

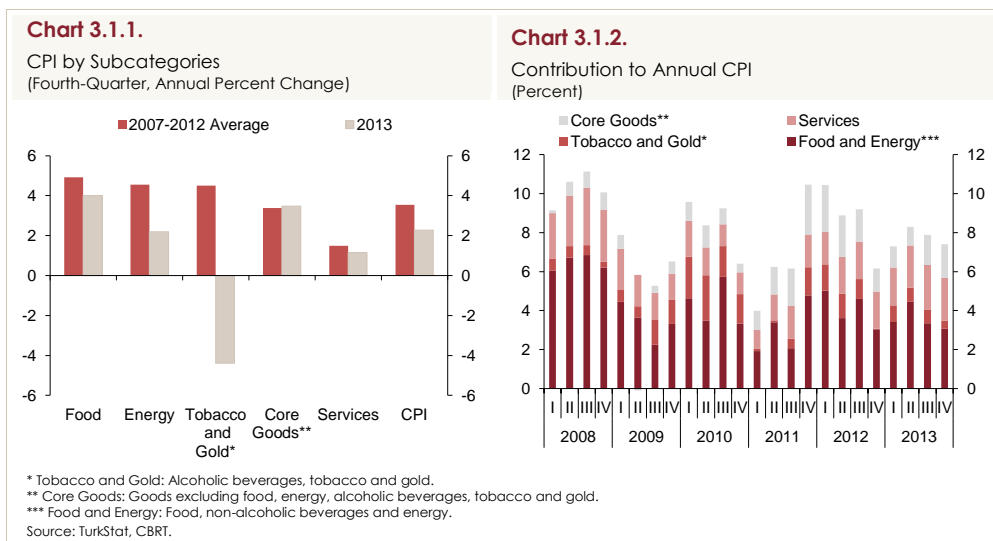
## 3. Inflation Developments

### 3.1. Inflation

In 2013, consumer inflation increased by 1.2 points year-on-year to 7.4 percent, overshooting the uncertainty band of the inflation target. Inflation followed a volatile path throughout the year. The consumer inflation, which soared due to the tax adjustments on tobacco at the beginning of 2013, followed a volatile path in the remaining part of the year amid developments in unprocessed food and energy prices, and ended the mid-year significantly above the value implied by the target. In the second half of the year, the weak course of portfolio flows driven by global uncertainty over the monetary policies in advanced economies led to depreciation of the Turkish lira and caused core inflation indicators to rise with the pass-through effect. Consequently, inflation expectations deteriorated slightly during the last six months.

In the last quarter of 2013, annual consumer inflation fell by 0.48 points from the previous quarter to 7.40 percent. The fall in inflation was mostly driven by the base effect from energy prices as well as tobacco prices that declined amid increased competition in the tobacco sector. On the other hand, unprocessed food prices rallied in this period. Moreover, the depreciation of the Turkish lira continued to affect the annual core goods inflation, while services inflation maintained its mild upward track. As a result, core inflation indicators remained elevated.

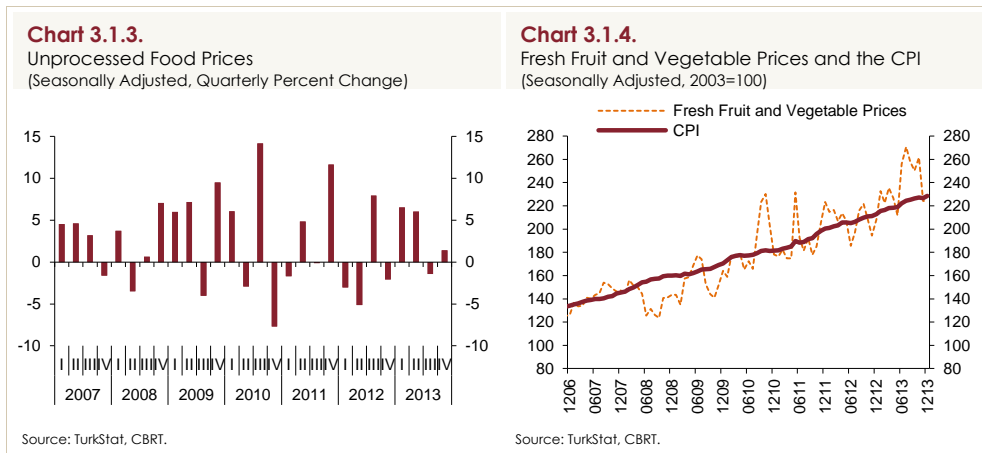
Across subcategories, quarterly rates of change proved more favorable for the energy, tobacco and gold prices in the fourth quarter compared to historical averages, yet still standing close to averages in other categories (Chart 3.1.1). In 2013, the overall contribution of the food and energy prices to inflation remained unchanged from end-2012 (food up 1.3 points, energy down 1.3 points). In the same period, due to exchange rate developments, the contribution of core goods to annual inflation went up by 0.5 points, while the contribution of services as well as tobacco and gold prices increased by 0.3 and 0.4 points, respectively (Chart 3.1.2).



