INFLATION
REPORT

MÁTYÁS KIRÁLY

'… wise is the man who can put purpose to his desires.'

Miklós Zrínyi: *The Life of Matthias Corvinus*

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Pursuant to Act CXXXIX of 2013 on the Magyar Nemzeti Bank, the primary objective of Hungary's central bank is to achieve and maintain price stability. Low inflation ensures higher long-term economic growth and a more predictable economic environment, and moderates the cyclical fluctuations that impact both households and companies.

In the inflation targeting system in use since August 2005, the Bank has sought to attain price stability by ensuring an inflation rate near the 3 per cent medium-term target. The Monetary Council, the supreme decision-making body of the Magyar Nemzeti Bank, performs a comprehensive review of expected developments in inflation every three months, in order to establish the monetary conditions consistent with achieving the inflation target. The Council's decision is the result of careful consideration of a wide range of factors, including an assessment of prospective economic developments, the inflation outlook, financial and capital market trends and risks to stability.

In order to provide the public with a clear insight into how monetary policy works and to enhance transparency, the Bank publishes the information available at the time of making its monetary policy decisions. The Report presents the inflation forecasts prepared by the Directorate Economic Forecast and Analysis, the Directorate Monetary Policy and Financial Market Analysis, the Directorate for Fiscal and Competitiveness Analysis and the Directorate Financial System Analysis, as well as the macroeconomic developments underlying these forecasts. The forecast is based on the assumption of endogenous monetary policy. In respect of economic variables exogenous to monetary policy, the forecasting rules used in previous issues of the Report are applied.

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THE MONETARY COUNCIL'S KEY FINDINGS RELATED TO THE INFLATION REPORT

In the Council's assessment, Hungarian economic growth continues to pick up from the end of this year. Some degree of unused capacity has remained in the economy, but looking ahead, the disinflationary impact of the domestic real economic environment is gradually dissipating. Inflation rises over the forecast period and reaches the inflation target in the first half of 2018. The strong external financing capacity and the decline in the government's FX debt will further reduce the vulnerability of the country in the forthcoming years.

The fragile growth of the global economy continued in the past months. Although long-term inflation expectations rose, inflation rates still fell short of the central bank targets. International money markets were first characterised by improving investor sentiment, followed by strong risk aversion in emerging and global bond markets.

International money market sentiment was volatile in the past quarter. In early November, temporary turbulence evolved in some market segments, while persistent risk aversion developed in other ones. Rising inflation expectations resulted in significant increases in long-term government securities yields of the US, other developed and emerging markets as well. In parallel with that, strong capital outflows have happened from the global bond markets. In December, the US Fed and the ECB made decisions in diverging policy directions. The Fed decided to raise interest rates thereby moved towards a tighter policy path, which move had been indicated for a long time. By contrast, the ECB decided to extend its quantitative easing programme. Thereby loose euro-area monetary conditions remain accommodative for a longer period. Starting from November, the US dollar has appreciated against the main currencies in line with central banks' steps. As a result of the decision taken at the end-November OPEC meeting about the limiting of oil production, prevailing oil price futures rose to above 50 dollars. The news related to the stability of the euro area banking sector were focussed on by the market again.

Global economic growth continued to be subdued in the third quarter of 2016. While growth picked up in the majority of developed economies, growth prospects varied in the emerging regions. Inflation was subdued all over the world. In the case of most of the world's leading central banks the fragile economic activity and the moderate inflation environment justify a persistently loose monetary policy environment that supports economic growth. Growth in the Central European region continued to exceed that of the developed regions, although it decelerated in the third quarter. In line with the global inflation environment, the countries of the region are also characterised by low inflation rates, which are below central bank targets. Central banks in the region maintained their loose monetary policy stance.

Inflation is rising gradually, reaching 3 per cent, which corresponds to price stability, in the first half of 2018.

Based on the incoming data received in recent months, domestic inflation increased as expected and the underlying trends were in line with the September Inflation Report. According to the forecast, inflation will rise further in the coming months, to which base effects are also contributing. The dynamic expansion in employment and the tightening labour market leads to, in general, dynamic wage increases. Over the forecast horizon, the cost increasing effect of the new wage agreement will be attenuated by the reduction of the employer's contribution and the cut in corporate taxes. Therefore, at macroeconomic level there will be no major change in labour cost compared to our previous forecast. At the same time, the distribution of burdens varies depending on company size. On the whole, the pick-up in nominal wage growth results in a material increase in household consumption, pointing to a gradual increase in the core inflation rate. Although in the Monetary Council's assessment the moderate imported inflation and the historically low inflation expectations decelerate the rise in the domestic price level, base effects and the pick-up in domestic consumption result in a gradual increase in the consumer price index. Looking ahead, inflation will reach the medium-term inflation target in the first half of 2018.

Mostly relying upon household consumption, the dynamic growth of the domestic economy is continuing from the end of this year. Stable growth together with the favourable external balance, provides an opportunity for the implementation of measures that further improve competitiveness.

In our forecast we expect renewed pick-up in economic performance as of the end of this year. An increasingly important role in growth is played by the continued expansion in domestic demand, which is mainly determined by the increase in consumption and private investment. As a result of the rise in employment, the unemployment rate declines to historically low levels. In addition to the historically high levels of household wealth, the favourable income developments and the increase in lending to households, the restoration potential resulting from making up for previous years' postponed consumption also supports the prolonged expansion in household consumption. Looking ahead, we expect an upturn in public investment in line with the government's commitment. Due to the programmes of the central bank, lending to SMEs

increased in a pace formerly wished to be achieved, namely 5 to 10 per cent, and will be stimulated by the Growth Supporting Programme in the forthcoming years. According to our forecast, the dynamic rise in wages urges companies to implement efficiency increasing investment projects, and as of 2017 vehicle industry developments will also contribute to the expansion in corporate investment. The continued increase in lending to households is consistent with the turnaround in the real estate market and the continued pick-up in economic activity. Demand in Hungary's export markets is expected to decline in 2017. However, starting from 2018, export dynamics is expected to improve gradually again with the development of new capacities in the vehicle industry. As a result of the MNB's and the Government's growth stimulating programmes, the Monetary Council expects annual growth to exceed 3 per cent in the forthcoming years. Looking ahead, steps taken to improve competitiveness also contributes to the economy's dynamic expansion.

External debt continues to decline, resulting in a further improvement in Hungary's perception abroad, while with the rise in domestic absorption the surplus of the balance of payments may slightly decrease in the coming years.

In 2015, the external financing capacity of the economy amounted to nearly 8 per cent of GDP, which may gradually decline to below 7 per cent of GDP in the years to come. The pick-up in domestic absorption reduces the trade surplus, and also contributes to the increase in corporate profits. The impact of these may be reduced by an acceleration in the absorption of EU transfers. On the whole, the savings position of the Hungarian economy will slightly decline over the forecast horizon, still remaining significant and also entailing a decrease in external debt and thus in vulnerability as well. This is also confirmed by the fact that Hungary's credit rating has been restored to investment grade at all the three major international credit rating agencies. In 2016, the budget deficit is expected to be lower than the target, which is attributable to increasing tax revenues as well as to lower than planned expenditures in certain areas. In the first three quarters, the absorption of EU funds and public investment were substantially below the annual plans. In 2017, the social contribution tax will decline by 5 percentage points, while the corporate tax rate will be a uniform 9 per cent. We continue to project a declining annual debt path over the forecast horizon, supported by economic growth as well as the moderate general government deficit. According to our forecast, the debt path will be in line with the requirements of both the Hungarian and EU fiscal rules.

In addition to international bond market developments, the domestic money market developments were primarily affected by the central bank's actions. The limitation on the quantity of the three-month deposit as of September reduced the interbank and government securities market yields to a degree that exceeded market expectations.

The MNB took several steps to ease monetary conditions: it narrowed the interest rate corridor, held liquidity providing FX swap tenders, and both in October and November limited the amount of liquidity that can be placed in 3-month deposits. As a result of these steps, money market yields up to 3 years declined considerably. As a result of changing the set of instruments, the BUBOR rates, which serve as basis for the pricing of household and corporate loans, declined to historic lows. However, during the past quarter, as a result of the changed international inflation expectations and yield environment, the longer section of the interbank and government securities market yield curve shifted significantly upwards, and the yield curve became steeper. However, as a result of the ECB's easing-oriented step, euro-area monetary conditions, most relevant for the Hungarian monetary policy, are expected to remain accommodative for a longer period.

The macroeconomic outlook is surrounded by both upside and downside risks.

In addition to the baseline projection in the December Inflation Report, the Monetary Council also considered two alternative scenarios. The realisation of the alternative scenario that assumes weaker demand in external markets means lower growth and inflation paths than the baseline scenario. The alternative scenario assuming faster wage growth and more dynamic expansion in consumption imply stronger domestic economic growth and higher inflation than the baseline forecast. In addition to the key risk scenarios, among possible further risks the Monetary Council also discussed alternative scenarios that envisage monetary policy divergence among developed-country central banks, a slower investment path resulting from developments in and the structural composition of EU transfers, and higher, as well as lower, oil and commodity prices.

In the Council's assessment, some degree of unused capacity has remained in the economy while inflation is rising gradually to the target. The disinflationary impact of the real economy is gradually dissipating over the policy horizon. If the assumptions underlying the Bank's projections hold, maintaining the current level of the base rate for an extended period and the loosening of monetary conditions by the change in the monetary policy instruments are consistent with the medium-term achievement of the inflation target and a corresponding degree of support to the economy.

SUMMARY TABLE OF THE BASELINE SCENARIO

(Forecast based on endogenous monetary policy)

	2015	2016	2017	2018
	Actual		**Projection**	
Inlation (annual average)				
Core inflation	1.2	1.4	2.4	3.0
Core inflation without indirect tax effects	1.1	1.3	2.3	2.9
Inflation	-0.1	0.4	2.4	3.0
Economic growth				
Household consumption expenditure	3.4	5.0	5.0	4.0
Government final consumption expenditure	1.3	1.8	0.7	1.0
Gross fixed capital formation	1.9	-8.4	11.2	7.4
Domestic absorption	2.3	2.1	5.1	4.0
Exports	7.7	6.6	5.0	6.0
Imports	6.1	6.4	6.7	6.6
GDP[1]	3.1	2.8	3.6	3.7
External balance[2]				
Current account balance	3.4	5.5	3.7	3.0
External financing capacity	7.9	6.9	6.5	6.4
Government balance[2,6]				
ESA balance	-1.6	(-1.5) – (-2.0)	(-1.8) – (-2.2)	(-2.0) – (-2.2)
Labour market				
Whole-economy gross average earnings	4.3	6.3	9.0	7.0
Whole-economy employment	2.7	3.3	1.2	1.0
Private sector gross average earnings[3]	4.0	5.4	8.5	6.9
Private sector employment	2.5	3.4	1.9	1.3
Unemployment rate	6.8	5.2	4.7	4.4
Unit labour costs in the private sector[4]	2.4	6.7	4.7	3.3
Household real income[5]	3.9	4.5	4.6	3.9

[1] The baseline forecast is based on backcast and nowcast adjusted by anticipated revisions.

[2] As a percentage of GDP.

[3] According to the original HCSO data for full-time employees.

[4] Private sector unit labour costs calculated with full time equivalent domestic employees.

[5] MNB estimation.

[6] In 2016 depending on the use of EU funds and the implementation of the proposed measures to exploit the fiscal space. In 2017-2018 depending on the use of the National Protection Fund and the share of down payment of EU funds.

1. INFLATION AND REAL ECONOMY OUTLOOK

1.1. Inflation forecast

According to our forecast, inflation will continue to rise in the following quarters. A significant increase in household income will result in dynamic consumption growth, and as a consequence of this core inflation is projected to rise. In addition to this, in our forecast costs are expected to slowly increase, which will also tend to push core inflation higher. At the same time, due to the subdued external inflation environment and well-anchored expectations, the inflation will only gradually approach the medium-term target. According to our forecast, inflation will fall short of the 3 per cent medium-term inflation target in the coming year and is expected to reach the target during the first half of 2018.

Chart 1-1: Fan chart of the inflation forecast
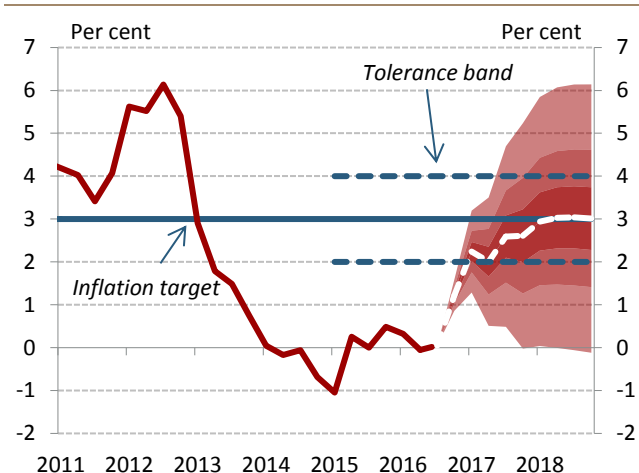
Source: HCSO, MNB

Chart 1-2: Monthly evolution of the near-term inflation forecast
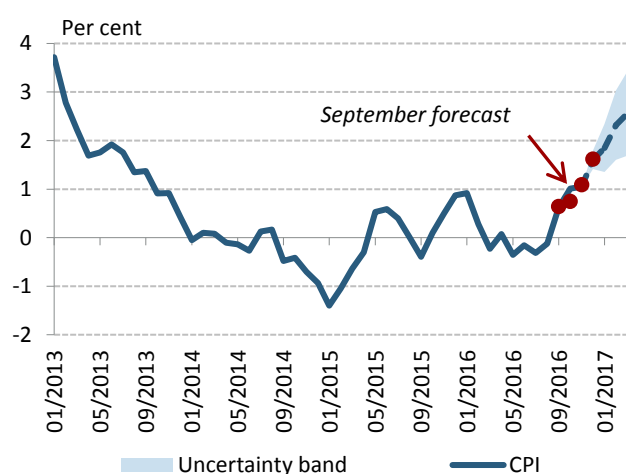
Note: Annual change. The uncertainty band shows the root mean squared error of previous years' near-term forecasts.
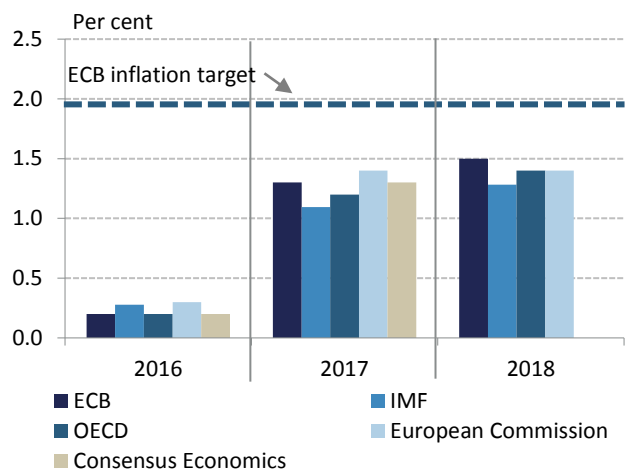Source: MNB

Based on our short-term forecast, the price index is set to increase further (Chart 1-2). In the coming quarters, the rise in the consumer price index will be caused by increases in the prices of products not included in the core inflation basket, due to base effects, while from mid-2017 the increase in core inflation will be the main factor behind this rise. Annual average inflation is expected to be 0.4 per cent this year, 2.4 per cent next year and 3.0 per cent in 2018 (Chart 1-1 and Table 1-1).

Inflation developments in the euro area, Hungary's main trading partner, will continue to be restrained by the open output gap and the globally low cost environment. According to the most recent European Central Bank forecast, euro-area inflation will be significantly lower than the medium-term target in both 2017 and 2018 (at 1.3 and 1.5 per cent, respectively). As a result, in a historical comparison, the external inflationary environment is expected to remain low over the medium term (Chart 1-3).

Core inflation excluding indirect taxes is expected to rise gradually over the forecast horizon (Chart 1-4 and Table 1-1), driven by the pick-up in household consumption supported by increasing incomes. In our forecast, we project a slow rise in costs, which will also tend to increase core inflation. The upward impact of the new wage agreement on wage costs is offset by the contribution cut, and thus the cost of labour remains broadly unchanged at the macroeconomic level. At the same time, the costs are not distributed equally according to enterprise size. The increase in the minimum wage exerts an impact on price developments mainly by fuelling consumption. In view of the dynamic expansion in employment and tight labour market conditions, the unit labour cost will rise in the private sector. However, based on domestic and international experience since the crisis, the inflationary effect of accelerating wage outflows may be moderate, owing to the low wage share and subdued inflation expectations. Over the forecast horizon, the disinflationary impact of the domestic real economic environment is gradually dissipating.

Chart 1-3: Projections for euro-area inflation

Source: ECB, IMF, OECD, European Commission, Consensus Economics

Chart 1-4: Decomposition of the inflation forecast
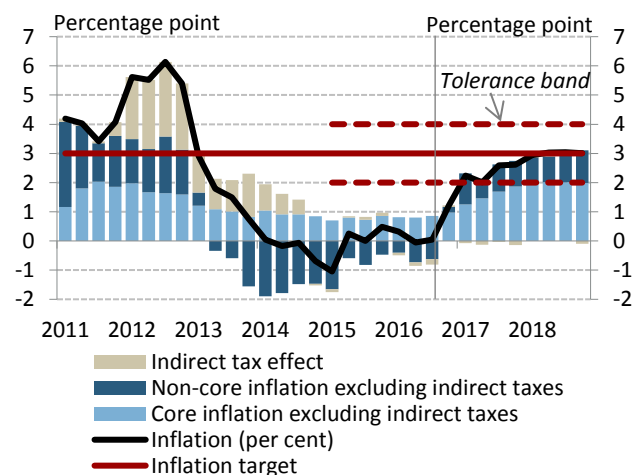
Source: MNB

Table 1-1: Details of the inflation forecast

		2016	2017	2018
Core inflation		1.4	2.4	3.0
Contribution to inflation		*0.9*	*1.6*	*2.1*
Non-core inflation	Unprocessed food	0.3	-0.3	4.8
	Fuel and market energy	-6.5	7.7	3.6
	Regulated prices	0.2	0.4	1.9
	Total	-1.7	2.3	2.9
Contribution to inflation		*-0.5*	*0.8*	*0.9*
Inflation		**0.4**	**2.4**	**3.0**

Note: The sum of contributions may differ from the aggregated value due to rounding.
Source: MNB

According to our forecast, the price index of non-core items excluding indirect taxes will increase in the short run (Chart 1-4 and Table 1-1). Oil prices expressed in euros are higher than our September assumptions, while looking ahead futures prices only project a gradually rising trajectory. At the same time, as a result of last year's decline in fuel prices falling out of the base, the price index of this product group is expected to rise at the turn of 2016 and 2017, also resulting in an increase in the consumer price index. In case of non-processed foods, subdued price dynamics are expected for this year in line with the good harvest results. In our forecast, regulated energy prices are not expected to change over the entire forecast horizon. In the group of regulated non-energy prices, subdued price dynamics are expected in line with the generally low inflation environment (Table 1-1).

On the whole, indirect tax changes point towards a slight decline in inflation both next year and in 2018. The previously announced changes in excise taxes being implemented in line with EU law harmonisation point to increases in the prices of tobacco products. The inflationary effects from the changes in the changes in tobacco and fuel excise tax may increase the consumer price index by 0.3–0.4 percentage points in 2017. Nevertheless, the consumer price index will be decreased by the VAT cuts at the beginning of next year (Internet, eggs, milk, poultry, restaurant services). The total effect of this may amount to 0.4 percentage points on average for the upcoming year. In early 2018, further VAT cuts will be introduced for restaurant services, which will restrain price dynamics.

Box 1-1: Assumptions applied in our forecast

Hungary is a small, open economy, and as such our forecasts for the most important macroeconomic variables are fundamentally influenced by developments in external factors and changes in these assumptions. The purpose of this brief presentation of the changes in the external assumptions is to make our forecasts more transparent.

Table 1-2: Main external assumptions of our forecast

Technical Assumptions	2016		2017		2018	Change	
	September	December	September	December	December	2016	2017
EUR/USD	1.12	1.11	1.12	1.06	1.06	-0.9 %	-5.4 %
Oil (USD/barrel)	43.5	43.9	50.6	55.3	56.6	0.9 %	9.3 %
Food prices							
Wheat (USD/bushel)	4.38	4.34	4.72	4.47	5.10	-0.9 %	-5.3 %
Maize (USD/bushel)	3.52	3.57	3.55	3.66	3.97	1.4 %	3.1 %
Euro area inflation (%)	0.1	0.2	1.2	1.3	1.5	0.1 pp.	0.1 pp.
GDP growth of our main trading partners* (%)	2.1	2.3	1.6	1.5	1.7	0.2 pp.	-0.1 pp.

