

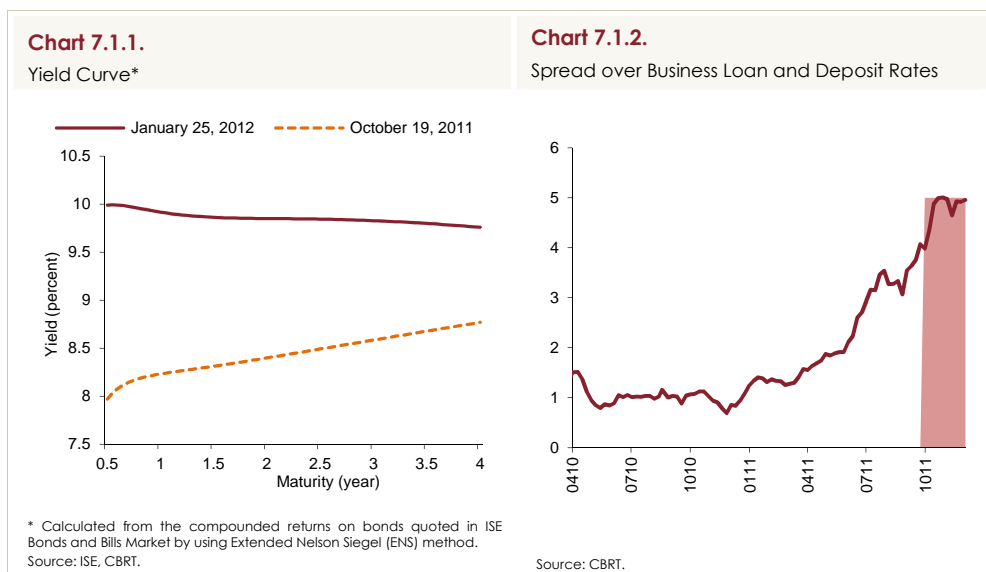
## 7. Medium-Term Projections

This Chapter summarizes the underlying forecast assumptions and presents the medium-term inflation and output gap forecasts as well as the monetary policy outlook over the upcoming three-year horizon.

### 7.1. Current State of the Economy, Short-Term Outlook and Assumptions

#### Monetary Conditions

Envisaging that inflation will markedly exceed the 2011 target, the CBRT has delivered a strong monetary tightening since October 2011 in order to contain the secondary effects and prevent a possible deterioration in the medium-term inflation outlook. Accordingly, the interest rate corridor and the liquidity management tools were utilized effectively. Market rates increased across all maturities amid the monetary tightening, with yield curve trending downward on relatively higher increase in the short term (Chart 7.1.1). The adopted tightening measures pushed both loan and deposit rates upwards, as well as causing the spread over business loan and deposit rates to widen via the relatively higher increase in loan rates (Chart 7.1.2). Overall, monetary stance remained tight in the last quarter of 2011, in tandem with the outlook presented in the previous Report.



## Inflation

Having climbed to 10.45 percent at end-2011, inflation remarkably exceeded the October forecasts amid more-than-envisaged increases in unprocessed food prices (Box 7.1). Prices of core goods remained on the rise due to depreciation of the Turkish lira. Meanwhile, services inflation remained moderate, thereby restricting the increase in core inflation indicators.

Food inflation in the last quarter increased notably on base effects, as projected in the October Inflation Report. In view of the high volatility in unprocessed food prices coupled with the developments in agricultural commodity prices, the assumption for annual food inflation remained unchanged at 7.5 percent (Table 7.1.1). However, considering the outlook for exchange rate and agricultural commodity prices, the composition of food inflation was changed, and processed food inflation was revised slightly downwards to 6.5 percent. Meanwhile, unprocessed food inflation is assumed to be 8.5 percent.

