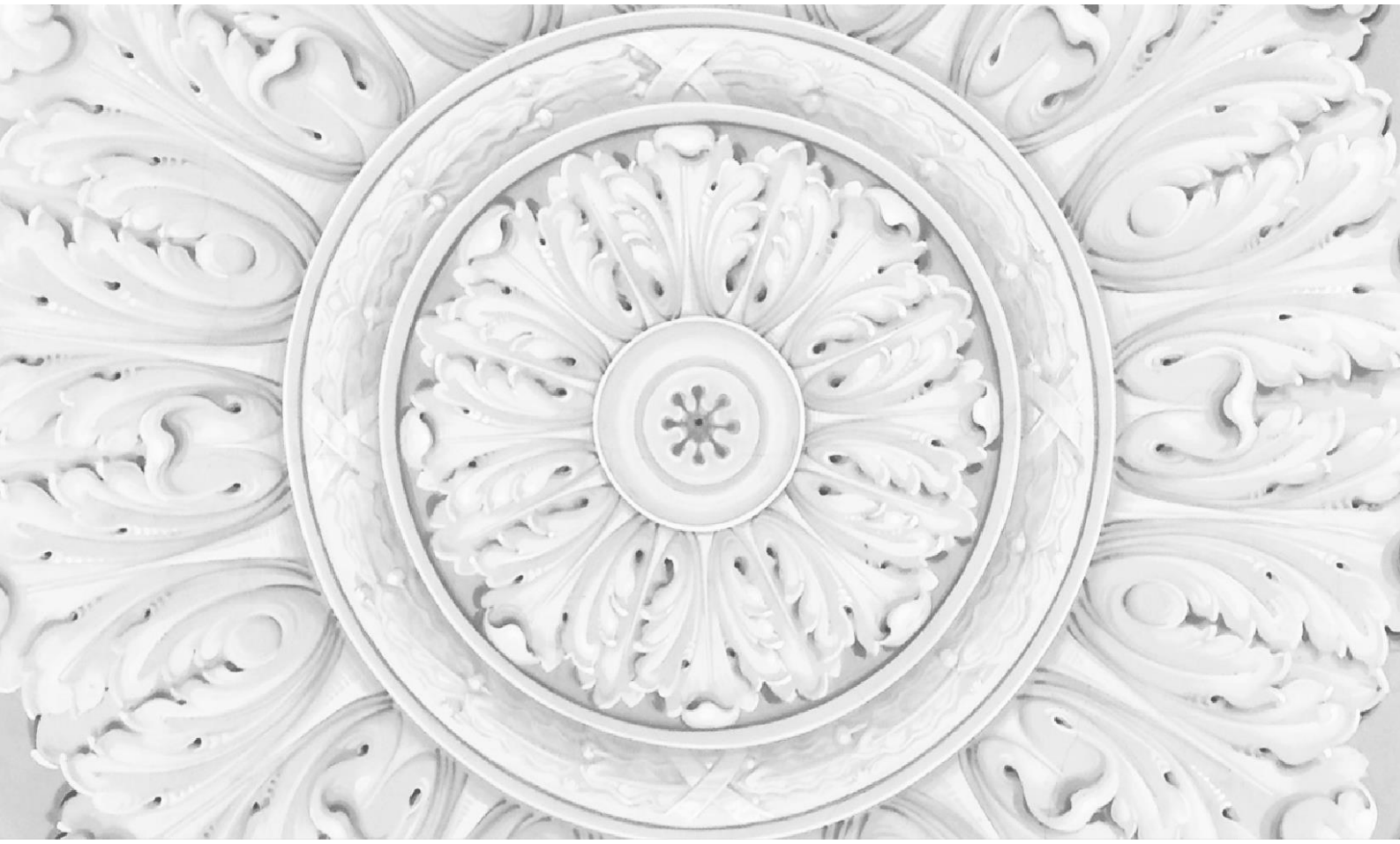
Bank of Russia
The Central Bank of the Russian Federation



TALKING TRENDS

Macroeconomics and markets

October 2017

Research and Forecasting Department Bulletin

No. 7 (19)

The bulletin is based on data as of 16.10.2017.

The views expressed in the bulletin are solely those of the authors and do not necessarily reflect the official position of the Bank of Russia.

Please send your comments and suggestions to dip_bulletin@mail.cbr.ru

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Executive summary

1. Monthly summary

- September saw inflation slow to a post-Soviet low, driving inflation expectations further down the path towards 4%. Based on an analysis of inflation factors and their temporal variations, expectations are reasonably high that some acceleration in consumer prices is possible relative to their current reading, with a steady 4% rate of inflation in 2018–2019 priced in. Economic expansion continues, gaining traction on a slow but sustainable trajectory. The existing balance of risks makes the case for continuing the current moderately tight monetary policy, while there is room for a further cut in the key rate in the next few quarters.
    - In September inflation decelerated to 3% on the back of tailwinds of a temporary nature, including a stronger ruble and a benign fruit and vegetables market. Nonetheless, the overall reduced inflationary pressure is showing signs of strengthening. There are still medium-term risks of inflation slightly overshooting 4%, mainly triggered by real wage growth at a pace exceeding productivity growth rates. The Bank of Russia's policy fosters reduced inflation risks and inflation anchoring at a level close to 4%.
    - Short-term economic activity readings and survey indicators suggest the economy is set to post sustainable albeit low economic growth rates in the third quarter. Growth in manufacturing output is becoming increasingly balanced, with both retail trade and consumer lending gaining momentum.
    - Risks to the stability of financial markets remain moderate and do not seriously hamper successful inflation targeting. The Russian market remains broadly resilient to short-term movements in the external environment, global market dynamics and global political risks.

2. Outlook

- The current GDP nowcast points to a forthcoming stabilisation in the economy as it edges towards sustainable yet low growth close to its potential.

3. In focus. How the exchange rate contributes to inflation slowdown: econometric study findings

- A stronger ruble remains a considerable contributor to inflation slowdown. If the exchange rate had been unchanged over the last 18 months, September inflation would stand at 4% YoY.
- Over the last five years, the ruble exchange rate pass-through effect declined almost twofold.

1. Monthly summary

1.1. Inflation

In September, inflation slowed to 3% on the back of the decline in the fruit and vegetable price index to a three-year low and thanks to this year's pass-through effect of a stronger ruble. Inflation expectations and underlying inflation both continue to decline, thus laying the groundwork for consumer price stabilisation at a low level close to 4% provided the moderately tight monetary policy is maintained in the future.

According to our calculations, inflation would have stood at 4% or slightly higher if unadjusted for temporary tailwinds. Projections indicate that inflation is set to accelerate to 4% as these factors run their course. This is further evidenced by a gradual rise in core inflation data.

There are still medium-term risks of inflation slightly overshooting 4%. Amid low unemployment and elevated inflation expectations, they may materialise if the pace of wage growth exceeds growth in labour productivity.

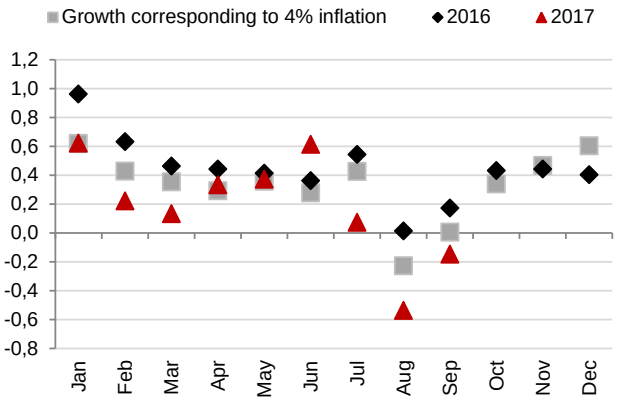
1.1.1. Seasonally adjusted price growth accelerated, but stayed within the forecast range of inflation.

- With September's consumer prices declining 0.15% MoM and annual inflation slowing to a new post-Soviet low of 3.0%,
- the growth of modified core inflation measures accelerated again, with their annualised reading just below 4%.
- The expedited median price growth (excluding fruit and vegetables and regulated services) provides further evidence to a slight increase in inflationary pressure.

According to Rosstat, consumer prices went down 0.15% MoM in September (compared to a decline of 0.54% in August). As a result, monthly consumer data edged closer towards the path consistent with 4% annualised inflation (Figure 1).

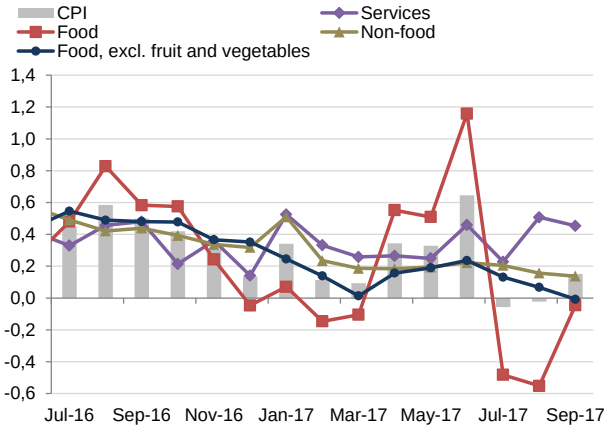
Seasonally adjusted price growth rates in September are estimated to total 0.15% and 0.07% QoQ in the third quarter overall. At the same time, food products exhibited slower paces of decline (from 0.55% MoM in August to 0.05% MoM in September), while the paces at which prices of non-food products declined dipped to 0.14% MoM. This follows their steady level of about 0.2% for seven months in a row. Meanwhile, the growth of prices for services slowed to 0.45% MoM on 0.51% MoM in August (Figure 2).

Figure 1. Price growth, % MoM



Sources: Rosstat, R&F Department calculations.

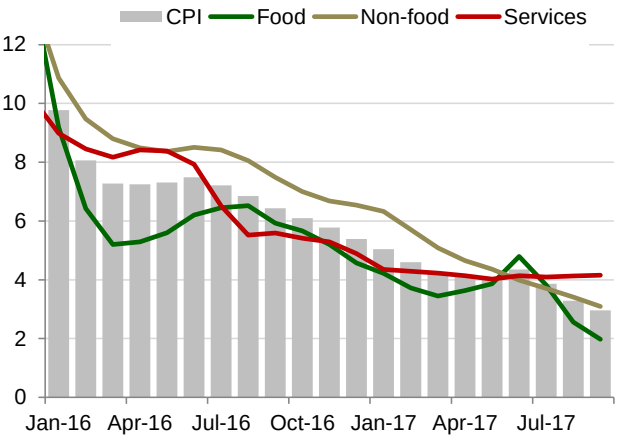
Figure 2. Seasonally adjusted price growth, % MoM



Sources: Rosstat, R&F Department calculations.

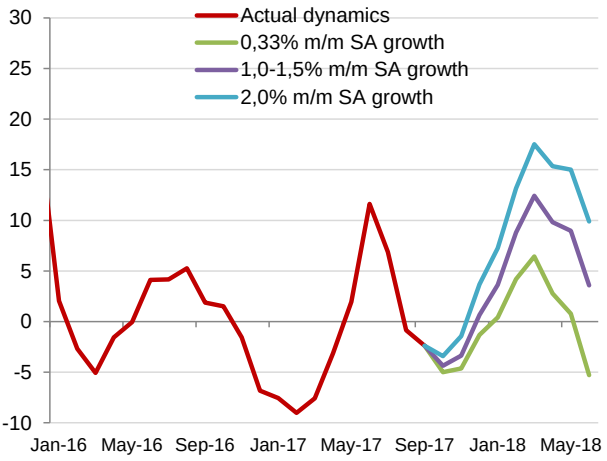
Annual inflation declined to 3.0% after 3.3% in August. Product market inflation declined as annual growth in services prices accelerated and held above 4% (Figure 3).

Figure 3. Inflation, % YoY



Sources: Rosstat, R&F Department calculations.

Figure 4. Annual growth in fruit and vegetable prices, % YoY



Sources: Rosstat, R&F Department calculations.

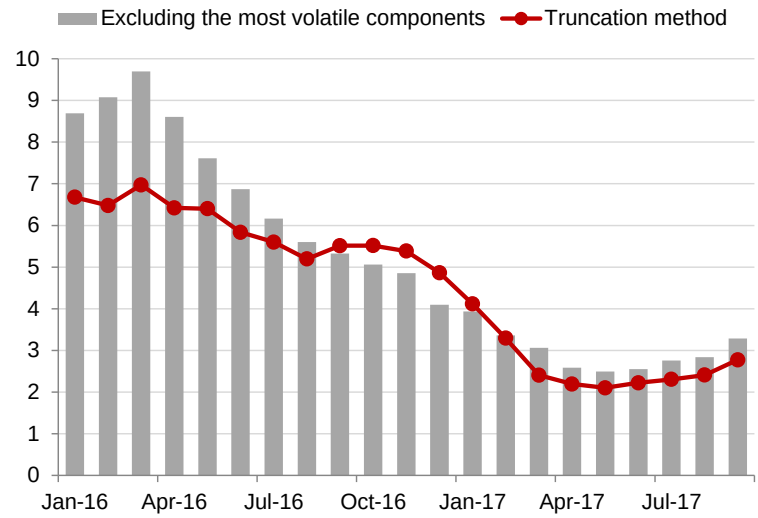
The decline in food prices can be largely traced to cheaper fruit and vegetables (at 2.4% YoY, owing to delays in this year's crops). According to the Ministry of Agriculture, yields of most crops in 2017 exceeded the 2016 data. Specifically, vegetable crops rose 0.81% on last year as of 5 October.

The risks that fruit and vegetable prices may accelerate are not high; however, early next year annual growth may accelerate on the low base effect of 2017 in the event of a re-emergence of regular seasonality in the movements of fruit and vegetable prices (Figure 4).

Food inflation excluding fruit and vegetables slowed to 2.5% YoY on 2.9% YoY in August, mainly due to price trends in chicken, eggs and sugar, where the price downturn continued to accelerate. Across most non-food products under study, there was a

slowdown in the growth of prices, with the exception of petrol. In the service sector, education emerged as the leader of acceleration in annual price growth.