Note: *Growth rate of Hungary's 21 most important export target countries, weighted by share in exports.
Source: CBT, Bloomberg, OECD, Consensus Economics, MNB calculations

During the past period, the price per barrel of Brent crude expressed in USD fluctuated in a range of USD 45–50, with significant volatility. Price developments were mainly shaped by stock exchange transactions (linked to the possible outcome of OPEC negotiations), while the trends defining fundamentals remained broadly unchanged. OPEC countries agreed to decrease their output by 1.2 million barrels, in the wake of which the price of oil rose to over USD 52. As a result, **we are assuming a higher oil price trajectory than applied in September Inflation Report**. The impact of the agreement may be offset by an increase in flexible US shale oil production in response to oil prices remaining above USD 50. Futures prices point towards a moderate increase in the coming period. Uncertainty surrounding expected oil price developments is high among analysts, and oil prices for break-even points are distributed in a wide band.

According to our technical assumption for the EUR/USD exchange rate, the euro will remain weak against the USD, which is probable in light of the expected difference in the monetary policy stances of the European Central Bank and the Fed.

Compared to the assumption applied in the September Inflation Report, the expected path of grain prices has increased slightly in the past months. Global inflation has been low for a long time, and similar subdued price increases are expected in the future. Looking ahead, imported inflation will only rise gradually.

Assumptions for GDP growth in Hungary's main trading partners has slightly increased for 2016 while slightly decreased for 2017. Developments in Hungary's external demand will mainly be shaped by the change in structure of the German economy, and contraction in demand for exports stemming from the exit negotiations due to Brexit and a slowdown in the Chinese economy. Significant uncertainty surrounds these prospects.

In the period since September Report, several new measures were implemented. The additional funding allocated to industrial park development, the Modern Cities scheme and the recapitalisation of EXIMBANK affects the 2016 budget. The sale of land is expected to generate HUF 100 billion in revenue for the budget in 2016 based on the latest information, compared to the earlier estimate of HUF 250 billion. However, the deficit-increasing impacts are offset by expenditure-side savings. The most significant of these is the general government advance payment within the disbursed European Union grants, much higher than assumed in September, with no own contribution associated in the current year. As a result, government investments will also be lower than previously forecasted.

Tax receipts for 2017 are significantly reduced by the uniform reduction of the corporate income tax rate to 9 per cent (for details, see box 5-1) and of the social contribution tax by 5 percentage points. Offsetting the tax cuts, the budget balance is improved by the HUF 150 billion in revenue from land sales, the increasing income tax base in the wake of the agreement on the minimum wage and the guaranteed wage minimum increase and the changes affecting the Job Protection Action Plan. The agreement on the minimum wage and guaranteed wage minimum increase was initiated by the government as a precondition for the social contribution tax cut. In 2018, the social contribution tax rate will be decreased to 20 per cent of the gross wage, which will be partially offset by further minimum wage and guaranteed wage minimum increases.
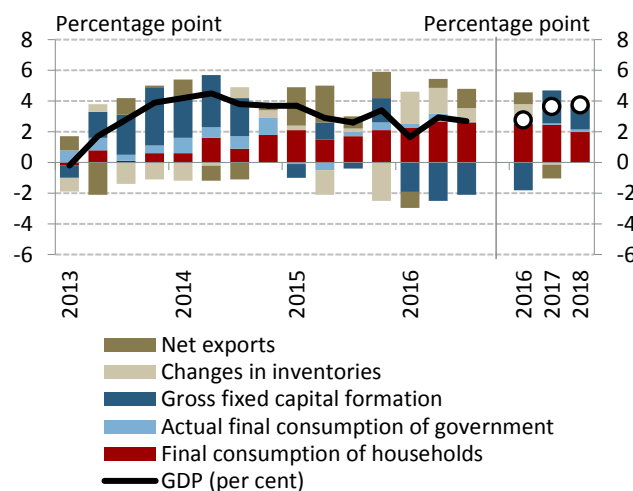
1.2. Real economy forecast

In our forecast, we expect a renewed upturn in economic performance from the end of this year, contributing to the convergence of the Hungarian economy since 2013. Our medium-term forecast is mainly shaped by dynamic wage growth. According to our forecast, growing domestic demand will play a major role in driving growth, with rising consumption and private investment as determining factors. This year's increase in household consumption can be linked to the positive income trends, the expansion of household lending and the significant rise in net financial wealth. According to our expectations, the dynamic increase in wages also has positive effects on the business investment side. The decrease in the relative price of capital and the low interest rate environment encourages productivity-enhancing investments. Investments will increase again in 2017-2018, driven by greenfield foreign direct investment and the public sector. Export dynamics should pick up gradually from 2018 onwards as new vehicle industry capacities are built. The rise in factors of domestic demand (consumption, investment) will significantly boost import dynamics, as a result of which net exports will contribute negatively to economic growth in the medium term. According to our expectations, the fiscal impulse will be negative for the entire current year, but the fiscal measures introduced in 2017-2018 should foster economic growth in the coming years. The Hungarian economy is expected to grow by 2.8 per cent in 2016, 3.6 per cent in 2017 and 3.7 per cent in 2018.

Chart 1-5: Fan chart of the GDP forecast
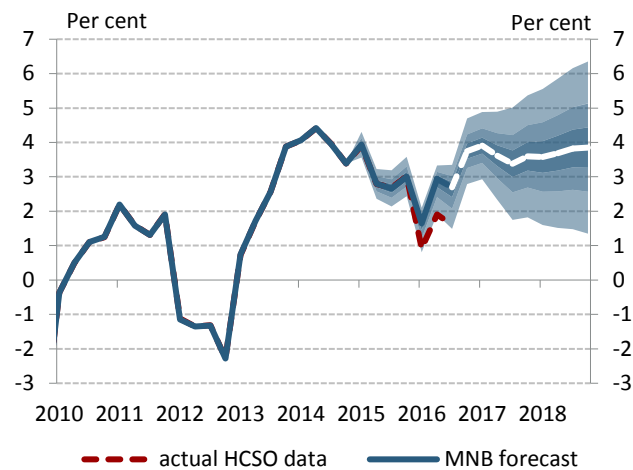
actual HCSO data ---- MNB forecast ——

Note: The baseline forecast is based on backcast and nowcast adjusted by anticipated revisions. Seasonally adjusted and reconciled data. Source: HCSO, MNB

Chart 1-6: Annual changes in GDP

- Net exports
- Changes in inventories
- Gross fixed capital formation
- Actual final consumption of government
- Final consumption of households
- GDP (per cent)

Note: The baseline forecast is based on backcast and nowcast adjusted by anticipated revisions. Source: HCSO, MNB

The dynamic upswing in household consumption is expected to continue over our forecast horizon, supported by an increase in the propensity to consume alongside positive income trends (Charts 1-6 and 1-7). The expansion in consumption at the end of this year is supported by the one-time benefit for pensioners, in addition to positive income trends. This benefit costs HUF 26 billion, amounting to 0.4 per cent of consumption in the fourth quarter. The increase in consumption will primarily be shaped by consumption expenditure drawn forward due to sharp rise in income as a result of the minimum wage hike. The historically high net financial wealth also supports the expansion of consumption. In the past quarters, there was an upswing in the previously subdued household loan demand, and as a result gross household lending expanded significantly this year. Looking forward, we expect a turnaround in household lending activity.

Household consumption which has been postponed since the crisis represents a substantial potential factor for recovery looking ahead. The sustained moderate consumption rate and the low level of durable goods purchases both suggest postponed consumption since the crisis. The financial saving rate is expected to decrease from its current elevated level in the upcoming years, while the consumption and investment rate will increase gradually. In the wake of rising employment, the unemployment rate is decreasing to historically low levels. The sustained growth in household consumption is also supported by the second-round effects of the housing market subsidy scheme. In terms of production, further growth is expected in sectors related to consumption demand, such as commerce, tourism and hospitality services.

According to our expectations, after this year's decline investments will rise significantly in 2017-2018, supported by both the public and the private sector (Chart 1-8). In

Chart 1-7: Evolution of households consumption, investment and financial savings rates as a percentage of disposable income
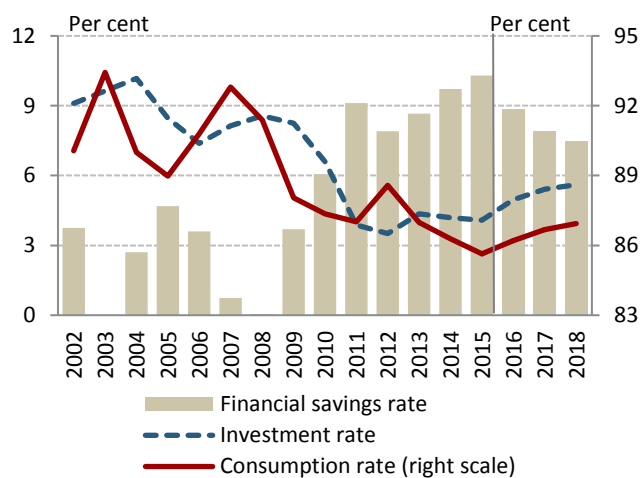
Source: HCSO, MNB calculation

Chart 1-8: Evolution of investment rate by sectors
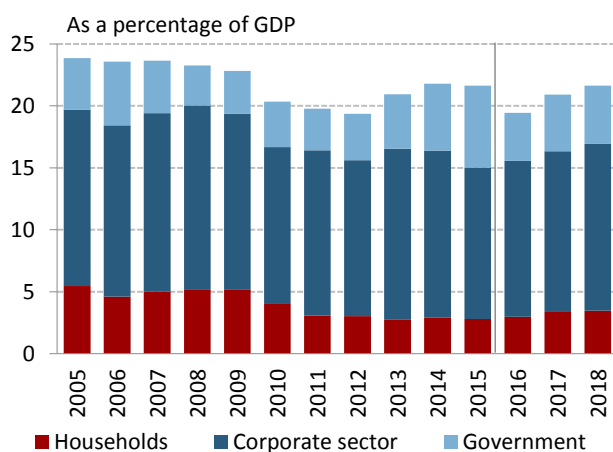
Source: HCSO, MNB

parallel with the moderate drawdown of EU funds this year, government investment contracted considerably compared to last year, which was a record-breaking year. At the same time, looking forward, we expect an increase in state investments in line with the government's commitment. However, projects backed by European Union funding will primarily be completed in the following years. This is supported by the rapid increase of contracts and the government's commitment to fast drawdowns at the beginning of the cycle. When examining investments backed by European Union funds, it is also essential to take into account qualitative characteristics alongside quantitative ones. In the 2014-2020 EU budgetary cycle, direct economic development projects are expected to have a more prominent role than in the former cycle.

Households' investment activity is fostered by stable labour market prospects and improving income trends, along with the demand stimulating effect of the housing market subsidy scheme. The housing market has increasingly reached a mature phase, characterised by the adjustment of supply in reaction to higher housing market demand. The significant growth reserves in the Hungarian housing market support the expected continuation of the upswing on the housing market. In accordance with the strong expansion of building permits and lending to households over the past period and the greater utilisation of the housing market subsidy scheme, we expect an upswing in household investments in 2017.

The dynamic increase in wages and demand also triggers positive effects on the corporate investment side. The decrease in the relative price of capital and the low interest rate environment encourages productivity-enhancing investments. Thanks to the improved demand outlook, corporate investments are expected to expand. The uniformisation of the corporate profit tax will significantly decrease burdens for large enterprises, which will foster additional investments by decreasing the cost of capital and contribute to a higher private investment trajectory. Rising investment activity is fostered by the pick-up in lending resulting from the Growth Support Scheme.

With rising credit demand, the volume of corporate loans is expected to increase over our forecast horizon. **The growth in the stock of SME loans is expected to remain stable, in the 5-10 per cent range.** On the demand side, the low interest rate environment allows commercial banks to increase their lending activity. In addition, central bank steps to stimulate market-based lending and the gradual phasing-out of the banking sector tax will also cause more dynamic lending. The newly announced development
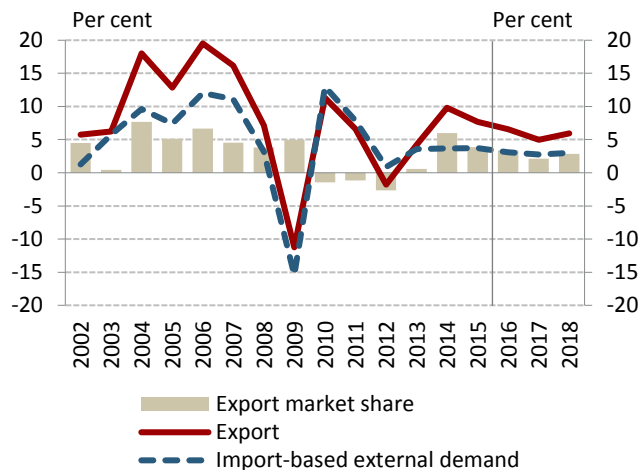
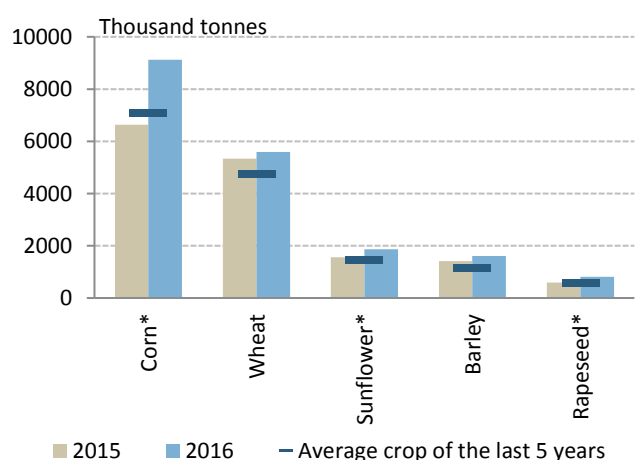**Chart 1-9: Annual changes in corporate and vehicle industry investments**
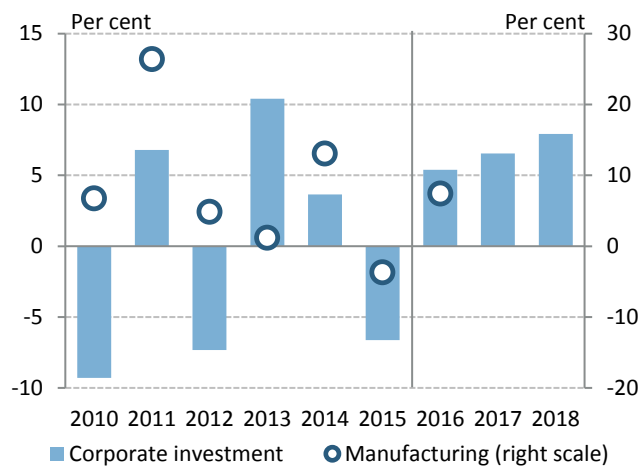
Note: Manufacturing investments for 2016 are based on the first three quarters. Source: HCSO, MNB calculation

Chart 1-10: Changes in export market share

Source: MNB

Chart 1-11: Evolution of crop yields in agriculture

Note: *Expected crop in 2016.
Source: HCSO, Research Institute of Agricultural Economics, Agroinform.hu

projects in the vehicle industry will also support the rise in corporate investments (Chart 1-9).

In addition to more subdued external demand growth, we expect slowing export dynamics over the first half of our forecast horizon. We expect export dynamics to pick up gradually from 2018 as new vehicle industry capacities are built (Chart 1-10)**.** Developments in Hungary's external demand will mainly be shaped by the change in the structure of the German economy, and then contraction in demand for exports stemming from a slowdown in the Chinese economy and thus global trade. In line with contracting industrial output, we expect a slowdown in trade dynamics in the remaining part of this year. However, we expect services trade, which is less reliant on business cycles and external funding, to offset the temporary slowdown of goods exports. The rise in factors of domestic demand (consumption, investment) will strongly boost import dynamics, as a result of which net exports will contribute negatively to economic growth in the medium term.

As a result of good agricultural output, the sector's value added will increase the GDP growth rate this year by 0.5-0.6 percentage points. The agricultural performance over the first three quarters is also verified by the currently available yield estimates (Chart 1-11). Corn yields have increased by more than one third compared to last year, while yields for wheat and other grain types have also increased, which has contributed to the output of the sector.

Based on previous experience, the preliminary data releases for growth have tended to be revised upwards in the following years after an upturn in economic activity, and therefore we believe that this year's underlying economic growth is stronger than the currently available HCSO estimates for the GDP figures. As a result, we expect that this year's economic growth will be revised up significantly when next year's revisions take place (for more details, see Special Topic 6.1).

Potential growth will pick up over the forecast horizon, primarily due to investment in the private sector and the trending increase in labour market participation in the coming years. The increase in capital stock and dynamic growth in corporate investments to expand capacities are fostered by the Growth Support Scheme, the decreasing banking sector tax and the EU funding available for enterprises. The pick-up in lending also contributes to improving productivity. Labour market participation will increase slightly at the beginning of our forecast horizon before levelling out at a historically high level.

Box 1-2: Revisions influencing GDP growth in recent years

When reviewing the development of GDP, the Hungarian Central Statistical Office regularly makes revisions, which also retrospectively influence the perception of economic performance. Revisions of the data are linked to several factors. Firstly, if newer data as well as more detailed and more complete databases become available, e.g. annual statistics (NAV data), the estimate can be made more precise. Secondly, the HCSO regularly makes changes for statistical reasons: it re-estimates the seasonal behaviour of the time series annually, and changes the base of the volume indexes every five years. Thirdly, from time to time methodological developments are implemented in the case of hard-to-observe data, when there is changeover to the use of a new proxy. Unusually, the future often changes the image of the past as well, as GDP figures received following a quarter under review also frequently result in revisions even in the already available values of the time series. A substantial change in methodology occurred in 2006 when illegal activities were taken into account in calculating GDP figures and HCSO moved to publish chain-linked volume indices. Furthermore, the ESA-2010 methodology was introduced in 2014 based on the regulation of Eurostat, which caused changes in national accounts data back to more pronounced extent than in course of the usual annual revision.

The 2015 annual national account data was published recently, in which the HCSO broadly revised upward the economic performance in recent years. In addition to corrections of routine revisions, the HCSO refined estimates of remittances and also accounted for a conversion fee in the case of credit institutions. In 2015, Hungarian GDP expanded by 3.1 percent, which is 0.2 percentage points higher than the data published previously. The numbers for the gross domestic product data can also change after the publication of the preliminary annual national accounts. The new data releases usually resulted in upward revisions in economic growth in the recent years (Chart 1-12). **The methodology for the revision of the GDP data and its treatment in our forecast are demonstrated later in this publication, in Special Topic 6.1.**

Chart 1-12: Revisions of GDP growth in recent years
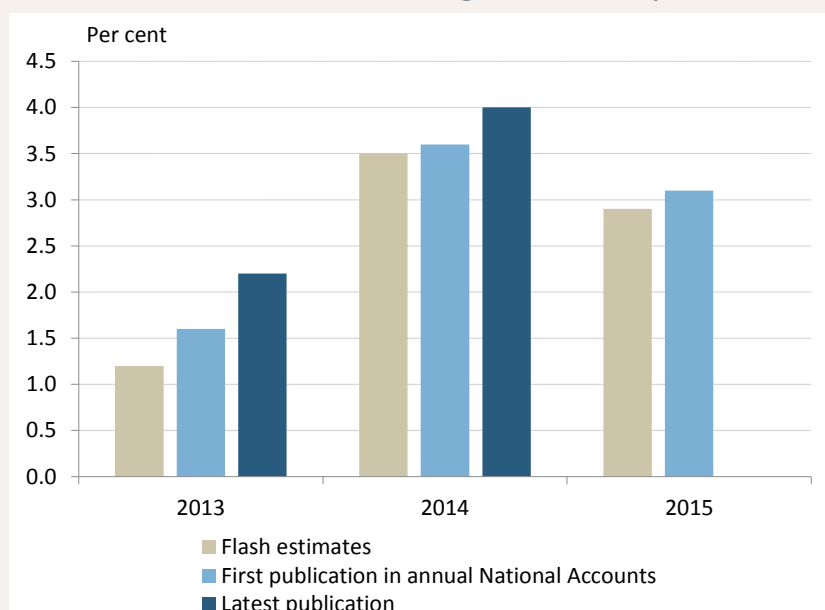
Source: HCSO

1.3. Labour market forecast

Over the forecast horizon, total employment will increase at a higher rate than activity, due to the continued increase in private sector employment. As a result, unemployment, which is already at a historically low level, will continue to decrease. Further increasing demand within the private sector and a tight labour market will trigger a gradual increase in wage dynamics, which is further enforced by the minimum wage and guaranteed minimum wage increases to be introduced in the upcoming two years. On the whole, over our forecast horizon nominal private sector wage growth will be stronger compared to past years.

