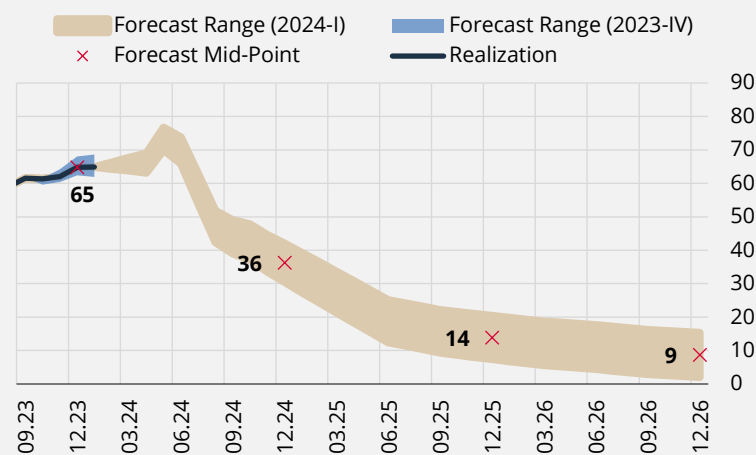


Box 2.3

A Closer Look at the Disinflation Path

In the last quarter of 2023, inflation was consistent with the 2023-IV Inflation Report forecasts and stood at 64.8%, approximately 0.2 points below the mid-point. This outlook was maintained in January, with inflation realizing in tandem with forecasts. In this box, the 2024-I Inflation Report forecast path (Chart 1) is analyzed more closely, while shedding light on basic issues regarding the "mechanics" of the disinflation path. In this context, (i) the relationship between the course of annual inflation and monthly movements of inflation is assessed, (ii) the base effect and its impacts on 2024 inflation are explained, and (iii) while the current situation is evaluated, important factors that will affect the inflation path in 2024 are stated, and the implications of the path in 2025 and beyond are discussed.

Chart 1: Inflation Report Forecasts* (%)



Source: CBRT.

* 2023-IV Inflation Report forecasts are reported for the period before January 2024, and 2024-I Inflation Report forecasts are reported for the period after February 2024.

Inflation Forecasts

Chart 1 indicates that inflation will remain flat in the first half of 2024, will peak in May with a significant increase, and then decrease sharply falling to 36%. The analysis of annual inflation outlook on a monthly basis reveals that (1) January is not different from February, (2) there will be a sharp price increase from April to May, (3) and the price increase rates will suddenly drop to very low levels afterwards.

These evaluations are clarified as follows in the light of the monthly inflation path implied by the forecasts. (1) Although annual inflation remained flat, there was a significant monthly increase in January due to wage adjustments, especially the minimum wage, and items with a high tendency for time-dependent price setting. While seasonal increases were recorded in service items such as health and transportation, there were automatic increases in some administered items (alcohol, tobacco, fuel, etc.). Since similar effects were prevalent in January 2023, annual inflation remained relatively flat. (2) The main reason for the expected sudden increase from April to May is that monthly inflation was close to zero due to the free natural gas in May 2023 and the normalization of the tariff in May 2024. (3) Although monthly price increase rates will show a gradual decline after May, the previous year's developments also play a role in the sharp decline in annual inflation. In other words, high monthly price increases were recorded in July and August 2023 due to exchange rate, taxes, administered prices, energy prices and the increase in demand as well as the non-linear effects of their combination on expectations and price-setting behavior. This factor, which causes the previous year's monthly inflation to significantly affect the current year's annual inflation in such periods, is called the base effect.

What Is Base Effect?

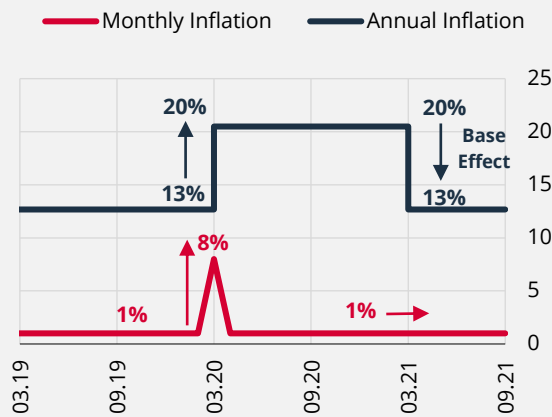
Chart 2 presents a sample visualization of base effects. The price of a product with a monthly price increase of 1% rose by 8% in March 2020, then price increases returned to normal levels in the following period. In the same period, annual inflation remained stable after rising to 20%. In March 2021, annual inflation decreased to 13% as the price change in 12 months earlier was excluded from the calculation of annual inflation. The source of this rapid decline in annual inflation in March 2021 without any change in monthly inflation is called “base effect”.

