

Inflation Monitor

April 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

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
Annexure A		26
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 April 2020		28
Table A5: Top Ten Contributors to Urban CPI Inflation (MoM) in April 2020		29
Table A6: Top and Bottom Fifteen Contributors to Urban CPI Inflation (YoY) in April 2020		30
Table A7: Top and Bottom Fifteen Contributors to Urban CPI Inflation (MoM) in April 2020		31
Table A8: Top and Bottom Fifteen Contributors to MoM Urban CPI Food Inflation in April 2020		32
Table A9: Top and Bottom Fifteen Contributors to MoM Urban CPI Non-food Inflation in April 2020		33
Table A10: Top Ten Contributors to Rural CPI Inflation (YoY) in April 2020		34
Table A11: Top Ten Contributors to Rural CPI Inflation (MoM) in April 2020		35
Table A12: Top and Bottom Fifteen Contributors to Rural CPI Inflation (YoY) in April 2020		36
Table A13: Top and Bottom Fifteen Contributors to Rural CPI Inflation (MoM) in April 2020		37
Table A14: Top and Bottom Fifteen Contributors to MoM Rural CPI Food Inflation in April 2020		38
Table A15: Top and Bottom Fifteen Contributors to MoM Rural CPI Non-food Inflation in April 2020		39
Table A16: Distribution of Price Changes (YoY) - Selected Urban CPI Items: April 2020		40
Table A17: Distribution of Price Changes (YoY) - Selected Rural CPI Items: April 2020		41
Table A18: Distribution of Price Changes (YoY) - WPI Items: April 2020		42

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
Annexure B	60
Technical Notes, Definitions and Methodologies	60
a) Technical Notes	60
b) Methodology for Estimating Inflation Diffusion Index for Pakistan	63

Team

- Mazhar Hussain Sr. Joint Director
mazhar.hussain@sbp.org.pk

- Muhammad Abdus Salam Joint Director
muhammad.abdussalam@sbp.org.pk

Review

1. Inflation in Brief

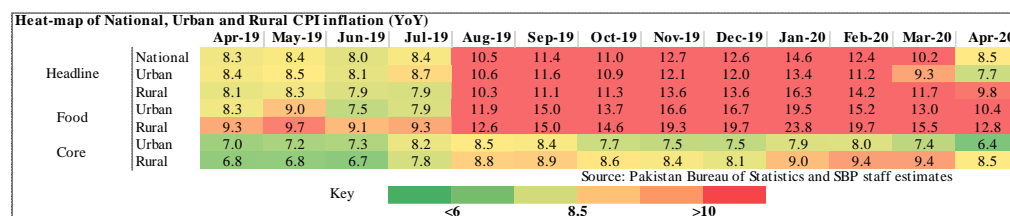
- a) National CPI inflation (2015-16=100) is recorded at 8.5 percent on year-on-year basis in April 2020 as compared to 10.2 percent in the previous month and 8.3 percent during the corresponding month of last year.
- b) National CPI inflation on month-on-month basis is recorded at -0.8 percent in April 2020 as compared to 0.04 percent in the previous month and 0.7 percent during the corresponding month of last year. Seasonally adjusted month-on-month CPI inflation is recorded at -1.18 percent in April 2020 compared to -0.12 percent in the previous month.
- c) Urban CPI inflation (2015-16=100) is recorded at 7.7 percent on year-on-year basis in April 2020 as compared to 9.3 percent in the previous month and 8.4 percent during the corresponding month of last year.
- d) Urban CPI inflation on month-on-month basis is recorded at -0.7 percent in April 2020 as compared to 0.1 percent in the previous month and 0.8 percent during the corresponding month of last year. Seasonally adjusted month-on-month Urban CPI inflation is recorded at -1.25 percent in April 2020 compared to 0.05 percent in the previous month.
- e) Rural CPI inflation (2015-16=100) is recorded at 9.8 percent on year-on-year basis in April 2020 as compared to 11.7 percent during the previous month. It was 8.1 percent during the corresponding month of last year.
- f) Rural CPI inflation on month-on-month basis is recorded at -1.1 percent in April 2020 as compared to -0.1 percent in the previous month and 0.6 percent during the corresponding month of last year. Seasonally adjusted month-on-month Rural CPI inflation is recorded at -1.08 percent in April 2020 compared to -0.37 percent in the previous month.

- g) Urban Core inflation (trimmed) on year-on-year basis is recorded at 6.7 percent in April 2020 as compared to 8.7 percent in the previous month and 7.4 percent during the corresponding month of last year.
- h) On month-on-month basis, the Urban Core inflation (trimmed) is recorded at -0.2 percent in April 2020 as compared to 0.3 percent in the previous month and 1.1 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 April 2020 as compared to 11.4 percent in the previous month and 7.3 percent during the corresponding month of last year.
- j) On month-on-month basis, the Rural Core inflation (trimmed) is recorded at -0.6 percent in April 2020 as compared to 0.1 percent in the previous month and 0.8 percent during corresponding month of last year.
- k) Urban Core (Non-food, non-energy (NFNE)) inflation on year-on-year basis is recorded at 6.4 percent in April 2020 as compared to 7.4 percent in the previous month. It was 7.0 percent during the corresponding month of last year.
- l) Urban Core (NFNE) inflation on month-on-month basis recorded at 0.2 percent in April 2020 as compared to 0.3 percent in the previous month and 1.1 percent during the corresponding month of last year.
- m) Rural Core (NFNE) inflation on year-on-year basis is recorded at 8.5 percent in April 2020 as compared to 9.4 percent in the previous month and 6.8 percent during the corresponding month of last year.
- n) Rural Core (NFNE) inflation on month-on-month basis recorded at 0.3 percent in April 2020 as compared to 0.6 percent in the previous month and 1.2 percent during the corresponding month of last year.

- o) WPI inflation on year-on-year basis recorded at 4.8 percent in April 2020 as compared to 9.2 percent in the previous month and 17.4 percent during the corresponding month of last year.
- p) WPI inflation on month-on-month basis recorded at -2.1 percent in April 2020 as compared to -0.9 percent in the previous month. It was 2.0 percent in the corresponding month of last year.
- q) SPI inflation on year-on-year basis recorded at 8.5 percent in April 2020 as compared to 12.2 percent in the previous month. It was 11.3 percent in the corresponding month of last year.
- r) SPI inflation on month-on-month basis recorded at -2.6 percent in April 2020 as compared to -1.1 percent in the previous month. It was 0.7 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, April 2020

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

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

Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: <0.00 0.75 >1.50

Heat-map of National CPI inflation (YoY)

	Weights	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
National	100.00	8.3	8.4	8.0	8.4	10.5	11.4	11.0	12.7	12.6	14.6	12.4	10.2	8.5
Food and non-alcoholic Beverages	34.58	9.1	9.9	8.4	8.3	12.6	15.8	15.0	19.4	19.7	23.7	18.4	14.7	11.7
Alcoholic Beverages, Tobacco	1.02	11.7	11.9	17.3	29.3	29.8	30.0	20.3	18.7	18.3	17.9	18.5	18.6	19.6
Clothing and footwear	8.60	6.4	6.9	6.4	7.5	8.9	8.9	9.3	9.4	9.7	9.6	10.1	11.0	10.2
Housing, water, Elec., Gas and other fuels	23.63	8.1	6.5	6.9	6.1	7.1	6.6	7.2	8.8	8.5	9.6	6.8	4.9	5.1
Furnishing and household equipment maintenance	4.10	9.1	9.1	9.3	11.0	11.6	11.7	11.3	10.8	10.4	10.1	10.0	10.1	9.0
Health	2.79	8.1	8.7	9.4	11.6	11.9	11.7	12.2	11.4	11.3	11.8	12.0	12.4	10.5
Transport	5.91	13.7	17.8	17.2	16.8	18.5	17.8	16.5	14.0	14.7	18.6	19.2	11.5	3.4
Communication	2.21	4.1	4.0	4.1	4.3	4.3	4.3	4.0	4.0	4.0	4.0	3.9	3.9	1.7
Recreation and culture	1.59	5.7	5.5	5.5	7.1	7.7	7.8	7.4	6.8	6.8	6.5	6.6	5.9	5.1
Education	3.79	5.4	5.9	5.8	6.8	6.9	6.2	6.0	6.1	6.0	7.3	7.4	4.5	3.2
Restaurants and hotels	6.92	5.0	4.2	4.0	5.8	6.2	6.1	6.0	6.4	6.1	7.4	8.7	8.7	8.5
Misc. goods and services	4.87	8.9	8.6	9.4	10.8	13.2	13.4	12.5	11.8	10.7	11.4	11.4	11.8	11.9

Source: Pakistan Bureau of Statistics and SBP staff estimates

Key: <6 8.5 >10

Heat-map of Urban CPI inflation (YoY)

	Weights	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
Urban	100.00	8.4	8.5	8.1	8.7	10.6	11.6	10.9	12.1	12.0	13.4	11.2	9.3	7.7
Food and non-alcoholic Beverages	30.42	8.7	9.7	7.7	7.7	12.6	16.3	15.0	18.6	18.8	22.0	16.4	13.7	10.7
Alcoholic Beverages, Tobacco	0.85	10.9	10.8	16.3	28.4	28.5	28.7	18.5	16.7	16.6	16.8	17.7	17.8	18.8
Clothing and footwear	8.01	5.8	7.0	6.8	7.5	9.1	9.0	9.0	9.1	9.6	9.0	9.6	9.9	9.5
Housing, water, Elec., Gas and other fuels	27.03	8.8	7.2	7.6	7.9	8.6	8.4	8.2	9.6	9.4	9.7	6.9	5.1	5.1
Furnishing and household equipment maintenance	4.09	9.8	10.2	10.5	12.3	12.4	12.5	11.6	11.2	11.0	10.4	10.0	9.8	8.3
Health	2.31	7.7	8.5	9.0	12.1	11.7	11.1	11.2	10.5	10.9	11.5	11.7	12.2	9.4
Transport	6.14	14.5	18.2	17.4	17.5	19.0	18.6	17.5	15.0	15.6	19.4	19.9	12.2	4.1
Communication	2.35	5.3	5.2	5.2	5.7	5.5	5.6	5.2	5.1	5.3	5.3	5.3	5.1	2.3
Recreation and culture	1.73	5.1	5.1	5.3	6.8	7.5	7.7	6.7	6.5	6.4	6.1	6.1	5.6	4.9
Education	4.88	5.7	6.4	6.4	7.3	7.4	6.4	6.2	6.3	6.3	7.5	7.5	4.5	3.4
Restaurants and hotels	7.41	5.2	4.5	4.5	5.4	5.0	5.0	4.9	5.2	4.9	6.5	7.7	7.5	7.4
Misc. goods and services	4.77	9.3	8.8	9.7	10.8	12.6	13.1	12.0	11.0	10.1	10.7	10.1	10.6	11.0

Source: Pakistan Bureau of Statistics and SBP staff estimates

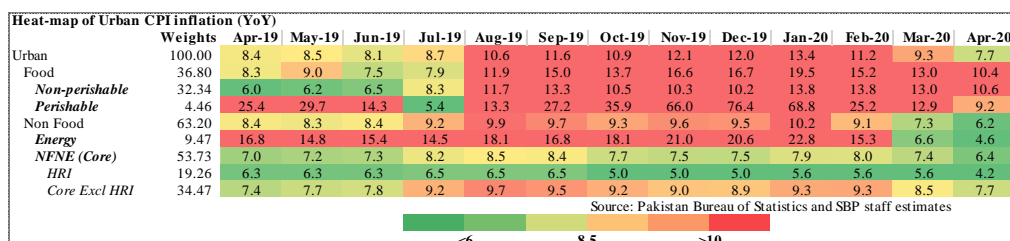
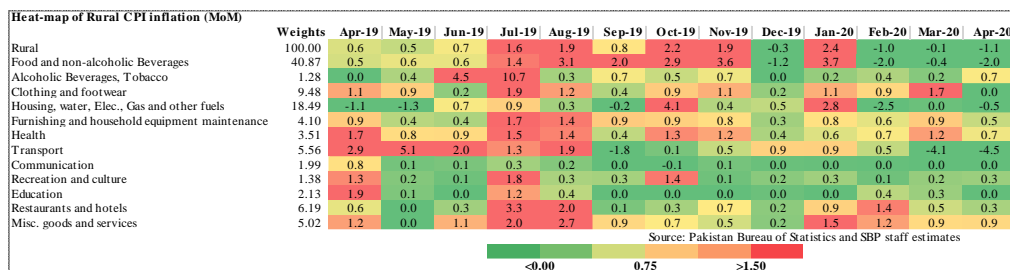
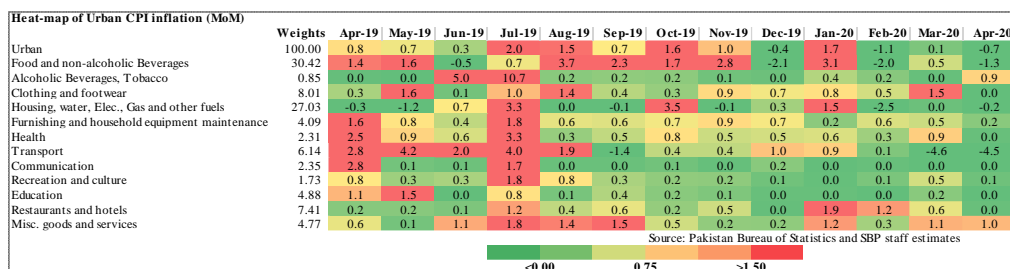
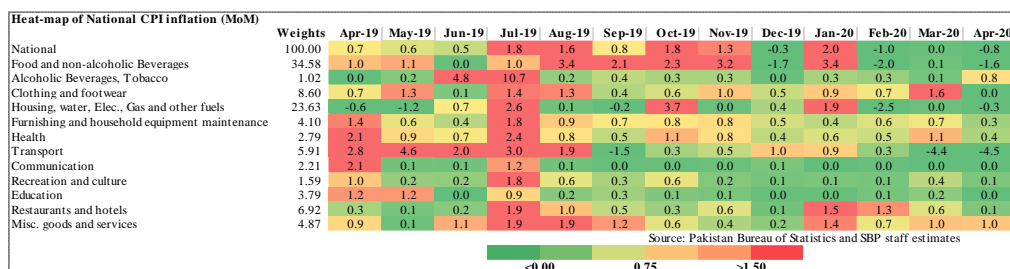
Key: <6 8.5 >10

Heat-map of Rural CPI inflation (YoY)

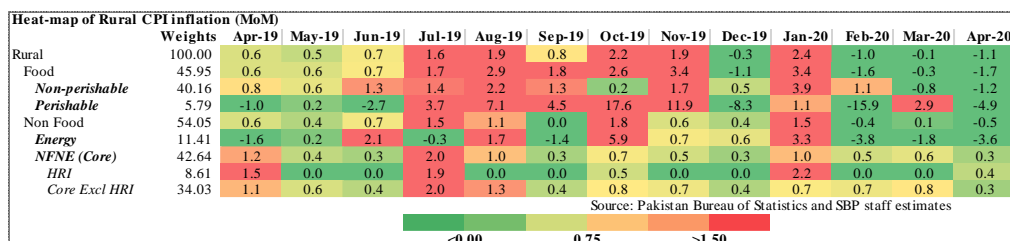
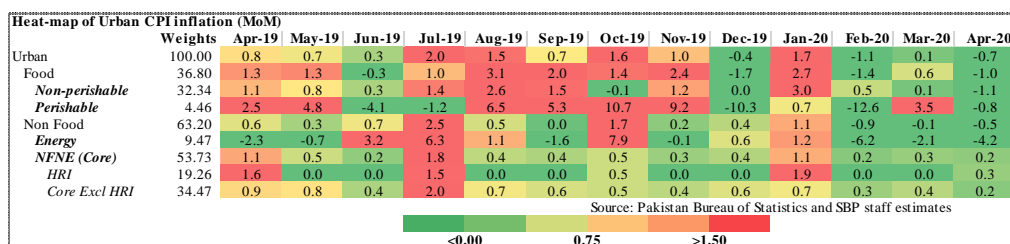
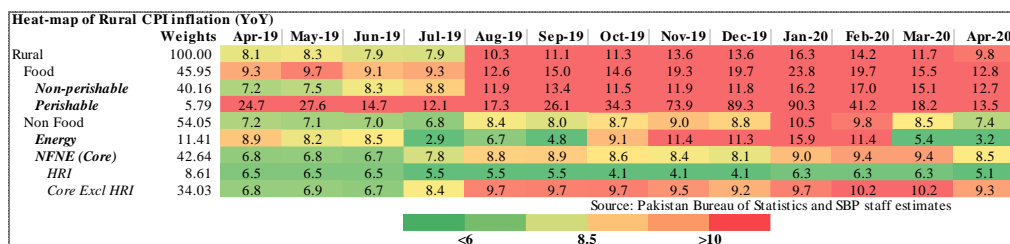
	Weights	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
Rural	100.00	8.1	8.3	7.9	7.9	10.3	11.1	11.3	13.6	13.6	16.3	14.2	11.7	9.8
Food and non-alcoholic Beverages	40.87	9.5	10.1	9.3	8.9	12.6	15.3	15.1	20.3	20.8	25.5	20.6	15.8	12.8
Alcoholic Beverages, Tobacco	1.28	12.6	13.3	18.4	30.4	31.3	31.4	22.4	21.0	20.2	19.2	19.4	19.5	20.4
Clothing and footwear	9.48	7.1	6.9	6.0	7.5	8.7	8.9	9.7	9.8	9.9	10.2	10.8	12.3	11.0
Housing, water, Elec., Gas and other fuels	18.49	6.6	5.0	5.3	2.0	3.7	2.8	4.9	6.9	6.6	9.4	6.6	4.6	5.2
Furnishing and household equipment maintenance	4.10	8.0	7.4	7.6	9.1	10.2	10.5	10.9	10.2	9.6	9.7	9.9	10.6	10.1
Health	3.51	8.5	8.9	9.8	11.1	12.2	12.2	13.1	12.3	11.7	12.1	12.4	12.6	11.6
Transport	5.56	12.5	17.2	16.9	15.7	17.6	16.4	14.7	12.2	13.1	17.2	18.0	10.2	2.3
Communication	1.99	2.0	2.1	2.1	2.0	2.1	2.0	2.0	1.9	1.7	1.7	1.6	1.6	0.8
Recreation and culture	1.38	6.7	6.4	5.9	7.7	8.0	8.0	8.9	7.4	7.5	7.3	7.3	6.5	5.4
Education	2.13	4.1	3.9	3.6	4.9	5.3	5.3	5.3	5.3	5.0	6.7	7.1	4.5	2.5
Restaurants and hotels	6.19	4.4	3.6	2.9	6.4	8.1	8.1	8.0	8.5	8.3	8.9	10.3	10.8	10.4
Misc. goods and services	5.02	8.4	8.3	9.0	10.7	14.1	13.9	13.2	12.9	11.6	12.5	13.4	13.6	13.2

