



Bank of Russia

Central Bank of the Russian Federation

Measuring Domestically Generated Inflation

**Analytical Note
Research and Forecasting
Department
Bank of Russia**

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In 2014-2015, inflation acceleration was driven mainly by external factors. As they were exhausted, CPI growth decreased predictably. At the same time, our estimates show that domestic factors currently fail to ensure a decline in the price growth to 4% in 2017. A slowdown in the growth rate of the wide range of domestic nominal indicators is necessary in order that the Bank of Russia may achieve its inflation target. Otherwise, further inflation deceleration may prove to be unsustainable in the medium term.

In most cases, central banks refer to standard consumer price index to determine the inflation target. The key monetary policy objective of the Bank of Russia is to reduce consumer inflation to 4% in 2017 and further sustain it close to this level.

However, in practical implementation of the monetary policy alternative inflation measures may be applied. It largely results from the fact that monetary policy lag makes it impossible to control inflation over the short-term horizon. Therefore, central banks have to target projected medium-term inflation. In these conditions, an auxiliary underlying (core) inflation indicator may be of use in monetary policy decision-making, if it allows capturing relevant headline inflation shocks, forecasting future headline inflation or providing information on current medium-term inflation expectations.

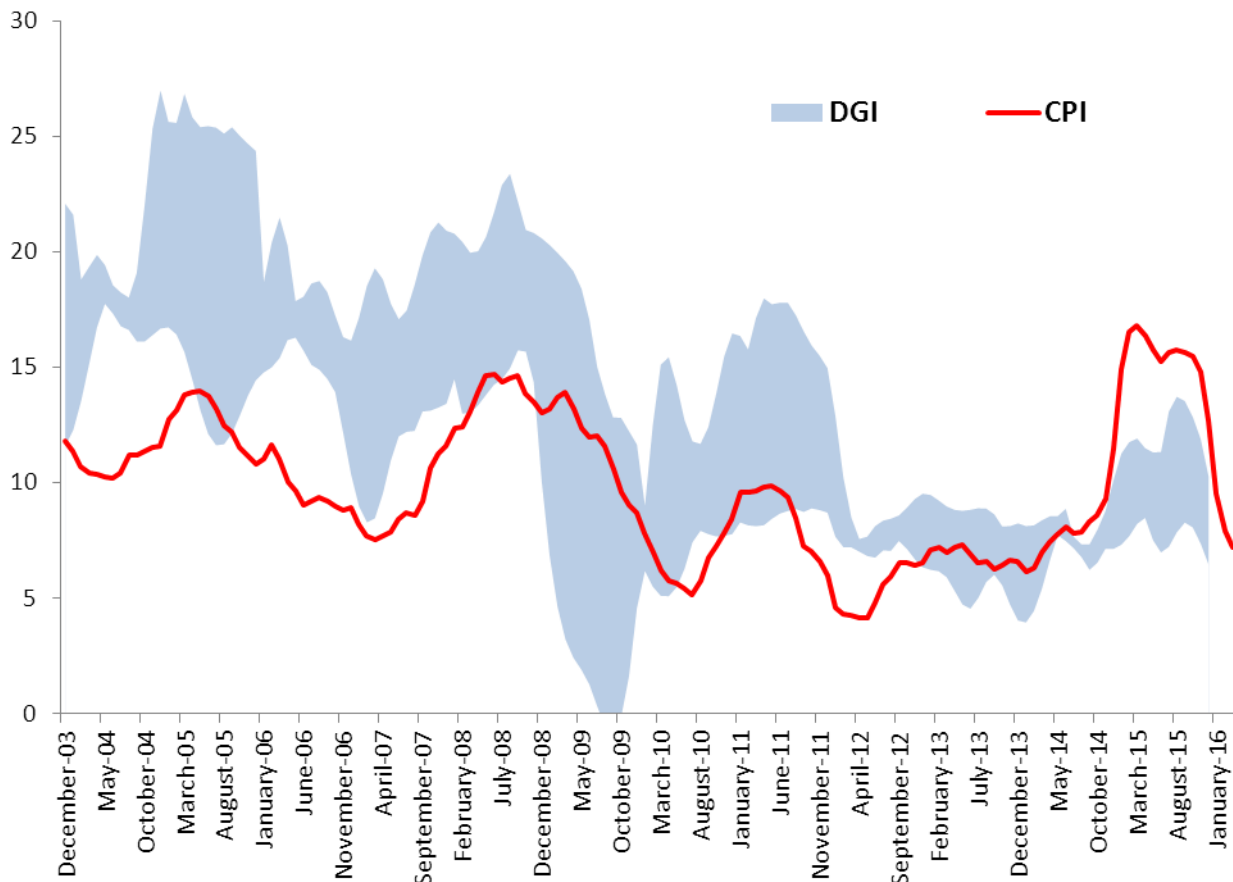
One of the approaches to calculating such a price indicator is a concept of domestically generated inflation (DGI).¹ It is gauged by the measures determined primarily by the growth of domestic costs and the least sensitive to external shocks price indicators. Several measures can be used for this purpose. *First*, these are service prices and GDP deflator. *Second*, it is unit labour costs index (wages growth is considered as the key domestic inflation determinant in the Neo-Keynesian models (*Christoffel et al. (2008), Vetlov et al. (2011)*)).

