition of YoY urban CPI inflation cascaded in food group and non-food groups and their respective sub-indexes.

<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
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
Aug-20	100	56.8	2.6	54.2	43.2	1.2	42.0	30.5	11.6

Also, for rural basket, the weighted contribution of food group in the overall rural CPI inflation decreased to 62.4 percent during August 2020 from 69.3 percent in previous month. It was 54.8 percent during corresponding month of last year. On the other hand, the weighted contribution of non-food group increased to 37.6 percent in August 2020 from 30.7 percent in previous month. Non-food group was 45.2 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
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
Aug-20	100	62.4	2.3	60.1	37.6	4.2	33.4	29.0	4.4

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**

	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
General	65.2	52.8	61.8	55.3	43.5	56.2	52.5	45.8	19.9	30.1	41.0	55.3	55.3
Food & Non-Alcoholic Beverages	65.6	50.0	67.8	45.6	35.6	66.7	35.6	31.1	26.7	4.4	34.4	42.2	22.2
Alcoholic Beverages & Tobacco	66.7	100.0	100.0	100.0	66.7	100.0	66.7	66.7	100.0	66.7	66.7	66.7	100.0
Clothing & Footwear	80.0	57.5	72.5	80.0	72.5	75.0	75.0	67.5	10.0	67.5	57.5	67.5	65.0
Housing, Water, Elect, Gas & other Fuels	37.9	10.3	55.2	24.1	20.7	3.4	6.9	27.6	24.1	17.2	10.3	27.6	41.4
Furnishing & Household Equip. Maintenance etc.	88.1	97.6	88.1	95.2	76.2	71.4	92.9	64.3	19.0	61.9	90.5	81.0	95.2
Health	45.2	32.3	64.5	64.5	54.8	71.0	77.4	67.7	35.5	38.7	38.7	74.2	83.9
Transport	53.1	15.6	37.5	37.5	46.9	40.6	50.0	31.3	-6.3	15.6	3.1	46.9	50.0
Communication	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	-20.0	20.0	0.0
Recreation & Culture	60.0	32.0	24.0	32.0	20.0	20.0	28.0	20.0	12.0	20.0	24.0	60.0	52.0
Education	56.3	62.5	6.3	25.0	12.5	6.3	0.0	31.3	0.0	0.0	0.0	0.0	18.8
Restaurant & Hotels	85.7	78.6	78.6	71.4	28.6	71.4	85.7	64.3	14.3	57.1	71.4	64.3	78.6
Miscellaneous	79.3	96.6	79.3	65.5	34.5	82.8	75.9	69.0	37.9	41.4	72.4	86.2	93.1
NFNE	68.1	59.1	58.3	63.0	48.1	55.3	62.6	53.2	19.6	40.4	43.8	60.9	66.4

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

	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
General	60.7	34.4	64.3	50.8	36.9	56.6	48.0	41.8	23.4	32.4	28.7	60.7	49.2
Food & Non-Alcoholic Beverages	55.7	22.8	69.6	46.8	25.3	67.1	32.9	16.5	25.3	8.9	17.7	48.1	15.2
Alcoholic Beverages & Tobacco	100.0	80.0	100.0	80.0	0.0	60.0	100.0	60.0	60.0	20.0	60.0	100.0	100.0
Clothing & Footwear	81.5	66.7	77.8	59.3	48.1	77.8	85.2	70.4	0.0	85.2	48.1	85.2	66.7
Housing, Water, Elect, Gas & other Fuels	52.2	-4.3	82.6	34.8	39.1	8.7	0.0	39.1	34.8	17.4	0.0	52.2	65.2
Furnishing & Household Equip. Maintenance etc.	88.5	73.1	84.6	80.8	57.7	69.2	73.1	80.8	23.1	53.8	65.4	88.5	88.5
Health	57.1	35.7	50.0	78.6	57.1	42.9	42.9	71.4	42.9	50.0	35.7	57.1	50.0
Transport	50.0	12.5	37.5	43.8	25.0	43.8	43.8	12.5	-6.3	0.0	18.8	43.8	62.5
Communication	20.0	0.0	-20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0
Recreation & Culture	11.1	22.2	27.8	11.1	27.8	22.2	33.3	27.8	22.2	11.1	5.6	44.4	33.3
Education	20.0	0.0	0.0	0.0	20.0	0.0	80.0	40.0	0.0	0.0	0.0	0.0	0.0
Restaurant & Hotels	57.1	21.4	42.9	42.9	35.7	78.6	71.4	78.6	28.6	64.3	57.1	64.3	57.1
Miscellaneous	88.2	70.6	70.6	64.7	58.8	70.6	82.4	52.9	41.2	70.6	35.3	88.2	88.2
NFNE	63.2	49.3	58.1	55.1	44.9	52.2	58.1	55.9	24.3	50.0	36.0	66.2	62.5

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.

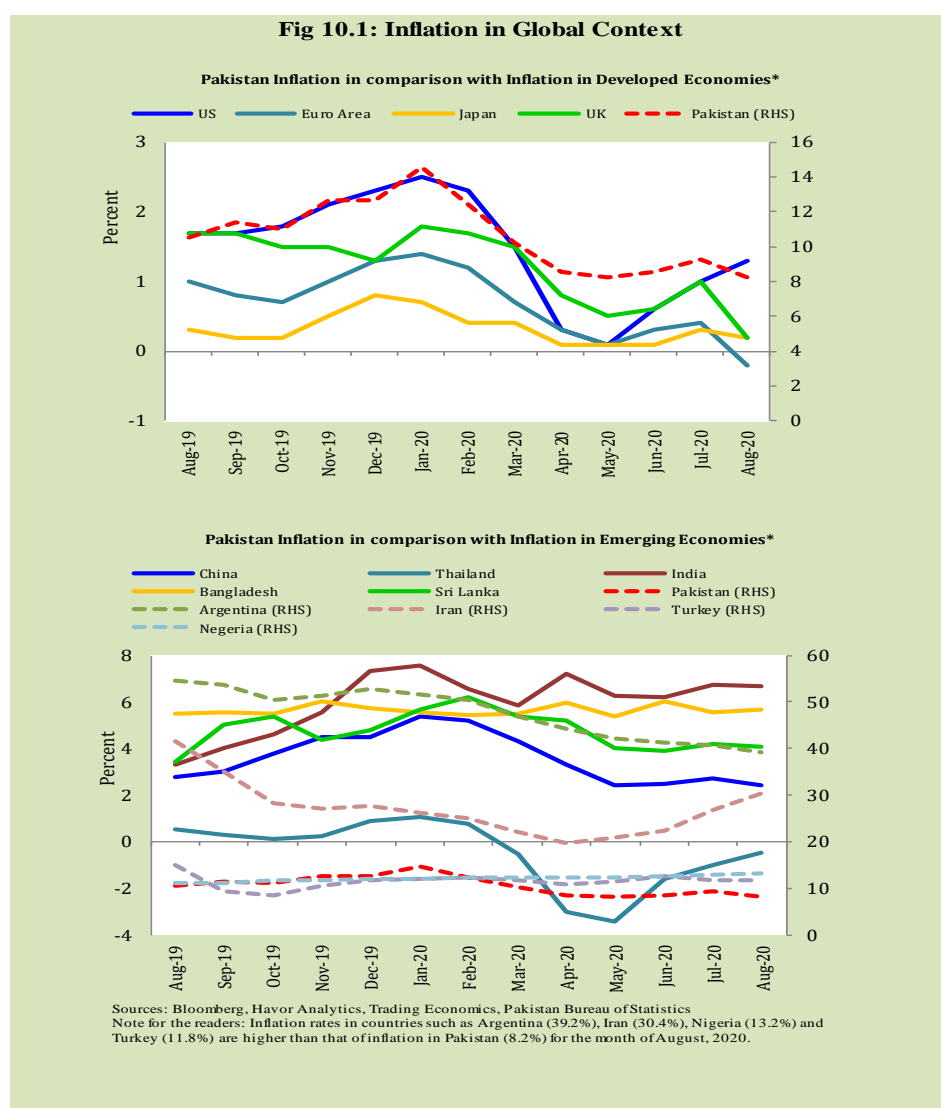
Table 9.1 Inflation in Domestic Urban and Rural CPI Food Commodities (in percent) - August 2020						
S. No	Item	Unit	Urban CPI		Rural CPI	
			YoY	MoM	YoY	MoM
1	Wheat	10 Kg	44.3	11.9	41.1	7.9
2	Wheat Flour Bag	20 Kg	20.9	4.6	23.8	2.9
3	Rice Basmati Broken (Superior/Average Quality) *	1 Kg	5.9	-0.4	12.8	3.4
4	Beef with Bone (Average Quality)	1 Kg	13.8	0.0	10.3	0.6
5	Mutton (Average Quality)	1 Kg	10.2	0.0	10.8	1.2
6	Chicken Farm Broiler (Live)	1 Kg	-38.3	-36.4	-27.0	-31.9
7	Milk Fresh (Un-Boiled)	1 Litre	15.1	5.3	8.2	1.8
8	Eggs Farm	Dozen	28.7	-1.3	30.4	1.4
9	Vegetable Ghee Dalda/Habib Or Other Superior Quality 1 Kg Pouch	Each	15.7	-1.0	19.9	-0.1
10	Pulse Masoor (Washed)	1 Kg	19.5	-1.0	26.9	-1.6
11	Pulse Moong (Washed)	1 Kg	35.7	-6.5	33.3	-9.7
12	Pulse Mash (Washed)	1 Kg	31.4	-2.3	27.8	-4.6
13	Pulse Gram	1 Kg	6.9	-1.3	5.8	-3.4
14	Potatoes	1 Kg	64.1	5.9	65.7	3.7
15	Onions	1 Kg	-33.0	10.2	-38.7	-0.4
16	Tomatoes	1 Kg	-0.7	-31.8	11.9	-33.9
17	Sugar Refined	1 Kg	28.0	13.5	-14.4	0.1
18	Garlic (Lehsun)	1 Kg	-10.2	3.4	25.5	13.3
19	Ginger (Adrak)	500 Gm	39.1	24.1	34.6	20.9
20	Tea Lipton Yellow Label 190 Gm Packet	Each	9.6	0.0	9.2	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.

