Understanding Inflation and Gross Domestic Product

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News on Prices and Inflation

Prices: higher and higher

نئے سال کا تحفہ۔۔ پٹرولیم مصنوعات مہنگی !!

حکومت نے خاموشی سے عوام پہ پیٹرول بم گرا دیا

Rupee's fall drives food prices higher

FBR drops inflation bomb by increasing duty on 144 items

عوام کی جیبیں چھوٹی ہوئیں
تو معدے بھی تنگ پڑ گئے

New Inflation bomb ready for poor People

ہیلمٹ کی قیمتوں کو پَر لگ گئے

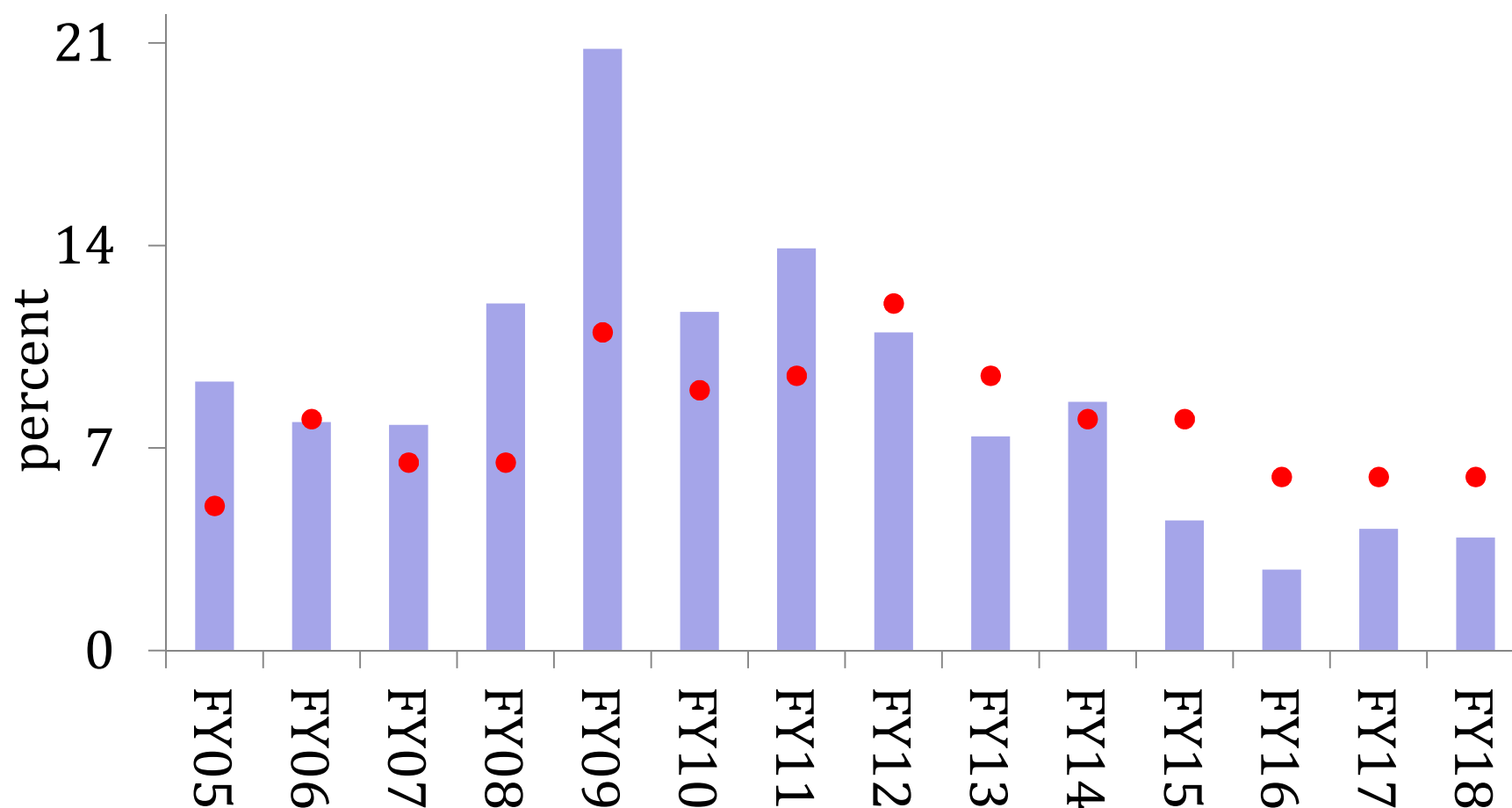Rising oil prices herald end of honeymoon for Pakistan's economy

RAMAZAN BAZAR PRICES

Price hikes overshadow Ramadan preps in Pakistan

Here's what the number says

Inflation -Targets Vs Actual

To connect the dots, we need to understand basics of inflation

What is Inflation?

➢ Inflation is an increase in prices.

➢ A situation of a sustained increase in the general level of price for goods and services in an economy.

➢ Inflation means an increase in the cost of living as the price of goods and services rise.

