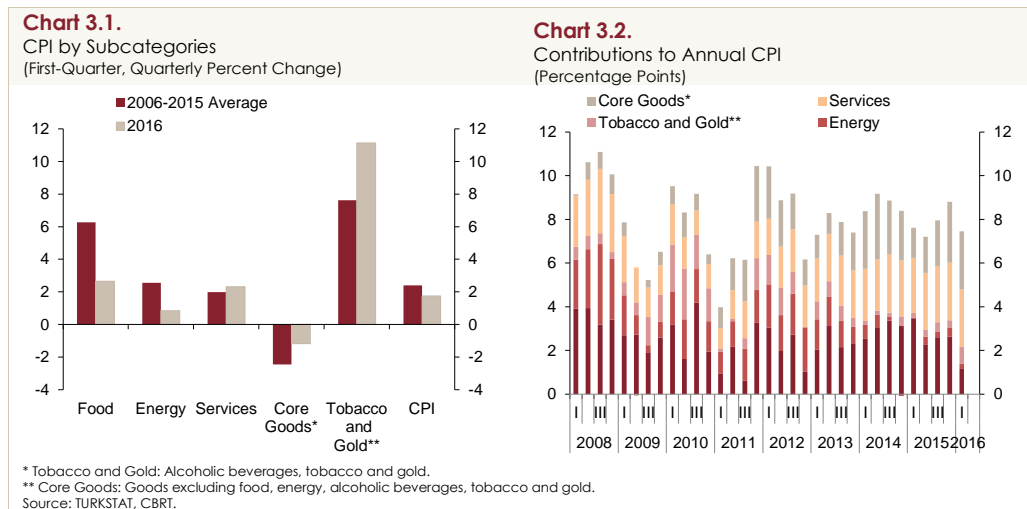


3. Inflation Developments

In the first quarter of 2016, consumer inflation dropped by 1.35 points quarter-on-quarter to 7.46 percent. This was mainly owed to the favorable course of unprocessed food prices. Low import prices and the ongoing weakening in the pass-through from the cumulative Turkish lira depreciation to annual inflation contributed slightly to the decline in energy and core goods inflation. Yet, adjustments in administered prices, rising inflation expectations and wage developments put a lid on this decline. Thus, annual inflation in services and core indicators remained elevated.



Price changes across tobacco and gold, services and core goods were above historical averages in the first quarter of 2016. Despite month-on-month drops in core goods inflation driven by seasonal discounts on clothing, the January depreciation in the Turkish lira led to a relatively modest quarterly decline in inflation. Increases in exchange rate sensitive items, inflation persistence and wage developments caused services inflation to remain high. However, increasing agricultural output amid mild weather conditions drove food inflation substantially lower than past years' averages in quarterly terms. Energy prices, on the other hand, benefited from falling oil prices despite electricity tariff adjustments in early January (Chart 3.1).

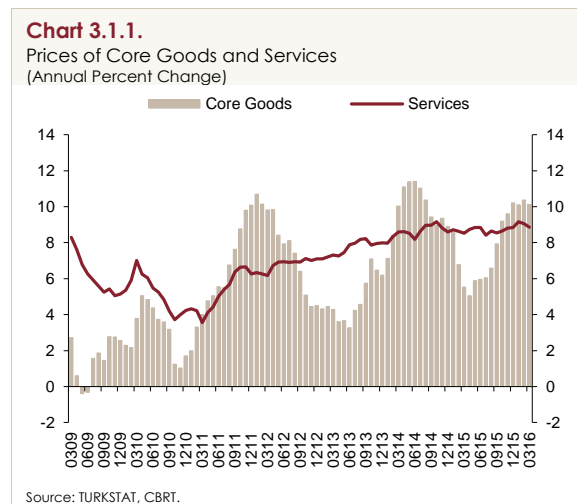
Accordingly, food prices contributed by about 1.5 points less to annual inflation in the first quarter. The contributions of core goods and energy were down by 0.1 point each while tobacco and gold brought annual inflation up by 0.4 points; and the contribution of services remained unchanged. Thus, there was no notable improvement in the contribution of core goods to consumer inflation in this period (Chart 3.2).

In short, the improving food inflation and accommodative import prices led to a marked decline in consumer inflation in the first quarter, but due to cumulative exchange rate effects and particularly the rigidities in services inflation, the desired improvement in core indicators is yet to be seen. Despite the recently prevailing favorable effects of the post-January Turkish lira appreciation, the high volatility in exchange rates adds to the upside risks for the core inflation outlook. Yet, after weighing on services inflation throughout 2015, catering services inflation has started to see some deceleration with food prices remaining moderate thanks to favorable weather conditions and measures on certain products.

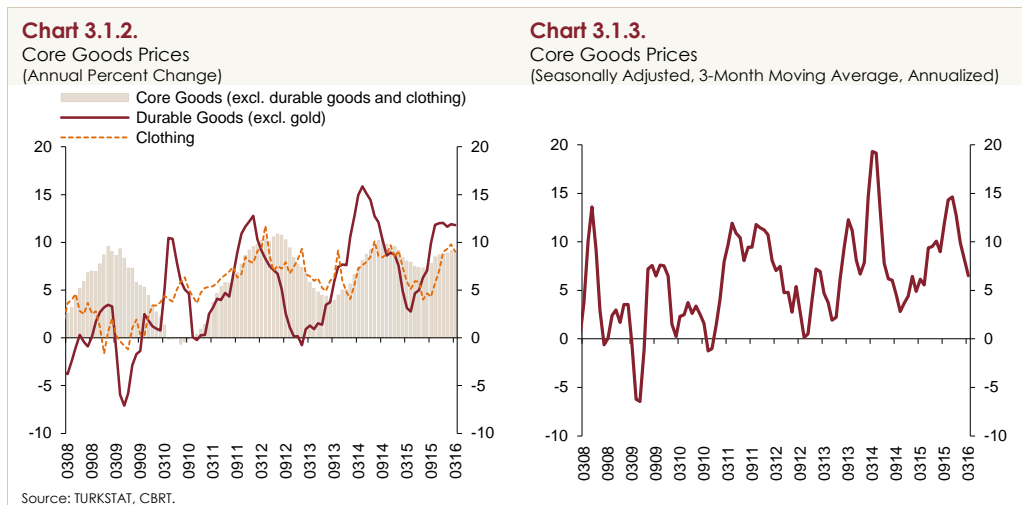
In this regard, the recent outlook for exchange rates and food prices might be the key drivers of disinflation in the upcoming period. However, it should be noted that the minimum wage adjustment weakens the downward flexibility of inflation against positive shocks although it does not seem to put significant pressure on prices yet.

