

Box 3.1

Drivers of Inflation Dynamics in the Recent Period

Consumer inflation in Turkey declined to 19.7% in the first quarter of 2019 (Chart 1). In this box, a reduced-form Phillips curve with time-varying parameters is estimated and contributions of fundamental macroeconomic variables to consumer inflation are examined for the recent period¹. Examining the macroeconomic determinants of disinflation may provide insight into policy options in the upcoming period.

Table 1: Contributions to Consumer Inflation (% Points)

	CPI	Constant Term ⁽¹⁾	Unprocessed Food ⁽²⁾	Exchange Rate	Import Prices	Output Gap	Real Unit Labor Cost	Taxes	Other ⁽³⁾
2018	20.3	5.5	2.0	8.6	0.2	0.5	-0.2	-1.0	4.7
2019-I	19.7	5.5	3.6	8.0	0.0	-0.6	0.2	-1.0	3.9

⁽¹⁾ This is the part of inflation that cannot be explained by fundamental macroeconomic variables (import prices, exchange rate, output gap, unit labor cost, food prices and tax adjustments) and is therefore estimated as a constant term. It should be emphasized that contributions to consumer inflation, particularly the size of constant term, can differ depending on the model specification and sample size.

⁽²⁾ This represents only the exchange rate-adjusted contribution of unprocessed food inflation. The exchange rate effect on unprocessed food prices is included under the “exchange rate” column in the table.

⁽³⁾ The term “Other” includes the contribution of non-tax price changes in tobacco and alcoholic beverages as well as the effect of the residual term.

Model results reveal that the main driver pushing consumer inflation to levels around 20% in the recent period was exchange rate developments (Table 1 and Chart 1). These affect consumer inflation directly through imported final goods in the CPI basket and also indirectly through the use of imported intermediate and capital goods in the production process as well as through the expectations channel. In particular, the depreciation of the Turkish lira in 2018 had a considerable impact on the CPI. In the third quarter of 2018, in which the exchange rate volatility was quite high, the pass-through to prices was higher and faster than historical averages.² Furthermore, the strengthened backward-indexation behavior was also effective in the recent rise in long-term exchange rate pass-through, which was historically around 18%.

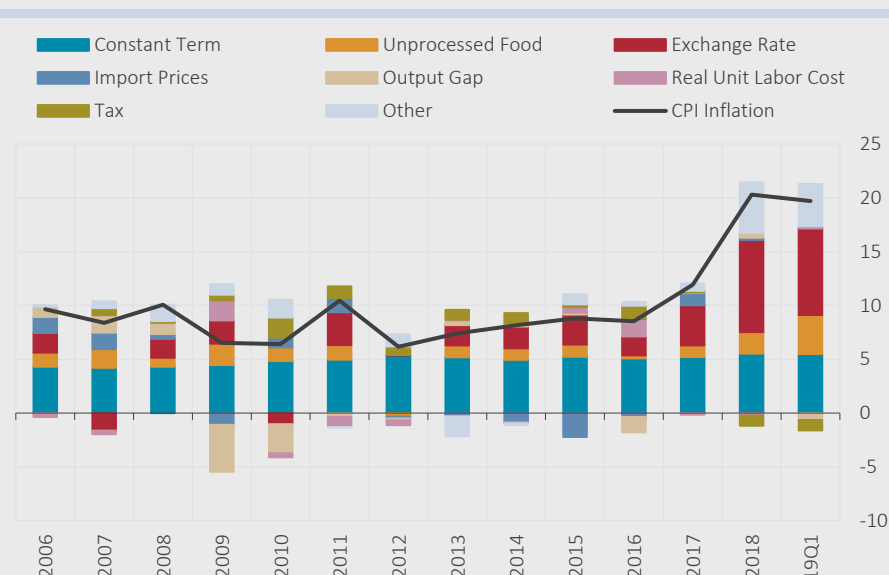
Consumer inflation, which went up due to exchange rate developments, has distorted the pricing behavior and expectations, thus leading to an increase in the constant term. The constant term refers to the part of inflation that cannot be explained by the macroeconomic variables in the model and can be ascribed to structural reasons. This term may also be said to be related with long-term inflation expectations and “trend inflation”.