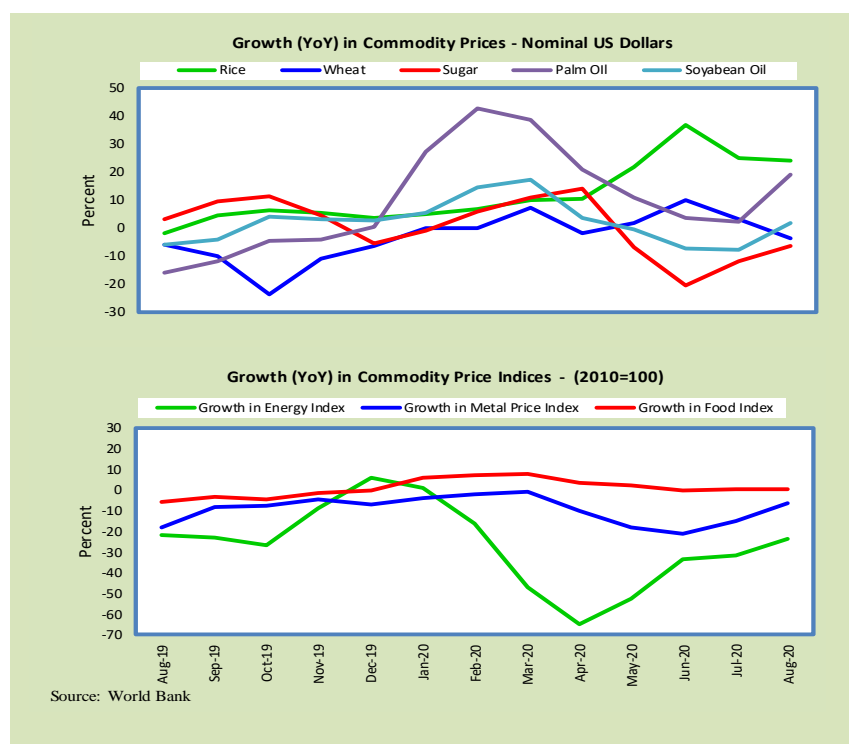


## 11. Global Commodity Prices

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	Aug-19		Jul-20		Aug-20	
	YoY	MoM	YoY	MoM	YoY	MoM
Food	-4.5	-2.5	1.8	0.1	6.3	1.8
Metals	-7.8	-2.2	-0.7	7.9	6.0	4.3
Energy	-22.1	-6.0	-31.6	5.9	-23.4	5.3
Agricultural	-4.8	-3.0	0.8	0.8	7.3	3.1
Cotton	-25.1	-6.3	-9.3	1.1	-1.2	2.1



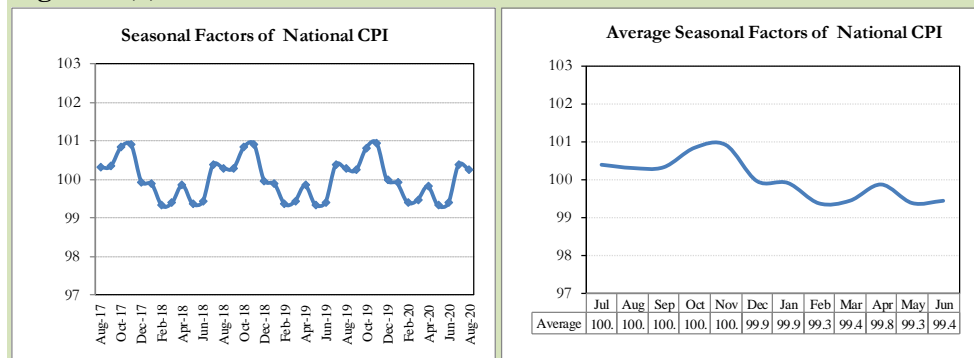
## **12. Seasonal Adjustment in CPI**

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.

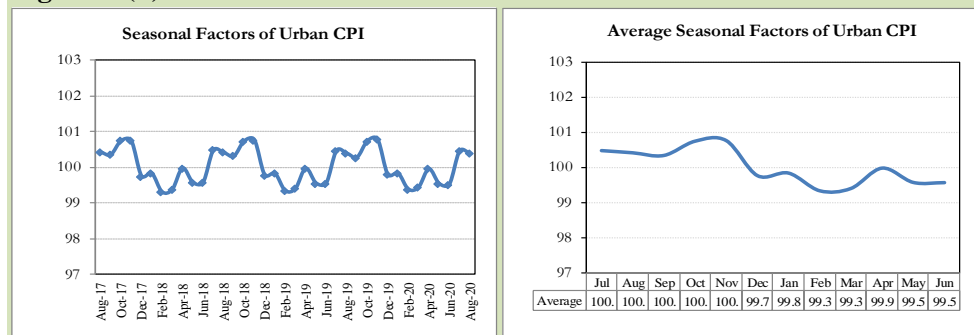
The changes in consumer prices are normally reported in terms of year-on-year and month-on-month basis. Seasonal adjustment is particularly useful for analyzing month-on-month changes. The monthly data series of Consumer Price Indices (National CPI, Urban CPI and Rural CPI) from July 2008 to August 2020 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.

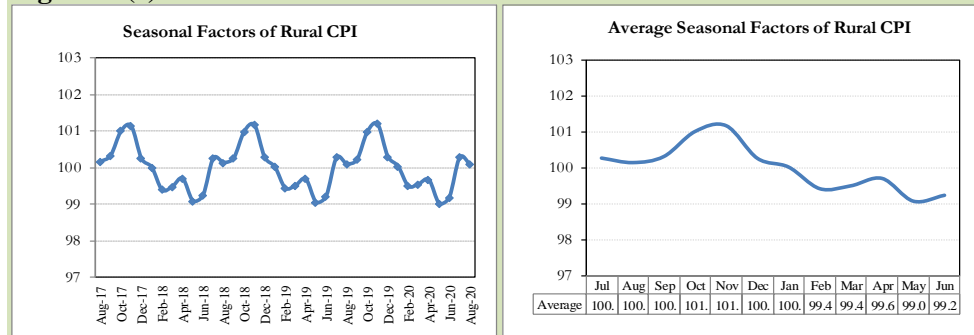
**Fig. 12.1 (a) Seasonal Factors of National CPI**



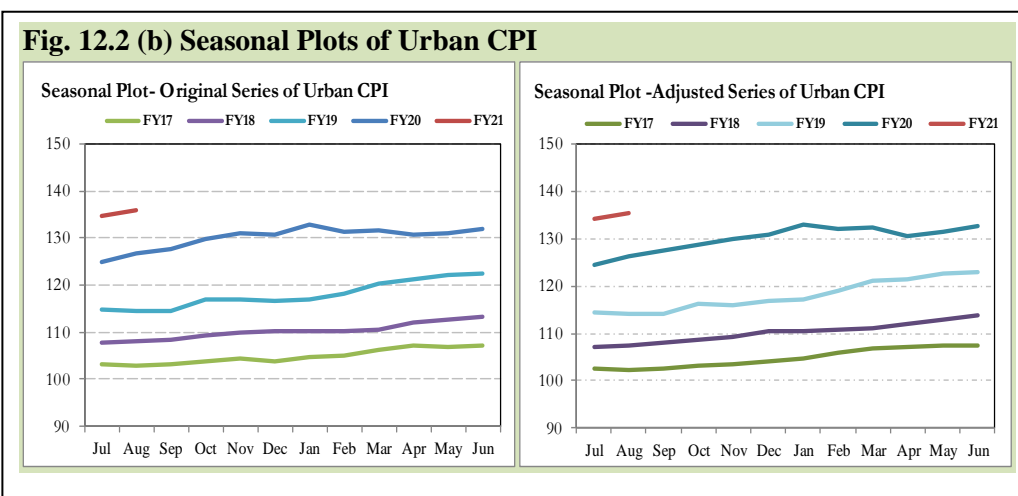
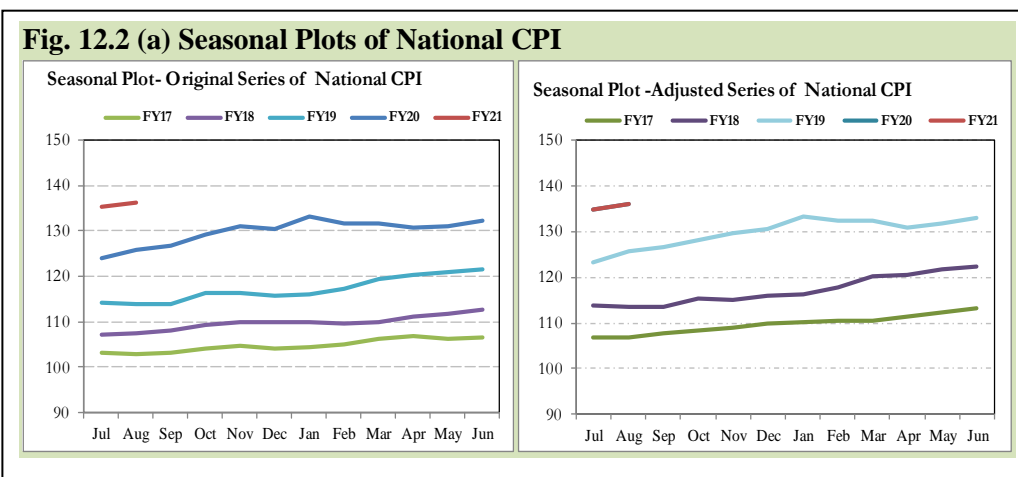
**Fig. 12.1 (b) Seasonal Factors of Urban CPI**



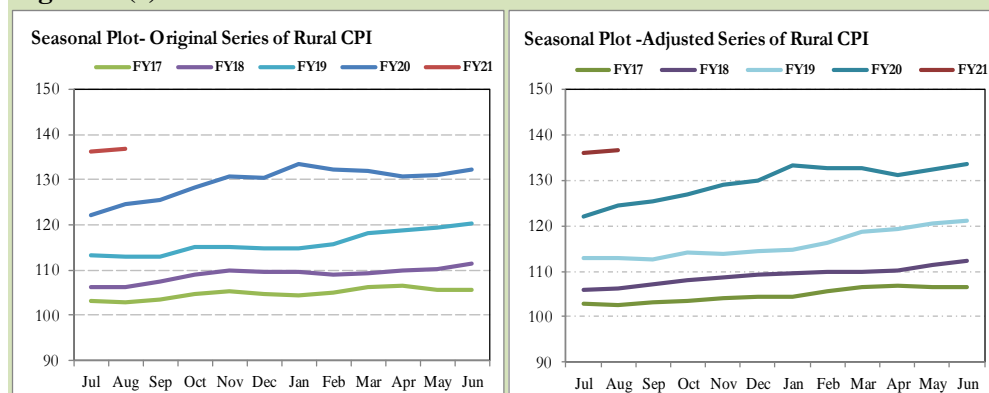
**Fig. 12.1 (c) Seasonal Factors of Rural CPI**



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 (c) Seasonal Plots of Rural CPI**



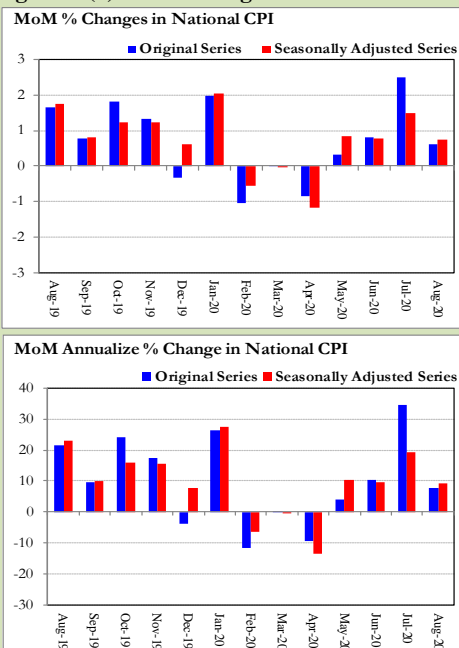
Seasonally adjusted National CPI for August 2020 stood at 135.88 against 136.23 in original series showing a decrease of 0.35 on account of adjustment of upward seasonality in August 2020.

Seasonally adjusted Urban CPI for August 2020 stood at 135.32 against 135.82 in original series showing a decrease of 0.50 on account of adjustment of upward seasonality in August 2020.

Seasonally adjusted Rural CPI for August 2020 stood at 136.72 against 136.84 in original series showing a decrease of 0.12 on account of adjustment of upward seasonality in August 2020.