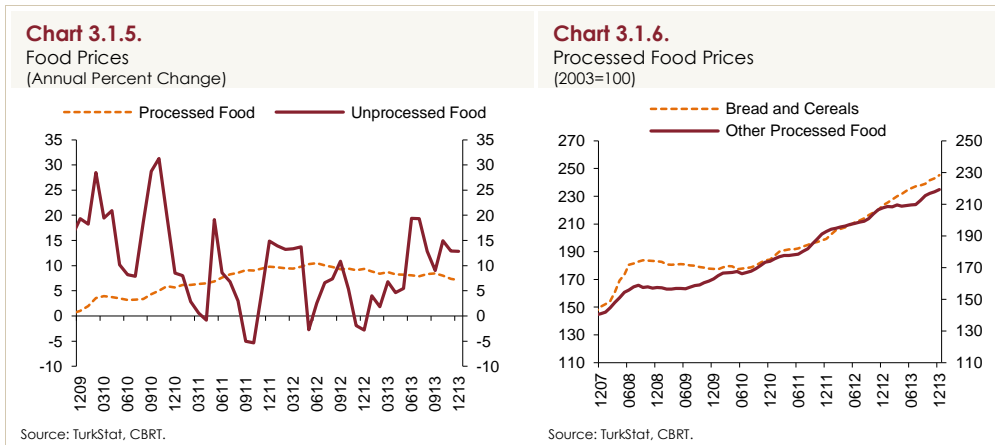
In sum, inflation went beyond the path projected in the October Inflation Report during the final quarter mainly due to developments in unprocessed food prices. In 2014, the course of inflation will be

determined by exchange rate developments and tax adjustments at the beginning of the year. Moreover, the cumulative effect of the depreciating Turkish lira and international prices put upward pressure on administered energy prices.

Unprocessed food inflation rose by 3.86 points from the third quarter to 12.88 percent (Table 3.1.1). In this period, seasonally adjusted unprocessed food prices increased modestly after the third quarter fall (Chart 3.1.3). Prices of fresh fruits and vegetables that remained elevated above the consumer prices throughout the year converged to the general price level as of December and increased by a year-on-year 7.86 percent (Chart 3.1.4). Meanwhile, the annual rate of increase in other unprocessed food prices, which soared substantially during the fourth quarter by 6.30 percent, reached 16.28 percent in December, thereby fuelling the high year-end inflation in the unprocessed food category.



Processed food prices were up 2.04 percent in the last quarter and annual inflation in this category decreased gradually to 7.11 percent (Table 3.1.1 and Chart 3.1.5). This development was largely driven by the prices of bread and cereals that increased due to wheat prices. Moreover, annual inflation in this category rose due to processed food prices excluding bread and cereals that accelerated in the third quarter amid the weaker Turkish lira. Meanwhile, annual inflation in the prices of bread and cereals as well as other processed food, which excludes bread and cereals fell in the final quarter to 9.71 and 5.54 percent, respectively (Chart 3.1.6). As a result, annual food price inflation ended the year at 9.67 percent, exceeding the October Inflation Report forecasts.

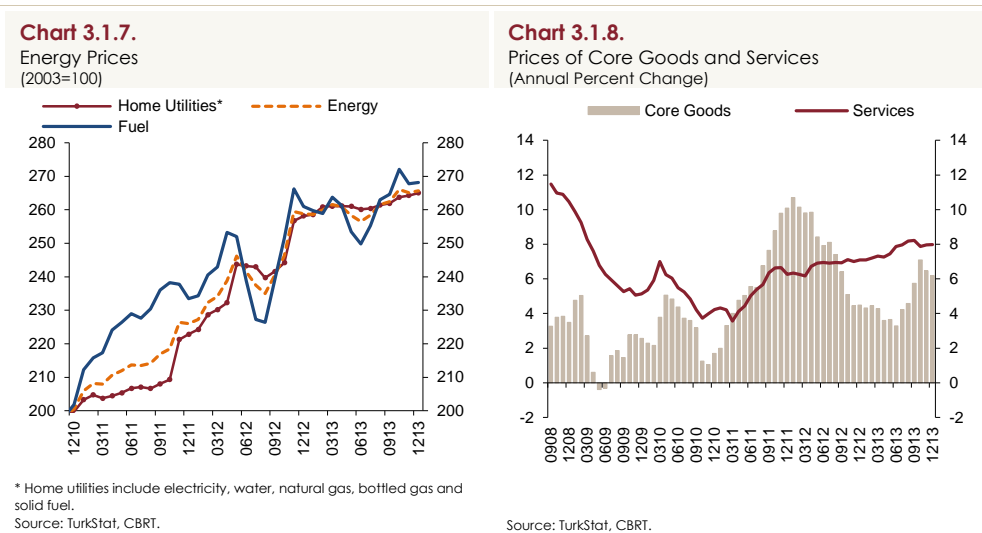


**Table 3.1.1.**Prices of Goods and Services  
(Quarterly and Annual Percent Change)

	2012		2013				
	IV	Annual	I	II	III	IV	Annual
<b>CPI</b>	<b>2.74</b>	<b>6.16</b>	<b>2.63</b>	<b>1.33</b>	<b>0.97</b>	<b>2.28</b>	<b>7.40</b>
<b>1. Goods</b>	<b>3.25</b>	<b>5.82</b>	<b>2.95</b>	<b>0.90</b>	<b>0.46</b>	<b>2.72</b>	<b>7.18</b>
Energy	5.02	13.79	0.86	-0.92	2.95	2.20	5.15
Food and Non-Alcoholic Beverages	3.12	3.90	7.06	-1.69	0.19	4.01	9.67
Unprocessed Food	2.82	-2.78	13.87	-4.70	-2.29	6.46	12.88
Processed Food	3.35	9.37	1.63	0.99	2.27	2.04	7.11
Goods (excl. energy and food)	2.50	3.78	0.92	3.65	-0.38	2.00	6.29
Core Goods	3.03	4.49	-1.52	4.86	-0.62	3.48	6.20
Durable Goods (excl. gold)	-0.48	0.17	2.54	0.05	3.75	1.12	7.62
Alcoholic Beverages, Tobacco and Gold	0.04	0.57	12.41	-1.35	0.68	-4.39	6.74
<b>2. Services</b>	<b>1.38</b>	<b>7.09</b>	<b>1.78</b>	<b>2.50</b>	<b>2.32</b>	<b>1.16</b>	<b>7.98</b>
Rent	1.61	5.46	1.25	1.59	1.70	1.81	6.50
Restaurants and Hotels	1.74	9.31	2.07	2.18	2.85	2.42	9.86
Transport	0.81	8.16	1.88	2.34	2.63	0.18	7.20
Communication	3.00	7.08	0.40	1.28	1.30	0.09	3.09
Other Services*	0.41	6.04	2.58	4.02	2.65	0.82	10.43