Figure 5. Modified measures of core inflation*, %



Sources: Rosstat, R&F Department calculations.

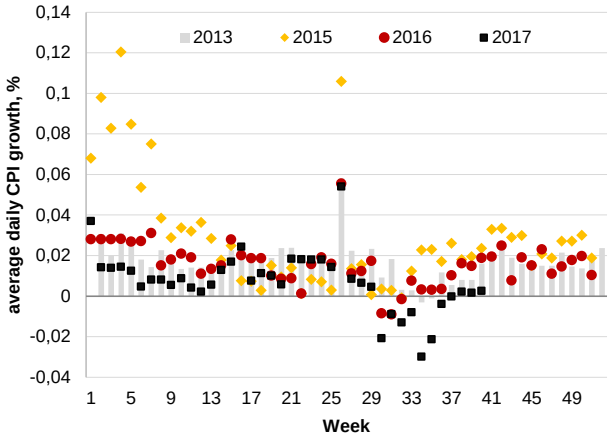
**rolling over three month in annual terms, seasonally adjusted*

Overall price pressure in the consumer market somewhat strengthened in September, showing further signs of an ongoing upward trend. This is demonstrated by the modified core inflation data that accelerated relative to August[1]. The rolling median annualised core inflation measure for three months moved upwards but remained within 4% (Figure 5).

According to Rosstat, consumer prices between 3 and 9 October remained at near-zero levels. Average price growth stood at levels below last year's readings (Figure 6).

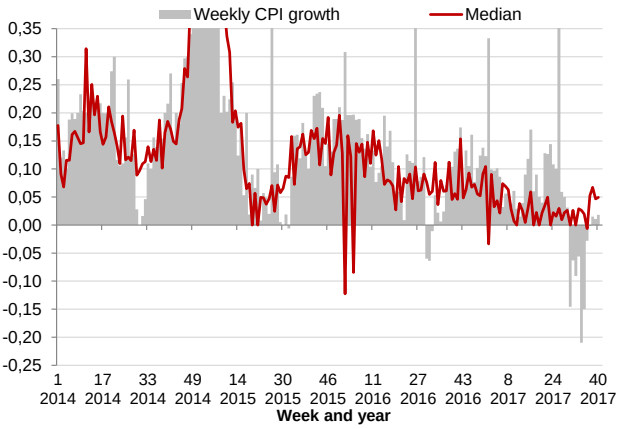
[1] The pace of growth in modified core CPI, calculated with the use of a truncation method, quickened from 0.19% MoM in August to 0.28% MoM in September. The pace of growth in modified core CPI, calculated based on the exclusion of the most volatile components, sped up from 0.22% MoM to 0.33% MoM in September (seasonally adjusted).

Figure 6. Average daily price growth, %



Sources: Rosstat, R&F Department calculations.

Figure 7. Median weekly price growth, goods and services*, %



Sources: Rosstat, R&F Department calculations.

** Excluding fruit and vegetables and administered prices.*

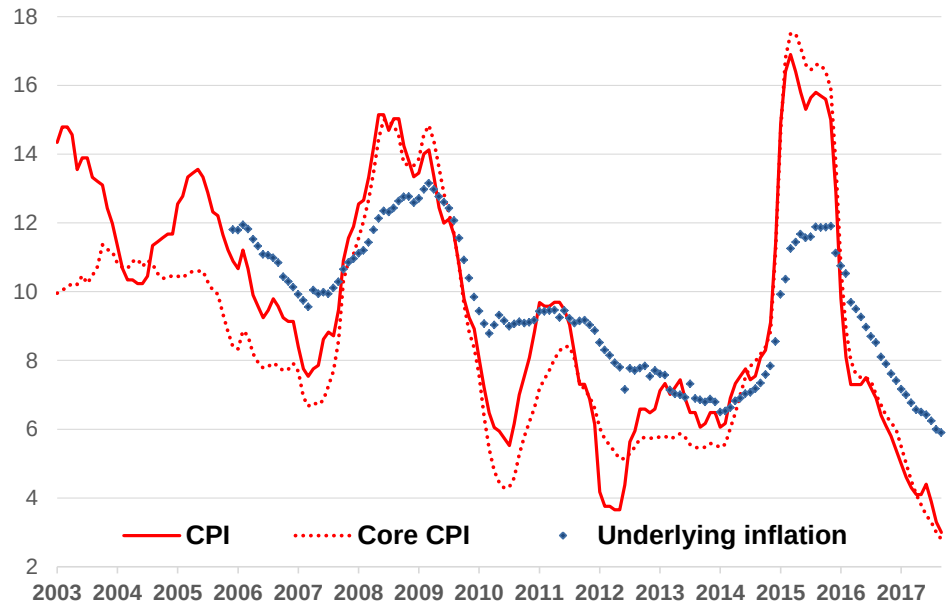
The median value of weekly price growth, calculated *excluding* fruit and vegetables and prices on administered services, remained at 0.05% (Figure 7). This level is above the median values observed for most of this year. The expedited median price growth (excluding fruit and vegetables and administered services) provides further evidence of a slight increase in overall inflationary pressure.

As was the case a week before, the key contribution was made by prices for chicken eggs that were up 2.39%. Growth, albeit moderate (0.2–0.3%), was also observed in prices for butter and milk. Price growth in this category is seasonal.

1.1.2. Underlying inflation continues its slow decline

- Estimates for underlying inflation rates in September 2017 were downgraded to 5.9% (from 6.0% in August) (Figure 8).
- Despite the sustainable slowdown in the price growth, its current estimate is still viewed as elevated, which is attributed to heightened historical inflation rates, as well as the inertia of this indicator in its construction.
- Medium-term risks of inflation surpassing 4%, albeit declining, are still high.

Figure 8. CPI, core CPI and historical estimates for underlying inflation, % YoY



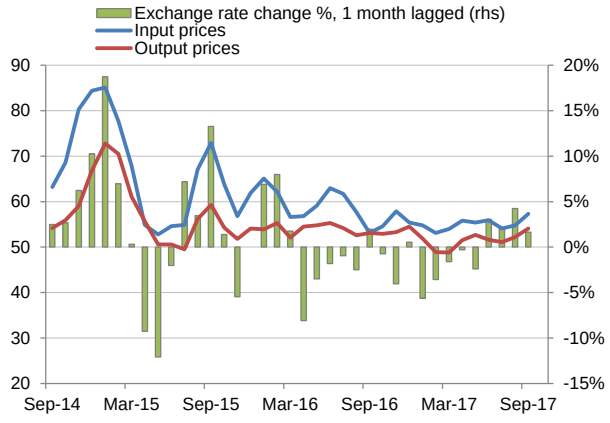
Sources: Rosstat, R&F Department calculations.

1.1.3. PMI price indexes: inflation pressure is gradually increasing

- PMI price indexes are still below historical readings (Figure 9, Figure 10).
- However, the September output price index in the manufacturing sector rose to its highest level since late last year, with that in the service sector rising to its highest since May 2017,[2] with the pass-through effect increasingly pronounced as producers imposed their mounting costs on consumers.
- According to respondents, among factors driving the upward growth of costs are rising raw material prices, increased shortage of material due to delayed supplies and growing wages.
- On the one hand, the rise in PMI price indexes is in part a response to a weakening in the ruble ongoing since late spring; hence it may be temporary.
- On the other hand, the performance of other PMI subindexes suggests price pressures are rising on the back of overall growth in demand for products and services, enabling companies to pass rising costs on to end-user prices. This driver's effect is more sustainable.

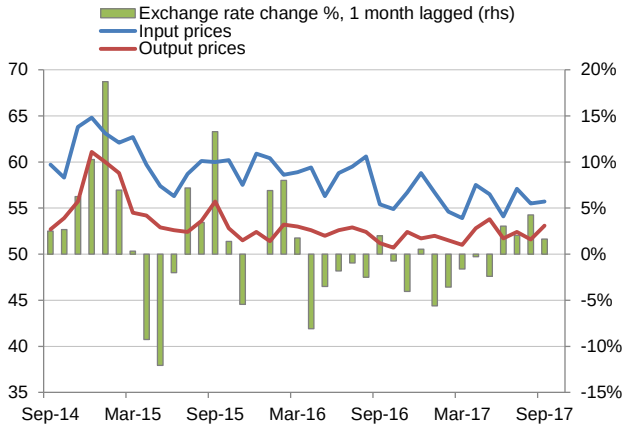
[2] Disregarding the May value as non-recurrent and unsustainable, the September output price index in the service sector would be the highest since February 2016.

Figure 9. PMI price indexes in the manufacturing sector, pp



Sources: Rosstat, R&F Department calculations.

Figure 10. PMI price indexes in the service sector, pp



Sources: Rosstat, R&F Department calculations.

1.2. Economic performance

The performance of short-term economic indicators and survey data suggests that economic expansion in the third quarter was steady and consistent with the current economic potential. Burgeoning production activity in the manufacturing sector is increasingly balanced and is spreading to more industries. Unemployment declined to a level we view as natural and, as such, maintains sustainable economic growth without accelerated inflation.

Slower inflation makes a positive impact on the economy, fostering more sustainable economic growth, enabling longer-term business planning, reducing project implementation risks and helping raise long-term finance. Additionally, lower interest rates in the context of low inflation drive debt servicing costs lower, thereby reducing risks to borrowers' financial stability.

We may draw the conclusion that both robust GDP and investment growth in the first half make the case for the economic feasibility of the current moderately tight monetary policy, which ensures macroeconomic stability, and a responsible fiscal policy.

Nonetheless, the stability delivered so far is an essential but insufficient prerequisite for sustainable growth in the Russian economy. It remains the case that this growth could be delivered through a set of structural policies to allow for reduction in financial and regulatory burdens on businesses, increase competition and boost the development of human resources alongside production and social infrastructure.

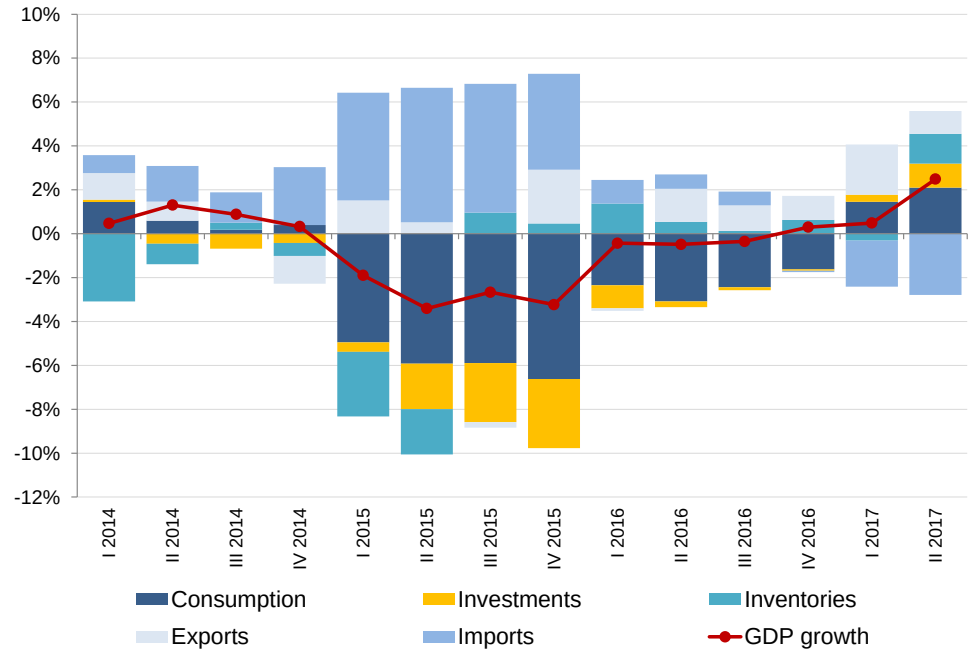
1.2.1. Q2 GDP growth: boosted by investment

- The significant acceleration in YoY GDP growth in the second quarter 'put right the wrongs' of technically weak Q1 results brought about by the statistical base effect.

- Seasonally adjusted QoQ data show that better GDP data mainly came as a result of improved fixed capital investment and, to a lesser degree, as a result of recovering inventories.
- H2 GDP growth is likely to slow to more sustainable levels (0.3-0.4% QoQ), seasonally adjusted, which reflects the conclusion of a growth recovery stage.
- The robust GDP and investment growth in the first half makes the case for the economic feasibility of the current moderately tight monetary policy.

Rosstat recently reconfirmed its 2017 Q2 growth estimate at 2.5% YoY. A breakdown by expenditure was also released.

Figure 11. Expenditure estimate of GDP: growth rate, % YoY

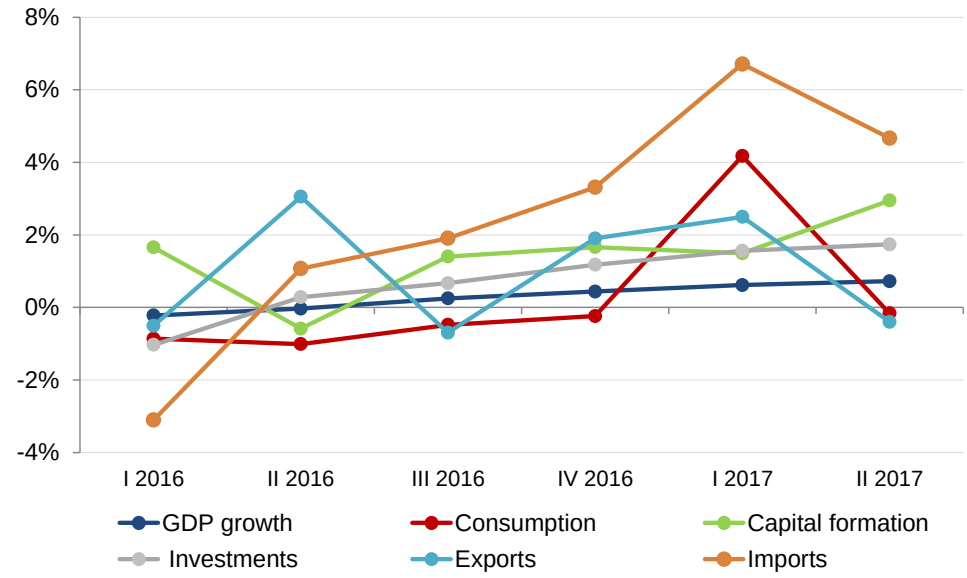


Sources: Rosstat, Bank of Russia calculations.