Month-on-month change of seasonally adjusted National CPI series stood at 0.75% reflecting an increase during August 2020 over previous month and an

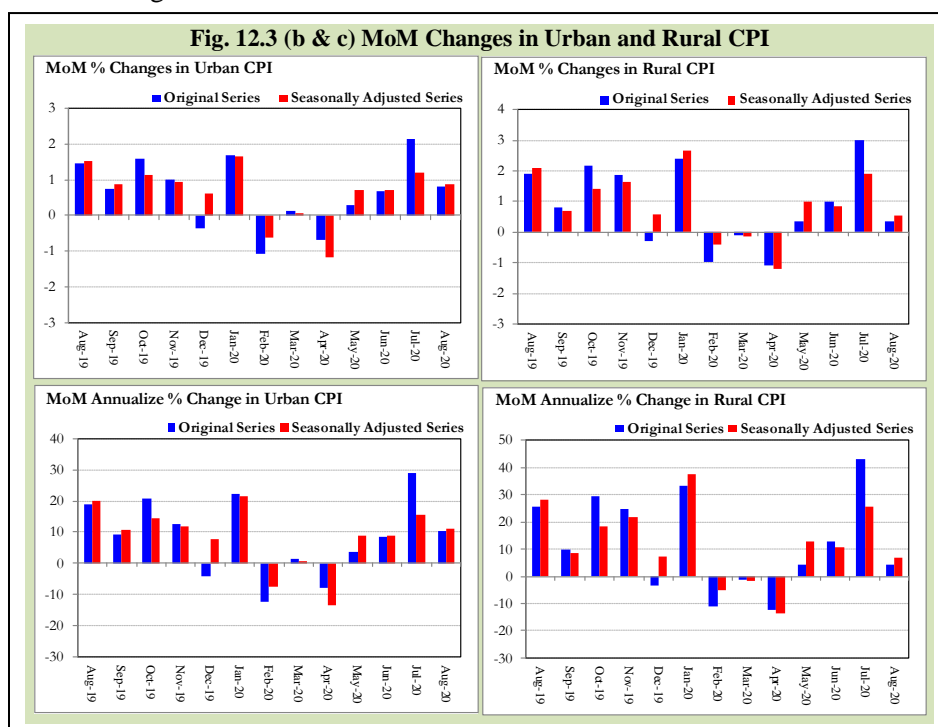
**Fig. 12.3 (a) MoM Changes in National CPI**



increase of 0.63% in original series.

Month-on-month change of seasonally adjusted Urban CPI series stood at 0.89% reflecting an increase during August 2020 over previous month and an increase of 0.81% in original series.

Month-on-month change of seasonally adjusted Rural CPI series stood at 0.54% reflecting an increase during August 2020 over previous month and an increase of 0.35% 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 August 2020 (corresponding to the seasonally adjusted month-on-month rate) is 9.36 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>Aug-19</b>	<b>Jul-20</b>	<b>Aug-20</b>	<b>Aug-19</b>	<b>Jul-20</b>	<b>Aug-20</b>
Food & Non-Alcoholic Beverages	3.4	3.4	3.9	-0.9	12.6	17.8	12.9
Alcoholic Beverages & Tobacco	0.2	0.2	1.7	1.0	29.8	5.0	5.8
Clothing & Footwear	1.3	1.3	0.8	0.3	8.9	10.3	9.2
Housing, Water, Elec, Gas & other Fuels	0.1	0.1	1.3	1.8	7.1	4.2	6.0
Furnishing & Household Equip. Maintenance	0.9	0.9	0.9	0.6	11.6	7.8	7.5
Health	0.8	0.8	1.0	0.7	11.9	7.8	7.7
Transport	1.9	1.9	9.6	3.0	18.5	-4.5	-3.4
Communication	0.1	0.1	0.0	0.0	4.3	0.3	0.3
Recreation & Culture	0.6	0.6	0.9	0.3	7.7	3.8	3.5
Education	0.2	0.2	0.0	0.0	6.9	1.1	1.0
Restaurants & Hotels	1.0	1.0	0.6	1.4	6.2	7.5	8.0
Miscellaneous	1.9	1.9	2.0	3.6	13.2	11.7	13.6
<b>Overall National CPI</b>	<b>1.6</b>	<b>1.6</b>	<b>2.5</b>	<b>0.6</b>	<b>10.5</b>	<b>9.3</b>	<b>8.2</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>Aug-19</b>	<b>Jul-20</b>	<b>Aug-20</b>	<b>Aug-19</b>	<b>Jul-20</b>	<b>Aug-20</b>
<b>I. Food Group</b>	<b>36.8</b>	<b>3.1</b>	<b>3.0</b>	<b>-0.3</b>	<b>11.9</b>	<b>15.1</b>	<b>11.3</b>
Food & Non-Alcoholic Beverages	30.4	3.7	3.5	-0.7	12.6	16.9	11.9
Alcoholic Beverages & Tobacco	0.9	0.2	2.2	1.0	28.5	4.7	5.5
Restaurant & Hotels (Food Component)	5.5	0.5	0.4	2.2	5.8	7.0	8.8
<b>II. Non-Food Group</b>	<b>63.2</b>	<b>0.5</b>	<b>1.7</b>	<b>1.5</b>	<b>9.9</b>	<b>3.9</b>	<b>4.8</b>
Clothing & Footwear	8.0	1.4	0.4	0.2	9.1	9.4	8.0
Housing, Water, Elec, Gas & other Fuels	27.0	0.0	1.3	1.7	8.6	3.6	5.4
Furnishing & Household Equip. Maintenance	4.1	0.6	0.5	0.5	12.4	6.3	6.2
Health	2.3	0.3	0.9	0.9	11.7	5.9	6.7
Transport	6.1	1.9	9.3	3.1	19.0	-4.8	-3.7
Communication	2.4	0.0	0.0	0.0	5.5	0.4	0.4
Recreation & Culture	1.7	0.8	0.5	0.4	7.5	3.1	2.7
Education	4.9	0.1	0.0	0.1	7.4	1.1	1.0
Restaurants & Hotels (Non-food Component)	1.9	0.3	0.0	0.9	2.9	6.0	6.6
Miscellaneous	4.8	1.4	1.6	3.4	12.6	10.4	12.6
<b>Overall Urban CPI</b>	<b>100.0</b>	<b>1.5</b>	<b>2.2</b>	<b>0.8</b>	<b>10.6</b>	<b>7.8</b>	<b>7.1</b>



Table A3: Rural CPI Inflation by Groups (YoY and MoM in percent)							
	Weights	MoM change			YoY change		
		Aug-19	Jul-20	Aug-20	Aug-19	Jul-20	Aug-20
<b>I. Food Group</b>	<b>45.9</b>	<b>2.9</b>	<b>4.0</b>	<b>-0.9</b>	<b>12.6</b>	<b>17.8</b>	<b>13.5</b>
Food & Non-Alcoholic Beverages	40.9	3.1	4.3	-1.1	12.6	18.7	14.0
Alcoholic Beverages & Tobacco	1.3	0.3	1.1	1.0	31.3	5.4	6.1
Restaurant & Hotels (Food Component)	3.8	1.3	1.7	0.9	7.9	12.0	11.6
<b>II. Non-Food Group</b>	<b>54.1</b>	<b>1.1</b>	<b>2.2</b>	<b>1.5</b>	<b>8.4</b>	<b>6.5</b>	<b>6.8</b>
Clothing & Footwear	9.5	1.2	1.2	0.4	8.7	11.5	10.6
Housing, Water, Elec, Gas & other Fuels	18.5	0.3	1.5	1.9	3.7	5.5	7.2
Furnishing & Household Equip. Maintenance etc.	4.1	1.4	1.4	0.9	10.2	10.1	9.5
Health	3.5	1.4	1.1	0.4	12.2	9.7	8.7
Transport	5.6	1.9	10.0	2.7	17.6	-3.8	-3.0
Communication	2.0	0.2	0.0	0.0	2.1	0.3	0.2
Recreation & Culture	1.4	0.3	1.6	0.1	8.0	5.2	5.0
Education	2.1	0.4	0.0	0.0	5.3	1.2	0.7
Restaurants & Hotels (Non-food Component)	2.4	3.1	0.0	0.0	8.6	3.8	0.8
Miscellaneous	5.0	2.7	2.5	3.8	14.1	13.8	15.0
<b>Overall Rural CPI</b>		<b>1.9</b>	<b>3.0</b>	<b>0.4</b>	<b>10.3</b>	<b>11.6</b>	<b>9.9</b>

Table A4: Top Ten Contributors to Urban CPI Inflation (YoY) in August 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Aug-19	Aug-20	
A. Ranked by Weighted Contribution					
1	Milk Fresh	7.11	4.05	14.86	13.35
2	House Rent	19.26	6.46	4.29	11.55
3	Wheat Flour	3.01	9.15	23.38	8.52
4	Condiments And Spices	1.33	21.95	38.87	8.01
5	Readymade Food	5.52	5.80	8.80	6.59
6	Electricity Charges	4.56	-0.79	11.39	6.21
7	Potatoes	0.45	27.34	62.44	4.88
8	Personal Effects N.E.C.	0.94	25.55	27.03	4.55
9	Sugar	1.11	33.80	27.98	4.13
10	Meat	2.04	12.05	12.24	3.78
Total		45.33			71.57
B. Ranked by Percentage Change					
1	Potatoes	0.45	27.34	62.44	4.88
2	Wheat	0.61	8.75	44.30	3.24
3	Beans	0.04	9.43	40.40	0.20
4	Condiments And Spices	1.33	21.95	38.87	8.01
5	Pulse Moong	0.17	46.32	35.67	0.71
6	Pulse Mash	0.12	29.52	31.43	0.30
7	Eggs	0.51	0.11	28.65	1.81
8	Sugar	1.11	33.80	27.98	4.13
9	Personal Effects N.E.C.	0.94	25.55	27.03	4.55
10	Butter	0.09	25.02	25.64	0.36
Total		5.38			28.19
C. Ranked by Weights					
1	House Rent	19.26	6.46	4.29	11.55
2	Milk Fresh	7.11	4.05	14.86	13.35
3	Readymade Food	5.52	5.80	8.80	6.59
4	Education	4.88	7.38	1.01	0.78
5	Electricity Charges	4.56	-0.79	11.39	6.21
6	Wheat Flour	3.01	9.15	23.38	8.52
7	Appliances/Articles/Products For P	2.98	9.66	8.15	3.24
8	Motor Fuel	2.91	23.43	-10.25	-5.36
9	Cotton Cloth	2.22	13.05	9.93	3.04
10	Meat	2.04	12.05	12.24	3.78
Total		54.48			51.71
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 7.1 percent in August 2020.					