Inflation, Disinflation & Deflation

Problem: How many goods and services should be taken into account? Which prices should be used (retail vs wholesale)?

Solution: Different types of inflation measures

What drives Inflation? (Cont'd)

- **Long-run**
    - Too much money chasing too few goods.
    - "Inflation is always and everywhere a monetary phenomenon…" (Milton Friedman)
    - Fiscal theory of price level (financing must be sustainable)

- **Short-run**
    - Expectations
    - Excess demand
    - Supply shocks

What drives inflation?

➢ **Demand-pull inflation**

This occurs when AD increases at a faster rate than AS. If demand exceeds supply, firms will respond by pushing up prices (at least in the short run).

➢ **Cost-push inflation**

This occurs when there is an increase in the cost of production for firms. Cost-push inflation could be caused by rising energy and commodity prices (especially of raw material).

Consequences of Inflation

➢ **Redistribution of wealth**

  ➢ Creditors / Debtors and Employees (on contract) / Employers

➢ **Unfavorable impact on long-term planning & investment**

  ➢ Future purchasing power is uncertain
  ➢ Information conveyed by prices becomes difficult to interpret
  ➢ Time and effort spent to minimize the effect of inflation

Is disinflation a problem?

➢ It improves international competitiveness

➢ It reduces uncertainty

➢ It protects the value of saving.

However, disinflation could be a problem.

➢ If it is caused by a fall in demand.

➢ If it leads to deflation and the problems associated with rising real debt and falling spending as consumers wait to see if goods become cheaper.

Deflation is harmful for the economy

➢ Discourages consumer spending.

➢ Increases real value of debt.

➢ Increases real interest rates.

➢ Increases real wages (and unemployment).

  ➢ More difficult for relative prices and wages to adjust.

➢ Deflation can become entrenched and difficult to end.

➢ It is often connected to recession and slowdown in economic growth

Inflation in Pakistan

Inflation Measures in Pakistan

➢ **Consumer Price Index (CPI):** measure changes in the cost of buying a representative fixed basket of goods and services and generally indicates inflation rate in the country.

➢ **Sensitive Price Indicator (SPI)**: is computed on weekly basis to assess the price movement of essential commodities at short interval so as to review the price situation in the county.

➢ **Whole Sale Price Index (WPI)**: measure the movement of prices for a set of selected items in the primary and wholesale markets.

➢ **GDP Deflator-** an indirect or a broad measure (NIA)

Primary Data Source for Inflation

➤ Pakistan Bureau of Statistics is responsible for collection, compilation and dissemination of price statistics. http://www.pbs.gov.pk/content/price-statistics

➤ Some information is also available on SBP website. http://www.sbp.org.pk/ecodata/MPM.pdf

➤ **Note:** There are multiple price indices computed in every economy. Central banks usually focus on stability of consumer prices. State Bank of Pakistan also focus on CPI inflation for policy formulation. For details, please see Monetary Policy Compendium http://www.sbp.org.pk/cmad/MPC-Mint.htm

Linkages between CPI and WPI

➢ Both the CPI and WPI cause each other (general perception that CPI follows WPI).

➢ Food index of CPI is very fast to adjust to changes in Food Index of WPI as compared to non-food index.

➢ WPI not only includes intermediate goods but also some finished goods. While changes in wholesale prices of intermediate goods may take a bit longer to transmit to consumer prices, those of finished goods may transmit quickly.

For details, please see

➢ The Relationship between Wholesale Price Index and Consumer Price Index (SBP staff notes 03/16 by M. Farooq Arby and Saghir Pervaiz Ghauri)

➢ Rao, Nasir Hamid and Syed Kalim Hyder Bukhari (2010); Asymmetric Shocks and Co-movement of Price Indices; MPRA Paper No. 28723, https://mpra.ub.uni-muenchen.de/28723/

Linkages between CPI and SPI

➢ SPI is predominantly a subset of CPI Food group.

➢ SPI has 53 items: 34 items belong to the Food group and the remaining 19 items to the other groups of CPI basket.

➢ CPI Food group, that carries a weight of 37.5% in overall CPI, has 139 items.

  ➢ SPI food items carry a weight of 25.79% in CPI basket.

➢ The number of items in SPI from other groups is not as significant as those from the Food group of CPI.

Anatomy of CPI

Coverage of CPI (cont'd)

➢ The current CPI basket includes 487 goods and services, and covers 76 markets from 40 urban centers.

➢ The basket is developed on the basis of Family Budget Survey conducted in 2007-08.

➢ The items represent the taste, habits, and customs. All items are classified into 12 major groups.

➢ Number of markets depends upon the size of the city.

   ➢ Volume of sales is the basic criteria for selection of markets.

