

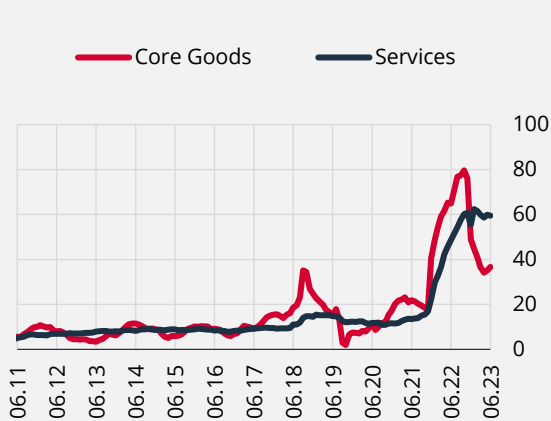
Box 2.3

Persistence of Services Inflation

Services and core goods groups, the two main components of core inflation, differ in terms of price dynamics. While the openness of the core goods group to foreign competition exerts pressure on final prices, it also encourages the use of foreign inputs and increases the importance of the exchange rate on the group's price developments. Core goods are more conducive to technological developments and positively affected by productivity gains. On the other hand, services prices are more sensitive to domestic factors, in particular wages. In services, where productivity gains are more limited, co-movement of wages across sectors increases unit costs and strengthens the course of price increases. Although both sectors are affected by demand developments, aggregate demand conditions are more important in the services sector, and the sensitivity to credit is more evident in core goods, primarily the durable goods.¹ In addition, time-dependent price setting and backward indexation are more prevalent in the services sector. As a result of these structural differences discussed briefly, the services sector index is approximately 43% higher than that of core goods as of mid-2023.

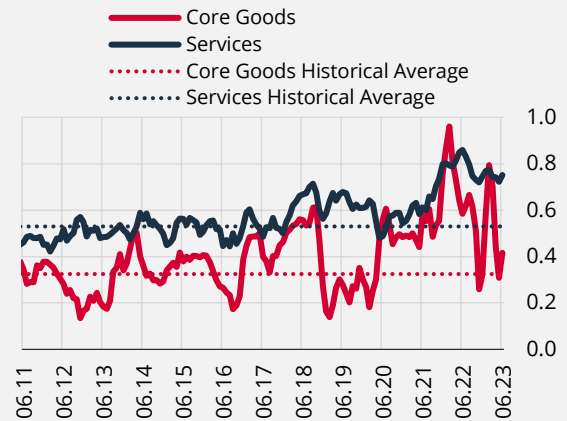
The historical course of diffusion indices as well as the annual inflation rates reveal the differences in price setting behavior between the main groups. Import prices in terms of TL are highly determinant in the dynamics of core goods inflation, which is largely composed of tradable goods, and inflation can rapidly fall to low levels in periods when the effects of shocks weaken. On the other hand, inflation displays persistence in the wage-sensitive services sector, which is not subject to foreign trade and where backward-indexation behavior as well as time-dependent price setting are predominant (Chart 1 and Chart 2).

Chart 1: Core Goods and Services Prices
(Annual % Change)



Source: CBRT, TURKSTAT.

Chart 2: Diffusion Indices of Main Expenditure Groups* (Seasonally Adjusted, 3-Month Average)



Source: CBRT, TURKSTAT.

* Calculated as the ratio of the difference between the number of items with increasing prices and the number of items with decreasing prices to the total number of items.

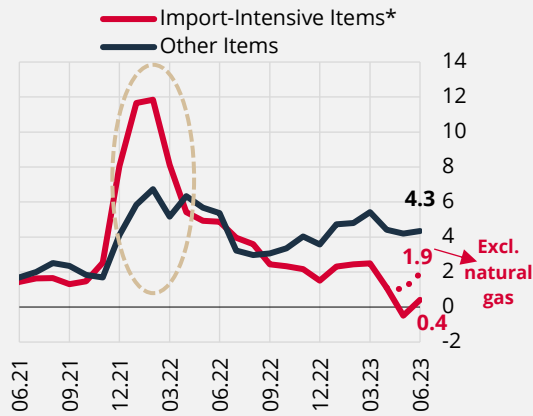
The divergence between the price setting behavior of the groups has recently gained importance again in parallel with the macroeconomic developments. With this respect, the CPI sub-items were classified according to the imported input intensity² and separate price indices are calculated for items with intensity of more than 15% and the remainder.