**Table 7.1.1.**  
Revisions to 2012 Assumptions

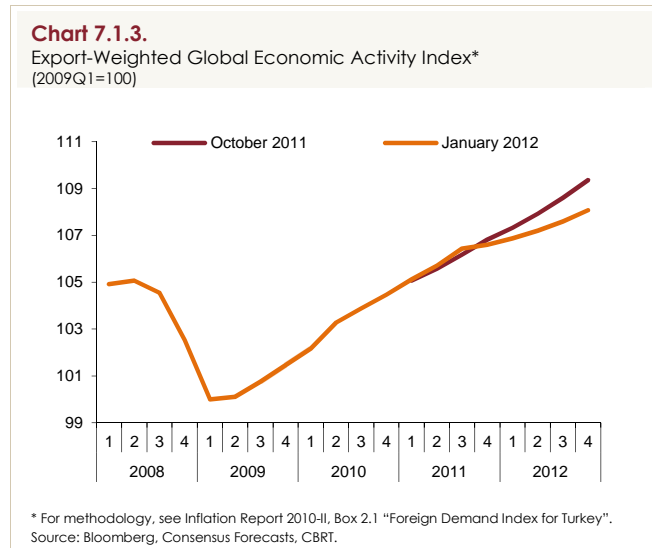
		October 2011	January 2012
<b>Output Gap</b>	2011Q3	-0.7	-0.15
	2011Q4	-1.0	-0.25
	2012-2014	7.5	7.5
<b>Food Price Inflation</b> (Year-end Percent Change)	2012	-1.9	-0.3
<b>Import Prices</b> (Average Annual Percent Change, USD)	2013	-0.5	-0.7
<b>Oil Prices</b> (Average Annual, USD)	2012	100	110
	2013	100	105
<b>Export-Weighted Global Production Index</b> (Average Annual Percent Change)	2011	2.45	2.43
	2012	2.26	1.39

## Demand Conditions

National accounts data suggest a stronger course of growth in the third quarter compared to the outlook presented in the October Inflation Report. Last quarter data point to a mild increase in domestic demand. Production of consumption goods, indicative of private demand, followed an upward course in the October-November period, while imports of consumption goods maintained a downtrend since the second quarter. Leading indicators signal a mild increase in investment demand in tandem with the consumption demand.

Accordingly, the output gap assumptions underlying the recent forecasts were revised upwards for the second half of 2011 (Table 7.1.1).

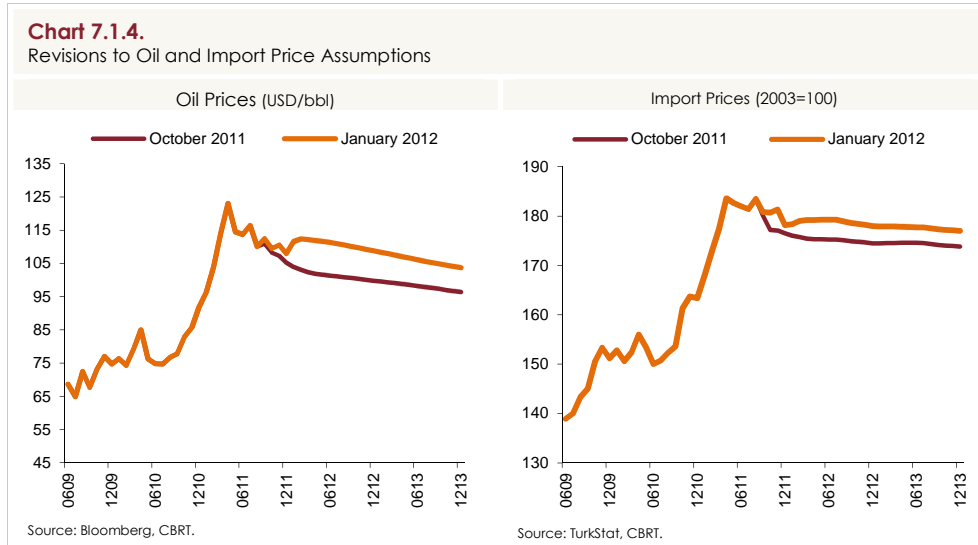
External demand indicators for the last quarter of 2011 suggest a quarterly increase in exports notwithstanding the setbacks at a global scale. Meanwhile, uncertainties persist regarding the solution of the Euro Area problems, which aggravated in August. Furthermore, the U.S. economic outlook remains weak, reflecting on the global growth forecasts, thus causing export-weighted global production index to go down compared to the October Inflation Report (Chart 7.1.3).



### Import Prices

The imported input prices in the last quarter of 2011 remained slightly above the October Inflation Report forecasts. Current projections based on futures prices assume that import prices in USD will go down by a year-on-year 0.3 percent in 2012. Therefore, the import price assumptions for 2012 were revised slightly upwards in the inter-reporting period (Chart 7.1.4).

