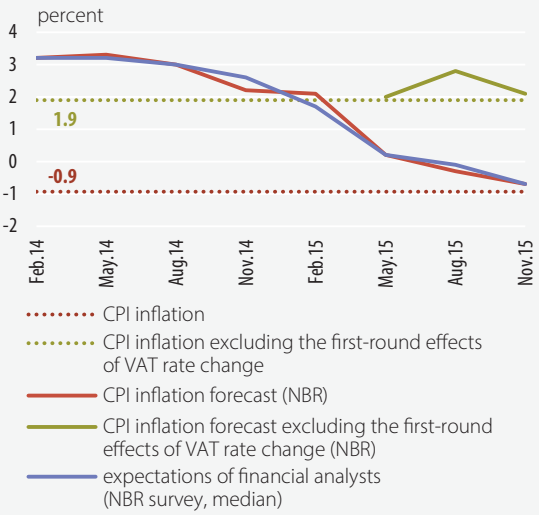
sluggish global demand. At the same time, the future monetary policy stances of the world's major central banks, depending on the direction and magnitude of their reconfiguration, may influence the EUR/USD exchange rate developments, which may have unforeseen effects on the USD/RON exchange rate and, hence, on the oil price expressed in domestic currency.

Box 3. Assessment of forecast errors for the December 2015 annual CPI inflation

Given the inherent time lags in central bank's decisions working their way through to the economy, the macroeconomic forecasts play a pivotal part in the inflation targeting strategy. This box assesses the accuracy of the forecasts that the NBR made in successive rounds that contain a projection on the end-2015 annual CPI inflation rate. Thus, eight forecasting rounds were considered, corresponding to the Inflation Reports published February 2014 through November 2015.

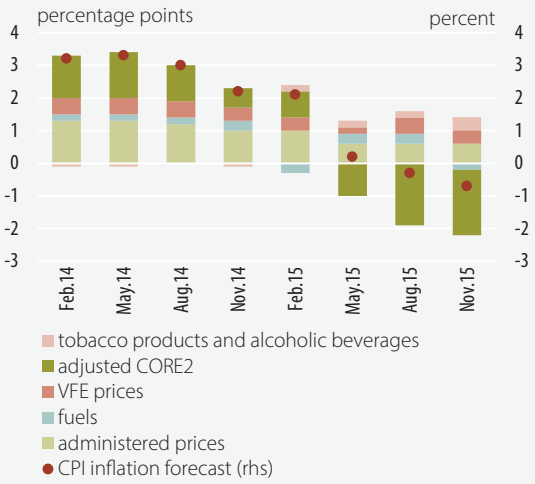
The annual CPI inflation rate for December 2015 (-0.9 percent[75]) was overestimated[76] in all eight rounds under review, with forecast errors ranging between a +0.2 percentage point low (in the November 2015 forecasting round) and a +4.2 percentage point high (in the May 2014 forecasting round). The significant errors in the Inflation Reports published in February 2014 to February 2015 owe to the absence of information on the measure aimed at broadening the scope of the reduced VAT rate to all food items, non-alcoholic beverages and food service activities[77], which impacted also the path of inflation expectations through which the second-round effects of the measure are fed through. In terms of accuracy, the size of errors is similar to the median of those arising from financial analysts' forecasts (taken from the NBR survey on inflation expectations carried out in the months when Inflation Reports were published) – Chart A.

Chart A. Successive Forecasts of the Annual CPI Inflation Rate for December 2015



Source: NIS, NBR projections, NBR survey

Chart B. Contributions of Components to the Forecasted Annual CPI Inflation for December 2015 in Successive Projection Rounds



Source: NBR calculations

[75] According to NIS Press Release No. 14 of 13 January 2016.

