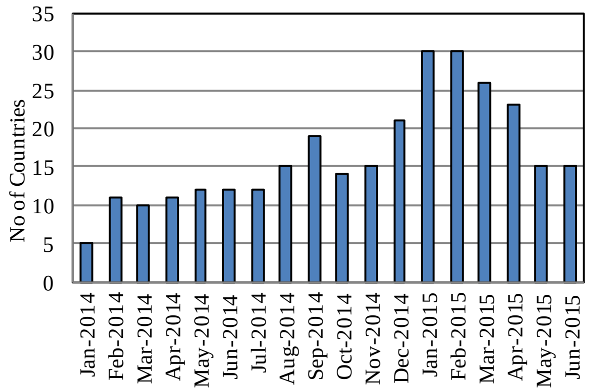
Special Section 2: An Analysis of Deflation

While concerns about inflation have remained a norm for years, deflation has emerged as a challenging economic problem for many countries. A general decline in prices of goods and services is referred to as deflation. IMF (2003) defines deflation "as a sustained decline in an aggregate measure of prices, which could either be consumer price index or GDP deflator".[1] Presently, inflation rate is very low in many advanced economies, which some analysts believe, would eventually tip into deflation in the next few months.[2,3] Euro Area is particularly vulnerable, as year-on-year CPI inflation for June 2015 clocked in below zero in 8 out of 19 Euro area countries[4] (**Figure S2.1**).[5]

Figure S2.1: Number of Countries with Negative YoY change in consumer prices (Total Countries 79)



Source: IFS, IMF

In this section, we will analyze the reasons behind low inflation across countries; how various central banks are responding; and what are the odds that deflationary pressures would be transmitted to Pakistan.

Box S2.1: Sources of deflation and its impact

Deflationary pressures may be temporary or persistent. Temporary deflationary pressures may arise from both demand and supply factors: for instance, if a country adopts short-term stabilization measures to manage its macroeconomic imbalances, it may cause prices to decline for a while. Similarly, a one-off increase in supply due to productivity improvement may also cause prices to decline in short-term (for instance, availability of high-yield variety of seeds would increase crops output resulting in falling prices). When deflation is temporary, this does not influence consumers and investors decisions, hence the chances of an economic downturn are low.

As for the persistent deflationary pressures, these may also arise from both demand and supply factors: for instance, it is usually hard for economies to recover from deep borne crisis as this severely dents investor and consumer confidence. Demand boosting fiscal and monetary measures are often not successful in these situations to lift the economy from low spending. Supply-side factors could also persist for a long time. For instance a technological improvement that gives a supply-push for a longer-period. Shale revolution in the US provides a good example. Persistent deflationary pressures transform into consumer sentiments that prices will fall further, and they start postponing their consumption decisions, which eventually result in deflationary

[1] "One or two quarters of price declines, while technically constituting deflation, would not be worrying. However, even mild but continuous deflation could be a cause for concern, as it may increase economic uncertainties, distort resource allocation, entail distributional consequences, and lead to subpar growth performance". Source: *Deflation: Determinants, Risks, and Policy Options: Findings of an Interdepartmental Task Force*. IMF Occasional paper (2003).

[2] http://www.bloombergview.com/articles/2015-02-17/enjoy-cheap-oil-fear-the-deflation

[3] Average inflation in the US, Euro Area, Japan and China is below 2 percent on YoY basis during Jan-June 2015. Specially, Euro Area inflation is persistently falling since November 2011.

[4] These countries are Cyprus, Estonia, Finland, Greece, Ireland, Lithuania, Slovak Republic, Slovenia

[5] These 79 countries are U.S., U.K , Austria , Belgium, Denmark, France, Germany, Italy, Luxembourg , Netherlands, Norway, Sweden, Switzerland, Canada, Japan, Euro Area, Finland, Greece, Iceland, Ireland ,Malta, Portugal, Spain, Turkey, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Rep, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua , Panama, Paraguay, Uruguay, Jamaica, Cyprus, Israel, Jordan, Lebanon, Egypt, Sri Lanka, Indonesia, Korea, Malaysia, Pakistan, Philippines, Thailand, Angola, Cabo Verde, Ghana, Nigeria, Rwanda, Seychelles, Senegal, Tanzania, Tunisia, Uganda, Zambia, Fiji, Albania, Kazakhstan, Bulgaria, China, Czech Rep, Slovak Rep, Estonia, Latvia, Serbia, Hungary, Lithuania, Croatia, Slovenia, Macedonia.