3.1. Core Inflation Outlook

Annual core goods inflation fell by 0.09 points to 10.13 percent in the first quarter (Table 3.1.1 and Chart 3.1.1). This high rate was mostly driven by both the lagged pass-through of the exchange rate, which however has faded in recent months, and the depreciation in January. With the appreciation of the Turkish lira after January, core goods inflation saw some improvement, albeit slightly, induced by durable goods. Meanwhile, clothing inflation remained flat after the massive fourth-quarter upsurge, while core goods excluding clothing and durables continued to trend upward (Chart 3.1.2).



January 2016 was marked by sharp price increases across all durable goods, particularly in furniture and automobiles. After hitting the highest January level in the index history, furniture prices continued to climb, albeit more slowly, in the following two months, thus recording a cumulative increase of nearly 6 percent in the first three months of the year. Despite rising in the first two months, annual clothing inflation remained unchanged quarter-on-quarter due to the March decline. Responding to the exchange rate with a lag, core goods inflation excluding clothing and durables remained high yet declined slightly in March. In sum, despite weakening to some degree in March, the exchange rate continued to put pressure on the prices of core goods through the first quarter.



In the first quarter, the contribution of core goods to annual consumer inflation fell by about 0.1 point to 2.66 percent (Chart 3.2). The underlying trend of core goods inflation improved significantly on the back of waning cumulative exchange rate effects (Chart 3.1.3). The recent Turkish lira appreciation suggests that this improvement will be reflected in core goods inflation over the upcoming period.

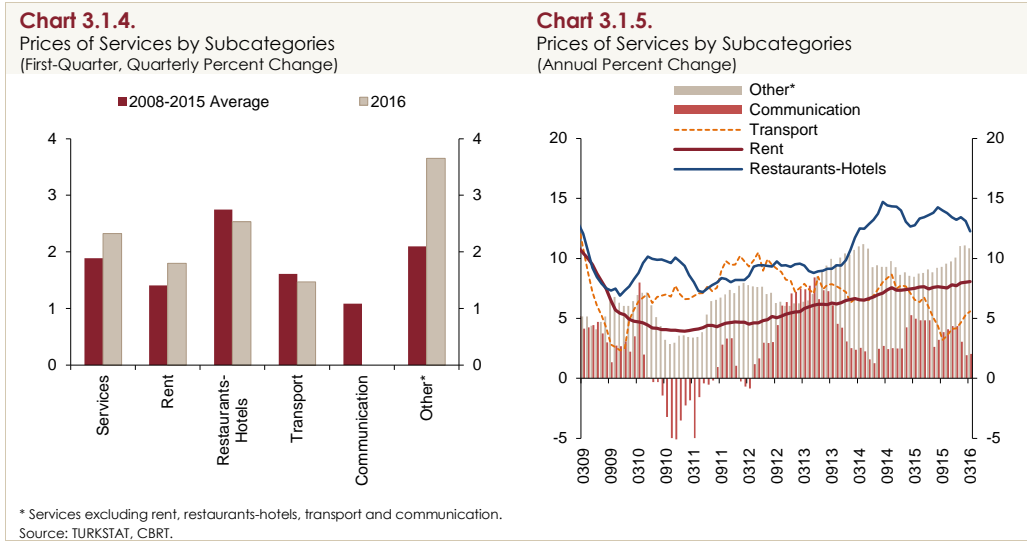
Table 3.1.1.

Prices of Goods and Services
(Quarterly and Annual Percent Change)

	2015					2016	
	I	II	III	IV	Annual	I	Annual
CPI	3.03	1.68	1.39	2.44	8.81	1.75	7.46
1. Goods	3.34	1.37	0.81	3.02	8.79	1.51	6.86
Energy	1.96	1.44	-0.70	0.24	2.96	0.85	1.83
Food and Non-Alcoholic Beverages	8.82	-3.85	2.85	3.03	10.87	2.65	4.58
Unprocessed Food	16.40	-9.27	3.56	4.07	13.83	2.49	0.22
Processed Food	2.30	1.45	2.22	2.11	8.33	2.80	8.86
Core Goods	-1.10	6.60	-0.57	5.15	10.22	-1.18	10.13
Clothing and Footwear	-12.43	22.37	-11.81	15.34	9.00	-12.42	9.01
Durable Goods (excl. gold)	3.91	1.43	4.57	1.66	12.05	3.70	11.82
Furniture	3.55	1.24	3.20	2.32	10.70	5.72	13.02
Electrical and Non-Electrical Appliances	2.44	0.98	4.00	1.96	9.69	1.38	8.56
Automobile	5.13	1.51	5.71	1.07	14.01	4.95	13.82
Other Durable Goods	2.51	3.70	2.61	2.94	12.28	0.87	10.49
Core Goods (excl. clothing and durable goods)	1.78	2.16	2.25	2.32	8.79	2.06	9.09
Alcoholic Beverages, Tobacco and Gold	4.49	0.61	2.32	-0.94	6.56	11.14	13.34
2. Services	2.32	2.40	2.76	1.10	8.85	2.33	8.86
Rent	1.47	1.77	2.38	1.90	7.73	1.80	8.08
Restaurants-Hotels	3.42	3.59	4.29	1.34	13.23	2.53	12.26
Transport	0.10	2.06	1.41	0.56	4.17	1.47	5.60
Communication	2.26	-0.11	1.53	0.63	4.36	0.00	2.05
Other Services*	2.95	3.00	2.87	0.92	10.09	3.65	10.84