Figure 1 presents the range of these three DGI measures and CPI growth in Russia. Notably, that before the 2008-2009 crisis, external factors contributed to inflation reduction and CPI growth was below DGI. In 2010-2013, actual and domestic inflation rates were almost identical. Only a period in early 2012, when CPI growth rates fluctuated (mainly impacted by movements in administered prices), stands out.

In 2014-2015, inflation acceleration was largely triggered by external factors. As a result, CPI growth rates outpaced DGI for the first time. As external shocks wore out, actual inflation predictably slowed to the relevant values. At the same time, current DGI measures still exceed the 4% benchmark considerably.

¹ E.g., see 'Measures of underlying inflation', Bank of England Inflation Report (August 2015), p. 28-29

**Figure 1. CPI and DGI range
(annual growth, %)**



Source: Rosstat.

A more formal approach to calculating the impact of domestic factors on inflation suggests using 'monetary' inflation indicator. This indicator is calculated by means of identifying a common low-frequency component in the growth rates of a series of nominal indicators. This indicator is assumed to be cleared from shocks which are uncommon for all indicators under consideration (idiosyncratic shocks) and short-term fluctuations irrelevant for monetary policy. The calculation is based on a dynamic factor model (Cristadoro *et al.* 2005).

The dataset included CPI, the three above-mentioned domestic inflation indicators, as well as housing prices, fixed capital investment deflator, monetary aggregate M2Y, and the nominal effective ruble exchange rate².

The Research and Forecasting Department applies this approach for model decomposition of consumer price inflation (for details, see [Talking Trends No. 5 / March 2016](#), Section 1.1.2 'The implications of monetary factors, global food prices and exchange rate for inflation in Russia').