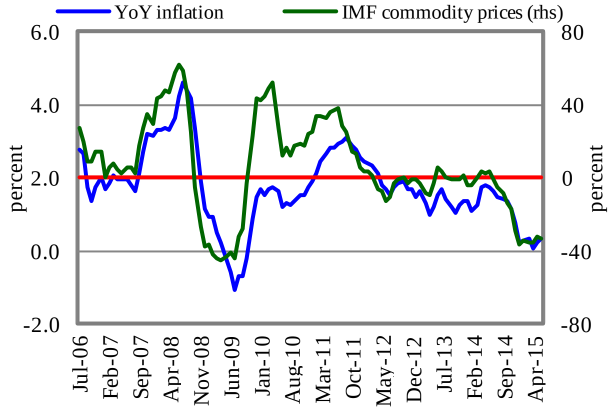
spirals. The Great Depression of 1929-1933 in United States, Japan from 1990-2006, and Hong Kong following the Asian financial crisis of 1998-2004 are examples of prolonged deflation.

The impact of both temporary and persistent deflation would differ for various sectors of the economy. For example, indirect tax revenue and nominal GDP may fall, businesses may face decline in sales revenues. However, if disinflation persists, all economic agents change their behaviors; for instance, consumers would start postponing their purchases; governments may find other sources of tax collection (e.g., via increasing rates); corporate may reduce employees; as usually nominal wages are rigid and if real wages rise as a result of falling output prices, firms usually reduce their labor force.

It all started from financial crisis in advanced economies (2009-11)

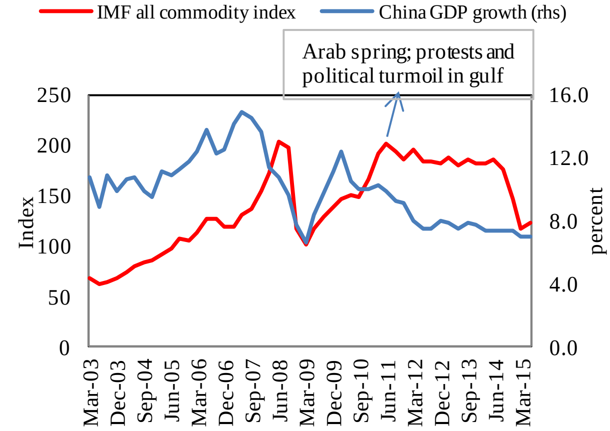
Typically deflationary pressures are tackled by accommodative macroeconomic policies. That is why, major policy makers in the US, UK, Euro Area and Japan had adopted aggressive fiscal and monetary policies, when their economies went into recession/deflation during the global financial crisis of 2008-09. These policies worked for most countries as economic activity picked up, and inflation surpassed the desired rate of 2 percent within the next two years (**Figure S2.2**). The only exception was Japan, where inflation kept hovering around zero, and often went into negative zone.[6] By end 2011, inflation in advanced economies had increased to reach 2.7 percent, from only 0.1 percent in 2009.[7]

Figure S2.2: Inflation in Advanced Economies and Global Commodity Prices



Source: Haver Analytics

Figure S2.3: China Growth and Commodity Prices



Source: Haver Analytics and IMF

Slowdown in China Caused Disinflation during 2011-13

During 2011-13, the global economy experienced significant disinflation, as rebalancing in China weakened the global commodity market.[8] More specifically, Chinese economy grew by only 7.3 percent in 2014, which is nearly half the growth in the pre-crisis peak seen in 2007 (**Figure S2.3**).[9] This had a significant impact on overall demand, and prices of key commodities like metal, oil, coal, etc.