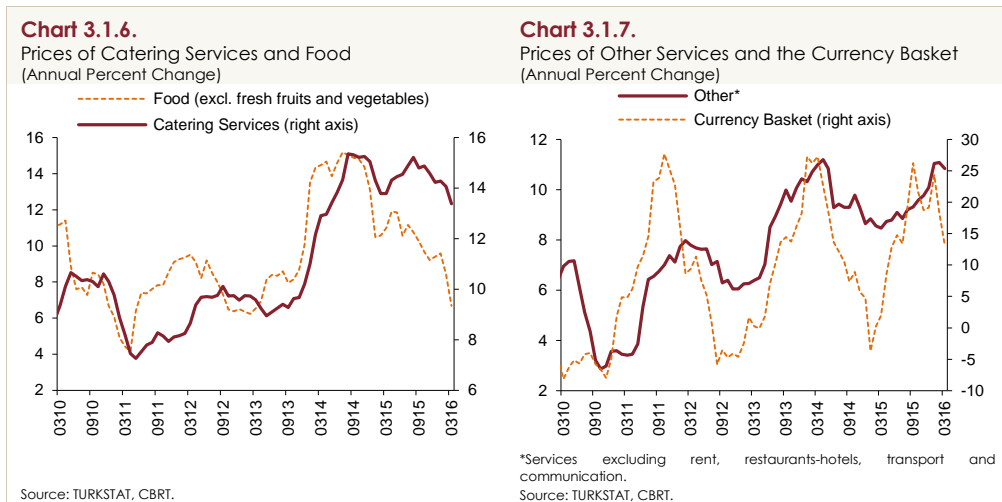
* Services excluding rent, restaurants- hotels, transport and communication.
Source: TURKSTAT, CBRT.

Prices of services soared by 2.33 percent in the first quarter at a higher rate than past quarters' averages, while annual services inflation remained flat at 8.86 percent (Charts 3.1.1 and 3.1.4). Price increases across communication services and restaurants-hotels were lower than historical averages, causing annual inflation of these items to drop (Charts 3.1.4 and 3.1.5). However, annual inflation was on the rise for transport services due to public price adjustments and for other services due to both administered price hikes and lagged exchange rate effects (Chart 3.1.5). Rent inflation, on the other hand, continued to edge higher in the first quarter, hitting 8.08 percent, the highest level since mid-2009 (Chart 3.1.5).

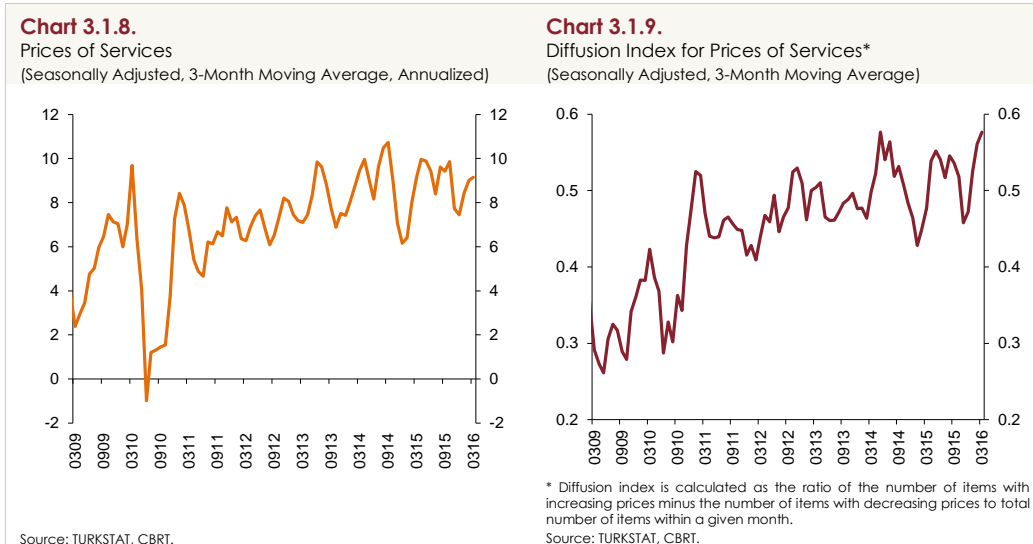


Cost pressures continued to weigh on prices of services in the first quarter. Having declined slightly in this period, annual catering services inflation, which is sensitive to changes in food prices excluding fresh fruits and vegetables, remained high at 13.37 percent (Chart 3.1.6). Among transport services, the administered fares for railway and maritime passenger transport recorded upswings. Annual inflation in other items increased quarter-on-quarter to 10.84 percent (Chart 3.1.7), mostly on the back of soaring prices of private health services, insurance, driving courses and official services as well as prices of maintenance and repair, which reflect the lagged effects of the cumulative Turkish lira depreciation.