Coverage of CPI (Cont'd)

Sr. No		Number of Markets	Sr. No		Number of Markets
1	Rawalpindi	6	21	Karachi	13
2	Islamabad	4	22	Hyderabad	4
3	Attock	1	23	Nawab Shah	1
4	Jhelum	1	24	Mirpur Khas	1
5	Lahore	7	25	Mithi	1
6	Sahiwal	1	26	Sukkur	2
7	Gujranwala	1	27	Larakana	1
8	Wazirabad	1	28	Dadu	1
9	Sialkot	1	29	Peshawar	3
10	Faislabad	2	30	Mardan	1
11	Jhang	1	31	Abbottabad	1
12	Multan	3	32	Bannu	1
13	Muzaffargrah	1	33	D.I.Khan	1
14	D.G.Khan	1	34	Mingora	1
15	Vehari	1	35	Quetta	2
16	Sargodha	1	36	Turbat	1
17	Mianwali	1	37	Gawadar	1
18	Bahawalpur	1	38	Loralai	1
19	Bahawalnagar	1	39	Khuzdar	1
20	R.Y.Khan	1	40	Dera Murad Jamali	1
Total cities					40
Total number of Markets					76

Coverage of CPI

Sr. No	Commodity Groups	Weights	No. of Items
1	Food & Non-Alcoholic Beverages	34.83	127
2	Alcoholic Beverages & Tobacco	1.41	6
3	Clothing & Footwear	7.57	59
4	Housing, Water, Elec, Gas & other Fuels	29.41	36
5	Furnishing & Household Equip. Maintenance etc	4.21	69
6	Health	2.19	39
7	Transport	7.2	43
8	Communication	3.22	12
9	Recreation & Culture	2.03	39
10	Education	3.94	16
11	Resturant & Hotels	1.23	6
12	Miscellaneous	2.76	35
13	Total	100	487

Schedule of Price Collection

Name of Schedule	Frequency of data	Date of collection
Part-I Food & Non-Alcoholic Beverages, Alcoholic Beverage & Tobacco	Monthly	11-14 of each month
Part-II Clothing and Footwear, Housing, Water, Electricity, Gas and Other Fuels	Monthly	1-3 of each month
Part-III Furnishing, Household Equipment & Routine Household maintenance, Health and Medicine etc.	Monthly	4-6 of each month
Part-IV Transport, Communication, Recreation & Culture, Education and Miscellaneous goods and services.	Monthly	7-10 of each month

# Methodology

Wheat and Tea Prices from the CPI Basket for May

	Prices (Rs)		Inflation rate (%)	
	Wheat	**Lipton Yellow**	**Wheat**	**Lipton Yellow**
2015	331.66	145.73		
2016	323.06	159.91	-2.59%	9.73%
2017	326.16	198.50	0.96%	24.13%
2018	325.82	198.35	-0.10%	-0.08%