Economic weakening in China has stemmed from multiple reasons, including: (i) a fall in working age population in recent years,[10] (ii) overinvestment in the previous few years, especially in property,

[6] Naturally, this had frustrated Japanese government which pushed it to implement extraordinary fiscal and monetary measures to lift the economy. Japan struggled very hard and came out of deflation in 2013 and is trying to not slip to deflation again. Apparently, inflation picked up in early 2014, but the impact was partly due to hike in sales tax.
[7] Source: Haver Analytics.
[8] China represents a share of 10.4 percent in total global imports (Source: IMF Direction of Trade).
[9] Chinese economy posted a growth of 14.1 percent in 2007 (Source: Haver Analytics).
[10] China's working-age population dropped by 2.44 million to 919.54 million in 2013. The working age population defined as number of people between 15 to 59 years old accounted for 67.6 percent of the country's overall population (Source: National Bureau of Statistics, China).

infrastructure and industrial capacity,[11] and (iii) failure to lift consumption due to inefficiencies in public health care and transfer systems.[12]

The slowdown in China has two major implications for the global economy: (i) being the largest importer of commodities (mostly raw material), this contributed the most to depressed prices of coal, copper, iron ore and other metals, and (ii) there is also a direct impact of lower Chinese imports on exports of commodity-dependent countries like Brazil, Australia, Chile and Russia, who suffered a squeeze in export revenues.[13] Other countries that export manufacturing raw material and machinery to China are also vulnerable; these include Japan, Taiwan, South Korea, and Singapore. Thus to support falling export revenues, countries strarted to offer their commodities at lower prices and this behaviour transformed into falling commodity prices.

Commodity deflation from July 2014 onwards: excess supplies of commodities

Global demand for most commodities tapered as China slowed down, but supplies continued to grow unabated – and in some cases, at a higher pace. For instance, the slowdown in global economy effectively placed a lid on global oil demand that posted a growth of only 1.3 percent in 2014.[14] The demand from European countries and Japan actually *declined* during 2014, whereas, the demand from Asian countries slowed down significantly.[15] As a result, oil prices began to slide July 2014 onwards. Typically, OPEC responds to price declines by cutting down production, but this time, they decided against this.[16] Overall production was left unchanged, which purged any hopes of a price recovery. Downward pressure on prices was further intensified by increased shale-driven oil production in the US, and growing penetration of alternative fuels, especially in Japan.

Similarly in the steel market, demand grew quite modestly compared to supplies. This is because, China is flooding the global steel market, as its domestic consumption remains depressed. Excess capacities in China, have helped it to penetrate in other steel exporting countries like India. Likewise in case of coal, demand has tapered as China is reducing its consumption to reduce carbon emissions. However, supplies from Indonesia and Australia continue to grow, as these countries are probably expecting prices to fall further.[17]

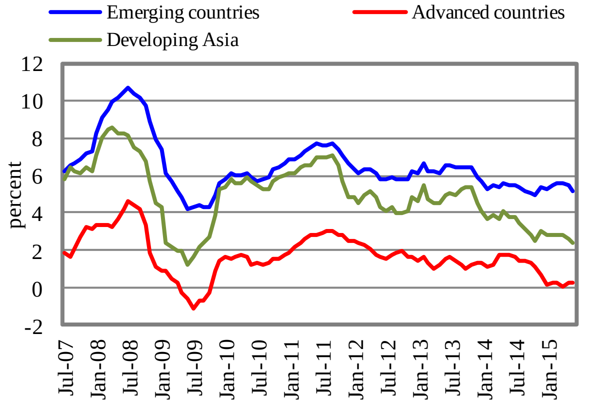
Global integration and deflation spillovers

With the fall in oil prices, and the slump in overall commodity market, the global economy has been pushed towards very low inflation rates. Here it is important to note, that the fear of global deflation is common for all countries, since it is emanating primarily from a sharp fall in commodity prices (supply-side). Having said that, those countries are less vulnerable to deflation risks where domestic demand is strong, like Norway, Netherlands, and many emerging economies in Asia and Latin America.[18] On the other extreme, there are debt-laden countries of Euro Area that are bogged down into deflation since a year now, as fiscal austerity measures have weighed heavily on domestic