Source: Pakistan Bureau of Statistics and SBP staff estimates

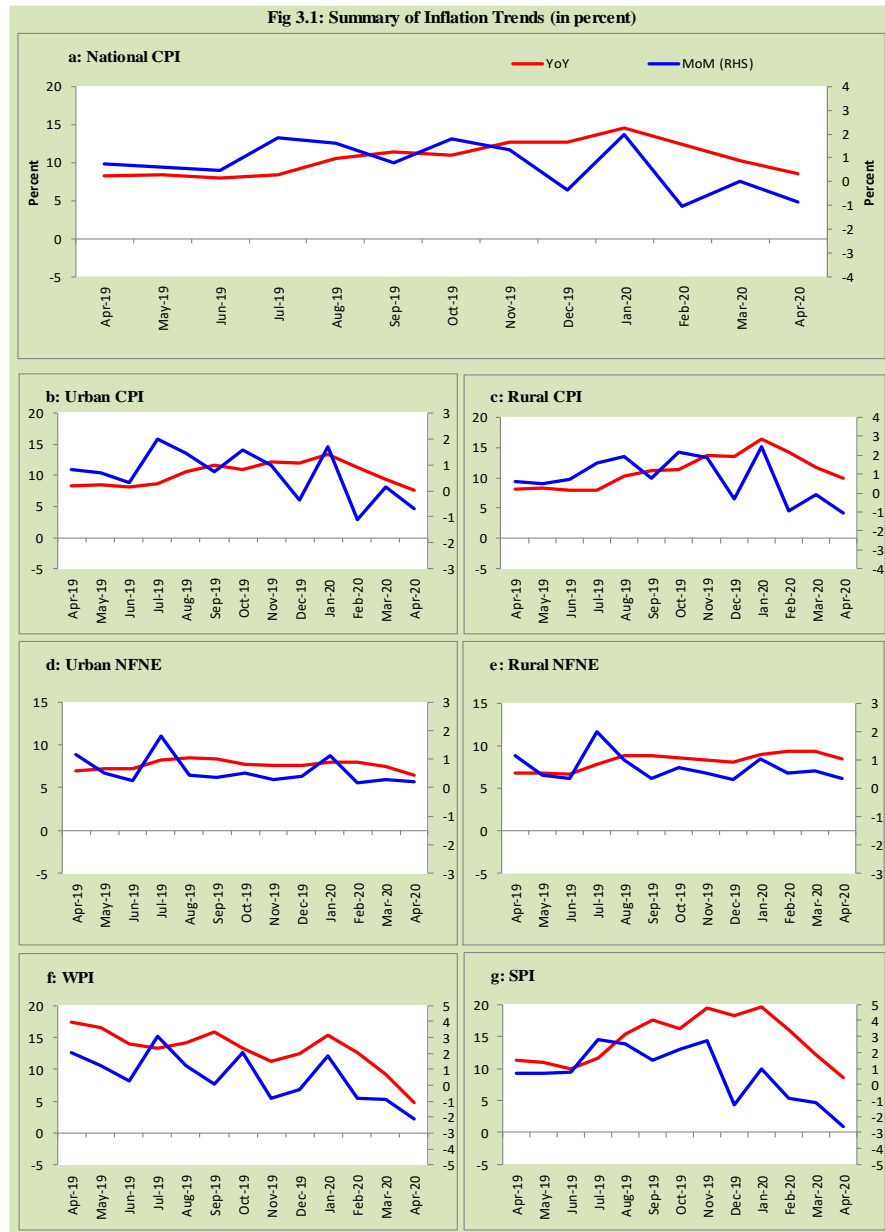
Key: <6 8.5 >10



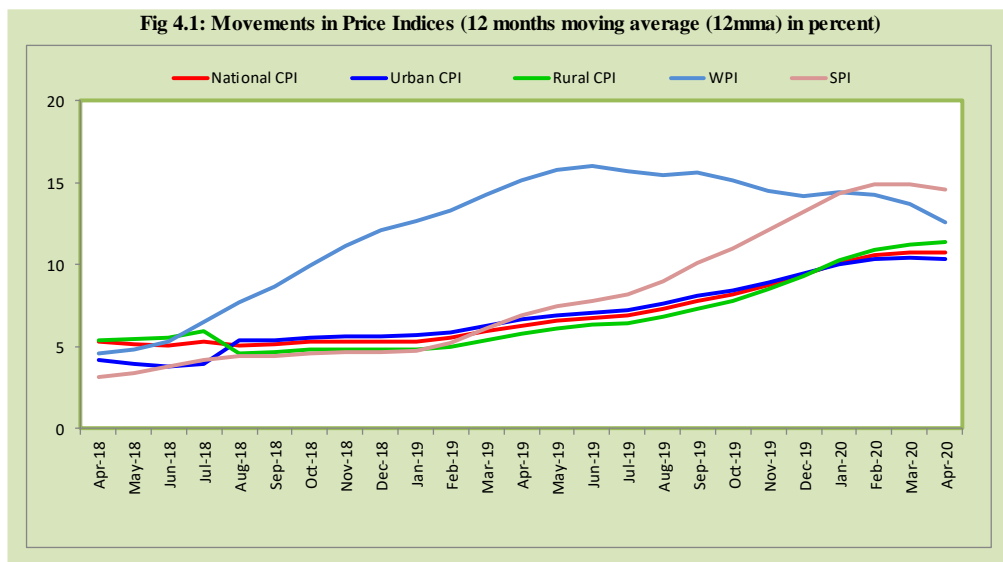
Inflation Monitor, April 2020



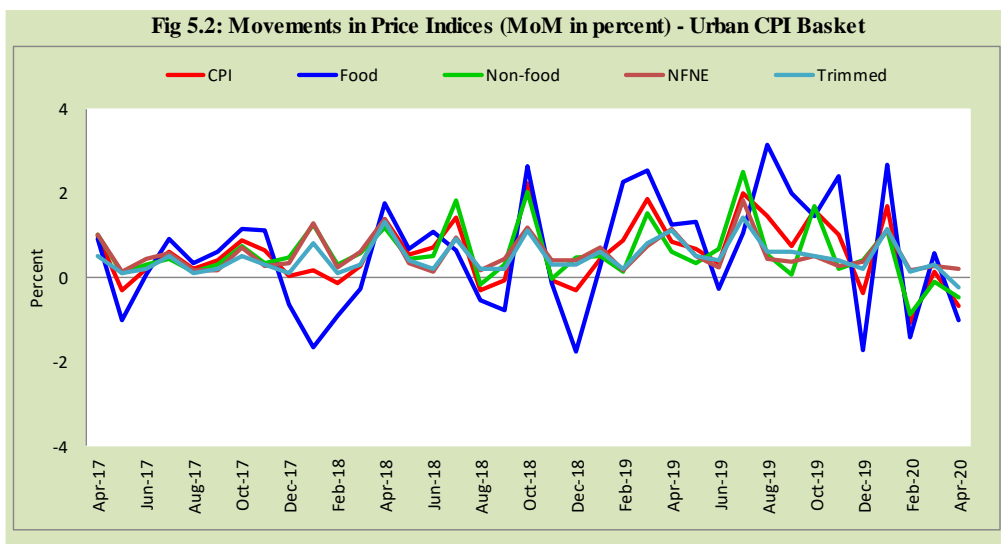
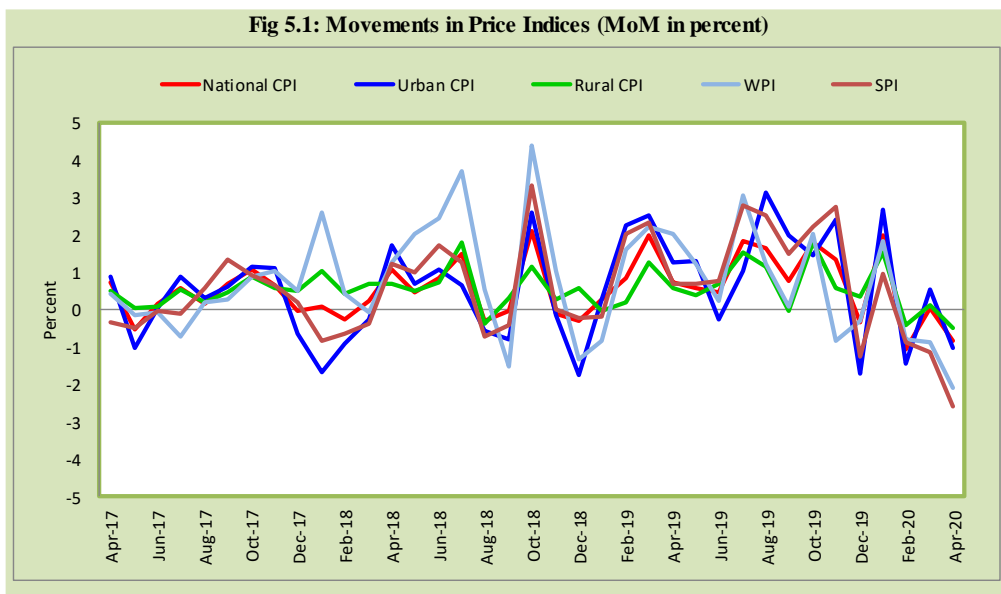
3. Trends in Inflation

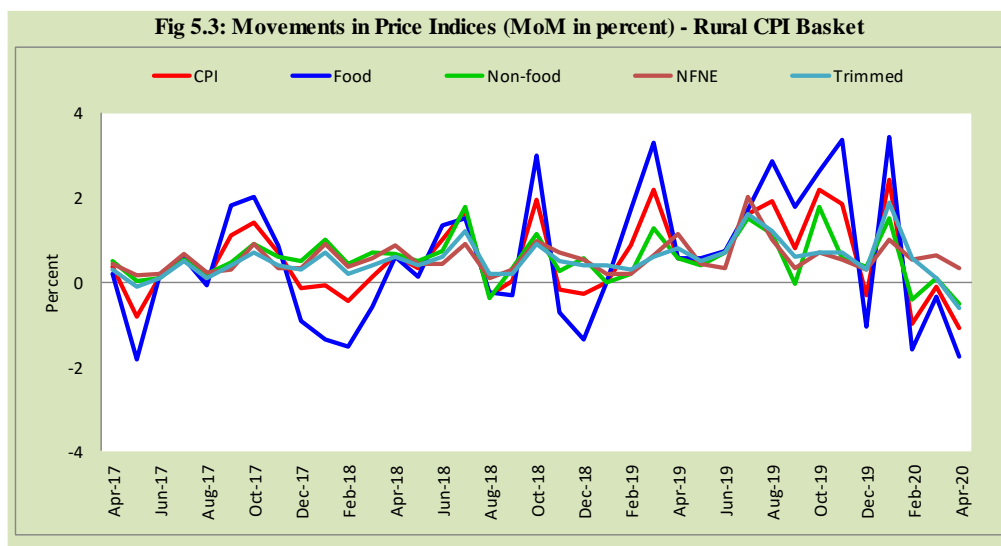


4. Movement in Price Indices (Moving Averages)



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

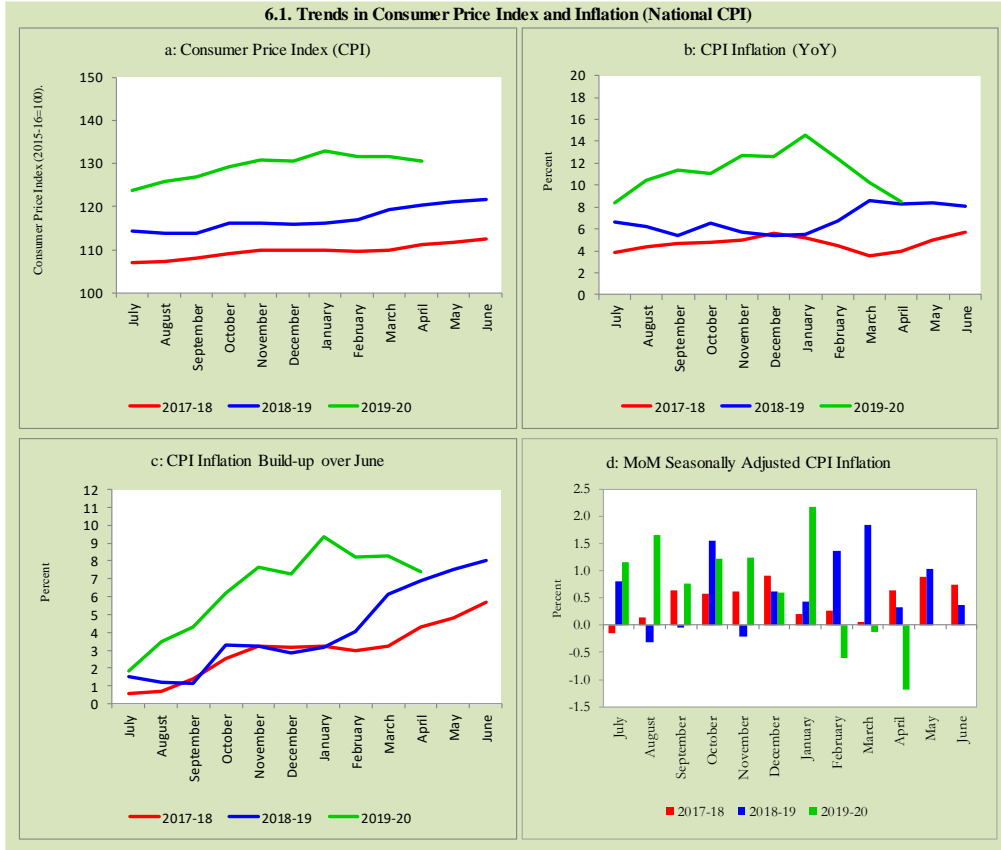




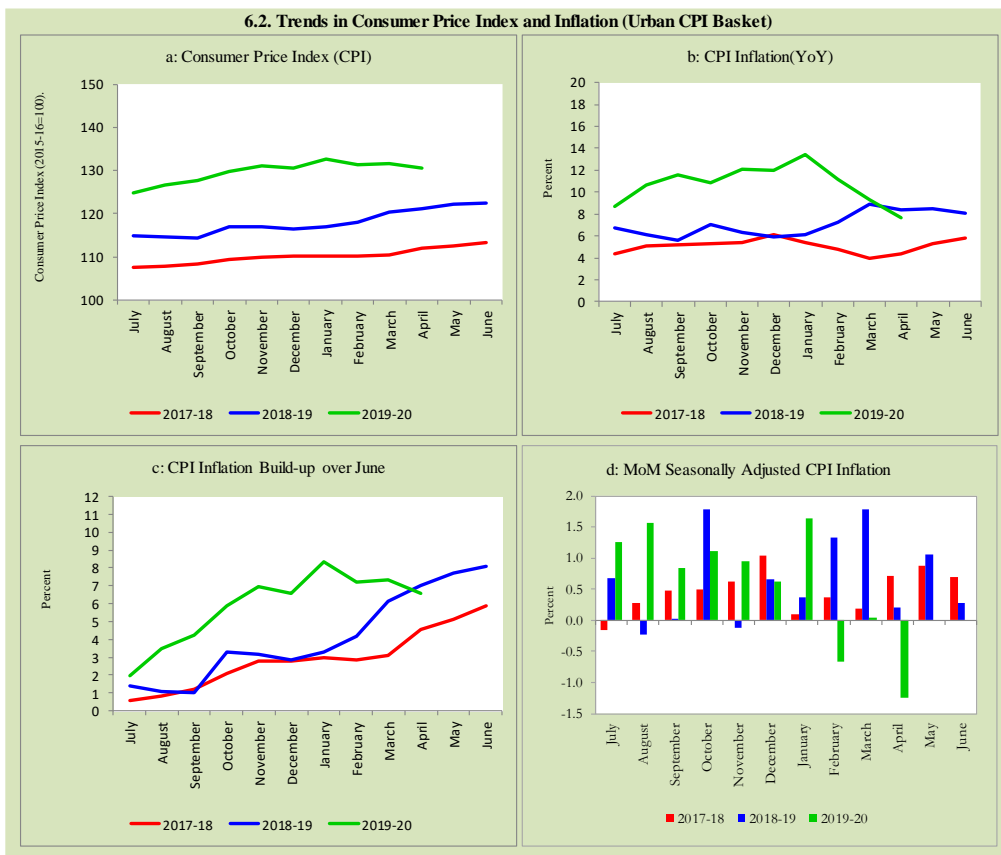
6. Trends in Consumer Price Indices and Inflation

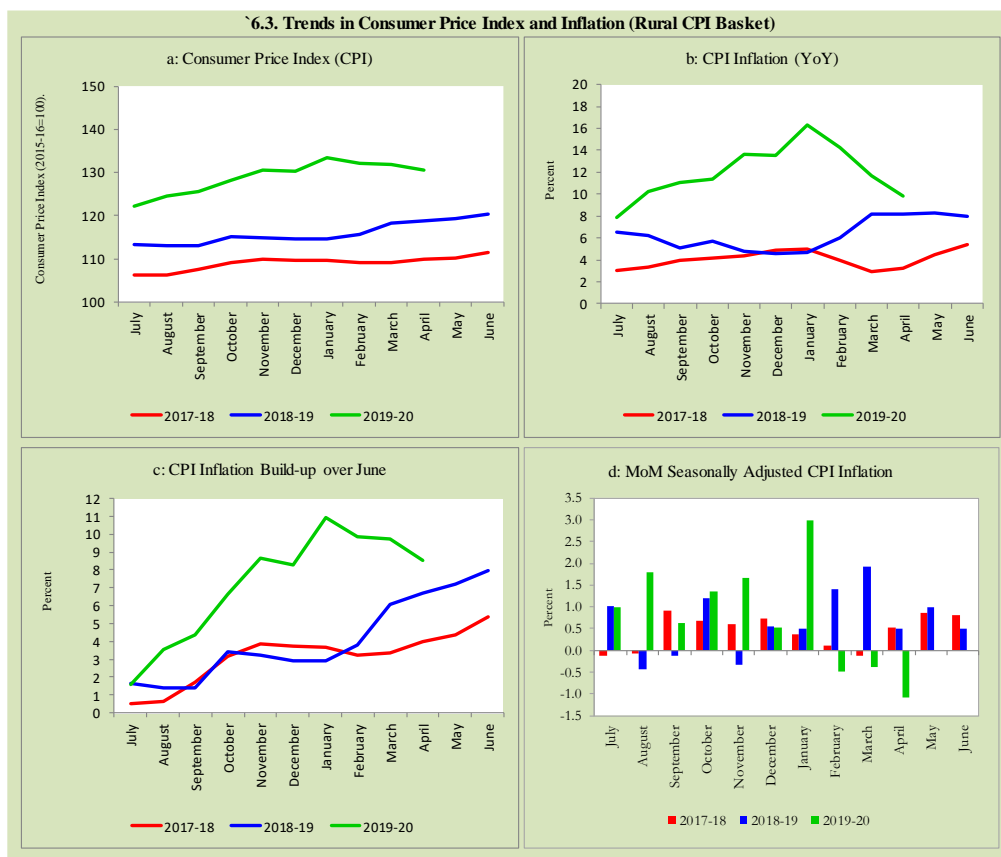
Monthly Consumer Price Indices, YoY growth rates and inflation build up over June along with seasonally adjusted (MoM) growth rates in CPI (National, Urban and Rural) is summarized in the following graphs (Figure 6.1 to 6.3).