Although the weakening global outlook posed additional downside risks to oil prices, supply-side developments continue to exert pressure on oil prices. Accordingly, oil price assumption, which was USD 100 per barrel in the previous Report, was increased to USD 110 per barrel for 2012, and USD 105 per barrel for 2013 (Table 7.1.1 and Chart 7.1.4).

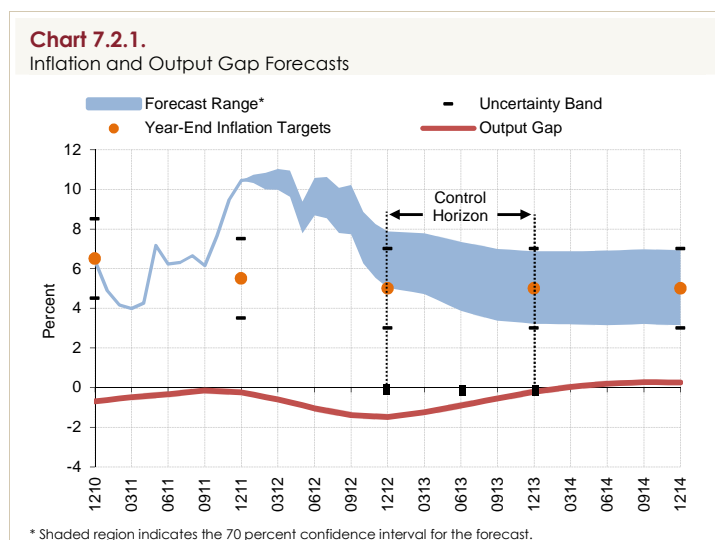


### Fiscal Policy and Tax Adjustments

Regarding fiscal policy, the medium-term inflation forecasts take the revised projections of the MTP as given. Accordingly, the baseline scenario envisages that public spending will gradually contribute less to domestic demand, hence public sector will impose no inflationary pressure through aggregate demand. Tobacco prices are assumed to remain unchanged throughout 2012, while increasing in tandem with the October 2011 tax adjustments in 2013. Moreover, other tax adjustments and administered prices are assumed to be consistent with the inflation targets and automatic pricing mechanisms.

## 7.2. Medium-Term Outlook

Forecasts are based on the assumption that tight monetary policy stance will be sustained for a while, hence, annual loan growth rate will hover around 15 percent and the Turkish lira will appreciate mildly. Accordingly, inflation is expected to be, with 70 percent probability, between 5.1 and 7.9 percent with a mid-point of 6.5 percent at the end of 2012, and between 3.3 and 6.9 percent with a mid-point of 5.1 percent at the end of 2013. Inflation is expected to stabilize around 5 percent in the medium term (Chart 1.3.1).