Table A5: Top Ten Contributors to Urban CPI Inflation (MoM) in August 2020					
Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Jul-20	Aug-20	
<b>A. Ranked by Weighted Contribution</b>					
1	Electricity Charges	4.56	0.00	11.61	52.42
2	Milk Fresh	7.11	1.37	4.79	39.12
3	Wheat Flour	3.01	-1.51	5.44	19.26
4	Sugar	1.11	3.82	13.53	18.70
5	Readymade Food	5.52	0.42	2.22	14.70
6	Personal Effects N.E.C.	0.94	4.85	8.69	14.21
7	Motor Fuel	2.91	27.01	3.34	12.60
8	Transport Services	1.75	-7.55	5.41	10.40
9	Wheat	0.61	7.42	11.95	9.34
10	Condiments And Spices	1.33	7.57	2.81	6.49
		<b>28.85</b>			<b>197.22</b>
<b>B. Ranked by Percentage Change</b>					
1	Sugar	1.11	3.82	13.53	18.70
2	Wheat	0.61	7.42	11.95	9.34
3	Electricity Charges	4.56	0.00	11.61	52.42
4	Onions	0.59	16.41	10.40	5.52
5	Personal Effects N.E.C.	0.94	4.85	8.69	14.21
6	Wheat Products	0.09	1.62	6.85	0.76
7	Bakery And Confectionary	0.48	0.59	6.65	3.70
8	Water Supply	0.53	0.00	6.15	4.27
9	Potatoes	0.45	4.58	5.85	5.83
10	Wheat Flour	3.01	-1.51	5.44	19.26
		<b>12.37</b>			<b>134.00</b>
<b>C. Ranked by Weights</b>					
1	House Rent	19.26	1.58	0.00	0.00
2	Milk Fresh	7.11	1.37	4.79	39.12
3	Readymade Food	5.52	0.42	2.22	14.70
4	Education	4.88	0.00	0.06	0.40
5	Electricity Charges	4.56	0.00	11.61	52.42
6	Wheat Flour	3.01	-1.51	5.44	19.26
7	Appliances/Articles/Products For P	2.98	0.49	1.47	5.17
8	Motor Fuel	2.91	27.01	3.34	12.60
9	Cotton Cloth	2.22	0.45	0.11	0.31
10	Meat	2.04	3.97	0.01	0.04
		<b>54.48</b>			<b>144.00</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 MoM change in Urban CPI, which is 0.8 percent in August 2020.					

Table A6: Top and Bottom Fifteen Contributors to Urban CPI Inflation (YoY) in August 2020					
Top 15 Contributors		Weights	YoY Change		Weighted Contribution (%)
Items/ Contributors			Aug-19	Aug-20	
Ranked by Weighted Contribution					
1	Milk Fresh	7.11	4.05	14.86	13.35
2	House Rent	19.26	6.46	4.29	11.55
3	Wheat Flour	3.01	9.15	23.38	8.52
4	Condiments And Spices	1.33	21.95	38.87	8.01
5	Readymade Food	5.52	5.80	8.80	6.59
6	Electricity Charges	4.56	-0.79	11.39	6.21
7	Potatoes	0.45	27.34	62.44	4.88
8	Personal Effects N.E.C.	0.94	25.55	27.03	4.55
9	Sugar	1.11	33.80	27.98	4.13
10	Meat	2.04	12.05	12.24	3.78
11	Appliances/Articles/Products For P	2.98	9.66	8.15	3.24
12	Wheat	0.61	8.75	44.30	3.24
13	Cotton Cloth	2.22	13.05	9.93	3.04
14	Vegetable Ghee	1.03	17.13	16.38	2.36
15	Eggs	0.51	0.11	28.65	1.81
Total		52.69			85.27
Bottom 15 Contributors					
1	Chicken	1.36	75.27	-38.28	-8.40
2	Motor Fuel	2.91	23.43	-10.25	-5.36
3	Onions	0.59	61.11	-33.02	-3.48
4	Fish	0.39	13.30	-8.50	-0.44
5	Fresh Fruits	1.44	8.20	-1.32	-0.25
6	Tomatoes	0.35	-28.81	-0.74	-0.04
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	19.75	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	0.27	6.08	0.00
13	Dental Services	0.02	-1.25	4.45	0.01
14	Accommodation Services	0.13	0.84	0.58	0.01
15	Major Tools & Equipments	0.01	4.67	8.62	0.01
Total		10.29			-17.93

Table A7: Top and Bottom Fifteen Contributors to Urban CPI Inflation (MoM) in August 2020					
Top 15 Contributors		MoM Change		Weighted Contribution (%)	
Items/ Contributors	Weights	Jul-20	Aug-20		
Ranked by Weighted Contribution					
1	Electricity Charges	4.56	0.00	11.61	52.42
2	Milk Fresh	7.11	1.37	4.79	39.12
3	Wheat Flour	3.01	-1.51	5.44	19.26
4	Sugar	1.11	3.82	13.53	18.70
5	Readymade Food	5.52	0.42	2.22	14.70
6	Personal Effects N.E.C.	0.94	4.85	8.69	14.21
7	Motor Fuel	2.91	27.01	3.34	12.60
8	Transport Services	1.75	-7.55	5.41	10.40
9	Wheat	0.61	7.42	11.95	9.34
10	Condiments And Spices	1.33	7.57	2.81	6.49
11	Potatoes	0.45	4.58	5.85	5.83
12	Onions	0.59	16.41	10.40	5.52
13	Appliances/Articles/Products For P	2.98	0.49	1.47	5.17
14	Water Supply	0.53	0.00	6.15	4.27
15	Bakery And Confectionary	0.48	0.59	6.65	3.70
Total		33.88			221.71
Bottom 15 Contributors					
1	Chicken	1.36	2.60	-36.45	-64.49
2	Fresh Fruits	1.44	-6.24	-23.15	-46.21
3	Tomatoes	0.35	179.19	-31.83	-20.00
4	Fresh Vegetables	1.53	23.84	-2.78	-5.60
5	Pulse Moong	0.17	-10.72	-6.50	-1.55
6	Vegetable Ghee	1.03	-0.61	-0.86	-1.21
7	Eggs	0.51	10.82	-1.33	-0.91
8	Cooking Oil	1.10	-1.34	-0.59	-0.86
9	Fish	0.39	-0.58	-1.87	-0.75
10	Liquefied Hydrocarbons	0.51	7.27	-0.68	-0.41
11	Pulse Mash	0.12	-2.71	-2.28	-0.25
12	Pulse Gram	0.17	-2.39	-1.29	-0.23
13	Gram Whole	0.09	-2.70	-1.78	-0.19
14	Pulse Masoor	0.16	-6.27	-0.98	-0.15
15	Besan	0.08	-3.72	-1.21	-0.11
Total		9.00			-142.92

Table A8: Top and Bottom Fifteen Contributors to MoM Urban CPI Food Inflation in August 2020					
Top 15 Contributors		Weights	MoM Change		Weighted Contribution (%)
Items/ Contributors	Jul-20		Aug-20		
Ranked by Weighted Contribution					
1	Milk Fresh	7.11	1.37	4.79	39.12
2	Wheat Flour	3.01	-1.51	5.44	19.26
3	Sugar	1.11	3.82	13.53	18.70
4	Readymade Food	5.52	0.42	2.22	14.70
5	Wheat	0.61	7.42	11.95	9.34
6	Condiments And Spices	1.33	7.57	2.81	6.49
7	Potatoes	0.45	4.58	5.85	5.83
8	Onions	0.59	16.41	10.40	5.52
9	Bakery And Confectionary	0.48	0.59	6.65	3.70
10	Milk Products	0.64	1.74	4.71	3.54
11	Marriage Hall Charges	1.75	0.00	0.89	1.91
12	Wheat Products	0.09	1.62	6.85	0.76
13	Cigarettes	0.72	2.88	0.64	0.59
14	Pan Prepared	0.14	0.00	2.16	0.54
15	Beverages	0.89	0.18	0.49	0.51
Total		24.45			130.49
Bottom 15 Contributors					
1	Chicken	1.36	2.60	-36.45	-64.49
2	Fresh Fruits	1.44	-6.24	-23.15	-46.21
3	Tomatoes	0.35	179.19	-31.83	-20.00
4	Fresh Vegetables	1.53	23.84	-2.78	-5.60
5	Pulse Moong	0.17	-10.72	-6.50	-1.55
6	Vegetable Ghee	1.03	-0.61	-0.86	-1.21
7	Eggs	0.51	10.82	-1.33	-0.91
8	Cooking Oil	1.10	-1.34	-0.59	-0.86
9	Fish	0.39	-0.58	-1.87	-0.75
10	Pulse Mash	0.12	-2.71	-2.28	-0.25
11	Pulse Gram	0.17	-2.39	-1.29	-0.23
12	Gram Whole	0.09	-2.70	-1.78	-0.19
13	Pulse Masoor	0.16	-6.27	-0.98	-0.15
14	Besan	0.08	-3.72	-1.21	-0.11
15	Tea	0.84	0.00	0.00	0.00
Total		9.33			-142.51

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

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Jul-20	Aug-20	
Ranked by Weighted Contribution					
1	Electricity Charges	4.56	0.00	11.61	52.42
2	Electrical Appliances For Personal	0.94	4.85	8.69	14.21
3	Motor Fuel	2.91	27.01	3.34	12.60
4	Transport Services	1.75	-7.55	5.41	10.40
5	Personal Grooming Services	2.98	0.49	1.47	5.17
6	Water Supply	0.53	0.00	6.15	4.27
7	Household Equipments	1.00	0.65	1.12	1.33
8	Drugs And Medicines	1.07	1.04	0.85	1.18
9	Doctor (Mbbs) Clinic Fee	0.40	1.36	1.18	0.75
10	Tailoring	1.07	0.14	0.42	0.58
11	Hospitals Services	0.57	0.38	0.78	0.53
12	Motor Vehicles	0.81	0.20	0.39	0.43
13	Education	4.88	0.00	0.06	0.40
14	Construction Wage Rates	0.20	0.23	1.44	0.40
15	Furniture And Furnishing	0.48	0.70	0.66	0.37
Total		24.16			105.05
<u>Bottom 15 Contributors</u>					
1	Liquefied Hydrocarbons	0.51	7.27	-0.68	-0.41
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	Communication Apparatus	0.45	0.01	0.00	0.00
11	Household Servant	0.77	1.14	0.00	0.00
12	House Rent	19.26	1.58	0.00	0.00
13	Carpets	0.03	0.76	0.05	0.00
14	Therapeutic Appliances And	0.01	1.22	0.57	0.00
15	Woolen Cloth	0.84	1.08	0.01	0.01
Total		25.39			-0.40

Table A10: Top Ten Contributors to Rural CPI Inflation (YoY) in August 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Aug-19	Aug-20	
A. Ranked by Weighted Contribution					
1	Wheat	3.47	8.39	41.14	12.51
2	Milk Fresh	10.38	5.27	8.17	8.20
3	Wheat Flour	3.43	10.77	26.22	8.03
4	Condiments And Spices	1.49	13.39	48.79	7.39
5	Potatoes	0.74	28.08	65.14	6.63
6	Sugar	2.03	37.34	25.53	5.18
7	Vegetable Ghee	2.38	15.80	20.00	5.12
8	Cotton Cloth	2.84	10.14	15.31	4.83
9	Solid Fuel	4.48	3.86	11.22	4.78
10	Readymade Food	3.80	7.84	11.60	4.61
Total		35.04			67.28
B. Ranked by Percentage Change					
1	Potatoes	0.74	28.08	65.14	6.63
2	Condiments And Spices	1.49	13.39	48.79	7.39
3	Wheat	3.47	8.39	41.14	12.51
4	Water Supply	0.06	27.17	37.55	0.30
5	Beans	0.09	6.09	37.54	0.33
6	Pulse Moong	0.25	50.97	33.34	0.76
7	Personal Effects N.E.C.	1.21	31.28	30.58	4.57
8	Eggs	0.57	-1.64	30.36	1.54
9	Pulse Mash	0.15	31.39	27.83	0.26
10	Pulse Masoor	0.21	14.50	26.90	0.39
Total		8.24			34.69
C. Ranked by Weights					
1	Milk Fresh	10.38	5.27	8.17	8.20
2	House Rent	8.61	5.51	4.94	4.36
3	Solid Fuel	4.48	3.86	11.22	4.78
4	Readymade Food	3.80	7.84	11.60	4.61
5	Wheat	3.47	8.39	41.14	12.51
6	Electricity Charges	3.44	-0.79	11.39	3.46
7	Wheat Flour	3.43	10.77	26.22	8.03
8	Cotton Cloth	2.84	10.14	15.31	4.83
9	Motor Fuels	2.49	23.18	-10.55	-3.47
10	Vegetable Ghee	2.38	15.80	20.00	5.12
Total		45.32			52.43
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 9.9 percent in August 2020.					