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



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





7. Weighted Contribution

The weighted contribution of food group in the overall urban CPI inflation decreased to 48.3 percent during April 2020 from 49.4 percent in previous month. It was 35.3 percent during corresponding month of last year. The weighted contribution of non-food group increased to 51.7 percent in April 2020 from 50.7 percent in previous month. Non-food group was 64.6 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

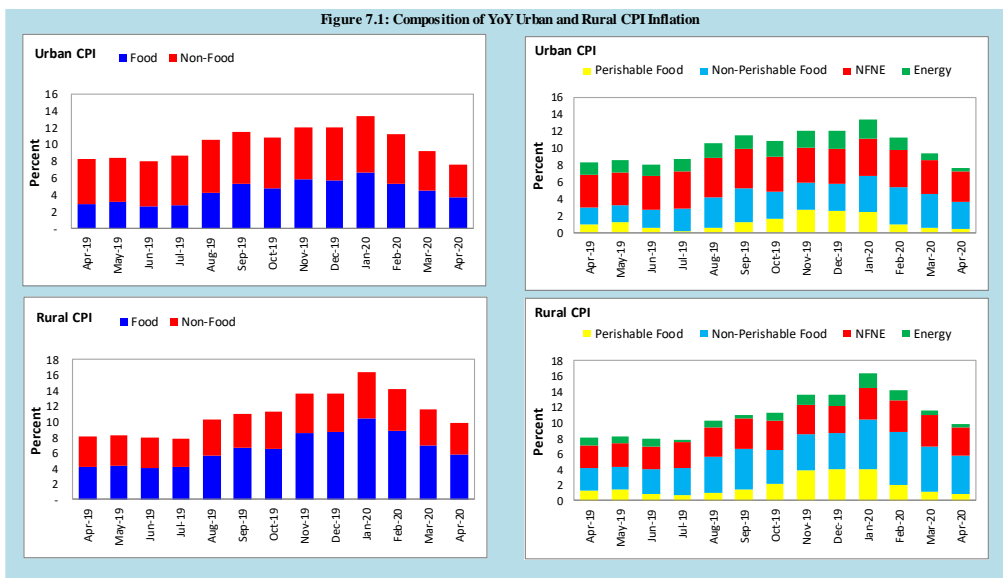
the overall inflation for urban basket. Figure 7.1 provides a graphical presentation of composition of YoY urban CPI inflation cascaded in food group and non-food groups and their respective sub-indexes.

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
Apr-19	100	35.3	12.6	22.7	64.6	18.4	46.3	31.0	15.2
May-19	100	37.6	14.6	23.0	62.4	15.9	46.4	31.6	14.8
Jun-19	100	33.2	8.0	25.2	66.8	17.7	49.1	33.6	15.5
Jul-19	100	32.3	3.0	29.3	67.7	16.4	51.3	36.5	14.8
Aug-19	100	39.7	6.0	33.7	60.3	16.5	43.8	31.6	12.2
Sep-19	100	45.8	10.5	35.3	54.2	14.1	40.1	28.9	11.2
Oct-19	100	44.7	14.9	29.7	55.4	16.8	38.6	29.3	9.2
Nov-19	100	48.7	22.1	26.6	51.3	17.1	34.2	25.9	8.3
Dec-19	100	48.4	21.8	26.6	51.7	17.1	34.6	26.2	8.4
Jan-20	100	50.5	18.4	32.1	49.6	16.8	32.8	24.3	8.5
Feb-20	100	47.7	9.4	38.3	52.3	13.3	39.0	29.0	10.1
Mar-20	100	49.4	6.5	42.8	50.7	7.2	43.4	31.5	11.9
Apr-20	100	48.3	5.8	42.5	51.7	5.9	45.8	35.0	10.8

Also, for rural basket, the weighted contribution of food group in the overall rural CPI inflation decreased to 58.8 percent during April 2020 from 59.9 percent in previous month. It was 50.7 percent during corresponding month of last year. On the other hand, the weighted contribution of non-food group increased to 41.2 percent in April 2020 from 40.3 percent in previous month. Non-food group was 49.2 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
Apr-19	100	50.7	15.7	35.0	49.2	12.6	36.6	29.4	7.3
May-19	100	52.4	16.9	35.5	47.6	11.5	36.2	29.0	7.1
Jun-19	100	50.9	10.0	40.9	49.2	12.4	36.7	29.4	7.3
Jul-19	100	52.4	8.7	43.7	47.6	4.4	43.2	36.9	6.4
Aug-19	100	54.8	9.8	45.1	45.2	7.7	37.5	32.6	4.9
Sep-19	100	60.0	13.3	46.7	40.0	5.1	34.9	30.4	4.5
Oct-19	100	57.8	18.5	39.3	42.2	9.5	32.7	29.5	3.3
Nov-19	100	63.3	28.7	34.5	36.7	9.8	26.9	24.2	2.7
Dec-19	100	63.9	29.4	34.5	36.1	9.8	26.3	23.6	2.8
Jan-20	100	64.2	24.8	39.3	35.8	11.4	24.4	20.9	3.5
Feb-20	100	61.7	14.6	47.1	38.2	9.3	28.9	24.9	4.0
Mar-20	100	59.9	9.5	50.4	40.2	5.5	34.7	29.9	4.8
Apr-20	100	58.8	8.2	50.6	41.2	3.8	37.5	32.8	4.7

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													
	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
General	31.7	39.3	52.5	61.5	65.2	52.8	61.8	55.3	43.5	56.2	52.5	45.8	19.9
Food & Non-Alcoholic Beverages	24.4	47.8	43.3	50.0	65.6	50.0	67.8	45.6	35.6	66.7	35.6	31.1	26.7
Alcoholic Beverages & Tobacco	0.0	0.0	100.0	100.0	66.7	100.0	100.0	100.0	66.7	100.0	66.7	66.7	100.0
Clothing & Footwear	27.5	40.0	60.0	70.0	80.0	57.5	72.5	80.0	72.5	75.0	75.0	67.5	10.0
Housing, Water, Elect, Gas & other Fuels	-24.1	3.4	65.5	44.8	37.9	10.3	55.2	24.1	20.7	3.4	6.9	27.6	24.1
Furnishing & Household Equip. Maintenance etc.	64.3	54.8	90.5	76.2	88.1	97.6	88.1	95.2	76.2	71.4	92.9	64.3	19.0
Health	100.0	50.0	75.0	0.0	100.0	0.0	100.0	50.0	25.0	75.0	75.0	100.0	-25.0
Transport	100.0	50.0	75.0	0.0	100.0	0.0	100.0	50.0	25.0	75.0	75.0	100.0	-25.0
Communication	40.0	20.0	20.0	40.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0
Recreation & Culture	60.0	44.0	36.0	56.0	60.0	32.0	24.0	32.0	20.0	20.0	28.0	20.0	12.0
Education	50.0	56.3	0.0	56.3	56.3	62.5	6.3	25.0	12.5	6.3	0.0	31.3	0.0
Restaurant & Hotels	28.6	35.7	50.0	78.6	85.7	78.6	78.6	71.4	28.6	71.4	85.7	64.3	14.3
Miscellaneous	55.2	48.3	82.8	69.0	79.3	96.6	79.3	65.5	34.5	82.8	75.9	69.0	37.9
NFNE	38.3	40.4	55.7	68.1	68.1	59.1	58.3	63.0	48.1	55.3	62.6	53.2	19.6

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

	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
General	49.2	41.4	46.7	73.0	60.7	34.4	64.3	50.8	36.9	56.6	48.0	41.8	23.4
Food & Non-Alcoholic Beverages	30.4	30.4	36.7	65.8	55.7	22.8	69.6	46.8	25.3	67.1	32.9	16.5	25.3
Alcoholic Beverages & Tobacco	0.0	20.0	100.0	100.0	100.0	80.0	100.0	80.0	0.0	60.0	100.0	60.0	60.0
Clothing & Footwear	81.5	77.8	63.0	85.2	81.5	66.7	77.8	59.3	48.1	77.8	85.2	70.4	0.0
Housing, Water, Elect, Gas & other Fuels	0.0	-4.3	60.9	39.1	52.2	-4.3	82.6	34.8	39.1	8.7	0.0	39.1	34.8
Furnishing & Household Equip. Maintenance etc.	88.5	65.4	42.3	84.6	88.5	73.1	84.6	80.8	57.7	69.2	73.1	80.8	23.1
Health	71.4	64.3	57.1	78.6	57.1	35.7	50.0	78.6	57.1	42.9	42.9	71.4	42.9
Transport	56.3	56.3	56.3	75.0	50.0	12.5	37.5	43.8	25.0	43.8	43.8	12.5	-6.3
Communication	40.0	40.0	20.0	40.0	20.0	0.0	-20.0	20.0	20.0	20.0	20.0	0.0	0.0
Recreation & Culture	66.7	27.8	11.1	72.2	11.1	22.2	27.8	11.1	27.8	22.2	33.3	27.8	22.2
Education	80.0	60.0	0.0	80.0	20.0	0.0	0.0	0.0	20.0	0.0	80.0	40.0	0.0
Restaurant & Hotels	50.0	21.4	35.7	85.7	57.1	21.4	42.9	42.9	35.7	78.6	71.4	78.6	28.6
Miscellaneous	64.7	64.7	76.5	100.0	88.2	70.6	70.6	64.7	58.8	70.6	82.4	52.9	41.2
NFNE	67.6	55.9	47.8	81.6	63.2	49.3	58.1	55.1	44.9	52.2	58.1	55.9	24.3

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

9. Domestic Commodity Prices

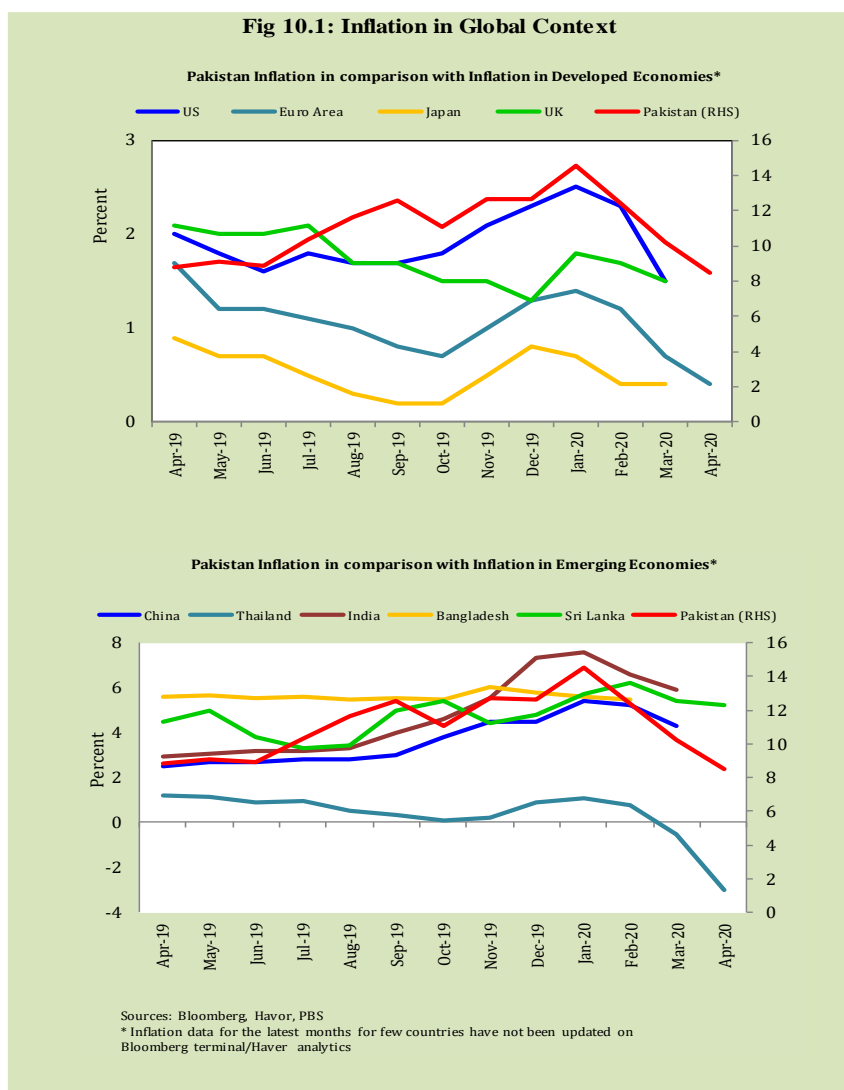
Inflation in domestic food commodities (YoY and MoM in percent) for selected essential food items covering both urban and rural CPI baskets is given in table 9.1.

Table 9.1 Inflation in Domestic Urban and Rural CPI Food Commodities (in percent) - April 2020						
S. No	Item	Unit	Urban CPI		Rural CPI	
			YoY	MoM	YoY	MoM
1	Wheat	10 Kg	16.8	-3.3	21.9	-4.4
2	Wheat Flour Bag	20 Kg	13.2	0.4	16.9	0.6
3	Rice Basmati Broken (Superior/Average Quality) *	1 Kg	11.1	0.4	9.1	1.3
4	Beef with Bone (Average Quality)	1 Kg	16.6	1.9	8.9	0.3
5	Mutton (Average Quality)	1 Kg	10.0	1.0	10.9	1.6
6	Chicken Farm Broiler (Live)	1 Kg	-28.8	-21.8	-28.5	-19.8
7	Milk Fresh (Un-Boiled)	1 Litre	3.1	-5.0	2.7	-4.7
8	Eggs Farm	Dozen	44.2	14.7	29.3	11.2
9	Vegetable Ghee Dalda/Habib Or Other Superior Quality 1 Kg Pouch	Each	25.5	-1.6	28.8	-0.5
10	Pulse Masoor (Washed)	1 Kg	47.7	27.5	45.1	15.7
11	Pulse Moong (Washed)	1 Kg	101.1	23.1	94.4	18.3
12	Pulse Mash (Washed)	1 Kg	67.9	14.0	56.1	6.9
13	Pulse Gram	1 Kg	31.2	10.8	28.5	6.8
14	Potatoes	1 Kg	97.2	-0.8	105.7	-6.7
15	Onions	1 Kg	40.7	-22.9	38.9	-25.0
16	Tomatoes	1 Kg	-55.4	-11.1	-56.3	-5.7
17	Sugar Refined	1 Kg	27.8	2.6	46.5	-29.3
18	Garlic (Lehsun)	1 Kg	47.8	-23.2	24.5	2.0
19	Ginger (Adrak)	500 Gm	44.7	-9.6	84.8	-4.3
20	Tea Lipton Yellow Label 190 Gm Packet	Each	9.5	0.0	9.7	0.0

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

10. Inflation in Global Context

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

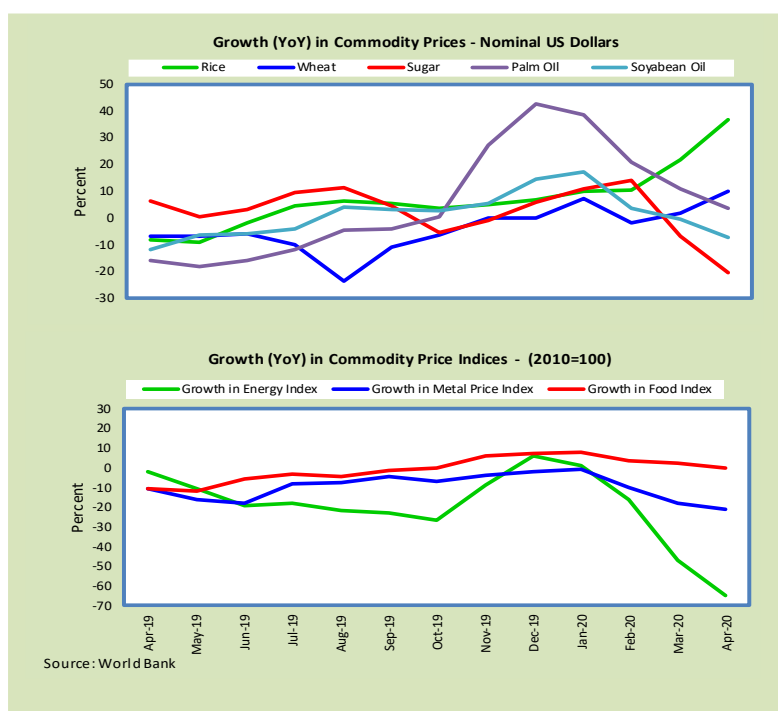


11. Global Commodity Prices

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

Table 11.1 Changes in Major Global Indices (percent)

Item/ Group	Apr-19		Mar-20		Apr-20	
	YoY	MoM	YoY	MoM	YoY	MoM
Food	-8.3	-1.4	2.1	-2.7	-0.4	-2.7
Metals	-7.2	1.8	-18.2	-7.3	-21.4	-4.6
Energy	-1.2	3.3	-47.4	-35.2	-65.1	-30.2
Agricultural	-7.8	-0.9	0.4	-3.1	-1.9	-2.3
Cotton	-9.0	3.3	-19.2	-11.6	-27.2	-6.1



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 April 2020 has been used for seasonal adjustment analysis. The seasonal analysis is carried out without taking trading-day or Islamic calendar month's effects.