There is a considerable difference in the performance of GDP components based on YoY vs QoQ seasonally adjusted data. The fairly sharp acceleration in YoY GDP data in 2017 Q2 is mainly driven by the Q1 low comparison base. The first quarter of this year turned in a technically weak result owing to its fewer number of days vs the first quarter of 2016, a leap year. Meanwhile, in the second quarter annual GDP data reached a level consistent with seasonally adjusted QoQ growth estimates. This growth is relatively smoother in nature: 0.6% QoQ in 2017 Q1 and 0.7% QoQ in 2017 Q2.

Consequently, the statistical factor referred to above is responsible for the substantial annualised growth of end use consumption and inventories in the second quarter, whereas the acceleration in seasonally adjusted QoQ GDP data, according to Rosstat, owes its existence only to gross accumulation.

Figure 12. Expenditure estimate of GDP, seasonally adjusted, % QoQ



Sources: Rosstat, Bank of Russia calculations.

According to YoY data, the key contribution to the accelerated 2017 Q2 growth came from gross accumulation (+2.5 pp) and final consumption expenditure (+2.1% pp). The strongest YoY increment was observed in final consumption expenditures of households (+2.0 pp) and in the recovery of inventories (+1.4 pp). A gradually recovering domestic demand is giving impetus to consumption, imports and inventories.

Notwithstanding the GDP growth acceleration in the second quarter, the negative GDP contribution of net exports (-1.7 pp) is worth noting. This comes against the backdrop of slower growth in absolute numbers of exports (from 7.1 to 3.3% YoY) as the growth of imports continues to accelerate (from 16.5 to 20.7% YoY). This deceleration of exports is seen as a regular variation stemming from Russia's action to deliver on the OPEC+ deal and the stabilisation in key export items. At the same time, accelerated growth paces of imports in many ways come as a result of the re-equipment of production capacities (beyond the recovery in consumer demand).

This conclusion is indirectly confirmed by the data of regular market surveys of companies, conducted by Rosstat and private entities. In this way, as follows from the data of one survey, increasingly fewer respondents cite 'equipment shortages' as a constraint on industrial activity. In addition, market survey results show that companies are seeing a decrease in the proportion of respondents who mention 'investment deficit'.

It also follows from PMI future output and inventory estimates for the manufacturing sector that the investment situation is showing signs of improvement. At the same time, businesses indicated greater dissatisfaction over sales and the implications of 'low domestic demand' as an industrial output constraint. This may suggest the paces of the ongoing recovery in domestic demand may be moderate or even trending downwards.

These conclusions are further supported by seasonally adjusted quarter-on-quarter GDP data. According to these estimates, fixed capital investment emerged as the key contributor to accelerated GDP growth in the second quarter. The positive contribution of inventories was meanwhile unchanged; it even rose slightly in the second quarter. However, its overall quarter-on-quarter performance, seasonally adjusted, was not of great importance for final GDP growth data since late 2016.

Final consumption expenditure in the second quarter, seasonally adjusted, edged lower (-0.2% QoQ) following a 4.2% QoQ surge in 2017 Q1. However, at this stage of statistical data collection these estimates are unreliable. As new data come in, updates will likely be made to both quarters' estimates, leading to a diminished gap between them. Having said that, it is a safe bet to say that the second quarter was marked with less pronounced consumption (seasonally adjusted). At the same time, slower consumption in the second quarter is aligned to improvements in quarter-on-quarter data on inventories as well as a certain slowdown in seasonally adjusted import growth.

As a result, the new data suggest, on the one hand, a strengthening trend towards a recovery in investment, which is poised to continue supporting GDP growth in the remainder of 2017. On the other hand, these data are suggestive of a certain slowdown in GDP growth on a quarter-on-quarter basis, as low albeit sustainable rates of household consumption remain in place and the positive contribution to growth from recovering inventories gradually recedes[3].

Against this backdrop, QoQ GDP growth is expected to slow to 0.3–0.4%[4] in 2017 Q3, signalling that the recovery stage is now ending. A general conclusion can be drawn that the strong growth of GDP and investment in the first half testifies to the fact that the Bank of Russia's moderately tight monetary policy, while no impediment to economic growth, helps reduce uncertainty.

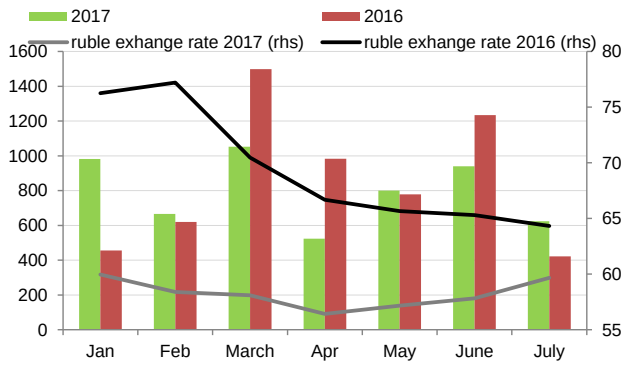
1.2.2. In the context of low inflation, lower profitability is consistent with financial stability

- According to Rosstat, companies' net financial result[5] for January-July 2017 totalled 5.6 trillion rubles. This is 6.7% less than a year earlier.
- Based on H1 results, profitability declined. For the first six months of 2016 profitability stood at 3.3% (to assets) and 8% (to sales revenue), while the same period of 2017 figure was 2.7% и 6.7% respectively.

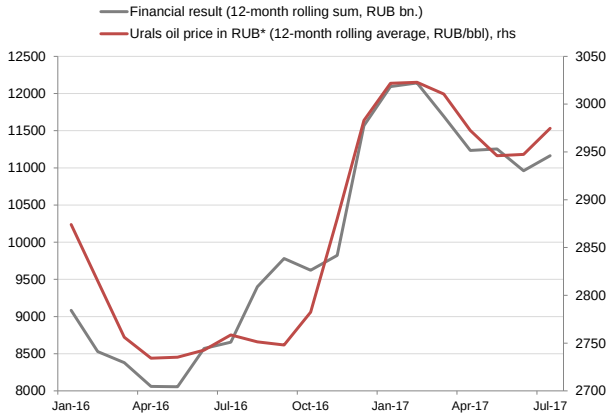
Figure 13. Financial result by month, 2017 and 2016*, billion rubles

Figure 14. Financial result and ruble oil price

[3] The impact on recovering inventories from growth in investment goods has recently increased.
[4] See Subsection 2.1.1. GDP growth projections: the economy on path to sustainable growth
[5] Excluding SME, banks, insurance and budgetary institutions.



Source: Rosstat, Bank of Russia calculations.
**based on peer organisations*



Source: Rosstat, Bank of Russia calculations.
**Based on the dollar oil price with one month's lag*

- Lower profitability is a regular occurrence in the transition to sustainably low inflation, however. All other things being equal, inflation slowdown leads to declining nominal profitability measures and a declining financial result in the overall economy. However, this is explained by the calculation phenomenon, which fails to take account of changes to the financial situation in a company and in the economy or in their financial stability. After all, profitability in prior years must have been higher to be able to set off the higher inflation reading.
- In this way, high inflation implies that output prices are deliberately kept at a level warranting profit margin ‘buffers’. Under this arrangement, some shares of profits are channelled into working capital, which rises parallel to the input prices of raw material. In a context of low inflation alongside low inflation expectations, there is less need for this ‘buffer’ or none at all.
- Financial results are meanwhile strongly affected by the ruble prices of oil that almost instantaneously impact the mining sector and related industries (Figure 14). In this vein, the strengthening of the ruble early this year, against the backdrop of a relatively stable dollar oil price, sent the financial result lower as a result of exchange rate fluctuations. Accordingly, the growth in oil prices since the middle of the year triggered a better financial result.

1.2.3. Expansion in manufacturing is increasingly balanced

- Growth emerged across most manufacturing sectors in the first eight months of the year.
- In August 2017, key growth drivers in the manufacturing sector included expanding metallurgy alongside a strengthening trend towards recovery in the car industry.
- The production of construction materials is on the upswing against the backdrop of expanding construction.

Based on the results of the first eight months of the current year, the industry was boosted by pharmaceuticals (+12.8% YoY), motor vehicles (+12.0% YoY), furniture (+8.5% YoY), textiles (+8.3% YoY), paper (+6.3% YoY), electrical equipment (+5.6% YoY) and chemicals (+5.5% YoY) (Figure 15). Although only moderate growth has been observed across the food industry and the rubber and plastics production sector (+4.8% and +3.8% YoY respectively), a positive sustainable trend remains.

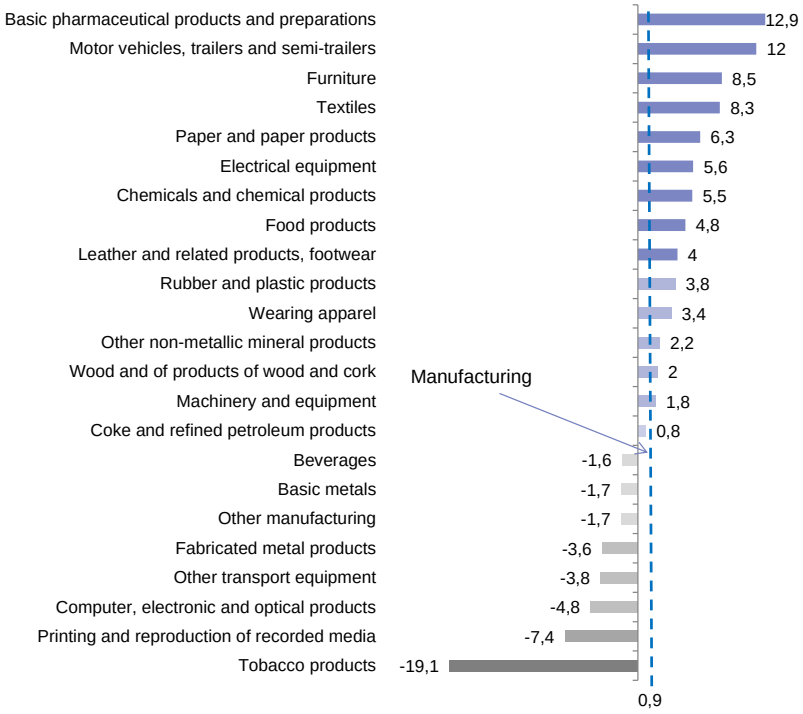
Among industries essential to the manufacturing industry index, declines occurred on an annual basis in metallurgy (-1.7% YoY), 'other vehicles and equipment' (-3.8% YoY) as well as in computers, electrical and optical products (-4.8% YoY). Outputs in these sectors continue to post unstable data.

Growth was observed across *most intermediate demand industries* in August compared with the previous month. Following a streak of declines in prior months, metallurgy turned in a considerable growth of 4% MoM, seasonally adjusted. With benign global markets, major Russian iron and steel industry players are maintaining high prices on their products. This has led to improvements in their financial positions due to relatively stable output. The developments in metallurgy are dependent to a certain degree on fluctuations in the non-ferrous industry. According to ACRA[6], the negative trend in nickel output is projected to last through 2020, in defiance of the deficit in global markets. The performance of this sector is expected to have a constraining effect on the recovering non-ferrous sector.

Following a substantial dip in July, the chemical industry made a slight recovery in August. The industry will possibly return to a growth path, with slower rates, however, that those in 2016. Acceleration in growth is expected in 2019 as a result of major production launches[7]. The production of polyethylene and polypropylene is expected to rise 34% and 80% respectively by 2020 on their 2016 levels. Seasonally adjusted outputs of rubber and plastics in August were up 18% м/м.

[6] Analytical Credit Rating Agency. Recovering prices for non-ferrous metals to boost import substitution in Russia.
[7] SIBUR website. ZapSibNeftekhim in August 2017.