Rate of inflation = $(P_t - P_{t-1}) / P_{t-1} *100$

YoY Inflation and Major Contributors

Contribution (%age points) **to YoY Inflation**

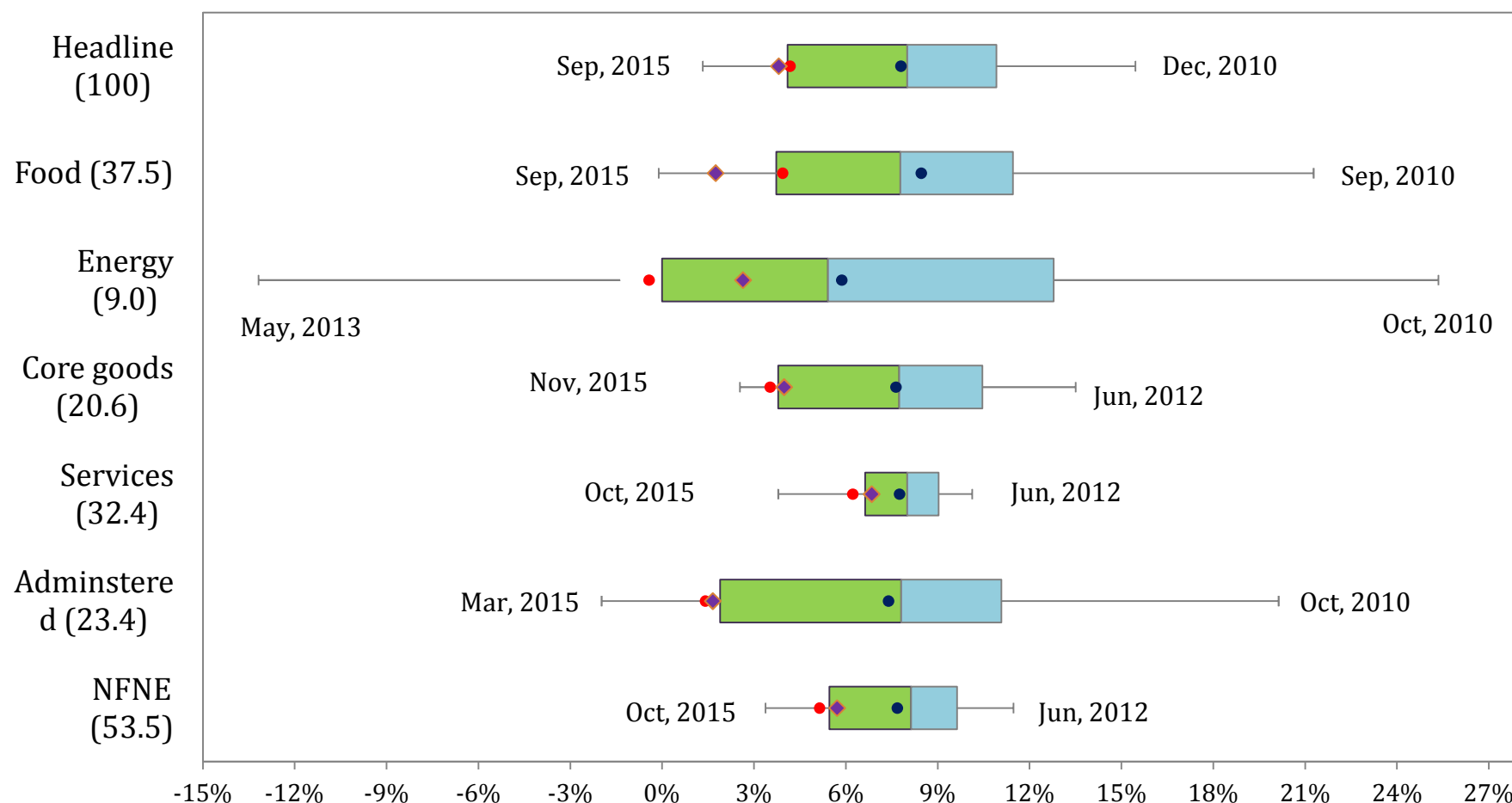Legend: Energy · NFNE · Food · Headline · Annual Target
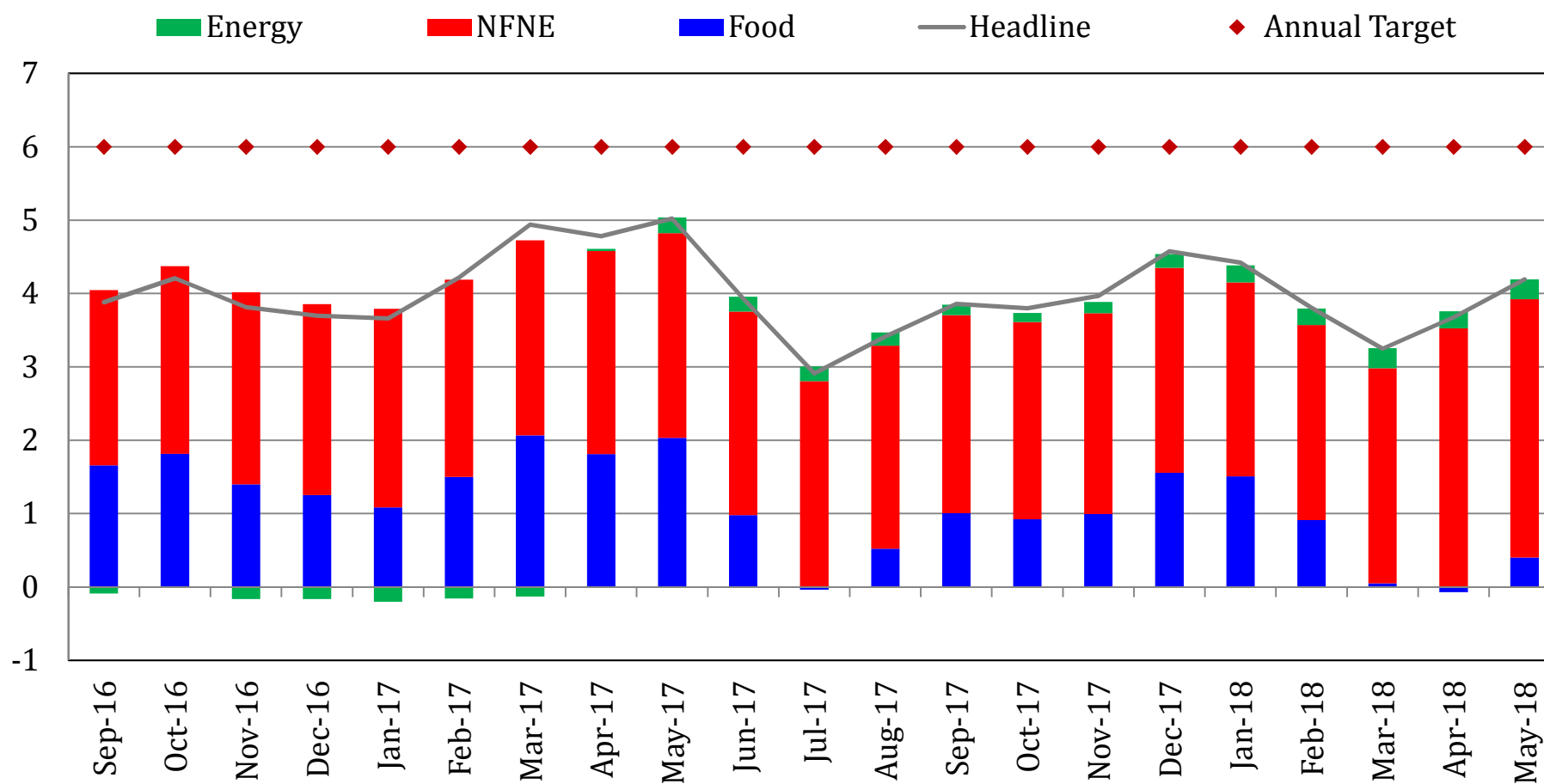
Source: Pakistan Bureau of Statistics and SBP staff estimates