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

Fig. 12.1 (a) Seasonal Factors of National CPI

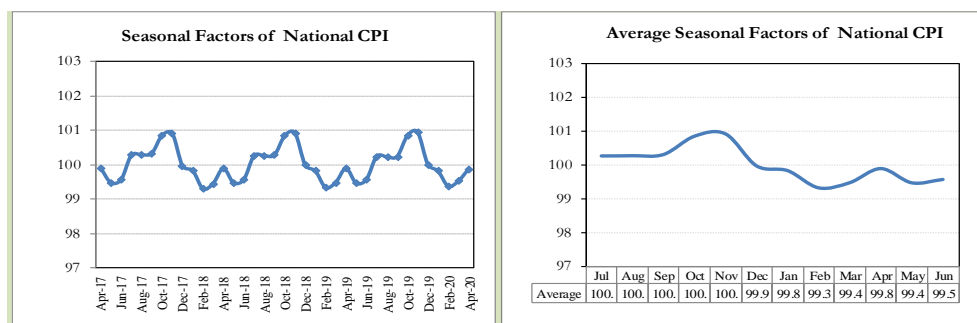


Fig. 12.1 (b) Seasonal Factors of Urban CPI

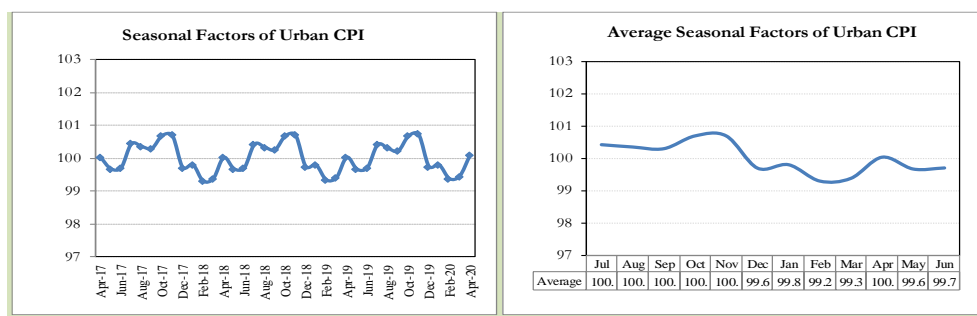
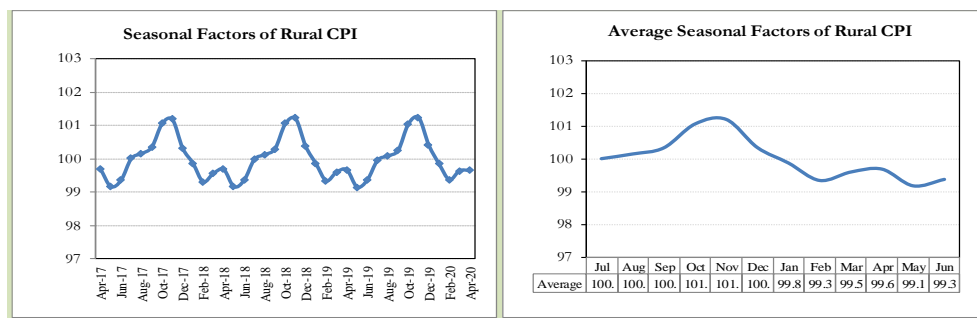


Fig. 12.1 (c) Seasonal Factors of Rural CPI



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

Fig. 12.2 (a) Seasonal Plots of National CPI

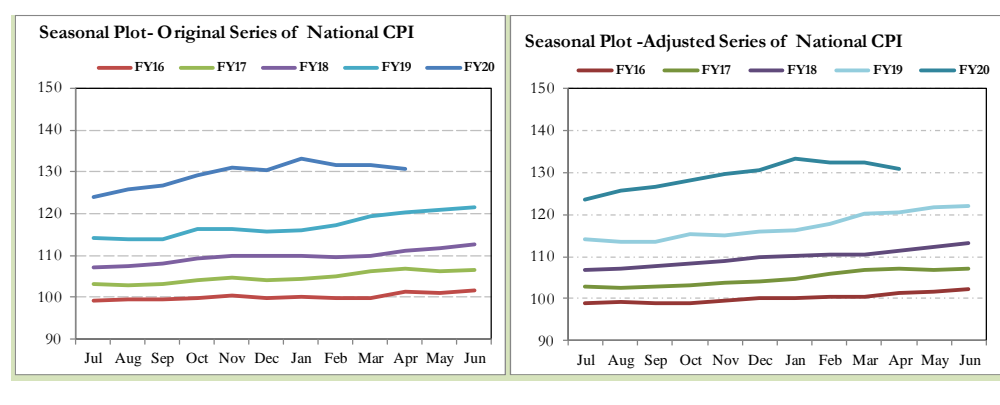


Fig. 12.2 (b) Seasonal Plots of Urban CPI

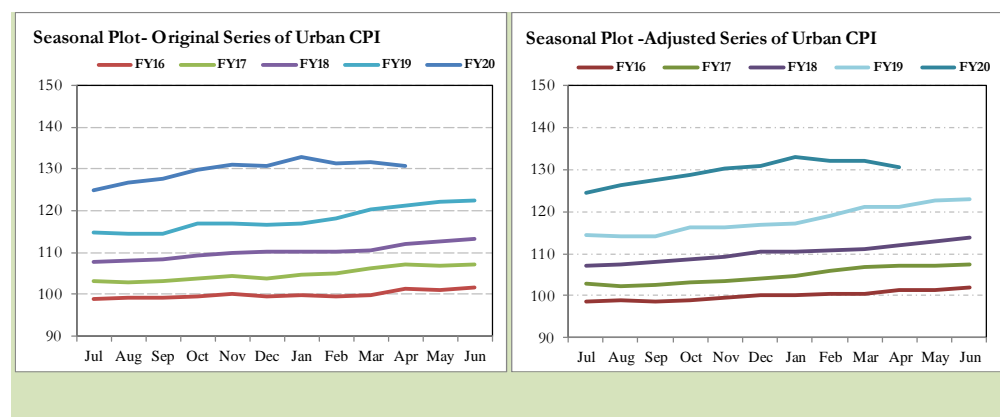
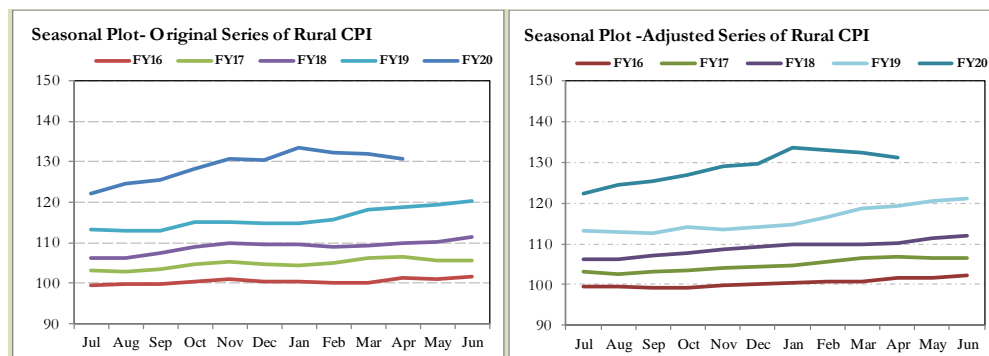


Fig. 12.2 (c) Seasonal Plots of Rural CPI



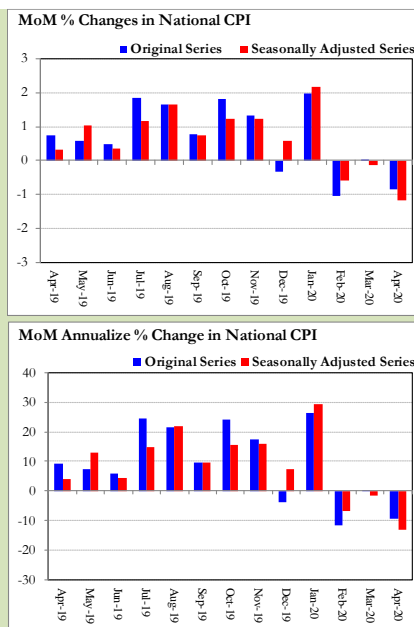
Seasonally adjusted National CPI for April 2020 stood at 130.76 against 130.59 in original series showing an increase of 0.17 on account of adjustment of downward seasonality in April 2020.

Seasonally adjusted Urban CPI for April 2020 stood at 130.58 against 130.60 in original series showing a decrease of -0.02 on account of adjustment of upward seasonality in April 2020.

Seasonally adjusted Rural CPI for April 2020 stood at 131.04 against 130.58 in original series showing an increase of 0.46 on account of adjustment of downward seasonality in April 2020.

Month-on-month change of seasonally adjusted National CPI series stood at -1.18% reflecting a decrease during April 2020 over previous month and a

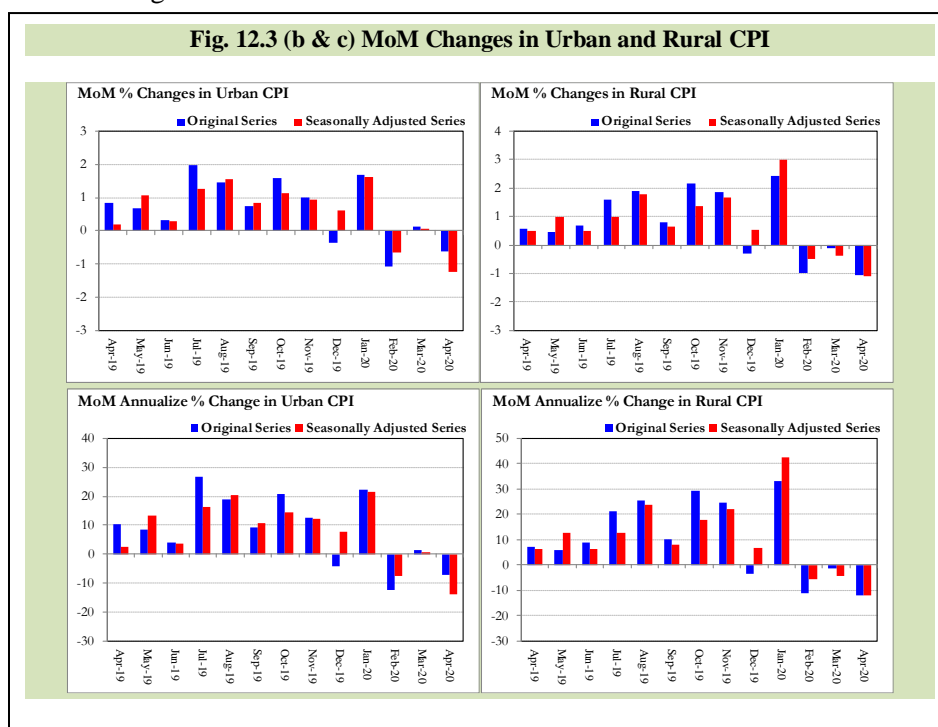
Fig. 12.3 (a) MoM Changes in National CPI



decrease of -0.84% in original series.

Month-on-month change of seasonally adjusted Urban CPI series stood at -1.25% reflecting a decrease during April 2020 over previous month and a decrease of 0.61% in original series.

Month-on-month change of seasonally adjusted Rural CPI series stood at -1.08% reflecting a decrease during April 2020 over previous month and a decrease of -1.08% 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 April 2020 (corresponding to the seasonally adjusted month-on-month rate) is 13.28 percent.

Annexure A

Table A1: National CPI Inflation by Groups (YoY and MoM in percent)							
	Weights	MoM change			YoY change		
		Apr-19	Mar-20	Apr-20	Apr-19	Mar-20	Apr-20
Food & Non-Alcoholic Beverages	34.6	1.0	0.1	-1.6	9.1	14.7	11.7
Alcoholic Beverages & Tobacco	1.0	0.0	0.1	0.8	11.7	18.6	19.6
Clothing & Footwear	8.6	0.7	1.6	0.0	6.4	11.0	10.2
Housing, Water, Elec, Gas & other Fuels	23.6	-0.6	0.0	-0.3	8.1	4.9	5.1
Furnishing & Household Equip. Maintenance	4.1	1.4	0.7	0.3	9.1	10.1	9.0
Health	2.8	2.1	1.1	0.4	8.1	12.4	10.5
Transport	5.9	2.8	-4.4	-4.5	13.7	11.5	3.4
Communication	2.2	2.1	0.0	0.0	4.1	3.9	1.7
Recreation & Culture	1.6	1.0	0.4	0.1	5.7	5.9	5.1
Education	3.8	1.2	0.2	0.0	5.4	4.5	3.2
Restaurants & Hotels	6.9	0.3	0.6	0.1	5.0	8.7	8.5
Miscellaneous	4.9	0.9	1.0	1.0	8.9	11.8	11.9
Overall National CPI	100.0	0.7	0.0	-0.8	8.3	10.2	8.5

Table A2: Urban CPI Inflation by Groups (YoY and MoM in percent)							
	Weights	MoM change			YoY change		
		Apr-19	Mar-20	Apr-20	Apr-19	Mar-20	Apr-20
I. Food Group	36.8	1.3	0.6	-1.0	8.3	13.0	10.4
Food & Non-Alcoholic Beverages	30.4	1.4	0.5	-1.3	8.7	13.7	10.7
Alcoholic Beverages & Tobacco	0.9	0.0	0.0	0.9	10.9	17.8	18.8
Restaurant & Hotels (Food Component)	5.5	0.6	0.8	0.0	5.6	8.2	7.7
II. Non-Food Group	63.2	0.6	-0.1	-0.5	8.4	7.3	6.2
Clothing & Footwear	8.0	0.3	1.5	0.0	5.8	9.9	9.5
Housing, Water, Elec, Gas & other Fuels	27.0	-0.3	0.0	-0.2	8.8	5.1	5.1
Furnishing & Household Equip. Maintenance	4.1	1.6	0.5	0.2	9.8	9.8	8.3
Health	2.3	2.5	0.9	0.0	7.7	12.2	9.4
Transport	6.1	2.8	-4.6	-4.5	14.5	12.2	4.1
Communication	2.4	2.8	0.0	0.0	5.3	5.1	2.3
Recreation & Culture	1.7	0.8	0.5	0.1	5.1	5.6	4.9
Education	4.9	1.1	0.2	0.0	5.7	4.5	3.4
Restaurants & Hotels (Non-food Component)	1.9	-0.9	0.2	0.0	4.3	5.5	6.5
Miscellaneous	4.8	0.6	1.1	1.0	9.3	10.6	11.0
Overall Urban CPI	100.0	0.8	0.1	-0.7	8.4	9.3	7.7

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

	Weights	MoM change			YoY change		
		Apr-19	Mar-20	Apr-20	Apr-19	Mar-20	Apr-20
I. Food Group	45.9	0.6	-0.3	-1.7	9.3	15.5	12.8
Food & Non-Alcoholic Beverages	40.9	0.5	-0.4	-2.0	9.5	15.8	12.8
Alcoholic Beverages & Tobacco	1.3	0.0	0.2	0.7	12.6	19.5	20.4
Restaurant & Hotels (Food Component)	3.8	1.0	0.7	0.5	6.4	11.5	11.0
II. Non-Food Group	54.1	0.6	0.1	-0.5	7.2	8.5	7.4
Clothing & Footwear	9.5	1.1	1.7	0.0	7.1	12.3	11.0
Housing, Water, Elec, Gas & other Fuels	18.5	-1.1	0.0	-0.5	6.6	4.6	5.2
Furnishing & Household Equip. Maintenance	4.1	0.9	0.9	0.5	8.0	10.6	10.1
Health ^{etc}	3.5	1.7	1.2	0.7	8.5	12.6	11.6
Transport	5.6	2.9	-4.1	-4.5	12.5	10.2	2.3
Communication	2.0	0.8	0.0	0.0	2.0	1.6	0.8
Recreation & Culture	1.4	1.3	0.2	0.3	6.7	6.5	5.4
Education	2.1	1.9	0.3	0.0	4.1	4.5	2.5
Restaurants & Hotels (Non-food Component)	2.4	0.0	0.2	0.0	1.3	9.4	9.4
Miscellaneous	5.0	1.2	0.9	0.9	8.4	13.6	13.2
Overall Rural CPI		0.6	-0.1	-1.1	8.1	11.7	9.8

Table A4: Top Ten Contributors to Urban CPI Inflation (YoY) in April 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Apr-19	Apr-20	
A. Ranked by Weighted Contribution					
1	House Rent	19.26	6.29	4.20	10.84
2	Gas Charges	1.08	38.63	54.84	8.92
3	Readymade Food	5.52	5.58	7.65	5.44
4	Wheat Flour	3.01	2.04	14.82	4.86
5	Condiments And Spices	1.33	18.74	23.16	4.32
6	Potatoes	0.45	-2.96	92.26	4.00
7	Meat	2.04	7.59	13.75	3.85
8	Vegetable Ghee	1.03	11.37	26.31	3.48
9	Sugar	1.11	20.16	27.80	3.42
10	Milk Fresh	7.11	2.98	3.89	3.33
Total		41.94			52.46
B. Ranked by Percentage Change					
1	Pulse Moong	0.17	22.31	101.10	1.62
2	Potatoes	0.45	-2.96	92.26	4.00
3	Pulse Mash	0.12	2.16	67.89	0.54
4	Gas Charges	1.08	38.63	54.84	8.92
5	Pulse Masoor	0.16	7.79	47.67	0.67
6	Eggs	0.51	-10.41	44.16	2.24
7	Onions	0.59	42.43	40.72	2.43
8	Butter	0.09	13.62	34.19	0.42
9	Gur	0.04	21.70	33.75	0.14
10	Pulse Gram	0.17	9.30	31.22	0.58
Total		3.38			21.57
C. Ranked by Weights					
1	House Rent	19.26	6.29	4.20	10.84
2	Milk Fresh	7.11	2.98	3.89	3.33
3	Readymade Food	5.52	5.58	7.65	5.44
4	Education	4.88	5.74	3.42	2.52
5	Electricity Charges	4.56	14.42	-5.88	-3.30
6	Wheat Flour	3.01	2.04	14.82	4.86
7	Appliances/Articles/Products For P	2.98	9.89	8.24	3.11
8	Motor Fuel	2.91	15.14	0.41	0.18
9	Cotton Cloth	2.22	6.97	10.31	2.87
10	Meat	2.04	7.59	13.75	3.85
Total		54.48			33.70
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 7.7 percent in April 2020.					