[11] According to the World Bank, investments had risen to 47.7 percent of China's GDP in China in 2013.
[12] Savings in China are extremely high (around 50 percent in recent years).
[13] For instance, Australia, Brazil and Chile had been enjoying growth spurts in the pre-global financial crisis period as demand from China was abnormally strong.
[14] In the previous five years, oil demand had grown by an average pace of 1.7 percent (Source: International Energy Agency).
[15] Europe has a share of 13 percent in global oil demand, whereas, the use of alternative fuels is gaining momentum in Japan, as it is trying to reduce oil dependence (Source: Energy Outlook for 2030, Agency for Natural Resources, Japan).
[16] OPEC meeting was held in Vienna in September 2014 to decide on oil production for the next six months. While Iran and Venezuela pushed to reduce production, Saudi Arabia and Russia wanted to maintain OPEC's market share.
[17] Indonesia and Australia have a combined share of 55 percent in global coal exports (Source: International Trade Center).
[18] Average inflation for emerging economies is currently standing at 5.5 percent on YoY basis during Jan-Jun 2015 while the same number is 2.7 percent for Developing Asia. (Source: Haver Analytics).

demand. [19] In the middle, there are many advanced economies that are experiencing very low inflation rates due to weak domestic demand – like Belgium, France, Italy and Germany, which are occasionally tipping into deflation in recent months due to depressed commodity prices.[20]

Figure S2.4: Inflation in Advanced, Emerging and Developing Asia



Source: Haver Analytics

However, there is a looming risk that if the current trend in commodity prices persists, then the countries which are presently showing low (but positive) inflation rate, would slide into deflation; and countries which are showing negative inflation rate would stuck into deflationary spiral. This analysis stems from two factors:

(i) Due to trade integration, deflation may spread across countries. This risk has already been materialized in the non-Euro area member countries, where deflation has been imported from Euro area member countries.[21] It must be noted that currently inflation is at disturbingly low level in the US, Japan, and Germany, which account for one-fifth of the world's total exports.[22] These countries can become a major source of spillover, if deflation persists; and

(ii) Another source of this spillover may come from currency management in emerging economies like China, Korea, Taiwan and India. These economies are not facing deflation at the moment, but by depreciating/devaluing their currencies, they are *exporting* deflation in other economies.

Therefore, while domestic factors remain important for every economy, global commodity prices would continue to dominate the trend in consumer prices going forward.

Global Commodity Outlook

Global commodity outlook hinges upon six factors:

(i) Outlook on China is not optimistic: GDP growth is trending downwards; property prices are consistently falling; exports are declining; and the stocks have crashed on five occasions within three months since June 2015, losing 43 percent value. Already People's Bank of China has cut interest rates thrice during the last twelve months, and has also devalued the

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[19] Greece, Portugal, Ireland, Spain and Cyprus are experiencing deflation for last 12, 6, 7, 11 and 12 months, respectively. These countries had developed serious issues related to debt-sustainability in the post-global financial crisis period.

[20] Belgium and Italy have recorded deflation in 6 out of previous 12 months on YoY basis, whereas, France and Germany have recorded 3 and 1 month of deflation out of previous 12 months on YoY basis, respectively.

[21] IMF (2015) shows that in the non-Euro area member countries, like Czech Republic, Poland, Sweden and Switzerland, spillovers from low Euro Area inflation, a sharp decline in oil prices, and NEER fluctuations have been important drivers of disinflation. Similarly, Iossifov & Podpiera (2014) in a panel setting estimated that in addition to falling commodity prices, recent low inflation in the Euro Area had spilled over to Non-Euro Area trading partners which are pegged to Euro. Countries with more rigid exchange rate regimes and higher share of foreign value added in domestic demand have been more affected. (Sources: (1) *Cross Country Report on inflation, July 2015*. (2) Iossifov, P., and Podpiera,J. (2014). *'Are Non-Euro Area EU Countries Importing Low Inflation from the Euro Area?'* IMF Working Paper, No. WP/14/191.

[22] Average inflation on YoY basis is US, Germany and Japan is -0.1, 0.25 and 1.4 percent, respectively, during Jan-June 2015 (Source: Haver Analytics).