¹ CBRT (2020).

² CBRT (2022).

When consumer inflation is analyzed in terms of imported input intensity, it is observed that the course diverged significantly between these two main groups after the exchange rate increase at the end of 2021, and the rise in inflation in the following period was driven by items with high imported input intensity. In 2023, the course slows down in items that are highly sensitive to exchange rate and import prices, yet it remains high in items where the impact of domestic developments is more evident, particularly in services (Chart 3). In fact, the cumulative changes in the first half of 2023 suggest that the highest increase is in the services sector and is significantly above the headline inflation. On the other hand, the cumulative increase in core goods is more moderate (Chart 4).

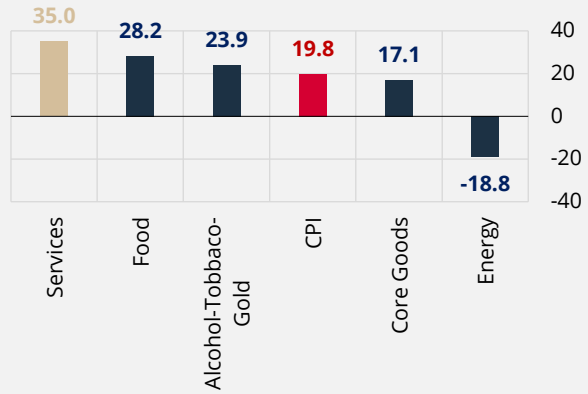
Chart 3: Inflation by Import Intensity
(Seasonally Adjusted, 3-Month Average, %)



Source: CBRT, TURKSTAT.

* Composed of items with higher than 15% import input intensity. Share within the CPI basket is 58.4%.

Chart 4: Cumulative Inflation of CPI and Main Groups
(First Half of 2023, %)

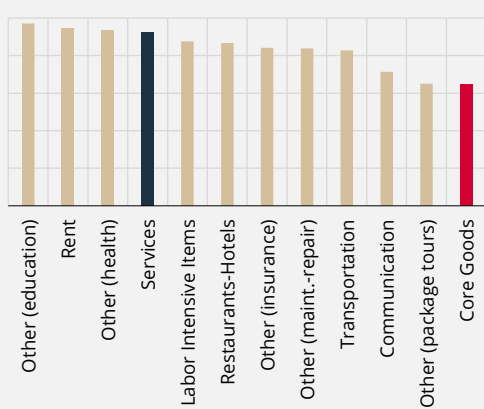


Source: CBRT, TURKSTAT.

Similar to the divergence between core goods and services, there is also heterogeneity within the services sector. There are noticeable differences among services sector subgroups in terms of price setting behavior (time-dependent price setting, backward indexation), labor intensity and input use, and sector-specific imbalances in certain periods can gain importance.

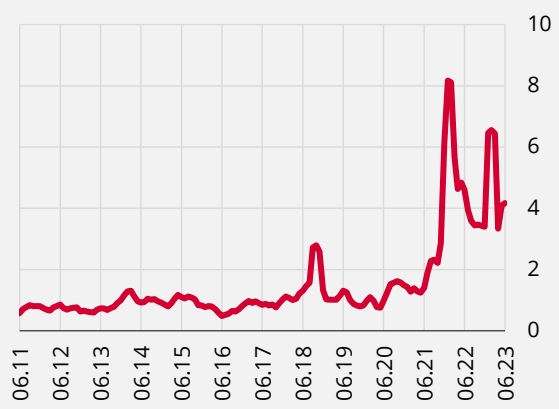
The analysis conducted with quarterly data on annual inflation of services and its subgroups reveals that persistence is evident in the services sector (Chart 5). Within the services group, items such as education services, health services and rent, where time-dependent price setting is common and past inflation is of great importance in the formation of new prices, exhibit higher inflation persistence. On the other hand, persistence is weaker in items such as package tours, where the sensitivity to variables such as input cost and exchange rate is higher, and communication services. A similar outlook emerges when we compare the services and core goods main groups, and we find that persistence is higher in the services sector.

