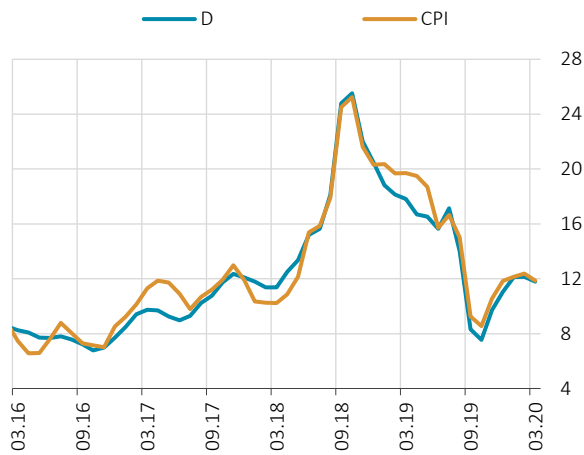


### 3. Inflation Developments

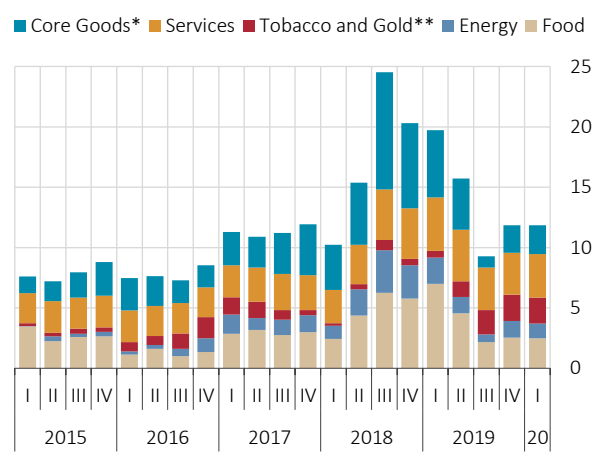
Having remained almost flat in the first quarter of 2020, consumer inflation came in at 11.86%, in line with the January Inflation Report forecast (Chart 3.1). Energy and food groups pulled inflation down in this quarter whereas the contribution from core goods and services to inflation was higher than in the previous quarter (Chart 3.2). The flight to safe havens sparked by the recent coronavirus pandemic boosted the demand for reserve currencies causing the Turkish lira to depreciate against the currency basket in the first quarter. Meanwhile, amid weak global growth, the demand for commodities slumped, leading to a sharp decline in international commodity prices particularly for crude oil and metals. While the economy remained strong in the January-February period, the pandemic began to put pressure on economic activity in March through external trade, tourism and domestic demand. Year-end inflation expectations continued to improve in April but the distribution of medium-term expectations pointed to slightly increased uncertainty about the effects of the pandemic.

Chart 3.1: CPI and D Index\* (YoY % Change)



Source: TURKSTAT.  
\* CPI excluding unprocessed food, alcoholic beverages and tobacco products.

Chart 3.2: Contribution to Annual CPI (% Point)



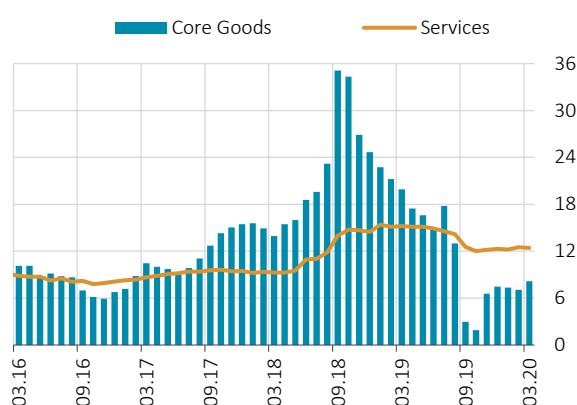
Sources: CBRT, TURKSTAT.  
\* Core Goods: Goods excluding food, energy, alcoholic beverages, tobacco and gold.  
\*\* Tobacco and Gold: Alcoholic beverages, tobacco products and gold.

In short, although the annual inflation in core indicators was slightly up in the first quarter, their trends remained mild thanks to inflation expectations, domestic demand conditions and producer prices. The economic climate brought on by the COVID-19 outbreak affects inflation substantially through both demand and costs (Box 3.1). To sum up, the depreciating Turkish lira as well as pandemic-induced negative supply shocks, the spike in the precautionary demand for certain products and higher unit costs drive inflation higher. However, tumbling international commodity prices and weakening aggregate demand conditions have a positive impact on the inflation outlook.

#### 3.1 Core Inflation Outlook

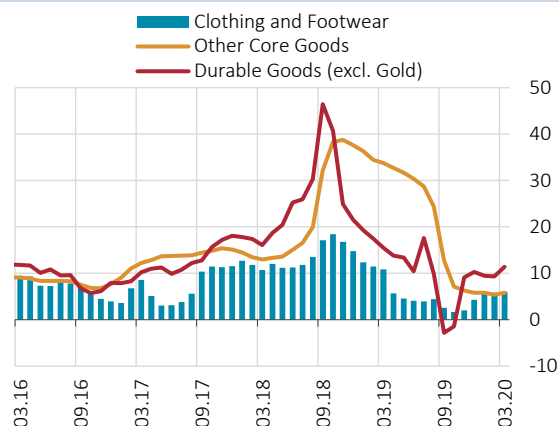
Annual core goods inflation was up 0.70 points in the first quarter to 8.18% (Chart 3.1.1). By subcategories, annual inflation rose in durable goods and clothing-footwear but was flat in other core goods (Chart 3.1.2).

Chart 3.1.1: Prices of Core Goods and Services (YoY % Change)



Source: TURKSTAT.

Chart 3.1.2: Prices of Core Goods (YoY % Change)



Source: TURKSTAT.