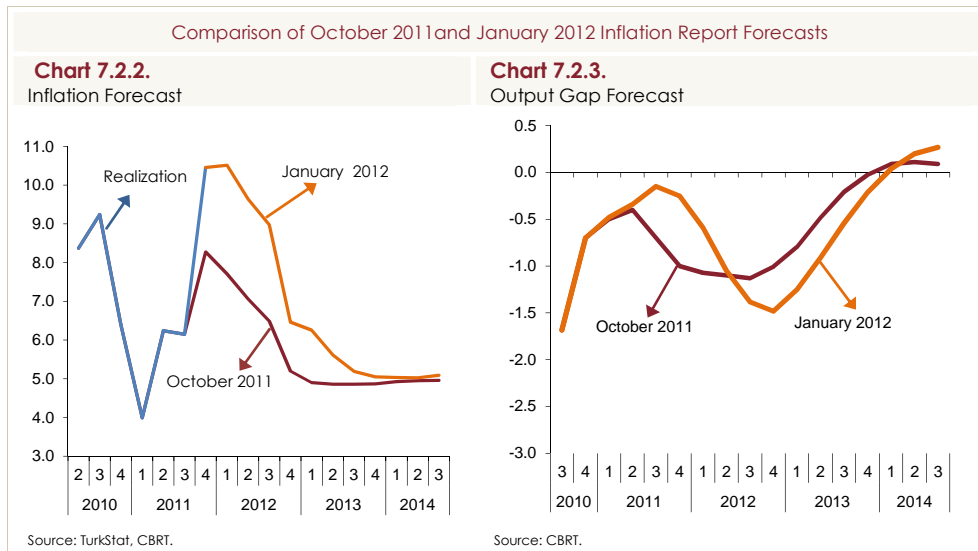


The cumulative effects of the exchange rate developments dominating the second half of 2011 in addition to adjustments to administered prices and the unfavorable course of the unprocessed food prices may pose upward pressure on inflation in early 2012. However, the strong course of the Turkish lira as well as the pursued tight monetary policy are expected to pull inflation down starting from the second quarter. Inflation is expected to plunge, reaching 6.5 percent at end-2012 as the base effects owing to tax adjustments in administered prices and unprocessed food prices fade away in the last quarter (Details on base effects are presented in Box 7.2).

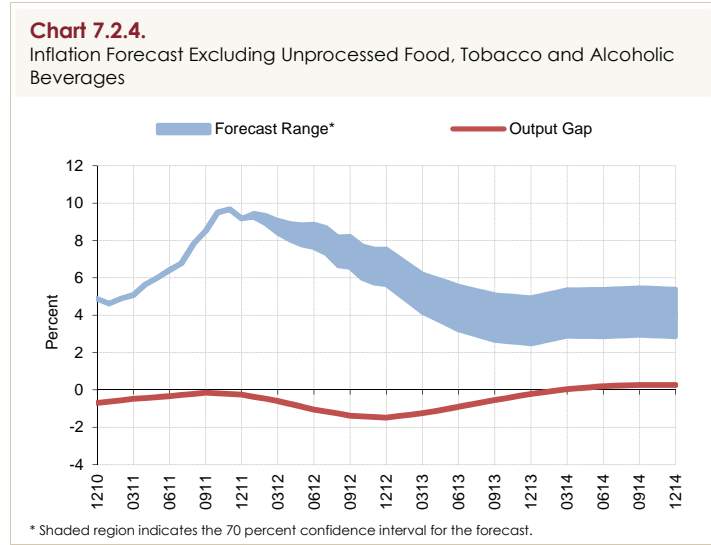
Output gap forecasts based on above assumptions are given in Chart 7.2.1. Although the recently released data point to a stronger-than- envisaged economic activity, for the second half of 2012, output gap was revised downwards quarter-on-quarter considering the lagged effects of the current monetary tightening and the deterioration of the global growth outlook (Chart 7.2.3). Thus, aggregate demand conditions will markedly contribute to disinflation by the second half of 2012.

In sum, demand-side developments as well cost factors remained virtually unchanged, yet, projections on end-2012 inflation were pulled up notably in the inter-reporting period due to upward revision of the initial values (Chart 7.2.2).

Inflation is envisioned to reach the target of 5 percent by mid-2013 in view of the fact that attaining the target by year-end requires an extremely tight monetary policy. Such a tightening may give rise to severe deceleration in the economic activity, while also causing growth composition to deteriorate amid rapid appreciation of the Turkish lira, thus heightening concerns on financial stability. Therefore, the revised forecasts are based on an outlook envisioning to reach the target in about 18 months. However, the target might also be reached by the end of 2012 should the risk appetite improve markedly in the forthcoming period and the capital flows to emerging economies re-accelerate, leading to a stronger-than-expected appreciation of the Turkish lira.



Unpredictable fluctuations in items that are beyond the control of the monetary policy, such as unprocessed food, tobacco and alcoholic beverages, are among major factors causing deviations in inflation forecasts. Hence, inflation forecasts excluding unprocessed food, tobacco and alcoholic beverages are publicly shared in Chart 7.2.4. The inflation indicator, when measured as above, is expected to fall gradually as of the first quarter of 2012, and stabilize around 5 percent in the medium term.



It should be emphasized that any new data or information regarding the inflation outlook may lead to a change in the monetary policy stance. Therefore, assumptions regarding the monetary policy outlook underlying the inflation forecast should not be perceived as a commitment on behalf of the CBRT.

#### Comparison of the CBRT's Forecasts with Inflation Expectations

It is critical that economic agents, being aware of the temporary factors, should focus on the medium-term inflation trend, and therefore, take the inflation target as a benchmark in their pricing plans and contracts. In this respect, to serve as a reference guide, CBRT's current inflation forecasts should be compared to inflation expectations of other economic agents. Year-end inflation expectations as well as 12-month and 24-month ahead inflation expectations of the Survey of Expectations' respondents are slightly above our baseline scenario forecasts (Table 7.3.1).