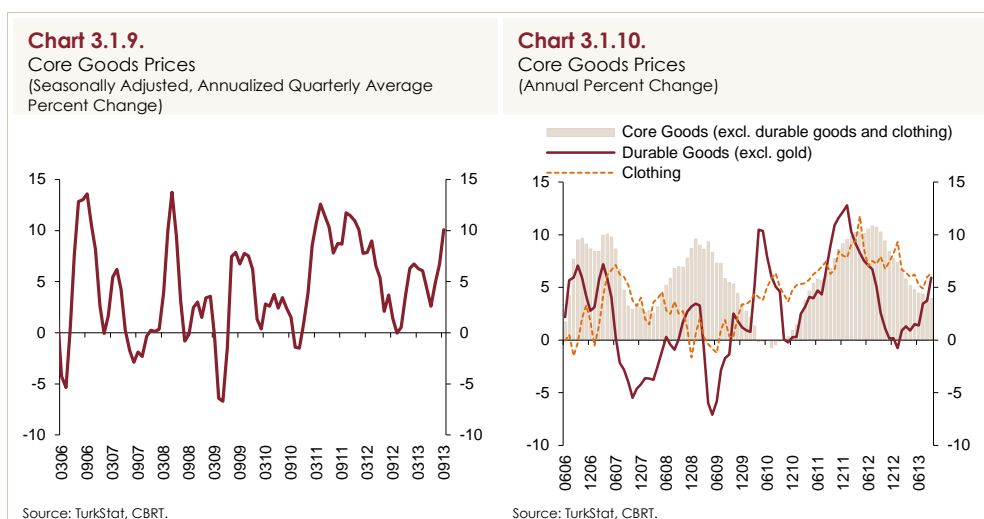
\* Services excluding rents, restaurants, hotels, transport and communication.  
Source: TurkStat, CBRT.

Energy prices increased by 2.20 percent in the fourth quarter, while the annual inflation dropped by 2.90 points to 5.15 percent due to base effects (Table 3.1.1). This surge was led by LPG and bottled gas prices that soared significantly in December (by 12.14 and 9.25 percent, respectively) owing to international prices. In addition, international oil prices and the weak Turkish lira caused fuel prices to surge by 3.27 percent in this quarter (Chart 3.1.7). With no adjustments to administered energy prices throughout the year, annual inflation in energy prices reached the 4-year low in 2013. However, it should be noted that the depreciation of the Turkish lira and the rising costs of administered energy items caused by international developments pose an upside risk to energy inflation in 2014.



Annual core goods inflation increased by around 0.5 points to 6.20 percent in the fourth quarter (Chart 3.1.8). The cumulative effects of the Turkish lira depreciation during May and November have largely ended and the pace of growth in seasonally adjusted core goods prices turned downward as of November (Chart 3.1.9). The rise in durable goods prices, which are rapidly affected by the exchange rate, continued in the last quarter, albeit more slowly, and annual inflation increased further. Across subcategories, the furniture

as well as electrical and non-electrical appliances prices witnessed the delayed effects of exchange rate developments, while automobile prices increased at a decelerating rate (Table 3.1.2). The Turkish lira depreciation also had lagged effects on core goods excluding clothing and durables, and the downtrend of the annual inflation in this category was reversed in the final quarter (Chart 3.1.10). Yet, annual clothing inflation fell to 4.82 percent, restraining the rise of the annual core goods inflation.



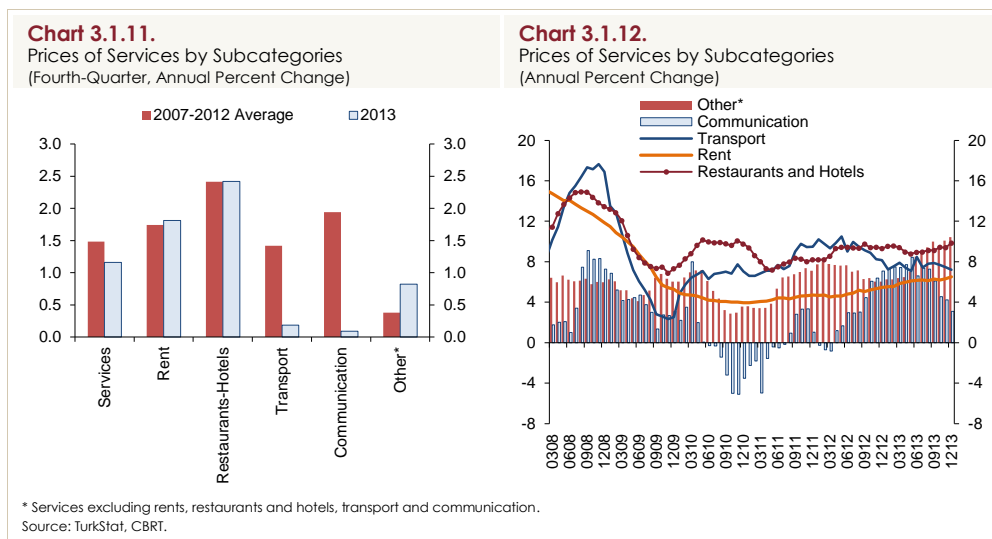
**Table 3.1.2.**  
Core Goods Prices  
(Quarterly and Annual Percent Change)