Chart 1-13: Employment, participation and unemployment rate of the national economy
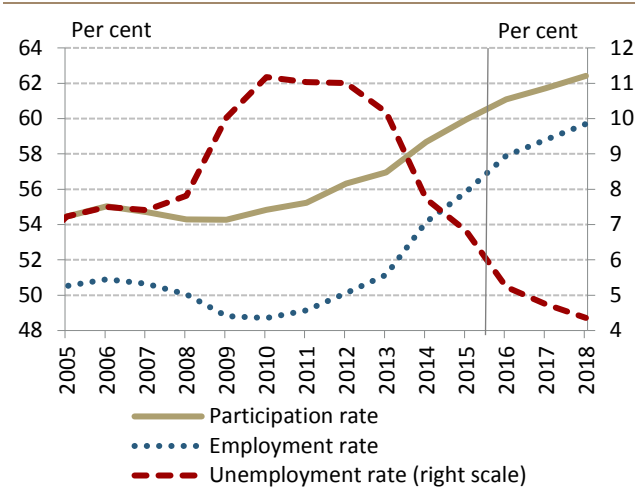
Source: MNB calculations based on HCSO data

Chart 1-14: Decomposition of unit labour cost in the private sector
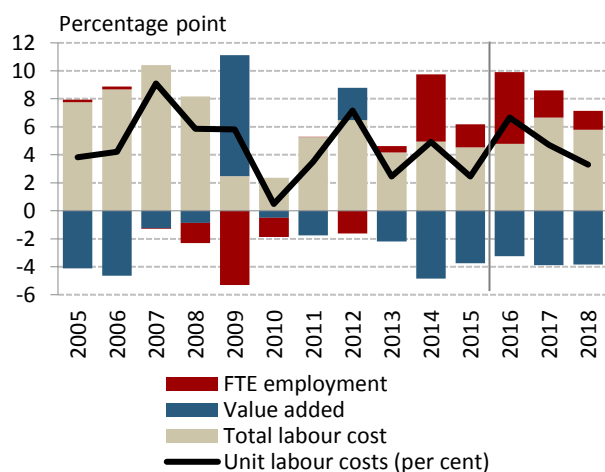
Note: FTE – full-time equivalent.

Source: MNB calculations based on HCSO data

Participation will continue to increase slightly over our forecast horizon. The rise in participation is mainly driven by the labour market entry of inactive persons closely tied to the labour market, fostered by the stimulating effect on labour supply of the higher minimum wage and the guaranteed minimum wage (Chart 1-13). According to our expectations, due to the rising wage dynamics, the emigration of the skilled workforce may slow. Furthermore, due to the high wage dynamics the difference between the wage levels of the private sector and public employment schemes will increase. As a result, the incentive for public workers to move to the private sector will increase.

Over the forecast horizon, labour demand in the private sector will increase further, in parallel with continued economic growth. However, corporations' efforts to increase their workforce will be significantly influenced by the increasingly limited labour reserves, not only in terms of quantity, but also quality and mobility. Due to labour market frictions, the number of persons employed in the private sector will rise at a slower rate compared to the robust increase of recent years. The full-time equivalent employment is set to increase similarly to employment over our forecast horizon. We expect a slight reduction in public bureaucracy, leading to a decline in public sector employment, most of which will move to the private sector. Our forecast does not expect any further increase in public employment schemes; the annual average number of public employees will be around 220,000. **Total employment will continue rising at a slower rate.**

As employment continues to rise, **unemployment, which is already at a historical low, will continue to decrease**. Due to shrinking labour reserves, increasing wage competition is emerging both between companies and sectors in order to fill open positions and to retain the current workforce, which will lead to a gradual increase in nominal private sector wage dynamics over our forecast horizon. In addition, the minimum wage and guaranteed minimum wage increases to be introduced in the upcoming two years will contribute significantly to rising gross average wages in the private sector (see Box 1.3). Overall, over our forecast horizon, nominal private sector wage dynamics will be stronger compared to the past years (Chart 1-14).

Box 1-3: Macroeconomic impacts of the wage agreement

Pursuant to the wage agreement announced in November, **the minimum wage will increase by 15 per cent in 2017 and by 8 per cent in 2018, while the guaranteed wage minimum will rise by 25 per cent in 2017 and by 12 per cent in 2018** (Table 1-3). The administrative wage increases will considerably contribute to the increase in gross average earnings in the private sector. **At the company level, the increase in labour costs resulting from the increase in the minimum wage and the guaranteed wage minimum will be somewhat offset in 2017 by a 5 percentage point decline in the social contribution tax paid by employers and in 2018 by a further 2 percentage point decrease, covering each employee.** The box below deals with the macroeconomic effects of the wage agreement.

Table 1-3: Summary table of the wage agreement

|	2016	2017	2018
Gross minimum wage (HUF)	111 000	127 500	138 000
Annual growth (per cent)		*14.9*	*8.2*
Gross guaranteed minimum wage (HUF)	129 000	161 000	180 500
Annual growth (per cent)		*24.8*	*12.1*
Social contribution tax (per cent)	27	22	20
Per cent point change		*-5*	*-2*

Source: Ministry for National Economy

The increase in the minimum wage and the guaranteed wage minimum affects a significant proportion of employees directly, as the distribution of wages is left-skewed; in 2015, the base wage of nearly 30 per cent of full-time employees did not exceed the guaranteed wage minimum.[1] In addition, companies try to maintain the correlation between employees' relative productivity and relative wages, and thus in order to maintain the wage differences within the company, the wages of those whose earnings are close to the minimum wage and the guaranteed wage minimum will typically also rise. **Accordingly, due to the avoidance of wage compression, the increase in the minimum wage and the guaranteed wage minimum may have a spillover effect in the lower part of the wage distribution**. However, the degree of spillover is expected to be decreased by the effect in terms of combating the shadow economy. The reason for this is, that in case of the minimum wage and guaranteed wage minimum increase, the reported earnings of informal employees may approach their actual earnings, but this does not change the (actual) wage distribution within the company.

For estimating the impact of the minimum wage and guaranteed wage minimum increases, which exceed the underlying market developments, we used 2015 Wage Survey data of the National Employment Service. In our calculations, we assumed that, except for public workers, those who have jobs that do not require qualifications earn at least the minimum wage, while those working in jobs requiring at least secondary school qualification or secondary school level skills earn at least the guaranteed wage minimum. According to our assumptions, the wages of those who do not earn the minimum wage or the guaranteed wage minimum will also rise considerably in the context of tight labour market conditions. In our calculations, **in 2017 the increase in the minimum wage and in the guaranteed wage minimum will directly affect 12 per cent and 16 per cent of full-time employees, respectively.** Based on the experiences of previous large minimum wage increases,[2] **the wage distribution shifts to the right in the lower wage categories, while advancing towards the higher wage categories, a declining rate of the spillover effect is typical**. The wages of those employed in higher wage categories are mainly influenced by the tightness of the labour market. Following the last large minimum wage and guaranteed wage minimum increases in 2012, no considerable spillover was observed in wage categories close to the average wage. On the whole, **according to our estimate, as a result of the direct and spillover effects, the increase in the minimum wage and the guaranteed wage minimum may add 2.5 percentage points to the nominal wage dynamics of the private sector next year compared to our previous projection**.

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[1] According to the Wage Survey, among companies that employ at least 5 people.

[2] Kertesi, G. – Köllő, J. (2004): The employment consequences of the 2001 rise in the minimum wage. Economic Review, Year LI, April 2004 (pp. 293–324).

Chart 1-15: Impacts of the minimum wage and guaranteed wage minimum increase on private sector nominal wages
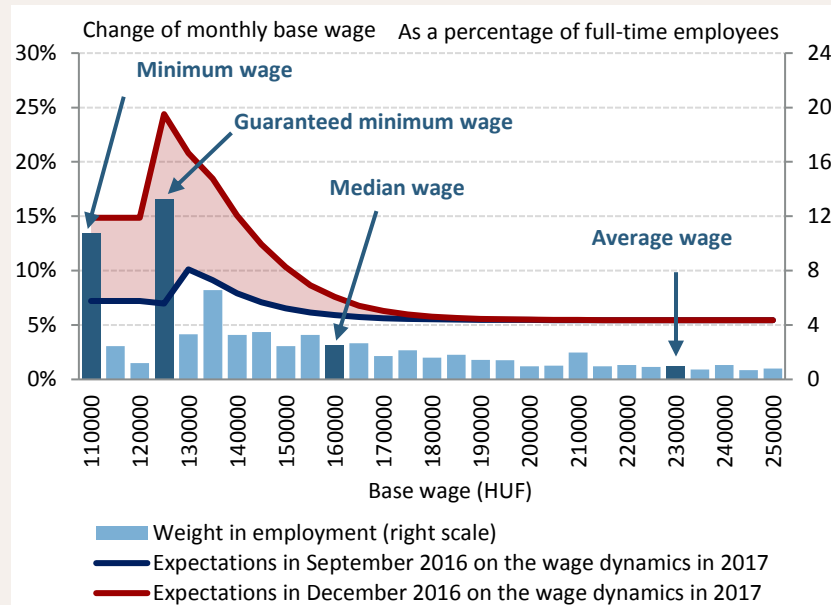
Note: The estimation of wage distribution in 2016 is based on the 2015 Wage Survey data.
Source: NES Wage Survey, MNB calculations

More significant nominal wage outflows than the ones observed in the past years may primarily be reflected in an **increase in consumption expenditures** in relation to households and mainly in wage cost increases in relation to companies. Raising the minimum wage and the guaranteed wage minimum means an effective wage increase in the lower income strata, which have a high consumption rate. **Looking ahead, households' disposable income may expand significantly**, in line with a considerable contribution by earned income.

The wage cost-increasing effect of raising the minimum wage and the guaranteed wage minimum will be mitigated by the reduction of the social contribution tax. **As a result of the measures, labour cost at macroeconomic level will practically remain unchanged, but the distribution of burdens across domestic companies is uneven.** In the case of companies where the ratio of those who earn the minimum wage or the guaranteed wage minimum is high, the increase in the minimum wage and the guaranteed wage minimum will not be offset by the reduction of the social contribution tax, and thus the labour cost of this corporate segment may rise significantly (Chart 1-16). However, for those companies where the majority of employees earn considerably more than the guaranteed wage minimum, the measures may result in a decline in labour cost. According to the international empirical literature on minimum wage increases,[3] we do not expect considerable adjustment in employment by companies. **Companies experiencing a considerable increase in wage cost may adjust through various channels: they may increase their efficiency and productivity, or may pass on their arising additional costs through price hikes.** Based on the experiences of the 2001–2002 minimum wage increase,[4] in the sectors where even a slight price rise entails a loss in market share (e.g. manufacturing, exports sector), firms are able to pass on the costs resulting from a pay rise to a smaller degree. However, in the sectors where demand is less flexible (services sector, non-exporting sectors), it is easier for companies to pass on the additional costs to consumers. **Nevertheless, one factor working against a stronger cost-side inflationary effect is that the correlation between wages and inflation weakened after the crisis.** Companies had more room for the management of higher wages, as in the past years the global decline in energy prices reduced production costs significantly. In addition, companies' interest expenditures fell considerably as a result of both the lower outstanding debt and the lower interest rates.

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[3] A number of studies, see for example, Belman, D. and Wolfson, P.J. (2014): What Does the Minimum Wage Do? Kalamazoo, MI: W.E. Upjohn Institute for Employment Research; and Card, D. and Krueger, A.B. (2016): Myth and Measurement: The New Economics of the Minimum Wage (Twentieth Anniversary Edition). Princeton, NJ: Princeton University Press.

[4] Harasztosi, P. – Lindner, A. (2015): Who Pays for the Minimum Wage?. http://faculty.chicagobooth.edu/workshops/micro/pdf/LindnerJMP.pdf

Chart 1-16: Changes in labour cost in 2017 by wage category
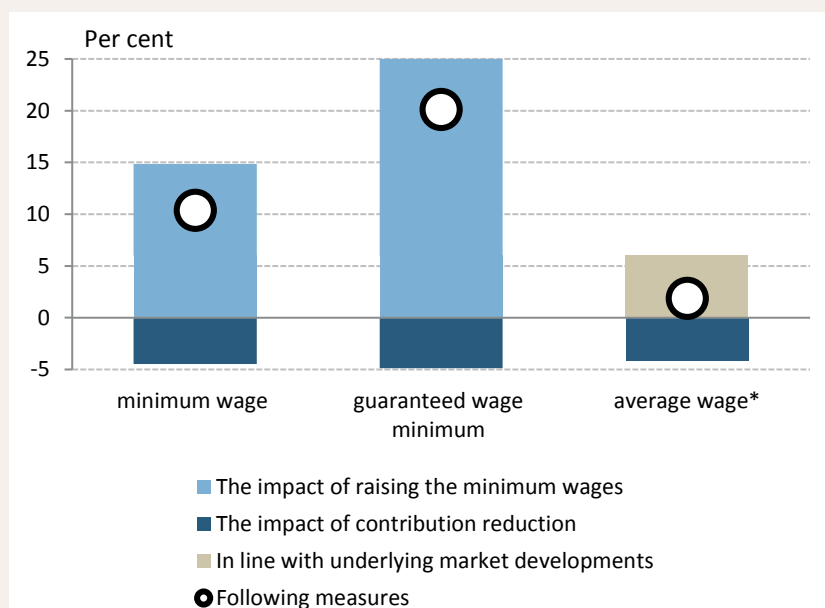
Note: *Employees earning average wage in 2016.
Source: MNB calculation

From a fiscal standpoint, **the reduction of the social contribution tax and the related amendment of the Job protection action plan will represent a HUF 370 billion tax cut in 2017 and a HUF 545 billion tax cut in 2018** (Table 1-4). The increase in the minimum wage and in the guaranteed wage minimum directly increases public sector wage outlays and various social benefits are also tied to the minimum wage. The negative impact on the balance is offset by **the increase in government revenues linked to wages by HUF 165 billion in 2017 and by HUF 275 billion in 2018** (all forms of social security contributions and personal income tax) due to **the increase in the minimum wage and in the guaranteed wage minimum and also to the reduction of the social contribution tax**. In addition, additional consumption fuelled by rising wages generates extra consumption tax revenues.

Table 1-4: Effects of the wage agreement on government revenues (billion HUF)

	2017	2018
Social contribution tax reduction and changes to the Job protection action plan (static, private)	-370	-545
Effect of the higher gross wage bill on government revenues (dynamic, total economy)	165	275
Higher public expenditures	-40	-70
Sum	**-245**	**-340**
in percent of GDP	**-0.6**	**-0.8**

Source: MNB calculation

Overall, the high nominal wage dynamics points to a gradual increase in core inflation. Raising the minimum wage and the guaranteed wage minimum may primarily have an impact on the changes in prices through a pick-up in consumption.

Table 1-5: Changes in the projections compared to the previous Inflation Report

	2015	2016		2017		2018
	Actual	**Projection**				
		September	**Current**	**September**	**Current**	**Current**
Inflation (annual average)						
Core inflation	1.2	1.4	1.4	2.2	2.4	3.0
Core inflation without indirect tax effects	1.1	1.3	1.3	2.2	2.3	2.9
Inflation	-0.1	0.4	0.4	2.3	2.4	3.0
Economic growth						
External demand (GDP-based)	2.1	2.1	2.3	1.6	1.5	1.7
Household consumer expenditure	3.4	4.9	5.0	3.8	5.0	4.0
Government final consumption expenditure	1.3	2.0	1.8	0.5	0.7	1.0
Gross fixed capital formation	1.9	-4.2	-8.4	8.3	11.2	7.4
Domestic absorption	2.3	2.4	2.1	4.0	5.1	4.0
Exports	7.7	6.5	6.6	5.2	5.0	6.0
Imports	6.1	6.4	6.4	6.5	6.7	6.6
GDP	3.1	2.8	2.8	3.0	3.6	3.7
External balance[2]						
Current account balance	3.4	6.2	5.5	5.4	3.7	3.0
Net lending	7.9	8.3	6.9	8.3	6.5	6.4
Government balance[2,6]						
ESA balance	-1.6	(-1.4) – (-1.5)	(-1.5) – (-2.0)	(-2.1) – (-2.3)	(-1.8) – (-2.2)	(-2.0) – (-2.2)
Labour market						
Whole-economy gross average earnings	4.3	6.1	6.3	6.5	9.0	7.0
Whole-economy employment	2.7	3.1	3.3	0.6	1.2	1.0
Private sector gross average earnings[3]	4.0	5.3	5.4	6.0	8.5	6.9
Private sector employment	2.5	3.2	3.4	1.1	1.9	1.3
Unemployment rate	6.8	5.2	5.2	4.8	4.7	4.4
Private sector unit labour cost[4]	2.4	7.1	6.7	4.0	4.7	3.3
Household real income[5]	3.9	5.0	4.5	3.5	4.6	3.9

[1] The baseline forecast is based on backcast and nowcast adjusted by anticipated revisions.

[2] As a percentage of GDP.

[3] According to the HCSO data for full-time employees.

[4] Private sector unit labour cost calculated with full-time equivalent domestic employment.

[5] MNB estimation.

[6] In 2016 depending on the use of EU funds and the implementation of the proposed measures to exploit the fiscal space. In 2017-2018 depending on the use of the National Protection Fund and the share of down payment of EU funds.

Table 1-6: MNB baseline forecast compared to other forecasts

	2016	2017	2018
Consumer Price Index (annual average growth rate, %)			
MNB (December 2016)	0.4	2.4	3.0
Consensus Economics (November 2016)[2]	0.2 – 0.4 – 0.5	1.2 – 1.9 – 2.6	
European Commission (November 2016)	0.4	2.3	2.7
IMF (October 2016)	0.4	1.9	2.6
OECD (November 2016)	0.1	1.4	2.5
Reuters survey (December 2016)[2]	0.3 – 0.4 – 0.5	2.0 – 2.1 – 2.5	2.1 – 2.7 – 3.4
GDP (annual growth rate, %)			
MNB (December 2016)[1]	2.8	3.6	3.7
Consensus Economics (November 2016)[2]	1.4 – 2.0 – 2.3	1.2 – 2.6 – 3.9	
European Commission (November 2016)	2.1	2.6	2.8
IMF (October 2016)	2.0	2.5	2.4
OECD (November 2016)	1.7	2.5	2.2
Reuters survey (December 2016)[2]	1.9 – 2.1 – 2.3	2.5 – 3.2 – 3.7	
Current account balance[4]			
MNB (December 2016)	5.5	3.7	3.0
European Commission (November 2016)	4.1	3.1	4.1
IMF (October 2016)	4.9	4.6	4.0
OECD (November 2016)	6.8	6.7	5.7
Budget balance (ESA 2010 method)[4,5]			
MNB (December 2016)	(-1.5) – (-2.0)	(-1.8) – (-2.2)	(-2.0) – (-2.2)
Consensus Economics (November 2016)[2]	(-2.8) – (-1.7) – (0.5)	(-3.0) – (-2.3) – (0.1)	
European Commission (November 2016)	-1.5	-2.3	-2.3
IMF (October 2016)	-2.2	-2.5	-2.5
OECD (November 2016)	-1.6	-2.0	-2.0
Reuters survey (December 2016)[2]	(-1.7) – (-1.3) – (-0.8)	(-2.7) – (-2.4) – (-1.7)	
Forecasts on the size of Hungary's export markets (annual growth rate, %)			
MNB (December 2016)	3.1	2.8	3.0
European Commission (November 2016)[3]	3.9	4.2	4.8
IMF (October 2016)[3]	4.0	4.4	4.9
OECD (November 2016)[3]	3.4	3.7	3.9
Forecasts on the GDP growth rate of Hungary's trade partners (annual growth rate, %)			
MNB (December 2016)	2.3	1.5	1.7
Consensus Economics (November 2016)[3]	2.2	1.9	
European Commission (November 2016)[3]	2.2	2.0	2.1
IMF (October 2016)[3]	2.2	2.0	2.0
OECD (November 2016)[3]	2.0	2.0	2.1

[1] The baseline forecast is based on backcast and nowcast adjusted by anticipated revisions.

[2] For Reuters and Consensus Economics surveys, in addition to the average value of the analysed replies (i.e. the median value), we also indicate the lowest and the highest values to illustrate the distribution of the data.

[3] Values calculated by the MNB; the projections of the named institutions for the relevant countries are adjusted with the weighting system of the MNB, which is also used for the calculation of the Bank's own external demand indices. Certain institutions do not prepare forecast for all partner countries.

[4] As a percentage of GDP.

[5] In 2016 depending on the use of EU funds and the implementation of the proposed measures to exploit the fiscal space. In 2017-2018 depending on the use of the National Protection Fund and the share of down payment of EU funds.

Source: Consensus Economics, European Commission, IMF, OECD, Reuters poll.

## 2. EFFECTS OF ALTERNATIVE SCENARIOS ON OUR FORECAST

In addition to the baseline projection in the December Inflation Report, the Monetary Council considered two alternative scenarios. If the alternative scenario which assumes moderate external demand materialises, the growth and inflation path will fall short of the path indicated in the baseline projection. The alternative scenario assuming accelerated wage growth and more dynamic expansion in consumption implies stronger domestic economic growth and higher inflation than the baseline projection. In addition to the key risk scenarios, among possible further risks the Monetary Council also discussed alternative scenarios that envisage monetary policy divergence among developed-country central banks, a slower investment path resulting from developments in and the structural composition of EU transfers, and higher, as well as lower, oil and commodity prices.