Figure 15. Manufacturing sectors' outputs, January - August 2017, % YoY

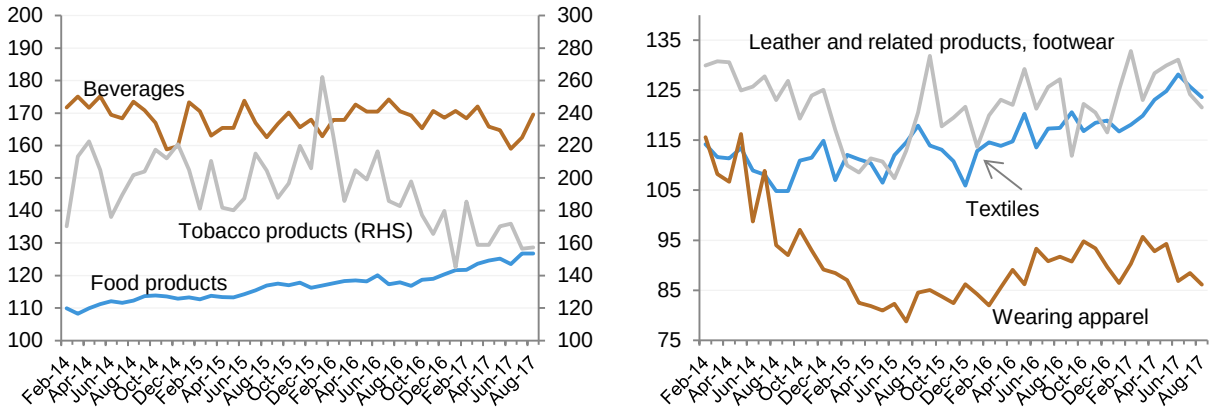


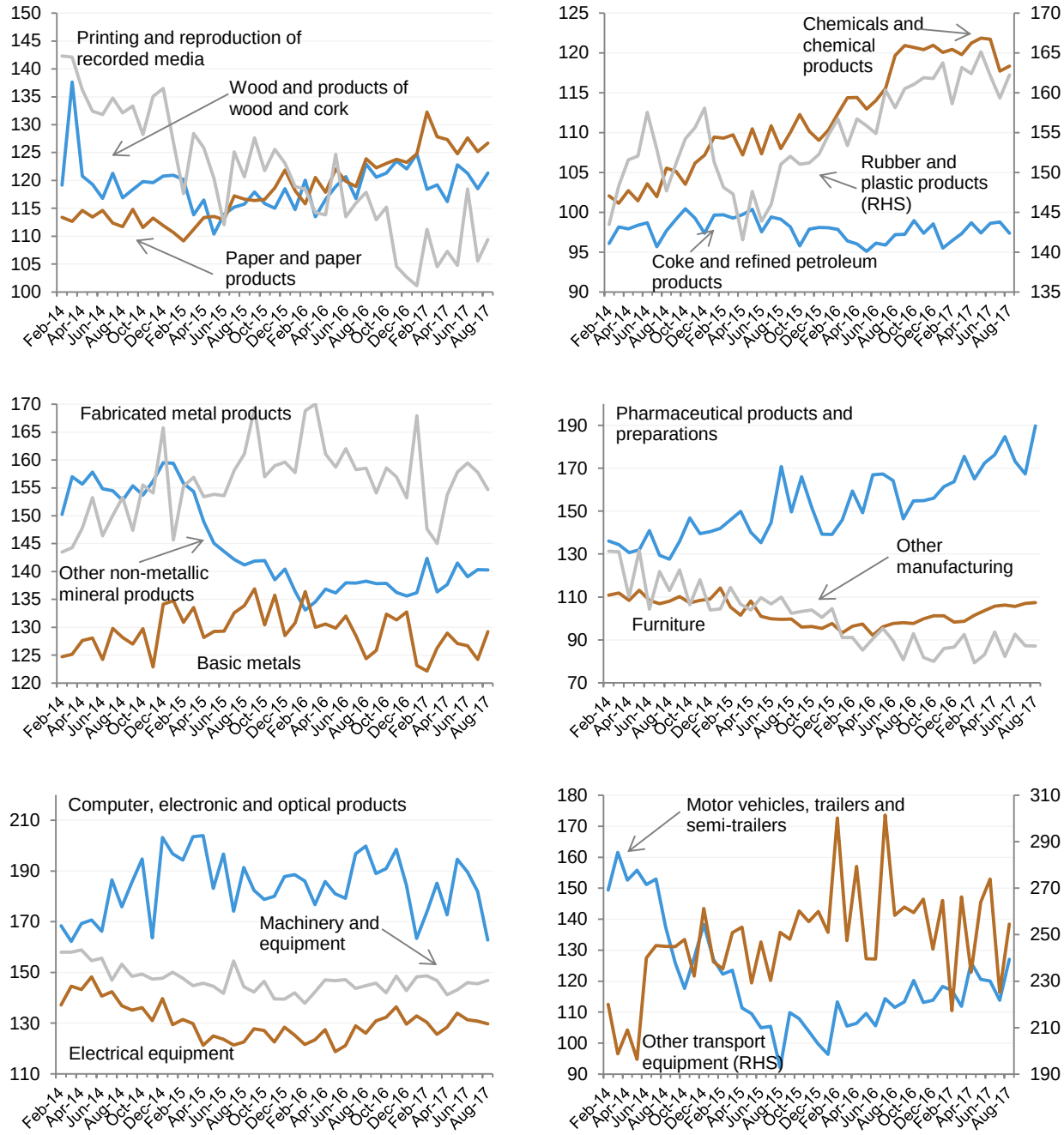
Sources: Rosstat, R&F Department calculations.

The oil refining industry, the largest in the manufacturing sector, showed a seasonally adjusted 1.4% MoM drop. While this contraction may be the result of dwindling production, it would be premature to suggest that the positive trend is coming to a close.

Expansion was also shown by almost all *consumer demand-oriented sectors.* The food industry sustains a positive trend, supported in recent months by mounting outputs of meat products. The arrival of new crops has yet to make its impact on food industry outputs. The positive effect of a plentiful year is expected as soon as September.

Figure 16. Manufacturing sectors' outputs, January 2014 = 100%, seasonally adjusted, %





Sources: Rosstat, R&F Department calculations.

The last two months saw a dynamic expansion in footwear production, which was up 2.2% MoM in July and 2.7% MoM in August, seasonally adjusted. Overall positive trends remain in place in both the output of domestically made products and imports. The latter development may have been driven by the certification of previously unaccounted-for products and trends in household purchasing power, which stopped its decline. At the same time, the total seasonally adjusted output of the leather industry was down 2.1% MoM on account of falling outputs of 'other leather and related products'.

Consistent with a trend towards steady expansion, there was a 13.3% MoM seasonally adjusted growth in pharmaceuticals. Furniture outputs also continue to post steady readings.

Although the results of *investment demand-oriented industries* were mixed, clear positive trends may be highlighted there.

In this way, in construction material production, positive trends which began in May 2017 became entrenched. The industry has been bolstered by the rising expansion in the construction sector, where a positive trend has settled since the start of the year. In this context, cement output is rising; July saw a surge in the outputs of refractory construction materials.

The rising production of motor vehicles is being shored up by an expanding car market; seasonally adjusted outputs of light and freight vehicles were up 10.4% and 14.5% MoM respectively. Robust data also came from the car body production sector with its 42% MoM seasonally adjusted growth (81.4% YoY).

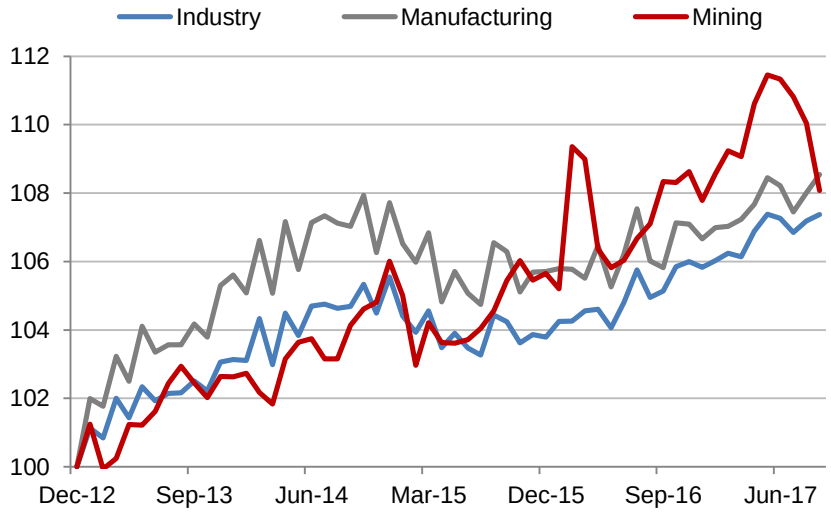
Seasonally adjusted outputs of machinery and equipment were up 0.9% MoM. The sector maintains its upward trend.

The outputs of ‘other vehicles’ were very unsteady. This possibly comes as a result of a non-standard 2017 output, which proved inconsistent with the seasonal pattern of prior years. Despite the 9% MoM reduction in the output of freight cars, this correction is likely to be temporary. Outputs are expected to gain support from the government's demand stimulus measures.

1.2.4. Industrial production in September: sustainable growth in the manufacturing sector

- Industrial production growth decelerated to 0.9% YoY in September, following a 1.5% YoY growth in August. However, once adjusted for seasonal and calendar effects, R&F Department estimates industrial production to have grown 0.2% in sequential terms, tracking the August dynamics.
- Manufacturing sectors saw a two-month streak of 0.5% seasonally adjusted MoM growth. Annualised growth accelerated to 1.1% YoY from 0.7% YoY in August.
- The key factor driving September's slowdown in industrial production was a 0.1% YoY decline in mining outputs, following 2.9% YoY growth in August. The reading is undoubtedly affected by Russia’s action to comply with the OPEC deal alongside the high base effect of September 2016 for crude oil output. The calendar effect also played a negative role (there were fewer working days in the year).
- Compared with the high base of October last year, when Russia posted a record output result, this month is set to turn in a further decline in mining outputs in year-on-year terms, as growth in manufacturing sectors is expected to continue.

Figure 17. Industrial outputs* (December 2012 = 100)



Source: Rosstat, Bank of Russia calculations.

** adjusted for seasonal and calendar effects*

1.2.5. Retail gains momentum

- Retail sales in August accelerated to 1.9% YoY on 1.2% YoY in July. When adjusted for seasonal and calendar effects, retail sales in August grew 0.2% MoM on July.
- The first half's retail sales, calculated based on changes in the sales of individual product categories, was consistently more optimistic than Rosstat's estimate.
- Households' attitudes to large purchases and saving saw improvements against a backdrop of rising real wages and more upbeat assessments of current and future disposable income.
- This is expected to drive further growth in household consumption and retail.

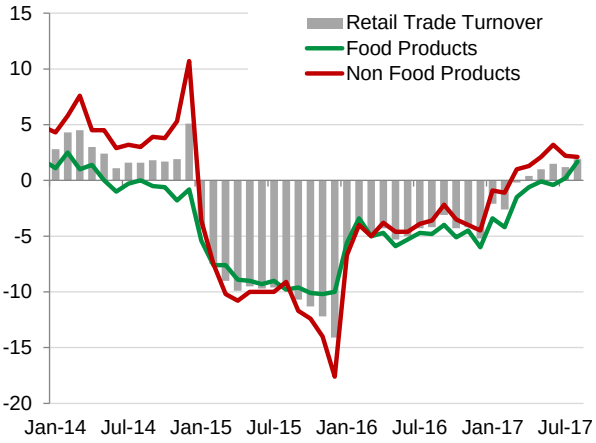
According to Rosstat, retail sales were up 1.9% YoY, enjoying five months of continuous growth (Figure 18). Sales expanded 1.2% YoY last month, after the following revisions: growth rates between April through July were upgraded following updates of respondents' previously supplied data - which suggested that recovery rates were statistically underestimated in prior releases.

Non-food retail sales grew 2.1% YoY in August (2.2% YoY growth in July). While non-food sales have been rising since March in annual terms, food sales posted growth only for the second consecutive month. Non-food retail sales grew 1.7% YoY in August (0.2% YoY growth in July).

Figure 18. Food, non-food and

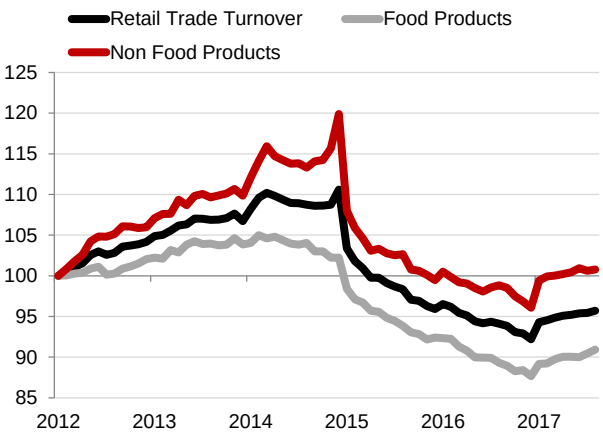
Figure 19. Retail sales, %

total retail sales, % YoY



Sources: Rosstat, R&F Department calculations.

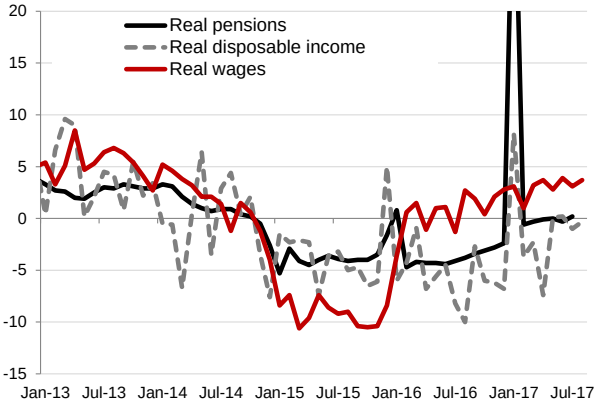
(January 2012 = 100%, seasonally adjusted)



Sources: Rosstat, R&F Department calculations.

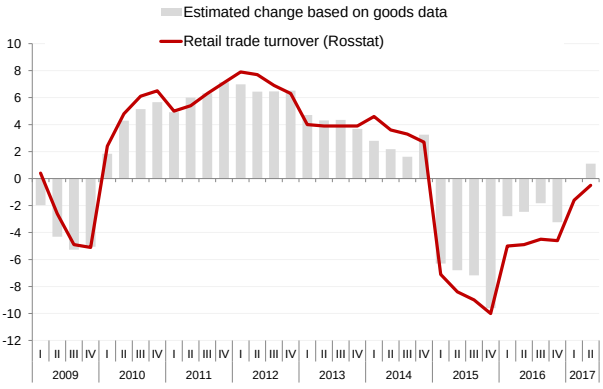
According to our estimates, retail sales in August, adjusted for seasonal and calendar effects, grew 0.2% MoM on zero growth in July (Figure 19). The relatively small increase of 0.1% in MoM non-food sales was set off by food sales with 0.5% MoM growth.

Figure 20. Real household income, %



Sources: Rosstat, R&F Department calculations.

Figure 21. Retail sales, % since start of year on the same period last year



Sources: Rosstat, R&F Department calculations.

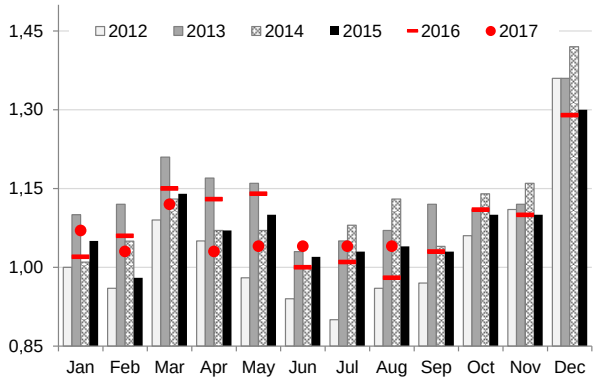
The continued recovery in sales growth was, in annual terms, supported by real wages rising to 3.7% from 3.1% YoY in July (which stood at 4.6% YoY after revisions) (Figure 20). The growth of nominal wages was 7.1% YoY in July and August. Thus, the acceleration in real wage growth occurred on the back of decelerating price growth.