Yuan to stimulate the economy; however, if weakening persists, it would have a significant impact on overall global economic growth; [23]

(ii) A recovery in oil prices: this in turn depends on how much the OPEC is willing to lose for maintaining its market share; not to forget, if sanctions from Iran are lifted, it is estimated to add 500,000 barrels per day in the global oil market.[24] Latest forecasts of EIA and the IMF for crude oil suggests that prices would remain stable at current levels throughout 2015 and 2016 **(Table S2.1**).[25] However, the likelihood of oil prices to fall below $30 per barrel in the next 12 months, has actually increased in recent months;[26]

Table S2.1: Crude Oil Forecast from EIA and IMF

($/barrel)	**2013**	**2014**	**2015 F**	**2016 F**
WTI spot[1]	97.98	93.17	49.62	54.42
Brent spot average[1]	108.56	98.89	54.4	59.42
Oil Price[1]	104.1	96.2	51.6	50.6

Source: US Energy Information Administration and IMF

F: Forecast
1. Prices from US Energy Information Administration.
2. Average of spot price for U.K. Brent, Dubai and WTI (IMF)

(iii) Prices of other primary commodities[27] have been on a downward trend in the past two years, and are expected to remain under pressure for 2015 and 2016. Likewise, no major changes in metal prices are expected in the next couple of years;[28]

(iv) Prospects in the Euro Area: Following the agreement between Greece and the Troika[29], the Euro Area looks much stable. However, the ECB has recently expressed its concern over lower-than-expected GDP growth in the region, calling the slowdown in emerging economies as a major causative factor. Necessary balance sheets adjustments are also underway that would suppress overall growth in the Euro Area. More importantly ECB Chairman Draghi has even hinted towards stepping up the on-going Quantitative Easing (QE) to counter the downside pressures; still, inflation is not expected to recover in the near future, as evident in negative bond yields over the 3-year horizon (**Table S2.2**);

Table S2.2: Sovereign Yields
(June 30, 2015)

Country	**O/N**	**1 Year**	**3 Year**
Sweden	-1.00	-0.36	-0.12
Switzerland*	-0.75	-0.93	-0.89
Denmark**	-0.75	-0.31	-0.29
Finland	-0.20	-0.23	-0.07
Austria	-0.20	-0.16	-0.04
Germany	-0.20	-0.24	-0.20
Belgium	-0.20	-0.17	-0.02
France	-0.20	-0.15	-0.05
Italy	-0.20	0.15	0.64
Japan	0.01	-0.03	0.03
United States***	0.04	0.26	1.00

Source: Bloomberg; data is based on tickers obtained from BTMM, CBRT and GGR screens of Bloomberg.
1 year and 3 year yields are generic representation of on-the-run (liquid) 12M bills and 3Y bonds.
*Interbank overnight rate is taken as proxy for sovereign overnight deposit rate.
**7-Day deposit rate is taken as proxy for overnight deposit rate.
***4W T-bill rate is taken as proxy for overnight deposit rate.

(v) Fed's decision on interest rates: The risk of a sharp slowdown in China and other emerging economies has compelled the Fed to postpone the increase in interest rates in its October 28,

[23] The World Bank (2015) has indicated that a slowdown in business investment in China alone could shave 0.3% to 0.5% from the global economic output. (Source: Global Economic Prospects, '*The Global Economy in Transition'.* International Bank for Reconstruction and Development / The World Bank (2015).
[24] These estimates have been presented in Economist August 12, 2015.
[25] Forecasts as of August 20, 2015 from the IMF and August 11, 2015 from US Energy Information Administration
[26] Commodity Price Outlook and Risks (IMF August 12, 2015)
[27] Primary commodities are extracted directly from the earth, and include fuels, gems and minerals.
[28] Medium Term Commodity Price projection, IMF (August 20, 2015)
[29] Troika refers to European Central Bank, European Commission and International Monetary Fund.

2015 decision.[30] Despite this, many analysts believe that the Fed has to increase the rate to ensure a sense of 'rule' and transparency in its monetary policy decisions. Most FOMC participants expect that the economic conditions will be suitable for a rate hike later in 2015[31] – next meeting is due in mid December. Global stocks and currencies would go through major adjustment after that;

(vi) Currency movements: Devaluation of its currency by China has already triggered a sense of imported deflation into the US, EU and other advanced countries. Recall that the Yuan acts as an anchor of stability in the Asian currency market; if it devalues further, it can trigger a currency rout across all Asia.