Chart 2-1: Impact of risk scenarios on the inflation forecast
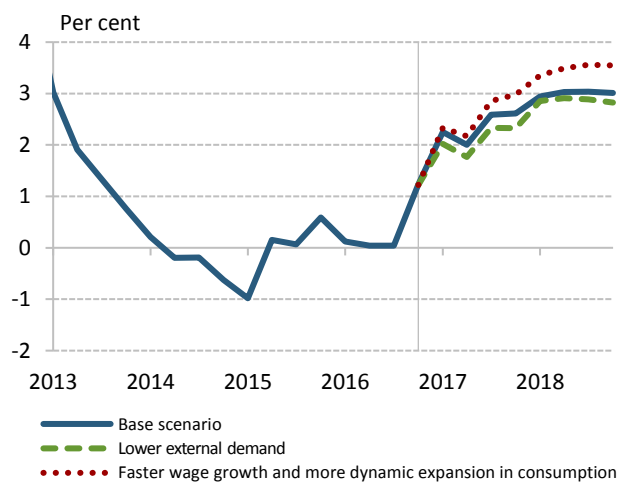
Source: MNB

Chart 2-2: Impact of risk scenarios on the GDP forecast
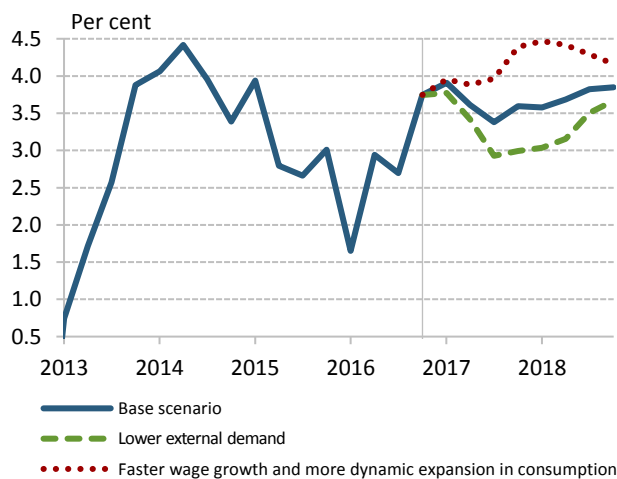
Note: The baseline forecast is based on backcast and nowcast adjusted by anticipated revisions.
Source: MNB

Moderate external demand

Downside risks to the growth of Hungary's external markets have increased considerably in the recent period. The slowdown in demand in Hungary's export markets next year poses a downside risk to Hungarian economic growth.

The economic performance of Hungary's export markets involves significant uncertainty. Looking ahead, the main drivers of external demand may be the ongoing restructuring of the German economy, the exit negotiations in the wake of the UK referendum and weaker demand for exports owing to the deceleration of the Chinese economy. **Subdued economic activity in Europe**, high unemployment rates in the periphery countries and the spillover effects associated with the **problems affecting the European banking sector may slow the demand for imports across Europe** and hence, restrain demand growth in Hungary's external markets. In addition, the interest rate increase in the USA may **induce intensive capital outflows in certain emerging markets and at the same time, increase the debt service of developed countries indebted in USD; thus, overall, Hungary is expected to face decelerating external demand growth due to the restrained growth of developed and emerging markets.**

According to the assumption of the alternative scenario, the moderation in external demand is expected to have a negative impact on industrial output and on the performance of the export sector, resulting in more moderate economic growth than indicated in the baseline projection. **Achievement of the inflation target is ensured by looser monetary policy.**

Faster wage growth and more dynamic expansion in consumption

In parallel with an upturn in economic activity, the **demand for labour has increased steadily** in recent years, but **supply has failed to adjust to this rapid expansion both in terms of volume (increase in activity) and in terms of quality or geographical distribution. The unemployment rate dropped below 5 per cent, and the number of**

Chart 2-3: Risk map: effect of alternative scenarios on the baseline forecast
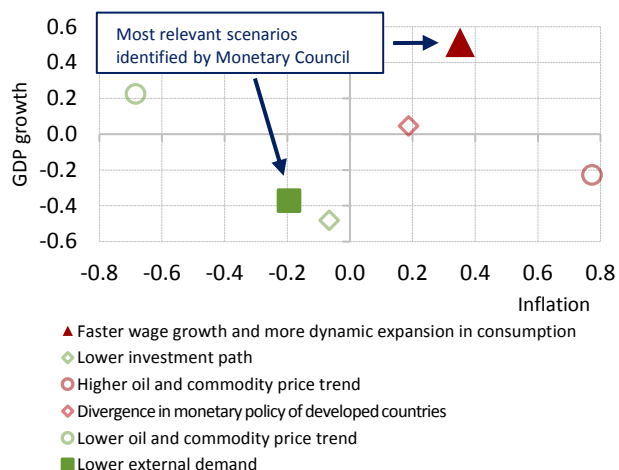
Note: The risk map presents the average difference between the inflation and growth path of the alternative scenarios and the baseline forecast on the forecast horizon. The red marker means tighter monetary policy than the baseline forecast, and the green markers mean looser monetary policy than the baseline forecast.
Source: MNB

jobseekers per job vacancy sank below pre-crisis levels. As a result, competition for adequate workforce has increased** which, in the context of a slower adjustment in supply, leads to an increase in wages over the short term. According to the baseline projection, as a result of rising wage growth, household consumption is expected to grow dynamically over the forecast horizon, but the inflationary pressure from the labour market will remain moderate.

Based on the **assumption of the alternative scenario**, frictions in the labour market will place significant constraints on companies' intentions to expand their labour force. The wage competition induced by intensifying bottlenecks results in higher nominal wage dynamics, leading to an increase in households' disposable income. **Rising domestic demand entails faster closing of the consumption gap and a more moderate disinflationary impact. Overall, achievement of the inflation target is ensured by tighter monetary policy than projected in the baseline scenario.**

Other risks

Along with the key risk scenarios, the Monetary Council also considered four additional risks. In the event of monetary policy divergence among developed-country central banks, inflation will be higher than expected in the baseline scenario, but this will have no significant impact on domestic economic growth. The lower investment path resulting from developments in and the structural distribution of EU transfers points to more subdued growth than envisaged in the baseline scenario, but the impact on inflation will be moderate. Higher oil and commodity prices imply higher inflation and slower growth, while lower oil and commodity prices indicate lower inflation and more robust growth.

3. MACROECONOMIC OVERVIEW

3.1. Evaluation of international macroeconomic developments

Global economic growth continued in 2016 Q3, although it still remains fragile. Considerable growth disparities exist across regions. Inflation rates remained moderate, and most of them were below central bank targets. Of the world's leading central banks, the Fed raised its policy rate by 25 basis points in December, while the ECB extended its asset purchase programme. In other countries, loose monetary conditions are expected to be maintained, with further easing in some countries.

Chart 3-1: Quarterly changes in GDP in certain globally important economies
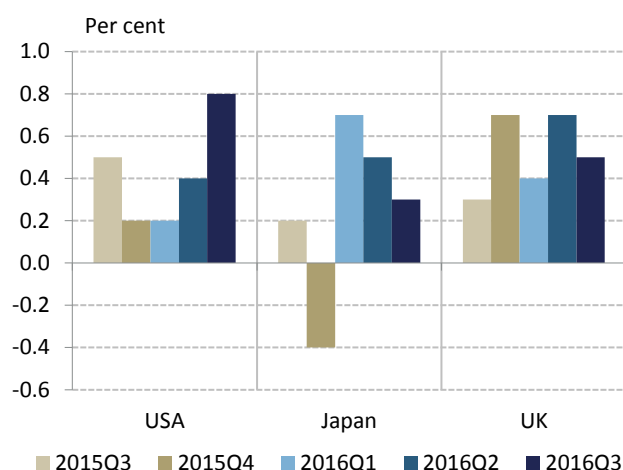
Note: Seasonally adjusted series.
Source: OECD

Chart 3-2: Annual changes in GDP in some emerging economies
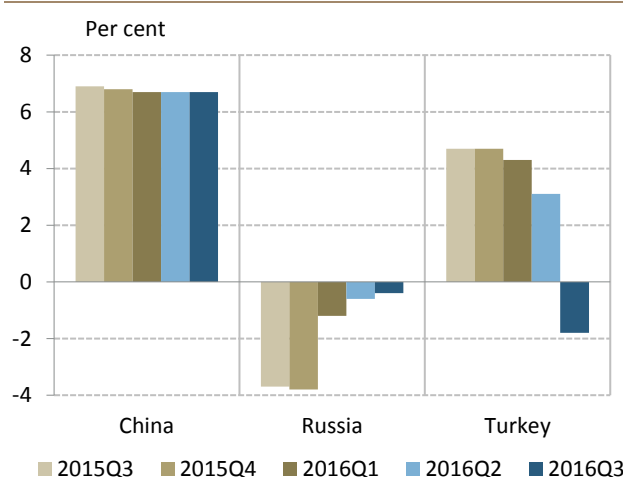
Note: Seasonally adjusted series. In the case of Turkey the last available datapoint is seasonally unadjusted.
Source: OECD, Rosstat, Turkish Statistical Institute

3.1.1. Developments in globally important economies

Compared to the previous quarter, the rate of economic growth accelerated in the United States in 2016 Q3. The increase in the growth rate was attributable to an expansion in exports and inventory accumulation, which was able to offset households' more subdued consumption. **Based on quarterly dynamics, growth slowed down in the economy of the United Kingdom.** Brexit and its unclear circumstances continue to significantly impair the short-term and medium-term growth prospects. **The Japanese economy slowed down somewhat on a quarterly basis**, which is mainly attributable to the negative contribution of net exports to GDP growth and to the more subdued investment dynamics (Chart 3-1).

Of the major emerging countries, the Chinese economy recorded a year-on-year growth of 6.7 per cent in 2016 Q3 (Chart 3-2), while compared to the previous quarter it was up 1.8 per cent. Retail sales continued to grow strongly, but the expansion of industry remained subdued. Significant government expenditures and the dynamic trends in lending also contributed to the substantial growth. Russia's economic performance decreased slightly, while Turkish GDP declined significantly. Regarding India, growth expectations fell slightly. Analysts' expectations for Brazil for this year shifted downwards, while looking ahead they project a stronger upswing than before.

The rate of increase in consumer prices remained below central bank targets in most of the developed countries (Chart 3-3), and based on central bank forecasts it may remain below target for a prolonged period in many cases. Developed countries are still generally characterised by negative output gaps and moderate demand-side inflationary pressure. Average inflation in developing countries remains at low levels. Of the developed countries, inflation is higher than the target only in Norway, while among the developing countries this can be observed in Russia and Turkey.

At their December meeting, the decision-makers of the Fed raised the policy rate by 25 basis points. The justification of the decision included the further pick-up in economic

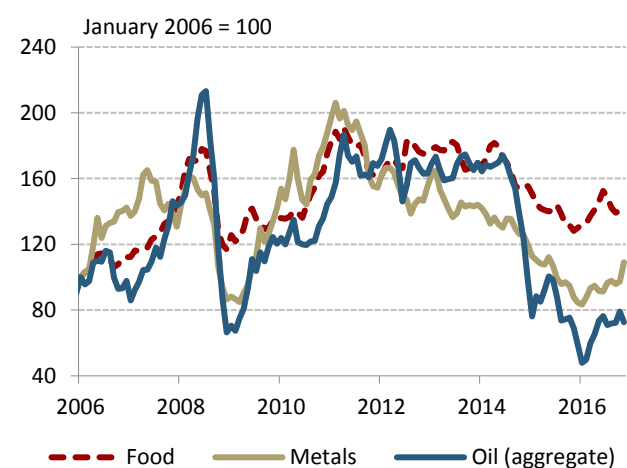**Chart 3-3: Inflation targets of central banks and actual inflation**
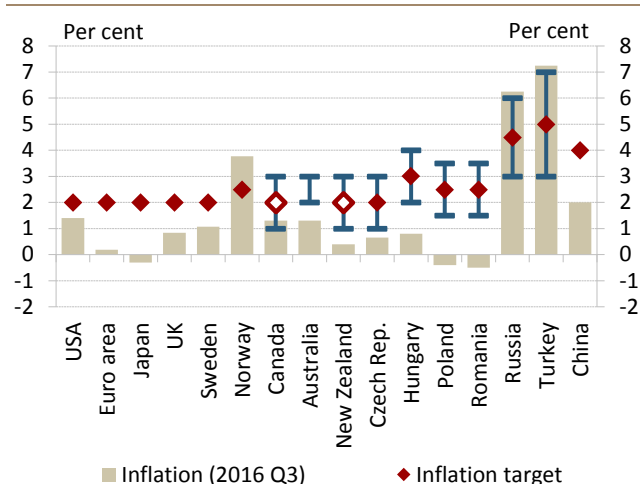
Note: The blue lines represent the inflation target range in Australia, Canada and New Zealand, while in other countries they mark a permissible fluctuation band. In Canada and New Zealand the mid-point of the target range is accentual, which is marked by an empty diamond.
Source: Databases of central banks, OECD

Chart 3-4: Major commodity price indices

Note: Calculated from prices in USD.
Source: IMF

activity. Most members of the FOMC expect three 25-basis point rate hikes in 2017, representing a steeper-than-expected interest rate path. Due to the ECB's monetary easing announced in December and the Fed's rate hikes, the divergence between the expected interest rate path of these two central banks may increase in the period ahead. Inflation has increased since the beginning of the year and is approaching the central bank target, while the labour market situation has improved further. Partly as a result of the expectations related to the interest rate increase and partly as a result of the outcome of the US presidential election, overseas yields rose gradually, and the exchange rate of the US dollar appreciated. After the victory of Donald Trump, financial markets calmed down and stock exchange price indices approached historically high levels following the initial volatility.

The Bank of Japan left its policy rate unchanged in the past quarter, while adjusting its Quantitative and Qualitative Easing Programme to its newly set target, which is to keep long-term yields at a 0 per cent level. The Bank maintained the annual purchasing level of JPY 80,000 billion, and long-term yields were in line with the central bank target. Based on central bank communication, overshooting the 2 per cent inflation target also has become part of the monetary policy strategy. As a result of the asset purchases, the balance sheet total of the Bank of Japan is continuing to increase, exceeding 90 per cent of Japanese GDP since August.

The decision-makers of the Bank of England left monetary conditions unchanged in the past quarter. No further supportive measures have been taken since the comprehensive easing programme in August. With imported products becoming more expensive as a result of the significant depreciation of the pound sterling following the referendum, prices are expected to increase. The decision-makers noted that the increase in both employment and wages remained subdued, and thus they do not expect any domestic inflationary pressure. According to their forecast, inflation may temporarily exceed the central bank target, after which it will reach the target from above.

Global commodity prices continued to be moderate (Chart 3-4). The average per barrel world market prices of Brent and WTI crude oils ranged around USD 50 in the past quarter. The crude oil market continues to be characterised by oversupply. However, as a result of the decision to limit production, which was reached at the end-November OPEC meeting, oil price quotes rose well above USD 50. In the past period, food prices declined slightly following an increase in H1, while metal prices increased considerably in November.

Chart 3-5: Advanced and emerging market 10-year treasury yields
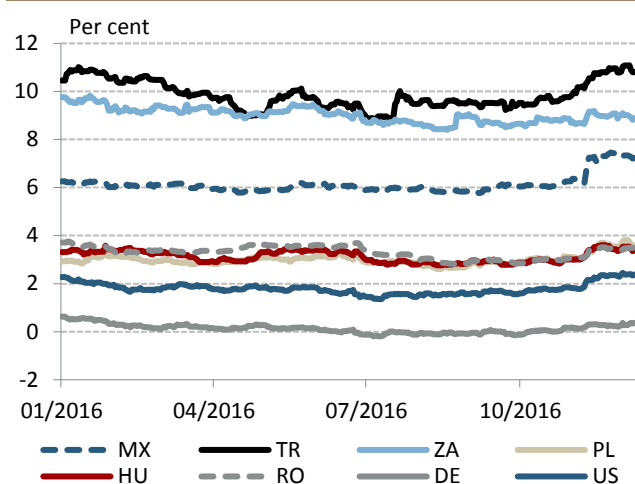
Source: Bloomberg
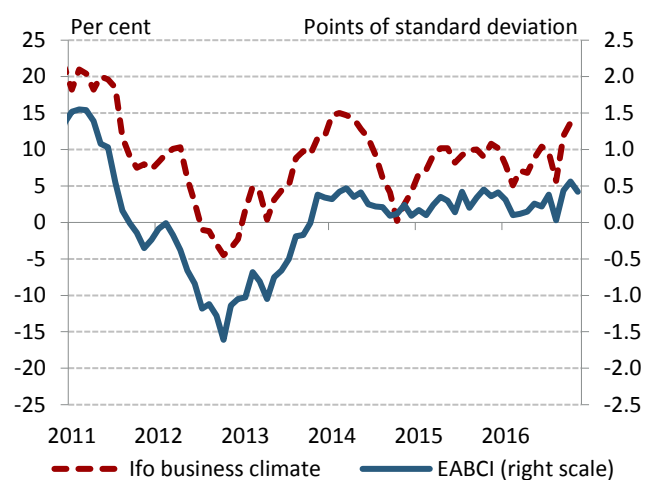
Chart 3-6: Quarterly changes in euro area GDP
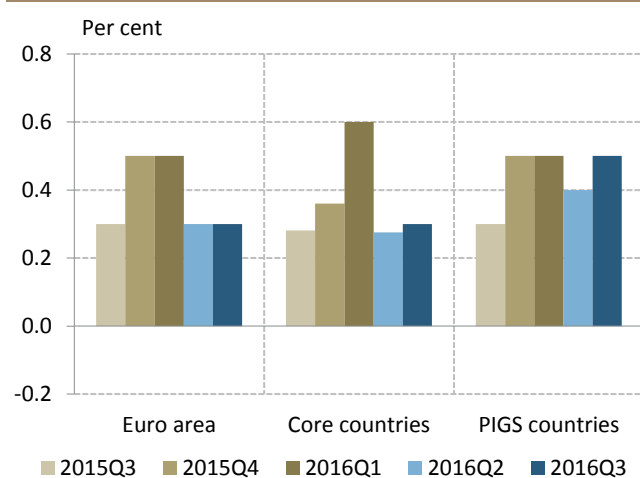
Note: Seasonally adjusted series, weighted mean by GDP. PIGS countries (Portugal, Italy, Greece, Spain), Core countries (Belgium, Germany, France, Latvia, Lithuania, Netherlands, Austria, Slovenia). Source: Eurostat

Money markets were characterised by strong willingness to take risks in the first part of the past quarter, which changed as a result of the outcome of the US presidential election and the Fed's rate hike. The election in the US in early November caused temporary market turbulence followed by adjustment in certain market segments, while in other ones the outcome of the election triggered persistent risk aversion and a selling wave. Accordingly, the VIX index, which captures the US stock market volatility, returned to a historically low level following a temporary surge, while developed stock markets were able to rise. At the same time, increasing inflation expectations resulted in major rises first in US and then in other developed and emerging long-term government securities yields, and global bond markets were characterised by strong capital outflows (Chart 3-5). FX market developments were determined by the strong appreciation of the US dollar observed from early November as well as by the depreciation of the yen and emerging currencies. Due to the ECB decision on the extension of the asset purchase programme in December, and the Fed's rate hike and the higher-than-expected interest path, the euro depreciated, while the US dollar strengthened. Oil prices rose to over USD 50 as a result of the commitment of the OPEC and some non-OPEC countries to reducing production from January 2017.

3.1.2. Developments in the euro area

In 2016 Q3, the growth rate of the euro area equalled the previous quarter's dynamics (Chart 3-6). The economy of Germany, Hungary's most important trading partner, expanded at a lower rate, growing by 0.2 per cent compared to the previous quarter. Imports increased in parallel with the fall in exports, and thus net exports had a negative impact on the growth rate. On an annual basis, GDP expanded moderately, by 1.5 per cent, which is partly attributable to households' lower consumption dynamics. In France, the weak Q2 GDP recovered, supported by increasing government consumption and investment as well. Euro-area growth is surrounded by significant downside risks, which are related to, *inter alia*, the effects of the British referendum and the stability of the banking sector.

The growth rate of periphery countries rose significantly compared to the previous quarter, which was mainly attributable to households' increased consumption. In Italy, 0.3 per cent growth was registered compared to the previous quarter. The performance of both industry and the services sector picked up, but net exports made a negative contribution to growth. The Spanish economy expanded by 0.7 per cent on a quarterly basis, representing a slight

Chart 3-7: Business climate indices for Germany and the euro area

Source: European Commission, Ifo

Chart 3-8: Inflation expectations and long term yields in euro area

Source: Bloomberg

slowdown compared to the growth dynamics of previous quarters. Household consumption is still dynamic, but investments were moderate. In Greece, there was a pick-up in economic growth in the third quarter, and both domestic consumption and external demand was favourable, while investments expanded only moderately.

Forward-looking indicators of economic activity showed increases in the past period (Chart 3-7). The business confidence index capturing the prospects of the euro area (EABCI) increased significantly from the low level observed in August. In the past quarter, an even more significant improvement was observed regarding the expectations for the German economy (Ifo), as this index rose to a more than two-year high.

Euro area inflation increased slightly in the past quarter, as a result of the base effect from the earlier oil price decline and the slight rise in the price dynamics of services. A mild increase in inflation was registered in the largest euro area economies in the past period. Inflation is already in positive territory in Spain, while a continued decline in consumer prices was observed in Italy. 5-year inflation expectations starting in 5 years increased in the euro area, although they still fall short of the ECB's inflation target (Chart 3-8).