**Table 7.3.1.**  
CBRT Inflation Forecasts and Expectations

	CBRT Forecast	CBRT Survey of Expectations*	Inflation Target**
2012 Year-end	6.46	7.22	5.0
12-Month Ahead	6.39	6.91	5.0
24-Month Ahead	5.04	6.26	5.0

\* January 2012, second survey period results.

\*\* Calculated by linear interpolation of year-end inflation targets for 2012-2014.

Source: CBRT.

### 7.3. Risks and Monetary Policy

Inflation will remain elevated in the short term, posing risks regarding the secondary effects. The cumulative rate of increase in the consumer prices, which will continue to reflect on inflation till the last quarter of 2012, hit 5.66 percent in the last quarter of 2011. Annual inflation, measured as the 12-month rate of change in prices, is expected to remain significantly above the target until the year-end, even if the underlying inflation falls back to levels consistent with the target. Although the monetary tightening by the CBRT since October has contained the secondary effects, inflation expectations and the pricing behavior will be monitored closely in the upcoming period, and necessary measures will be taken to keep medium-term inflation outlook consistent with the target.

Uncertainties regarding global economy will remain critical, thus requiring flexibility in monetary policy. The baseline scenario underlying the medium-term projections assumes that problems in the Euro Area will be solved gradually with no further deterioration in the global outlook. However, the probability that the solution of the Euro Area problems may be protracted and painful poses downside risks regarding global growth and risk appetite. On the other hand, perceptions regarding global economic outlook may turn more favorable than expected, should the measures taken towards the solution be finalized sooner and more decisively than envisaged. Accordingly, the risk appetite may improve amid the ongoing quantitative easing policies pursued by major central banks, accelerating capital flows to emerging economies. Overall, the ongoing Euro Area problems and uncertainties about the effectiveness of the adopted measures imply further volatility in the global financial markets in the forthcoming period, thus necessitating a flexible monetary policy, which utilizes multiple instruments. The CBRT will continue to monitor global developments closely, and take the required measures promptly.

Another risk factor in the forthcoming period is the uncertainty regarding oil prices. Although the weak course of the global economy dampens commodity prices, the recently manifesting problems regarding oil supply pose upside risks to energy prices. Should such a risk materialize, the CBRT will not react to temporary price movements, yet will not tolerate any deterioration on expectations.



The CBRT monitors fiscal policy developments closely while formulating its monetary policy. The baseline scenario forecasts of the Report are based on the MTP framework, therefore assuming that fiscal discipline will be maintained. A revision in the monetary policy stance may be considered, should the fiscal stance deviate significantly from this framework, and consequently, have an adverse effect on the medium-term inflation outlook.

In the period ahead, monetary policy will continue to focus on achieving price stability on a permanent basis, while observing financial stability. To this end, the impact of the macroprudential measures taken by the CBRT and other relevant institutions on the inflation outlook will be assessed carefully. Strengthening the structural reform agenda that would ensure the sustainability of the fiscal discipline, thereby reducing the saving deficit will contribute to the relative improvement of Turkey's sovereign risk and support price and the financial stability. Making progress in this direction will also provide room for monetary policy maneuver, and support the social welfare by keeping interest rates permanently at low levels. In this respect, taking necessary steps towards implementation of the structural reforms envisaged by the MTP is of utmost importance.

Box  
7.1

## Sources of Revisions to end-2011 Forecasts

Uncertainties regarding the global economy continued in 2011, requiring revisions to assumptions on external demand and commodity prices. Meanwhile, unprocessed food prices remained volatile. Due to unforeseen external developments, inflation forecasts for end-2011 were also revised remarkably. As an inflation-targeting central bank, the CBRT is liable to account to the public for the deviations in inflation target through published reports. Accordingly, this Box summarizes the revisions to end-year inflation forecasts throughout 2011, along with the underlying reasons.