¹This method was previously used in Kara, Ögünç and Sarıkaya (2017) and Koca and Yılmaz (2018). The D index (CPI excluding unprocessed food and alcohol-tobacco) is employed as a dependent variable whereas lagged value of inflation, import prices in US dollar, basket exchange rate (US \$ / TL and EUR / TL average), output gap and real unit labor cost are used as independent variables. The equation is estimated using quarterly data. In addition, the direct impact of changes in taxes on consumer inflation is also taken into consideration. Quarterly contributions to consumer inflation are calculated by multiplying the value of the relevant variable with the value of its time-varying coefficient at the respective period. The annual contributions are obtained via the aggregation of quarterly contributions.

² Box 3.1, Inflation Report 2018-IV.

Unprocessed food prices constitute another significant variable that has recently had an increased inflationary effect (Table 1). In this group, annual inflation reached 41.7% in March 2019 due to soaring prices of fresh fruits and vegetables. The weak course of the Turkish lira was also effective in this development, but it is noteworthy that annual food inflation has been on an upward trend even when adjusted for the exchange rate effect. This points to the effect of adverse supply conditions on the rise in fresh fruits and vegetables group inflation, and there was no correction in prices as of the first quarter of 2019.

Chart 1: Contributions to CPI Inflation (% Points)



Source: CBRT, TURKSTAT.

The impact of import prices, demand conditions and real unit labor costs on the recent acceleration in consumer prices is relatively limited in terms of annual figures. Also, a close look at the year-by-year contribution of output gap and unit labor cost variables that reflect demand conditions and labor costs reveals that the contributions are in the opposite direction in periods when the economy is shrinking (Chart 1). While the contribution of the output gap to inflation was negative in 2009 and 2016 when the economic activity contracted, there was a positive contribution from real unit labor costs. In such periods, production per capita decreases as a result of the contraction in economic activity. This decrease negatively affects the measured partial labor productivity due to lack of flexibility in the labor market, and results in a rise in unit production costs. Thus, in periods when the economic activity contracts, the output gap makes a downward contribution to inflation whereas the upward impact of real unit labor costs on inflation increases due to the decline in partial labor productivity.

Another factor highlighted in Table 1 is the recent downward contribution of the tax adjustment to inflation. Temporary tax reductions in furniture, white goods and automobiles were effective in this development. On the other hand, it is noted that the term "Other", which includes the part of inflation dynamics not captured by the model, has been high in the recent period. It is considered that in 2018, some part of the term "Other" reflected indirect effects of electricity and natural gas price adjustments. The remaining part is assessed to be determined by the deterioration in the pricing behavior.

By the first quarter of 2019, the high contribution of constant term was preserved, while the contribution of economic activity, exchange rate and import prices to inflation was downward compared to 2018 year-end.³ On the other hand, the pressures on inflation exerted by unprocessed food prices and real unit labor costs increased.

In sum, the sharp depreciation in the Turkish lira and the accompanying deterioration in inflation expectations and pricing behavior have been the main drivers of the recent rise in inflation. The upward impact of unprocessed food prices on inflation has become more evident. In addition, the part of inflation that cannot be explained by fundamental macroeconomic variables and is rather attributable to general rigidities has also remained high. In this context, while the CBRT maintains a policy stance that focuses on price stability, other relevant authorities' support for expectation management is crucial for the success of the disinflation efforts.

References

Inflation Report, (2018), "A Model-Based Analysis of Recent Inflation Developments", 2018-IV.

Kara, H., Ögünç, F. and Sarıkaya, Ç. (2017). "Inflation Dynamics in Turkey: A Historical Accounting", CBRT Research Notes in Economics, No. 17/03, May 2017.

Koca, Y. K. and Yılmaz, T. (2018), "A Closer Look at Core Inflation Dynamics with a Historical Perspective", CBRT Research Notes in Economics, No. 18/07, October 2018.

³ The disinflationary effect of the weakening economic activity has become more evident in the last two quarters. However, due to the lagged upward effects from 2018, the total contribution of the output gap to annual consumer inflation as of the first quarter of 2019 was relatively limited at -0.6 points.