Across durable goods, prices were down 0.15% in this quarter while annual inflation increased by 1.12 points to 11.39% due to the low base effect from a year earlier. Prices of durable goods remained moderate largely due to a VAT cut-driven fall of 6.20% in furniture prices. Prices of home appliances edged up by a mere 0.64% whereas prices of automobiles rose by 1.97% amid a weaker Turkish lira (Table 3.1.1 and Chart 3.1.3). With new season arrivals, clothing and footwear prices posted a slightly higher increase in March compared to a year ago, and annual inflation rose to 6.01%. After remaining modest in the first two months of 2020, prices of other core goods were pushed higher by exchange rates in March, registering an increase of 1.44% in the first quarter.

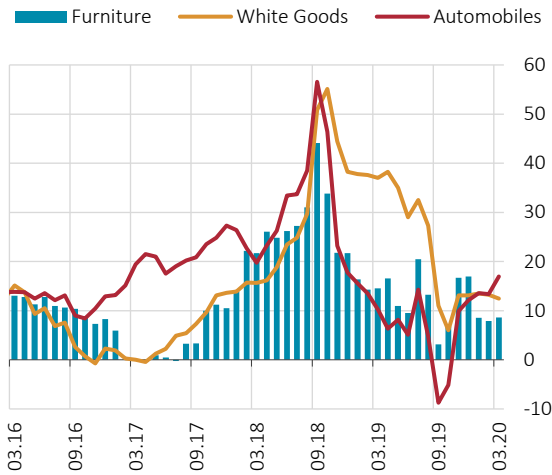
Table 3.1.1: Prices of Goods and Services (3-Month and YoY % Change)

|   | 2019         |              |              |             |              | 2020         |              |
|---|--------------|--------------|--------------|-------------|--------------|--------------|--------------|
|   | I            | II           | III          | IV          | YoY          | I            | YoY          |
| <b>CPI</b>  | <b>2.27</b>  | <b>2.69</b>  | <b>3.24</b>  | <b>3.15</b> | <b>11.84</b> | <b>2.29</b>  | <b>11.86</b> |
| <b>1. Goods</b>                                       | 1.87         | 2.29         | 3.07         | 3.96        | 11.65        | 1.81         | 11.59        |
| <b>Energy</b>   | <b>-1.62</b> | <b>0.20</b>  | <b>6.64</b>  | <b>5.57</b> | <b>10.98</b> | <b>-2.66</b> | <b>9.81</b>  |
| <b>Food and Non-Alcoholic Beverages</b>               | <b>10.01</b> | <b>-1.45</b> | <b>-2.46</b> | <b>4.86</b> | <b>10.89</b> | <b>9.18</b>  | <b>10.05</b> |
| Unprocessed Food                                      | 18.98        | -8.46        | -8.24        | 6.16        | 6.10         | 15.88        | 3.33         |
| Processed Food  | 1.56         | 6.28         | 3.03         | 3.75        | 15.39        | 3.23         | 17.28        |
| <b>Core Goods</b>                                     | <b>-2.96</b> | <b>4.02</b>  | <b>2.84</b>  | <b>3.54</b> | <b>7.48</b>  | <b>-2.33</b> | <b>8.18</b>  |
| Clothing and Footwear                                 | -12.26       | 8.06         | -2.37        | 12.71       | 4.32         | -10.85       | 6.01         |
| Durable Goods (excl. Gold)                            | -1.15        | 3.53         | 6.33         | 1.34        | 10.27        | -0.15        | 11.39        |
| Furniture   | 1.00         | 0.89         | 11.73        | 2.72        | 16.95        | -6.20        | 8.61         |
| Electrical and Non-Electrical Devices                 | -0.98        | 0.84         | 3.26         | -0.88       | 2.20         | -0.07        | 3.14         |
| Automobiles   | -2.25        | 5.95         | 6.28         | 1.88        | 12.14        | 1.97         | 16.98        |
| Other Durable Goods                                   | 1.39         | 2.59         | 4.50         | 1.85        | 10.71        | 2.13         | 11.51        |
| Core Goods excl. Clothing and Durable Goods           | 1.42         | 2.09         | 1.44         | 0.76        | 5.83         | 1.44         | 5.84         |
| <b>Alcoholic Beverages, Tobacco Products and Gold</b> | <b>1.96</b>  | <b>14.86</b> | <b>18.77</b> | <b>0.00</b> | <b>39.10</b> | <b>1.79</b>  | <b>38.86</b> |
| <b>2. Services</b>                                    | <b>3.29</b>  | <b>3.67</b>  | <b>3.66</b>  | <b>1.17</b> | <b>12.30</b> | <b>3.40</b>  | <b>12.42</b> |
| Rent  | 2.46         | 2.28         | 3.09         | 1.88        | 10.05        | 2.51         | 10.11        |
| Restaurants and Hotels                                | 2.64         | 5.49         | 3.76         | 0.74        | 13.17        | 3.11         | 13.68        |
| Transport   | 0.28         | 4.91         | 9.00         | 0.32        | 15.03        | 1.70         | 16.66        |
| Communication   | 1.54         | 0.77         | 0.63         | 3.84        | 6.92         | 0.18         | 5.48         |
| Other Services  | 5.86         | 3.32         | 2.91         | 0.74        | 13.40        | 5.64         | 13.17        |

Source: TURKSTAT.