Rosstat revised the decline in retail sales in the first half from 0.5% to 0.3% YoY. These retail sales, calculated based on changes in the sales of individual product

categories[8], proved more optimistic (Figure 21). According to estimates, 2017 H1 sales saw a 1.1% YoY increase. Sales of food products were up 0.2%, while those of non-food products increased 1.9% YoY. Rosstat estimates indicate that sales of food products were up 1.7%, while those of non-food products increased 1.0% YoY.

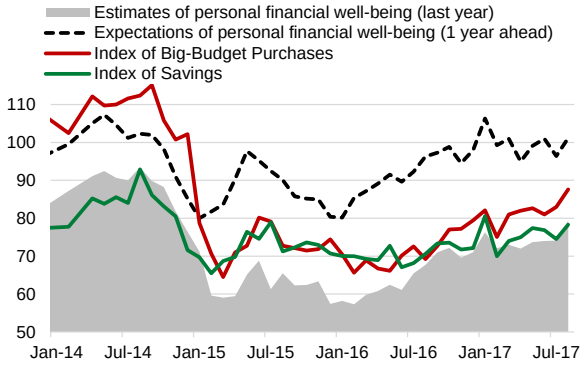
A study by Romir[9], a pollster, found that real household spending had been unchanged for the fourth consecutive month (Figure 22). Real spending was up 6.4% for the year. According to the company, middle earners notched up the strongest growth in their annual income of 13.9%. High earners meanwhile increased their real spending by 7.2%. A dip of 1.3% in real spending vs August was only observed in low-earning consumers.

Figure 22. Real everyday household spending, % (January 2012 = 100%)



Sources: Rosstat, R&F Department calculations.

Figure 23. Consumer sentiment index and its components, pp



Sources: inFOM, R&F Department calculations.

Based on an inFOM consumer survey[10], the August consumer sentiment index was up against July, in a sign of gradually rising consumer optimism. The survey data found that households' attitudes to large purchases and savings had improved amid rising current expectations and expectations as regards future income (Figure 23). Respondents' estimates of their financial standing were accompanied with a dwindling proportion of respondents who noted the need to cut on everyday spending. Beyond that, there was a rise in the number of respondents who did not have to relinquish their spending plans over the last three months.

Going forward, growing real wages alongside upbeat consumer sentiment held at a time when estimates of financial standing are improving are set to help in recovering consumer demand, sustaining economic growth in the next quarters.

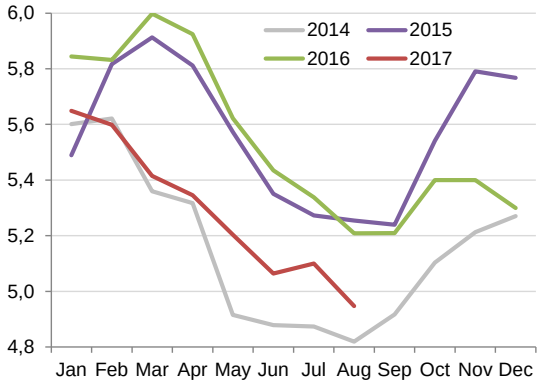
[8] The index is the weighted average of core food and non-food products, accounting for about 71% of total retail sales. The conclusions are based on the commodity composition for the year that precedes the accounting year.
For details, see Talking Trends. No. 1. February 2017. Section 3. 'In focus. Consumption: decline or growth?'.
[9] Romir Research Holding. «Новый урожай удешевил расходы». ('New crops drive down costs'). 7.09.2017.
[10] Inflation expectations and consumer sentiment. No. 8. August 2017.

1.2.6. Unemployment still holds close to equilibrium

- The rate of unemployment dipped below 5% as seasonal demand for labour mounted, a trend typical for the period between late summer and early autumn.
- Nominal wage growth has held for two consecutive months at 7.1% YoY, having sent real wages higher in the context of lower inflation.
- The downgrade of 1.5 pp in the preliminary July estimate for wage growth points to lesser inflation risks on the part of the labour market.
- However, the planned salary increase for certain categories of public sector employees is projected to ramp up the rates of nominal salary growth in the fourth quarter by 1.5 pp.

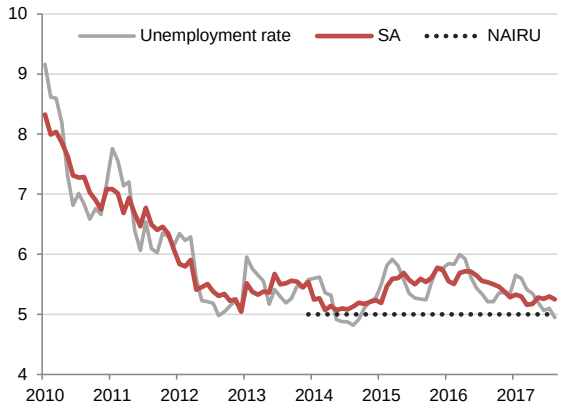
The unemployment rate dipped below the reading of 5% for the first time since 2014, totalling 4.9% in August (Figure 24). Unemployment tends to be at its lowest in the August to September period. Last August's decline against July was a five-year high on the back of July's unemployment edging higher despite seasonal variability. The latter development comes as a result of delayed harvesting. The seasonally adjusted unemployment rate went down to 5.25% from 5.30% seen in July (Figure 25) and held close to the natural level of unemployment.

Figure 24. Unemployment by month, 2014-2017, %



Source: Rosstat.

Figure 25. Unemployment, %



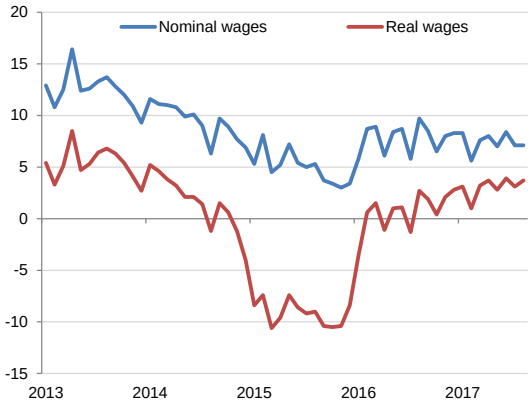
Sources: Rosstat, R&F Department calculations.

According to Rosstat's preliminary estimate, nominal wages in August rose 7.1% YoY (Figure 48). July's readings were revised downwards by 1.5 pp to 7.1% from 8.6%, in a sign of abating concerns over inflation risks from the labour market side. Nonetheless, real wage growth in August sped up to 3.7% from 3.1% YoY in July, thanks to an inflation slowdown to 3.3% from 3.9%.

However, the planned salary increase for certain categories of public sector employees, as part of the May presidential decrees, is projected to ramp up the rates of overall wage growth in the fourth quarter. In recent years, public sector wages have

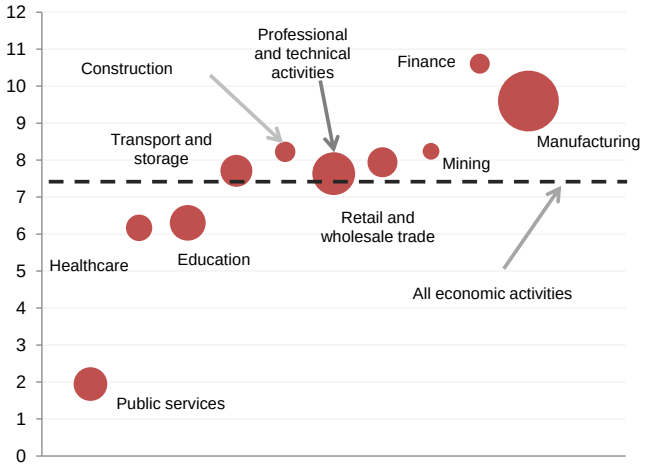
grown at considerably lower rates than those in the private sector (Figure 49). Our calculations find that the May presidential decrees, once implemented, will add 1.0–1.5 pp to total wage growth in the economy through the end of this year.

Figure 26. Growth rates: nominal and real wages, % YoY



Source: Rosstat.

Figure 27. Wage growth by economic activity January - July 2017, % YoY



Sources: Rosstat, R&F Department calculations.

Note the area of circles is reflective of the activity's share in total payroll

1.2.7. PMI in September: robust figures as Q3 ends

- The services PMI in September was up from 54.2 to 55.2 pp, with new orders at their highest readings since December 2012.
- The sector was much more upbeat, with rates of employment at their highest since May 2016.
- The composite PMI was at a three-month high.
- However, its median Q3 reading points to the gradual deceleration in business activity to a lower yet sustainable level aligned with current Russian economic capabilities.

In September, the services PMI rose from 54.2 to 55.2 pp - which suggest the acceleration in sectoral activity was consistent with the manufacturing sector's data. The ensuing current PMI indexes in both sectors were somewhat above their historical average readings. The composite PMI in September was up to 54.8 pp, beating its all-time average with growth at a three-month high (Figure 28). The private sector of the Russian economy posted solid figures at the end of the third quarter; this result is poised to shore up industrial performance in the months to come.

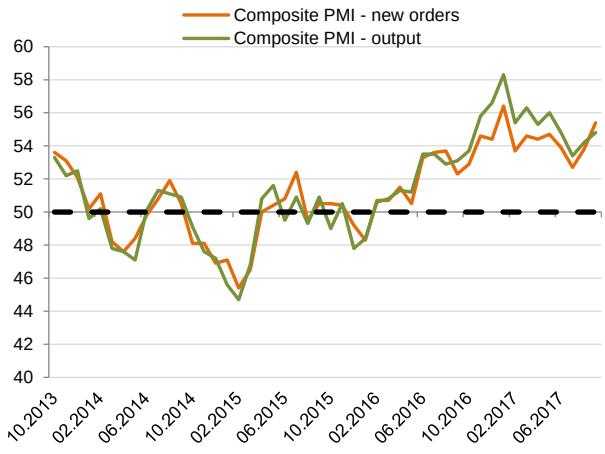
Still, the average PMI reading for the third quarter came in lower than that for the period between 2016 Q4 and 2017 Q2 and is still indicative of a slower growing Russian economy (Figure 29) aligned to our GDP nowcast. Our calculations suggest that the economy is moving towards the path of low yet sustainable growth in line with the Russian economy's current capabilities.

Accelerated growth in the service sector is grounded in more upbeat data on new orders, which have been at their highest since December 2012. A number of companies noted sustainable demand from both domestic and foreign clients.

In all probability, improvements in the data on new export orders and the better market conditions cited by respondents combined to add to optimism of service sector companies. Business expectations in the sector were up to an eight-month high, accompanied by employment growth rates at their highest since May 2013, and the resulting reduction in unfinished projects.

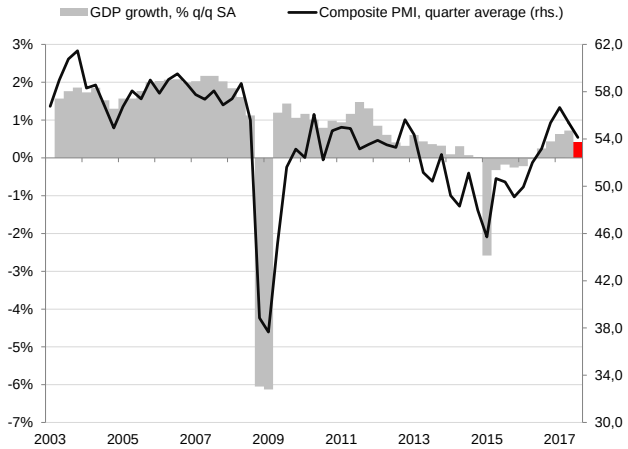
It would be too early to make any conclusions as to which trends are emerging in the Russian economy's private sector based on one month's data. Having said that, the positive data on order intakes could encourage producers to change their corporate strategy of cautiously ramping up production, strictly adhered to in recent months particularly in the manufacturing sector. Concurrently, sustainable demand for new staff is predicted to hold, with companies more energetically increasing output prices, which may add to inflationary pressure.

Figure 28. Composite PMI indexes, pp



Source: Bloomberg Finance L.P.

Figure 29. Composite PMI indexes and GDP growth, pp



Source: Bloomberg Finance L.P.

1.2.8. New car market: accelerating growth

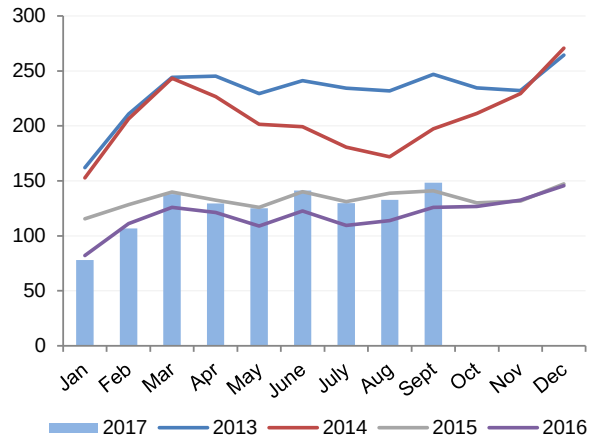
- New car and light commercial vehicle sales once again showed robust growth (+3.7% MoM, seasonally adjusted) in September 2017 after a slight decrease in August. Production of new passenger cars over the first eight months of this year also showed considerable growth.

- Throughout this year the car market is poised to bring new positive developments, thus reflecting the recovery in demand for durable goods and boosting overall retail sales.
- Exports of new cars have been growing largely thanks to non-CIS countries.

Data from the Association of European Businesses (AEB) suggest that new car and light commercial vehicle sales rose by 17.9% YoY in September 2017 (Figure 30).