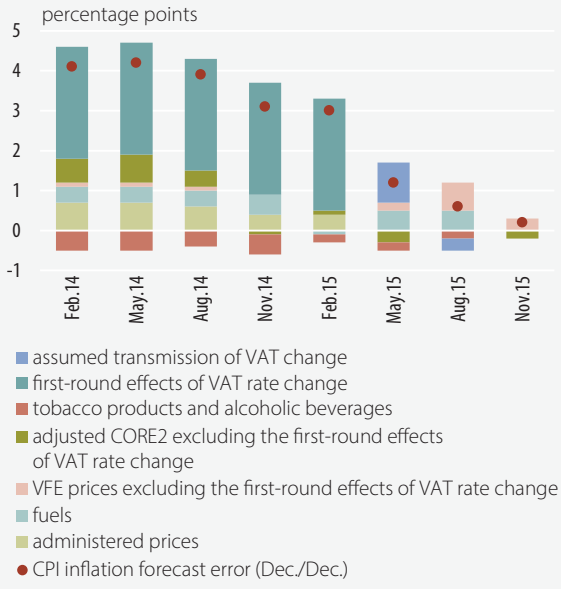
[76] The forecast error is calculated as the difference between the forecasted value and the actual one. A negative difference implies that the projection underestimated the actual CPI inflation rate, while a positive difference implies its overestimation.

[77] On 7 April 2015, the Government adopted the Emergency Ordinance amending and supplementing Law No. 571/2003 on the Tax Code providing for the broadening of the reduced VAT rate (9 percent) to all food items, non-alcoholic beverages and food service activities, except for alcoholic beverages, starting in June 2015.

A significant revision of the NBR's projection on end-2015 CPI inflation occurred during the May 2015 round, when the information on broadening the reduced VAT rate became available, with an impact on some sub-components of the adjusted CORE2 index[78] and on volatile food prices (VFE) – Chart B.

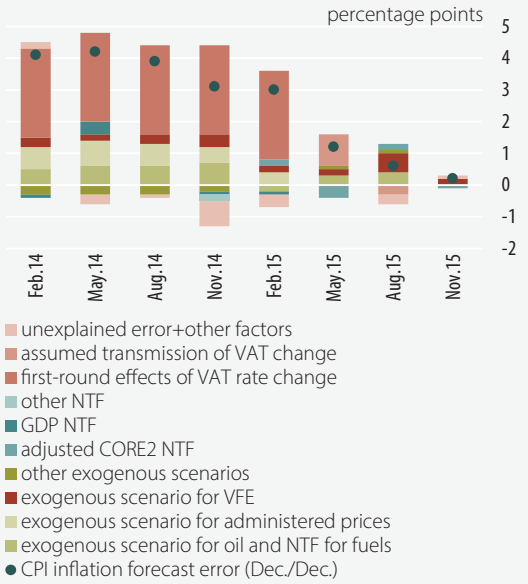
Chart C shows the differences between the forecasted contributions of CPI components to headline inflation and those actually reported in December 2015. The influence of broadening the reduced VAT rate prevails over the other contributions. The first-round impact of this measure (estimated at 2.8 percentage points) was initially underestimated in the May 2015 forecasting round and marginally overestimated in the August 2015 round.

Chart C. Forecast Errors in Successive Rounds, by Contribution of CPI Components



Source: NBR calculations

Chart D. Forecast Errors in Successive Rounds, by Contribution of Factors Included in the Model for Analysis and Medium-Term Forecasting



Source: NBR calculations

Chart D shows the breakdown of the forecast errors for the annual CPI inflation rate by specific determinants included in the NBR's Model for Analysis and Medium-Term Forecasting (MAMTF). Specifically, this assumes counterfactual simulations in which projection input data (also called specific factors) are supposed to be exactly known (being assigned the actual historical values). The difference between the inflation projections released in the eight Inflation Reports (February 2014 – November 2015) and those resulting from the counterfactual simulations allows for determining the contribution made by each of the specific factors to the total forecast error. Thus, excluding the first-round statistical effect of the VAT rate cut as well as that associated with estimating its pass-through coefficient into prices, the exogenous scenarios[79] were the major contributors to the overestimation of the December 2015 CPI inflation. The errors caused by short-term forecasts[80], especially those for inflation and its sub-components, are visible primarily in the recent forecasting rounds, considering their associated forecasting horizon (1-2 quarters). "Other factors" include various assumptions adopted in the forecasting process (for instance, the risk premium, the economic agents' inflation expectations, the estimates on deviations from medium-term trends of the main macroeconomic variables etc.), with a lower contribution to errors.

[78] The fiscal measure affected 42 percent of the adjusted CORE2 basket.