	2012		2013				
	IV	Annual	I	II	III	IV	Annual
<b>Core Goods</b>	<b>3.03</b>	<b>4.49</b>	<b>-1.32</b>	<b>4.86</b>	<b>-0.62</b>	<b>3.48</b>	<b>6.20</b>
<b>Clothing and Footwear</b>	<b>12.00</b>	<b>8.20</b>	<b>-10.90</b>	<b>20.95</b>	<b>-10.43</b>	<b>10.38</b>	<b>4.82</b>
<b>Durable Goods (excl. gold)</b>	<b>-0.48</b>	<b>0.17</b>	<b>1.41</b>	<b>0.05</b>	<b>3.75</b>	<b>1.12</b>	<b>7.62</b>
Furniture	1.84	6.33	3.19	0.65	1.59	2.89	9.50
Electrical and Non-Electrical Appliances	-0.96	-3.41	0.94	-2.66	0.12	0.91	-1.48
Automobile	-1.07	-0.40	1.09	0.72	5.55	0.67	10.27
Other Durable Goods	0.54	5.68	1.22	1.53	1.80	2.69	7.25
<b>Other</b>	<b>1.05</b>	<b>7.71</b>	<b>2.76</b>	<b>1.15</b>	<b>0.75</b>	<b>2.13</b>	<b>5.05</b>

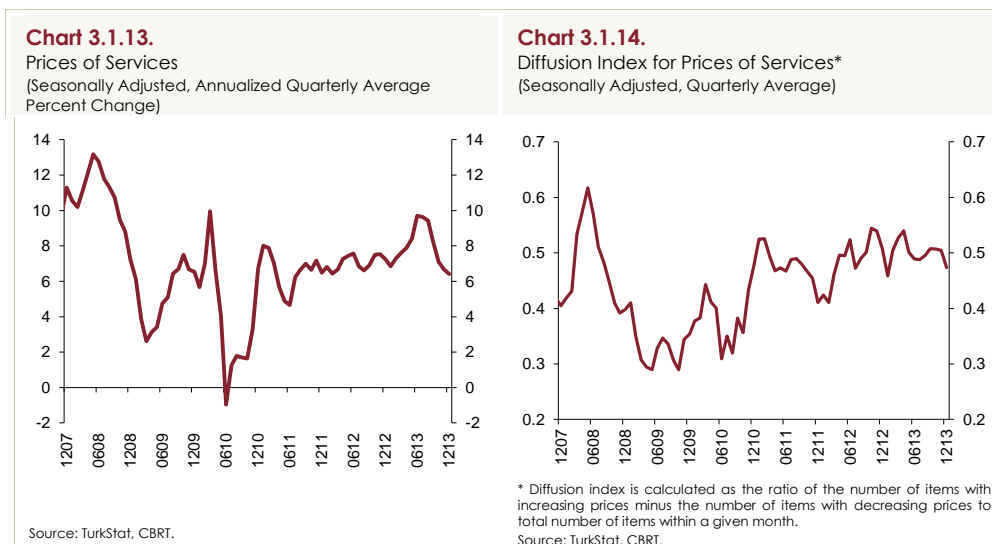
Source: TurkStat, CBRT.

In sum, the exchange rate effects, which were mostly limited to durable goods, particularly automobiles, in the third quarter, were also felt by core goods other than durables and clothing in the fourth quarter. Therefore, the depreciation of the Turkish lira since May continued to affect prices of core goods, though to a lessening degree, in the fourth quarter. Meanwhile, the accelerating depreciation of the Turkish lira as of mid-December and the tax adjustments on automobiles were the main factors that deteriorated the 2014 outlook for core goods prices. Tax adjustments to automobile prices may pull the year-end consumer inflation up by 0.3 points in case of a full pass-through to final prices. Leading indicators for January imply a significant surge in automobile prices due to both exchange rates and taxes. Thus, annual inflation in this category is expected to rise further in the forthcoming period.

Annual inflation in services fell 0.24 points quarter-on-quarter to 7.98 percent at year-end (Chart 3.1.8). In the fourth quarter, price hikes were close to averages of previous years for rents and restaurant-hotel services, but below historical averages for transport and communication services (Chart 3.1.11). Due to healthcare services, the prices of other services recorded an above-average rate of increase in the fourth quarter. An analysis of annual rates of increase as of year-end suggests that the prices of restaurants, hotels, rents and other services continued with a steady uptrend (Chart 3.1.12).