**January 2011 Inflation Report**

The divergence between domestic and external demand grew strongly in this period amid weak external demand on one hand, and brisk domestic demand on the other. Owing to the downside risks on external demand coupled with the pursued monetary tightening as of the last quarter of 2010 against heightening macro financial risks, forecasts are based on an outlook where inflation is controlled via dampening aggregate demand. Despite the more favorable-than-anticipated course of unprocessed food inflation in the last quarter of 2010, end-2011 inflation was projected to go slightly beyond the target due to gradual increases in oil and other commodity prices. Accordingly, year-end inflation was envisaged as 5.9 percent in the January 2011 Inflation Report.

**Table.1.** Inflation Report Assumptions

		Jan. 2011	Apr. 2011	Jul. 2011	Oct. 2011	Realization
<b>Food Prices</b> (Year-end Percent Change)	<b>2011</b>	7.5	7.5	7.5	7.5	12.2
	<b>2012</b>	7.5	7.5	7.5	7.5	-
<b>Import Prices</b> (Average Annual Percent Change, USD)	<b>2011</b>	10.9	16.2	15.4	15.2	15.7*
	<b>2012</b>	95	115	115	110	111
<b>Oil Prices</b> (Average Annual, USD)	<b>2011</b>	95	115	115	100	-
	<b>2012</b>	2.60	2.60	2.51	2.45	2.43*
<b>Export-Weighted Global Production Index</b> (Average Annual Percent Change)	<b>2011</b>	2.60	2.60	2.51	2.45	2.43*

\*As of January 15, 2012.

**April 2011 Inflation Report**

National accounts data for the last quarter of 2010 were largely consistent with the projections in the January 2011 Inflation Report. In spite of the weak external demand, forecasts were based on an outlook with limited support to disinflation through aggregate demand conditions given the brisk domestic demand.

Year-end inflation was projected as 6.9 percent in the April 2011 Inflation Report, with an upward revision by 1 point compared to the previous Report. The upward revision was mainly due to two factors. First, oil and other commodity prices in the first quarter of the year, went far beyond than envisioned in January. Cutback in production coupled with the mounting uncertainty amid the political unrest in the MENA countries caused surging oil prices. Accordingly, assumptions for average crude oil prices for 2011 were revised upwards by USD 20 to USD 115 in April 2011 compared to January 2011 (Table 1). Similarly, the annual average rate of increase in USD-denominated import prices was revised upwards from 10.9 percent to 16.2 percent. Consequently, year-end inflation forecasts were revised upwards by 0.5 point compared to the previous Report (Table 2). The second factor underlying the upward revision of the year-end inflation forecast is the rise in customs tariffs applied to fabrics and ready-to-wear starting from the second half of the year.

**July 2011 Inflation Report**

Second quarter data indicated that the soaring domestic demand in the previous quarter lost pace, and the negative contribution of external demand to growth continued. Despite the weak course of external demand in this period, projections for export-weighted global growth index for Turkey remained unchanged (Table 1). In this context, the initial value for the output gap forecast was revised slightly downwards. On the other hand, the medium-term inflation outlook remained virtually unchanged.

Food prices increased in tandem with the second quarter forecasts on soaring unprocessed food prices. Given the high volatility in unprocessed food prices and the developments in agricultural commodity prices, food inflation assumption for 2011 was maintained as 7.5 percent (Table 1).

Although crude oil prices hovered slightly below the April 2011 assumption of USD 115 in the second quarter, crude oil price assumption was kept constant. Other commodity prices remained elevated in the second quarter, despite a slight decline. Accordingly, the contribution of oil and other commodity prices to inflation forecast remained broadly unchanged compared to the previous Report.

In sum, year-end inflation forecast in the July 2011 Inflation Report remained unchanged in the inter-reporting period (Table 2).

#### **October 2011 Inflation Report**

National accounts data for the second quarter turned more favorable than the outlook presented in the July Inflation Report, while external demand remained weak. Forecasts were based on an outlook envisioning a slower recovery in external demand, and hence, external demand assumptions were revised downwards (Table 1). However, amid the better-than-expected economic activity in the second quarter, output gap assumptions were revised slightly upwards for the short term, yet leaving the end-2011 inflation forecast broadly unchanged (Chart 1).

Oil prices in the third quarter hovered below the July Inflation Report assumption, causing a downward revision in crude oil price assumption to USD 110 for 2011. Similarly, import prices were also revised downwards (Table 1). As a result, inflation forecast for end-2011 was pulled down by 0.1 point. Food inflation assumption, on the other hand, was maintained as 7.5 percent.