Inflation: A Historical Perspective (FY10-FY17)

Legend: 2nd Quartile (26-50%) ■ 3rd Quartile (51-75%) ● Mean • FY 17 (Jul-May) ◆ FY18 (Jul-May)

Categories (y-axis):
- Headline (100) — Sep, 2015 ... Dec, 2010
- Food (37.5) — Sep, 2015 ... Sep, 2010
- Energy (9.0) — May, 2013 ... Oct, 2010
- Core goods (20.6) — Nov, 2015 ... Jun, 2012
- Services (32.4) — Oct, 2015 ... Jun, 2012
- Adminstered (23.4) — Mar, 2015 ... Oct, 2010
- NFNE (53.5) — Oct, 2015 ... Jun, 2012

x-axis: -15% -12% -9% -6% -3% 0% 3% 6% 9% 12% 15% 18% 21% 24% 27%
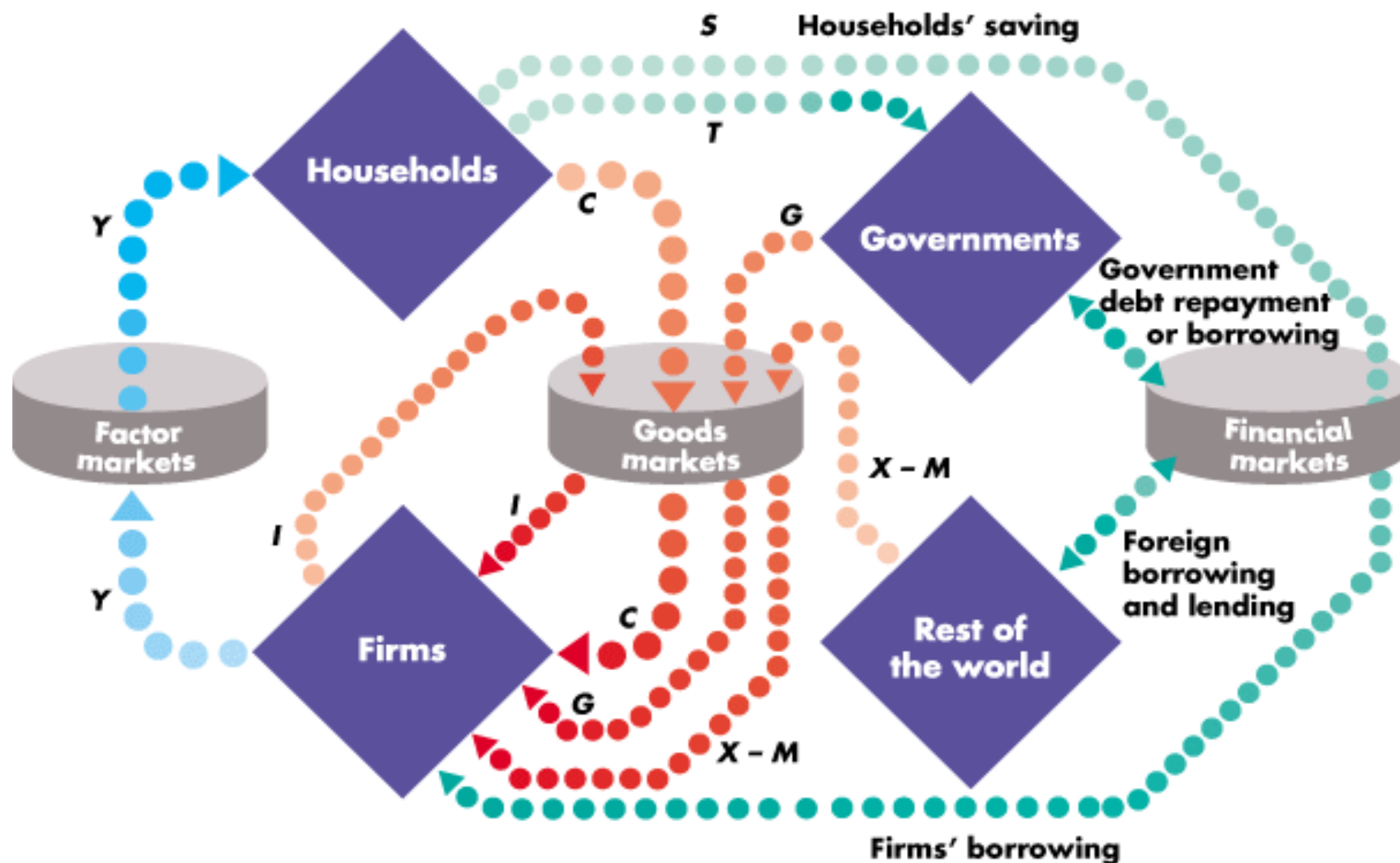
Understanding GDP

Gross Domestic Product

GDP or **gross domestic product** is the market value of all final goods and services produced in a country in a given time period.