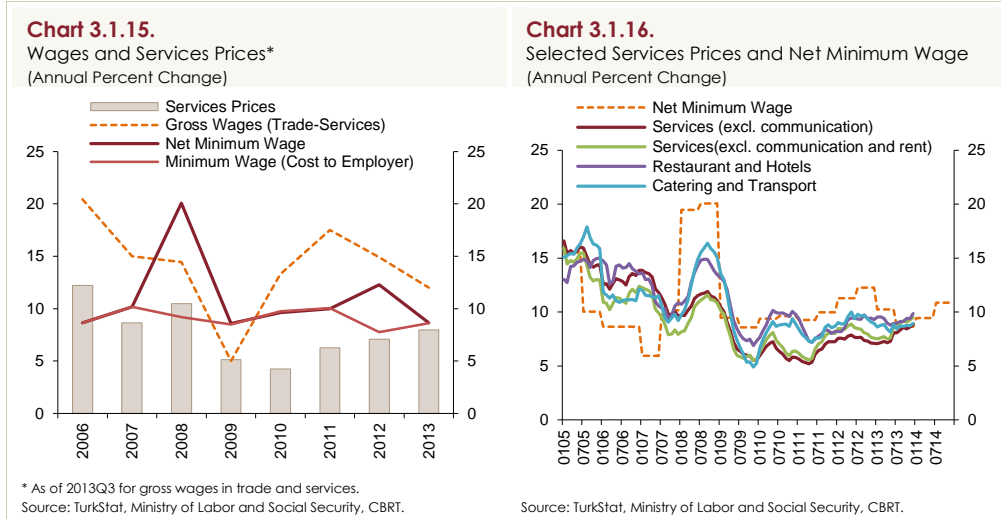


The seasonally adjusted underlying trend of the services decelerated slightly in the last quarter and returned to the early-2013 level (Chart 3.1.13). The diffusion index also displayed a similar pattern (Chart 3.1.14). Despite having decelerated, the underlying trend of services inflation still remains high.

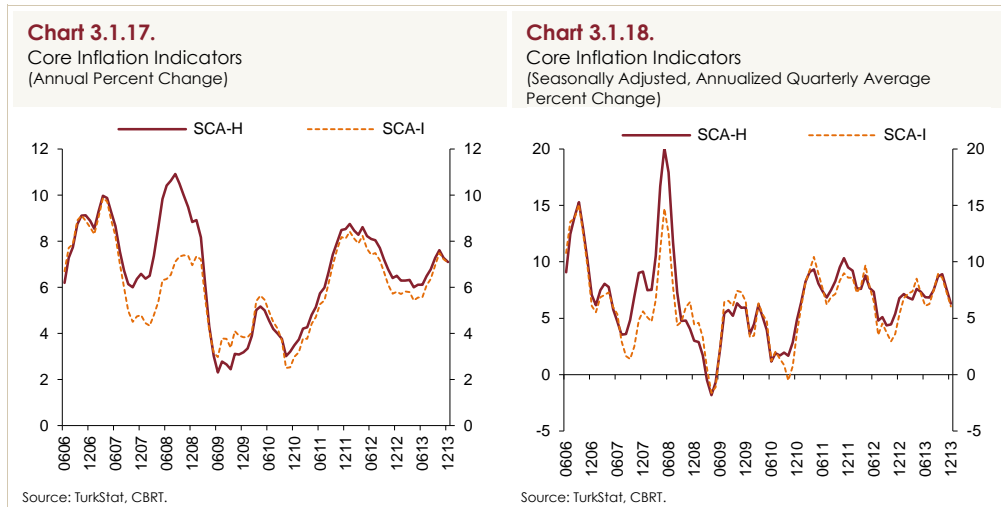


Wages, a key driver of the high inflation in services, increased at a faster pace than inflation (Chart 3.1.15). This trend is evident for wages in trade and services sectors as well as minimum wages. In addition, selected subcategories of services prices follow the same pattern especially with net minimum

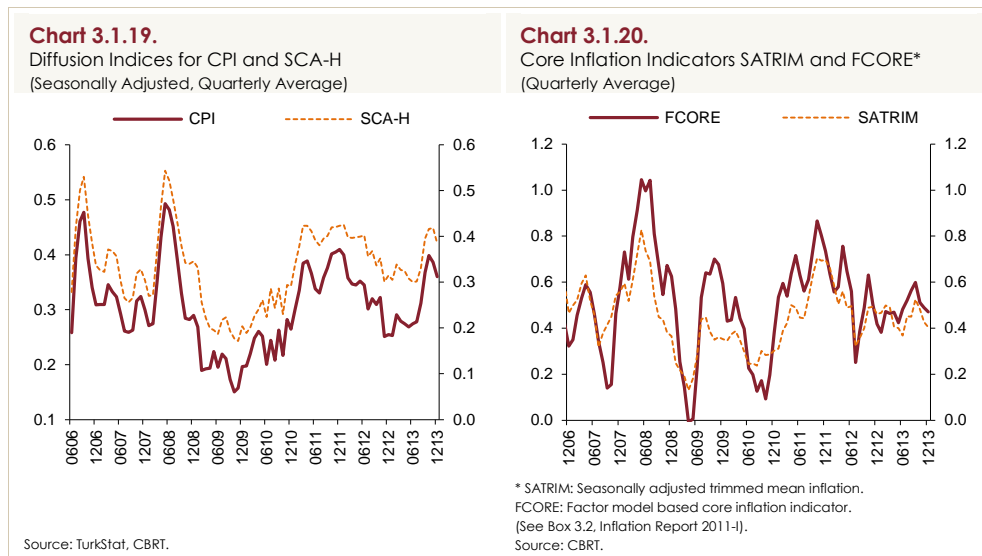
wages. Thus, the announced minimum wage figures for 2014 signal that services prices may be subject to further pressure through the wage channel in the upcoming period (Chart 3.1.16).



In the final quarter, annual inflation in the SCA-H and SCA-I, which are among core inflation indicators, remained elevated at 7.1 percent (Chart 3.1.17). Seasonally adjusted data suggested that the underlying trend of the SCA-H and SCA-I indices would decrease from the end of the third quarter thanks to prices of core goods and services (Chart 3.1.18).