Chart 5: Persistence in Services Inflation³
(Quarterly, Annual Inflation, 2010-19)



Source: CBRT.

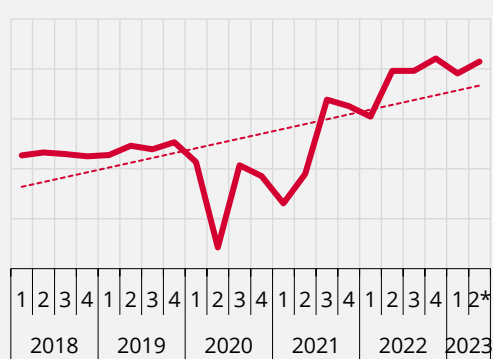
Chart 6: Labor Intensive Services Price Index⁴
(Seasonally Adjusted Monthly Change, 3-Month Average)



Source: CBRT, TURKSTAT.

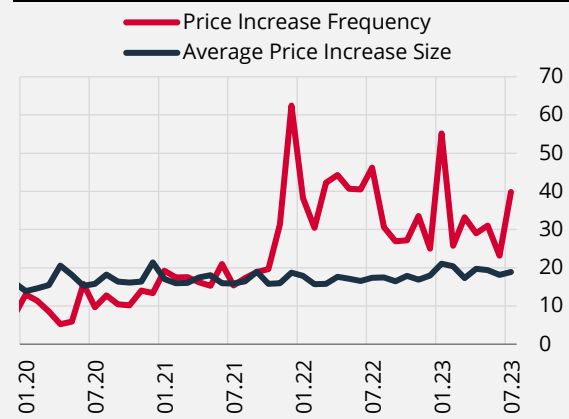
Due to its labor-intensive structure, the service sector is more significantly affected by wage developments (CBRT, 2023). Restaurants-hotels and various maintenance-repair items are the subgroups within the services group that respond most quickly to wage adjustments. In line with the recent developments, the underlying trend of the labor-intensive price index, which is composed of the aforementioned items, hovers above the long-term average. In parallel with the minimum wage increases in the recent period, the mentioned index has displayed significant increases (Chart 6). In times of high inflation, the compensation of wages with past inflation in order to protect the purchasing power of employees is one of the important factors that strengthens the persistency in the services sector.

Chart 7: Food and Beverage Services Turnover Index (Real, Seasonally and Calendar Adjusted)



Source: TURKSTAT.
* As of May.

Chart 8: Food Services Price Increase Frequency and Size* (% Points)



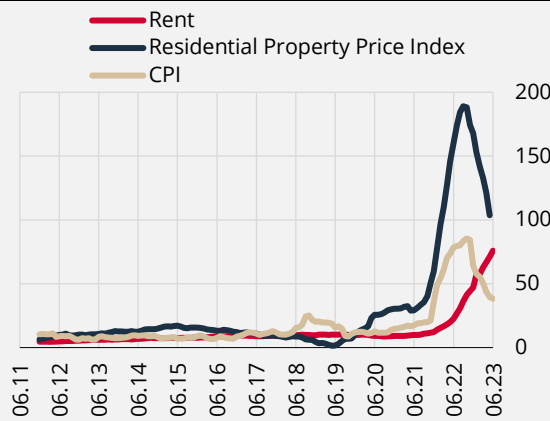
Source: CBRT, Authors' calculations.
* Frequency is obtained by dividing the number of price increases seen in the prices of the products monitored during the month by the total number of products.

³ The coefficient of inertia was obtained from the following equation estimation $\pi_{i,t} = c + \rho * \pi_{i,t-1} + \varepsilon_t$.

⁴ The above-mentioned sectors are maintenance-repair (personal transportation vehicles, household goods, household appliances, photo-data processing tools, shoe and clothing repair and dry cleaning), household services, photography services, food and beverage services, hotels-pension, men-women hairdressing and similar services.