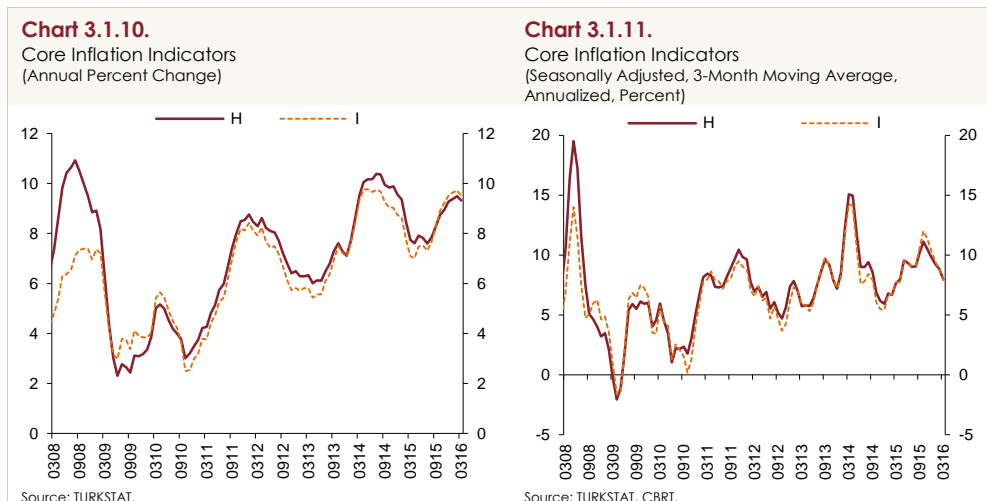
Meanwhile, the Treasury incentive offered to employers in line with the minimum wage adjustment for 2016 partially alleviated the additional pressure on prices of services, yet wage developments remained influential in services inflation. All in all, wage developments, the overall level of inflation and hikes across items sensitive to the exchange rate caused services inflation to remain elevated in the first quarter.



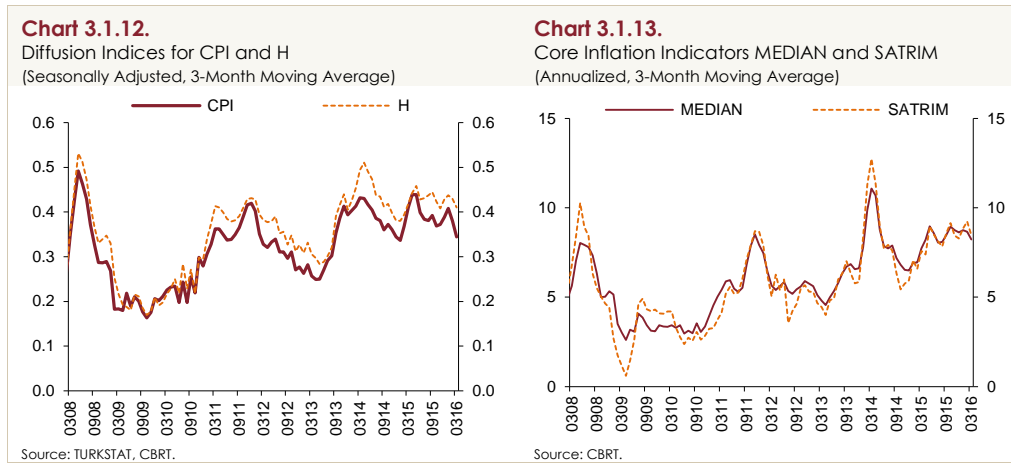
The three-month average of the seasonally adjusted services inflation posted a quarter-on-quarter increase mainly due to rising administered prices (Chart 3.1.8). Similarly, the diffusion index for prices of services recorded an uptick (Chart 3.1.9).



In line with the outlook for prices of core goods and services, annual inflation in H and I core inflation indicators were flat quarter-on-quarter at 9.32 and 9.51 percent, respectively (Chart 3.1.10). In addition, the underlying trend of core inflation indicators exhibited a remarkable slowdown driven by core goods (Chart 3.1.11).



As of the end-quarter, the likelihood for prices to rise has edged down as implied by the diffusion indices (Chart 3.1.12). SATRIM and MEDIAN, the alternative core inflation indices monitored by the CBRT, were practically unchanged from the previous quarter (Chart 3.1.13). In sum, indicators for tendency and pricing behavior pointed to some deceleration in the underlying trend of inflation for the first quarter. However, due to ongoing cumulative exchange rate effects, rigidities in services inflation and a consumer inflation improving solely on the back of moderate food and import prices, the desired improvement in core indicators is yet to be seen.



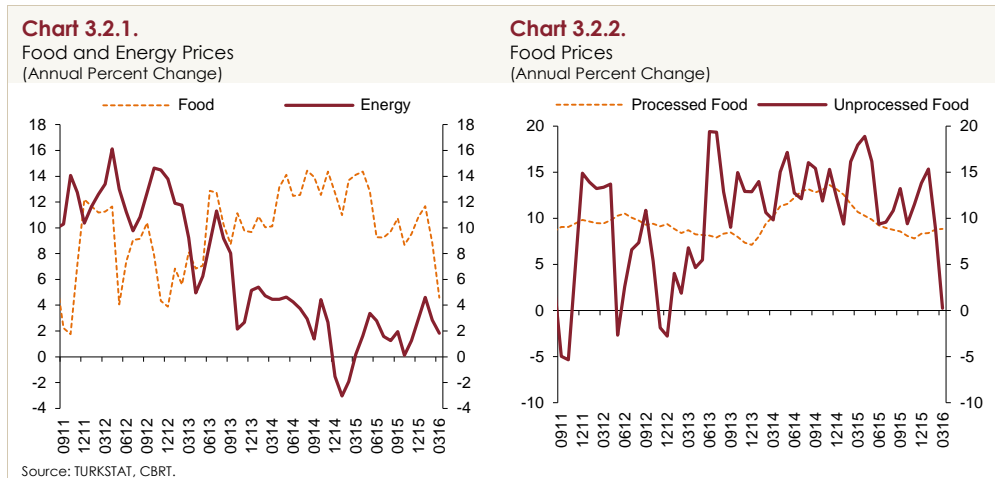
3.2. Food, Energy and Alcohol-Tobacco Prices

After ending 2015 at an elevated level, annual food inflation descended by 6.28 points to 4.58 percent in the first quarter of 2016 (Chart 3.2.1), remaining far below the previous Report's assumption. This decline was mostly attributed to the plummeting unprocessed food inflation, whereas processed food inflation recorded a slight rise (Chart 3.2.2).