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

Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Mar-20	Apr-20	
A. Ranked by Weighted Contribution					
1	Motor Fuel	2.91	-6.17	-8.85	43.96
2	Milk Fresh	7.11	0.96	-4.29	41.68
3	Chicken	1.36	3.25	-21.81	41.02
4	Onions	0.59	35.07	-22.94	26.15
5	Liquefied Hydrocarbons	0.51	2.27	-18.67	17.48
6	Fresh Vegetables	1.53	-7.78	-3.86	9.56
7	Tomatoes	0.35	-23.29	-11.10	3.30
8	Wheat	0.61	-8.43	-3.29	2.83
9	Condiments And Spices	1.33	1.58	-0.74	1.80
10	Vegetable Ghee	1.03	0.38	-1.01	1.77
		17.33			189.56
B. Ranked by Percentage Change					
1	Pulse Masoor	0.16	-3.39	27.54	-4.72
2	Pulse Moong	0.17	0.05	23.11	-6.35
3	Fresh Fruits	1.44	8.53	17.71	-37.39
4	Eggs	0.51	1.62	14.71	-9.83
5	Pulse Mash	0.12	-2.33	13.98	-1.71
6	Pulse Gram	0.17	-5.13	10.83	-2.47
7	Besan	0.08	-1.86	8.03	-0.93
8	Beans	0.04	1.18	4.72	-0.30
9	Gram Whole	0.09	-0.93	4.38	-0.57
10	Pan Prepared	0.14	0.08	3.80	-1.11
		2.91			-65.38
C. Ranked by Weights					
1	House Rent	19.26	0.00	0.26	-7.36
2	Milk Fresh	7.11	0.96	-4.29	41.68
3	Readymade Food	5.52	0.81	0.04	-0.31
4	Education	4.88	0.19	0.00	0.00
5	Electricity Charges	4.56	0.00	0.00	0.00
6	Wheat Flour	3.01	-3.17	-0.25	0.98
7	Appliances/Articles/Products For P	2.98	0.65	0.20	-0.84
8	Motor Fuel	2.91	-6.17	-8.85	43.96
9	Cotton Cloth	2.22	0.78	0.00	0.00
10	Meat	2.04	0.84	1.49	-4.88
		54.48			73.23
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 -0.7 percent in April 2020.					

Table A6: Top and Bottom Fifteen Contributors to Urban CPI Inflation (YoY) in April 2020					
Top 15 Contributors			YoY Change		Weighted Contribution (%)
Items/ Contributors	Weights		Apr-19	Apr-20	
Ranked by Weighted Contribution					
1	House Rent	19.26	6.29	4.20	10.84
2	Gas Charges	1.08	38.63	54.84	8.92
3	Readymade Food	5.52	5.58	7.65	5.44
4	Wheat Flour	3.01	2.04	14.82	4.86
5	Condiments And Spices	1.33	18.74	23.16	4.32
6	Potatoes	0.45	-2.96	92.26	4.00
7	Meat	2.04	7.59	13.75	3.85
8	Vegetable Ghee	1.03	11.37	26.31	3.48
9	Sugar	1.11	20.16	27.80	3.42
10	Milk Fresh	7.11	2.98	3.89	3.33
11	Personal Effects N.E.C.	0.94	11.60	22.67	3.33
12	Cooking Oil	1.10	13.31	22.21	3.15
13	Appliances/Articles/Products For P	2.98	9.89	8.24	3.11
14	Cotton Cloth	2.22	6.97	10.31	2.87
15	Education	4.88	5.74	3.42	2.52
Total		54.08			67.43
Bottom 15 Contributors					
1	Chicken	1.36	5.91	-28.76	-5.67
2	Electricity Charges	4.56	14.42	-5.88	-3.30
3	Tomatoes	0.35	121.19	-55.44	-3.14
4	Liquefied Hydrocarbons	0.51	16.20	-2.34	-0.17
5	Fish	0.39	11.23	-2.52	-0.12
6	Postal Services	0.02	1.65	0.00	0.00
7	Newspapers	0.07	26.29	0.00	0.00
8	Therapeutic Appliances And	0.01	1.00	0.80	0.00
9	Accommodation Services	0.13	0.77	0.46	0.01
10	Major Tools & Equipments	0.01	4.03	9.24	0.01
11	Electrical Appliances For Personal	0.05	1.43	1.97	0.01
12	Dental Services	0.02	0.83	6.58	0.01
13	Motor Vehicle Tax	0.05	17.24	2.19	0.01
14	Plastic Products	0.05	4.52	2.84	0.02
15	Carpets	0.03	1.94	5.36	0.02
Total		7.59			-12.33

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

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Mar-20	Apr-20	
Ranked by Weighted Contribution					
1	Motor Fuel	2.91	-6.17	-8.85	43.96
2	Milk Fresh	7.11	0.96	-4.29	41.68
3	Chicken	1.36	3.25	-21.81	41.02
4	Onions	0.59	35.07	-22.94	26.15
5	Liquefied Hydrocarbons	0.51	2.27	-18.67	17.48
6	Fresh Vegetables	1.53	-7.78	-3.86	9.56
7	Tomatoes	0.35	-23.29	-11.10	3.30
8	Wheat	0.61	-8.43	-3.29	2.83
9	Condiments And Spices	1.33	1.58	-0.74	1.80
10	Vegetable Ghee	1.03	0.38	-1.01	1.77
11	Dry Fruits	0.33	-1.20	-2.24	1.10
12	Milk Products	0.64	0.93	-1.19	1.07
13	Wheat Flour	3.01	-3.17	-0.25	0.98
14	Cooking Oil	1.10	0.18	-0.44	0.80
15	Potatoes	0.45	10.93	-0.80	0.70
Total		22.86			194.20
<u>Bottom 15 Contributors</u>					
1	Fresh Fruits	1.44	8.53	17.71	-37.39
2	Eggs	0.51	1.62	14.71	-9.83
3	House Rent	19.26	0.00	0.26	-7.36
4	Personal Effects N.E.C.	0.94	2.10	3.70	-6.73
5	Pulse Moong	0.17	0.05	23.11	-6.35
6	Meat	2.04	0.84	1.49	-4.88
7	Pulse Masoor	0.16	-3.39	27.54	-4.72
8	Sugar	1.11	-0.54	2.55	-4.09
9	Pulse Gram	0.17	-5.13	10.83	-2.47
10	Pulse Mash	0.12	-2.33	13.98	-1.71
11	Beverages	0.89	0.87	1.10	-1.36
12	Washing Soap/Detergents/Match Box	1.41	0.44	0.55	-1.13
13	Pan Prepared	0.14	0.08	3.80	-1.11
14	Besan	0.08	-1.86	8.03	-0.93
15	Appliances/Articles/Products For P	2.98	0.65	0.20	-0.84
Total		31.42			-90.89

Table A8: Top and Bottom Fifteen Contributors to MoM Urban CPI Food Inflation in April 2020					
Top 15 Contributors			MoM Change		Weighted Contribution (%)
Items/ Contributors	Weights	Mar-20	Apr-20		
Ranked by Weighted Contribution					
1	Milk Fresh	7.11	0.96	-4.29	41.68
2	Chicken	1.36	3.25	-21.81	41.02
3	Onions	0.59	35.07	-22.94	26.15
4	Fresh Vegetables	1.53	-7.78	-3.86	9.56
5	Tomatoes	0.35	-23.29	-11.10	3.30
6	Wheat	0.61	-8.43	-3.29	2.83
7	Condiments And Spices	1.33	1.58	-0.74	1.80
8	Vegetable Ghee	1.03	0.38	-1.01	1.77
9	Dry Fruits	0.33	-1.20	-2.24	1.10
10	Milk Products	0.64	0.93	-1.19	1.07
11	Wheat Flour	3.01	-3.17	-0.25	0.98
12	Cooking Oil	1.10	0.18	-0.44	0.80
13	Potatoes	0.45	10.93	-0.80	0.70
14	Fish	0.39	-9.25	-0.68	0.34
15	Wheat Products	0.09	0.60	-1.37	0.18
Total		19.93			133.29
Bottom 15 Contributors					
1	Fresh Fruits	1.44	8.53	17.71	-37.39
2	Eggs	0.51	1.62	14.71	-9.83
3	Pulse Moong	0.17	0.05	23.11	-6.35
4	Meat	2.04	0.84	1.49	-4.88
5	Pulse Masoor	0.16	-3.39	27.54	-4.72
6	Sugar	1.11	-0.54	2.55	-4.09
7	Pulse Gram	0.17	-5.13	10.83	-2.47
8	Pulse Mash	0.12	-2.33	13.98	-1.71
9	Beverages	0.89	0.87	1.10	-1.36
10	Pan Prepared	0.14	0.08	3.80	-1.11
11	Besan	0.08	-1.86	8.03	-0.93
12	Rice	1.18	0.22	0.36	-0.62
13	Gram Whole	0.09	-0.93	4.38	-0.57
14	Readymade Food	5.52	0.81	0.04	-0.31
15	Beans	0.04	1.18	4.72	-0.30
Total		13.66			-76.65

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

<u>Top 15 Contributors</u>		<u>MoM Change</u>			Weighted Contribution (%)
Items/ Contributors	Weights	Mar-20	Apr-20		
Ranked by Weighted Contribution					
1	Motor Fuel	2.91	-6.17	-8.85	43.96
2	Liquefied Hydrocarbons	0.51	2.27	-18.67	17.48
3	Hospitals Services	0.57	0.05	-0.03	0.03
4	Footwear	1.48	5.84	0.00	0.00
5	Cotton Cloth	2.22	0.78	0.00	0.00
6	Doctor (Mbbs) Clinic Fee	0.40	3.24	0.00	0.00
7	Household Equipments	1.00	1.22	0.00	0.00
8	Education	4.88	0.19	0.00	0.00
9	Recreation And Culture	0.65	1.33	0.00	0.00
10	Household Textiles	0.34	0.50	0.00	0.00
11	Dopatta	0.17	0.80	0.00	0.00
12	Text Books	0.67	0.16	0.00	0.00
13	Tailoring	1.07	0.07	0.00	0.00
14	Mechanical Services	0.43	0.10	0.00	0.00
15	Hosiery	0.41	0.09	0.00	0.00
Total		17.72			61.46
<u>Bottom 15 Contributors</u>					
1	House Rent	19.26	0.00	0.26	-7.36
2	Electrical Appliances For Personal	0.94	2.10	3.70	-6.73
3	Washing Soap/Detergents/Match Box	1.41	0.44	0.55	-1.13
4	Personal Grooming Services	2.98	0.65	0.20	-0.84
5	Garbage Collection	0.11	0.00	1.41	-0.26
6	Drugs And Medicines	1.07	0.45	0.08	-0.13
7	Stationery	0.35	0.09	0.24	-0.12
8	Construction Input Items	0.38	0.11	0.17	-0.10
9	Motor Vehicle Accessories	0.19	0.22	0.26	-0.07
10	Construction Wage Rates	0.20	0.30	0.19	-0.06
11	Transport Services	1.75	-5.45	0.01	-0.02
12	Readymade Garments	1.32	1.00	0.01	-0.01
13	Woolen Cloth	0.84	0.17	0.01	-0.01
14	Solid Fuel	0.42	-1.13	0.00	0.00
15	Woolen Readymade Garments	0.43	-0.01	0.00	0.00
Total		31.65			-16.84

Table A10: Top Ten Contributors to Rural CPI Inflation (YoY) in April 2020					
Items/ Contributors		Weights	YoY Change		Weighted Contribution (%)
			Apr-19	Apr-20	
A. Ranked by Weighted Contribution					
1	Vegetable Ghee	2.38	8.32	29.47	7.41
2	Wheat	3.47	5.31	21.88	6.68
3	Condiments And Spices	1.49	15.89	43.95	6.46
4	Solid Fuel	4.48	1.23	13.12	5.75
5	Potatoes	0.74	-4.04	103.48	5.41
6	Wheat Flour	3.43	2.63	18.13	5.39
7	House Rent	8.61	6.49	5.14	4.68
8	Cotton Cloth	2.84	10.53	14.77	4.61
9	Sugar	2.03	23.83	24.54	4.51
10	Readymade Food	3.80	6.36	11.02	4.43
Total		33.27			55.33
B. Ranked by Percentage Change					
1	Potatoes	0.74	-4.04	103.48	5.41
2	Pulse Moong	0.25	29.82	94.41	1.90
3	Pulse Mash	0.15	9.67	56.15	0.47
4	Pulse Masoor	0.21	7.55	45.11	0.64
5	Condiments And Spices	1.49	15.89	43.95	6.46
6	Onions	0.90	33.79	38.93	2.70
7	Beans	0.09	8.25	34.48	0.31
8	Postal Services	0.01	0.08	31.47	0.02
9	Water Supply	0.06	0.00	30.55	0.20
10	Vegetable Ghee	2.38	8.32	29.47	7.41
Total		6.27			25.52
C. Ranked by Weights					
1	Milk Fresh	10.38	3.68	2.70	2.73
2	House Rent	8.61	6.49	5.14	4.68
3	Solid Fuel	4.48	1.23	13.12	5.75
4	Readymade Food	3.80	6.36	11.02	4.43
5	Wheat	3.47	5.31	21.88	6.68
6	Electricity Charges	3.44	14.42	-5.88	-1.99
7	Wheat Flour	3.43	2.63	18.13	5.39
8	Cotton Cloth	2.84	10.53	14.77	4.61
9	Motor Fuels	2.49	14.98	-0.90	-0.26
10	Vegetable Ghee	2.38	8.32	29.47	7.41
Total		45.32			39.44
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 9.8 percent in April 2020.					

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

Items/ Contributors		Weights	MoM Change		Weighted Contribution (%)
			Mar-20	Apr-20	
A. Ranked by Weighted Contribution					
1	Milk Fresh	10.38	0.29	-4.72	42.47
2	Onions	0.90	40.95	-25.01	26.42
3	Chicken	1.46	-4.85	-19.84	25.26
4	Fresh Vegetables	2.09	-5.64	-11.19	25.14
5	Motor Fuels	2.49	-6.69	-9.42	24.81
6	Wheat	3.47	-7.39	-4.43	14.19
7	Liquefied Hydrocarbons	1.00	-0.34	-12.95	13.51
8	Potatoes	0.74	6.82	-6.57	6.16
9	Milk Products	0.96	0.14	-2.78	2.35
10	Tomatoes	0.51	-36.43	-5.72	1.46
		24.01			181.75
B. Ranked by Percentage Change					
1	Fresh Fruits	1.45	8.04	23.26	-30.62
2	Pulse Moong	0.25	-0.46	18.25	-4.98
3	Pulse Masoor	0.21	-3.45	15.66	-2.29
4	Eggs	0.57	-3.17	11.21	-5.13
5	Condiments And Spices	1.49	0.07	7.95	-12.83
6	Pulse Mash	0.15	-2.05	6.94	-0.69
7	Pulse Gram	0.28	-5.07	6.77	-1.61
8	Beans	0.09	3.77	5.80	-0.55
9	Garbage Collection	0.01	0.00	4.49	-0.03
10	Besan	0.07	-1.76	2.80	-0.19
		4.56			-58.92
C. Ranked by Weights					
1	Milk Fresh	10.38	0.29	-4.72	42.47
2	House Rent	8.61	0.00	0.45	-3.52
3	Solid Fuel	4.48	0.05	0.15	-0.63
4	Readymade Food	3.80	0.70	0.53	-1.95
5	Wheat	3.47	-7.39	-4.43	14.19
6	Electricity Charges	3.44	0.00	0.00	0.00
7	Wheat Flour	3.43	-2.52	-0.39	1.14
8	Cotton Cloth	2.84	1.88	0.00	0.00
9	Motor Fuels	2.49	-6.69	-9.42	24.81
10	Vegetable Ghee	2.38	1.05	-0.34	0.92
		45.32			77.42
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 -1.1 percent in April 2020.					