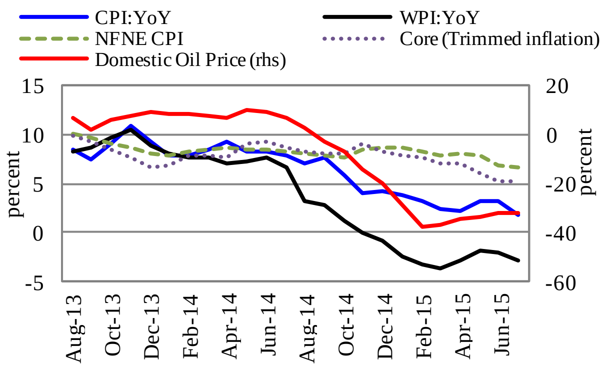
Table S2.3: Real GDP (%) and inflation in Major economies

			July 2015 WEO updated projection			
	2013	**2014**	2015	2016	**Upside risks**	**Downward risks**
US	2.2 [1.5]	2.4 [1.6]	2.5 [0.1]	3.0 [1.5]	Better financial conditions, lower oil prices and better prospects of housing sector.	Dollar appreciation can pose risk to recovery
Euro Area	-0.4 [1.4]	0.8 [0.4]	1.5 [-0.1][4]	1.7 [1.3][5]	Euro depreciation against US$	Slowdown in emerging markets
Japan	1.6 [0.4]	-0.1 [2.7]	0.8 [1.0]	1.2 [0.9]	Yen depreciation	Weak consumption
China	7.7 [2.6]	7.4 [2.0]	6.8 [1.2]	6.3 [1.5]	Declining property prices	Financial market turbulence

Inflation rates are in square brackets [ ].
Source: compiled from World Economic Outlook, April 2015 and WEO update of July 2015 of the IMF
4, 5: Source: European Economic Forecast, winter 2015, European Commission

Table S2.3 presents, where the IMF sees the global economy next year. It also lists major upward/downward risk factors for major economies.

Figure S2.5: Trend of Price indices and domestic oil price



Domestic oil price include Motor Sprit , Diesel and Kerosine oil price
Source: Pakistan Bureau of Statistics

Pakistan's Case

Pakistan is also not immune to global trends in inflation. WPI in Pakistan is showing falling trend since May 2014, and its YoY change is in negative zone for consecutive eleven months since December 2014. This index is closely related to global prices, as imported items constitute a significant proportion.[32] Within the WPI, oil prices are the main driver in the current declining trend, which is reflected in 8.1 percent fall in transportation and fuel related group.[33] However, CPI inflation is still positive, despite falling continuously since September 2014 onwards.[34] Here it is

[30] Due to increase in interest rates in US, capital may divert from many economies to US. Some analysts also believe that presently China is liquidating its holding of US treasuries, which has already put upward pressure on yield on these securities.
[31] Source: Transcript of Chair Yellen's FOMC Press Conference Opening Statement, September 17, 2015.
[32] WPI include items like printing paper, coke, motor sprit, diesel, kerosene, furnace oil, pig iron, steel products and engines for vehicles, etc.
[33] This group constitutes 22.3 percent weight in WPI index, which explain the fall in WPI index.
[34] CPI include goods as well as services such as doctor fee, car mechanic fee and some government tax such as motor vehicle tax. That is why it is a broader price index than WPI which include only goods.

important to recall that Pakistan has not experienced CPI deflation since FY63, when improved supplies and price decontrols had pushed general prices in the country down.[35]
Usually CPI and WPI show co-movements,[36] but these two indices have started to decouple from July 2014 onwards (**Figure S2.5**). This is mainly because imported items constitute a relatively smaller portion of CPI, compared to WPI.[37] Another reason for a positive CPI inflation could be the fact that domestic demand is strong, which is also evident from the fact that core inflation indicators are in the range of 3-4 percent.[38]

Going forward also, we do not expect CPI inflation to fall below 0 percent, *even* if WPI continues to stay in a negative zone.[39] This assessment stems from following factors:

(i) Prospects of overall domestic demand are encouraging due to planned public infrastructure spending; monetary easing; continued momentum of growth in remittances; better law and order in the country; and an upbeat construction industry due to incentives in budget for 2015-16;[40]

(ii) International oil prices are currently hovering around $ 49 per barrel; we do not expect these prices to fall as sharply as they did last year. In addition to this, the pass-through of a further price fall may be limited in Pakistan, as government is absorbing some part of the price fall by increasing sales tax rates on petroleum products;[41]

(iii) Increase in power tariffs in FY16 due to tariff rationalization and certain surcharges like Nelum-Jehlum surcharge, will contribute in general price increase. As a result of this, government has increased K-electric tariff from 19 to 30 percent in different slabs for its residential consumers.[42] Similar adjustments have been also applied on other electric distribution companies. Also, the gas tariff has also been increased for different sectors in September 2015;[43]

(iv) Recovery of Gas Infrastructure Development Cess (GIDC)[44] from April 2015 onward (as producers will pass on the increase in costs to consumers) would be playing its role in pushing overall CPI;

[35] For details, see Economic Survey for 1962-63, Ministry of Finance.
[36] Hamid and Hyder (2011) estimated a long run co-integrating relationship between CPI and WPI, and found that these two indices are co-integrated in the long run and follow a coherent path. The deviations in the movement of CPI and WPI in the short run are transitory (Source: Hamid, R. N., and Hyder., K (2011). '*Asymmetric Shocks and the co-movements of Price indices'.* SBP working paper No 38, February 2011).
[37] CPI does not include many items of WPI like furnace oil, fertilizer, cement, steel/metals, glass sheet, timber etc
[38] YoY Trimmed inflation in August 2015 is 2.9 percent while it is 4.1 percent for Non Food Non Energy Inflation (NFNE).
[39] Consumer's inflation expectations as measured by IBA-SBP's Consumers Confidence Survey (CCS) suggest that the proportion of respondents expecting a rise in overall prices during the next six months, fell from 42.28 percent in July 2015, to 39.35 percent in September 2015. Similarly, the proportion of respondents expecting a fall in overall prices have increased to 4.52 percent in September 2015, from 2.51 percent in July 2015.
[40] Minimum tax on builders is suspended until 2018 and customs duty on import of construction machinery has been reduced.
[41] For instance, in September 2015 government has reduced petrol price by Rs 3 per liter while it raised GST rate on petrol from 20 to 25.5 percent.
[42] Government of Pakistan, vide Notification no. SRO 677(1)/2015 dated 14th July 2015 have increased the electricity tariff for residential consumers. It has further modified the bill calculation methodology by allowing benefit of only the single previous slab. For detail see http://www.ke.com.pk/customer-services/tariff-structure/.
[43] Details can be obtained from, http://www.ogra.org.pk/images/data/downloads/1441041000.pdf
[44] GIDC was designed to finance Iran-Pakistan pipeline (IP), Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline project, LNG and other related projects. Litigation on its method made it difficult for the government to collect it. Recently, government has obtained legal cover through GIDC Act in June 2015 (see **Chapter 3 Energy** for more detail).

(v) House Rent Index (HRI) grew at an average of 6.3 percent last year, and a rise in HRI will increase overall CPI;[45] and

(vi) The risk of importing low inflation from trading partners in CPI basket is low as the PKR remained almost stable against the major trading partners, i.e. US and China[46]. The PKR has depreciated by 1.2 and 3.5 percent against CNY (Yuan) and USD respectively, between July and first week of November 2015[47]. This depreciation will be augmenting inflationary expectations as it is perceived as one of the important anchor in price setting behavior by firms.

[45] House Rent Index constitutes 29.4 percent weight in CPI basket. This index is computed using quarterly surveys of house rent in major urban centers and depends significantly on overall prices of houses in the country. Anecdotal evidence suggests that due to improving law and order situation and low interest rate environment house prices are rising. That is why we expect a rise in house rent.

[46] NEER (Nominal Effective Exchange Rate) index measures the relative value of a country's currency compared to the other major currencies being traded. USA and China have trade weights of 19.5 and 13.99 percent respectively in the NEER index constructed by SBP.

[47] Source: Mark to Mark Revaluation, Exchange Rate data, SBP