Diffusion indices of core goods and services displayed an outlook similar to increases in seasonally adjusted prices. Accordingly, diffusion indices for the CPI and the SCA-H indicator slumped in the fourth quarter (Chart 3.1.19). FCORE and SATRIM, the alternative core inflation indicators monitored by the CBRT, trended downwards compared to the third quarter (Chart 3.1.20). Thus, the analysis of core inflation indicators, diffusion indices and alternative core indicators suggests that the underlying trend of inflation is lower compared to the previous quarter due to the waning effects of the Turkish lira depreciation. However, the depreciation of the Turkish lira during the second half of December and tax adjustments to automobile prices pose an upside risk to inflation for the upcoming period.



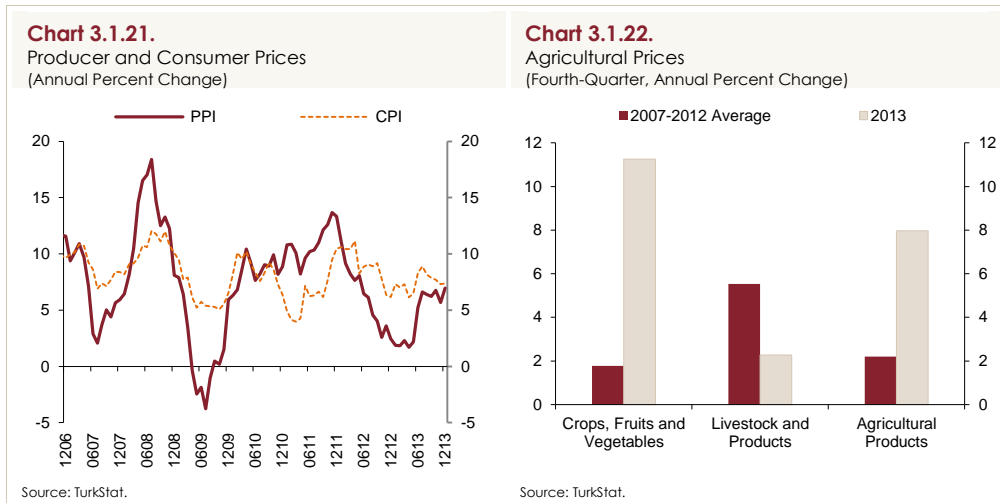
Producer prices increased by 2.43 percent on account of the dramatic hike in manufacturing and agricultural prices in the fourth quarter of 2013, and annual PPI inflation went up by around 0.75 points quarter-on-quarter to 6.97 percent (Table 3.1.3). The increase in the agricultural prices was driven by fruit and vegetable prices that soared above historical averages (Chart 3.1.22). The major price hikes in cotton and wheat, both industrial crops, were also noteworthy.

**Table 3.1.3.**  
PPI and Subcategories  
(Quarterly and Annual Percent Change)

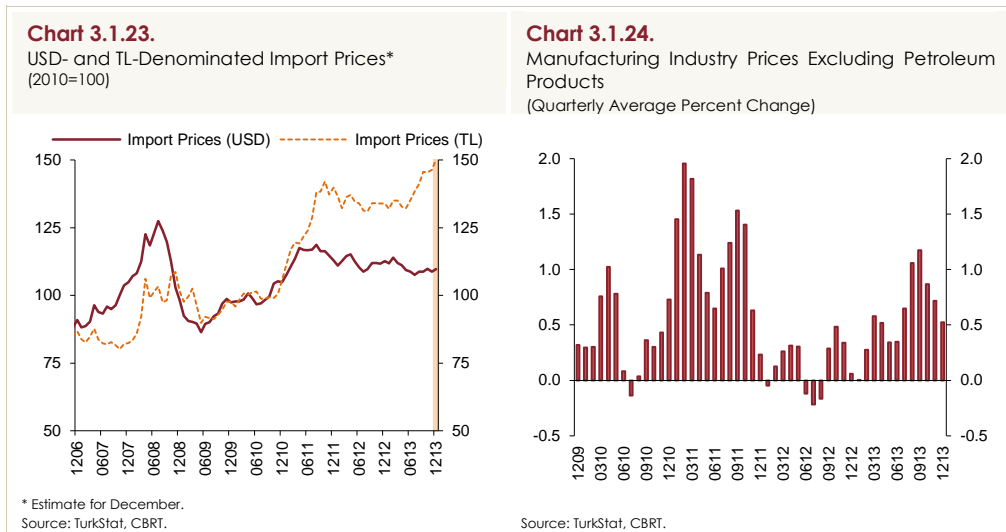
	2012		2013				
	IV	Annual	I	II	III	IV	Annual
<b>PPI</b>	<b>1.72</b>	<b>2.45</b>	<b>0.50</b>	<b>1.95</b>	<b>1.92</b>	<b>2.43</b>	<b>6.97</b>
<b>Agriculture</b>	<b>-3.31</b>	<b>-4.17</b>	<b>-0.06</b>	<b>6.94</b>	<b>-6.77</b>	<b>7.97</b>	<b>7.58</b>
Crops, Fruits and Vegetables	-4.78	-5.05	2.32	10.72	-9.83	11.26	13.66
Livestock and Animal Products	-0.29	-3.15	-8.47	-0.62	1.86	2.28	-5.23
<b>Industry</b>	<b>2.74</b>	<b>3.83</b>	<b>0.61</b>	<b>0.98</b>	<b>3.71</b>	<b>1.41</b>	<b>6.85</b>
Mining	0.13	5.49	3.90	2.11	4.61	1.49	12.64
<b>Manufacturing</b>	<b>-0.17</b>	<b>1.27</b>	<b>1.87</b>	<b>0.88</b>	<b>3.97</b>	<b>1.51</b>	<b>8.45</b>
Manufacturing (excl. petroleum products)	0.18	1.48	1.75	1.04	3.56	1.58	8.15
Manufacturing (excl. petroleum and base metal products)	0.48	2.50	1.76	1.11	3.30	1.64	8.02
Electricity, Gas and Water	28.21	23.64	-11.28	1.45	0.82	0.38	-8.92

Source: TurkStat, CBRT.