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

Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Jul-20	Aug-20	
A. Ranked by Weighted Contribution					
1	Electricity Charges	3.44	0.00	11.61	89.95
2	Wheat	3.47	10.84	7.89	80.33
3	Sugar	2.03	3.67	13.31	76.49
4	Milk Fresh	10.38	1.23	1.79	48.87
5	Personal Effects N.E.C.	1.21	6.02	9.55	43.51
6	Wheat Flour	3.43	1.73	4.36	41.30
7	Motor Fuels	2.49	29.61	3.55	25.82
8	Potatoes	0.74	5.33	3.73	15.48
9	Transport Services	1.80	-5.17	3.17	14.92
10	Readymade Food	3.80	1.72	0.91	10.21
		32.80			446.88
B. Ranked by Percentage Change					
1	Sugar	2.03	3.67	13.31	76.49
2	Electricity Charges	3.44	0.00	11.61	89.95
3	Personal Effects N.E.C.	1.21	6.02	9.55	43.51
4	Wheat	3.47	10.84	7.89	80.33
5	Wheat Products	0.11	2.02	6.49	1.86
6	Wheat Flour	3.43	1.73	4.36	41.30
7	Potatoes	0.74	5.33	3.73	15.48
8	Motor Fuels	2.49	29.61	3.55	25.82
9	Ice Cream	0.06	1.60	3.25	0.49
10	Gur	0.15	-1.11	3.19	1.40
		17.14			376.63
C. Ranked by Weights					
1	Milk Fresh	10.38	1.23	1.79	48.87
2	House Rent	8.61	1.70	0.00	0.00
3	Solid Fuel	4.48	0.00	0.07	0.84
4	Readymade Food	3.80	1.72	0.91	10.21
5	Wheat	3.47	10.84	7.89	80.33
6	Electricity Charges	3.44	0.00	11.61	89.95
7	Wheat Flour	3.43	1.73	4.36	41.30
8	Cotton Cloth	2.84	2.45	0.01	0.12
9	Motor Fuels	2.49	29.61	3.55	25.82
10	Vegetable Ghee	2.38	0.33	-0.04	-0.30
		45.32			297.14

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 0.4 percent in August 2020.

Table A12: Top and Bottom Fifteen Contributors to Rural CPI Inflation (YoY) in August 2020					
Top 15 Contributors			YoY Change		Weighted Contribution (%)
Items/ Contributors	Weights	Aug-19	Aug-20		
Ranked by Weighted Contribution					
1	Wheat	3.47	8.39	41.14	12.51
2	Milk Fresh	10.38	5.27	8.17	8.20
3	Wheat Flour	3.43	10.77	26.22	8.03
4	Condiments And Spices	1.49	13.39	48.79	7.39
5	Potatoes	0.74	28.08	65.14	6.63
6	Sugar	2.03	37.34	25.53	5.18
7	Vegetable Ghee	2.38	15.80	20.00	5.12
8	Cotton Cloth	2.84	10.14	15.31	4.83
9	Solid Fuel	4.48	3.86	11.22	4.78
10	Readymade Food	3.80	7.84	11.60	4.61
11	Personal Effects N.E.C.	1.21	31.28	30.58	4.57
12	House Rent	8.61	5.51	4.94	4.36
13	Electricity Charges	3.44	-0.79	11.39	3.46
14	Rice	1.55	8.14	15.60	3.02
15	Meat	1.71	10.95	10.46	2.00
Total		51.56			84.68
Bottom 15 Contributors					
1	Chicken	1.46	56.48	-26.99	-4.48
2	Onions	0.90	62.51	-38.68	-4.22
3	Motor Fuels	2.49	23.18	-10.55	-3.47
4	Fresh Vegetables	2.09	9.84	-4.79	-1.00
5	Liquefied Hydrocarbons	1.00	-2.36	-5.47	-0.56
6	Fresh Fruits	1.45	14.69	-2.22	-0.31
7	Fish	0.26	13.69	-1.78	-0.05
8	Gram Whole	0.11	-1.51	-0.92	-0.01
9	Motor Vehicle Tax	0.02	17.87	0.00	0.00
10	Newspapers	0.02	33.33	0.00	0.00
11	Accommodation Services	0.14	0.00	0.00	0.00
12	Postal Services	0.01	31.58	0.00	0.00
13	Communication Services	1.65	1.15	0.00	0.00
14	Garbage Collection	0.01	1.03	7.77	0.01
15	Dessert Preparation	0.01	5.84	10.25	0.01
Total		11.63			-14.08

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

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Jul-20	Aug-20	
Ranked by Weighted Contribution					
1	Electricity Charges	3.44	0.00	11.61	89.95
2	Wheat	3.47	10.84	7.89	80.33
3	Sugar	2.03	3.67	13.31	76.49
4	Milk Fresh	10.38	1.23	1.79	48.87
5	Personal Effects N.E.C.	1.21	6.02	9.55	43.51
6	Wheat Flour	3.43	1.73	4.36	41.30
7	Motor Fuels	2.49	29.61	3.55	25.82
8	Potatoes	0.74	5.33	3.73	15.48
9	Transport Services	1.80	-5.17	3.17	14.92
10	Readymade Food	3.80	1.72	0.91	10.21
11	Rice	1.55	2.96	1.76	9.91
12	Personal Grooming Services	1.54	0.64	2.11	9.38
13	Tailoring	1.30	0.09	1.17	4.36
14	Milk Products	0.96	0.71	1.69	4.23
15	Meat	1.71	1.82	0.74	3.97
Total		39.86			478.73
Bottom 15 Contributors					
1	Chicken	1.46	2.58	-31.90	-145.22
2	Fresh Fruits	1.45	-6.62	-25.42	-119.42
3	Tomatoes	0.51	241.40	-33.94	-72.21
4	Fresh Vegetables	2.09	21.63	-8.66	-48.44
5	Condiments And Spices	1.49	1.48	-3.51	-21.01
6	Pulse Moong	0.25	-13.42	-9.66	-8.33
7	Pulse Gram	0.28	-4.98	-3.41	-2.28
8	Pulse Mash	0.15	-4.04	-4.55	-1.45
9	Pulse Masoor	0.21	-4.06	-1.57	-0.75
10	Onions	0.90	25.57	-0.40	-0.69
11	Gram Whole	0.11	-4.00	-2.47	-0.68
12	Liquefied Hydrocarbons	1.00	9.25	-0.18	-0.44
13	Besan	0.07	-4.42	-1.94	-0.36
14	Vegetable Ghee	2.38	0.33	-0.04	-0.30
15	Fish	0.26	-0.39	-0.32	-0.21
Total		12.61			-421.80

Table A14: Top and Bottom Fifteen Contributors to MoM Rural CPI Food Inflation in August 2020					
Top 15 Contributors		MoM Change		Weighted Contribution (%)	
Items/ Contributors	Weights	Jul-20	Aug-20		
Ranked by Weighted Contribution					
1	Wheat	3.47	10.84	7.89	80.33
2	Sugar	2.03	3.67	13.31	76.49
3	Milk Fresh	10.38	1.23	1.79	48.87
4	Wheat Flour	3.43	1.73	4.36	41.30
5	Potatoes	0.74	5.33	3.73	15.48
6	Readymade Food	3.80	1.72	0.91	10.21
7	Rice	1.55	2.96	1.76	9.91
8	Milk Products	0.96	0.71	1.69	4.23
9	Meat	1.71	1.82	0.74	3.97
10	Cigarettes	1.24	0.99	1.04	3.50
11	Sweet Meat	0.40	0.42	2.63	2.79
12	Eggs	0.57	13.84	1.43	2.40
13	Wheat Products	0.11	2.02	6.49	1.86
14	Gur	0.15	-1.11	3.19	1.40
15	Bakery And Confectionary	0.37	1.74	1.00	1.00
Total		30.91			303.74
Bottom 15 Contributors					
1	Chicken	1.46	2.58	-31.90	-145.22
2	Fresh Fruits	1.45	-6.62	-25.42	-119.42
3	Tomatoes	0.51	241.40	-33.94	-72.21
4	Fresh Vegetables	2.09	21.63	-8.66	-48.44
5	Condiments And Spices	1.49	1.48	-3.51	-21.01
6	Pulse Moong	0.25	-13.42	-9.66	-8.33
7	Pulse Gram	0.28	-4.98	-3.41	-2.28
8	Pulse Mash	0.15	-4.04	-4.55	-1.45
9	Pulse Masoor	0.21	-4.06	-1.57	-0.75
10	Onions	0.90	25.57	-0.40	-0.69
11	Gram Whole	0.11	-4.00	-2.47	-0.68
12	Besan	0.07	-4.42	-1.94	-0.36
13	Vegetable Ghee	2.38	0.33	-0.04	-0.30
14	Fish	0.26	-0.39	-0.32	-0.21
15	Marriage Hall Charges	2.25	0.00	0.00	0.00
Total		13.86			-421.36

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

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Jul-20	Aug-20	
Ranked by Weighted Contribution					
1	Electricity Charges	3.44	0.00	11.61	89.95
2	Personal Effects N.E.C.	1.21	6.02	9.55	43.51
3	Motor Fuels	2.49	29.61	3.55	25.82
4	Transport Services	1.80	-5.17	3.17	14.92
5	Personal Grooming Services	1.54	0.64	2.11	9.38
6	Tailoring	1.30	0.09	1.17	4.36
7	Drugs And Medicines	1.58	0.40	0.75	3.52
8	Appliances/Articles/Products For	2.27	1.26	0.60	3.51
9	Washing Soaps, Detergents And	1.70	0.61	0.76	3.40
10	Furniture And Furnishing	0.58	1.53	1.82	2.95
11	Household Equipments	1.28	2.47	0.80	2.93
12	Woolen Cloth	1.10	1.42	0.65	1.92
13	Motor Vehicles	0.73	0.80	0.76	1.48
14	Construction Input Items	0.63	1.45	0.86	1.37
15	Hosiery	0.43	1.93	0.88	1.28
Total		22.07			210.28
<u>Bottom 15 Contributors</u>					
1	Liquefied Hydrocarbons	1.00	9.25	-0.18	-0.44
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	Accommodation Services	0.14	0.00	0.00	0.00
8	Postal Services	0.01	0.00	0.00	0.00
9	Communication Services	1.65	0.00	0.00	0.00
10	Newspapers	0.02	0.00	0.00	0.00
11	Motor Vehicle Tax	0.02	0.00	0.00	0.00
12	Garbage Collection	0.01	3.01	0.00	0.00
13	Stationery	0.37	1.35	0.00	0.00
14	Water Supply	0.06	33.99	0.00	0.00
15	House Rent	8.61	1.70	0.00	0.00
Total		15.95			-0.44