Table A12: Top and Bottom Fifteen Contributors to Rural CPI Inflation (YoY) in April 2020					
Top 15 Contributors		YoY Change			Weighted Contribution (%)
Items/ Contributors	Weights	Apr-19	Apr-20		
Ranked by Weighted Contribution					
1	Vegetable Ghee	2.38	8.32	29.47	7.41
2	Wheat	3.47	5.31	21.88	6.68
3	Condiments And Spices	1.49	15.89	43.95	6.46
4	Solid Fuel	4.48	1.23	13.12	5.75
5	Potatoes	0.74	-4.04	103.48	5.41
6	Wheat Flour	3.43	2.63	18.13	5.39
7	House Rent	8.61	6.49	5.14	4.68
8	Cotton Cloth	2.84	10.53	14.77	4.61
9	Sugar	2.03	23.83	24.54	4.51
10	Readymade Food	3.80	6.36	11.02	4.43
11	Personal Effects N.E.C.	1.21	14.52	24.45	3.41
12	Milk Fresh	10.38	3.68	2.70	2.73
13	Onions	0.90	33.79	38.93	2.70
14	Rice	1.55	8.37	12.75	2.47
15	Cigarettes	1.24	13.13	20.83	2.36
Total		48.54			68.99
Bottom 15 Contributors					
1	Chicken	1.46	7.42	-28.50	-4.94
2	Tomatoes	0.51	119.47	-56.28	-3.75
3	Electricity Charges	3.44	14.42	-5.88	-1.99
4	Motor Fuels	2.49	14.98	-0.90	-0.26
5	Fish	0.26	11.11	-0.02	0.00
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	Garbage Collection	0.01	0.00	5.69	0.01
10	Honey	0.03	7.50	2.75	0.01
11	Dessert Preparation	0.01	4.42	7.18	0.01
12	Major Tools And Equipments	0.03	1.99	3.35	0.01
13	Mustard Oil	0.01	5.30	15.50	0.02
14	Dental Services	0.02	1.11	11.98	0.02
15	Postal Services	0.01	0.08	31.47	0.02
Total		8.47			-10.85

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

<u>Top 15 Contributors</u>		<u>MoM Change</u>		Weighted Contribution (%)	
Items/ Contributors	Weights	Mar-20	Apr-20		
Ranked by Weighted Contribution					
1	Milk Fresh	10.38	0.29	-4.72	42.47
2	Onions	0.90	40.95	-25.01	26.42
3	Chicken	1.46	-4.85	-19.84	25.26
4	Fresh Vegetables	2.09	-5.64	-11.19	25.14
5	Motor Fuels	2.49	-6.69	-9.42	24.81
6	Wheat	3.47	-7.39	-4.43	14.19
7	Liquefied Hydrocarbons	1.00	-0.34	-12.95	13.51
8	Potatoes	0.74	6.82	-6.57	6.16
9	Milk Products	0.96	0.14	-2.78	2.35
10	Tomatoes	0.51	-36.43	-5.72	1.46
11	Wheat Flour	3.43	-2.52	-0.39	1.14
12	Vegetable Ghee	2.38	1.05	-0.34	0.92
13	Fish	0.26	0.02	-2.12	0.50
14	Dry Fruits	0.25	0.04	-0.29	0.07
15	Cooking Oil	0.60	0.24	-0.08	0.05
Total		30.94			184.43
<u>Bottom 15 Contributors</u>					
1	Fresh Fruits	1.45	8.04	23.26	-30.62
2	Condiments And Spices	1.49	0.07	7.95	-12.83
3	Eggs	0.57	-3.17	11.21	-5.13
4	Pulse Moong	0.25	-0.46	18.25	-4.98
5	Sugar	2.03	-0.72	1.99	-3.67
6	Personal Effects N.E.C.	1.21	2.28	2.57	-3.59
7	House Rent	8.61	0.00	0.45	-3.52
8	Rice	1.55	0.59	1.53	-2.71
9	Pulse Masoor	0.21	-3.45	15.66	-2.29
10	Readymade Food	3.80	0.70	0.53	-1.95
11	Pulse Gram	0.28	-5.07	6.77	-1.61
12	Washing Soaps, Detergents And	1.70	1.00	0.93	-1.36
13	Hospitals Services	1.01	1.41	1.35	-1.21
14	Meat	1.71	0.97	0.66	-1.15
15	Cigarettes	1.24	0.08	0.76	-0.84
Total		27.10			-77.45

Table A14: Top and Bottom Fifteen Contributors to MoM Rural CPI Food Inflation in April 2020					
Top 15 Contributors		MoM Change		Weighted	
Items/ Contributors	Weights	Mar-20	Apr-20	Contribution (%)	
Ranked by Weighted Contribution					
1	Milk Fresh	10.38	0.29	-4.72	42.47
2	Onions	0.90	40.95	-25.01	26.42
3	Chicken	1.46	-4.85	-19.84	25.26
4	Fresh Vegetables	2.09	-5.64	-11.19	25.14
5	Wheat	3.47	-7.39	-4.43	14.19
6	Potatoes	0.74	6.82	-6.57	6.16
7	Milk Products	0.96	0.14	-2.78	2.35
8	Tomatoes	0.51	-36.43	-5.72	1.46
9	Wheat Flour	3.43	-2.52	-0.39	1.14
10	Vegetable Ghee	2.38	1.05	-0.34	0.92
11	Fish	0.26	0.02	-2.12	0.50
12	Dry Fruits	0.25	0.04	-0.29	0.07
13	Cooking Oil	0.60	0.24	-0.08	0.05
14	Mustard Oil	0.01	0.74	-0.47	0.01
15	Tea	1.26	0.00	0.00	0.00
Total		28.71			146.11
Bottom 15 Contributors					
1	Fresh Fruits	1.45	8.04	23.26	-30.62
2	Condiments And Spices	1.49	0.07	7.95	-12.83
3	Eggs	0.57	-3.17	11.21	-5.13
4	Pulse Moong	0.25	-0.46	18.25	-4.98
5	Sugar	2.03	-0.72	1.99	-3.67
6	Rice	1.55	0.59	1.53	-2.71
7	Pulse Masoor	0.21	-3.45	15.66	-2.29
8	Readymade Food	3.80	0.70	0.53	-1.95
9	Pulse Gram	0.28	-5.07	6.77	-1.61
10	Meat	1.71	0.97	0.66	-1.15
11	Cigarettes	1.24	0.08	0.76	-0.84
12	Pulse Mash	0.15	-2.05	6.94	-0.69
13	Beans	0.09	3.77	5.80	-0.55
14	Beverages	0.55	0.43	0.92	-0.44
15	Bakery And Confectionary	0.37	0.75	1.11	-0.36
Total		15.73			-69.83

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

<u>Top 15 Contributors</u>		Weights	<u>MoM Change</u>		Weighted Contribution (%)
Items/ Contributors			Mar-20	Apr-20	
Ranked by Weighted Contribution					
1	Motor Fuels	2.49	-6.69	-9.42	24.81
2	Liquefied Hydrocarbons	1.00	-0.34	-12.95	13.51
3	Transport Services	1.80	-3.43	0.00	0.00
4	Motor Vehicles	0.73	-0.06	0.00	0.00
5	Electricity Charges	3.44	0.00	0.00	0.00
6	Motor Vehicle Tax	0.02	0.00	0.00	0.00
7	Newspapers	0.02	0.00	0.00	0.00
8	Communication Services	1.65	0.00	0.00	0.00
9	Postal Services	0.01	0.00	0.00	0.00
10	Water Supply	0.06	0.00	0.00	0.00
11	Accommodation Services	0.14	0.00	0.00	0.00
12	Communication Apparatus	0.34	0.00	0.00	0.00
13	Tailoring	1.30	0.00	0.00	0.00
14	Woolen Readymade Garments	0.54	0.00	0.00	0.00
15	Personal Grooming Services	1.54	0.00	0.00	0.00
Total		15.07			38.32
<u>Bottom 15 Contributors</u>					
1	Personal Effects N.E.C.	1.21	2.28	2.57	-3.59
2	House Rent	8.61	0.00	0.45	-3.52
3	Washing Soaps, Detergents And	1.70	1.00	0.93	-1.36
4	Hospitals Services	1.01	1.41	1.35	-1.21
5	Solid Fuel	4.48	0.05	0.15	-0.63
6	Drugs And Medicines	1.58	0.84	0.36	-0.57
7	Appliances/Articles/Products For	2.27	0.50	0.28	-0.54
8	Doctor (Mbbs) Clinic Fee	0.51	0.64	0.78	-0.45
9	Construction Input Items	0.63	0.93	0.72	-0.38
10	Furniture And Furnishing	0.58	0.68	0.45	-0.24
11	Mechanical Services	0.36	2.53	0.60	-0.24
12	Recreation And Culture	0.48	0.26	0.48	-0.20
13	Household Textiles	0.44	1.12	0.48	-0.19
14	Construction Wage Rates	0.25	1.43	0.71	-0.19
15	Medical Tests	0.40	2.70	0.34	-0.14
Total		24.50			-13.43

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

Groups	Decrease or no change	Subdued increase (Greater than 0% but less than 5%)	Moderate increase (5% but less than 10%)	Double digit increase (10% or more)
Food & Non-Beverages	Tomatoes, Chicken Farm Broiler (Live), Cucumber (Kheera), Cauliflower (Phool Gobhi)	Chips (Loose), Cumin Seed (Zeera) White National 50 Gm Packet, Chilies Powder National 200 Gm Packet	Pickle Mitchells/National Bottle (340 Gm-400 Gm), Mutton (Average Quality)	Cardamom Small (Average Quality), Pulse Moong (Washed), Potatoes, Pulse Mash (Washed), Garlic (Lehsun), Pulse Masoor (Washed), Ginger (Adrak), Eggs Farm, Onions
Alcoholic Beverages & Tobacco			Pan Prepared (Sweet With Beetle Nuts)	Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet
Clothing & Footwear	Gents Sponge Chappal Bata, Ladies Sandal Bata, Ladies Sponge Chappal Bata	Pant Cloth Wash & Wear (Average Quality), Vest "Baniyan" For Men Average Quality, Brassier (Average Quality), Socks Nylon Local (Average Quality)	Tailoring Charges Awami Suit (Male), Awami Suit Gents Wash & Wear (Average Quality), Shirt Boy Length 24"/26", Chaddar (Wash-N-Wear) (2X2.5 Meter)	Gents Shoes Servis, Gents Sandal Bata, Cheetah 50 Size 3-5 Servis, Heavy Weight Suiting Lawrance Pur (Average Quality), Gents Shoes Paul Bata, Dopatta Cotton (Average Quality), Georgette (Average Quality), Shoe Repair Full Sole, Long Cloth 57" Gul Ahmed/Al Karam
Housing, Water, Elect, Gas & other Fuels	Electricity Charges 51-100 Units, Electricity Charges 101-300 Units, Electricity Charges 301-700 Units, Cement (Local) 50 Kg Bag	House Rent Combined, Cement Blocks (6"X8"X12")	Water Charges Per House, Unskilled Labor Wage Rate, Sand (Black Pit), Charges For Refuse/Waste Collection, Mason Wage Rate, Bajri, Painter Wage Rate	Gas Charges 6.7438 - 10.1157 Mmbtu, Gas Charges 10.1157 - 13.4876 Mmbtu, Gas Charges Combined, Gas Charges Above 13.4876 Mmbtu, Synthetic Enamel Ici Balti 3.64 Litre, Bricks New 1St Class, Gas Charges 3.3719 - 6.7438 Mmbtu
Furnishing & Household Equip. Maintenance etc		Split Air Conditioner Orient/Lg/Dawlance 1.5 Ton, Sofa Set Five Seater, Air Cooler Super Asia Ecm-4000/Jc-1000, Gm Polybag	Dinner Set Plastic 72 Pieces Super Quality, Express Washing Powder 1 Kg Polybag, Harpic 500 MI Bottle	Tube Light Philips 40 Watt, Phenyl Tyfon/Finis 2.75 Litre Bottle, Robin Blue Liquid 75 MI Bottle, Geyser Super Asia Large Size 30 Gallons (Gas), Central Table Set With Glass Top, Chair Plastic (Chairman) (Average Quality)
Health	Hydriillin Syrup 120 MI Bottle, Johar Joshanda Instant (Sachet) Packet	X-Ray (Chest) Charges, Ecg Charges, Daonil Tablets 5 Mg, Cost Of Surgery (C-Section)	Dettol Medium Bottle, Betnovate-N Ointment 10 Gm Tube, Dental Surgeon Fee Per Visit, Flagyl Tablets 400 Mg	Ventolin Tablets 2 Mg, Septran Tablets, Calpol Syrup 100 MI Bottle, Amoxil Capsule 250 Mg, Inderal Tablets 10 Mg, Doctor (Mbbs) Clinic Fee, Lederplex Syrup Bottle
Transport	Air Fare Economy Class Per Kilometer (National Average), Hi-Speed Diesel, Petrol Super, Bus Fare Outside City (Non Ac)	Motorcycle United/Unique 70 Cc, Tire Motorcycle Cd 70 (Back Wheel), Car Tax 800 Cc To 1500 Cc	Train Fare Economy Per Person, Train Fare Ac Lower Per Person, Auto Rickshaw Fare, Motorcycle Honda Cd 70	Suzuki Fare Maximum Within City, Bus Fare Maximum Within City, Mini Bus Fare Maximum Within City, Car Suzuki 1000 Cc, Suzuki Fare Minimum Within City, Car Toyota 1300 Cc Xli, Mini Bus Fare Minimum Within City
Communication	Courier Charges Minimum Within Zone Outside City (Tcs), Telephone Call Charges	Internet Charges (Dsl) 1 Mb (Unlimited)	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	Laptop Dell/Hp/Acer Core I5, Display (14'-15'), English Book Ba/B.Sc, English Book Class Xi Complete Set, Exercise Book (With Lines) 80 To 100 Pages	Urdu Book Ba/B.Sc, English Book Class Vi, Led Sony/Samsung 32" Colored, Lead Pencil Goldfish, Mathematics Book Class Xi (Text Book Board)	English Book Class IX And X, Ballpoint Pen Local, Photostat Paper 70 Gm, Urdu Book Class Xi/Inter
Education	Vocational Training Basic Computer Short Course Fee (3 Months)	Private School Fee English Medium Average Standard (Class V), Government College Fee First Year	Government Engineering University Tuition Fee For Be (1St Year), Tuition Fee Private University M.Sc./M.A	
Restaurant & Hotels		Cooked Chicken At Average Hotel, Chicken Biryani Full/Double	Bread Tandoori Standard Size, Tea Prepared Ordinary	Cooked Daal At Average Hotel, Cooked Beef At Average Hotel
Miscellaneous	Hair Style Charges (At Average Beauty Parlor)	Wall Clock Quartz (Average Quality), Purse Ladies Medium Size (Average Quality)	Toilet Soap Lifebuoy 115 Gm, Disposable Razor Gillette Blue II, Hair Color (Kala Kola)	Gold Tezabi 24 Carett, Pampers (Medium Size), Silver Tezabi 24 Carett, Tooth Brush (Shield), Blade Treet Ordinary (10 No. Packet), Lipstick Swiss Miss/Medora (Medium)

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

Groups	Decrease or no change	Subdued increase (Greater than 0% but less than 5%)	Moderate increase (5% but less than 10%)	Double digit increase (10% or more)
Food & Non-Alcoholic Beverages	Tomatoes, Chicken Farm Broiler (Live), Bottlegourd (Loki), Tinda, Watermelon (Turbooz)	Curd, Kinnu (Average Quality), Honey Marhaba Bottle 500 Gm, Milk Fresh (Un-Boiled), Chilies (Green)	Ice Cream Walls Cup (Large Size), Tea Lipton Yellow Label 190 Gm Packet	Potatoes, Pulse Moong (Washed), Ginger (Adrak), Chilies Powder Loose, Pulse Mash (Washed), Garlic (Lehsun), Pulse Masoor (Washed), Onions, Peas (Matar)
Alcoholic Beverages & Tobacco				Cigarettes Capstan 20'S Packet, Cigarettes Gold Leaf 20'S Packet, Chewing Tobacco (Niswar), Tobacco Hukka Twisted
Clothing & Footwear		Tailoring Charges Simple Suit (Female)	Chaddar (Wash-N-Wear) (2X2.5 Meter), Socks Nylon Local (Average Quality), Footware Gents Local (Average Quality), Pullover Ladies (Average Quality)	Brassier (Average Quality), Dopatta Cotton (Average Quality), Shirting (Average Quality), Long Cloth, Lawn Printed (Average Quality), Washing Charges Shalwar Kameez, Full Pant Boy Length 24"/26", Shirt Boy Length 24"/26", Shoe Repair Full Sole, Shoe Polish Charges
Housing, Water, Elect, Gas & other Fuels	Electricity Charges 51-100 Units, Cement (Local) 50 Kg Bag, Electricity Charges 101-300 Units, Electricity Charges 301-1000 Units	Lpg 11.67 Kg Cylinder	Bajri, Charges For Refuse/Waste Collection, House Rent Combined	Water Charges Per House, Sand (Black Pit), Bricks New 1St Class, Unskilled Labor Wage Rate, Carpenter Wage Rate, Coal, Electrician Charges, Painter Wage Rate, Firewood Whole, Plumber Wage Rate, Mason Wage Rate
Furnishing & Household Equip. Maintenance etc.		Plates Steel Medium Size (Average Quality), Refrigerator Dawlance/Pel 10 Cubic Feet Double Door	Ceiling Fan 56" Pak/Younas/Millat, Water Set (Omroc) 6 Glass, Dinner Set Plastic 72 Pieces Super Quality	Tube Light Philips 40 Watt, Robin Blue Liquid 75 Ml Bottle, Washing Soap 250 Gm Cake (Specify Name), Towel Medium Size (2' X 3'), Boot Polish Cherry/Kiwi 42 Ml, Match Box, Cot Iron (Charpai)
Health	Hydriyllin Syrup 120 Ml Bottle	Johar Joshanda Instant (Sachet) Packet	Panadol Tablets Plain, Physiotherapist Fee Per Visit, Cost Of Surgery (C-Section)	Inderal Tablets 10 Mg, Amoxil Capsule 250 Mg, Doctor (Mbbs) Clinic Fee, Dettol Medium Bottle, Daonil Tablets 5 Mg, Blood Test (Cp) Charges, Dental Surgeon Fee Per Visit
Transport	Air Fare Economy Class Per Kilometer, Hi-Speed Diesel, Petrol Super, Car Tax 800 Cc To 1500 Cc, Bus Fare Outside City (Non Ac)		Train Fare Economy Per Person, Car Suzuki 800 Cc Without Ac, Motorcycle Honda Cd 70, Tire Cycle, Motorcycle Service Charges	Tire Car Mehran Tubeless (General), Mobil Oil (Havoline 20W-50), Chingchi Rickshaw Charges, Minimum, Cng, Tire Motorcycle Cd 70 (Back Wheel), Bicycle
Communication	Telephone Call Charges, Mobile Call Charges	Internet Charges (Dsl) 1 Mb (Unlimited), Mobile Set With Rear Camera And Without Touch Screen		Postal Registration Charges
Recreation & Culture	Urdu Books Class V (Text Book Board), Newspaper Daily Jang	English Books Class Xi Complete Set, Exercise Book (With Lines) 80 To 100 Pages, Lead Pencil Goldfish, Ballpoint Pen Local	Led Sony/Samsung 32" Colored, English Books Class Ix And X, English Books Class Vi	Pets Feed
Education	Vocational Training Basic Computer Short Course Fee (3 Months)	Private School Fee English Medium Average Standard (Class V)		
Restaurant & Hotels		Pizza Chicken Medium Size (Average Quality)	Cooked Chicken At Average Hotel, Cooked Beef At Average Hotel	Cooked Daal At Average Hotel, Chicken Biryani Full/Double, Tea Prepared Ordinary, Bread Tandoori Standard Size
Miscellaneous		Hair Removing Cream (Eu-Cream) 30Ml Tube, Toilet Soap Lux 75 Gm, Shampoo Sun Silk/Pantene 90 Ml Bottle	Tooth Paste Colgate 75 Gm, Artificial Jewelry (Locket Set) (Average Quality)	Gold Tezabi 24 Carett, Shaving Charges, Disposable Razor Gillette Blue II, Hair Cut Charges For Men, Hair Color (Kala Kola), Blade Treet Ordinary (10 No. Packet)