This definition has four parts:

➢ Market value

➢ Final goods and services

➢ Produced within a country

➢ In a given time period

Gross Domestic Product

$$Y = C + I + G + X - M$$

Gross Domestic Product

The circular flow demonstrates how GDP can be measured in two ways.

Aggregate expenditure

➢ Total expenditure on final goods and services equals the value of output of final goods and services, which is GDP.

➢ Total expenditure $= C + I + G + (X - M)$.

Aggregate income

➢ Aggregate income earned from production of final goods, Y, equals the total amount paid out for the use of resources, wages, interest, rent, and profit.

➢ Firms pay out all their receipts from the sale of final goods, so income equals expenditure,

➢ $Y = C + I + G + (X - M)$.

Gross Domestic Product

Financial Flows

➢ Financial markets finance deficits and investment.

➢ Household saving (S) is income minus net taxes and consumption expenditure, and flows to the financial markets;

➢ $Y = C + S + T$,

➢ Income equals the uses of income.

➢ If government purchases exceed net taxes, the deficit $(G – T)$ is borrowed from the financial markets (if T exceeds G, the government surplus flows to the markets).

➢ If imports exceed exports, the deficit with the rest of the world $(M – X)$ is borrowing from the rest of the world.

Gross Domestic Product

How Investment Is Financed

➢ Investment is financed from three sources:

    ➢ Private saving (S)

    ➢ Government budget surplus (T – G)

    ➢ Borrowing from the rest of the world (M – X)

➢ We can see these three sources of investment finance by using the fact that aggregate expenditure equals aggregate income.

➢ We just learned that

$$Y = C + S + T = C + I + G + (X – M)$$

➢ Then rearrange to obtain

$$I = S + (T – G) + (M – X)$$

➢ Private saving (S) plus government saving (T – G) is called **national saving.**

Measuring GDP

The Pakistan Bureau of Statistics (PBS) is responsible for collection, compilation and dissemination of GDP Data.

➢ Pakistan National Accounts estimates are prepared in the light of the UN System of National Accounts (SNA) 2008.

➢ PBS uses a combination of approaches for compilation of GDP

    ➢ Production approach;