At its December meeting, the ECB's Governing Council decided to lengthen its asset purchase programme. The ECB lengthened the programme by 9 months until December 2017; however, from April it will purchase assets amounting to EUR 60 billion per month, instead of the current EUR 80 billion. The Bank also modified the technical conditions of the programme: on the one hand, the minimum remaining maturity for eligible securities has been decreased to 1 year, and on the other hand, the Bank also extended the programme to include securities with a yield below the interest rate on the ECB's deposit facility.

3.1.3. Developments in the CEE region

The Central and Eastern European region still showed dynamic expansion, but the pace of growth was slower than in the previous period (Chart 3-9). In Romania, a dynamic increase in household consumption was observed as a result of higher wages and the announced tax cut. Domestic consumption and the expansion of industry contributed significantly to growth in the Czech Republic and in Slovakia, respectively. In Poland, the year-on-year growth rate slowed to 2.5 per cent in the third quarter, which is mainly attributable to the weaker-than-expected performance of investments and the export sector.
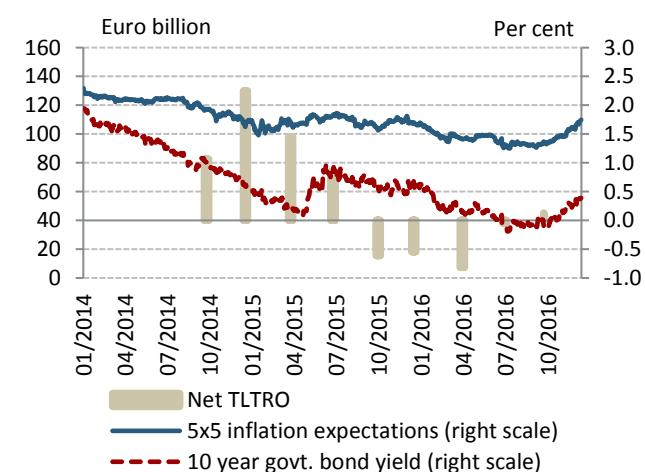
Chart 3-9: Quarterly changes in GDP in CEE countries

Per cent
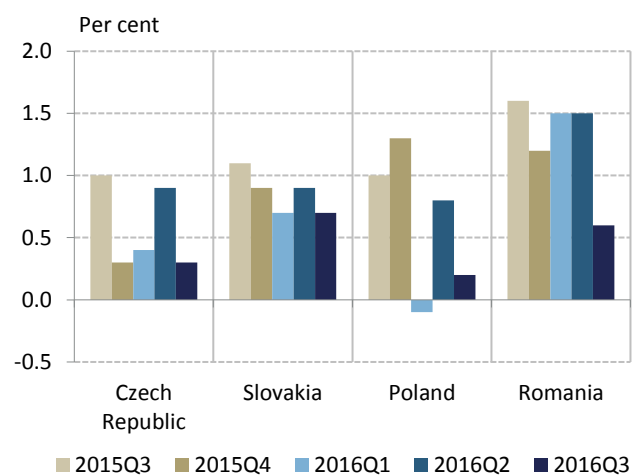
Note: Seasonally adjusted series.
Source: Eurostat, OECD

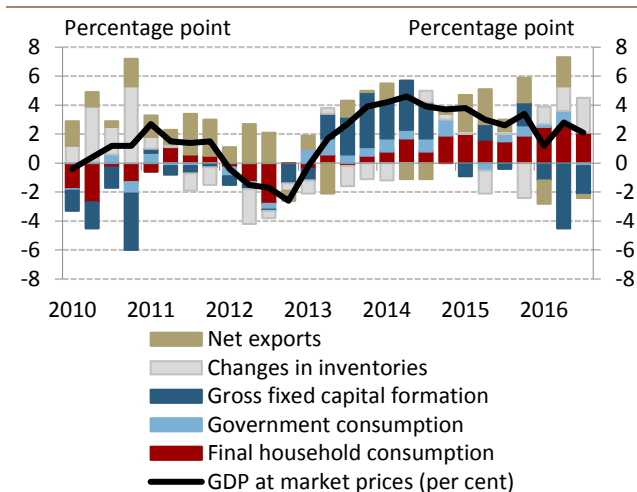However, a pick-up has been observed in domestic consumption.

The average inflation of the region remains in negative territory; the only exception is the Czech Republic, where inflation was positive. In line with expectations, the growth rate of consumer prices in Poland is gradually rising. As a result, inflation may reach positive territory by the beginning of next year.

Central banks in the Central and Eastern European countries maintained loose monetary conditions in line with the macroeconomic developments. In the opinion of the decision-makers of the Polish central bank, the rate of deflation is declining gradually, and the strengthening in domestic consumption will contribute to achieving the inflation target. The Czech central bank plans to cancel the exchange rate limit in the middle of next year, but the exact date of phasing-out may change in line with achieving the inflation target. Deflation lessened in accordance with the Romanian central bank's expectations, and inflation may reach the tolerance band in 2017.

## 3.2. Analysis of the production and expenditure side of GDP

In 2016 Q3, according to the HCSO, Hungary's gross domestic product increased by 2.2 per cent year on year, while compared to the previous quarter the volume of GDP was up 0.3 per cent. The restrained growth was primarily attributable to a slower upturn in investment implemented from EU funds and to moderate industrial production. The significant expansion in household consumption continued to provide considerable support to economic growth.

Chart 3-10: Contribution to annual changes in GDP

- Net exports
- Changes in inventories
- Gross fixed capital formation
- Government consumption
- Final household consumption
- GDP at market prices (per cent)

Source: HCSO

Chart 3-11: Evolution of the HuCoin indicator

HuCoin   ● GDP quarterly change

Note: Due to the revision of GDP, the past values of the HuCoin indicator have also changed.
Source: HCSO, MNB calculations

In 2016 Q3, according to the HCSO, Hungary's gross domestic product increased by 2.2 per cent year on year, while compared to the previous quarter GDP was up 0.3 per cent (Chart 3-10). The moderate growth is mainly attributable to the slow pick-up in investment implemented from EU funds and the subdued performance of the vehicle industry. Based on the HuCoin indicator, which reflects the medium-term prospects of the domestic economy, the underlying trends of economic activity improved slightly in the past months (Chart 3-11).

In 2016 Q3, the significant expansion in household consumption continued to provide considerable support to economic growth. The rise in households' consumption expenditure was primarily supported by a sharp increase in wages and an improvement in underlying income trends as a result of low inflation. **The increase in consumption is also corroborated by the steady pick-up in retail sales since the end of 2012** (Chart 3-12). In Q3, the volume of retail sales grew by 4.6 per cent compared to the same period of the previous year; **the increase in sales was observed in a wide range of products**. **Historically high net financial assets also contributed to the increase in consumption** in the past years (Chart 3-13). In the past quarters, **an upswing was observed in households' credit demand**, which had been previously subdued. As a result, households' net financial savings already declined considerably this year.

For the first time since 2009, the household sector was a net borrower in 2016 Q3. The volume of new loans continued to increase, which was mainly attributable to the expansion in housing loans. The pick-up in lending to households is primarily explained by demand factors: in addition to the low interest rate environment and the rise in real wages, the Home Purchase Subsidy (HPS) also stimulates households' willingness to borrow. Supply conditions remained unchanged in the case of housing loans, and were eased in the case of consumer loans during the quarter under review.

Similarly to the past period, market services contributed significantly to economic growth in Q3 as well. The increase in value added was observed in a wide range of service sectors. The performance of the catering and tourism sectors improved significantly in Q3. The pick-up in demand in domestic tourism is supported by households' improving
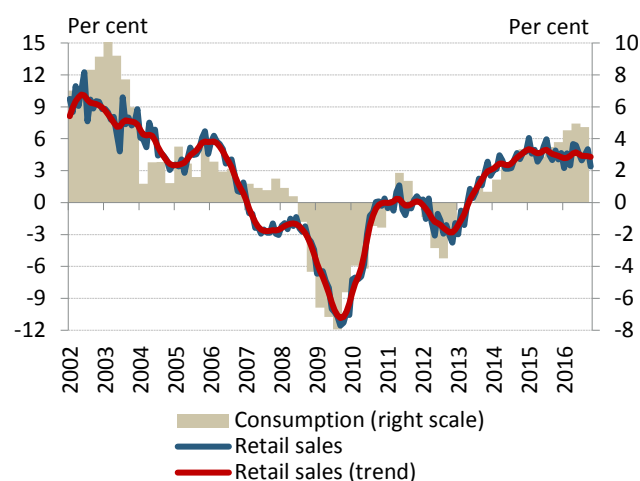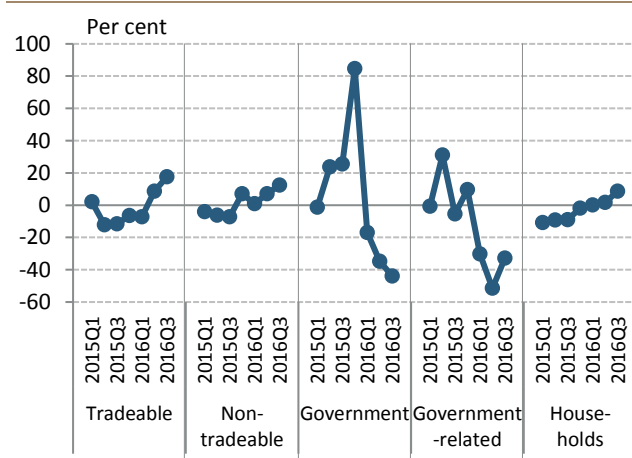
Chart 3-12: Developments in retail sales and consumption
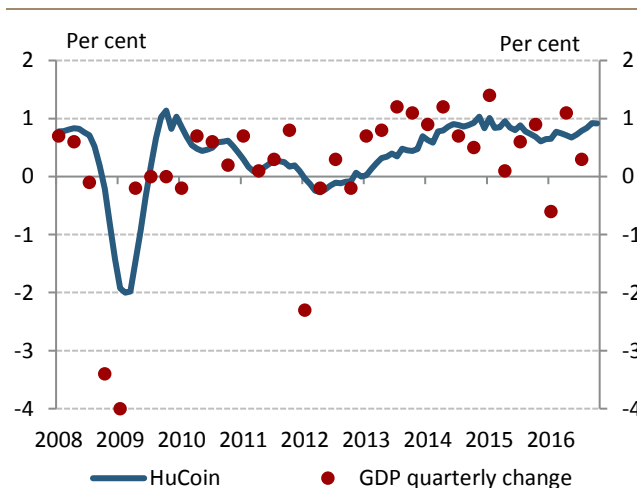
Per cent   Per cent

Consumption (right scale)
Retail sales
Retail sales (trend)

Note: Seasonally adjusted data, annual change.
Source: HCSO, MNB calculations

Chart 3-13: Savings and assets of households

HUF billion   HUF billion

Net financial saving (right scale) —— Net financial wealth
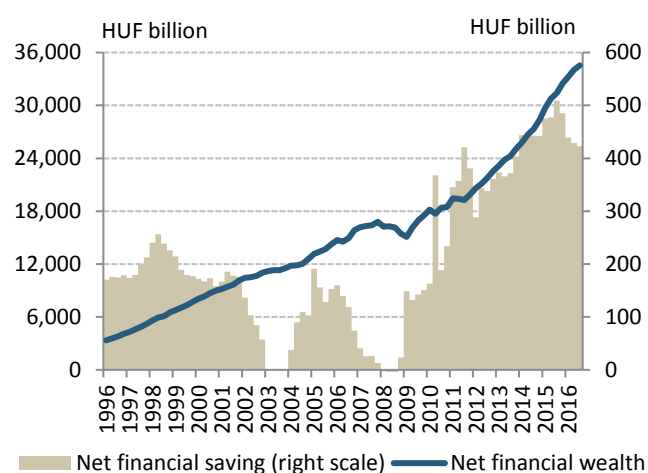
Source: MNB calculation

Chart 3-14: Development of sectoral investments

Per cent

Tradeable   Non-   Government Government House-
             tradeable   -related   holds

Note: Annual change.
Source: HCSO

income position, and the number of guest nights spent by foreigners also continued to increase. Among market services, only the performance of the finance and insurance sector decreased slightly in year-on-year terms.

The expansion in final consumption was a result of a further increase in households' consumption expenditures, in addition to the stagnation of transfers in kind from the government and the fall in government consumption.

According to the HCSO, in 2016 Q3, whole-economy investment shrank by 8.8 per cent as a result of the lower volume of funds from the European Union compared to last year. The performance of individual sectors continued to vary (Chart 3-14). The significant downturn in investment in the public sector and in sectors closely related to the public sector (energy, water supply, transportation) continued, in line with the slow pick-up in investment implemented from EU funds. In parallel with the subdued investment activity, **construction output continued to be much below that of the same period of the previous year**. Corporate investment activity rose again in Q3, primarily supported by a major expansion in manufacturing investment. In addition to individual large investment projects, a general improvement in investment activity was observed in the case of the majority of industrial enterprises. **In addition to a rise in investment in the corporate sector that produces for exports, the investment activity of companies producing and providing services for the domestic market also increased further.**

In 2016 Q3, loans to non-financial corporations increased by 1.8 per cent year on year. **Outstanding loans of the SME sector rose by 6 per cent in the past one year, with continued support from the Funding for Growth Scheme** (Chart 3-15). **In the case of the SME sector including self-employed people, an annual increase of 7.3 per cent was observed.** On the supply side, the growth in lending was supported by the easing of credit conditions. On the demand side, in addition to a pick-up in the borrowing activity of small and micro enterprises, an upturn in demand was observed in the case of large companies as well, mainly for commercial real estate financing.

Households' investment activity improved in Q3. The expansion in home construction remained subdued, but the number of building permits issued continued to increase significantly. Compared to the same period of the previous year, the number of new homes handed over grew by nearly 20 per cent in 2016 Q3, in line with the large rise in the number of building permits issued in the past period. However, according to aggregate housing market data, due

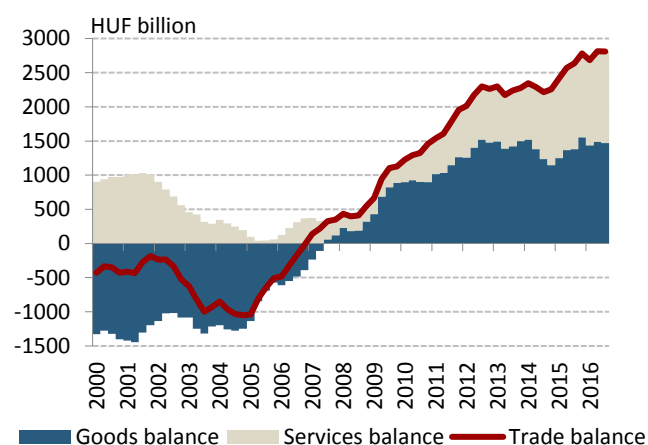**Chart 3-15: Annual changes in lending to non-financial corporates and SMEs**
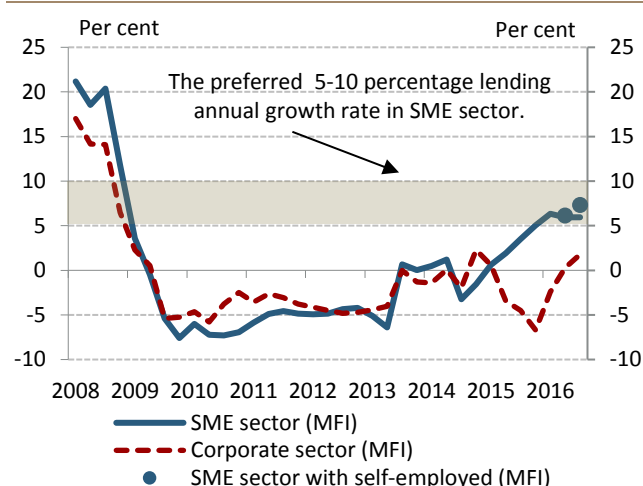
Note: Data for corporate loans total are based on transactions. For SME loans, estimated transaction are applied as of Q4 2013.
Source: MNB

Chart 3-16: Evolution of trade balance

Note: Seasonally adjusted, 4 quarterly cumulated values, in 2005 price.
Source: HCSO

to last year's high base, the number of transactions stopped increasing in the period under review. The subdued development of home construction this year was attributable to the low utilisation of the HPS as well as the longer processing time of building permits. Housing price increases continued to a lesser degree in Q3.

The contribution of net exports to GDP growth was negative in Q3, in line with the slow expansion in exports. Industrial production and sales expanded slightly compared to the same period of last year, mainly due to the subdued performance of subsectors in the machine industry. In relation to the moderate industrial output, growth in goods exports decelerated. The export of services continued to increase in year-on-year terms, but rose to a lesser extent compared to the previous quarters. Goods imports were more moderate compared to previous quarters, which was explained by a further decline in investments with high import content.

Hungary's trade surplus increased year on year (Chart 3-16). Both the goods and services balances contributed to this growth in Q3. Although the rate of increase slowed, the terms of trade continued to improve year on year in 2016 Q3, which is primarily explained by the low oil price.

Value added in agriculture continued to increase in Q3. The average yields, which exceed the average of past years, confirm that agriculture's contribution to economic growth will be significant this year.

The contribution of changes in inventories to economic expansion has been increasing this year. The expansion in inventories is mainly attributable to the significant harvest results and the inventories stockpiled in trade. **The strong contribution of changes in inventories this year suggests a significant degree of uncertainty regarding the expenditure side of GDP.**

Box 3-1: Developments in household consumption

As a consequence of less favourable labour market developments resulting from the crisis and the need to reduce outstanding debts accumulated prior to the crisis which had proven to be unsustainable, household consumption remained at a persistently low level between 2008 and 2013. In parallel with debt reduction and precautionary considerations coming to the fore, households significantly postponed some of their consumption in the years of adjustment; in past years, this was also corroborated by the increase in consumption, which was more moderate than the income developments. As a result, **the consumption-to-GDP ratio fell considerably both in historical and international comparison, which, looking ahead, means recovery potential regarding the growth of the domestic economy** (Chart 3-17).

Chart 3-17: Changes in the consumption rate between 2000 and 2015
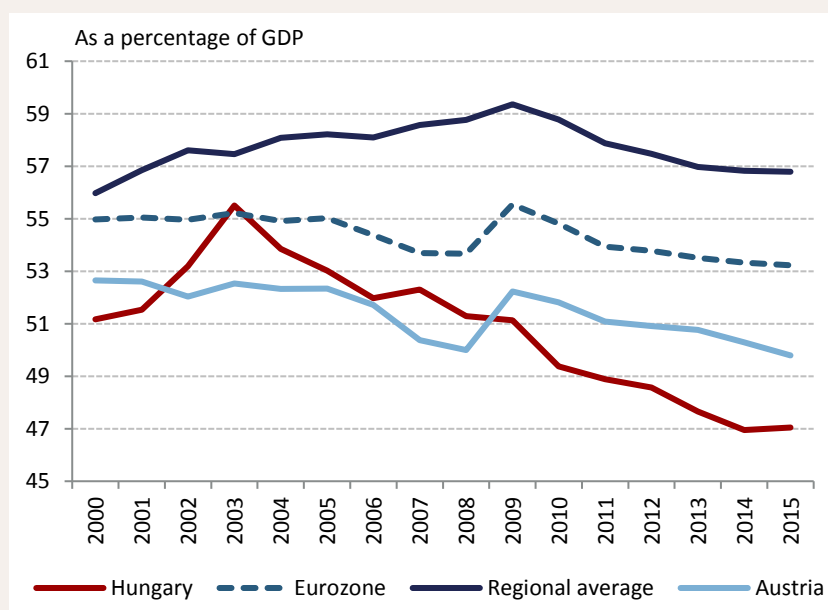
Note: The regional average contains data for Poland, Slovakia, the Czech Republic and Romania. Based on constant (2005) prices.
Sources: Eurostat

As a result of the significant net savings position, households' loan-to-income ratio steadily eroded (Chart 3-18), moreover the debt structure improved substantially, due to the FX conversion scheme. In line with households' improving debt position, **household consumption has been picking up steadily since 2014**, already expanding by more than 4 per cent on average during the past quarters. **The household consumption that was postponed in the balance sheet adjustment period is appearing as a significant recovery potential.**

Looking ahead, the rise in households' consumption expenditure **may be supported by high wage dynamics and an improvement in underlying income trends as a result of the low inflation**. In addition, the historically **high net financial assets** accumulated due to the high savings rate following the crisis also contribute to the increase in household consumption.

