

## Belarus short-term economic trends

Inflation

01/2013

- In 2012, inflation reached 21.78%, being driven by the rise in food prices and costs of paid services.
- According to the forecasts, we expect inflation to accelerate to 23.62% yoy in February, 23.58% yoy in April, and 23.73% yoy in June.

### Consumer prices in November and December 2012

In **November**, consumer prices increased by 1.69% mom (1.78% mom in October), while on an annual basis growth slowed down to 22.85% yoy (30.60% yoy in October). From the beginning of the year consumer prices has grown by 20.11% eop. Food inflation contributed to 47.62% of the gross inflation rate (prices of fresh tomatoes, fresh cucumbers, apples, wheat flour grew the most). The contribution of paid services prices amounted to 44.55% of gross inflation (32.06% due to HPU and 12.48% due to other services). Prices of central heating, concert halls, automobile transport (international traffic), recreation and health-improving services outpaced the growth of other paid services prices. The weight of non-food products inflation in consumer prices inflation decreased to 7.84%.

In **December**, CPI amounted to 1.39% mom. On an annual basis, inflation slowed down to 21.78% yoy. An increase in food products prices contributed to 60.41% of inflation (prices of fresh tomatoes, fresh cucumbers, potatoes, fresh white cabbage, apples, and beet grew the most). The weight of paid services inflation in consumer inflation amounted to 37.69% (10.21% due to HPU and 27.48% due to other services). Prices of concert halls, cinemas and video rooms, railway transport (international traffic), and communications services grew the fastest. Non-food products prices almost have not changed, contributing only to 1.90% of inflation.

In **2012**, 53.86% of inflation arose from the increase in food products prices, 13.65% – from non-food products inflation, and 32.50% – from paid services inflation (the 9.46% of inflation stemmed from the rise in HPU prices and 23.03% – from the other paid services inflation).



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### Consumer prices dynamics

	November 2012	December 2012
CPI, % mom	1.69	1.39
CPI, % yoy	22.85	21.78
CPI, % eop	20.11	21.78

Source: Belstat, calculations based on Belstat data.

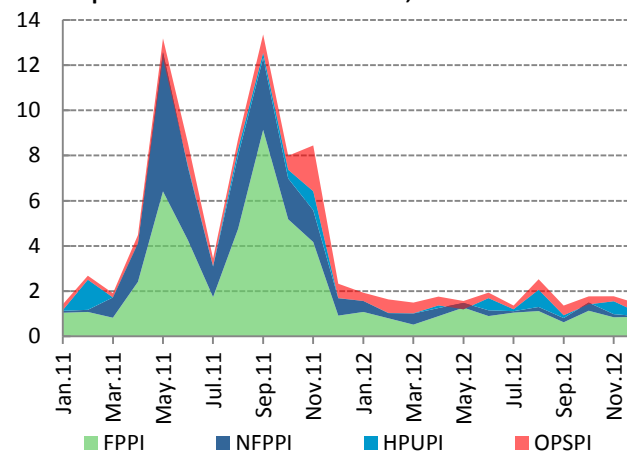
### Inflation by the groups of consumer goods and services

	November 2012			December 2012		
	% mom	% yoy	% eop	% mom	% yoy	% eop
Food products	1.72	25.23	22.94	1.76	25.10	25.10
Non-food products	0.46	13.04	10.23	0.09	10.33	10.33
Paid services:	3.84	36.80	32.66	2.62	36.14	36.14
HPU	7.40	25.80	25.60	1.90	27.90	27.90
other services	1.72	43.16	36.45	3.05	40.61	40.61

The data may slightly differ from the official data because of rounding.

Source: Belstat, calculations based on Belstat data.

### CPI components contribution to the CPI, % mom



FPPI – food products price index, NFPPPI – non-food products price index, HPUPI – HPU price index, OPSPI – other paid services price index.

Source: Calculations based on Belstat data.

## Short-term inflation forecast<sup>1</sup>: January 2013 – June 2013

The average of the forecasts, made on the basis of several approaches<sup>2</sup>, suggests inflation in February may amount to 23.62% yoy, in April – to 23.58% yoy, and in June – to 23.73% yoy. The confidence interval ( $\pm 2$  standard errors) of the forecast ranges from 21.75–24.01% yoy in January to 18.37–29.02% yoy in June.