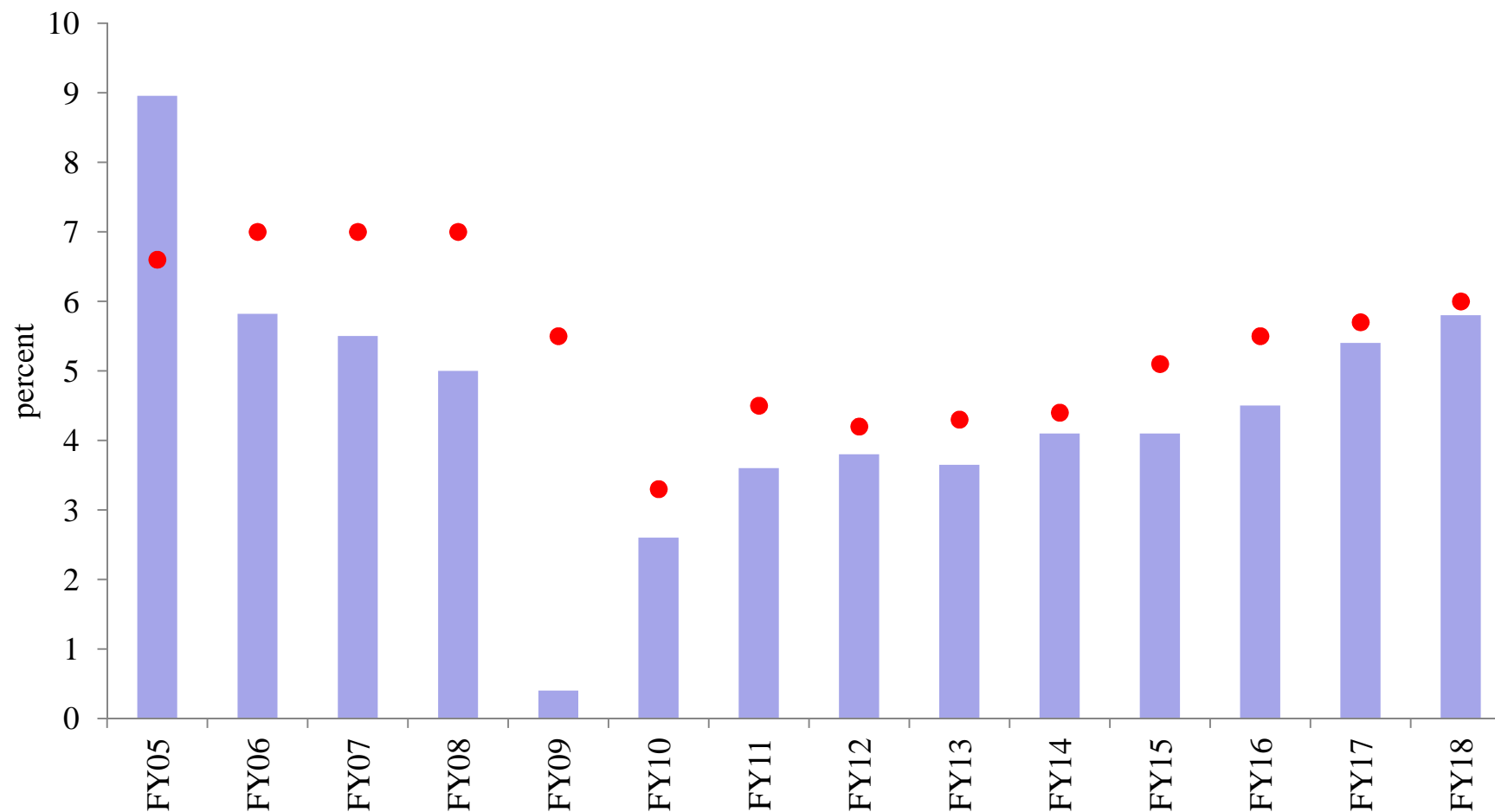   ➢ Income approach; and

    ➢ The expenditure approach

http://www.pbs.gov.pk/content/national-accounts

http://www.pbs.gov.pk/national-accounts-tables

Measuring GDP

Real GDP Growth : Targets Vs Actual

GDP: Omissions or Under estimation

➢ Voluntary services (Work of housewives)

➢ Illegal activities (narcotics, gambling, smuggling etc.)

➢ Undesirable effects of production (pollution, traffic congestion)

➢ No consideration is made for the changes in leisure time

➢ Distribution of national income and wealth

➢ Non-economic contributors to well-being are excluded

Thank You

Sensitive Price Indicator (SPI)

- ➢ **SPI is based on the prices prevailing in 53 markets of 17 major cities.**

- ➢ **Methods of derivation of weights:**

  Computation of weights of SPI is the same as that of the CPI. Weights are drawn on the basis of Family Budget Survey conducted in 2007-2008. The weights for each group are combined by taking simple average of weights of 17 cities for each item. Then, all income groups are combined at Pakistan level taking simple average of weights of 5 income quintiles.

- ➢ **Periodicity of price collection:**

  Prices are being collected on weekly basis on every Thursday. The field staff collects retail prices of SPI items by personally contacting the shopkeeper of the markets covered under SPI. Prices are obtained by the headquarters on email/telephone/fax from the concerned Field/Regional Offices on the same day.

- ➢ **Formula used for computation of is the same as was explained in CPI.**

	City Name	Number of Markets
1	Islamabad	4
2	Rawalpindi	6
3	Gujranwala	1
4	Sialkot	1
5	Lahore	7
6	Faisalabad	2
7	Sargodha	1
8	Multan	3
9	Bahawalpur	1
10	Karachi	13
11	Hyderabad	4
12	Sukkur	2
13	Larkana	1
14	Peshawar	3
15	Bannu	1
16	Quetta	2
17	Khuzdar	1
	Total	**53**

Wholesale Price Index

➢ **Calculation of average prices at market/city level:**

➢ For each commodity 4 quotations from different shops.

➢ Average of these 4 quotations is taken as a representative price for the commodities in the market/city.

➢ **Weights**

The value of marketable surplus has been used for deriving the weights of items. The weights are derived at item level (Aggregate value of items in base year) and average price of all the markets for the particular item is used for computation of WPI.

The marketable surplus is the value of item available for sale in the wholesale market, which is equal to the total value of product less consumption by producer plus imports, minus export if any.

Coverage of WPI			
1	Karachi	12	Sukkur
2	Lahore	13	Bahawalpur
3	Faisalabad	14	Sahiwal
4	Rawalpindi	15	Nawabshah
5	Hyderabad	16	Larkana
6	Multan	17	Mirpurkhas
7	Gujranwala	18	Mingora
8	Peshawar	19	Kasur
9	Sialkot	20	Gujrat
10	Sargodha	21	Bannu
11	Quetta		

Sub-Indices of WPI		
	Weight (2007-08)	Items
Agriculture Forestry & Fishery Products	25.77	92
Ores & Minerals, Electricity Gas & Water	12.04	12
Food Products, Beverages and Tobacco, Textiles, Apparel and Leather Products	31.11	125
Other Transportable Goods except Metal Products, Machinery and Equipments	22.37	143
Metal Product Machinery & Equipment	8.71	91
Total	**100**	**463**