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

Table A19: International Commodity Prices/Indices

	Jan-20	Feb-20	Mar-20	Apr-20
Energy				
Crude Oil (US\$ per barrel) *	61.6	53.3	32.2	21.0
Energy Index (2010 = 100)	74.5	65.0	42.1	29.4
Food				
Rice (\$/MT)	451.0	450.0	494.0	564.0
Wheat (\$/MT)	224.5	215.3	209.1	219.0
Sugar (US cent/ pound)^	14.1	14.8	11.8	10.2
Palm Oil (\$/MT)	810.1	728.8	635.2	608.9
Soybean Oil (\$/MT)	875.6	800.4	747.8	680.0
Non-Food Non-Energy				
Cotton Outlook 'A' Index #^	79.1	76.6	67.7	63.5
Metal Price Index (2010 = 100)	80.5	76.0	70.5	67.3
Copper (\$/MT)	6,031.2	5,687.8	5,182.6	5,058.0
Aluminum (\$/MT)	1,773.1	1,688.1	1,610.9	1,459.9
Iron Ore (\$ cents/dry MT)	95.8	87.7	89.0	84.7
Tin (\$/MT)	17,029.2	16,480.3	15,290.9	14,952.8
Nickel (\$/MT)	13,506.9	12,715.6	11,846.2	11,804.0
Zinc (\$/MT)	2,354.3	2,113.2	1,903.6	1,903.4
Lead (\$/MT)	1,923.9	1,872.5	1,734.4	1,657.6
Uranium (\$/MT)@	24.6	24.8	27.4	33.3
DAP (\$/MT)	264.9	279.4	276.2	282.0
Urea (\$/MT)	215.4	214.4	231.1	235.0

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

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

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

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

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

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

DAP: Diammonium Phosphate

Table A20: National CPI Data Series Original and Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	103.17	107.15	114.29	123.86
Aug	102.80	107.31	113.93	125.89
Sep	103.23	108.05	113.90	126.86
Oct	104.19	109.22	116.32	129.16
Nov	104.69	109.95	116.18	130.90
Dec	104.08	109.92	115.82	130.45
Jan	104.53	110.01	116.12	133.03
Feb	105.04	109.72	117.12	131.64
Mar	106.14	109.96	119.46	131.69
Apr	106.91	111.15	120.33	131.59
May	106.36	111.65	121.05	
Jun	106.54	112.58	121.63	
Seasonally Adjusted Series				
Jul	102.89	106.86	114.00	123.57
Aug	102.48	107.01	113.65	125.62
Sep	102.85	107.70	113.59	126.57
Oct	103.30	108.31	115.36	128.11
Nov	103.77	108.98	115.13	129.69
Dec	104.18	109.97	115.84	130.45
Jan	104.70	110.20	116.33	133.28
Feb	105.81	110.50	117.91	132.48
Mar	106.77	110.57	120.08	132.32
Apr	107.02	111.27	120.47	130.76
May	106.93	112.25	121.71	
Jun	107.01	113.08	122.16	

Table A21: Urban CPI Data Series Original and Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	103.20	107.71	114.94	124.95
Aug	102.73	107.93	114.58	126.77
Sep	103.06	108.38	114.49	127.72
Oct	103.87	109.34	117.04	129.75
Nov	104.36	110.03	116.94	131.05
Dec	103.74	110.08	116.57	130.57
Jan	104.59	110.28	117.07	132.77
Feb	105.12	110.12	118.08	131.32
Mar	106.18	110.43	120.29	131.49
Apr	107.20	111.94	121.29	130.60
May	106.86	112.53	122.11	
Jun	107.08	113.34	122.52	
Seasonally Adjusted Series				
Jul	102.76	107.24	114.45	124.44
Aug	102.34	107.55	114.20	126.39
Sep	102.71	108.06	114.20	127.45
Oct	103.14	108.59	116.25	128.88
Nov	103.65	109.27	116.11	130.10
Dec	104.08	110.40	116.88	130.91
Jan	104.80	110.50	117.32	133.05
Feb	105.91	110.91	118.88	132.16
Mar	106.88	111.13	121.01	132.22
Apr	107.18	111.92	121.26	130.58
May	107.21	112.91	122.54	
Jun	107.41	113.69	122.89	

Table A22: Rural CPI Data Series Original and Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	103.12	106.30	113.30	122.22
Aug	102.90	106.37	112.96	124.56
Sep	103.49	107.54	113.01	125.55
Oct	104.68	109.05	115.23	128.28
Nov	105.18	109.83	115.03	130.67
Dec	104.59	109.68	114.70	130.28
Jan	104.44	109.60	114.68	133.42
Feb	104.91	109.11	115.68	132.13
Mar	106.09	109.25	118.21	132.00
Apr	106.47	109.95	118.89	130.58
May	105.60	110.33	119.45	
Jun	105.73	111.44	120.29	
Seasonally Adjusted Series				
Jul	103.10	106.29	113.31	122.27
Aug	102.70	106.20	112.82	124.45
Sep	103.06	107.16	112.67	125.24
Oct	103.56	107.90	114.03	126.94
Nov	103.97	108.54	113.64	129.06
Dec	104.32	109.33	114.27	129.75
Jan	104.57	109.74	114.85	133.63
Feb	105.67	109.87	116.45	132.96
Mar	106.59	109.73	118.68	132.47
Apr	106.80	110.30	119.28	131.04
May	106.49	111.27	120.47	
Jun	106.42	112.16	121.06	

Table A23: National CPI Monthly & Average Seasonal Factors					
Period	FY17	FY18	FY19	FY20	Average
Jul	100.27	100.27	100.25	100.23	100.26
Aug	100.31	100.28	100.25	100.22	100.26
Sep	100.37	100.32	100.27	100.23	100.30
Oct	100.86	100.84	100.83	100.83	100.84
Nov	100.88	100.89	100.91	100.94	100.90
Dec	99.90	99.95	99.99	100.01	99.96
Jan	99.83	99.83	99.81	99.81	99.82
Feb	99.27	99.30	99.33	99.37	99.32
Mar	99.42	99.45	99.48	99.52	99.47
Apr	99.89	99.89	99.89	99.87	99.88
May	99.47	99.47	99.45		99.46
Jun	99.56	99.56	99.57		99.56

Table A24: Urban CPI Monthly & Average Seasonal Factors					
Period	FY17	FY18	FY19	FY20	Average
Jul	100.43	100.44	100.43	100.41	100.43
Aug	100.38	100.36	100.33	100.30	100.35
Sep	100.35	100.30	100.25	100.21	100.30
Oct	100.71	100.69	100.68	100.68	100.70
Nov	100.69	100.70	100.71	100.73	100.70
Dec	99.67	99.71	99.73	99.74	99.69
Jan	99.80	99.80	99.79	99.79	99.80
Feb	99.26	99.29	99.33	99.36	99.29
Mar	99.34	99.37	99.40	99.44	99.37
Apr	100.02	100.02	100.03	100.09	100.04
May	99.67	99.67	99.65		99.67
Jun	99.70	99.69	99.70		99.70

Table A25: Rural CPI Monthly & Average Seasonal Factors					
Period	FY17	FY18	FY19	FY20	Average
Jul	100.02	100.01	99.99	99.96	100.00
Aug	100.19	100.16	100.13	100.09	100.14
Sep	100.41	100.35	100.30	100.25	100.33
Oct	101.08	101.06	101.06	101.05	101.06
Nov	101.16	101.19	101.22	101.25	101.21
Dec	100.26	100.32	100.37	100.41	100.34
Jan	99.88	99.87	99.85	99.85	99.86
Feb	99.28	99.31	99.34	99.37	99.32
Mar	99.53	99.56	99.60	99.65	99.58
Apr	99.69	99.68	99.67	99.65	99.67
May	99.17	99.16	99.15		99.16
Jun	99.35	99.36	99.36		99.36

Table A26: National CPI (Month-on-Month) Original & Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	1.44	0.57	1.51	1.83
Aug	-0.36	0.15	-0.31	1.64
Sep	0.42	0.69	-0.03	0.77
Oct	0.93	1.09	2.12	1.81
Nov	0.47	0.66	-0.12	1.35
Dec	-0.58	-0.03	-0.30	-0.34
Jan	0.43	0.08	0.25	1.97
Feb	0.48	-0.26	0.87	-1.04
Mar	1.05	0.22	2.00	0.04
Apr	0.72	1.08	0.73	-0.84
May	-0.52	0.46	0.60	
Jun	0.17	0.83	0.48	
Seasonally Adjusted Series				
Jul	0.73	-0.14	0.81	1.16
Aug	-0.40	0.14	-0.31	1.65
Sep	0.35	0.64	-0.05	0.76
Oct	0.44	0.57	1.56	1.22
Nov	0.45	0.61	-0.20	1.23
Dec	0.39	0.91	0.62	0.59
Jan	0.50	0.21	0.43	2.17
Feb	1.06	0.27	1.36	-0.60
Mar	0.90	0.07	1.84	-0.12
Apr	0.24	0.64	0.32	-1.18
May	-0.09	0.88	1.03	
Jun	0.08	0.74	0.37	

Table A27: Urban CPI (Month-on-Month) Original & Seasonally Adjusted Series				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	1.47	0.59	1.41	1.98
Aug	-0.46	0.20	-0.31	1.46
Sep	0.32	0.42	-0.08	0.75
Oct	0.79	0.89	2.23	1.59
Nov	0.47	0.63	-0.09	1.00
Dec	-0.59	0.05	-0.32	-0.37
Jan	0.82	0.18	0.43	1.68
Feb	0.51	-0.15	0.86	-1.09
Mar	1.01	0.28	1.87	0.13
Apr	0.96	1.37	0.83	-0.68
May	-0.32	0.53	0.68	
Jun	0.21	0.72	0.34	
Seasonally Adjusted Series				
Jul	0.74	-0.15	0.67	1.26
Aug	-0.41	0.29	-0.22	1.57
Sep	0.36	0.48	0.00	0.84
Oct	0.42	0.49	1.79	1.12
Nov	0.49	0.63	-0.12	0.95
Dec	0.42	1.04	0.66	0.62
Jan	0.68	0.09	0.37	1.63
Feb	1.06	0.37	1.33	-0.67
Mar	0.92	0.20	1.79	0.05
Apr	0.27	0.71	0.20	-1.25
May	0.04	0.88	1.05	
Jun	0.18	0.69	0.29	

Table A28: Rural CPI (Month-on-Month) Original & Seasonally Adjusted				
Original Series				
Period	FY17	FY18	FY19	FY20
Jul	1.39	0.54	1.67	1.60
Aug	-0.21	0.07	-0.30	1.91
Sep	0.57	1.10	0.04	0.79
Oct	1.15	1.40	1.96	2.17
Nov	0.48	0.72	-0.17	1.86
Dec	-0.56	-0.14	-0.29	-0.30
Jan	-0.14	-0.07	-0.02	2.41
Feb	0.45	-0.45	0.87	-0.97
Mar	1.12	0.13	2.19	-0.10
Apr	0.36	0.64	0.58	-1.08
May	-0.82	0.35	0.47	
Jun	0.12	1.01	0.70	
Seasonally Adjusted Series				
Jul	0.73	-0.12	1.03	1.00
Aug	-0.38	-0.08	-0.44	1.78
Sep	0.35	0.90	-0.13	0.63
Oct	0.48	0.69	1.20	1.36
Nov	0.39	0.59	-0.34	1.67
Dec	0.34	0.73	0.55	0.54
Jan	0.23	0.38	0.50	2.99
Feb	1.06	0.12	1.39	-0.50
Mar	0.87	-0.13	1.92	-0.37
Apr	0.19	0.52	0.50	-1.08
May	-0.29	0.87	1.00	
Jun	-0.07	0.80	0.49	

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



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

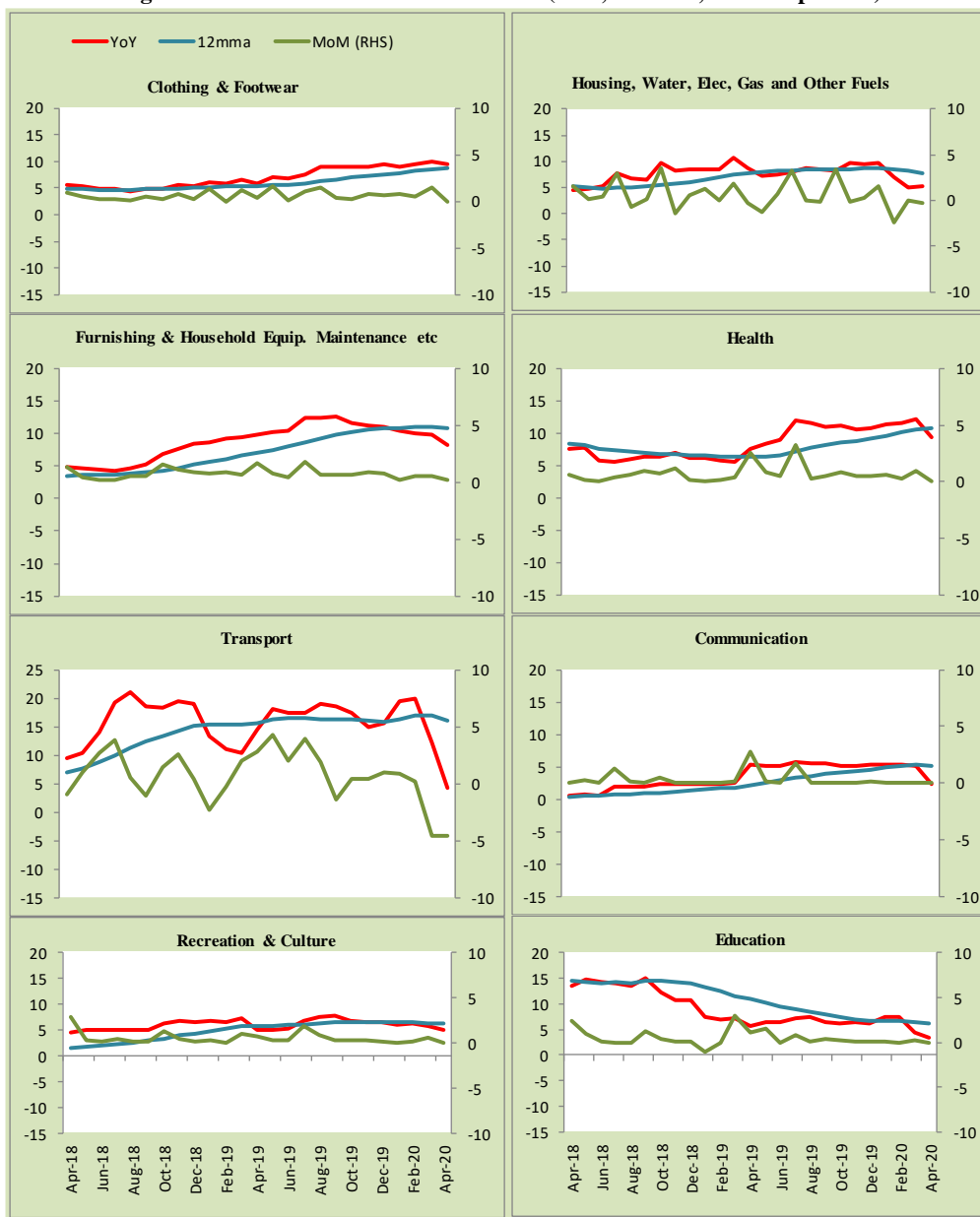


Figure A3: Rural CPI Non-food Inflation (YoY, 12MMA, MoM in percent)

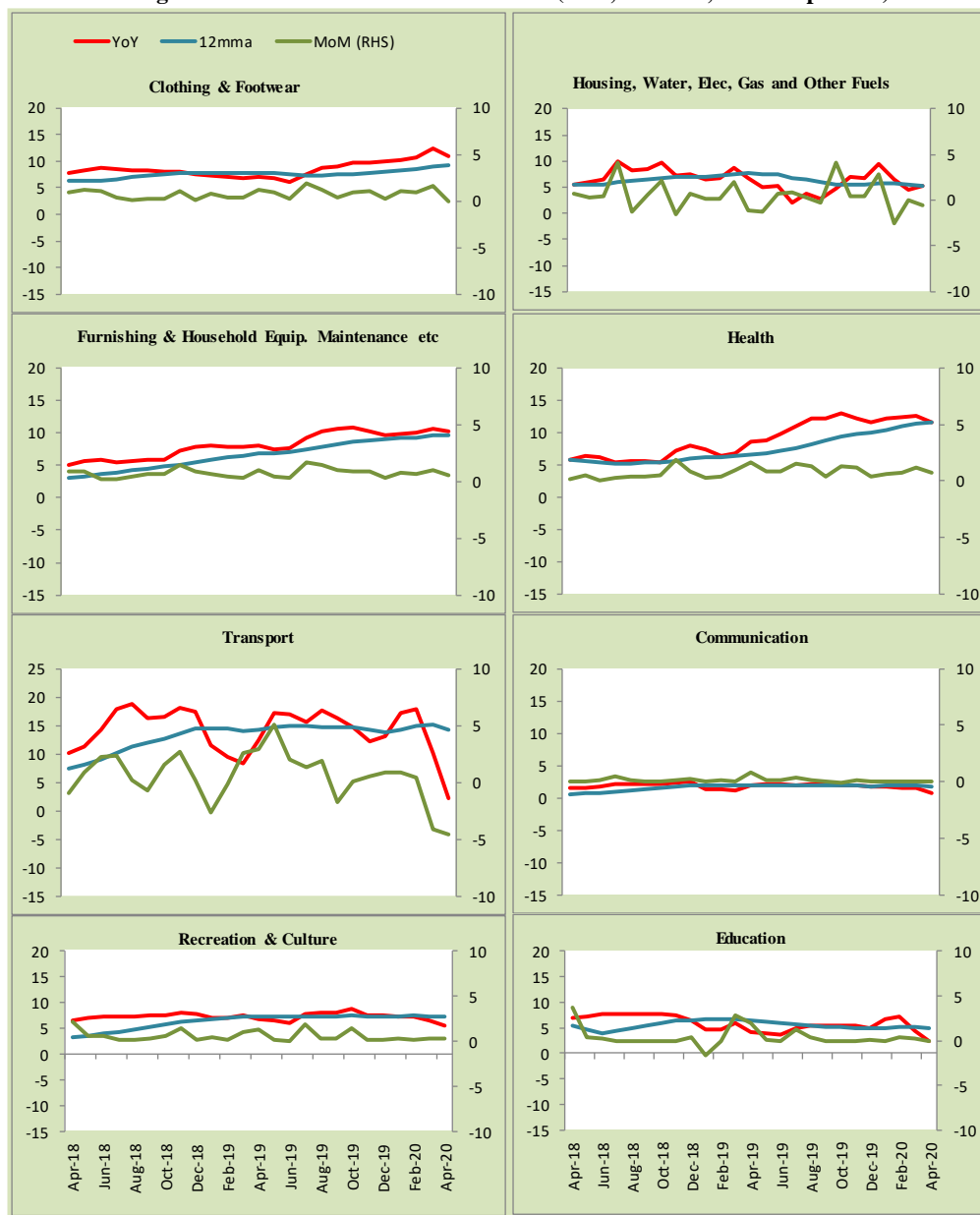


Figure A4: Frequency Distribution of Price Changes of Urban CPI Items (YoY)