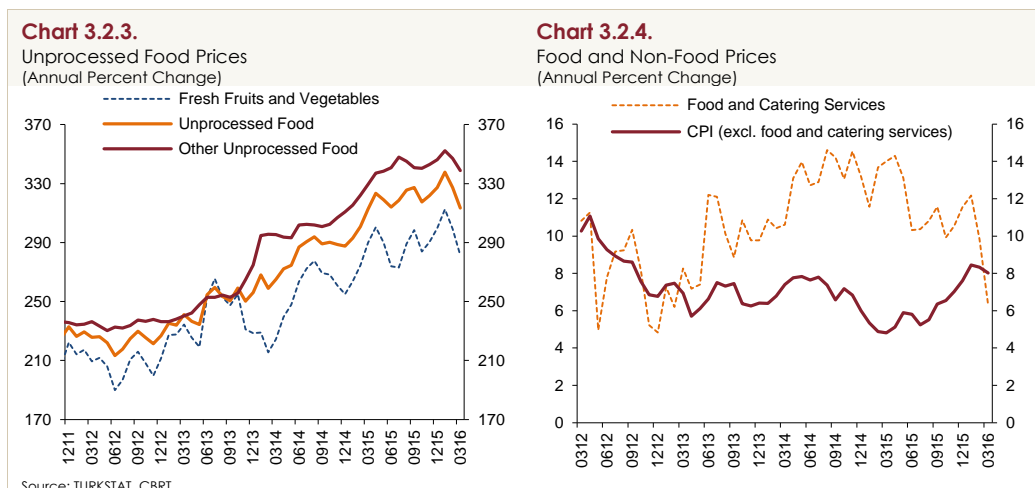
Seasonally adjusted unprocessed food prices escalated due to severe weather conditions in January. Yet, with milder weather conditions in the following two months, the supply of fresh fruits and vegetables increased, prompting a significant drop in unprocessed food prices (Chart 3.2.3). The fall in unprocessed food inflation was evident not just in certain categories but across all subcategories. In fact, prices of unprocessed food products other than fresh fruits and vegetables were also down in the first quarter (Chart 3.2.3). Among these products, prices for red meat were particularly outstanding as in the previous quarter. Having trended upwards between 2013 and 2015 due to a shortage of livestock supply, red meat prices remained relatively flat in the fourth quarter of 2015 before rising in January and later falling in February and March. Imports of carcass and live cattle by the Meat and Milk Board boosted domestic supply, helping red meat prices remain on relatively moderate levels.¹ As a result, annual unprocessed food inflation fell by 13.61 points quarter-on-quarter to 0.22 percent thanks to both mild weather conditions and measures on certain products (Chart 3.2.2).

On the processed food front, annual inflation was up 0.53 points to 8.86 percent in this quarter (Chart 3.2.2), mainly due to mounting bread and cereal prices in the face of a favorable wheat supply. Amid rising bread prices in Istanbul and Ankara, this category saw a price increase of 4.32 percent in the first quarter, while its annual inflation rose to 9.42 percent. Non-alcoholic beverages are another sub-item with an annual inflation on the rise. Meanwhile, unlike 2015, the rate of increase for prices of vegetable oils has slowed. Moreover, processed red meat inflation continued to decelerate amid falling red meat prices.

¹ Also, a series of measures were taken to contain upside risks to red meat prices stemming from recently declining raw milk prices.

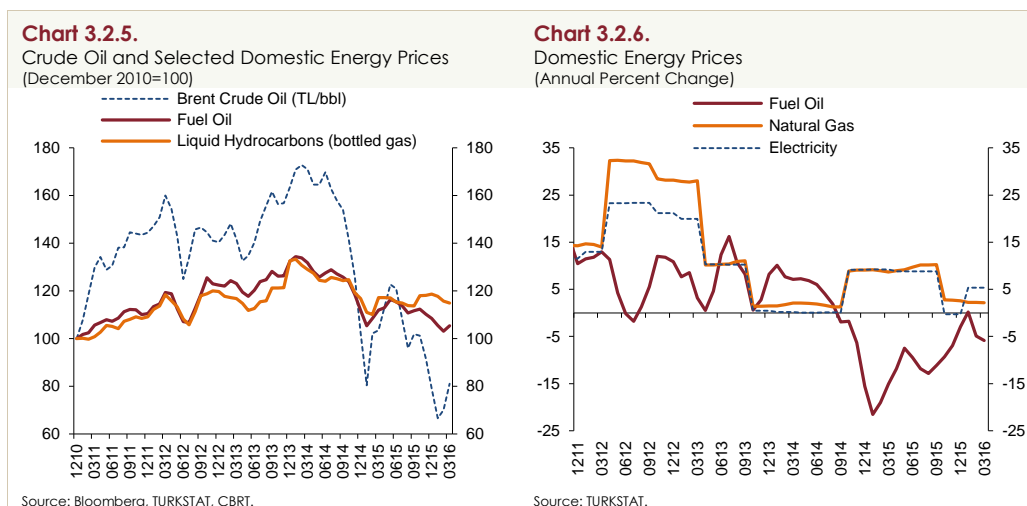


Annual inflation in food and catering services declined to 6.31 percent in the first quarter on the back of the sharp fall in food inflation, while CPI inflation, excluding food and catering services, surged to 8.02 percent due to tax hikes in alcohol and tobacco products (Chart 3.2.4). Thus, food inflation dropped below non-food inflation after a long time, which is attributed to both the increasing supply amid mild weather conditions and also the newly introduced measures. In this regard, the work done by the Committee on Monitoring and Evaluation of Food and Agricultural Product Markets is particularly critical to producing long-lasting gains. In addition to supply developments, the expected fall in the number of tourists is likely to drive food prices, particularly unprocessed food prices, down by dampening domestic food demand.



Energy prices increased by 0.85 percent in the first quarter due to the electricity tariff adjustment of 5.48 percent in early January and rising water tariffs. Meanwhile, after receding to 31 USD per barrel in January, Brent crude oil prices began to climb, ending the quarter at 39 USD per barrel. The course of oil prices in January and February, coupled with the Turkish lira appreciation, brought bottled gas and fuel prices down by 3.20 and 2.84 percent quarter-on-quarter, respectively (Chart 3.2.5). Natural gas prices, however, remained hardly changed (Chart 3.2.6). Accordingly, also benefiting from the base effect, annual energy inflation declined by 1.12 points to 1.83 percent, thus further contributing

positively to CPI inflation. Yet, annual energy inflation is expected to edge up in the upcoming period amid likely oil price increases.