Inflation trends

Inflation (Year on Year)
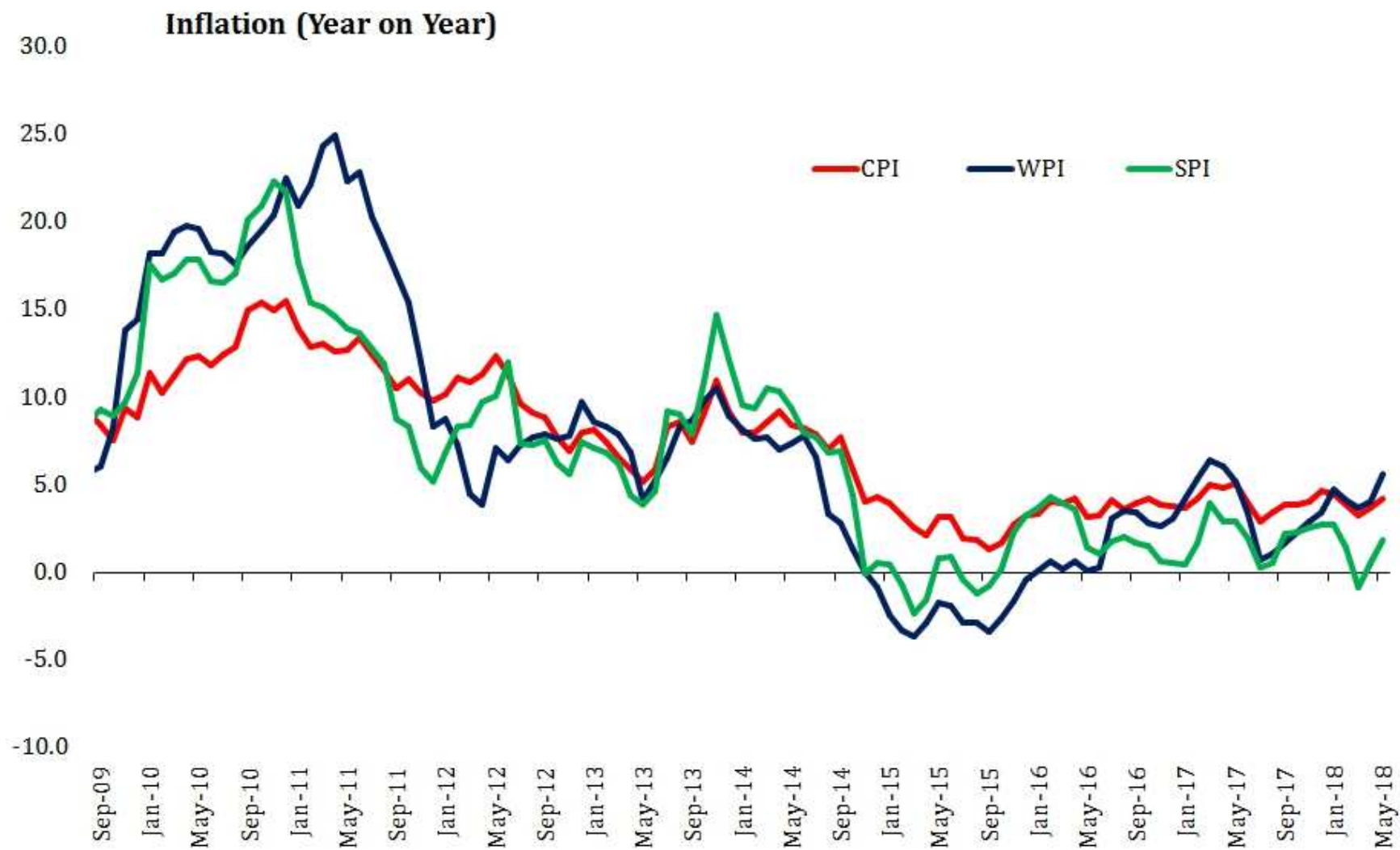
Constructing Price Indices

Example of constructing a composite commodity sub-index for Pulses from prices of individual items

Item$_i$	Weights	Prices per Kg of Items				
	w_i	Base 2007-08 Price P_0	May 2017 P_{n1}	May 2018 P_{n2}	$(w_i P_{n1}/P_0)$	$(w_i P_{n2}/P_0)$
Masoor	0.1869	69.36	127.44	110.96	0.34	0.30
Moong	0.2336	52.45	128.86	114.08	0.57	0.51
Mash	0.2098	69.87	197.85	147.51	0.59	0.44
Gram	0.2361	44.81	132.15	114.64	0.70	0.60
Σ	0.8664				2.21	1.85
Index in Period n = $\Sigma(w_i P_n/P_0)/(\Sigma w_i)$:					191.23	217.81
YoY % Change in Pulses (Commodity) Sub-index:						-16.0%

Gross Domestic Product

Market value

➢ GDP is a market value—goods and services are valued at their market prices.

➢ To add apples and oranges, autos and fertilizer, we add the market values so we have a total value of output in Rupees.

Final goods and services

➢ GDP is the value of the final goods and services produced.

➢ A final good (or service) is an item bought by its final user during a specified time period.

➢ A final good contrasts with an intermediate good, which is an item that is produced by one firm, bought by another firm, and used as a component of a final good or service.

➢ Excluding intermediate goods and services avoids double counting.