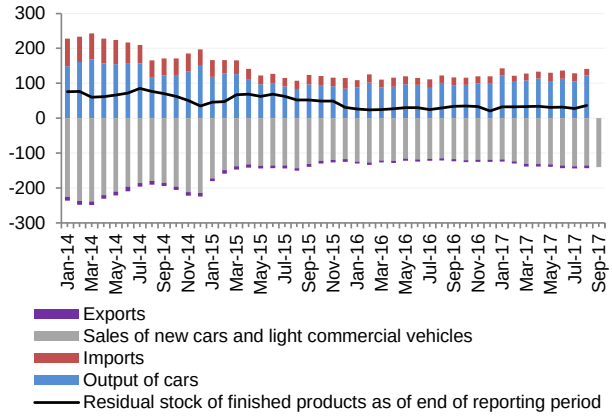
Considerable growth this month and as of Q3-end (+17.7% YoY) improved annual forecasts significantly. According to AEB estimates, the market will grow by 10.8% in 2017. Sales have already increased by 10.6% over the first nine months. The Ministry of Industry and Trade also improved its year-end forecasts: sales are supposed to rise by 10% YoY. Estimated production growth increased by the same value this year.

Figure 30. New car and light commercial vehicle sales, thousand units



Sources: AEB, R&F Department calculations.

Figure 31. Demand (-) and supply (+) components in the Russian auto market, seasonally adjusted, thousand units



Sources: AEB, R&F Department calculations, Rosstat.

Our estimates suggest that the market will grow by at least 12%, exceeding expectations. Monthly sales charts featured in Figure 8 suggest that the market growth rate is more likely to accelerate than slow in the fourth quarter (especially in December), as predicted by the AEB and the Ministry of Industry and Trade. Indeed, monthly sales correspond to the 'normal' 2013 readings with a downward shift in the amount of sales. Oil price growth in recent months guarantees that demand for cars will increase throughout this year.

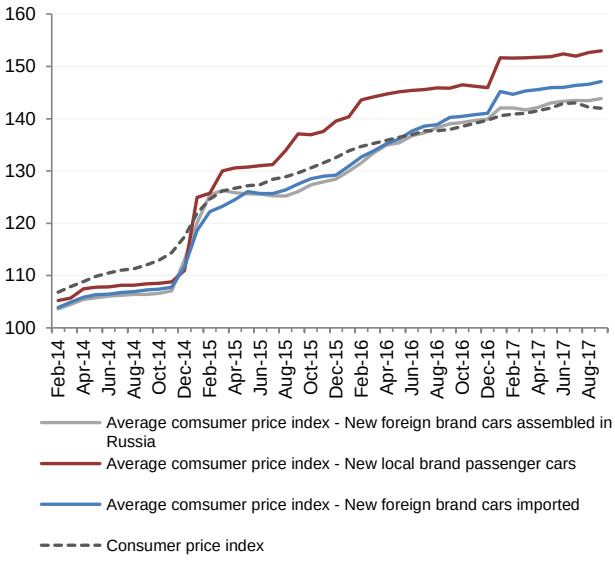
Seasonally adjusted September sales data also point to steady growth of 3.7% MoM (Figure 31). This increase, coupled with analysts' revised forecasts, indicates the ongoing positive sentiment in the market of new passenger cars.

Faster sales growth in the auto market should also contribute to further recovery in retail sales.

The production of passenger cars also increased considerably by 21.4% YoY in the first eight months of 2017. As a result, output already considerably outpaced the crisis readings of 2015-2016 in the period under review. The foreign economic trends of prior months held in the period between January and August 2017. Passenger car imports have shrunk considerably (-8.5% YoY) whereas exports demonstrated sizeable growth (+32.4% YoY). As in previous years, non-CIS countries account for most export growth.

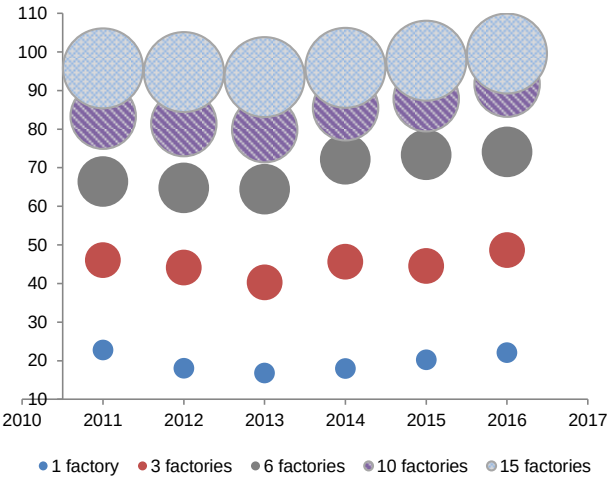
Consumer prices of new cars continued to increase in September 2017 (Figure 32). That said, annualised growth in the prices of imported cars and those assembled in Russia was below overall inflation this month (2.1% and 2.8% YoY vs 3.0% YoY respectively). The only group of goods where price growth outpaced headline inflation was new domestically produced cars.

Figure 32. Consumer prices of new cars, January 2013 = 100%



Sources: Rosstat, R&F Department calculations.

Figure 33. Car production concentration ratio, %



Source: Rosstat.

Despite the relatively stable current market, state support programmes have considerable impact on the prospects of the industry's further development. The Strategy for Russian Motor Industry Development Until 2025 is among the important projects. Auto part production setup and export increase are key unsolved issues from the previous version of the Strategy.[11] The new version of the document is focused on motor vehicle production consolidation and reduction of the number of base platforms as the industry's development priority and an answer to the above challenges. This is supposed to result in an economy of scale that will maximise added value, increase business profitability and

[11]The Strategy for Russian Motor Industry Development Until 2020, approved by Order of the Russian Ministry of Industry and Trade No. 319, dated 23 April 2010.

localisation. These changes will lead to cost cuts and a consequent positive effect on the car part industry and raw material suppliers. Furthermore, Russian manufacturing may become more competitive, and this will translate into the volume of export sales.

Production consolidation is overall is line with the global trend in the motor industry. Rosstat data suggest that production concentration is increasing in the industry (Figure 33): by 2016, six firms accounted for 75% of total output. However, the number of base production platforms is relatively high. As of 2015, one Russian platform accounted for 230 cars,[12] almost half the value registered in other emerging markets. At the same time, capacity utilisation in the motor industry is relatively low and exhibits a downward trend (41% in 2016). This issue is clearly important for production optimisation, increasing competitiveness and further development of the industry overall. It is still uncertain what measures the government will take to respond to this challenge. Car manufacturers believe that consolidation should run naturally without shrinking the product range, which is extremely important in the current market conditions.

1.3. Global economy, financial and commodity markets

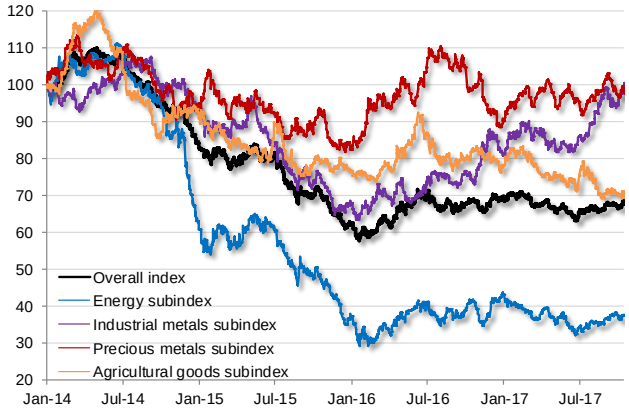
1.3.1. Fundamental and temporary factors push up oil prices

- Leading international organisations continued to revise upwards their demand growth forecasts for liquid fuel on the back of strong consumption growth in OECD countries.
- The activity of US shale oil companies continues to slow; a slowdown in production growth rates is expected.
- Compliance with the OPEC+ agreement increased significantly in August.
- However, Libya and Nigeria are still considerably reducing its effectiveness whereas the parties to the Agreement are keeping their market shares through reserve sales.
- Alongside fundamental factors, oil prices are boosted by stronger temporary factors, in particular, threats that oil supply from Iraqi Kurdistan may halt and that production in Venezuela will drop further.
- Both fundamental and temporary factors switched the oil futures curve to backwardation: futures prices were relatively high at the short end of the curve, whereas sales by hedger producers exert pressure on futures prices at the medium end.

[12] According to IHS data.

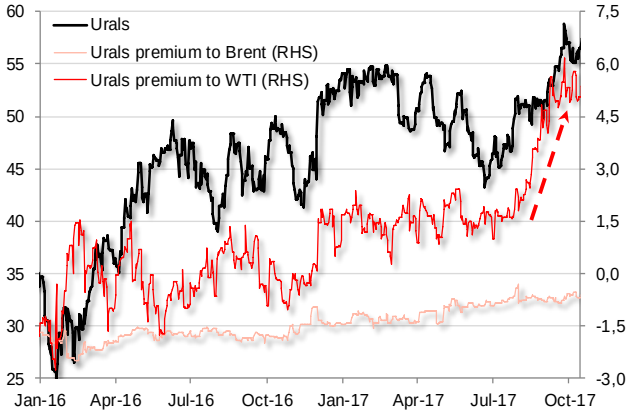
In September and the first half of October the Bloomberg Commodity Index rose by 1%. The 1% drop in the prices of precious metals was offset by a 1% increase in the prices of industrial metals and a 3% hike in energy prices, while agricultural produce prices showed neutral dynamics (Figure 34). The Urals price increased by 10% on the back of the oil market rebalancing and improvements in expectations of future supply and demand movements, and also due in part to temporary factors and the ongoing shrinkage in the Brent price discount amid restrictions on Russian oil production under the OPEC+ agreement (Figure 35).

Figure 34. Bloomberg commodity and metal indices (01.01.2014 = 100)



Sources: Bloomberg Finance L.P., R&F Department calculations.

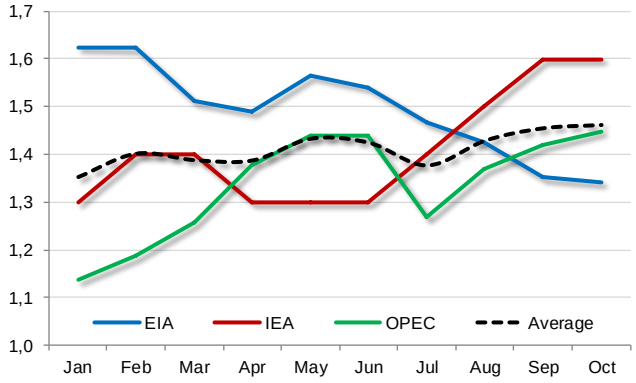
Figure 35. Urals and premium against Brent and WTI



Sources: Bloomberg Finance L.P., R&F Department calculations.

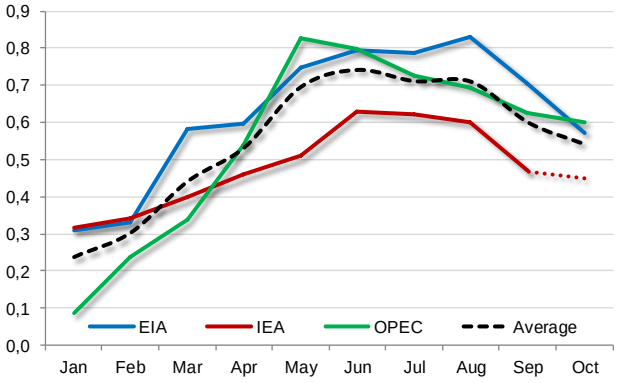
The September and October reports of key international organisations (International Energy Agency (IEA), Energy Information Administration (EIA) and OPEC) by and large continue the trend towards an upward revision of the global liquid fuel demand forecast (Figure 36). It is based on the improvement in consumption expectations in OECD countries. In particular, the IEA predicts that German demand will grow by 0.1 million barrels a day in 2017. The EIA revised its forecast downwards but reassigned this demand to 2018.

Figure 36. Global liquid fuel demand growth forecasts in monthly reports of major organisations in 2017, million barrels a day



Sources: EIA, IEA, OPEC, R&F Department calculations.

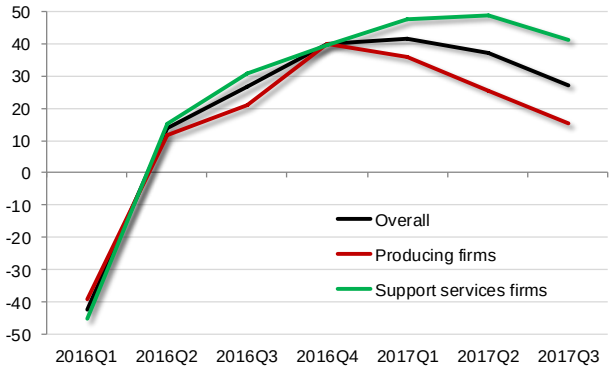
Figure 37. US liquid fuel production growth forecasts in monthly reports of major organisations in 2017, million barrels a day



Sources: EIA, IEA, OPEC, R&F Department calculations.

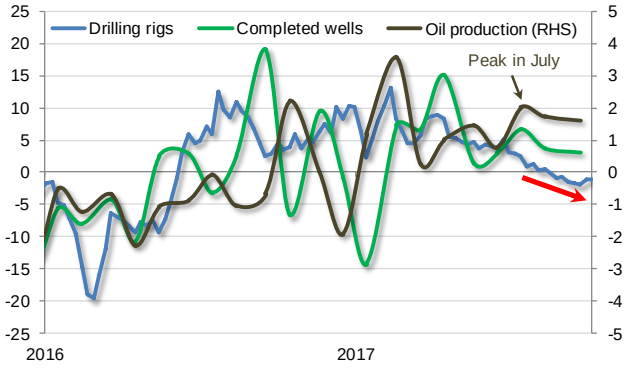
The supply side also supported oil prices. On the one hand, liquid fuel production in the US is growing, and, according to EIA data, shale oil production presumably hit a new record in September, exceeding the March 2015 readings. At the same time, leading international organisations in their reports revised their 2017 forecasts of production growth in the US downwards (Figure 37). The Q3 Dallas Fed Energy Survey showed that the business activity index of Eleventh District oil and gas companies[13] fell further, with oil exploration and production firms outperforming (oilfield service firms are getting an increasingly greater margin from recovering oil prices) (Figure 38). Production and key leading indicators in the shale oil industry have seen either slower growth or faster decline in recent months: drilling rigs are being withdrawn, both the deployment of new wells and employment are slowing, and production efficiency is falling at a faster pace. Further development of the trend towards slower growth in shale oil production is expected (Figure 39-Figure 41).