**Table A16: Distribution of Price Changes (YoY) - Selected Urban CPI Items: August 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	Chicken Farm Broiler (Live), Onions, Chilies (Green), Garlic (Lehsun), Apple (Average Quality)	Cumin Seed (Zeera) White National 50 Gm Packet, Pepper Black National 50 Gm Packet	Chips (Loose), Tea Lipton Yellow Label 190 Gm Packet, Rusk (Papay) (Average Quality)	Chilies Powder National 200 Gm Packet, Cardamom Small (Average Quality), Potatoes, Wheat, Beans Red/White (Lobia), Ginger (Adrak), Pulse Moong (Washed)ty
Alcoholic Beverages & Tobacco		Cigarettes Gold Leaf 20'S Packet	Cigarettes Capstan 20'S Packet	Pan Prepared (Sweet With Beetle Nuts)
Clothing & Footwear	Gents Sponge Chappal Bata, Ladies Sandal Bata, Ladies Sponge Chappal Bata, Gents Sandal Bata	Tailoring Charges Shirt (Men), Chaddar (Wash-N-Wear) (2X2.5 Meter), Washing Charges Pant And Shirt Both, Brassier (Average Quality)	Underwear Medium Size (Average Quality), Shirting (Average Quality), Shoe Repair Full Sole, Children Shoes Power Lite Bata	Gents Shoes Servis, Gents Shoes Paul Bata, Dopatta Cotton (Average Quality), Long Cloth 57" Gul Ahmed/Al Karam, Washing Charges Shalwar Kameez, Georgette (Average Quality), Cheetah 50 Size 3-5 Servis, Pullover Gents Oxford/Bonanza
Housing, Water, Elect, Gas & other Fuels	Cement (Local) 50 Kg Bag, Bajri, Iron Bars (M.S. Bar) 1/2 " 40 Grade, Gas Charges Upto 3.3719 Mmbtu	Bricks New 1St Class, House Rent Combined, Plumber Wage Rate, Lpg 11.67 Kg Cylinder, Sand (Black Pit), Cement Blocks (6" X8" X12")	Electricity Charges Above 700 Units, Electricity Charges Upto 50 Units, Synthetic Enamel Ici Balti 3.64 Litre, Painter Wage Rate, Mason Wage Rate	Water Charges Per House, Electricity Charges 51-100 Units, Charges For Refuse/Waste Collection, Electricity Charges 101-300 Units, Electrician Charges, Electricity Charges Combined, Electricity Charges 301-700 Units
Furnishing & Household Equip. Maintenance etc		Tea Set Pakistani (China-Ware) Set Of 21 Pieces, Bed Sheet Single (Superior Quality)	Cot Iron (Charpai), Dinner Set Plastic 72 Pieces Super Quality, 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	Panadol Tablets Plain, X-Ray (Chest) Charges, Dental Extraction Fee, Ecg Charges, Ultrasound Abdominal	Betnovate-N Ointment 10 Gm Tube, Flagyl Tablets 400 Mg, Cac 1000 Tablets Sandoz Bottle	Ventolin Tablets 2 Mg, Septran Tablets, Dettol Medium Bottle, Lederplex Syrup Bottle, Doctor (Mbbs) Clinic Fee, Urine Test (Dr) Charges, Glaxose-D 400 Gm Packet
Transport	Hi-Speed Diesel, Petrol Super, Cng, Train Fare Ac Sleeper Per Person, Train Fare Business Class Per Person	Car Service Charges, Motorcycle United/Unique 70 Cc, Suzuki Fare Minimum Within City, Car Honda Civic Turbo 1.5 Vtec	Tire Car Mehran Tubeless (General), Bus Fare Maximum Within City, 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
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, Recreational Park Charges (Minimum Playland Ticket)	Ballpoint Pen Local, Urdu Book Class Xi/Inter, Pen Ink Dollar 57 Ml Bottle, Exercise Book (With Lines) 80 To 100 Pages, Urdu Book Ba/B.Sc, English Book Class Vi	Photostat Paper 70 Gm, Lead Pencil Goldfish, Laptop Dell/Hp/Acer Core I5, Display (14'-15'), Led Sony/Samsung 32" Colored	
Education	Vocational Training Basic Computer Short Course Fee (3 Months)	Private Engineering University Tuition Fee For Be (1St Year)	Government Engineering University Tuition Fee For Be (1St Year)	
Restaurant & Hotels		Cooked Chicken At Average Hotel	Cooked Beef At Average Hotel, Tea Prepared Ordinary	Bread Tandoori Standard Size, Cooked Daal At Average Hotel
Miscellaneous		Trunk Medium Size (Average Quality), Toilet Soap Lifebuoy 115 Gm	Face Cream Ponds Medium Size (Cold), Hair Cut Charges For Men, Tooth Paste Colgate 75 Gm	Silver Tezabi 24 Carett, Gold Tezabi 24 Carett, Pampers (Medium Size), Lipstick Swiss Miss/Medora (Medium), Tooth Brush (Shield)

**Table A17: Distribution of Price Changes (YoY) - Selected Rural CPI Items: August 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 Gobhi), Spinach (Paalak), Turnip (Shalgham), Peas (Matar), Muskmelon (Kharbuza)	Samosa (Vegetable, Average Quality), Gram Whole Black (Average Quality), Chilies (Green)	Tea Lipton Yellow Label 190 Gm Packet, Grapes (Angoor) (Average Quality), Sweetmeat (Mixed Mithai)	Chilies Powder Loose, Potatoes, Wheat, Coriander Seed Powder Loose, Beans Red/White (Lobia), Mango Kalmi (Average Quality), Ginger (Adrak)
Alcoholic Beverages & Tobacco		Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet	Tobacco Hukka Twisted	Chewing Tobacco (Niswar), Pan Prepared (Sweet With Beetle Nuts)
Clothing & Footwear		School Uniform Girls (Kameez & Shalwar) 24"/26"	Shirt Boy Length 24"/26", Lungi/Dhoti Cotton (Average Quality), Shoe Repair Full Sole, Dopatta Geoette (Average Quality), Pullover Ladies (Average Quality)	Brassier (Average Quality), Shirting (Average Quality), Washing Charges Shalwar Kameez, Long Cloth, Lawn Printed (Average Quality), Vest "Baniyan" For Men Average Quality, Shoe Polish Charges, Underwear Medium Size (Average Quality)
Housing, Water, Elect, Gas & other Fuels	Kerosene Oil, Lpg 11.67 Kg Cylinder, Cement (Local) 50 Kg Bag	House Rent Combined, Bajri	Firewood Whole, Electricity Charges Above 1000 Units, Electricity Charges Upto 50 Units, Plumber Wage Rate, Sand (Black Pit), Charges For Refuse/Waste Collection	Water Charges Per House, Electricity Charges 51-100 Units, Electrician Charges, Coal, Bricks New 1St Class, Electricity Charges 101-300 Units, Electricity Charges Combined, Carpenter Wage Rate, Electricity Charges 301-1000 Units, Painter Wage Rate
Furnishing & Household Equip. Maintenance etc.		Refrigerator Dawlance/Pel 10 Cubic Feet Double Door, Cleanser Powder Vim 900 Gm Polybag, Readymade Quilt (3 Kg)	Tea Set Pakistani (China-Ware) Set Of 21 Pieces, Lota Plastic Medium Size (Average Quality), Match Box	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		Physiotherapist Fee Per Visit, Cost Of Surgery (C-Section), Johar Joshanda Instant (Sachet) Packet	Blood Test (Cp) Charges, Amoxil Capsule 250 Mg, Dental Surgeon Fee Per Visit, X-Ray (Chest) Charges	Dettol Medium Bottle, Doctor (Mbbs) Clinic Fee, Daonil Tablets 5 Mg, Inderal Tablets 10 Mg
Transport	Hi-Speed Diesel, Petrol Super, Cng, Car Tax 800 Cc To 1500 Cc, Bus Fare Outside City (Non Ac), Car Suzuki 800 Cc Without Ac	Motorcycle Service Charges, Tire Motorcycle Cd 70 (Back Wheel), Air Fare Economy Class Per Kilometer	Chingchi Rickshaw Charges, Minimum, Tire Cycle, Motorcycle Honda Cd 70, Mobil Oil (Havoline 20W-50)	Tire Car Mehran Tubeless (General), Bicycle
Communication	Telephone Call Charges, Mobile Call Charges, Postal Registration Charges	Mobile Set With Rear Camera And Without Touch Screen		
Recreation & Culture	Newspaper Daily Jang	Urdu Books Class V (Text Book Board), Urdu Books Class Ix And X (Text Book Board), English Books Class Ix And X	Pets Feed, Ballpoint Pen Local, English Books Class Vi, Led Sony/Samsung 32" Colored, Exercise Book (With Lines) 80 To 100 Pages	
Education	Vocational Training Basic Computer Short Course Fee (3 Months)	Private School Fee English Medium Average Standard (Class V)		
Restaurant & Hotels		Marriage Hall Charges With Furniture	Cooked Chicken At Average Hotel, Cooked Beef At Average Hotel	Tea Prepared Ordinary, Cooked Daal At Average Hotel, Chicken Biryani Full/Double, Bread Tandoori Standard Size
Miscellaneous		Purse Ladies Medium Size (Average Quality), Hair Removing Cream (Eu-Cream) 30Ml Tube	Blade Treet Ordinary (10 No. Packet), Suitcase Ragzine (24"X16"X6") (Average Quality)	Gold Tezabi 24 Carett, Disposable Razor Gillette Blue Ii, Shaving Charges, Artificial Jewelry (Locket Set) (Average Quality), Hair Color (Kala Kola), Tooth Paste Colgate 75 Gm

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



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

	May-20	Jun-20	Jul-20	Aug-20
<b>Energy</b>				
Crude Oil (US\$ per barrel) *	30.4	39.5	42.1	43.4
Energy Index (2010 = 100)	38.8	48.3	51.2	53.9
<b>Food</b>				
Rice (\$/MT)	510.0	520.0	480.0	505.0
Wheat (\$/MT)	205.8	198.4	198.4	198.4
Sugar (US cent/ pound)^	11.0	12.1	12.3	13.1
Palm Oil (\$/MT)	576.6	656.5	694.2	760.3
Soybean Oil (\$/MT)	684.8	755.7	821.1	866.9
<b>Non-Food Non-Energy</b>				
Cotton Outlook 'A' Index #^	65.7	67.8	68.5	69.9
Metal Price Index (2010 = 100)	68.9	74.3	80.2	83.6
Copper (\$/MT)	5,239.8	5,754.6	6,372.5	6,498.9
Aluminum (\$/MT)	1,466.4	1,568.6	1,643.8	1,737.3
Iron Ore (\$ cents/dry MT)	93.7	103.3	108.5	121.1
Tin (\$/MT)	15,401.9	16,837.8	17,469.9	17,650.0
Nickel (\$/MT)	12,179.6	12,727.2	13,402.3	14,537.8
Zinc (\$/MT)	1,975.3	2,025.7	2,177.2	2,410.1
Lead (\$/MT)	1,626.3	1,744.8	1,817.9	1,935.7
Uranium (\$/MT)@	33.9	32.8	32.5	30.9
DAP (\$/MT)	263.0	273.0	305.1	341.9
Urea (\$/MT)	201.9	202.0	214.4	249.5