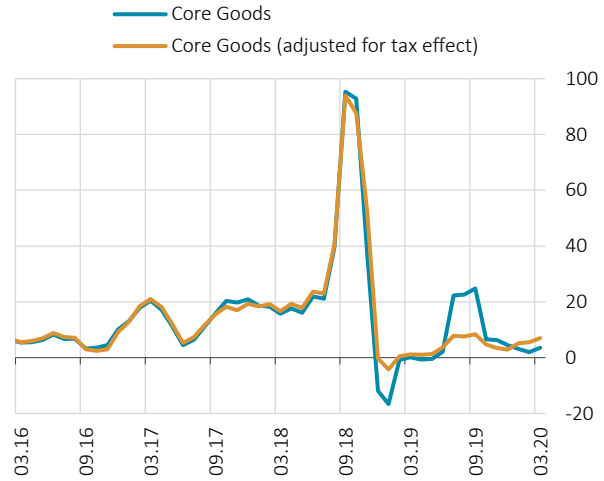
In short, core goods inflation slowed in the first two months of 2020 on the back of a VAT cut in furniture prices but picked up again on account of exchange rate developments in March. Adjusted for tax effects, the underlying trend of core goods inflation posted an increase (Chart 3.1.4).

**Chart 3.1.3: Selected Durable Goods Prices (YoY % Change)**



Sources: CBRT, TURKSTAT.

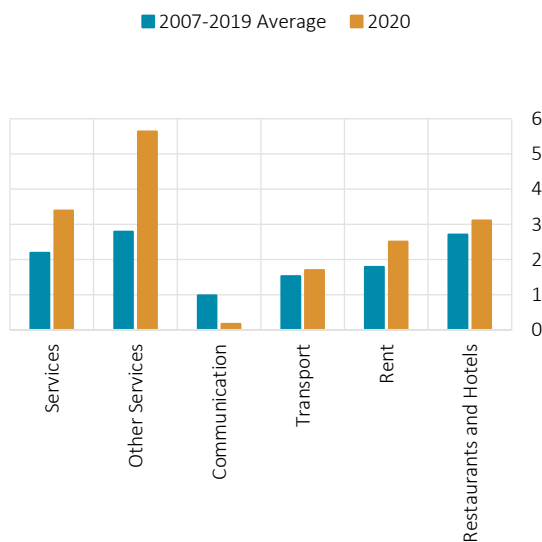
**Chart 3.1.4: Prices of Core Goods (Seasonally-Adjusted, Annualized 3-Month Average % Change)**



Sources: CBRT, TURKSTAT.

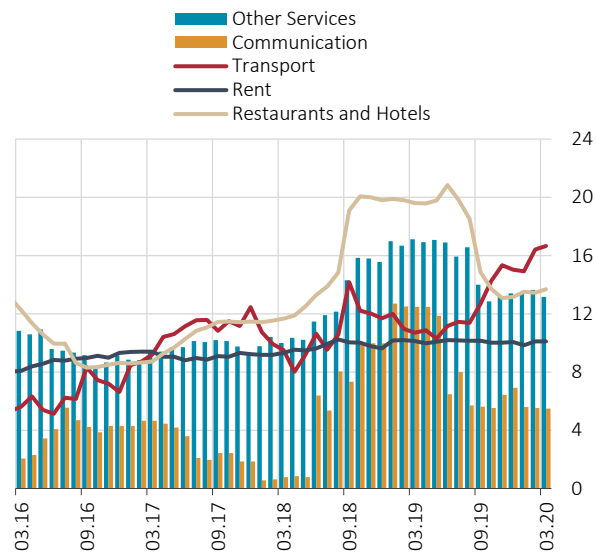
Prices of services were up 3.40% in the first quarter while annual services inflation remained relatively flat at 12.42% (Chart 3.1.1 and Table 3.1.1). In this period, prices of services rose at a faster pace than historical averages for the quarter. This upsurge was evident across all subcategories, with other services in the lead, except communication (Chart 3.1.5).

**Chart 3.1.5: Prices of Services by Subcategories (First Quarter % Change)**



Source: TURKSTAT.

**Chart 3.1.6: Prices of Services by Subcategories (YoY % Change)**



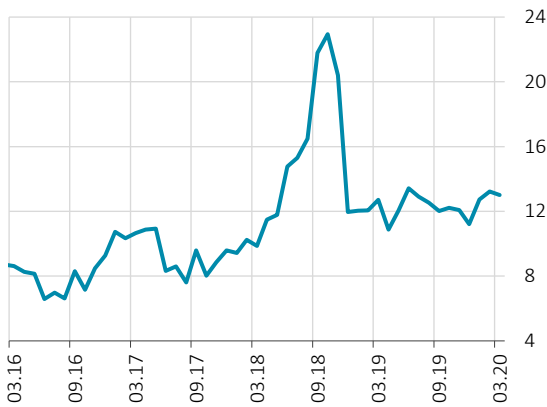
Source: TURKSTAT.

Among subcategories of services, annual inflation was up in transport and restaurants-hotels, down in communication and other services, and flat in rents (Chart 3.1.6). The rise in transport was largely led by higher ferry fares and prices of intercity road and in-city rail passenger transport. On the restaurants-hotels front, catering services inflation rose in line with food inflation excluding fruits and vegetables whereas annual accommodation services inflation declined due to the pandemic. Across other services,

healthcare services and package tours saw large quarterly increases due to their high sensitivity to exchange rates. In March, annual inflation slowed in packages tours, maintenance and repair, and entertainment and cultural services amid the pandemic.

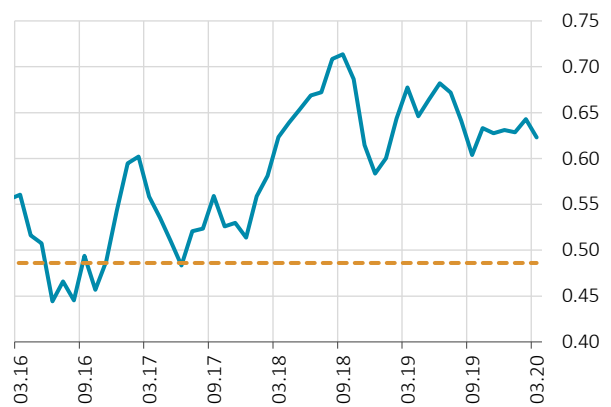
Thus, the underlying trend of services inflation was higher in the first quarter (Chart 3.1.7). Meanwhile, the price increasing tendency implied by the diffusion index remained constant in this period and continued to hover above its historical averages (Chart 3.1.8). However, services inflation is expected to fall over the upcoming period due to demand side effects as well as pandemic-oriented methodology changes regarding the compilation of prices. Weak demand conditions are expected to have a greater impact on accommodation, transport (air and road), and entertainment and cultural services where economic activity is at a near standstill.