Chart 3-18: Evolution of loan-to-income ratio of households

Changes between 2010-2015 ● Level of loan-to-income ratio in 2015 (right scale)
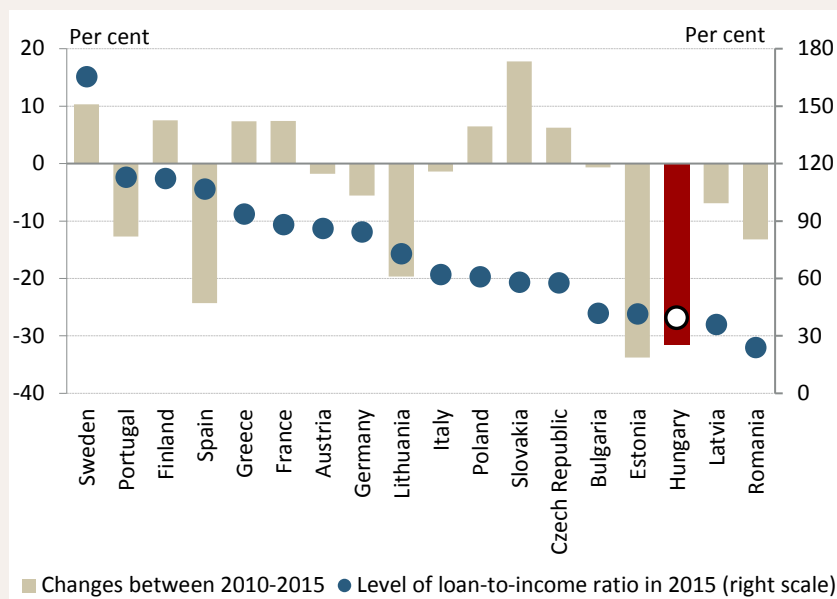
Note: In the case of Italy and Greece the indicator available for 2010 is the loan to adjusted gross income which is slightly different. For Bulgaria and Estonia the data are available from 2014.
Source: Eurostat, ECB

The structure of consumption also changed following the crisis. Expenditure on durable goods fell significantly, while the level of consumption of services and non-durable goods was broadly stable (Chart 3-19). As a result of the gradual pick-up in underlying consumption trends in recent years, a slight rise was observed in demand for durables. Looking ahead, **a steadily dynamic rise in consumption** is suggested by the positive developments in income, the pick-up in lending and the improvement in households' assets. As a result, **domestic demand may become increasingly important in the structure of economic growth.**

Chart 3-19: Changes in the structure of households consumption expenditure, 2005=100

—— Expenditure on durable goods   —— Expenditure on semi-durable goods
—— Expenditure on non-durable goods   —— Expenditure on services
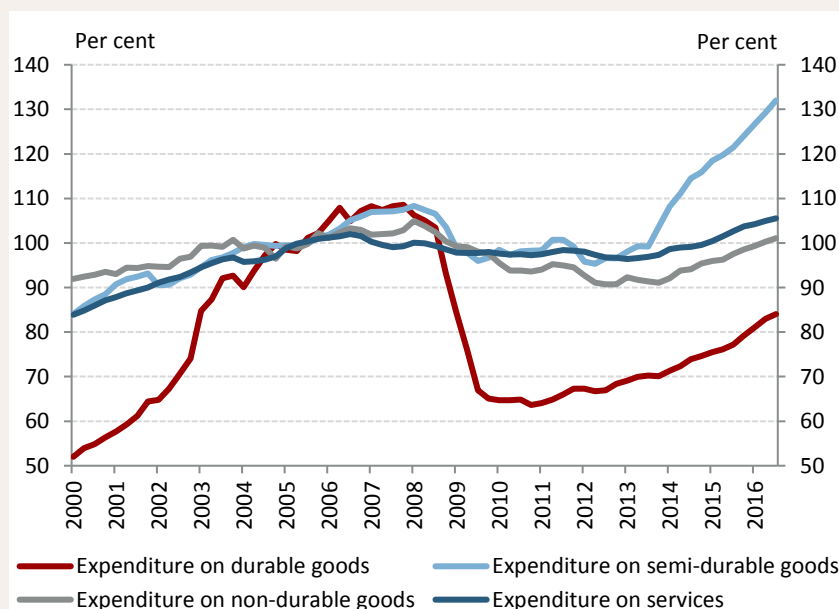
Source: HCSO, MNB calculation

3.3. Labour market

In 2016 Q3, employment in the private sector increased further. Similarly to H1, the annual growth rate was above 3 per cent. The expansion measured in Q3 was attributable to the increase in the number of employees in manufacturing. The unemployment rate declined to 4.9 per cent in Q3, with continued tightening of the labour market.

Chart 3-20: Participation, employment and unemployment of the national economy
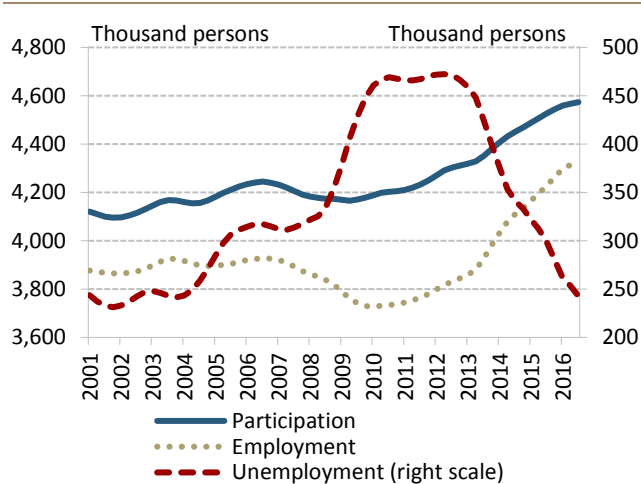
Note: Seasonal moving averages.
Source: HCSO

Chart 3-21: Evolution of employment in the private sector

Note: *Total hours worked, divided by average weekly hours of full time employees, without employees abroad.
Source: HCSO, MNB

In 2016 Q3, the active workforce increased further (Chart 3-20); the activity rate for the 15–74 age group rose towards 61 per cent. In the same period, this ratio was 70.6 per cent for the 15–64 age group.

Based on seasonally adjusted data, the **expansion in whole-economy employment continued**, with contributions from both the private sector and the general government. The increase in employment other than public work programmes played a role in the increase registered in the public sector.

Employment in the private sector continued to increase. Within the sector, there was no major change in the case of market services, while a significant increase was observed in manufacturing employment. The number of both full-time and part-time employees increased in the private sector in Q3. The weight of the average working hours of part-time employees increased in the sum of total hours worked. The number of employees working at sites abroad declined slightly year on year. On the whole, the **full-time equivalent number of employees increased at a rate similar to private sector employment** (Chart 3-21). Due to the rise in average working hours of part time employees, an intensive adjustment also characterised the Hungarian labour market in Q3, albeit a decrease in total hours worked compared to the strong figure in Q2.

The unemployment rate declined to a historically low level of 4.9 per cent in Q3. The number of reported new, non-subsidised vacancies remained practically unchanged, while the number of non-subsidised vacancies grew again. Within the private sector, both manufacturing and market services saw an increase in vacancies. Based on tightness indicators calculated according to various statistics, labour market tightness continued to increase in Q3.

3.4. Cyclical position of the economy

According to our estimate, the output gap was in negative territory in 2016 Q3 as well. In line with the dynamic increase in employment, however, the output gap was gradually closing in recent quarters.

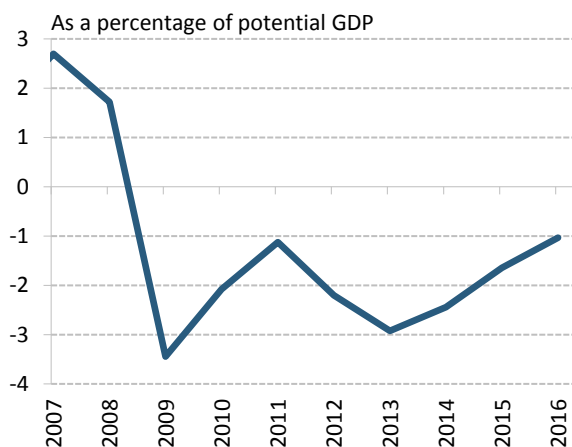**Chart 3-22: Evolution of the output gap and industrial capacity utilisation**
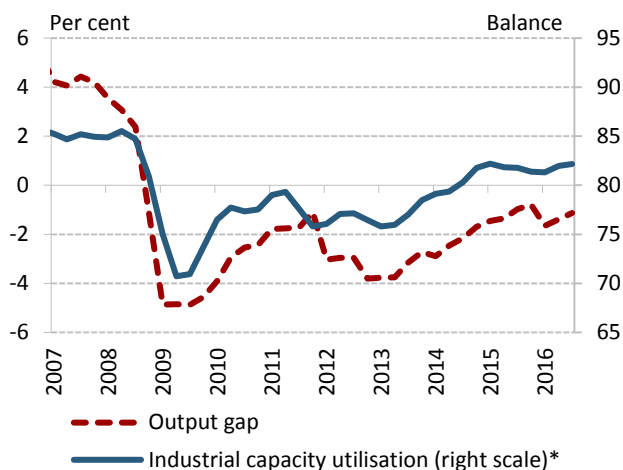
Note: *Trend.
Source: MNB estimation, ESI survey

Chart 3-23: Evolution of the euro area output gap

Source: European Commission

According to our estimate, the output gap remained in negative territory in 2016 Q3 as well (Chart 3-22). As a result of subdued industrial production, industrial capacity utilisation was restrained, contributing to the open cyclical position. Household consumption is of key importance in terms of assessing the output gap, in which a significant **recovery potential can still be identified**. Based on the European Commission's estimate, **the output gap of the euro area** – which comprises Hungary's most important trading partners – **has been in negative territory** since the crisis, exerting a significant impact on changes in the domestic output gap (Chart 3-23).

Most surveys measuring corporate business sentiment and capacity utilisation **have increased considerably in the past years**. This suggests a gradual closing of the output gap. According to responding companies, workforce was a bottleneck in the past quarters. The historically low unemployment rate also implies that **the utilisation of the labour factor increased considerably in the past period**.

3.5. Costs and inflation

Although inflation increased in the autumn months, it remained at subdued levels and was well below the 3 per cent target. The developments in inflation were explained by the low imported inflation and the stabilisation of inflation expectations at low levels. Private sector wage growth, which was faster than last year, continued in Q3.

Chart 3-24: Annual changes in gross average wages of private sector
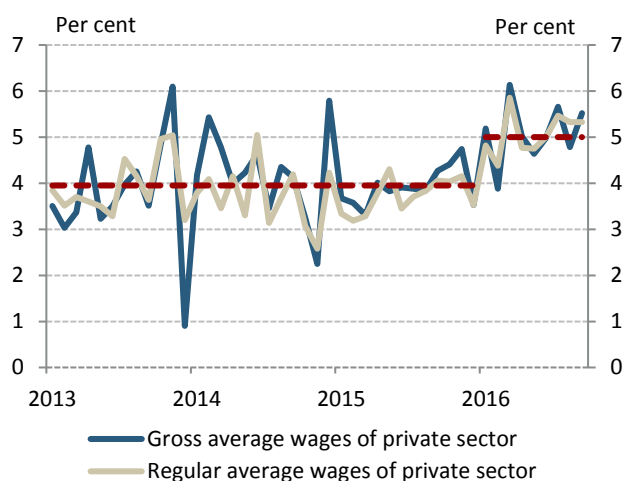
Note: Seasonally adjusted data.
Source: MNB calculation based on HCSO data

Chart 3-25: Decomposition of annual change of unit labour cost in private sector

Note: *Full-time equivalent. Seasonally adjusted data. Based on value added data of HCSO.
Source: MNB calculation based on HCSO data

3.5.1. Wages

In 2016 Q3, gross average earnings in the private sector rose by 5.4 per cent year on year (Chart 3-24), which is attributable to the further tightening in the labour market in the recent quarters. The bonuses paid by companies in Q3 were slightly higher than in the previous years. In the private sector, wage dynamics accelerated in both manufacturing and the market services sector compared to Q2. Similarly to recent years, the wage increase in manufacturing was higher than in the services sector.

Unit labour cost calculated using full-time equivalent employment remains at a high level (Chart 3-25). The rise in the level of unit labour cost is explained by the strong employment growth and high labour cost per capita in 2016 Q3.

3.5.2. Producer prices

Agricultural producer prices remained practically unchanged in Q3, and were at lower levels compared to previous years. The continuous improvement in quality added to the producer price of milk, and the slaughtering of livestock in the autumn also resulted in price increases. At the same time, the rise in the producer price of milk was offset by the decline in the prices of seasonal products (mainly vegetables). Cereal producer prices remained practically unchanged in the past months.

Industrial producer prices declined slightly compared to last year (Chart 3-26). Although the annual price index of the energy producing sectors increased, it remained in negative territory due to the low oil prices. The price dynamics of the sectors producing goods for further processing remained subdued. Similarly to previous months, the prices of sectors producing consumer goods increased slightly year on year. Changes in domestic producer prices were in line with the trends observed in the euro area.

3.5.3. Consumer prices

Although inflation increased in the autumn months, it remained at subdued levels and was well below the 3 per cent target (Chart 3-27). The observed price dynamics are attributable to the joint effect of moderate commodity prices and low inflation expectations. Overall, the contribution of demand-sensitive products to inflation did
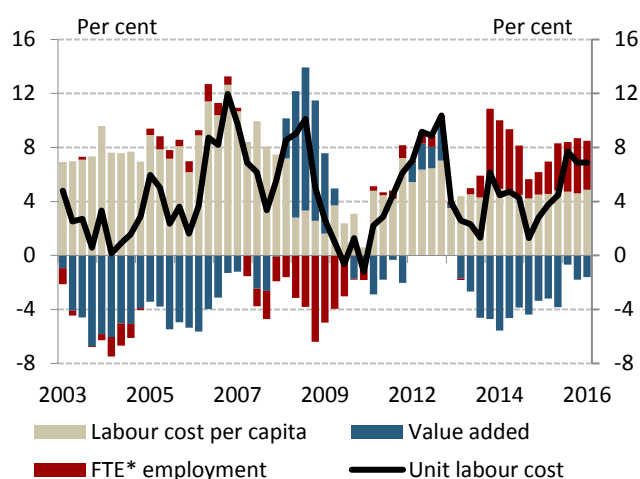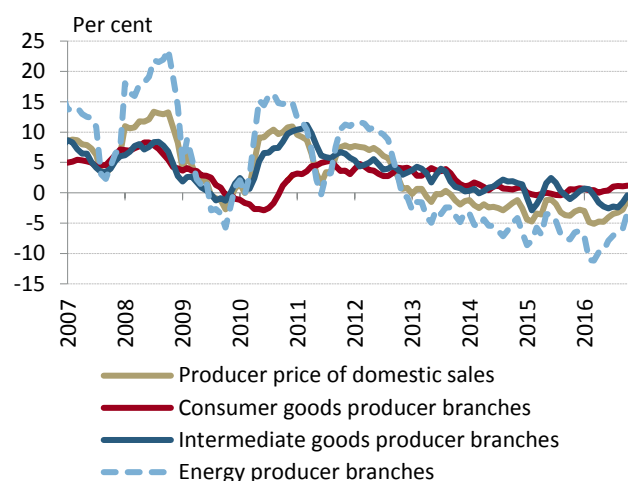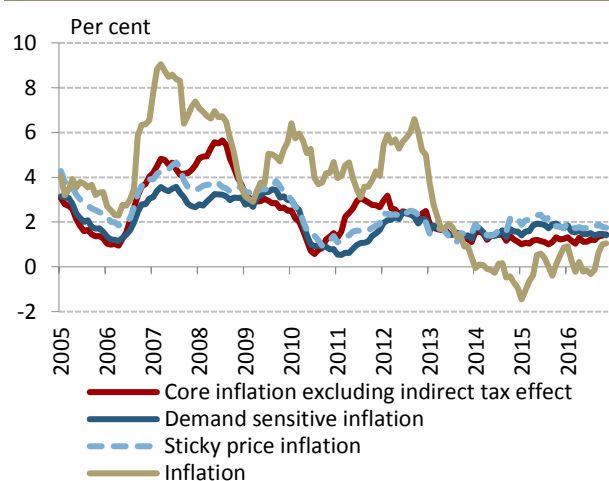
Chart 3-26: Annual change in industrial producer prices

Per cent

Source: MNB calculation based on HCSO data

— Producer price of domestic sales
— Consumer goods producer branches
— Intermediate goods producer branches
--- Energy producer branches

Chart 3-27: Inflation and underlying inflation indicators

Per cent

— Core inflation excluding indirect tax effect
— Demand sensitive inflation
--- Sticky price inflation
— Inflation

Source: MNB calculation based on HCSO data

Chart 3-28: Expected changes in retail sales prices in the next 3 months* and actual inflation

Balance   Per cent

— Balance (trend)
--- Change of 3 month average of CPI (right scale)

Note: *Balance is the difference between the proportion of corporations expecting price increase and price decrease.
Source: GKI and MNB calculation based on HCSO data

not change, while – unlike in previous months – the more volatile, more cost-sensitive food and energy prices pointed to price increases.

Indicators capturing longer-term inflation trends (the inflation of demand-sensitive and sticky-price products) **remained practically unchanged in the past period**. The level of the indicators continues to reflect a moderate inflation environment, which is primarily explained by the imported inflation and commodity prices.

Price increases for industrial goods were restrained in past months. Prices of consumer durables declined, while those of non-durable items increased slightly. In addition to the price-reducing effect of moderate import prices, the steady acceleration in domestic demand also had an overall influence on industrial goods prices during the past quarter.

Similarly to previous years, the price index of market services remained subdued. In October, higher price dynamics compared to previous years were observed in the case of health services and cable TV subscriptions, resulting in a rise in the annual price index. Apart from this effect, however, moderate price increases were observed in a wide range of products. Based on the pricing practices typical of these products, the beginning of next year may determine the developments in market services inflation.

Seasonally adjusted processed food prices increased slightly in the past months. This increase is mainly attributable to the rising prices of milk and dairy products, in line with the changes in producer prices. No major shift was observed in the seasonally adjusted price level of unprocessed food.

The inflation of fuels rose into positive territory again, which is explained, in addition to base effects, by an increase in oil prices and the raising of the excise tax effective as of October. **There were no major price changes in the case of regulated-price products** in the past months. **The consumer price index in the past months was in line** with the forecast in the September Inflation Report.
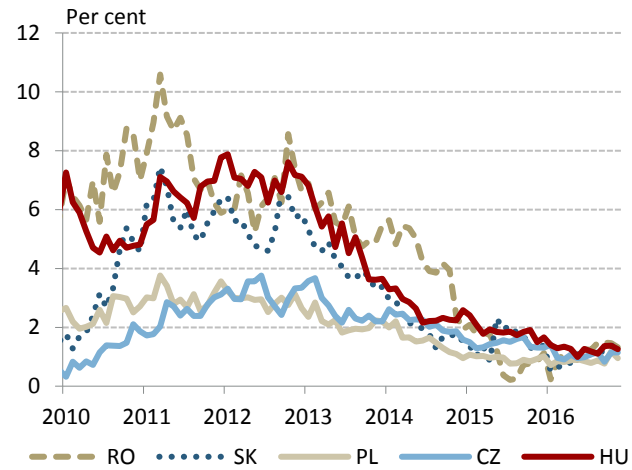
3.5.4. Inflation expectations

The price expectations of the retail trade sector remained practically unchanged in the past period. The sector's expectation concerning prices is at a level similar to the one at the beginning of the year (Chart 3-28).

Hungarian households' inflation expectations remained practically unchanged, and they continue to expect a low inflation environment. Although inflation rose in the previous months, expectations remained at subdued levels.

Chart 3-29: Inflation expectations in the region

Per cent

Source: MNB calculations based on data of the European Commission

The **latest post-crisis trend** in household expectations suggest a more **anchored expectation** than before. In regional comparison, expectations in Hungary were in line with the expectations observed in countries characterised by permanently low inflation in the past as well (Chart 3-29).

4. FINANCIAL MARKETS AND INTERES RATES

4.1. Domestic financial market developments

In the first part of the past quarter, money markets were characterised by high risk appetite, after which the outcome of the US presidential elections triggered sustained risk aversion and sell-offs in certain market segments. Aside from the temporary turmoil, developed stock exchanges were able to increase, but the global bond market was affected by significant capital outflows, which caused a major rise in both developed and emerging long-term government security yields. Foreign exchange market trends were characterised by strong appreciation of the USD from early November. In the wake of the ECB's decision adopted in December to continue its asset purchases and the rather hawkish messages of the Fed caused the depreciation of the euro exchange rate against the US dollar. Following the OPEC and other producers' decision to restrict production, oil price listings increased significantly to above USD 50.

Along with international factors, Hungarian money market trends were mainly shaped by the modification of the central bank's toolset and the announcement of fine-tuning swap tenders. The limited quantity accepted by the MNB in the context of its October and November deposit tender contributed to further reducing interbank and government security yields with maturities of under three years. Over the past quarter however, the longer section of the interbank and government securities market yield curve was pushed significantly higher, consistent with the regional shift, as a result of changes in international inflation expectations and the yield environment. The CDS spread, reflecting a country's risk perception, increased somewhat during the second half of the period in the wake of a more cautious investor sentiment, but then declined. The exchange rate of the forint against the euro fluctuated within a band of 304-315, slightly depreciating compared to the beginning of the period.
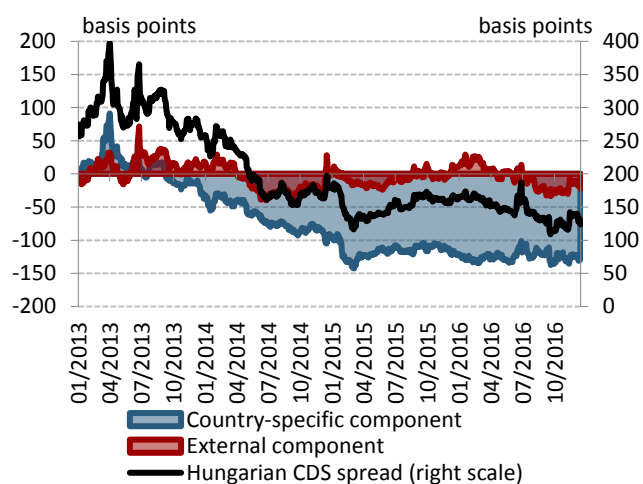
Chart 4-1: Components of 5-year Hungarian CDS spreads

Note: The decomposition method used can be found in the MNB Bulletin: Variance decomposition of sovereign CDS spreads, Kocsis–Nagy (2011).
Source: Bloomberg

4.1.1. Hungary's risk perception

Hungary's risk indicators deteriorated slightly compared to mid-September, due to international factors (Chart 4-1)**.** The Hungarian five-year sovereign CDS spread fluctuated around a historically low level during the first half of the period, subsequently increasing after the US presidential elections amidst risk averse sentiment. Long-term government securities market yields increased in the wake of international impacts, in spite of the strong demand at the auctions. In the first half of the period, the forint appreciated significantly from 310 against the euro, before depreciating to reach 315. CDS spreads and long-term yields exhibited similar dynamics in neighbouring countries, although the zloty's exchange rate and 10-year yield reacted more markedly than the regional average to the adverse international environment.