Prices of alcoholic beverages and tobacco products soared by 10.69 percent in the first quarter on the back of the January SCT hike on alcoholic beverages and tobacco products. This upsurge added about 0.5 points to CPI inflation. Together with the adjustments to electricity tariffs, cell phone taxes and other administered items, the fiscal measures of January had a direct effect of around 0.7 points on CPI inflation as predicted.

3.3. Domestic Producer Prices

Domestic producer prices (D-PPI) rose by 0.75 percent in the first quarter amid manufacturing price developments (Table 3.3.1). Meanwhile, annual D-PPI inflation posted a quarter-on-quarter decline of 1.91 points to 3.80 percent due to the base effect.

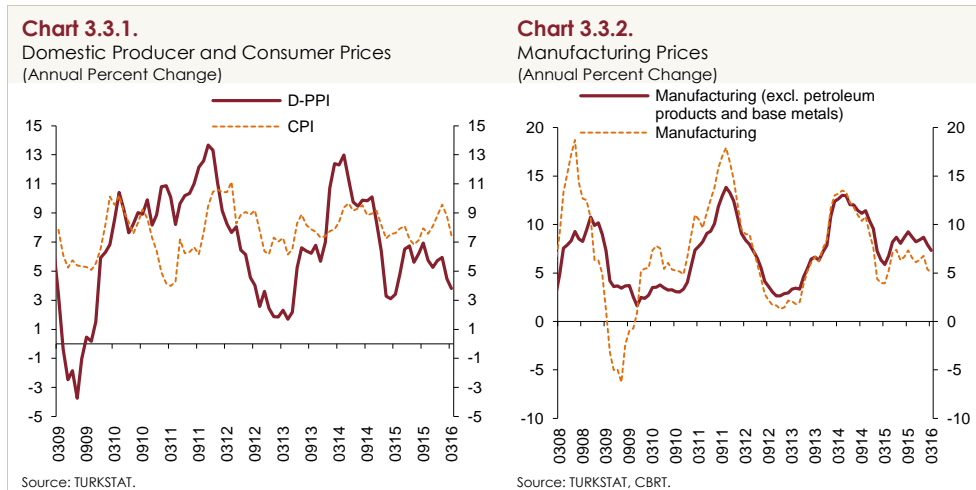
Table 3.3.1.
D-PPI and Subcategories
(Quarterly and Annual Percent Change)

	2015					2016	
	I	II	III	IV	Annual	I	Annual
D-PPI	2.60	2.81	2.20	-1.94	5.71	0.75	3.80
Mining	0.33	3.59	-3.41	-1.08	-0.69	-1.36	-2.37
Manufacturing	2.64	3.45	2.12	-1.89	6.38	1.33	5.03
Manufacturing (excl. petroleum products)	2.65	3.12	2.70	-1.32	7.28	1.56	6.14
Manufacturing (excl. petroleum and base metal products)	2.70	3.22	2.88	-0.57	8.44	1.66	7.34
Electricity and Gas	1.80	-3.33	5.38	-3.39	0.19	-4.99	-6.49
Water	13.75	2.21	0.27	2.89	19.95	3.27	8.90
D-PPI by Main Industry Groups							
Intermediate Goods	1.97	2.96	3.05	-2.30	5.69	1.19	4.88
Durable Goods	5.15	3.20	4.07	-0.40	12.48	4.76	12.06
Durable Goods (excl. jewelry)	2.91	2.98	2.87	2.54	11.78	3.31	12.22
Non-Durable Goods	3.24	3.31	0.60	-0.52	6.73	1.55	4.98
Capital Goods	2.23	2.87	5.15	-0.45	10.08	1.59	9.40
Energy	2.29	1.33	-0.49	-5.54	-2.57	-4.86	-9.38

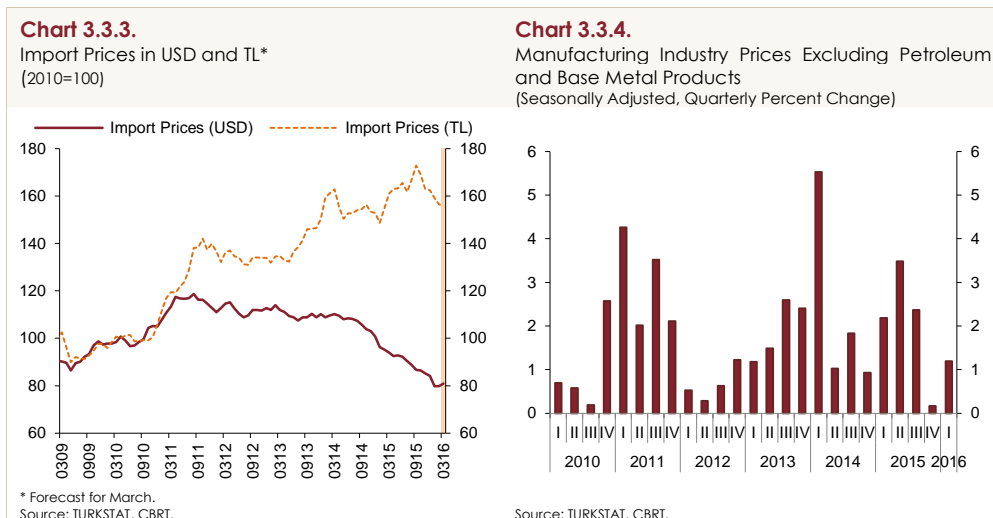
Source: TURKSTAT, CBRT.