In the July Inflation Report, prices of tobacco products were assumed to increase by 5.5 percent, in tandem with the inflation target, thus contributing around 0.3 points to year-end inflation. However, price hikes to tobacco products were remarkably beyond the assumptions, adding 0.6 points to year-end inflation forecast. Meanwhile, the depreciation of the Turkish lira was a major factor that affected inflation in the third quarter. Developments in foreign exchange rates were particularly influential on core goods prices. Accordingly, developments in exchange rate added 0.9 points to year-end inflation forecast (Table 2). In sum, inflation forecast path was revised upwards in the inter-reporting period mainly on the back of exchange rate developments and increases in administered prices.

**Table 2.** Sources of Revisions to 2011 Year-end Inflation Forecasts

	Jan. 2011	Apr. 2011	Jul. 2011	Oct. 2011
Inflation Forecasts (Percent)	5,9	6,9	6,9	8,3
Sources of Revisions to Inflation Report Forecasts (Points)				
	Apr.-Jan.	Jul.-Apr.	Oct.-Jul.	Dec.-Oct.*
<b>Food</b>	0,0	0,0	0,0	1,3
Processed	0,1	0,0	0,2	0,2
Unprocessed	-0,1	0,0	-0,2	1,1
<b>Oil and Other Commodity Prices</b>	0,5	0,0	-0,1	0,2
<b>Additional Fiscal Measures</b>	0,5	0,0	0,6	0,1
<b>Exchange Rate Developments</b>	0,0	0,0	0,9	0,4
<b>Underlying Inflation</b>	0,0	0,0	0,0	0,2

\* Difference between year-end inflation forecast and year-end actual inflation. 2011 year-end inflation has been 10.45.  
Source: CBRT.

### End-2011 Inflation

Developments in food prices in the last quarter of 2011 stand out as the leading factor to push inflation above forecasts. Amid the more-than-anticipated increase in unprocessed food prices in particular, food inflation, which was assumed as 7.5 percent for the year-end in the October 2011 Inflation Report, reached 12.2 percent. This greatly accounts for the difference between the inflation forecast for end-2011 presented as 8.3 percent in the October 2011 Inflation Report and the realization of 10.45 percent at the year-end (Table 2).

Lagged effects of exchange rate movements continued to weigh on core goods prices over the last quarter of the year, causing higher-than-envisioned surge in inflation outlook. Additionally, national accounts data of the third quarter pointed to a stronger-than-expected growth leading to an upward revision in output gap forecasts for the second half of 2011 (Chart 7.2.3). Accompanied by the exchange rate movements, this accounts for the 0.6 points of the difference between the inflation forecasts in the October 2011 Inflation Report and the actual inflation data. Lastly, import prices also exceeded the assumptions posting a year-on-year increase of 15.7 percent on average in 2011, accounting for the 0.2 points of the difference between year-end inflation forecast and actual inflation (Table 2).



Box  
7.2

## The Role of Base Effects on the CPI Inflation in 2012

In 2011, food prices exhibited substantial fluctuations driven by unprocessed food products. Similarly, core goods prices followed a volatile course amid the developments in the exchange rate and the import prices. In the last quarter of the year, rises in electricity and natural gas prices increased energy prices, while SCT hikes in alcoholic beverages and tobacco products increased alcohol-tobacco prices. Accordingly, annual inflation, which hit the historic-low of 3.99 percent by the end of the first quarter, displayed great fluctuations in the second quarter, while accelerating in the last quarter. The aim of this Box is to analyze the effects of these developments on the course of annual inflation via the base effects channel throughout 2012. A clear understanding of the base effects, a major determinant of the changes in annual inflation together with the current price developments, is significant for the future course of annual inflation.