Hungary's CDS spread decreased during the first half of the period in the wake of domestic factors, and subsequently increased due to international factors in the second half before exhibiting a slight decline once again at the end of the period. The low spread during the first half of the period increased by approximately 20 basis points due to the global risk aversion following the US presidential elections, which nonetheless still fell short of the large spike following Brexit. According to our decomposition method, the increase observed during the second half of the period was mostly explained by international factors. This is corroborated by the fact that regional spreads exhibited a similar increase.
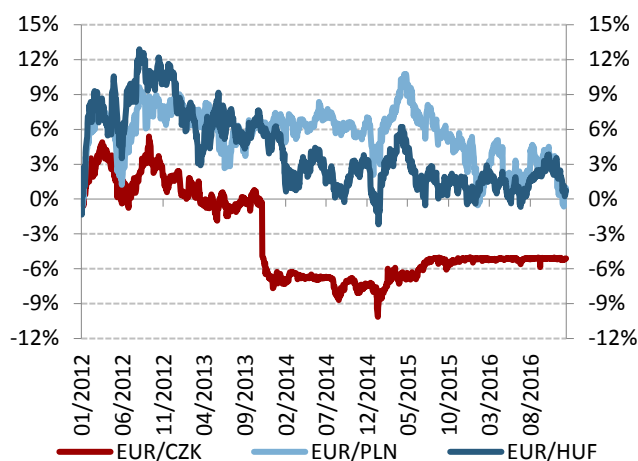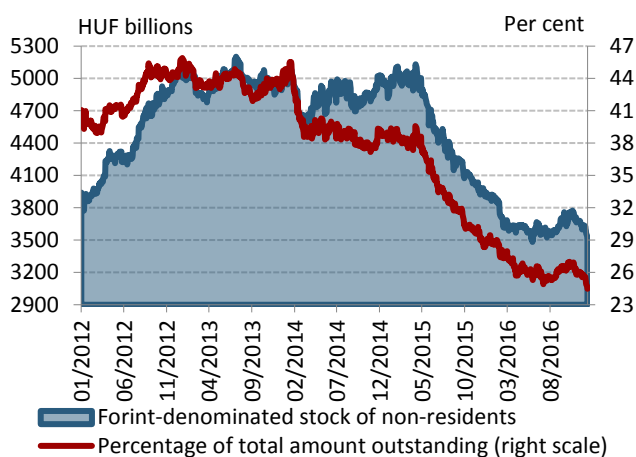
**Chart 4-2: Exchange rates in the region**

Note: Changes compared to beginning of 2012. Positive values mean an appreciation of the currency. Source: Bloomberg

Chart 4-3: Hungarian forint-denominated government securities held by non-residents

Note: The chart shows the stock of T-bills and T-bonds and the amount of government securities held by non-residents; retail securities are not included. Source: MNB

Chart 4-4: Yields of benchmark government securities
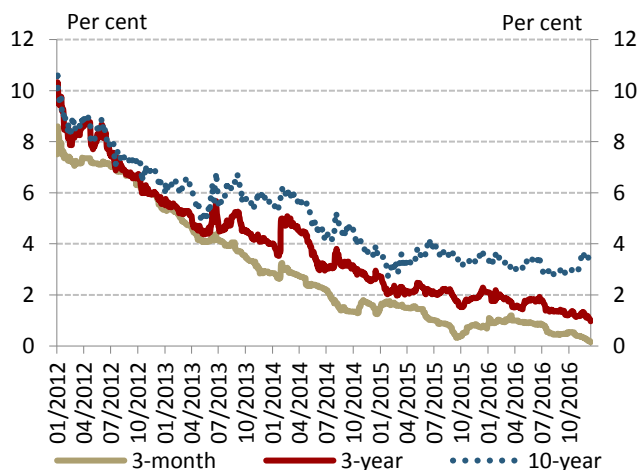
Source: ÁKK

During the first half of the period, the domestic component lowered the credit spread, with the upgrade of government debt into the investment grade category in September and November also contributing to this.

4.1.2. Foreign exchange market trends

During the period, the exchange rate of the forint versus the euro depreciated by 1.5 per cent (Chart 4-2)**.** The exchange rate of the forint fluctuated in a range of 304–315 and depreciated during the second half of the period. Until the end of September, the exchange rate appreciated by nearly 2 per cent, with the upgrade of Hungarian sovereign government debt also playing a role in this development. In the remaining portion of the period, particularly in mid-November, the forint depreciated due to international factors, but this was slightly offset by the improving risk perception of HUF-denominated instruments, thanks in part to the upgrades.

The slight depreciation of the forint was consistent with regional trends: during the second half of the period, the Polish zloty, the Czech koruna and the Romanian leu all depreciated, albeit to different extents. The zloty depreciated somewhat more than the regional average, by over 2 per cent, due to country-specific factors.

4.1.3. Government securities market and changes in yields

HUF-denominated government securities holdings by non-residents tended to increase at the beginning of the period and then decreased from November (Chart 4-3)**.** The continuous decline in HUF-denominated government securities holdings by non-residents observed since 2015 came to a halt in mid-2016 and these holdings then rose slightly in September and October. In line with the global bond market sell-offs in mid-November, holdings once again sank to close to HUF 3,500 billion by early December. The proportion of non-residents decreased from 26.3 per cent to 24.5 per cent by the end of the period.

Demand was strong on the primary market for government securities, but a marked decrease in yields was only observed at shorter maturities (Chart 4-4)**.** Short-term treasury bill yields decreased significantly during the period, supported by the transformation of the central bank's toolset. Among longer-term securities, however, auction yields increased significantly during the second half of the period due to international factors, despite strong demand.

The yields curve of the secondary market government securities became steeper over the past quarter. In line with auction yields, short and medium maturity secondary market yields decreased by 15-40 basis points, while the

Chart 4-5: 10-year government benchmark yields in CEE countries
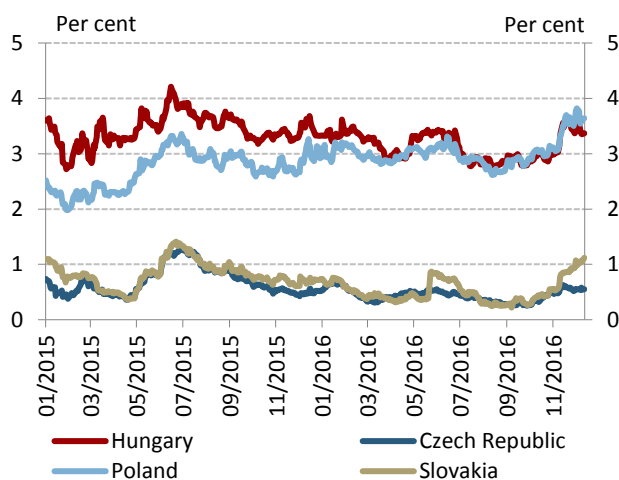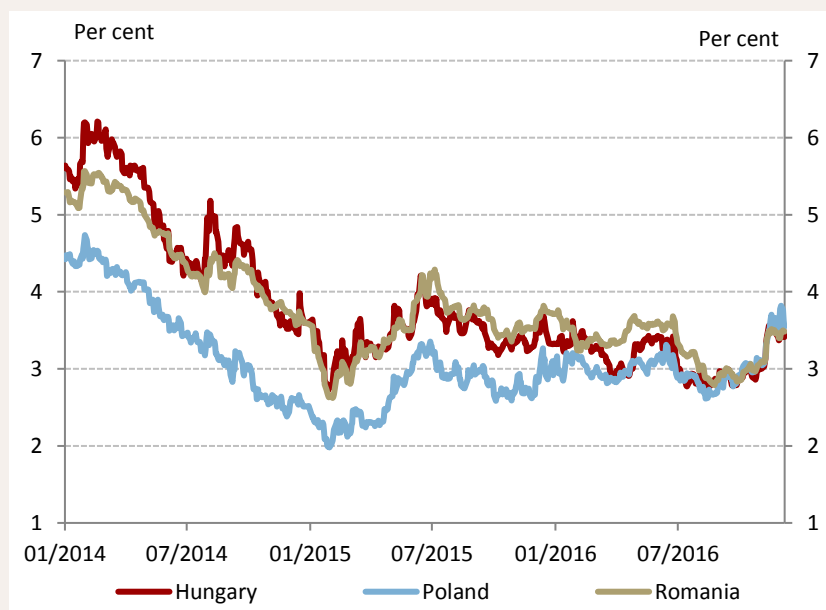

Note: Bloomberg

over-5-year section of the yield curve shifted upwards by 10-50 basis points during the period. For shorter maturities, yields decreased significantly as a result of the liquidity-boosting effect of the toolset transformation, while for long maturities, the rising international yield environment made an impact. The 10-year yield fluctuated around 3.4 per cent towards the end of the period, compared to 3 per cent at the beginning of the period (Chart 4-5).

Following the transformation of the toolset and the restricted 3-month central bank deposit tenders, interbank yields contracted at an increasing rate from November. Based on forward yields, market players expect interbank yields to stabilise at a lower level.

Box 4-1: Convergence of long-term government securities yields in the region over the past three years

The yields of long-term benchmark government securities have gradually converged in the region in recent years, and in recent months the values of the Hungarian, Polish and Romanian 10-year government securities yields have practically been the same. The Hungarian yield, which was still 120 basis points higher in early 2014, has now reached the level of the Polish yield (Chart 4-6).

Chart 4-6: 10-year government securities yields in the region
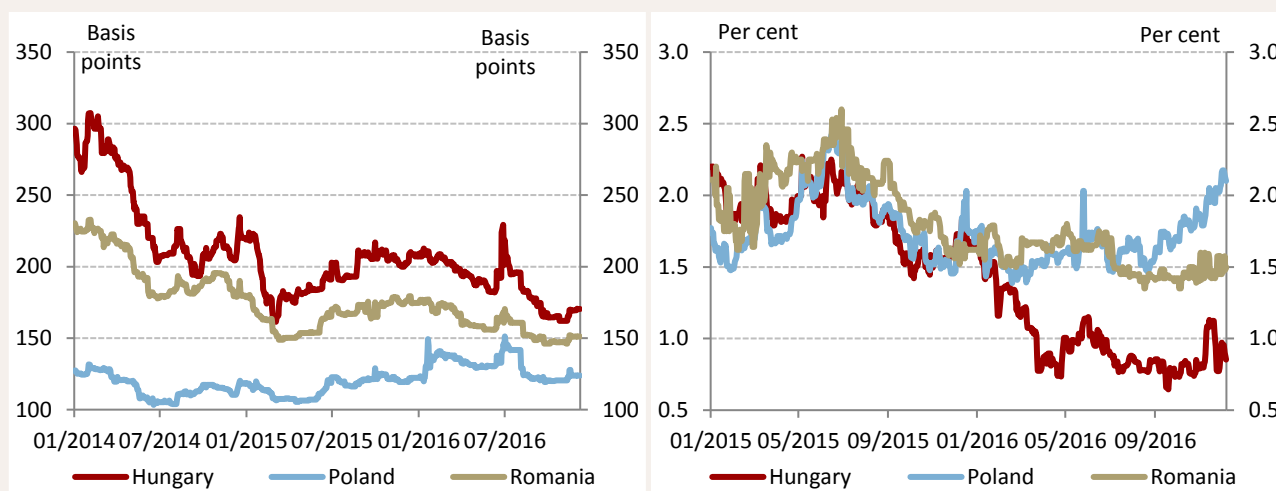

Sources: Bloomberg

Most of the convergence in yields is explained by the decline in differences between risk assessments: this is well reflected by the fact that the difference of 170 basis points between credit risk premiums in early 2014 has now declined to 50 basis points. Although the dynamics seen in CDS spreads justifies the convergence of long-term yields, it does not completely explain the practically corresponding levels of long-term yields, as the 20-basis point and 50-basis point surplus in the 10-year CDS spreads compared to the Romanian and Polish spreads, respectively, remained in place (Chart 4-7).

The rest of the yield convergence is attributable to the reducing effect of the MNB's unconventional instruments on the government securities and interbank yields as well as on the expectations concerning them. The difference in

expectations also appeared in the divergence of priced interest rate paths: while in Poland and Romania a short-term yield level of around 1.5–2 per cent is priced by the market in 2 years, this value in Hungary is around 1 per cent, in line with the MNB's message of holding the base rate unchanged for an extended period (Chart 4-7). This practically explains why the convergence of long-term yields was even tighter in the past months, in spite of the difference observed in the CDS spreads. Although in the recent weeks, a significant yield increase took place in the case of domestic long-term government securities in connection with the US presidential elections, these developments can be considered global and they resulted in similar increase in long-term government securities yields in the region as well; therefore, the co-movement did not change.

It played a role in the divergence of the priced interest rate paths that in the region the Hungarian inflation expectations declined the most in relative terms in the past two years. This has primarily been observed in recent months, as – in contrast to the stronger decline in Hungarian inflation expectations – the Romanian expectations have increased, while Polish inflation expectations have declined only to a lesser degree. While in Romania the 2-year expected inflation rose to slightly above the 2.5 per cent target, the expectations of 2.3 per cent in Hungary and 1.7 per cent in Poland are still well below the inflation targets of 3 and 2.5 per cent, respectively.

Chart 4-7: 10-year CDS spreads (left panel) and the short-term interbank yield priced for 2 years from now (right panel) in the region


Sources: Bloomberg, Reuters Datastream

4.2. Credit conditions of the financial intermediary system

In 2016 Q3, credit conditions eased both in the corporate and the retail consumer segments, while credit standards on housing loans remained unchanged. As indicated by the banks participating in the Lending Survey, intensifying competition and improving economic prospects continued to be the main factors contributing to easing. The easing, which primarily concerned price conditions, is concealed by composition effect reflected in the average interest rates on housing loans. As a result of increasing inflation expectations, the one-year forward-looking real interest rate declined in the quarter under review.

Chart 4-8: Smoothed interest rates and spreads on corporate loans by denomination
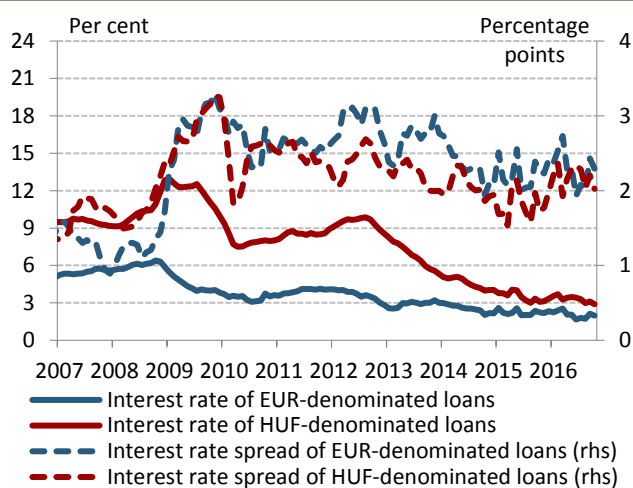
Note Interest rates smoothed by the 3-month moving average. The spread is the 3-month moving average of spreads on the 3-month BUBOR and EURIBOR, respectively. Loans with floating interest rates or with up to 1-year initial rate fixation.
Source: MNB

Chart 4-9: Changes in credit conditions in the corporate and household sectors
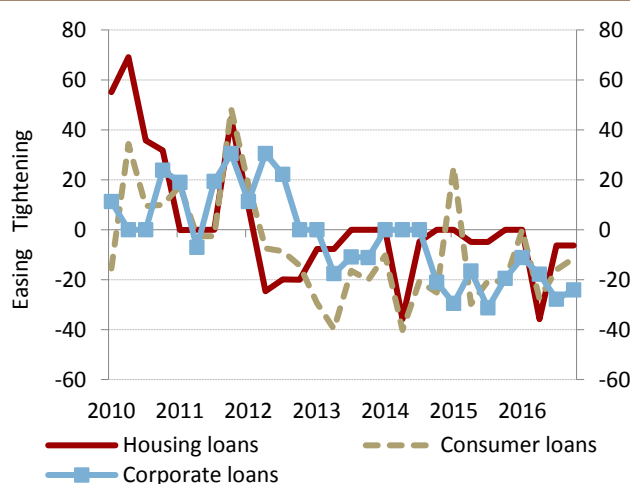
Note: Net percentage balance of respondents tightening/easing credit conditions weighted by market share. Projection for 2016 Q4 – 2017 Q1.
Source: MNB Lending Survey, based on banks' responses

4.2.1. Corporate credit conditions

The average financing cost of corporate forint loans decreased in 2016 Q3. Excluding money market transactions, the average interest rate level on new HUF loans with floating interest rates or with up to one-year initial rate fixation[5] fell by 0.3 percentage point to 3.1 per cent during the quarter (Chart 4-8). With respect to loan size, the average interest rate level on both high-amount and small-amount corporate forint loans declined in the period under review. As a combined result of the rising spread on high-amount loans of over EUR 1 million and the decline in credit spreads on small-amount loans, overall spreads dropped by 0.1 percentage point on average. The average interest rate level of EUR-denominated loans rose by 0.5 percentage point to 2.1 per cent during the quarter, accompanied by a corresponding increase in spreads. By the end of September, the average level of interest rate spreads amounted to 2.2 percentage points in the case of new forint loans and to 2.4 percentage points in the case of euro loans.

Corporate credit conditions continued to ease in Q3. According to the Lending Survey, in net terms,[6] 28 per cent of banks eased their corporate credit conditions (Chart 4-9). The easing affected all size categories of the corporate sector, as well as the conditions on commercial real estate loans. Responding banks explained the easing with the competitive situation, improving economic prospects and ample liquidity. As in the previous quarter, the easing concerned price conditions (spreads, premiums on risky loans, fees charged). Looking ahead, in net terms, around one quarter of the respondents envisaged further easing in corporate credit conditions, primarily also in terms of price conditions.

4.2.2. Household credit conditions

Spreads increased on housing loans and decreased on consumer loans in Q3. The APR on newly granted loans declined by 0.3 percentage point to 16.6 per cent in the case

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[5] The majority of loans granted under the Funding for Growth Scheme are long-term loans; therefore, the interest rates reviewed mainly reflect lending developments outside of the scheme.

[6] Net percentage balance of respondents tightening/easing credit conditions weighted by market share.

Chart 4-10: Smoothed annual percentage rate of charge (APRC) and spreads of housing and consumer loans
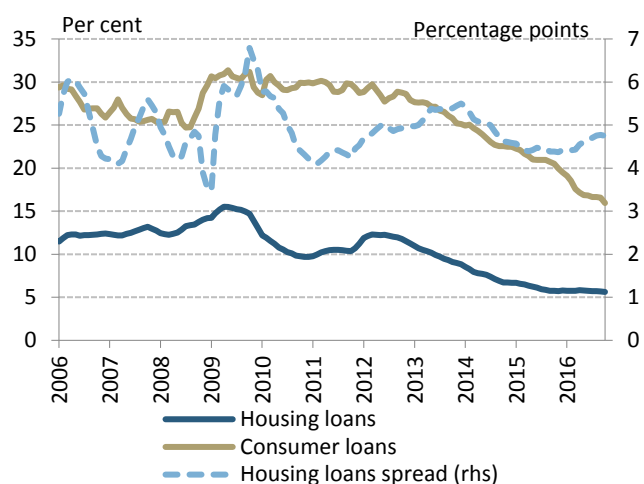
Note: Interest rates and spread smoothed by the 3-month moving average. Prior to 2009, HUF-denominated mortgage lending was marginal.

Source: MNB

of consumer loans in 2016 Q3 (Chart 4-10). The average interest rate on housing loans remained unchanged during the quarter; similar to the previous two quarters, it stood at 5.7 per cent at the end of September. The lack of changes in APR resulted from a composition effect: while the APR declined both on variable-rate and fixed interest rate housing loan products (by 0.2 and 0.1 percentage point, respectively), the share of loans with interest rate fixation – disbursed on higher interest rate level – increased within newly disbursed housing loans. At the end of September, the average APR on variable-rate and fixed-rate products stood at 4.5 per cent and 5.3 per cent, respectively. At the same time, the average interest rate spread on housing loans rose by 0.1 percentage point to 4.8 percentage points in the period under review, while spreads on consumer loans declined (by 0.3 percentage point to 6.2 percentage points in the case of home equity loans).