In the first quarter, manufacturing industry prices increased by 1.33 percent, while annual manufacturing inflation receded to 5.03 percent (Table 3.3.1 and Chart 3.3.2). The upturn in

manufacturing industry prices was driven by the food sector as well as categories connected to construction and durable consumption goods. The course of prices in these non-food sectors is affected by rising non-energy commodity prices, especially by industrial metals. The fall in import prices in both USD and TL-denominated terms contained inflationary pressures in the manufacturing industry (Chart 3.3.3).

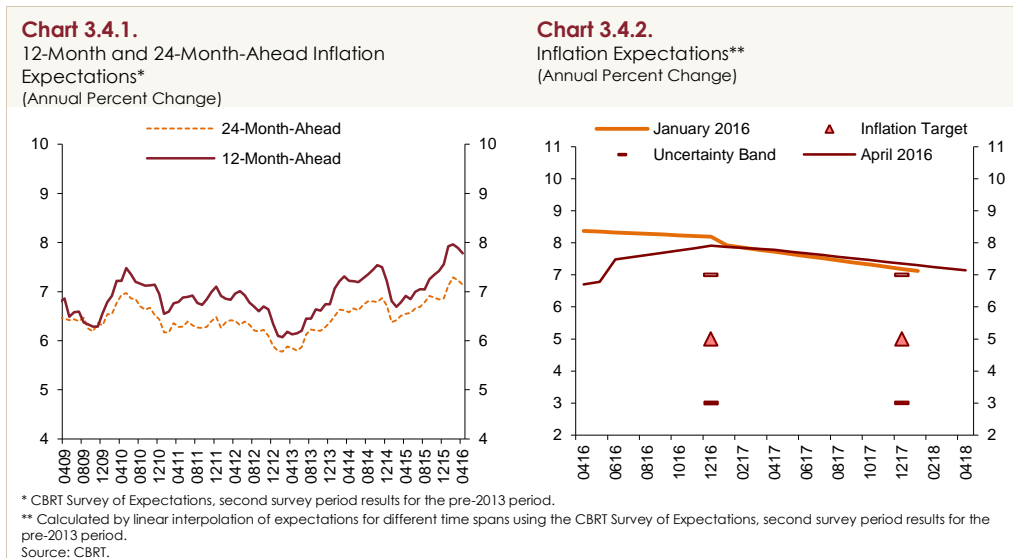


Prices were up across main industrial categories in this period (Table 3.3.1). Prices for durable consumption goods excluding jewelry surged by 3.31 percent owing to the furniture industry. The 1.59 percent increase in prices of capital goods was caused by motor vehicles and machinery manufacturing. Meanwhile, prices of intermediate goods increased by 1.19 percent due to wood-cork, non-metallic minerals and base metal industries that are strongly linked to construction. The rise in non-durable consumption goods, on the other hand, is attributed to food manufacturing prices, particularly for meat and meat products. As a result, the underlying manufacturing industry inflation excluding petroleum and base metals, which entail information on the underlying trend of producer prices, recorded a quarterly increase but cost pressures remained relatively subdued (Chart 3.3.4).

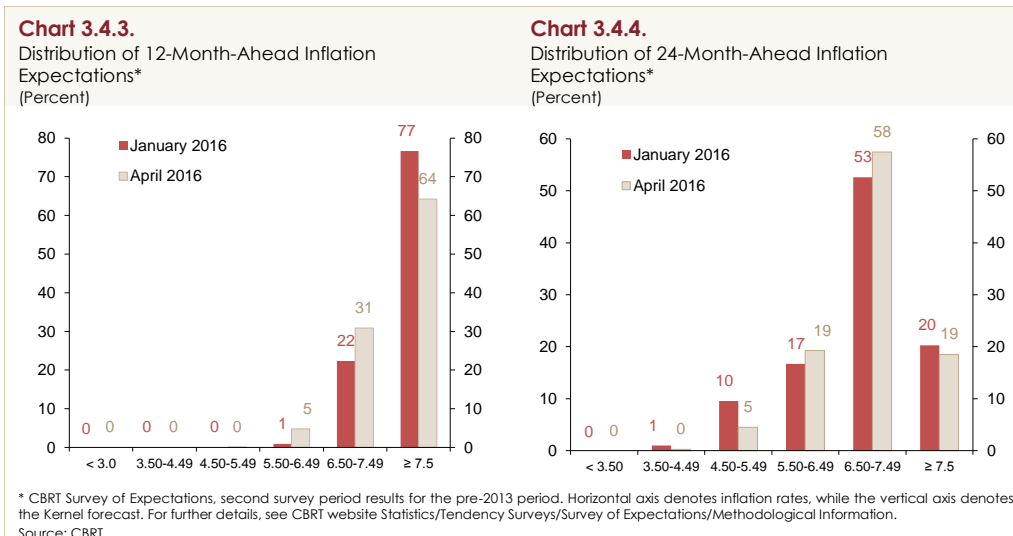


3.4. Expectations

Having trended upwards throughout 2015, medium-term inflation expectations remained on the rise in January and February before improving slightly in March thanks to a slowing CPI inflation backed by modest unprocessed food prices. With the continued appreciation of the Turkish lira in April, medium-term expectations improved further (Chart 3.4.1). Across maturities, compared to the January Inflation Report, year-end inflation expectations were revised downward, while expectations for longer terms hardly improved (Chart 3.4.2). Accordingly, inflation expectations still hover above the 5-percent year-end target set for 2016 and 2017.



The dispersion of medium-term inflation expectations points to some improvement in inflation expectations in April compared to January (Charts 3.4.3 and 3.4.4). The percentage of respondents expecting 12-month-ahead inflation to be between 5.5 and 7.49 percent increased, whereas those expecting it to be 7.5 percent or above decreased. However, there was no significant improvement in the dispersion of 24-month-ahead inflation expectations.



Box
3.1

The Effect of Syrian Refugees on Consumer Prices

A massive inflow of immigrants can affect the host country via labor markets, house prices and rents as well as consumer prices in the short term. The inflow of Syrian refugees might have a similar impact on the Turkish economy through these channels. This box presents an analysis of the effect of Syrian refugees on the domestic consumer prices.