Figure 38. Business activity index of Eleventh District oil and gas firms, pp



Source: Dallas Fed.

Figure 39. Oil shale industry growth, % MoM



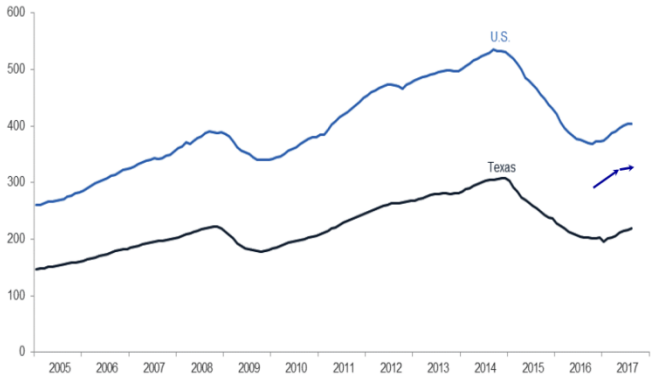
Sources: Bloomberg Finance L.P., EIA, R&F Department calculation.

[13] Encompasses Texas and adjacent areas including the Permian Basin, accounting for more than 40% of total US oil production and two thirds of core shale oil production.
For the report review, refer to Sub-section 1.3.3. 'Oil market balancing prospects deteriorate' of Talking Trends, June 2017 (No. 5 (17)).

In the period between August and September, countries improved their compliance with the OPEC+ agreement, thus increasing market rigidity. OPEC estimates based on secondary data suggest that OPEC-12 countries'[14] compliance with quotas increased to 100% as production in Venezuela dropped and Saudi Arabia returned its additional support (Figure 42), while compliance by non-OPEC countries surged to 161% (Figure 43). We estimate that total compliance of OPEC+ countries with their quotas stood at 117% in August (95% in July). That said, Libya and Nigeria still considerably undermine the agreement's effectiveness: with these countries' data factored in, quota compliance stood at 91% in August (67% in July).

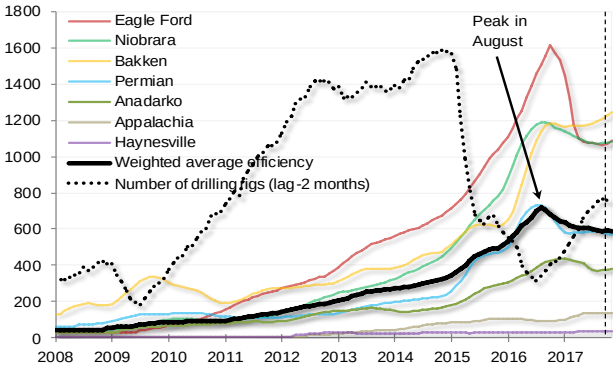
Furthermore, Kpler estimates suggest that the reduction of oil exports from OPEC countries lags considerably behind the production cuts: in August exports dropped by only 0.21 million barrels a day compared with October, that is, several times less than production (Figure 44). JODI data for Saudi Arabia show that reserve sales continue but their impact on oil supply growth is declining (Figure 45).

Figure 40. Employment in the oil and gas industry in Texas and the US as a whole, thousand people



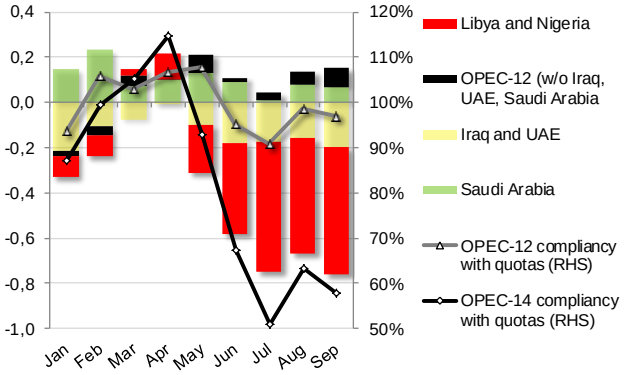
Source: Dallas Fed.

Figure 41. Number of drilling rigs and effectiveness of oil production in US shale oil basins (barrels per drilling rig)



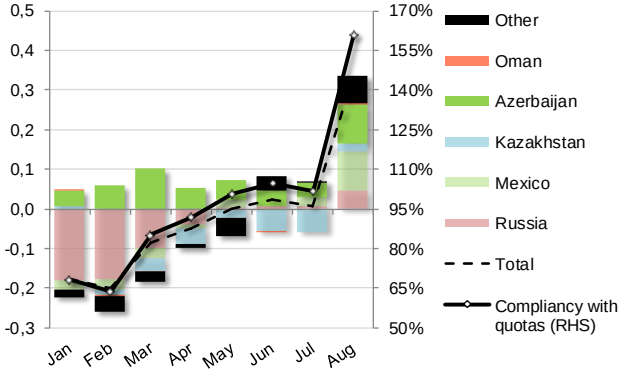
Sources: Bloomberg Finance L.P., EIA, R&F Department calculation.

Figure 42. OPEC countries' deviation from quotas ('+' stands for output cut in excess of requirements) (million barrels a day)



Sources: Bloomberg Finance L.P., OPEC, R&F Department.

Figure 43. Non-OPEC countries' deviation from quotas ('+' stands for output cut in excess of requirements) (million barrels a day)



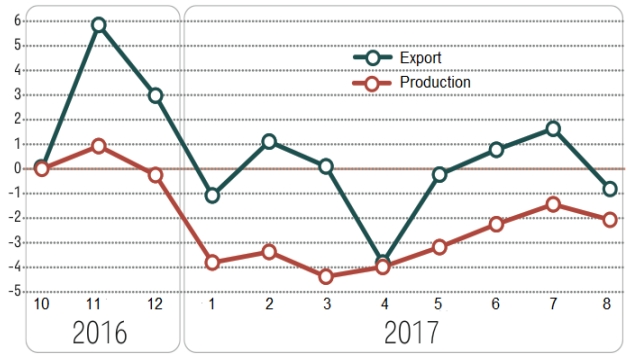
Sources: OPEC, R&F Department calculations.

[14] Includes 12 OPEC countries to which quotas are allocated, except for Libya and Nigeria.

Considerably stronger temporary factors pushed up oil prices alongside fundamental factors in the reporting period. They include seasonal high demand, the sharp production shrinkage in Venezuela in September that brought concerns about similar dynamics in the future, the relatively high risk of hurricanes in the US that repeatedly resulted in production breaks in some oilfields, a growing discount of WTI to other crudes, mounting tensions between the US and North Korea and Iran, and the Iraqi Kurdistan independence referendum. The latter engenders the menace of an internal military conflict which may be caused by, among other things, Kurdistan's occupation of oil-rich Iraqi fields of Kirkuk and Bai Hassan, and the disruption in oil supplies to the global market through Kurdistan (roughly 0.6 million barrels a day).

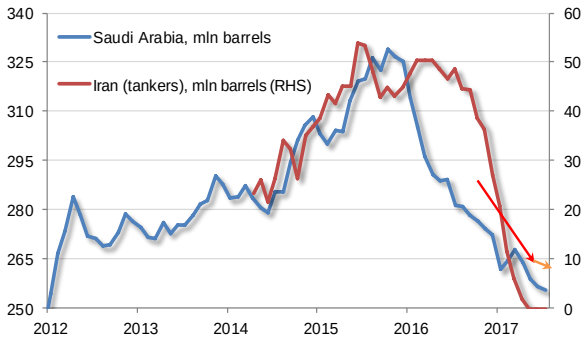
The growth in oil prices observed in the reporting period switched the oil futures curve from a contango shape to backwardation[15] (Figure 46). As futures prices remain relatively high at the short end of the curve, which may be attributed to both fundamental and temporary factors, futures prices at the medium end of the curve experience pressure from producers who are likely to hedge their positions. The experience of 2017 has shown that the WTI futures curve switches to backwardation and performs evenly when prices exceed $50 a barrel, a comfortable level for shale oil producers (Figure 47).

Figure 44. Changes in OPEC oil production and exports, % MoM



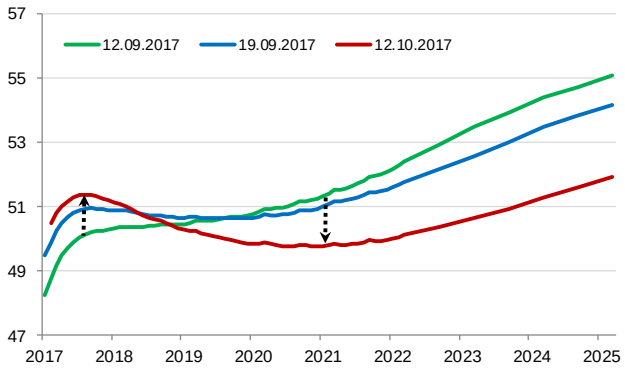
Source: Vedomosti.

Figure 45. Oil reserves in Saudi Arabia and Iran



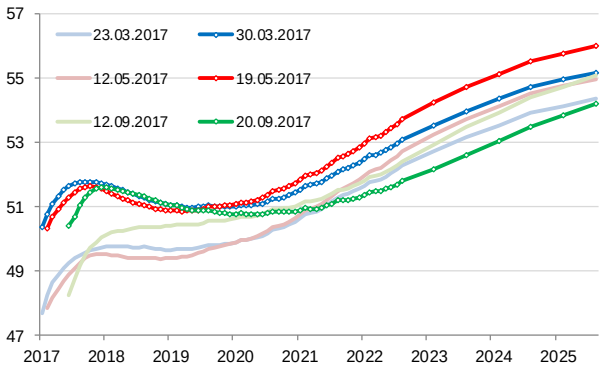
Sources: Bloomberg Finance L.P., JODI, R&F Department calculations.

Figure 46. WTI futures curves, US dollars a barrel



Source: Bloomberg Finance L.P.

Figure 47. WTI futures curves, US dollars a barrel



Source: Bloomberg Finance L.P.

[15] Contango/backwardation is characterised by the higher/lower price of each maturing futures contract.

2. Outlook: leading indicators

2.1. What do the Russian leading indicators suggest?

2.1.1. GDP growth projections: the economy on path to sustainable growth

- As of 19 September, the 2017 Q3 GDP estimate stood at 0.4% QoQ SA and was slightly revised down compared with the August estimate (ranged between 0.4% and 0.5% QoQ SA).
- The generally positive August macrostatistics were in line with our expectations: that the economy would settle on a sustainable growth path close to its potential.
- The rise in oil prices seen in recent weeks may also boost GDP growth.
- Estimates for the fourth quarter of 2017 (+0.4% QoQ SA) and the first quarter of 2018 (+0.4-0.5% QoQ SA) have hardly changed over the past month.
- The above estimates lead us to expect approximate GDP growth of roughly 2.0% as of end-2017.

	September 2017	August 2017
	% QoQ SA	% QoQ SA
2017 Q3	**0.4**	0.4-0.5
2017 Q4	**0.4**	0.4
2018 Q1	**0.4-0.5**	0.4

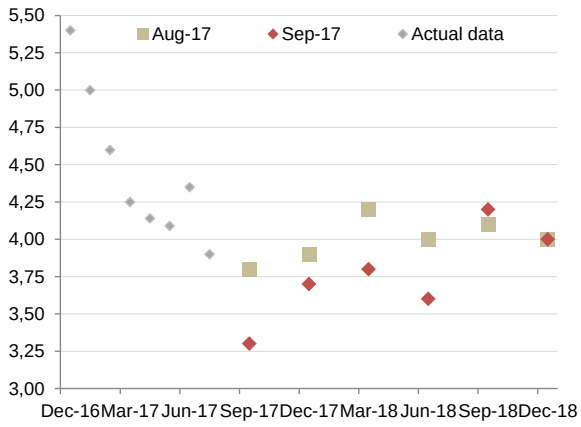
2.1.2. Analysts confident that inflation will hold near 4% on the medium-term horizon

- September's surveys revealed a continued decline in analysts' inflation expectations from 3.9% to 3.7% YoY for the end of this year. This resulted from the current inflation dynamics in the forecast.
- Analysts forecast that prices will rise faster in 2018 due to the low base of this year, and expect a more than 4% YoY increase in some cases.

- Analysts are thereby lowering their inflation expectations for 2017 given the actual data, but remain convinced that inflation will hold close to 4% on the mid-term horizon.
- We estimate that the 2017 base effect should bring about more considerable fluctuations in annual inflation than analysts forecast.
- As regards the key rate, expectations are moderate: analysts do not forecast a considerable rate cut in the next two years.

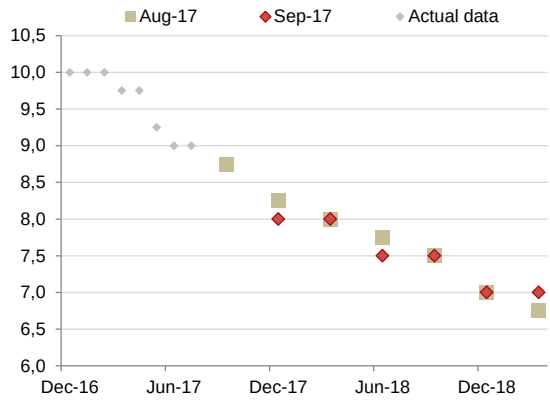
In September, analysts revised down their expectations for inflation throughout next year (Figure 48). The main reason for this decline in inflation expectations is a slowdown in actual consumer price growth rate. Inflation fell by 1 pp over a two-month period, naturally affecting experts' expectations. Expectations were down to 3.7% as of the end of this year.

Figure 48. Analysts' expectations for inflation, % YoY



Source: Bloomberg Finance L.P.