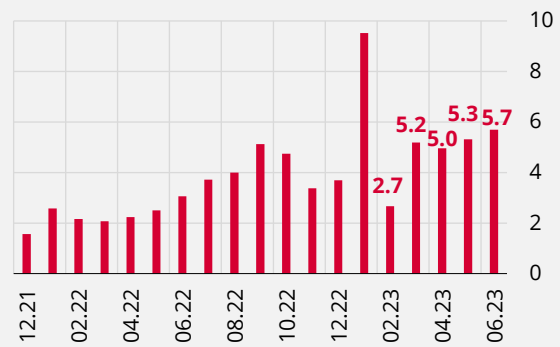
In addition to its labor-intensive structure, the service group also includes items that are significantly affected by input prices such as food and fuel. For example, while restaurants and hotels are one of the subgroups that are heavily impacted by minimum wage developments, the developments in food prices, especially red meat, tea, soft drinks and bread, which are the subject of catering services, are of great importance for the prices of the subgroup. The results of the estimated equations for the price dynamics of catering services also point to the importance of food developments. According to the estimation results, catering services inflation is also highly sensitive to developments in real unit wages, following food prices.⁵ In addition, demand indicators for catering services indicate that demand conditions have remained strong after the 2020 pandemic, staying above the long-term trend since the second half of 2021 (Chart 7). On the accommodation services side, which is another component of the restaurant-hotel group, the effects of the revival in tourism have been observed recently. Restaurant data provides useful information on price-setting behavior in catering services and the timely determination of the change therein. Analyses made with micro data show that there is no change in the average rate of increase in firms' prices, and that the rise in inflation in this group is driven by the changes in the number of firms that update their prices (Chart 8). Historically, the price increase frequency is sensitive to minimum wage, exchange rate developments and price developments especially in food items such as red meat, oil, flour and bread.

Chart 9: CPI, Rent Sub-Index and Residential Property Price Index (Annual % Change)



Source: CBRT, TURKSTAT.

Chart 10: Rent (Seasonally Adjusted, Monthly % Change)



Source: CBRT, TURKSTAT.

It is noteworthy that the imbalances prevailing in the housing market in recent years (Chart 9) also played an important role in the increases in the rent subgroup, where backward indexation behavior is common. Although the annual increase in residential property prices is on a downward trend, it remained above the headline inflation rate, and rent inflation has shown a marked upward trend in the last year. In seasonally adjusted terms, the last three months' increase in rent corresponds to 84.4% on an annualized basis (Chart 10). While rent inflation and changes in residential property prices imply that the amortization periods have decreased, current trends suggest that the risks on headline inflation due to the rent group are alive. While legal regulations regarding rent increase do not have sufficient effect, it is important to eliminate the imbalances in the housing market and to break the backward indexation behavior.

Another factor that strengthens the persistence in services inflation is that the services sector includes sub-items with high administered and backward indexation behavior such as transportation (municipal urban passenger transportation, train, highway and bridge toll rates, etc.) and various public services

⁵ In the equations estimated for the 2010Q1-2023Q1 period, catering services are included as the dependent variable. As explanatory variables, food prices excluding fresh fruits and vegetables, food expenditures by card, wages (minimum wage or real unit wage), output gap and dummy variables are used. In the equations, the coefficient of the food group was estimated in the range of 0.55-0.66 according to different food definitions. Similarly, the coefficient estimates for wages are in the range of 0.18-0.22.

(driving license, notary, passport fees, etc.). On the other hand, inflation exhibits relatively lower persistence in sectors such as package tours, which is sensitive to exchange rate and significantly affected by domestic demand, and communication, where competition, technological development and efficiency are important.

In summary, the divergence between the price setting behavior in the subgroups of core inflation in the consumer basket have become evident in line with recent macroeconomic developments. Inflation declined in items that are strongly influenced by external prices, in the inflation outlook, the effect of back-indexation behavior and items affected by domestic price dynamics became prominent. This causes the effects of macroeconomic shocks to spread via the services group over time and adds persistency to inflation. The pressures on inflation due to exchange rate increases in recent months as well as wage developments and tax adjustments may cause the negative outlook in service sector inflation to continue.

References:

CBRT (2023). An Evaluation of the Effect of Minimum Wage Increase on Inflation, Inflation Report 2023-III, Box 2.6.

CBRT (2022). Import Intensity and Inflation, Inflation Report 2022-III, Box 2.7.

CBRT (2020). An Evaluation of the Effect of Demand Conditions on Inflation, Inflation Report, 2020-IV, Box 2.3.