The huge internal immigration in Syria due to conflict has been transformed into a wave of refugees flowing into southern and southeastern border provinces of Turkey. Consequently, these refugees have been sheltered in government-operated accommodation camps constructed in border towns. However, there are also quite a number of refugees living outside these camps. Taking these camps into account, towns with the highest ratio of refugees to the local population are ranked as Kilis (38%), Hatay (12.5%), Gaziantep (12%), Şanlıurfa (9.5%) and Mardin (9%) as of end-2014, while the immigrant to population ratio is virtually zero in Eastern Anatolian provinces. In view of this heterogeneity in the density of refugees, this study aims to analyze the impact of immigration on consumer prices based on refugee concentration.

To this end, the study uses TURKSTAT's regional item prices, in which 437 items are categorized under 44 subgroups and 12 major groups for each NUTS-2 region, which covers the provinces in Southeastern Anatolia, the Eastern Mediterranean and Eastern Anatolia. The period of analysis is between 2010 and 2014 in order to set a pre-immigration and post-immigration period window.

The study employs difference-in-differences methodology, which is constructed across time and region. Assuming that the refugee inflow that affected Southeastern Anatolia and the Eastern Mediterranean would also affect prices in these regions, the corresponding regional prices are set as the treatment group, while prices in Eastern Anatolia, which received no refugees, were set as the control group. The time dimension that forms the other pillar of the difference-in-differences estimation was based on the pre-immigration period from 2010 to 2011 and the post-immigration period between 2012 and 2014. This difference is because early-2012 is marked by a rapid increase in the number of refugees against the absence of a refugee inflow before 2012. The difference-in-differences method is mathematically expressed by the following equation:

$$\ln(p_{i,r,y,m}) = \delta + \beta \cdot (T_{i,r} \times I_{i,y}) + f_i + f_r + f_y + f_m + \varepsilon_{i,r,y,m}$$

Where $\ln(p_{i,r,y,m})$ denotes the natural logarithm of the price of item i observed in year y , month m and region r . T is a dummy variable that takes the value 0 in the pre-immigration period and 1 in the post-immigration period. Similarly, variable I takes the value 1 for treatment regions and 0 for control regions. The variables f_i , f_r , f_y and f_m represent the product fixed effects, region fixed effects, year fixed effects and month-of-year fixed effects, respectively. The β coefficient shows how prices have changed between pre- and post-immigration periods across treatment and control regions and estimates the causal effect of immigration on local consumer prices.² Obviously, δ is the constant term and $\varepsilon_{i,r,y,m}$ is the error term.

² For further details, see Balkan and Tümen (2016).

The estimation results are in line with the relevant academic literature. Accordingly, it can be inferred that prices increase at a slower rate in treatment regions than in the control region. Although the theoretical literature suggests two-way causality between immigration and consumer prices, the empirical literature shows that immigration puts a downward pressure on consumer prices.³

Variable	All Products	Goods	Services	Informal Labor Intensive Items	Formal Labor Intensive Items	Basic Food Items	Luxury Food Items
Refugee Effect (1*T)	-0.0249*** (0.0028)	-0.0264*** (0.0032)	-0.0216*** (0.0032)	-0.0384*** (0.0045)	-0.0039*** (0.0007)	-0.0812*** (0.0101)	-0.0119*** (0.0033)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.4210*** (0.0193)	1.4486*** (0.0135)	3.4644*** (0.0608)	1.4654*** (0.0126)	3.0808*** (0.0268)	1.4551*** (0.0168)	4.0360*** (0.0237)
R²	0.992	0.997	0.952	0.991	0.991	0.945	0.973
Number of Observations	216,932	166,926	50,006	99,871	117,061	8,280	7,092

Standard errors are in parenthesis. ***, ** and * denote statistical significance at 1, 5 and 10 percent, respectively. Prices are weighted by their shares in the consumption basket.

Table 1 shows the estimation results. The first column reports that prices are 2.5 percent lower in the refugee-affected region than in the unaffected region. It should be noted that this effect is the cumulative effect observed between 2012 and 2014 and is only evident in the refugee-receiving regions of Southeastern Anatolia and the Eastern Mediterranean. This effect implies that Syrian refugees place downward pressure on prices where they are accommodated but this pressure is quite small to pass through to overall prices.

Columns 2 and 3 show that price decreases are even across goods and services. In particular, the average prices of goods and services decreased by 2.65 and 2.2 percent, respectively, in the treatment region between 2012 and 2014. Therefore, one may conclude that the refugees reduce prices homogeneously across goods and services.

Columns 4 and 5 display that the downward pressure on prices is driven by informal labor intensive items. The formal vs informal criterion is based on the Household Labor Force Survey for 2010-2011, where items produced in sectors with 50 percent and more informal employment are marked as informal labor intensive products. In particular, refugees were observed to have a downward effect of approximately 4 percent on the prices of informal labor intensive products, whereas the effect was close to zero in the formal labor intensive sectors.

As a final step, the analysis distinguishes between basic food and luxury food products as low-income refugees might raise the demand for basic food items, hence placing an upward pressure on their prices. However, as shown in the last two columns of Table 1, price drops were more pronounced in basic food items than in luxury food items across refugee-receiving regions. This implies that the inflationary effect of higher demand has been quite restricted compared to the downward pressure driven by the immigration, causing notable falls in prices, including those for basic food items.

³ Lach (2007) and Cortes (2008) are important works along this line.

This box estimates the causal effect of the forced immigration from Syria to Turkey on the level of consumer prices. In line with the relevant empirical literature, our findings confirm that immigration is associated with consumer price declines. Moreover, these declines are observed to be even across goods and services. Also, the informal employment is identified as the key channel through which the refugee effect takes place. Moreover, price declines are higher in basic food items than luxury food items, thus suggesting that the inflationary effect of aggregate demand has been limited compared to the disinflationary effect of the immigration via the employment channel.

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