[79] Exogenous scenarios built for the 8-quarter projection interval: VFE, administered prices, external variables (external inflation, effective EU GDP, 3M EURIBOR rate, EUR/USD exchange rate, oil price).

[80] Near-term forecasts (NTF): inflation, GDP, exchange rate, interest rates.

The difference between the total forecast error in Chart A and the sum of the contributions made by specific factors is referred to as "unexplained error" having as determinants various (unanticipated) shocks which affected the economy, the structure of the model (representing only a simplification/stylisation of reality), as well as the uncertainty concerning the estimated/calibrated values of the impact coefficients of various variables, as they are modelled within the MAMTF.

2. Policy assessment

In line with the NBR's forecasts, in 2015 Q4, the annual inflation rate remained in negative territory, although on an upward path, coming in at -0.93 percent in December[81]. Its positioning at a slightly lower-than-anticipated level[82] was entirely ascribable to supply-side factors, with the most significant influence coming from the weaker-than-expected increase in volatile food prices and administered prices. However, this influence was to a large extent offset by the opposite impact exerted by the developments in the adjusted CORE2 inflation, which, despite the persistence of low inflation in the euro area/the EU and of subdued inflation expectations, posted a slower negative annual dynamics over this period, given the faster narrowing of the negative output gap and the relative weakening of the leu against the main currencies. Consequently, amid the temporary effects of broadening the scope of the reduced VAT rate to all food items as of June, the average annual inflation rate went down to -0.59 percent in 2015, i.e. the lowest reading in 26 years.

In this context, the updated forecast on the medium-term macroeconomic developments, based on the latest available data and information, shows a new increase in the divergent nature of the future path of the annual inflation rate, given its anticipated positioning at values similar to those in the previous projection[83] for the first part of 2016 and at levels higher than previously forecasted for the following segment of the projection horizon.

Thus, in 2016 Q1, the forecasted annual inflation rate is seen moving deeper into negative territory to fall in March to the same level as in the previous projection (-3 percent). The upward trend expected for H2, after its return to positive territory, is, however, slightly more pronounced than that highlighted in the previous projection, the annual CPI inflation rate nearing the lower bound of the variation band of the flat target in December (1.4 percent). Implicitly, the level it rises to in 2017 Q1, owing to a base effect, is higher than that previously forecasted, its slowly increasing path staying within the upper half of the band of the flat target throughout the year[84]. In line with these developments, the average annual inflation rate forecasted for 2016 comes in at -0.7 percent – a level similar to that in the preceding projection –, while that for 2017 stands at 3.1 percent.

Behind the increasing divergence in the forecasted inflation pattern stand two major drivers. The first driver refers to the disinflationary impact (similar in terms of size to that in the previous projection) anticipated to be exerted by the cut applied this year to the standard VAT rate and other indirect taxes[85], overlapping in the course of the first months the still manifest effects arising from broadening

[81] At the end of the previous quarter, the annual inflation rate stood at -1.73 percent.

[82] According to the latest forecast, the annual inflation rate was expected to stand at -0.7 percent in December 2015.

[83] November 2015 Inflation Report.

[84] The projected annual inflation rate recalculated by excluding the anticipated one-off impact of the cut in the standard VAT rate to 19 percent exceeds slightly the upper bound of the band of the flat target at the end of the forecast horizon (3.7 percent).

[85] The revised version of the new Tax Code adopted by the Parliament of Romania on 3 September 2015 set forth: (i) the cut in the standard VAT rate from 24 percent to 20 percent as of 1 January 2016 and to 19 percent as of 1 January 2017; (ii) the removal of the special excise duty on fuels as of 1 January 2017; (iii) the lifting of the tax on special constructions and the cut in the tax on dividends from 16 percent to 5 percent as of 1 January 2017; (iv) other adjustments in the excise duties on tobacco products. This Code was, however, subsequently amended via Government Emergency Ordinance No. 50 of 27 October 2015, which approved the implementation, as of 1 January 2016, of the following measures: the cut in the tax on dividends, the broadening of the scope of the reduced 9 percent VAT rate to potable water delivery services and the reduction of the income tax for micro-enterprises with hired workers.