**Chart 3.1.7: Prices of Services** (Seasonally-Adjusted, Annualized 3-Month Average % Change)



Source: TURKSTAT.

**Chart 3.1.8: Diffusion Index for Services Prices\*** (Seasonally-Adjusted, 3-Month Average)

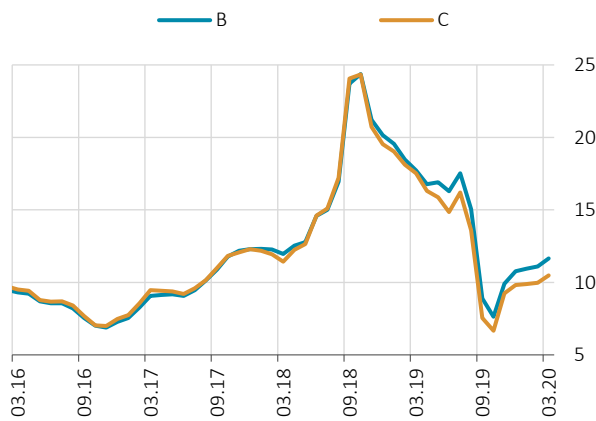


Source: TURKSTAT.

\* The diffusion index is calculated as the ratio of the number of items with increasing prices minus the number of items with decreasing prices to total number of items.

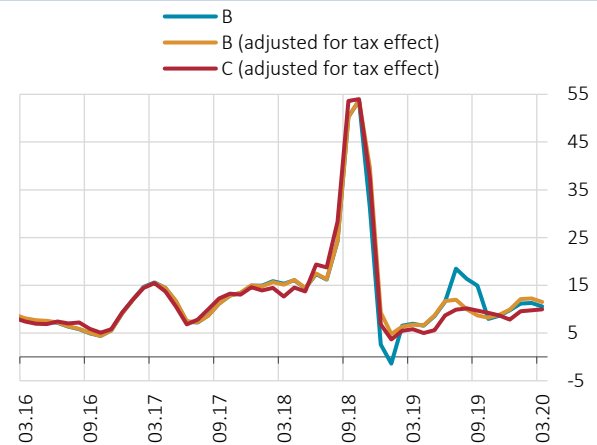
Among core inflation indicators, annual inflation in B and C indices edged up by 0.89 and 0.68 points to 11.65% and 10.49%, respectively, compared to previous quarter (Chart 3.1.9). Seasonally-adjusted three-month averages of core inflation indicators suggest the trends of these indices were slightly higher but still moderate (Chart 3.1.10).

**Chart 3.1.9. Indices B and C (YoY % Change)**



Source: TURKSTAT.

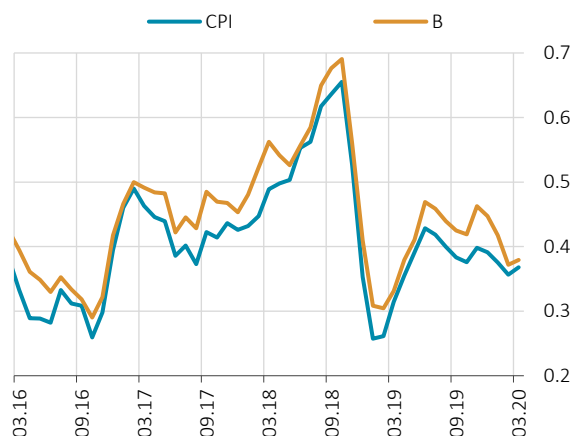
**Chart 3.1.10. Indices B and C (Seasonally Adjusted, Annualized 3-Month Average % Change)**



Sources: CBRT, TURKSTAT.

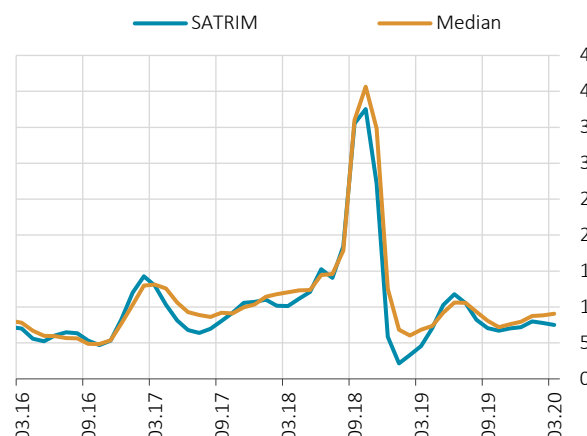
Diffusion indices for CPI and core indicators suggest that the tendency to increase prices was somewhat lower than in the previous quarter (Chart 3.1.11). Among alternative core inflation indicators, the underlying trend of Median was slightly up from the previous quarter-end while that of SATRIM remained horizontal (Chart 3.1.12). In short, indicators monitored for tendencies and pricing behaviour pointed to a relatively mild underlying trend of inflation for this period.

**Chart 3.1.11. CPI and B Diffusion Indices (Seasonally-Adjusted 3-Month Average)**



Sources: CBRT, TURKSTAT.

**Chart 3.1.12. Core Inflation Indicators SATRIM\* and Median\*\* (Annualized 3-Month Average, %)**



Sources: CBRT, TURKSTAT.

