Box 2.5

Main Macro Determinants of Inflation in 2020

Consumer inflation, which was 11.84% at the end of 2019, fluctuated around 12% throughout 2020, accelerated in the last quarter and ended the year at 14.60%. In this box, inflation developments of 2020 will be discussed in terms of basic macro determinants by estimating a reduced-form time varying parameter Phillips Curve model.[1]

Table 1: Contributions to Consumer Inflation(1) (% Points)

	CPI	Constant Term	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	11.8	5.7	0.4	1.5	-0.6	-1.4	0.9	1.7	3.6
2020	14.6	5.6	2.1	6.2	0.0	-0.4	0.8	0.0	0.3

Sources: CBRT, Turkstat.

(1) It should be noted that the contributions to consumer inflation depend on the estimated model; some effects, especially the constant term, may differ depending on the model description and sample size.

(2) Refers to the contribution of unprocessed food inflation adjusted for the exchange rate effect. The exchange rate effect on unprocessed food prices is included under the heading "exchange rate".

(3) The term "Other" includes the contribution of alcohol-tobacco products except tax adjustments, administered price adjustments for producer prices such as electricity and natural gas, and estimation errors in the equation.

In 2020, demand-side effects due to strong credit momentum were determinant on inflation through direct and indirect channels. The depreciation of the Turkish lira led by the effects of the rapid recovery achieved in the economy with credit expansion on current account balance, reserves, risk premium, dollarization and inflation expectations had an important role in the rise in inflation. Although the model findings indicate that the highest contribution to 2020 year-end inflation comes from the exchange rate, it is possible to associate this with strong domestic demand and the external imbalances it causes rather than a cost-driven external increase in inflation.

This linear equation, in which the pass-through of the depreciation and appreciation of the Turkish lira to inflation are symmetrical by definition, is considered to underestimate the exchange rate effect. The appreciation observed in the last two months of the year following the long-term depreciation trend passed through into inflation to a relatively limited extent, given the exchange rate volatility in that period. Therefore, the measured effect can be interpreted as a lower bound.

The second important point regarding the exchange rate pass-through is the effects arising from the interaction of demand. Considering the annual average in 2020, the currency basket depreciated by 25%, which had implications for many groups, especially durable goods. Time-varying parameter estimates indicate that the exchange rate pass-through is around 20%[2] (Chart 1). However, there were differences in the exchange rate pass-through that overlapped with sectoral divisions. In 2020, the

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[1] This method was previously used in Kara, Öğünç 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 the lagged value of inflation, import prices in US dollar, the currency basket (the USD / TRY and EUR / TRY average), the output gap and the 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 by the value of its time-varying coefficient in the respective period. Annual contributions are obtained via the aggregation of quarterly contributions.

[2] The long-term exchange rate pass-through is obtained by dividing the sum of the exchange rate coefficients (current period and lag of two) by the coefficient of past inflation subtracted from one.

exchange rate pass-through was high in items with strong sectoral demand, particularly durable goods, due to the strong credit momentum. On the other hand, the depreciation of the TL had a more limited impact on clothing and some services items due to the weak demand.

Another component that makes a high contribution to inflation is the constant term that changes over time but exhibits rigidity. Although this variable seems to be the part of inflation that cannot be explained by macro factors, it reflects the historical average movement of these macro factors (eg. average wage increase) and its effect on inflation. Therefore, the constant term in the equation that changes over time is essentially closely related to the inflation trend and expectations. Although it is a variable that changes rarely in the short term and shows inflation rigidity, it is considered as a component under the control of monetary policy since it is affected by the steady decreases and increases in inflation and thus in expectations. As a matter of fact, this variable, which has settled on a higher plateau since the second half of 2018, draws a picture in line with the persistence of inflation in double digits and the course of expectations (Chart 2).