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 June 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>	<b>FY21</b>
Jul	103.17	107.15	114.29	123.86	135.38
Aug	102.80	107.31	113.93	125.89	136.23
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	
<b>Seasonally Adjusted Series</b>					
Jul	102.79	106.73	113.85	123.39	134.87
Aug	102.46	106.97	113.60	125.55	135.88
Sep	102.83	107.68	113.57	126.54	
Oct	103.31	108.32	115.36	128.11	
Nov	103.77	108.97	115.12	129.68	
Dec	104.19	109.99	115.86	130.47	
Jan	104.66	110.12	116.24	133.15	
Feb	105.78	110.46	117.86	132.42	
Mar	106.81	110.62	120.14	132.39	
Apr	107.04	111.30	120.51	130.81	
May	107.01	112.36	121.84	131.90	
Jun	107.13	113.23	122.35	132.90	

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	135.82
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	102.73	107.20	114.40	124.38	134.13
Aug	102.29	107.48	114.12	126.29	135.32
Sep	102.67	108.01	114.15	127.38	
Oct	103.10	108.55	116.20	128.82	
Nov	103.61	109.23	116.06	130.04	
Dec	104.05	110.36	116.84	130.86	
Jan	104.79	110.48	117.28	133.00	
Feb	105.90	110.90	118.88	132.15	
Mar	106.89	111.14	121.03	132.24	
Apr	107.22	111.98	121.34	130.67	
May	107.31	113.03	122.67	131.61	
Jun	107.54	113.84	123.08	132.54	

<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	136.84
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	102.89	106.03	113.01	121.89	135.98
Aug	102.71	106.20	112.81	124.43	136.72
Sep	103.08	107.19	112.71	125.28	
Oct	103.62	107.97	114.11	127.04	
Nov	104.02	108.59	113.70	129.13	
Dec	104.40	109.42	114.38	129.89	
Jan	104.46	109.59	114.66	133.37	
Feb	105.61	109.79	116.34	132.81	
Mar	106.69	109.83	118.80	132.60	
Apr	106.76	110.28	119.26	131.02	
May	106.55	111.35	120.59	132.33	
Jun	106.51	112.30	121.24	133.45	

Table A23: National CPI Monthly & Average Seasonal Factors						
Period	FY17	FY18	FY19	FY20	FY21	Average
Jul	100.37	100.39	100.39	100.39	100.38	100.38
Aug	100.33	100.31	100.30	100.27	100.26	100.29
Sep	100.39	100.34	100.29	100.25		100.32
Oct	100.86	100.84	100.83	100.83		100.84
Nov	100.88	100.90	100.92	100.94		100.91
Dec	99.89	99.94	99.97	99.99		99.95
Jan	99.88	99.89	99.90	99.91		99.90
Feb	99.29	99.33	99.37	99.42		99.35
Mar	99.38	99.41	99.43	99.47		99.42
Apr	99.88	99.86	99.85	99.83		99.86
May	99.39	99.37	99.35	99.33		99.36
Jun	99.45	99.43	99.41	99.38		99.42

Table A24: Urban CPI Monthly & Average Seasonal Factors						
Period	FY17	FY18	FY19	FY20	FY21	Average
Jul	100.46	100.48	100.47	100.46	100.45	100.46
Aug	100.43	100.42	100.40	100.38	100.37	100.40
Sep	100.38	100.34	100.30	100.27		100.32
Oct	100.75	100.73	100.72	100.72		100.73
Nov	100.73	100.74	100.76	100.78		100.75
Dec	99.70	99.74	99.77	99.78		99.75
Jan	99.81	99.82	99.82	99.83		99.82
Feb	99.26	99.29	99.33	99.37		99.31
Mar	99.34	99.36	99.39	99.43		99.38
Apr	99.98	99.97	99.96	99.94		99.96
May	99.58	99.56	99.54	99.53		99.55
Jun	99.58	99.56	99.54	99.51		99.55

Table A25: Rural CPI Monthly & Average Seasonal Factors						
Period	FY17	FY18	FY19	FY20	FY21	Average
Jul	100.23	100.25	100.26	100.27	100.28	100.26
Aug	100.18	100.16	100.14	100.10	100.09	100.13
Sep	100.40	100.33	100.27	100.21		100.30
Oct	101.02	101.00	100.99	100.98		101.00
Nov	101.12	101.14	101.17	101.20		101.15
Dec	100.18	100.24	100.28	100.30		100.25
Jan	99.98	100.01	100.02	100.04		100.01
Feb	99.34	99.38	99.43	99.49		99.41
Mar	99.44	99.47	99.50	99.54		99.49
Apr	99.73	99.70	99.69	99.66		99.69
May	99.10	99.09	99.05	99.02		99.06
Jun	99.27	99.24	99.22	99.19		99.23

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	0.63
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	0.55	-0.37	0.55	0.85	1.48
Aug	-0.32	0.22	-0.22	1.75	0.75
Sep	0.36	0.66	-0.02	0.79	
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	0.45	0.13	0.33	2.05	
Feb	1.08	0.30	1.40	-0.55	
Mar	0.97	0.14	1.93	-0.02	
Apr	0.22	0.62	0.31	-1.19	
May	-0.02	0.95	1.10	0.83	
Jun	0.11	0.77	0.42	0.76	

<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	0.81
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	0.60	-0.31	0.49	1.05	1.20
Aug	-0.42	0.26	-0.25	1.53	0.89
Sep	0.37	0.49	0.02	0.86	
Oct	0.42	0.50	1.80	1.13	
Nov	0.49	0.62	-0.12	0.95	
Dec	0.43	1.04	0.67	0.63	
Jan	0.70	0.10	0.38	1.64	
Feb	1.06	0.38	1.36	-0.64	
Mar	0.93	0.21	1.81	0.07	
Apr	0.31	0.76	0.26	-1.19	
May	0.09	0.94	1.10	0.71	
Jun	0.21	0.72	0.34	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	0.35
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	0.47	-0.45	0.63	0.54	1.90
Aug	-0.17	0.16	-0.18	2.09	0.54
Sep	0.36	0.93	-0.09	0.68	
Oct	0.53	0.73	1.24	1.40	
Nov	0.38	0.58	-0.35	1.65	
Dec	0.36	0.76	0.60	0.59	
Jan	0.06	0.16	0.25	2.68	
Feb	1.10	0.18	1.46	-0.42	
Mar	1.02	0.04	2.12	-0.16	
Apr	0.07	0.41	0.39	-1.19	
May	-0.19	0.97	1.11	1.00	
Jun	-0.04	0.85	0.54	0.84	

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



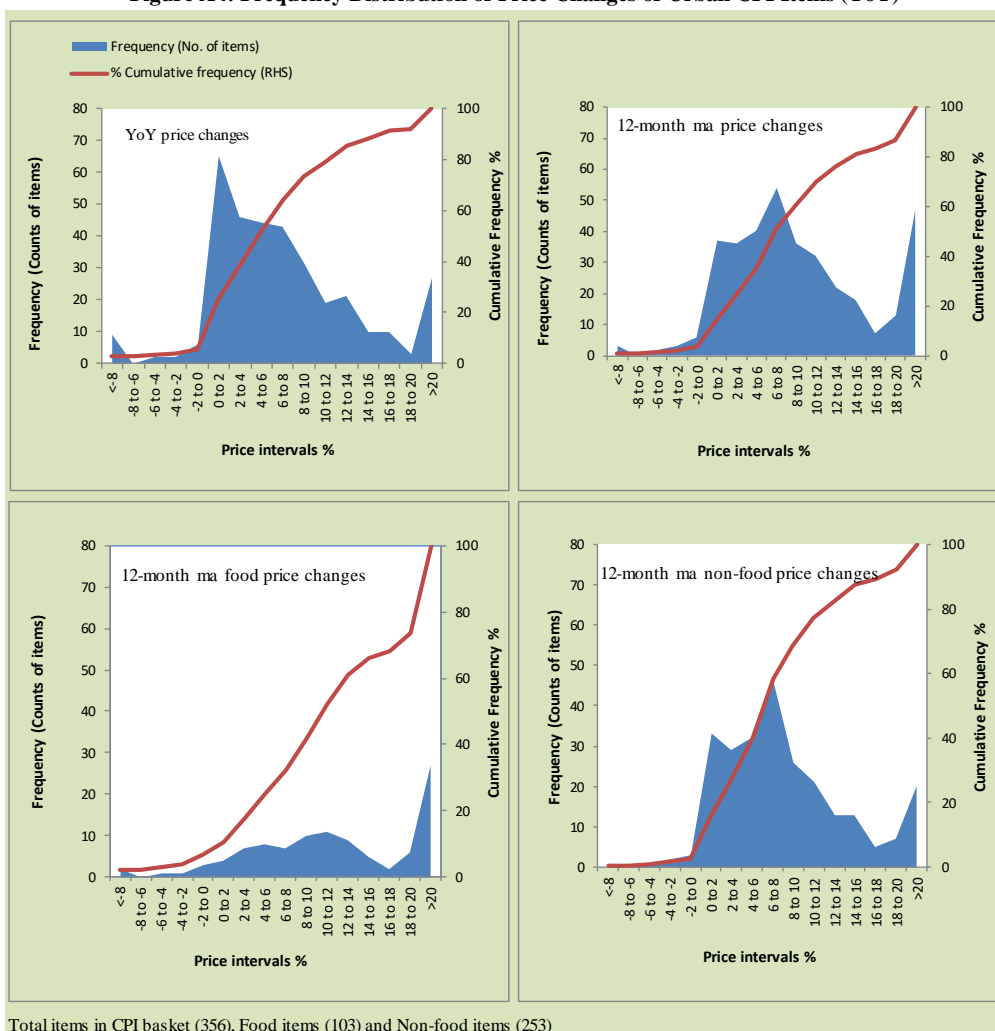
Figure A2: Urban CPI Non-food Inflation (YoY, 12MMA, MoM in percent)



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

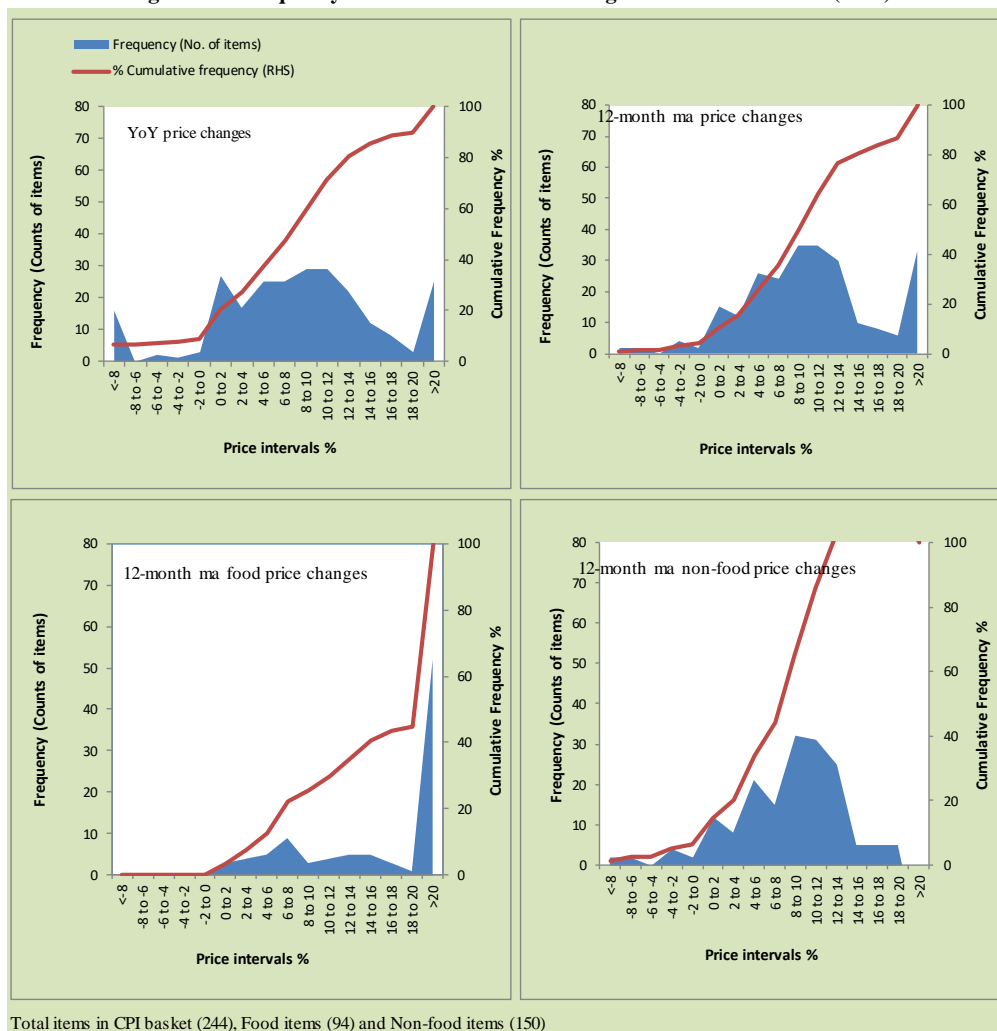


Figure A4: Frequency Distribution of Price Changes of Urban CPI Items (YoY)