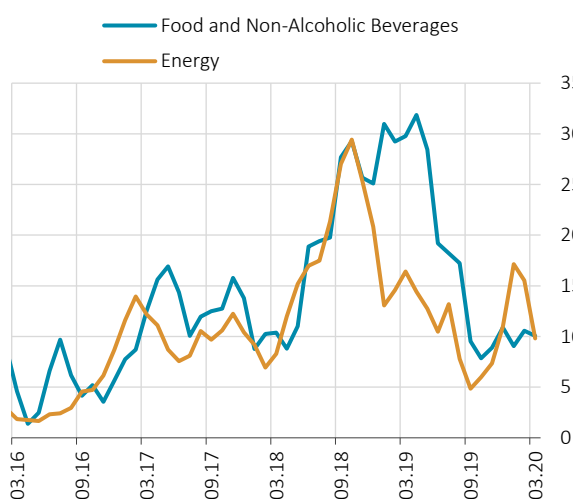
\*SATRIM: Seasonally-adjusted, trimmed mean inflation.

\*\*Median: Median monthly inflation of seasonally adjusted 5-digit sub-price indices.

## 3.2 Food, Energy and Alcohol-Tobacco Prices

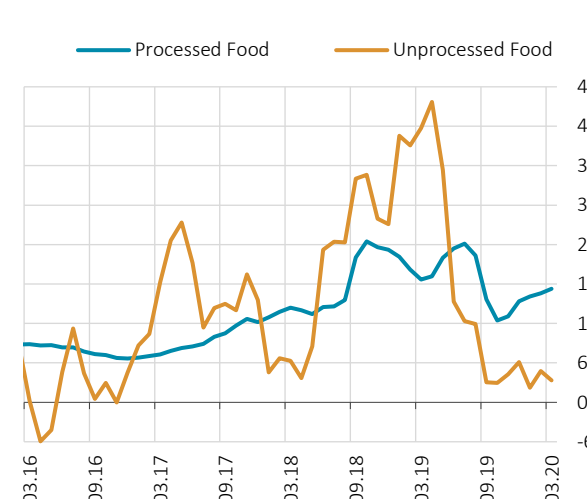
Annual inflation in food and non-alcoholic beverages fell by 0.84 points to 10.05% in the first quarter (Chart 3.2.1). While unprocessed food prices, particularly for fresh fruits and vegetables, were the main driver of this decline, annual processed food inflation remained on the rise (Chart 3.2.2).

**Chart 3.2.1: Food and Energy Prices (YoY % Change)**



Source: TURKSTAT.

**Chart 3.2.2: Food Prices (YoY % Change)**



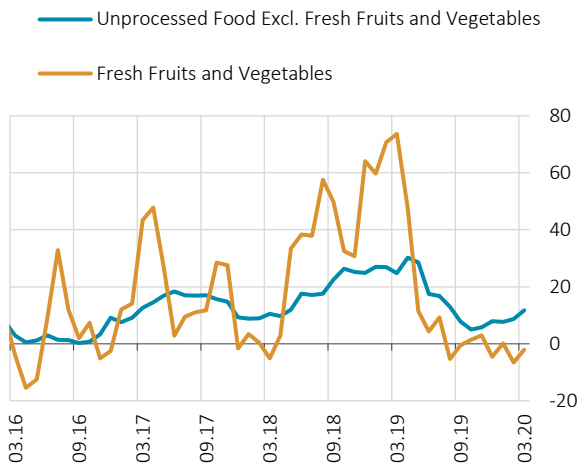
Source: TURKSTAT.

Annual unprocessed food inflation dropped by 2.77 points to 3.33% in the first quarter (Chart 3.2.2). This fall was mostly led by annual fresh fruits and vegetables inflation that fell by 9.50 points to -6.56% amid more favorable weather than a year ago. Meanwhile, inflation in other unprocessed food rose by 3.85 points to 11.79% (Chart 3.2.3). Red meat stood out in this subcategory with sharp price increases (Chart 3.2.4). The rise in red meat prices was accompanied by a rise in white meat prices in March. This increase in meat prices can be attributed to both mounting imported feed costs driven by exchange rates and

pandemic-induced supply shortages of external inputs. Accounting for a large share of imports in total supply, legumes also saw a higher annual inflation due to exchange rate developments.

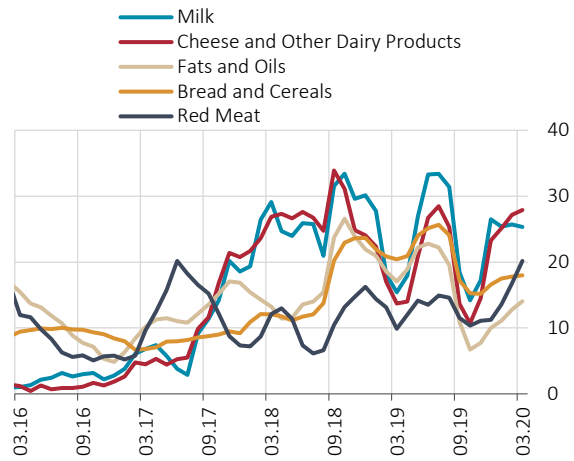
In the first quarter, annual processed food inflation increased by 1.89 points to 17.28% (Chart 3.2.2). The main driver of this increase was the annual inflation of cheese and other dairy products that went up on higher raw milk prices. Prices of bread and cereals, which make up a large percentage of processed foods, continued to increase modestly on account of rising wheat prices. Due to their sensitivity to exchange rates, prices of fats and oils posted a higher annual inflation (Chart 3.2.4). Meanwhile, the SCT hike on colas brought prices of non-alcoholic beverages significantly higher in March.

**Chart 3.2.3: Prices of Fresh Fruits and Vegetables and Other Food (YoY % Change)**



Sources: CBRT, TURKSTAT.