Figure 49. Analysts' expectations for the BoR key rate, %



Source: Bloomberg Finance L.P.

Analysts expect that inflation will jump in the third quarter of 2018 on the back of this year's low base effect. Annual inflation may exceed 4% in certain periods, however, expectations for the year-end have remained unchanged at the Bank of Russia's target level.

Surveys of analysts suggest that the Bank of Russia will continue to cut its key rate. However, the current dramatic slowdown in inflation failed to make the Bank of Russia considerably revise the scale of its key rate cut for the horizon under review. The adjustment of analysts' key rate forecast from 8.25% to 8.0% by end-2017 is largely a nominal response to the reduction of the key rate in September (Figure 49). Future periods will not see a rapid rate cut either. The rate expected as of the end of 2018 has been revised slightly upward (to 7.0%). This suggests that analysts believe the Bank of Russia will not hasten to reduce the interest rate.

3. In focus. How the exchange rate contributes to inflation slowdown: econometric study findings

- The exchange rate pass-through to prices had a considerable impact on inflation. Barring this effect, September inflation would have stood at 4% YoY, the level the Bank of Russia intends to maintain as a sustainable target.
- This conclusion suggests that the inflation slowdown to 3% in September is temporary in nature. All else being equal, inflation will accelerate to 4% as the pass-through effect abates in the future.
- The exchange rate pass-through of the ruble to prices has almost halved over the past five years but still influences consumer price dynamics considerably. [16]

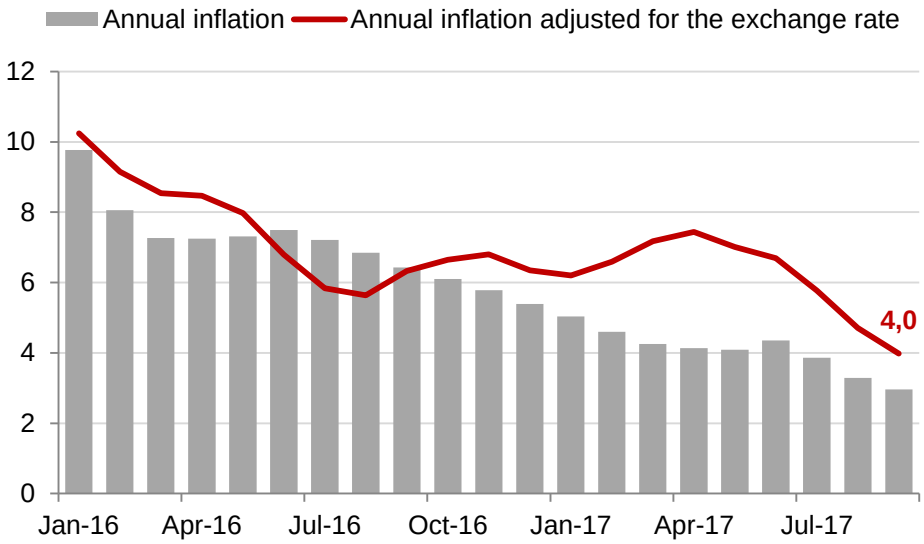
According to Rosstat data, annual consumer price growth slowed to a record low of 3% in September, holding below 4% YoY for the third consecutive month. Alongside the Bank of Russia's moderately tight monetary policy, inflation slowdown was caused by temporary factors where the past year's ruble appreciation played an important role.

The dependence of consumer prices on the exchange rate is determined by the pass-through effect, which has almost halved over past years, as the below data suggest. The main reasons for the decrease of the pass-through effect are a gradual reduction of imports in the structure of retail products, falling inflation expectations, menu costs,[17] etc.

Despite the decline in the pass-through effect, the contribution of the exchange rate to consumer price movements remains relatively high: estimated annual inflation adjusted for the exchange rate stands at 4.0%, the level the Bank of Russia intends to support sustainably (Figure 50). This conclusion suggests that the inflation slowdown to 3% in September is temporary in nature. All else being equal, inflation will accelerate to 4% as the pass-through effect abates in the future. It is this inflation rate that should govern monetary policy decision-making.

[16] Estimates based on the analysis of cointegration of the ruble's nominal effective exchange rate with prices of various CPI components, and standard reduced form VAR model estimates.
[17] Corporate costs related to price change.

Figure 50. Inflation adjusted for exchange rate movements, % YoY



Sources: R&F Department calculations.

In light of the latest ruble appreciation, the assessment of the exchange rate's contribution to disinflation[18] in the Russian economy in 2016-2017 brings back the issue of asymmetry in the exchange rate pass-through to consumer prices. In particular, do prices have a more pronounced response to the depreciation of the national currency than to its strengthening? As a rule, the asymmetry in the exchange rate pass-through to prices may be explained by the fact that monopolistic firms may modify trade mark-ups to a greater extent and reduce prices less when their costs fall on the back of the ruble's appreciation. In particular, the disinflationary impact of the exchange rate following the ruble's strengthening in 2017 could be constrained, among others, by the insufficient downturn in prices which were set against a lower ruble exchange rate as registered from late 2014 till early 2016, when the national currency weakened. Furthermore, the below estimates suggest that the pass-through effect of depreciation and appreciation differs not only in scale but also in time. Having said that, the scale and the deferred nature of the exchange rate pass-through to prices depends not only on appreciation/depreciation but also on the nature of impact on different consumer basket components, which varies in time and scale.

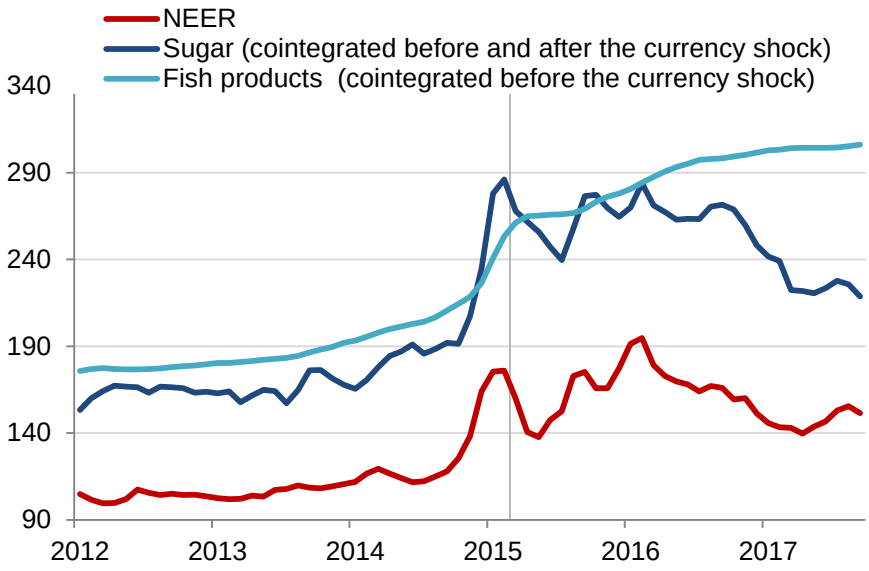
We used a statistical analysis based on a simple vector autoregression model (VAR) and cointegration to analyse, as a first approximation, possible changes in price sensitivity to the ruble exchange rate and estimate the scale and length of the exchange rate's contribution to the current inflation slowdown.

We used the Engle-Granger method to test the nominal effective exchange rate (NEER) and 43 key CPI components for cointegration. We analysed only three periods of time: *January 2012 - September 2014* (pre-crisis period), *January 2012 - February 2015*

[18] That is, inflation slowdown (not to be confused with deflation, year-on-year price downturn)

(period of exchange rate dynamics shock) and *March 2015 - September 2017* (period of ruble appreciation). As a result, we found out that *9* CPI components were cointegrated with the nominal effective exchange rate in the pre-crisis period. When the exchange rate sharply weakened, their number reached *14*. In the period of the ruble's appreciation the number of CPI components cointegrated with the exchange rate dropped to *3* (see also Figure 51). The weakening of the ruble in late 2014 and early 2015 predictably affected the prices of many consumer products. However, the reverse effect proved considerably lower. That said, CPI components that respond equally strongly to both the weakening and strengthening of the exchange rate (i.e., demonstrate a pass-through effect of symmetric force) include the price indices of sugar and fruit and vegetables.

Figure 51. Nominal effective rate of the ruble against foreign currencies and its cointegration with individual consumer basket components (index, pp)



Sources: R&F Department calculations.

In any case, the conclusion that cointegration lowers over time indirectly suggests that the exchange rate pass-through to prices is currently weakening and, for this reason, the disinflationary impact of the ruble's strengthening in 2017 was not pronounced.

In order to estimate the link between the exchange rate and consumer prices, we used the impulse response function of the core consumer price index to the exchange rate shock obtained from a standard reduced form VAR model:

$$\boldsymbol{Y_t} = \mathrm{A_0} + \sum_{i=1}^{p} \boldsymbol{A_i Y_{t-i}} \quad + \sum_{j=1}^{q} \boldsymbol{B_j X_{t-q}} + \mu_t,$$

where

Y_t is a vector of endogenous variables,

Y_t is a vector of exogenous variables,

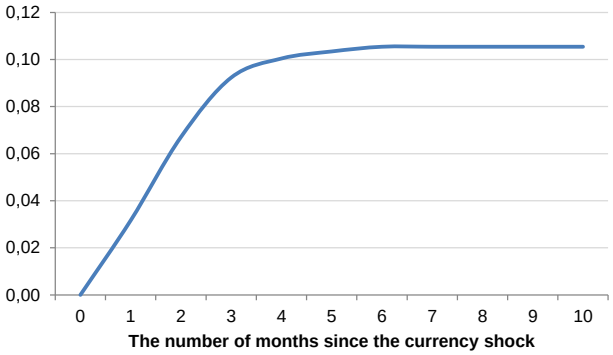
A_0 is a vector of constants,

A_i and B_j are matrices of unknown estimated parameters,

μ_t is a vector of random errors.

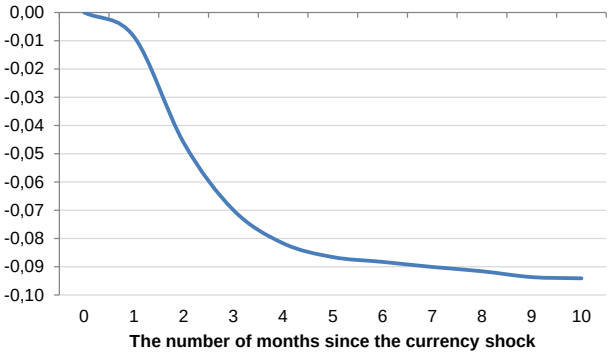
We used *core CPI* and *the exchange rate* as endogenous variables and *underlying inflation*, calculated on a regular basis, as an exogenous variable. Our choice of trend inflation as an exogenous variable was based on a set of model characteristics and economic implications: underlying inflation is a measure of medium-term inflation expectations and monetary aggregate performance, which in turn reflect the impact of monetary policy. In terms of econometric modelling, we use this indicator to avoid inaccurate model specification. Otherwise, model estimates would almost entirely attribute the inflation slowdown to the ruble's appreciation, and the pass-through effect of the appreciation would be exaggerated.

Figure 52. Accumulated core CPI inflation response to 1% ruble depreciation (VAR model estimate)



Sources: R&F Department calculations.

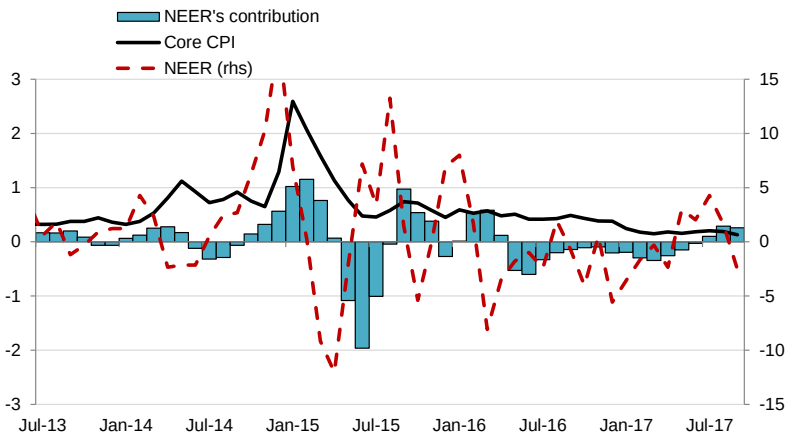
Figure 53. Accumulated core CPI inflation response to 1% ruble appreciation (VAR model estimate)



Sources: R&F Department calculations.

In order to estimate changes in the link over time, we parameterised the model on monthly data and a fixed moving period of six years (72 surveys).

Figure 54. NEER contribution to core CPI (pp)



Sources: R&F Department calculations.

The analysis confirmed the assumption that the pass-through effect abates over time. *In 2012-2013, for each percentage point of the ruble's depreciation, inflation increased by 0.16-0.20 pp within a six-month period, whereas a 1% decrease in the exchange rate in late 2016 and early 2017 increased inflation by only 0.10-0.12 pp.* Thus, the pass-through effect of the ruble's depreciation almost halved. We obtained similar results for the pass-through of ruble appreciation, but the period during which this effect impacts prices proved to be longer, comprising nine months (Figure 52 and Figure 53).

These estimates of impulse response functions helped us calculate the contribution of changes in the nominal effective exchange rate to core inflation movements[19] (Figure 54). In September 2017, the aggregate contribution for the 12 months totalled -1.02 pp. Therefore, given the actual year-on-year inflation in September (3.0% YoY), annual inflation adjusted for the exchange rate pass-through effect was estimated at 4.0%.[20]

In light of another temporary favourable effect observed in 2017, stemming from favourable movements of fruit and vegetable prices due to harvest, as well as persistently high inflation expectations, we consider the current inflation reduction below 4% to be temporary in nature.

[19] Here we used core inflation calculated by the truncation method and adjusted for price movements in education.

[20] The aggregate 12-month contribution to annual growth of food prices was 1.7 pp. Given the actual year-on-year food price inflation in September (2.0% YoY), growth in food prices adjusted for the exchange rate pass-through effect was estimated at 3.7%.

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