Taking a more detailed approach to the base effect, annual inflation (π_t), is calculated as the percentage change between the price index in a given month (P_t) and the index value 12 months earlier (P_{t-12}). The difference between the annual inflation rates in two consecutive months is approximately equal to the difference between the monthly inflation rate in the current month and the monthly inflation rate 12 months ago.

$$\pi_t - \pi_{t-1} \approx \left(\frac{P_t}{P_{t-1}} - \frac{P_{t-12}}{P_{t-13}} \right) * 100$$

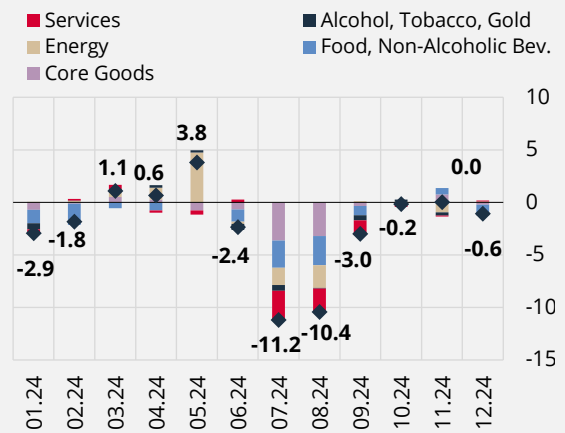
Thus, the change in annual inflation rates from one month to the next reflects the effect of price movements both in the current month and in the base month, which is the effect coming from 12 months ago (the base effect). For a significant base effect, the monthly change 12 months ago must deviate significantly from a typical monthly change that would normally be expected in that month.¹

Chart 2: Base Effects on Annual Inflation



Source: CBRT.

Chart 3: Base Effects on Annual CPI Inflation (% Points)



Source: CBRT.

Chart 3 analyzes the base effects on 2024 consumer inflation by main groups.² As seen in the chart, the energy group is projected to push annual inflation higher due to the natural gas subsidy in May. In the June-August 2023 period, multiple shocks in a short period of time led to high increases across subcategories. Therefore, in the June-September 2024 period, in addition to the cumulative effects of monetary tightening for reducing monthly inflation rates, base effects in almost all subcategories are expected to bring annual inflation down. On the other hand, from September 2024 onwards, no significant base effect is observed, while annual inflation is expected to decelerate further due to the strengthening of the lagged effects of monetary tightening in this period.

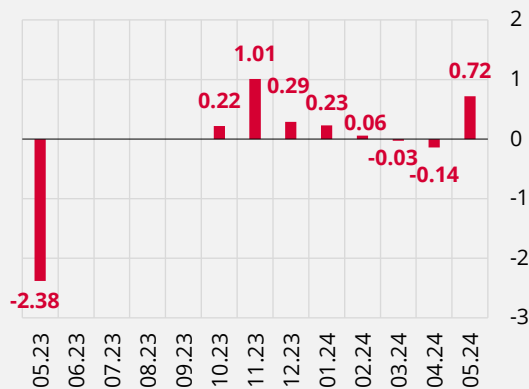
¹ Detailed information on this issue is presented in Box 3.2 of the Inflation Report 2019-II and Box 3.1 of the Inflation Report 2016-I. In addition, further evaluations on base effects can be found in ECB (2005, 2007).

² The contribution of base effects to annual inflation varies depending on the calculation of the typical monthly change. For the typical monthly changes, the average monthly inflation adjusted for outliers in the 2020-2022 period is used in each subcategory. The average and standard deviations of recent inflation rates are used for detecting outliers. The recent inflation trend (the average value of 4 seasonally adjusted inflation rates without outliers 2 months before and 2 months after the relevant month) is used for the typical monthly changes in the services item.

Effects of Natural Gas Subsidies Provided to Consumers on Inflation

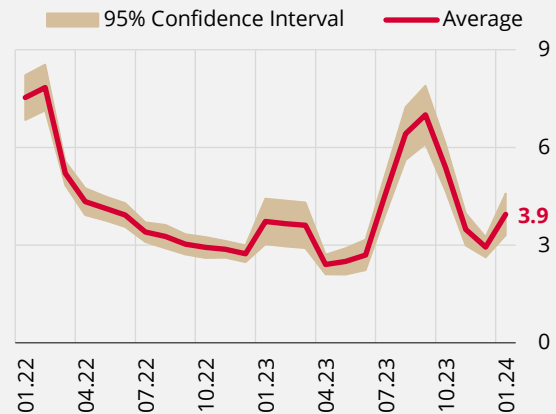
Considering the base effects and consumption quantity-driven effects, it is crucial to separate the contributions from the natural gas regulation in order to assess the course of inflation properly. Under this regulation, natural gas was offered free of charge to residential consumers in May 2023, and it was decided that up to 25 m³ of consumption would be covered by the state for the following one-year period. The free use of natural gas in May had a significant downward impact of 2.38 points on monthly consumer inflation (Chart 4). In line with the rise in consumption as the weather turned colder, consumer inflation picked up in the last quarter. While this effect was significant in November by around 1 percentage point, it weakened in December 2023 and January 2024. The sharp monthly increase in May 2024 due to the end of the regulation is particularly noteworthy (Chart 4). In addition to this development, annual inflation is expected to peak due to the base effect stemming from the fall in May 2023 (Chart 1).