**Chart 3.2.4: Selected Food Items (YoY % Change)**

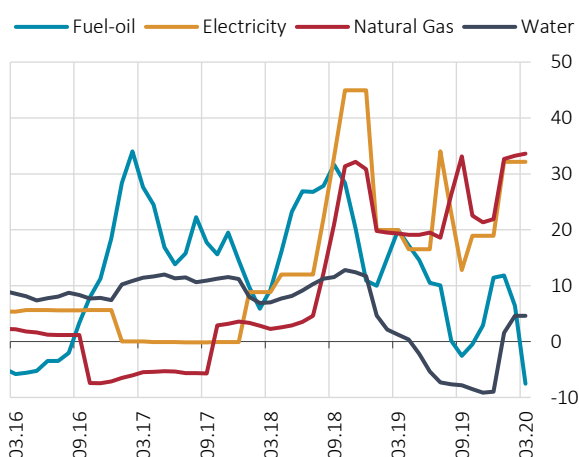


Sources: CBRT, TURKSTAT.

Exchange rate developments are likely to have a negative impact on items with high import content in the upcoming period. The demand for food items with long shelf lives that has been brought forward during the pandemic might put upward pressure on food prices given current supply conditions. However, lower agricultural commodity prices, higher domestic supply thanks to restricted food exports amid the pandemic, slower tourism and domestic demand may help result in a lower year-end food inflation compared to the January forecast.

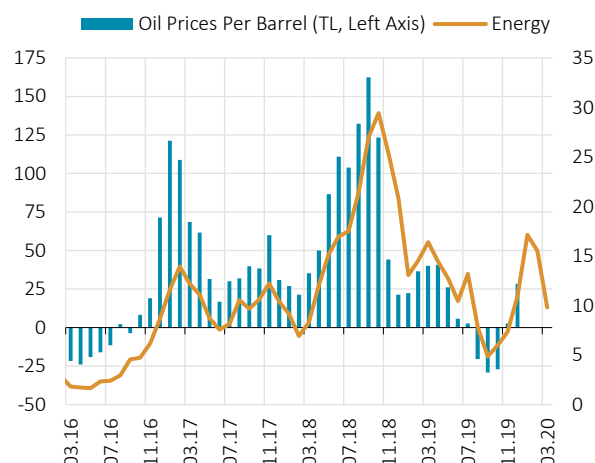
Energy prices declined by 2.66% in the first quarter (Table 3.1.1). Prices of Brent crude oil plunged from 65 USD/bbl on average at the end of the fourth quarter to 55 USD/bbl in February and later to 33 USD/bbl in March. Despite the depreciating Turkish lira, fuel and bottled gas prices were down 10.38% and 0.30%, respectively, amid lower oil prices, and continued to fall in April (Chart 3.2.5). In the first quarter, water tariffs rose by 6.98% due to adjustments in January. Accordingly, annual energy inflation dropped by 1.18 points to 9.81% in the first quarter (Chart 3.2.6).

Chart 3.2.5: Domestic Energy Prices (YoY % Change)



Source: TURKSTAT.

Chart 3.2.6: Energy Prices (YoY % Change)



Sources: Bloomberg, CBRT, TURKSTAT.

### 3.3 Domestic Producer Prices

In the first quarter, domestic producer prices (D-PPI) rose by 3.22% and annual D-PPI inflation was up 1.14 points to 8.50% (Table 3.3.1 and Chart 3.3.1). Producer prices were adversely affected by exchange rates, despite plummeting international commodity prices, for oil in particular.

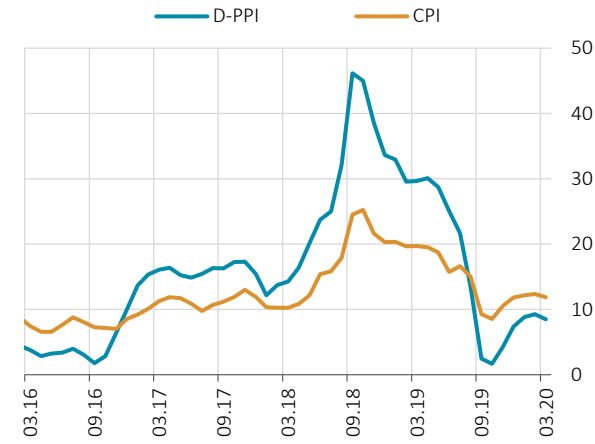
Table 3.3.1: D-PPI and Sub-Categories (3-Month and YoY % Change)

|   | 2019        |             |              |             |             | 2020        |             |
|---|-------------|-------------|--------------|-------------|-------------|-------------|-------------|
|   | I           | II          | III          | IV          | YoY         | I           | YoY         |
| <b>D-PPI</b>  | <b>2.14</b> | <b>5.83</b> | <b>-1.45</b> | <b>0.78</b> | <b>7,36</b> | <b>3.22</b> | <b>8.50</b> |
| Mining  | 5.72        | 5.92        | -0.59        | 1.78        | 13.31       | 3.47        | 10.90       |
| Manufacturing   | 2.68        | 5.34        | -1.89        | 0.82        | 6.98        | 3.45        | 7.79        |
| Manufacturing excl. Petroleum Products                | 2.42        | 5.51        | -1.82        | 0.75        | 6.90        | 4.78        | 9.36        |
| Manufacturing excl. Petroleum and Base Metal Products | 2.61        | 5.49        | -1.25        | 1.13        | 8.09        | 4.30        | 9.87        |
| Production and Distribution of Electricity and Gas    | -5.24       | 14.30       | 3.88         | -0.08       | 12.43       | -0.47       | 18.08       |
| Water Supply  | -7.65       | -1.74       | 0.91         | 0.55        | -7.94       | 5.83        | 5.51        |
| <b>D-PPI by Main Industrial Groupings</b>             |             |             |              |             |             |             |             |
| Intermediate Goods                                    | 2.04        | 4.87        | -2.28        | -0.29       | 4.27        | 4.76        | 7.04        |
| Durable Consumption Goods                             | 1.39        | 2.97        | 1.94         | 0.77        | 7.25        | 5.34        | 11.43       |
| Durable Consumption Goods (excl. Jewelry)             | 1.19        | 2.72        | 1.71         | 0.85        | 6.63        | 4.39        | 9.99        |
| Non-Durable Consumption Goods                         | 3.26        | 7.79        | -1.85        | 2.46        | 11.93       | 4.47        | 13.25       |
| Capital Goods   | 3.76        | 3.67        | -0.64        | 1.14        | 8.09        | 5.58        | 9.99        |
| Energy  | -1.23       | 8.54        | 0.82         | 0.86        | 9.02        | -8.01       | 1.53        |

Sources: CBRT, TURKSTAT.