Despite the favorable course of commodity prices, manufacturing industry prices soared by 1.51 percent in the last quarter due to the depreciation of the Turkish lira, bringing the annual inflation in this category up to 8.45 percent (Table 3.1.3). In this period, the USD-denominated import prices remained mild in line with the commodity prices, while the TL-denominated import prices recorded an increase (Chart 3.1.23). Falling international oil prices helped to bring manufacturing industry prices for petroleum products down slightly in the fourth quarter. On the other hand, manufacturing industry prices excluding petroleum products surged by 1.58 percent in this quarter, and the annual inflation increased by 1.49 points quarter-on-quarter to 8.15 percent.



Across subcategories, intermediate goods, capital goods and non-durable goods recorded price hikes. The rise in non-durable goods was caused by manufacturing prices for food and clothing. Prices of durable goods fell slightly in this quarter mostly due to the December decline, which was attributed to falling manufacturing prices for jewelry. Overall, in this quarter, the depreciation of the Turkish lira had a lessening effect on manufacturing industry prices excluding petroleum products, which have been rising since April and growing at an accelerated pace as of the second quarter (Chart 3.1.24). However, both the current course of producer prices and the depreciation of the Turkish lira since December suggest that cost pressures on consumer prices, especially on those for durable goods, increased.

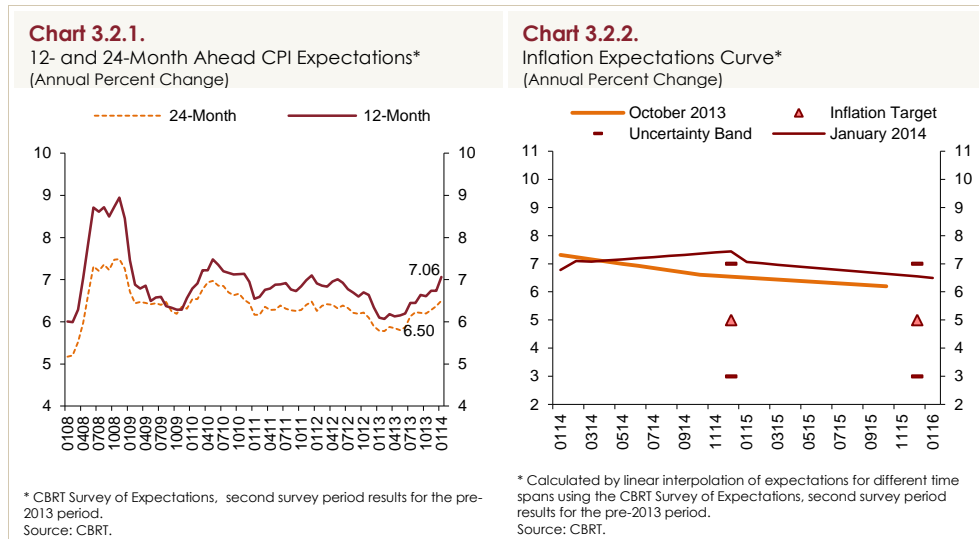


### 3.2. Expectations

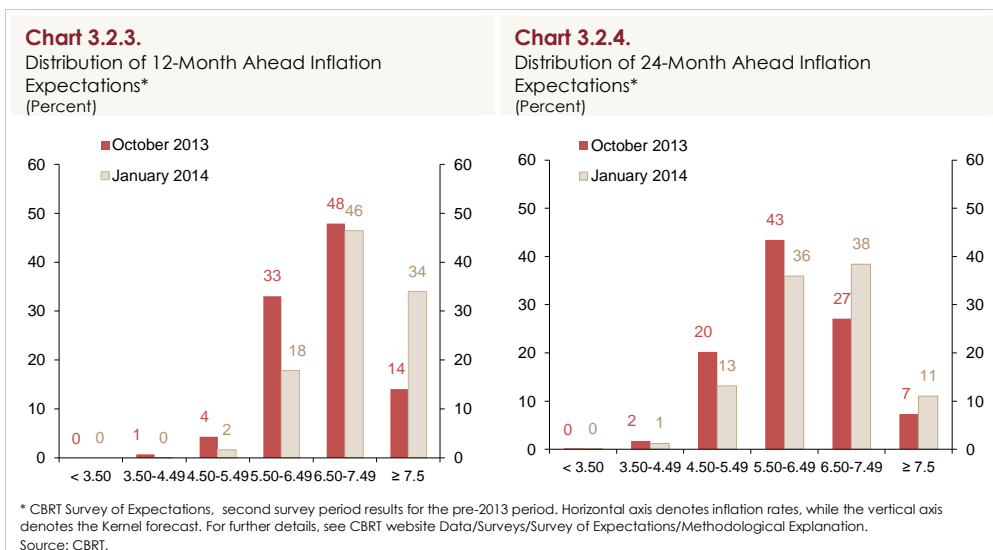
Medium-term inflation expectations, which displayed a flat course in the first half of 2013, deteriorated in the second half upon the depreciation of the Turkish lira (Chart 3.2.1). In January, medium-term expectations deteriorated further due to these developments as well as tax adjustments at the beginning of the year. Across maturities, inflation expectations for end-March were revised downwards compared to the previous quarter, while 12-month ahead inflation expectations increased and the spread widened. The



spread narrowed slightly for longer-term expectations (Chart 3.2.2). Nevertheless, inflation expectations still hover above the inflation target of 5 percent set for end-2014 and end-2015.