Chart 4: Estimated Contribution of Natural Gas Price Adjustments to Monthly Consumer Inflation³ (% Points)



Source: CBRT, GAZBİR.

Chart 5: Average Underlying Trend Indicators of Monthly Inflation* (%)



Source: CBRT.

* Seasonally adjusted three-month average change. Reports the mean and 95% confidence interval for seven main trend indicators (B and C indices, SATRIM, Median, the index excluding most volatile items, indicators produced by principal component analysis and dynamic factor models.).

Current State, Forecasts and Assumptions

A closer look at current state reveals that inflation expectations and their distribution improve as the policy decisions begin to take effect. Evaluated together with the main inflation indicators, the underlying trend of inflation has been on a downward trend since September, although this was interrupted in January for the reasons given above (Chart 5). As a matter of fact, three-month averages showed a sharp decline in the last quarter and reached approximately 2.9% in December. In January, the three-month trend increased to 3.9% also with the effect of the increase in monthly inflation. After the rise in January, it is estimated that the averages will trend downward again in the coming months.

A comparison of the previous Report period forecasts with the realizations reveals that the three-month averages of seasonally adjusted inflation indicators indicate a more favorable course than the projections both in the last quarter of 2023 and in January (Table 1).

³ The figures presented here reflect estimates. Realizations will differ slightly due to (i) the difference arising from the regional consumption calculation used by TURKSTAT (here the calculation is based on Türkiye's average historical consumption from GAZBİR), (ii) price increases by natural gas supplier firms, and (iii) relative increases in items other than natural gas.

Table 1: Comparison of Inflation Realizations and Forecasts (Seasonally Adjusted, Three-Month Average % Change)

	CPI		B		C	
	Inflation Report 2023-IV	Realization	Inflation Report 2023-IV	Realization	Inflation Report 2023-IV	Realization
Sep. 23	6.0	5.8	5.7	5.9	5.4	5.7
Nov. 23	4.1	3.6	3.7	3.6	3.8	3.6
Dec. 23	3.8	3.2	3.2	2.8	3.5	3.0
Jan. 24	4.3	4.3	4.7	4.2	5.3	4.6

Source: CBRT, TURKSTAT.

The underlying trend fell to comparatively low levels as a result of the relatively flat exchange rate and declining commodity prices in the February-May period of 2023. Although monthly inflation rates are expected to slow down again after the temporary rise in January 2024, the projection of rates close to the previous year's levels indicates that annual inflation may remain relatively flat in the February-April period of 2024. Possible increases that may be seen in domestic energy prices in the second quarter of the year and beyond have been reflected in the Inflation Report forecasts and included within the forecast range with a cautious stance.

Within the framework of the forecasts in the Inflation Report 2024-I, the seasonally adjusted monthly inflation rate is projected to be below 4% on average in the first half of 2024 and around 3% on average excluding January. Disinflation period will start with a rapid decline in annual headline inflation after May. In this period, it is evaluated that favorable base effects, and more importantly, further decline in the underlying trend of inflation will be effective. The continued rebalancing of domestic demand, the completion of wage updates and the additional improvement in expectations caused by the decline in headline inflation will play an important role in this process. Thus, according to the projections, seasonally adjusted average monthly inflation will first drop below 2.5% in the post-May period and then drop to around 1.5% in the last quarter of the year. The decline in the underlying trend of inflation to historical averages will continue in 2025, along with the dissolution of the rigidity in services inflation and by maintaining the monetary stance in line with the targets. At this point, it should be noted that many assumptions that cannot be determined by monetary policy, such as commodity prices, are effective on the CBRT's inflation projection, especially in the short term. The Inflation Report examines in detail the assumptions and economic outlook behind these conditional forecasts.

While the rebalancing in domestic demand and the stable course of the Turkish lira continue in 2024, the main parameters that will stand out are, how strongly inflation expectations will decline and to what extent the stickiness in inflation, especially services inflation, will be broken. Monetary policy will be the main determinant in realizing the path envisaged in the medium term and reducing the underlying trend of inflation to 1% by 2025, and the course of fiscal policy will also be important in this process.

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