Annual inflation, in other words, 12-month inflation is measured as the difference between the price level in a respective month and the price level in the same month of the previous year. Thus, the price level of the previous year is taken as the base. For example, even when prices are sluggish in a month, 12-month inflation may surge if prices were remarkably lower in the same month of the previous year. In this case, the surge in inflation may be explained by the upward pressure due to low base in the previous year.<sup>1</sup> Technically, base effect can be defined as the difference of the monthly change in the base period from the “normal” monthly change in the respective month. “Normal” monthly change reflects the underlying trend of price changes in the respective period, while no standard method exists for the calculation of this “typical” change. For example, the ECB estimates the “normal” monthly change by adding a seasonal factor to the seasonally adjusted historical average change in the respective month.<sup>2</sup> Due to the lack of a steady seasonality in some subcategories included in the analysis, the median of monthly inflation in subcategories in the respective months within certain years is used as the “normal” change in this Box.<sup>3</sup>

<sup>1</sup> For the role of base effects on the CPI inflation in 2010, see Box 3.2 in CBRT (2010).

<sup>2</sup> The annual inflation rate is calculated through the formula:  $\pi_t = \frac{p_t - p_{t-12}}{p_{t-12}} \times 100$ , where  $\pi_t$  stands for the annual inflation in month t, while  $p_t$  stands for the price level. The annual inflation rate can also be approximated by  $\pi_t = [\ln(p_t) - \ln(p_{t-12})] \times 100$ . Accordingly, the monthly change in annual inflation can be expressed as  $\pi_t - \pi_{t-1} = [\ln(p_t) - \ln(p_{t-1})] - [\ln(p_{t-12}) - \ln(p_{t-13})] \times 100$ . In other words, the difference in annual inflation for the subsequent two months is approximately equal to the difference between monthly inflation in month t and month t-12. Accordingly, the base effect for any CPI subcategory is equal to the difference of the  $[\ln(p_{t-12}) - \ln(p_{t-13})] \times 100$  from the “normal” monthly change of the respective month. For details, see Box 3 in ECB (2005) and Box 5 in ECB (2011).

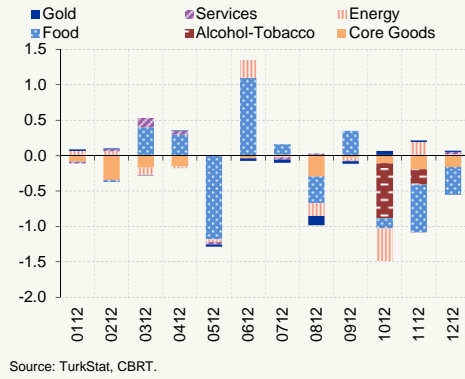
<sup>3</sup> In order to avert level effects, December 2010 is normalized to 100, also assuming that weights of each subcategory within the CPI remain unchanged throughout 2012.

Base effects will play a major role on the course of annual inflation in 2012. Chart 1 shows the expected contribution of base effects by CPI subcategories to the changes in annual CPI inflation, with the largest contribution coming from the food prices throughout the year. In particular, owing to the unprocessed food price hike in May and the plunge in June 2011, the base effect from the food prices is expected to pull annual inflation down by nearly

1.2 points in May and up by 1.1 points in June 2012. In the last quarter, base effects from the food prices will have negative contributions to annual inflation. As for the core goods, base effects are expected to bear downside consequences on annual inflation throughout the year. Due to the adjustments to administered prices in October 2011, base effects from alcohol-tobacco and energy prices in October 2012 will bring the annual inflation down. Base effects from services and gold are expected to have relatively weaker contributions to the monthly changes in annual inflation.

Cumulative contributions of the base effects to the changes in annual inflation in 2012 is shown in Chart 2. Accordingly, base effects are expected to pull the end-2012 inflation down by 3.3 points compared to the end-2011 inflation.<sup>4</sup> It should be noted that base effects will contribute to annual disinflation particularly in the last quarter of the year. In 2012, the most sizeable cumulative contribution of base effects will come from the core goods on the negative side. Base effects from the alcohol-tobacco prices will bring the annual inflation down by approximately 1 point. Cumulative contributions of the base effects from the food prices will fluctuate throughout the year, while the cumulative contributions of base effects from gold, services and energy prices will be relatively limited. Chart 3 shows that by year-end, base effects from the respective subcategories will decrease the annual SCA-H and SCA-I inflation by 1.6 and 1.4 points, respectively.

**Chart 1.** Expected Contributions of the Base Effects by Subcategories to Monthly Changes in Annual CPI Inflation in 2012



<sup>4</sup> Contribution of the base effects to the changes in annual inflation can differ depending on the method used for estimating the "normal" change. However, irrespective of the method, the sign of the total cumulative contribution and the share of each subcategory in this total do not change.