The dispersion of respondents' both 12-month and 24-month ahead inflation expectations reveals the pattern of the deterioration in inflation expectations (Charts 3.2.3 and 3.2.4). Almost half of the respondents' 12-month ahead inflation expectations are still in the range of 6.5 to 7.5 percent, while the number of respondents expecting inflation to rise above 7.5 percent increased significantly during this period.



Box  
3.1

## Implications of Base Effects for Consumer Inflation in 2014

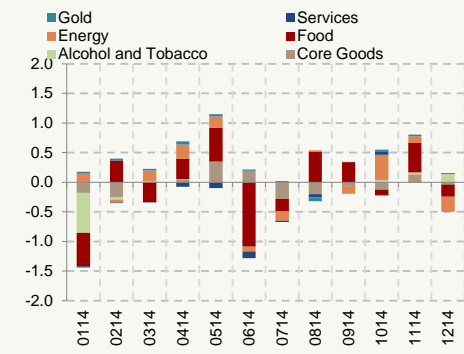
After rising in January 2013 as a result of tax hikes on tobacco products, annual inflation hovered above the upper end of the uncertainty band throughout the year due to prices of unprocessed food, energy and core goods. In particular, capital flows that weakened in the second half of the year due to global uncertainty over monetary policies caused the Turkish lira to depreciate, which brought core inflation indicators up through the core goods channel. This box shows the implications of the changes in CPI subcategories during 2013 on the annual consumer inflation for 2014 through base effects.

The base effect manifests itself on the 12-month ahead annual inflation when the monthly change in an index for a certain month deviates from the "normal" monthly change of the respective month.<sup>1</sup> Therefore, when assessing the change in annual inflation, both current monthly price changes and base effects are taken into account.

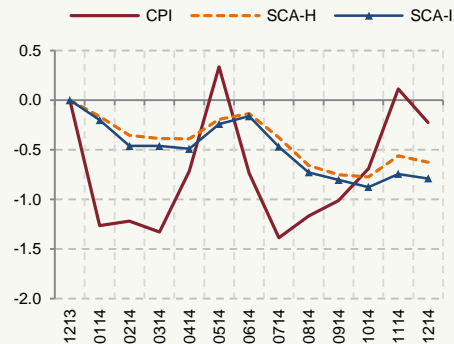
Chart 1 shows the expected contributions from base effects of the CPI subcategories to the 2014 annual consumer inflation.<sup>2</sup> Accordingly, the greatest contribution for the whole year will come from base effects of the food category due to unprocessed food prices. Base effects from alcohol and tobacco in January will have negative contributions to annual inflation due to the sharp monthly increase caused by tax hikes on tobacco products in the same month of the previous year. Inflation was about 1.2 points above the normal monthly change in January and June 2013 and about 1.1 points below the normal monthly change in May 2013. Therefore, regardless of the current monthly price developments, base effects will bring inflation down by 1.2 points and up by 1.1 points for the respective months in 2014. However, it should be noted again that annual inflation may move in the reverse direction to the fluctuations implied by base effects due to current price developments in these months. In cumulative terms, base effects will reduce end-2014 consumer inflation slightly by 0.2 points compared to the previous year-end (Chart 2). In particular, the cumulative contributions of base effects over the entire year will be negative for core goods, services as well as alcohol and tobacco, and positive for the energy prices. Lastly, base effects are expected to pull annual SCA-H and SCA-I inflation down by 0.6 and 0.8 points year-on-year, respectively, by December 2014 (Chart 2).

<sup>1</sup> Normal monthly change reflects the underlying trend of the price movements in the respective period. Yet, there is no standard method for measuring this typical change. This analysis uses the median of the monthly inflation rates for subcategories across years for the respective month as the normal change.

<sup>2</sup> This box uses the method in CBRT (2012) to determine base effects.

**Chart 1.** Expected Contribution of Base Effects by Subcategories to Annual CPI Inflation in 2014 (Percent)

Source: TurkStat, CBRT.

**Chart 2.** Cumulative Contribution of Base Effects to Annual Inflation in CPI and Core Inflation Indicators (Percent)

In sum, base effects from CPI subcategories will play a major role on the path of annual inflation in 2014. However, it should be remembered that current price developments are another factor affecting annual inflation, and therefore, base effects will not be the sole driver of inflation realizations in 2014. In fact, as of year-end, base effects are expected to have a negative, albeit very limited effect on the annual CPI inflation. This suggests that the end-2014 annual CPI inflation will be shaped by current price developments rather than base effects. Factors such as exchange rate developments, public price adjustments, aggregate demand and weather conditions are considered to be especially influential on inflation in the upcoming period through the current prices channel. Yet, understanding the contribution of base effects to changes in annual CPI inflation is crucial for determining the inflation trend accurately.

## REFERENCES

CBRT, 2012, The Role of Base Effects on the CPI Inflation in 2012, Box 7.2 in Inflation Report 2012-I.