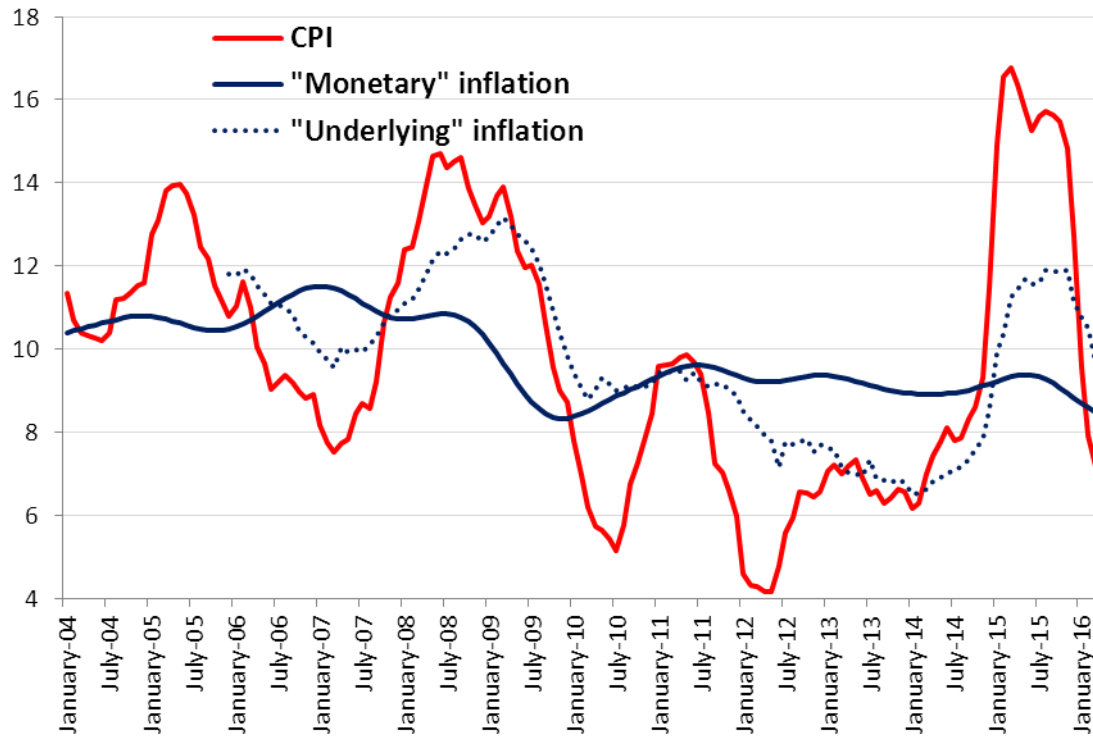
In addition, the Research and Forecasting Department applies this approach to estimate one of the three indicators used in calculation of underlying inflation. The Department publishes the median value of these indicators as a final estimate of underlying inflation.³ Besides, recursive (real-time) estimates, which are not subsequently

² We used monthly seasonally adjusted growth rates. The exchange rate needs to be included in the set of indicators in order that model outcomes may be further applied for inflation decomposition.

³ This approach to calculating underlying inflation has substituted for the 'monetary' approach as presented in Deryugina *et al.* (2015).

revised, are used as underlying inflation indicators, while inflation decomposition involves final values of indicators, which are revised as new information arrives.

Figure 2. Actual, 'monetary' and underlying inflation (annual growth, %)



Source: author's calculations.

Our calculation outcomes confirm that medium-term inflation remained subdued during 2014-2015. However, despite having declined somewhat recently, 'monetary' inflation value still exceeds 8%, signalling that the inflationary environment in the economy is less benign than headline consumer price index dynamics suggest. A considerable slowdown in actual inflation is likely to be prompted by transitory favourable factors. Should their impact be exhausted, further inflation deceleration may come to a halt. This results in persistent risks of inflation deviation from the Bank of Russia's target in late 2017.

References

Christoffel, K., G. Coenen and A. Warne (2008) The new area-wide model of the euro area - a micro-founded open-economy model for forecasting and policy analysis, Working Paper 944, European Central Bank

Cristadoro R., M. Forni, L. Reichlin and G. Veronese (2005) A core inflation indicator for the euro area, Journal of Money, Credit and Banking. Vol. 37. № 3. P. 539-560.

Vetlov, I., T. Hledik, M. Jonsson, H. Kucsera, and M. Pisani (2011) Potential output in DSGE models, Working Paper 1351, European Central Bank.

Deryugina E., Ponomarenko A., Sinyakov A., and K. Sorokin (2015) Evaluating the underlying inflation measures for Russia, Bank of Russia Working Paper Series No. 4.

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