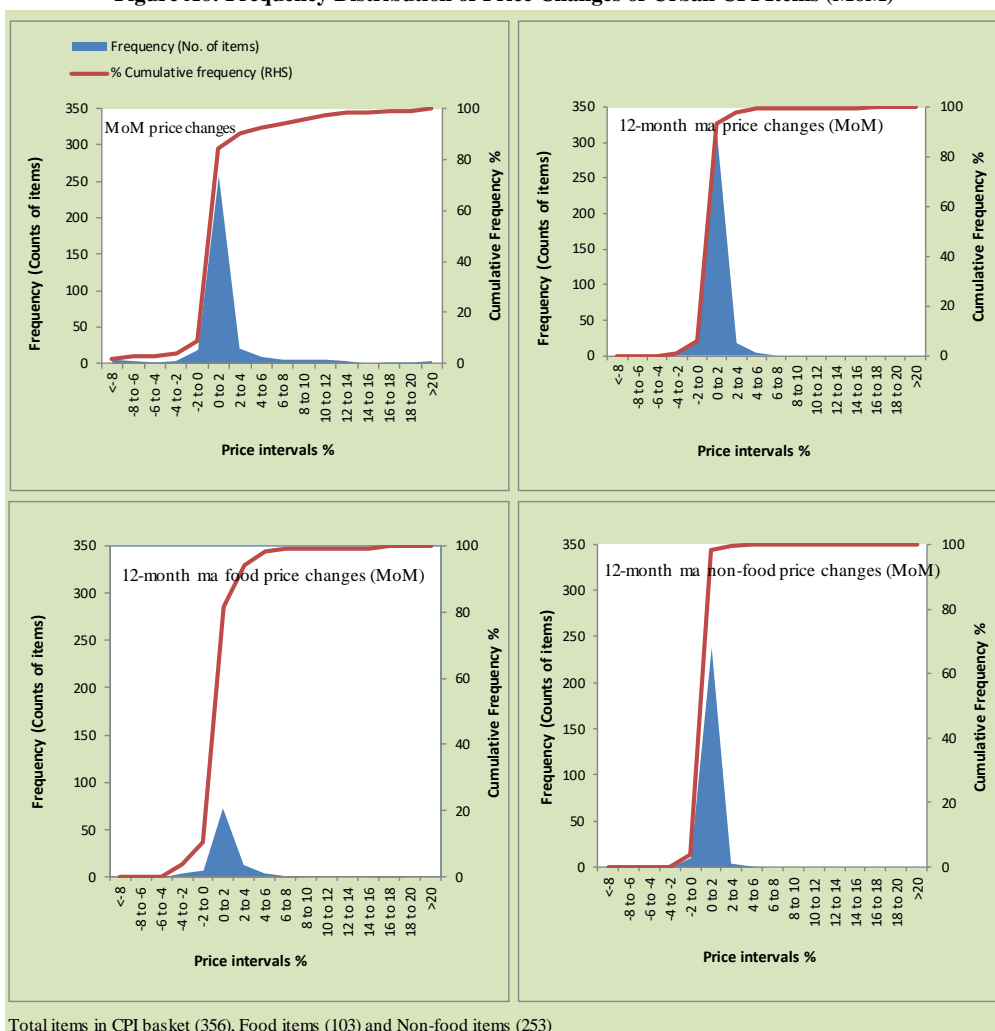
Total items in CPI basket (356), Food items (103) and Non-food items (253)

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



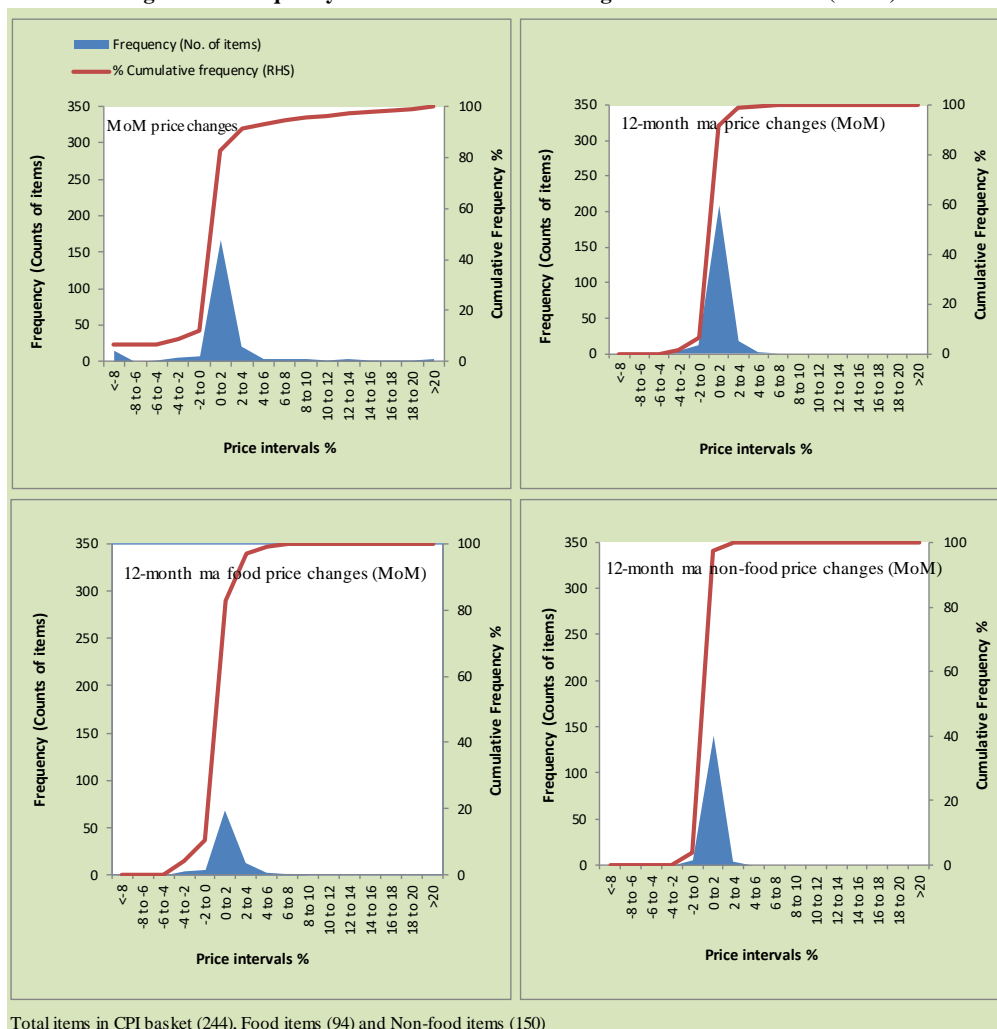
Total items in CPI basket (244), Food items (94) and Non-food items (150)

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



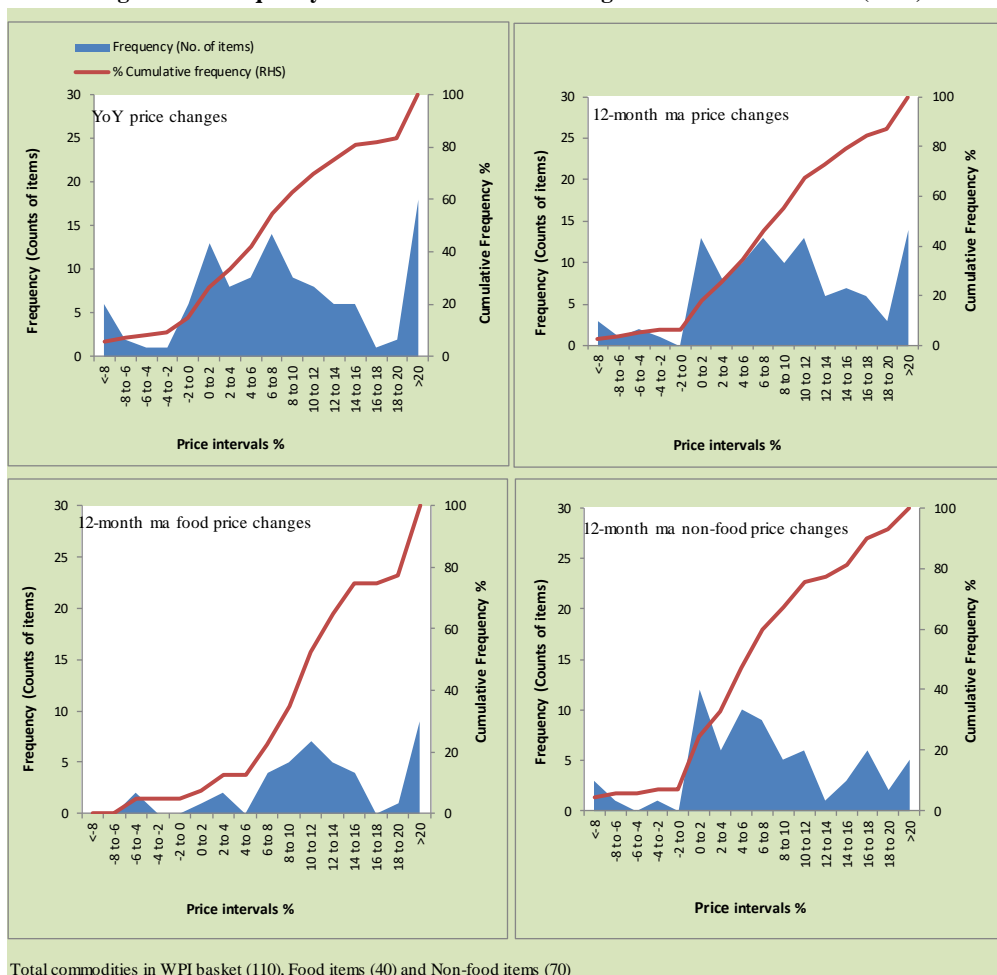
Total items in CPI basket (356), Food items (103) and Non-food items (253)

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





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



## **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:

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

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.