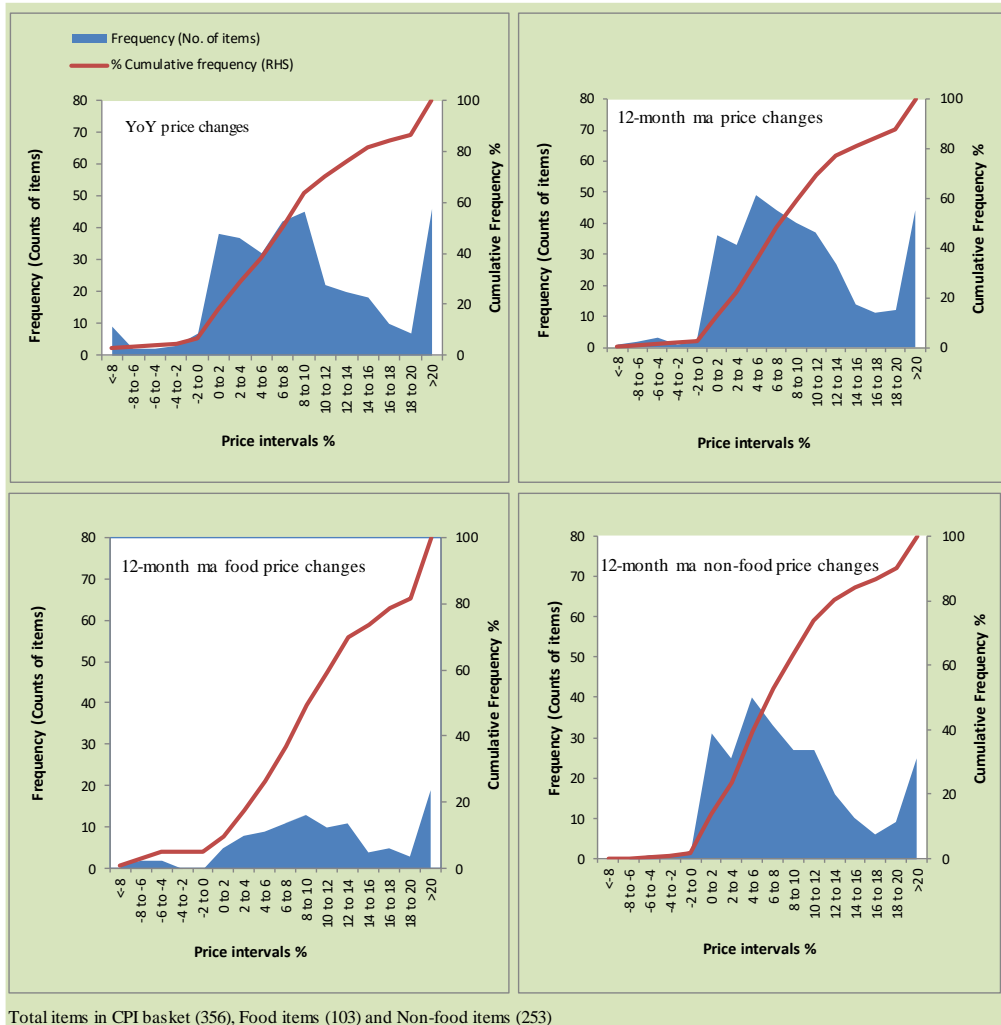


Figure A5: Frequency Distribution of Price Changes of Rural CPI Items (YoY)

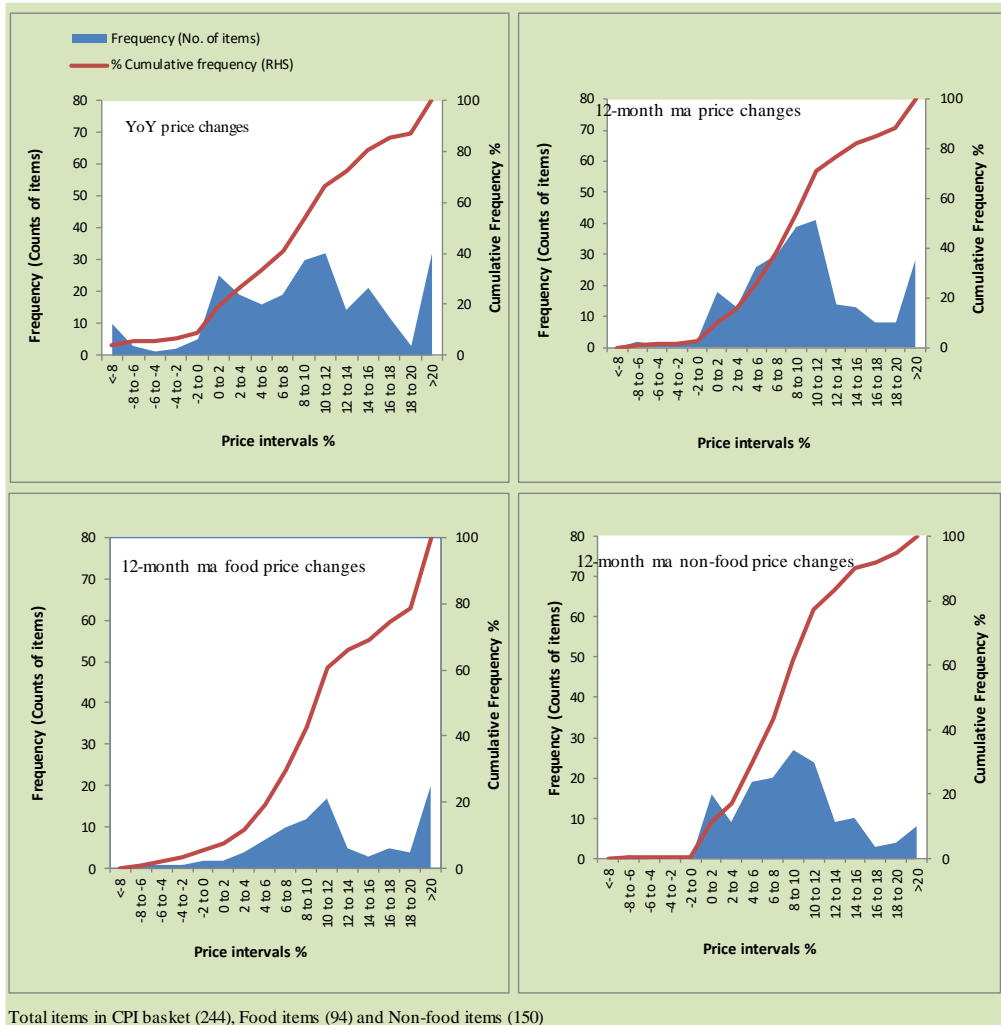
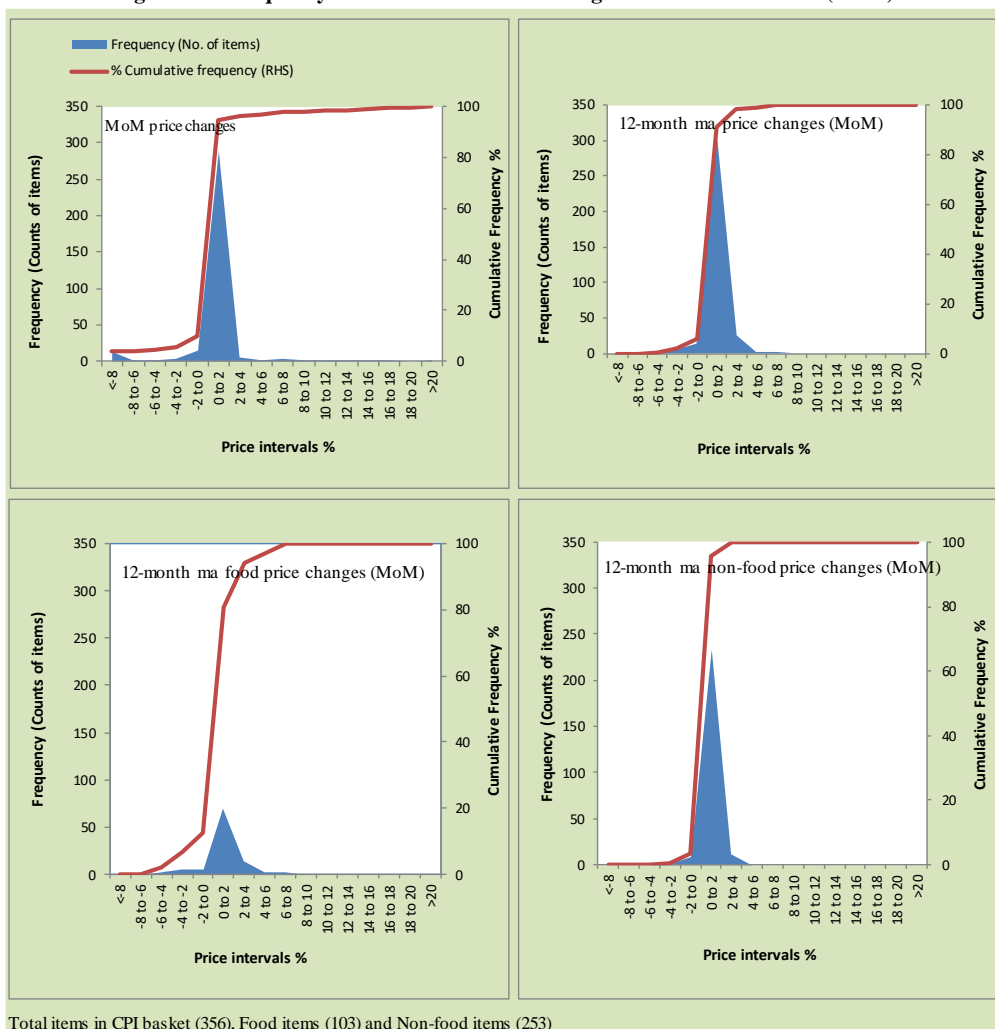


Figure A6: Frequency Distribution of Price Changes of Urban CPI Items (MoM)



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)

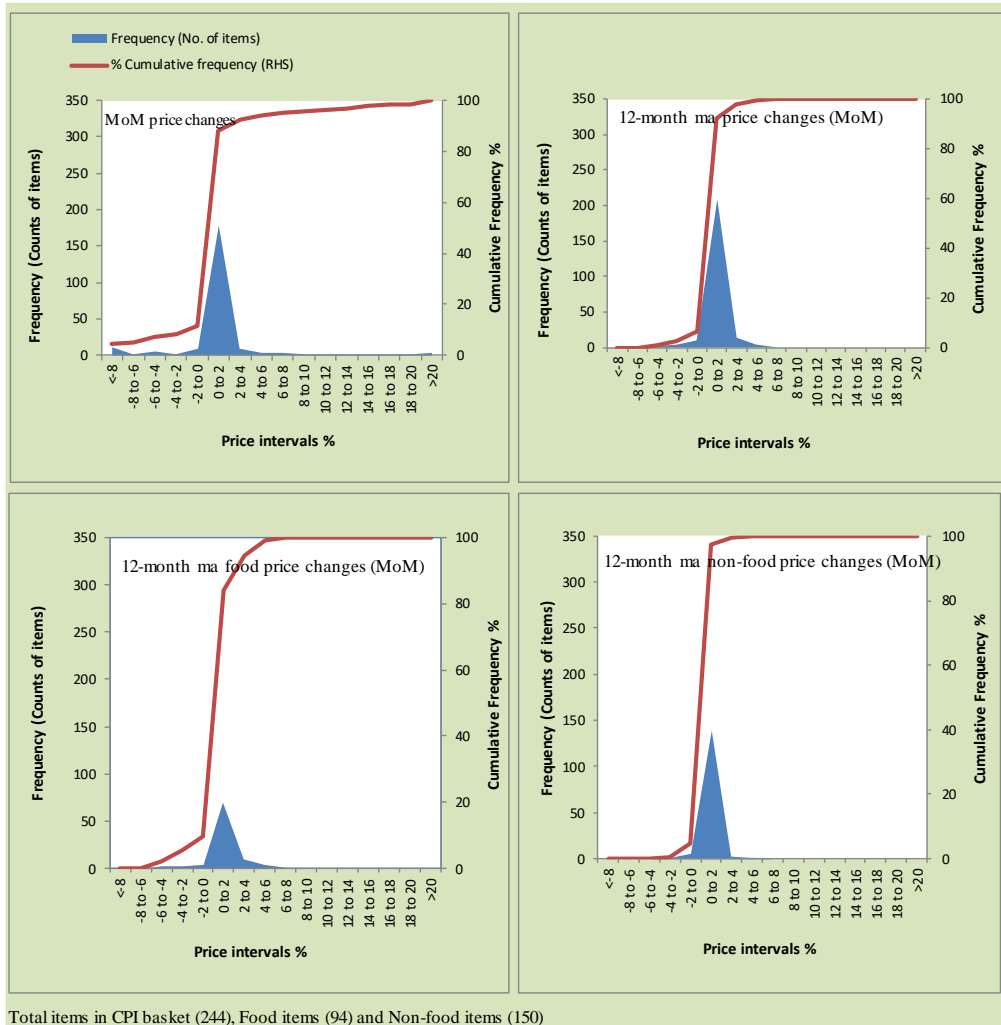
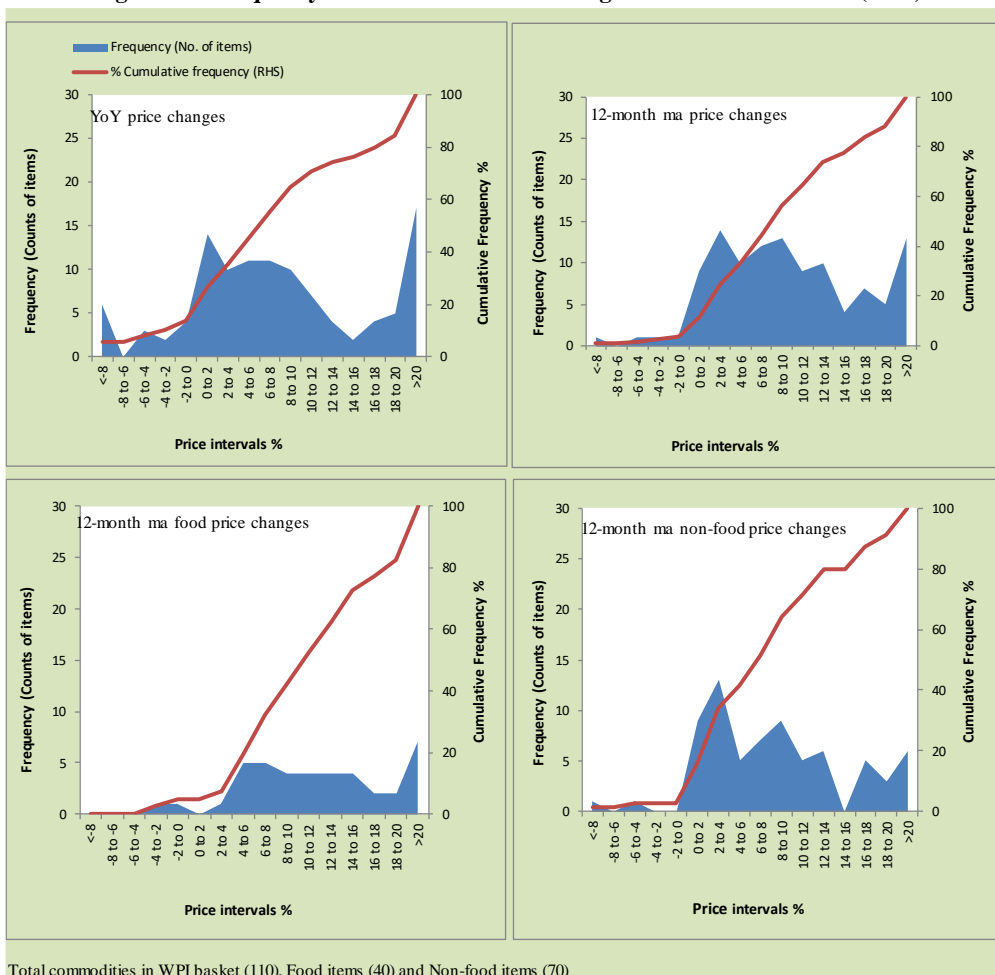


Figure A8: Frequency Distribution of Price Changes of WPI Commodities (YoY)



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^{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^{th} item

π_{it} : Inflation of i^{th} item

π_t : Overall inflation

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

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

b) Methodology for Estimating Inflation Diffusion Index for Pakistan

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

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

Thus, it is the difference between the share of items with increasing prices (i.e. depicting inflation) and the share of items with falling prices (i.e. depicting deflation) in CPI amongst the items for which prices have altered or remained constant¹.

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 analysis² suggests that IDI is a leading indicator for Pakistan’s YoY inflation.

¹ 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.

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