Greater predicted values (as compared to the ones available in the previous bulletin) are related to an inflation hike of January. On January 22, CPI amounted to 2.4% mom against average of December prices. This hike is caused by the relaxation of administered prices along with the rise in communication services prices. The latter is related to the cessation of VAT exemptions granted to mobile communication companies when servicing individuals ('natural persons'). Second, forecasts made account for the rise in electricity tariffs in February and increase in public transport service charges in the first quarter of 2013.

<sup>1</sup> The forecasting methodology is discussed in Zaretsky (2013).

<sup>2</sup> In this issue of the bulletin, inflation forecasts are based on the following approaches:

- autoregression (AR);
- autoregressive moving average model (ARMA);
- gross inflation as a weighted sum of food products inflation, non-food products inflation, HPU inflation, and other paid services inflation, which are forecasted by AR and ARMA models.
- error correction model (ECM) according to the Engle-Granger methodology;
- vector autoregression (VAR);
- autoregressive distributed lag model (ARDL): inflation is the function of past inflation and GDP deflator, forecasted by P\* (P-Star) model;

Simple average of the models' forecasts is taken in case several models are used within the framework of one approach. Forecasting of the values of the majority of exogenous variables is performed by using AR and ARMA models. Given that certain variables are problematic to model by using the AR or ARMA, expert forecasts are instead used to capture earlier and current trends. It follows that the bulletin contains forecasts close to unconditional as they predict the most likely future dynamics of the variables, assuming that economic policies remain largely unchanged.

## Short-term CPI forecast, % yoy

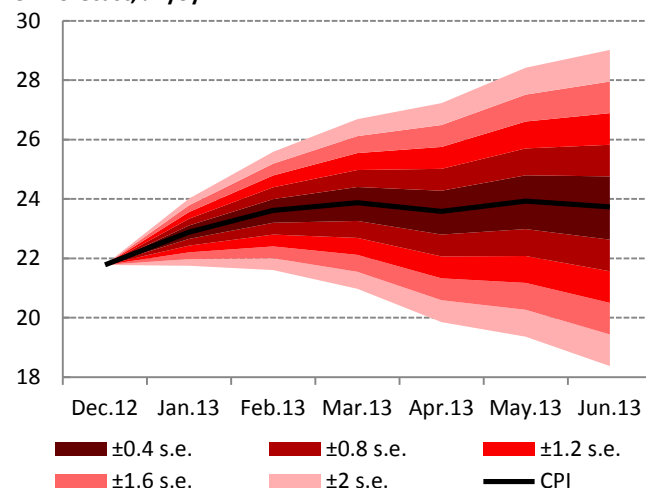
	Average <sup>1</sup>	Lower bound (-2 s.e. <sup>2</sup> )	Upper bound (+2 s.e.)
Jan.13	22.88	21.75	24.01
Feb.13	23.62	21.61	25.59
Mar.13	23.87	20.97	26.69
Apr.13	23.58	19.85	27.23
May.13	23.93	19.36	28.42
Jun.13	23.73	18.37	29.02

<sup>1</sup> the arithmetic mean of the forecasts.

<sup>2</sup> s.e. – standard error.

Source: IPM Research Center.

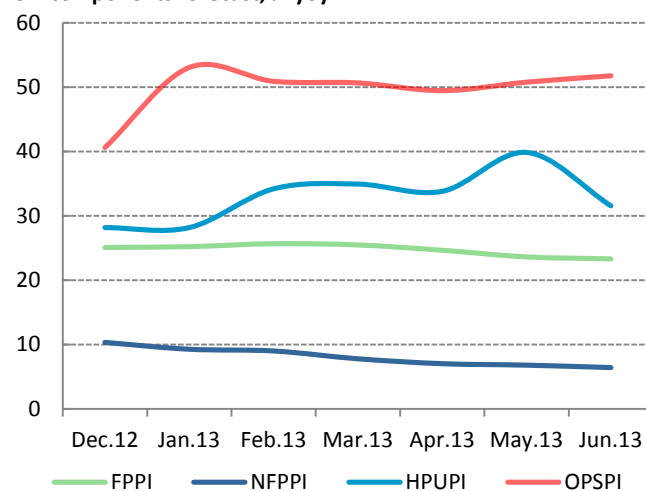
## CPI forecast, % yoy



External bounds of the same color regions correspond to a certain confidence interval.