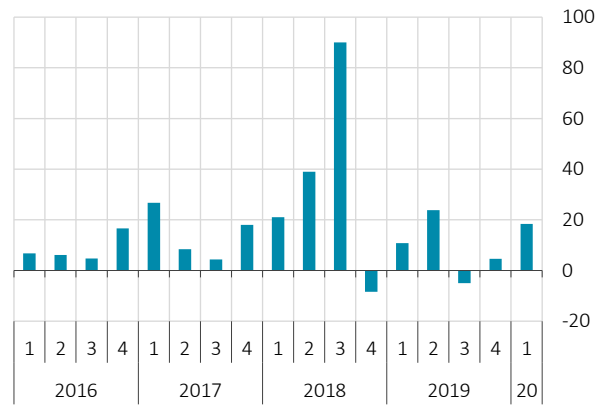
By main industrial groupings, all subcategories but energy posted price hikes in this period (Table 3.3.1). Energy prices dropped on the back of refined petroleum products, crude oil and manufacture of gas, and annual energy inflation went down by 7.49 points quarter-on-quarter to 1.53%. The tendency to increase prices was higher for the manufacturing industry excluding petroleum and base metals, which contains information on the underlying trend of producer prices (Chart 3.3.2). In conclusion, the gains from markedly lower oil prices notwithstanding, the pressure from producer prices somewhat increased for non-oil subcategories due to exchange rate developments.

**Chart 3.3.1: Domestic Producer and Consumer Prices (YoY % Change)**



Source: TURKSTAT.

**Chart 3.3.2: Manufacturing Prices excl. Petroleum and Base Metals (Seasonally-Adjusted, Annualized QoQ % Change)**



Sources: CBRT, TURKSTAT.

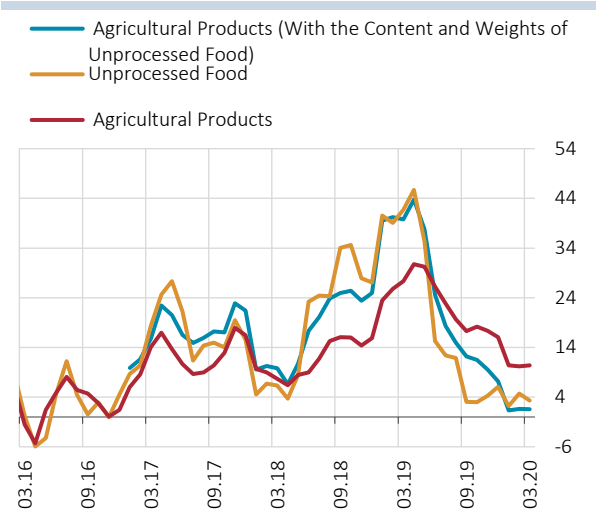
### 3.4 Agricultural Producer Prices

Annual inflation in agricultural producer prices fell by 5.69 points quarter-on-quarter to 10.38% in the first quarter of 2020 (Chart 3.4.1). This drop was largely driven by the base effect from the high inflation in vegetables and potato a year earlier. Wheat prices rose modestly whereas corn prices saw an upswing. Red lentils and dried beans brought annual inflation in legumes higher. In addition, the November increase in raw milk purchasing prices put further upward pressure on the inflation in producer prices for milk.

In this period, annual unprocessed food consumer inflation decreased in line with agricultural products. Looking at agricultural producer prices calculated by contents and weights of unprocessed food, agricultural producer inflation appears to have come in below unprocessed food inflation and prices hovered around the year-ago level (Chart 3.4.1). Seasonally-adjusted three-month averages reveal that the trend of agricultural producer prices and thus of unprocessed food prices were slightly higher in the first quarter (Chart 3.4.2)

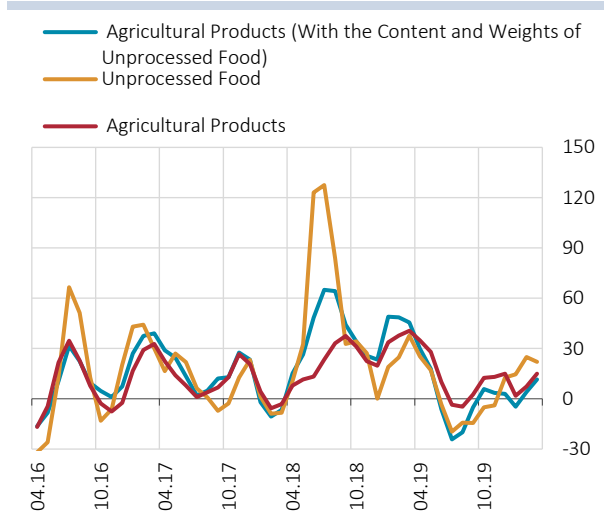


**Chart 3.4.1: Prices of Agricultural Products and Unprocessed Food (YoY % Change)**



Sources: CBRT, TURKSTAT.