Chart 1: Long-Term Exchange Rate Pass-through (%)

Chart 2: Constant Term (Annualized)
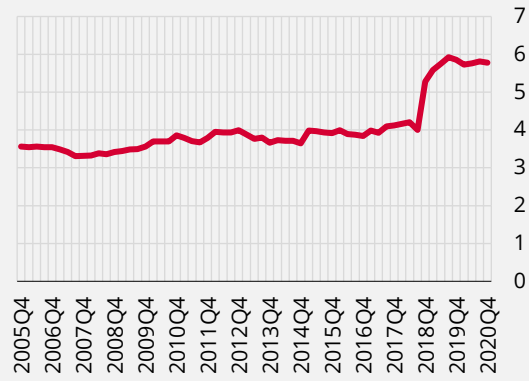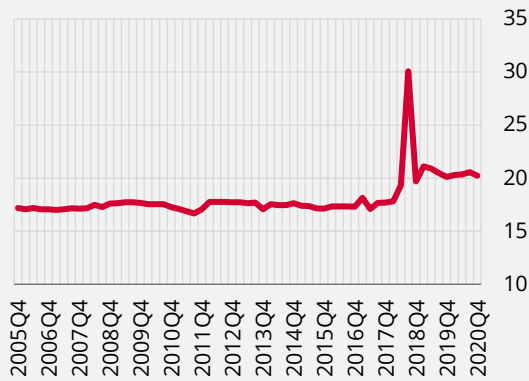
Source: CBRT.

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Unprocessed food prices come forward recently as a component with an inflationary effect that is above its historical average. While the depreciation in the Turkish lira was among the factors behind this development, even when the exchange rate effect is excluded, the contribution of unprocessed food was at the level of 2018 with 2.1 points. This was because of the pandemic-driven increase in demand, international agricultural commodity prices and adverse supply conditions caused by weather conditions and the seasonal transition, and annual unprocessed food inflation ended the year 2020 at a remarkable 26.34%, led by prices of fresh fruits and vegetables.

Another variable that drove inflation upwards in 2020 was the real unit labor cost. During periods of production decline, adjustment in the labor market may be slower and more limited compared to the goods and services market, in which case per capita production (partial labor productivity) decreases. As a result of sticky wages and their inability to adjust quickly, this loss of productivity causes an increase in real unit labor costs.[3] In fact, in the second quarter when economic activity contracted sharply, the hourly real labor cost rose significantly. Although it declined in the third quarter, it is estimated that its contribution to inflation throughout the year was positive. However, it should be noted that the divergence across sectors during the pandemic, the significant differentiations between employment and hours worked, the prohibition on dismissals, and the implementation of a short–term employment allowance all make it difficult to measure unit labor costs.

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[3] Box 3.1, Inflation Report 2020-III.

Reflecting aggregate demand conditions, the output gap somewhat limited inflation in 2020. Demand conditions affected the inflation outlook positively, especially in the first half of the year. While clothing and footwear was the group with the most pronounced demand-driven disinflationary effects, inflation remained relatively weak in services items that were hit the hardest by the pandemic, such as accommodation, package tours, education, entertainment and culture. On the other hand, the strong credit momentum in the second half of the year led to a significant increase in demand-side inflationary pressures on some groups, durable goods in particular (Zoom-in 2.6).

As for import prices, with COVID-19 becoming a pandemic, there was a sharp decline in brent oil prices , however other commodity prices, such as industrial metal, food and gold prices, did not decline at the same rate. In the second half of the year, import prices increased along with the partial recovery in the global economy. In this context, US dollar-denominated import prices fluctuated in 2020, making almost no contribution to inflation throughout the year.

In 2020, the contribution of the tax component to inflation was also close to zero. In this period, VAT reductions in furniture and some services items contributed downwards, while the tax base and SCT changes in automobiles had an upward effect.

In sum, the main determinant of the increase in inflation in 2020 was the depreciation of the Turkish lira. However, since the analysis is based on an equation in a reduced form, it does not fully reflect the interaction between macro variables, which prevents a clear inference about the economic reasons for the depreciation of the exchange rate and thus the rise in inflation. Considering the macro dynamics, it can be said that the rapid credit expansion and the domestic demand-led strong recovery were determinant on inflation through direct and indirect channels. The rapid recovery achieved in the economy with credit expansion had a significant effect on exchange rates through the external balance, inflation, expectations and risk premium channels. Therefore, although the effect of aggregate demand conditions on inflation seems limited, it is considered that the rapid growth in the second half of the year played an important role in the negative decoupling of the Turkish lira from other developing countries. Therefore, it is critical that the tight stance in monetary policy be maintained with determination and that loans and domestic demand take to a moderate path in the upcoming period, limiting inflation pressures through demand, cost and expectation channels.

References

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