Source: December 2012 – Belstat, January 2013 – June 2013 – IPM Research Center.

## CPI components forecast, % yoy



Source: December 2012 – Belstat and calculations based on Belstat data, January 2013 – June 2013 – IPM Research Center.

## Average forecasts and confidence intervals based on the seven approaches for forecasting

	AR			ARMA			Components (AR)					
	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)			
Jan.13	22.88	21.99	23.77	22.88	21.77	23.99	22.89	22.13	23.65			
Feb.13	24.41	22.73	26.10	23.25	21.16	25.34	23.80	22.43	25.18			
Mar.13	25.98	23.50	28.46	23.31	20.15	26.46	23.83	21.88	25.79			
Apr.13	26.28	23.03	29.54	22.10	17.95	26.25	23.44	20.88	26.00			
May.13	26.97	22.92	31.03	21.73	16.54	26.92	24.00	20.86	27.14			
Jun.13	27.51	22.67	32.34	21.51	15.23	27.80	23.75	20.09	27.42			
	Components (ARMA)			ECM			VAR			ARDL-P*		
	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)	Average	Lower bound (-2 s.e.)	Upper bound (+2 s.e.)
Jan.13	22.88	22.09	23.68	22.89	20.43	25.34	22.88	21.72	24.04	22.87	22.12	23.62
Feb.13	22.88	21.44	24.31	23.58	19.76	27.40	23.75	21.47	25.77	23.63	22.25	25.02
Mar.13	21.96	19.98	23.95	23.90	18.79	29.01	24.48	20.94	27.48	23.62	21.58	25.67
Apr.13	20.75	18.27	23.23	24.36	17.99	30.72	24.42	19.84	28.46	23.69	21.00	26.39
May.13	20.08	17.15	23.02	25.17	17.51	32.84	24.99	19.36	30.12	24.54	21.21	27.88
Jun.13	19.08	15.75	22.41	24.51	15.72	33.29	25.03	18.35	31.16	24.75	20.78	28.72

Source: IPM Research Center.

## Methodological notes to the interval forecast of the CPI

In case of inflation (and similar variables), interval forecasts are more relevant than point forecasts. These forecasts predict that inflation falls into specified 'confidence interval' with a certain probability. For example, future inflation falls into the constructed  $\pm 2$  s.e. confidence interval with a probability of approximately 95.5% (according to the forecasting models utilized and under the assumption that the error terms of the regressions are normally distributed). The confidence interval  $\pm 1.6$  s.e. corresponds to the probability of approximately 89%,  $\pm 1.2$  s.e. – 77%,  $\pm 0.8$  s.e. – 57.5%,  $\pm 0.4$  s.e. – 31%. Accordingly, for the  $\pm 2$  s.e. interval there exists a probability of approximately 4.5% that future inflation falls outside of this interval. Standard errors of the forecasts are calculated on the basis of standard errors of the residuals of the corresponding regressions and standard errors of regression coefficients. In case of multiple equation models, standard errors of the forecasts are calculated from the stochastic simulation of the models.

### Abbreviations used:

HPU	Housing and public utilities
CPI	Consumer price index
yoy	year-on-year (annual growth rate)
eop	end of period (growth relative to December of the previous year)
mom	month-on-month (monthly growth rate)
s.e.	Standard error

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### Data sources:

1. Belstat, website, <http://belstat.gov.by/homep/ru/specst/pricetab.php>.
2. Belstat, website, [http://belstat.gov.by/homep/ru/indicators/pressrel/cpi\\_estimate.php](http://belstat.gov.by/homep/ru/indicators/pressrel/cpi_estimate.php).
3. Belstat, the statistical bulletin "Social and economic situation in the Republic of Belarus" (different issues).
4. Belstat, the statistical data book "National accounts of the Republic of Belarus" (different issues).
5. NBB, "Bulletin of banking statistics" (different issues).
6. Zaretsky A. (2013). "Short-Term Inflation Forecasting in Belarus", *working paper* WP/13/01, IPM Research Center (in Russian).