**Chart 3.4.2: Prices of Agricultural Products and Unprocessed Food (Seasonally-Adjusted, Annualized 3-Month Average % Change)**

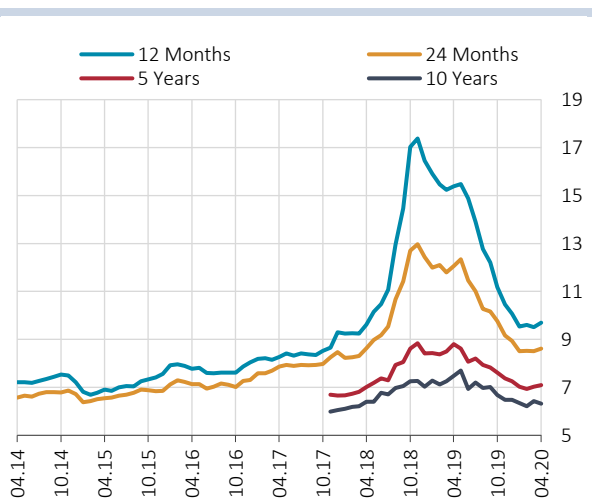


Sources: CBRT, TURKSTAT.

### 3.5 Expectations

After having fallen through 2019, inflation expectations were relatively flat in the first quarter of 2020. As of April, the year-end inflation expectation is 9.76%, and 12-month and 24-month-ahead inflation expectations are at 9.70% and 8.62%, respectively (Chart 3.5.1). Five-year and 10-year-ahead inflation expectations were also nearly flat, hovering above the medium-term inflation target. The inflation expectations curve points to a downward revision in short-term expectations and a small upward revision in medium-term expectations from the previous quarter (Chart 3.5.2).

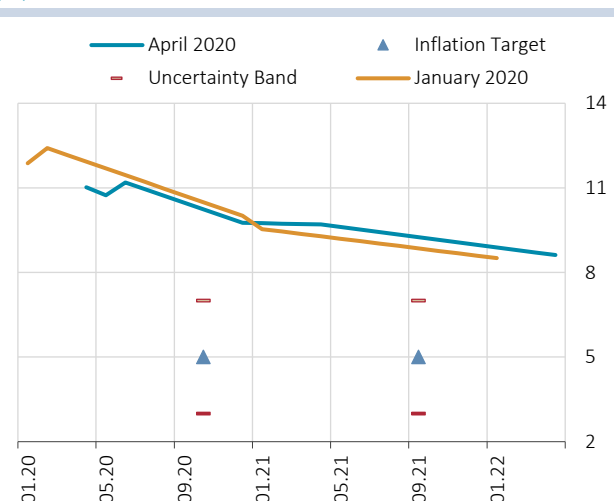
**Chart 3.5.1: CPI Inflation Expectations\* (%)**



Source: CBRT.

\* Results of the CBRT Survey of Expectations that polls corporate sector and financial sector representatives as well as professionals.

**Chart 3.5.2: Medium-Term Inflation Expectations Curve\* (%)**

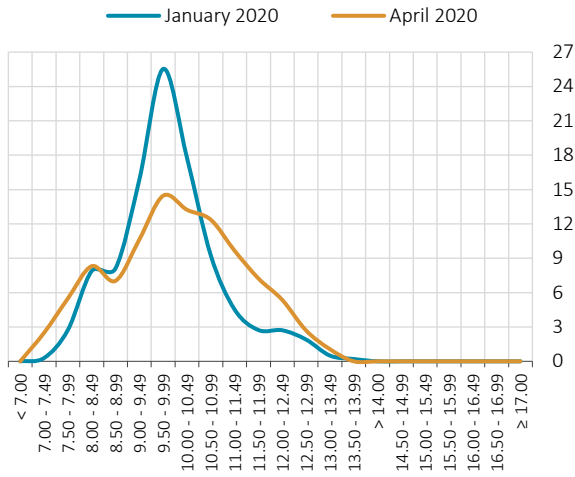


Source: CBRT.

\* Calculated by linear interpolation of expectations for different time spans using the CBRT Survey of Expectations that polls corporate sector and financial sector representatives as well as professionals.

Probability distributions of inflation expectations suggest that the peak values of distributions were almost the same for 12-month-ahead expectations as in the previous quarter but lower for 24-month-ahead expectations than in the previous quarter (Charts 3.5.3 and 3.5.4). Due to the pandemic-induced uncertainty, the consensus around the mean expectation was slightly lower for 12-month-ahead expectations, and the probability assigned to extreme values edged higher.

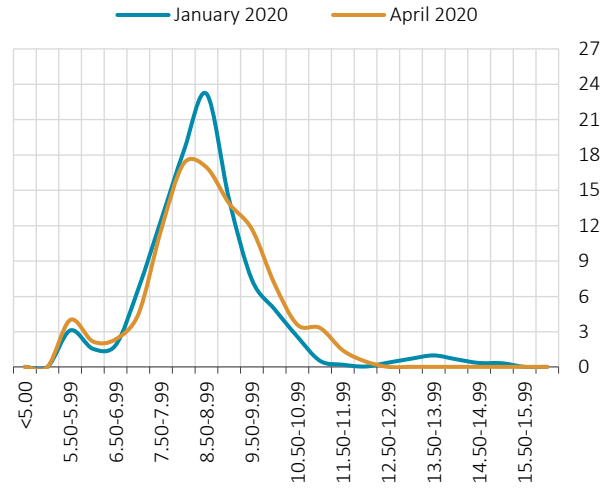
**Chart 3.5.3: Probability Distribution of 12-Month-Ahead Inflation Expectations\* (%)**



Source: CBRT.

\* Horizontal axis denotes the expected inflation rate, while the vertical axis denotes the respective probability. For further details, see Statistics/Tendency Surveys/Survey of Expectations/Metadata at the CBRT's website.

**Chart 3.5.4: Probability Distribution of 24-Month-Ahead Inflation Expectations\* (%)**



Source: CBRT.

\* Horizontal axis denotes the expected inflation rate, while the vertical axis denotes the respective probability. For further details, see Statistics/Tendency Surveys/Survey of Expectations/Metadata at the CBRT's website.