Credit conditions on consumer loans eased, while housing loan standards remained unchanged during the quarter. In net terms, 16 per cent of the banks responding to the Lending Survey eased conditions – in particular, the spreads – on consumer loans during the quarter. In the consumer segment, as a combined result of the improving economic outlook, banks' endeavour to retain or increase their market share and the intensification of perceived competition, households are more likely to have access to loans with less tight conditions. Although banks' efforts to achieve market share objectives would warrant the easing of conditions on housing loans as well, in net terms, only 6 per cent of banks eased conditions in Q3. According to the respondents, the easing mainly affected the spreads which, together with the increase in the average interest rate spread, may point to a composition effect: credit spreads declined for clients that had been creditworthy previously as well, while new, riskier clients faced a higher spread on average. Looking ahead, in net terms, 42 per cent of banks indicated that housing market developments would call for the easing of conditions in the housing loan segment, but only 6 per cent of the respondents intend to actually implement the easing. As for consumer loans, in net terms 11 per cent of banks indicated the possible intention of further easing, especially with respect to spreads and the minimum level of required creditworthiness level.

Chart 4-11: Forward-looking real interest rates

Note: *Based on the one-year forward-looking inflation expectations of analysts calculated by the MNB using the 1-year zero coupon yield and the Reuters poll. **Based on the one-year forward-looking inflation expectations of analysts calculated by the MNB using deposit rates with maturity up to 1 year and the Reuters poll.
Source: MNB, Reuters poll

4.2.3. Changes in real interest rates

In 2016 Q3, the level of the one-year forward-looking real interest rate declined. On the basis of the yield estimated from government securities yields, after a decline of 0.7 percentage point compared to June, the real interest rate level reduced by inflation expectations stood at –1 per cent in September 2016. Following a decrease of 0.4 percentage point, the real interest rate calculated on the basis of the deposit interest rates reached a level of –1 per cent in September as well (Chart 4-11). The decline in real interest rates can be primarily attributed to rising inflation expectations.

5. THE BALANCE POSITION OF THE ECONOMY

5.1. External balance and financing

In Q2, the net lending of the Hungarian economy stabilised at 7.5 per cent of GDP, while the current account surplus rose to 4.5 per cent. The trade surplus reached a historically high level of nearly 10 per cent of GDP, which is mainly attributable to the balance of goods, as a result of an increase in the export volume and a decline in import prices. The deficit on the income balance also continued to decline as a result of a decrease in the interest burden on foreign and intercompany loans. According to the financing approach, the net lending of the economy improved only slightly, although the net debt indicators still declined by EUR 2 billion. The debt ratios also showed improvement in Q2: the net external debt declined to 23 per cent, while the gross external debt decreased to 73 per cent. The allocation of debt outflows across sectors continues to be affected by the FX liquidity provided to the banking sector in connection with the conversion of FX loans into forints, which, on the whole, improves the external debt indicator of the banking sector. The high net saving evolved in parallel with the declining net borrowing of the state and a decrease in the private sector's net financial savings.

Chart 5-1: Changes in net lending as a proportion of GDP
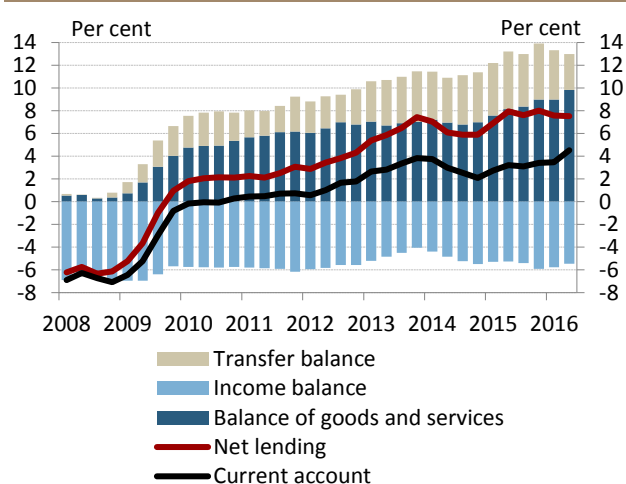
Note: Cumulated four-quarter values.
Source: MNB

Chart 5-2: Structure of net lending

Note: The net borrowing calculated by a bottom-up method corresponds to the total of the net borrowing and the BOP balance of statistical errors and residuals.
Source: MNB

5.1.1. Developments in Hungary's net lending position

Based on the real economy approach, in 2016 Q2 the four-quarter net lending of the Hungarian economy stabilised at a high level of around 7.5 per cent of GDP, while the current account surplus rose to 4.5 per cent (Chart 5-1). The **trade surplus** continued to increase in Q2, reaching 9.8 per cent of GDP. This extremely high value is primarily attributable to a significant increase in the export volume and to the stronger decline in import prices than in export prices, which was a result of restrained commodity prices. The four-quarter surplus of the **transfer balance** fell considerably due to the lower value of the transfers used compared to previous periods. The deficit of the **income balance** declined further, which was mainly attributable to the decrease in the interest burdens on foreign and intercompany loans, which is related to the repricing due to the low interest rate environment and the reduction of the external debt portfolio. Based on preliminary monthly data, the net lending position continued to improve in Q3, with contributions from the balance of goods and services as well as from the increasing surplus of the transfer balance.

5.1.2. Developments in financing

In addition to the decline of EUR 2 billion in net debt indicators, net lending according to the financing side increased significantly in Q2 (Chart 5-2). Compared to the previous quarter, there was an increase in the outflow of funds in Q2, which is mainly attributable to the higher outflow of debt liabilities, while non-debt liabilities also decreased as a result of dividend payments; the decline in FDI was almost fully attributable to the latter item. In contrast to the previous period, Hungarian and foreign FDI stocks were not influenced by capital in transit transactions in Q2. Based on preliminary monthly data, positive net FDI inflows were observed in Q3, the result of which was that in the first three quarters of the year there was an overall increase in FDI in Hungary.
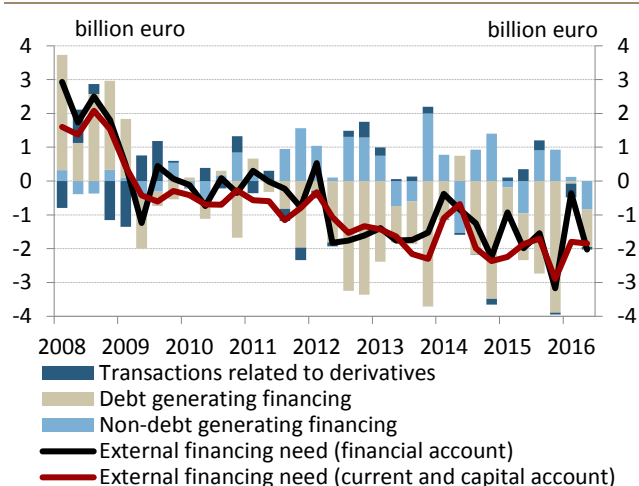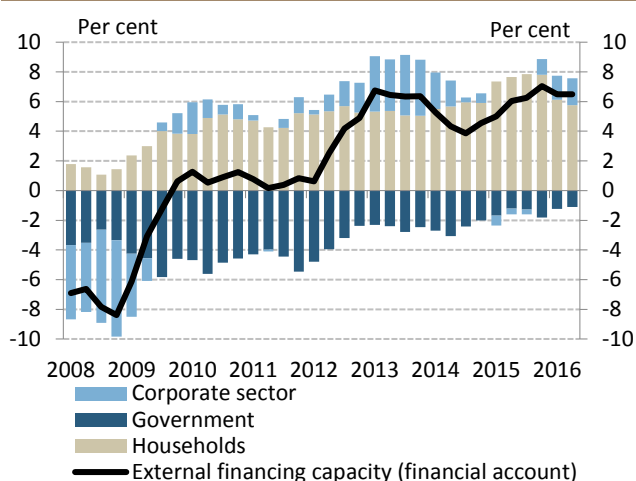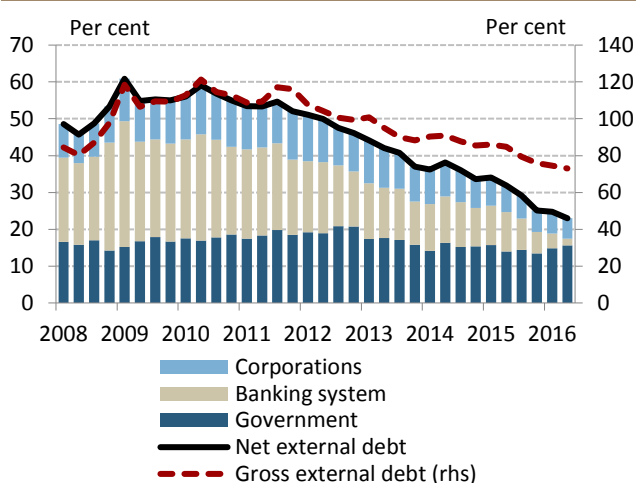
Chart 5-3: Breakdown of net lending by sectors as proportion of GDP

Note: Four-quarter cumulation.
Source: MNB

Chart 5-4: Breakdown of net external debt by sectors as a percentage of GDP

Note: Excluding intercompany loans.
Source: MNB

In Q2, economic agents reduced their net external debt by EUR 1.1 billion, while the structure of the debt outflow was still considerably influenced by the foreign currency liquidity provided by the MNB to the banking sector due to the conversion of FX loans into forints. The transaction related to the conversion into forints raised the net external debt of the consolidated general government through the decline in FX reserves, while it reduced that of the banking sector. As a result, the net external debt of the state increased by EUR 1.7 billion, while that of the banking sector decreased by EUR 2.4 billion. Corporations' net external debt declined by EUR 0.4 billion, primarily due to an increase in foreign receivables. The decline in the banking sector's external debt, which exceeded the rise in that of the consolidated general government, resulted in lower net external debt. According to preliminary monthly data, the net external debt of the consolidated general government increased in Q3 as well, which was also attributable to the rise in non-residents' government securities holdings following the upgrade by S&P.

The stabilisation of net lending in Q2 took place against the background of a slight deterioration in the private sector's net position and the decline in the net borrowing of the state to a historical low (Chart 5-3). The low general government deficit on the revenue side is mainly attributable to the rising tax revenues resulting from expanding employment and higher wages as well as an increase in consumption. On the expenditure side, the steadily decreasing interest expenditures and the lower co-financing of EU transfers also pointed to a more favourable net borrowing. Households' attitude to savings is changing: although they are still net loan repayers, borrowing started to rise slowly in line with the increase in consumption, which slightly reduced households' net financial savings.

In Q2, Hungary's net external debt declined further and currently stands at 23 per cent of GDP (Chart 5-4). The outflow of debt-type liabilities was the main contributor to this decline, but the increase in nominal GDP also resulted in a decrease in the debt indicator. Looking at the sectors, the fall in net external debt is primarily attributable to the considerably increase in the banking sector's foreign assets, while in the case of the general government a rise was observed, mainly due to the FX liquidity provided to the banking sector. Gross external debt declined to 73 per cent of GDP, which is attributable to continued outflows of the debt-type liabilities of the general government, i.e. to the maturity of an FX bond worth nearly EUR 0.2 billion and the repayment of the last instalment amounting to EUR 1.6 billion of the EU loan.

5.2. Forecast for Hungary's net lending position

The economy's net lending will be around 7 per cent of GDP in 2017 following a decline in 2016, and is set to decrease further by the end of the forecast horizon. In 2016, the deterioration of the economy's net lending is linked primarily to the lower absorption of EU transfers, the impact of which was offset by a rising trade surplus in the wake of improving terms of trade. The continuing expansion of domestic consumption in 2017 will be coupled with an increase in investment growth, which will result in a decrease in the trade surplus through growing imports. The accelerating absorption of EU transfers will offset this impact, and the economy's net lending will also be around 7 per cent of GDP in 2017. Growth driven by domestic items will continue in 2018, resulting in a further decline in the trade balance, which will be dampened by the production increase of previous investments. Consistently with this, net lending will decrease further. From the saving side of sectors, consistently with an increase in domestic absorption items, household savings will decrease continuously over the forecast horizon, while the state's net borrowing will increase. Overall, Hungary's external position will decrease slightly, but will continue to contribute to the decline in external vulnerability through the expected contraction in external debt and foreign currency public debt.

Chart 5-5: Evolution of net lending (as a percentage of GDP)
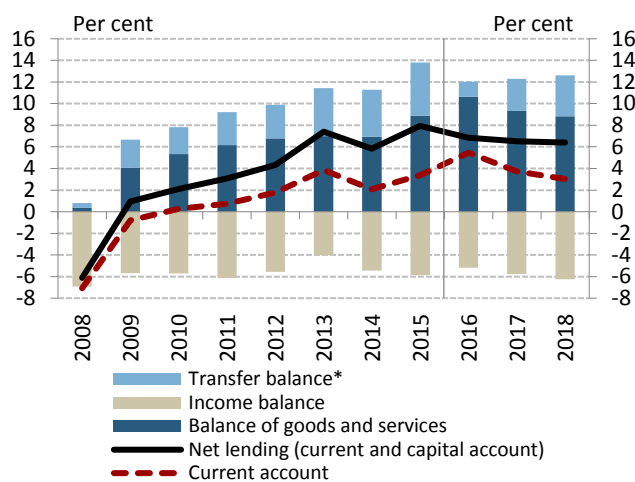
Note: *The sum of the balance of the current transfers and the capital account balance.
Source: MNB

Net lending will decrease gradually over the forecast horizon to below 7 per cent of GDP, while the current account surplus will decrease (Chart 5-5). The economy's net saving will fall to 7 per cent of GDP this year, while the shrinking transfer balance is only partially offset by the increasing trade balance in the wake of low oil prices and improving terms of trade. Looking ahead, growing domestic demand will play an increasingly important role in growth: the trade surplus will be reduced by the rise in imports attributable to household consumption this year and to an increase in investment next year. In 2018 this effect will be dampened by the increasing production of earlier investments in the vehicle industry. Due to the rising transfer absorption associated with the new EU budgetary cycle, the transfer balance will be lower in 2016 compared to earlier years, but the absorption of funds will increase in the upcoming years. The income balance deficit will still be offset by decreasing interest expenditures this year, but in upcoming years, profit realised by non-resident corporations will contribute to decreasing net lending with the corporate profit tax cut and accelerating economic growth.

Looking at the savings of the various sectors, the high net lending of the economy stems from **different financial savings trends of the individual sectors**: in parallel with households' substantially declining net savings and the state's slightly increasing net borrowing, companies' net financial savings will increase (Chart 5-6).

According to underlying developments, households' high financial savings may decline slightly leading up to 2018. With the end of the temporary impact of the foreign currency loan settlement, households' net savings will decrease gradually in the years to come as a result of increasing consumption and rising housing investment facilitated by government incentives.

Chart 5-6: Changes in the savings of sectors (as a percentage of GDP)
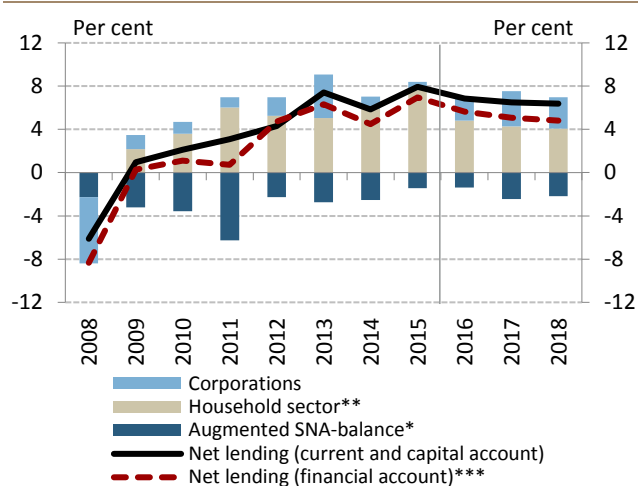
Note: *In addition to the central government, the augmented general government includes local governments, MNV Inc., institutions discharging quasi-fiscal duties (MÁV, BKK), and the MNB. The augmented SNA deficit takes into account private pension savings. **Net financial saving of households consistent with the SNA deficit does not contain the pension savings of those who return to the public pension system. The official net saving is different from the data in the chart. ***We expect that 'Net errors and omissions' (NEO) will return to the historical average.
Source: MNB

Corporations' saving will increase compared to 2015. Excluding the one-off impact of foreign currency loan settlements on the data for 2015, corporations' net saving will decrease in 2016. Starting from 2017, however, the lower tax rate and rising transfers may contribute to an increase in corporations' net saving; this effect will be mitigated in 2018 by the rising investments, in line with the increasing utilisation of EU funds.

Government net borrowing, which was historically low in 2016, will increase in the wake of growth-stimulating measures in 2017. The expected government deficit trend in 2016 stems from higher tax receipts associated with the rising wage bill, and the delayed expenditures linked to European Union grants and other investments. In 2017, the demand-stimulating measures announced earlier and the corporate tax and labour contribution cuts will increase the general government's borrowing requirement, while the tax content of the minimum wage hike and land sales carried forward to 2016 will decrease the general government's borrowing requirement. As a result, the state's borrowing requirement will rise above 2 per cent of GDP in 2017. One-off revenues (land sales, high value of the growth tax credit) are not expected to reoccur in 2018, and thus the state's borrowing requirement may slightly rise further.

As a result of the economy's elevated net lending, external debt indicators may continue to decline. Consistently with net lending, we expect to see a continued contraction of external debt over the forecast horizon. In addition, Hungary's external vulnerability may further be improved by the decreasing foreign currency ratio within government debt.

5.3. Fiscal developments

The 2016 ESA deficit of the government sector may remain at the low level observed in the past years, and thus in the last quarter the government has ample leeway to meet the deficit target. In 2017, along with the fiscal steps to stimulate the economy, the deficit will remain at around 2 per cent, which is lower than our September projection and also indicates that there is room for manoeuvre for the 2.4 per cent deficit target. For 2018 we prepared a technical projection which suggests that the deficit will not change significantly compared to the previous year. In 2016, the fiscal demand effect is lower than previously estimated, while in 2017 it is expected to be positive, partly due to the expenditures adopted in the budget and partly as a result of the tax cut proposals submitted since then. The downward trend in the gross government debt-to-GDP ratio is expected to continue, with the ratio decreasing to 73.5–74.0 per cent this year, then to below 73 per cent in 2017 and to below 72 per cent in 2018.

Table 5-1: General government balance indicators (as a percentage of GDP)

	2016	2017	2018
ESA deficit	(-1.5) - (-2.0)	(-1.8) - (-2.2)	(-2.0) - (-2.2)
Primary ESA-balance	1.3 - 0.8	0.8 - 0.4	0.4 - 0.2
Fiscal impulse*	(-0.5) - 0.0	1.0 - 1.4	0.0 - 0.2

Note: *Change in the augmented (SNA) primary balance.
Source: HCSO, MNB

Chart 5-7: Changes in the fiscal balance and interest expenditures
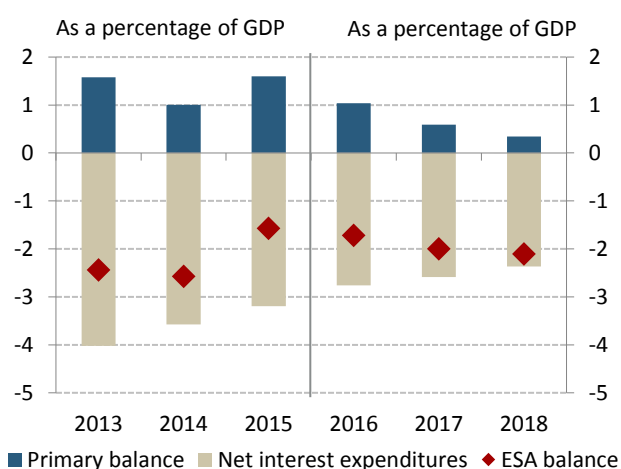
Note: Indicated values located in the middle of the uncertainty range. The figures do not include the imputed interest expenditures from 2012 related to the reform of the pension system.
Source: Eurostat, MNB

### 5.3.1. Main balance indicators and the fiscal demand effect

According to our projection, the ESA deficit of the government sector as a proportion of GDP is expected to be between 1.5–2.0 per cent in 2016 and 1.8–2.2 per cent in 2017, while for 2018 our technical projection indicates a range of 2.0–2.2 per cent (Table 5-1). Giving our forecast in the form of a band is justified by the utilisation of budget reserves and other uncertainties, for example the share of down payment for EU subsidies, which cannot be projected in advance.

The basic process which characterises the fiscal path is the further decline of interest expenditures and its partial use to stimulate the economy which reduce the surplus of the primary balance. The latter stems largely from the approved tax reductions the budgetary impact of which is reduced by the higher wage growth resulting from the wage agreement. With regard to primary expenditures, we assume stricter control, but the expected rise in EU funds will increase government investment. A consistently low interest rate environment is expected to remain in place over the entire forecast horizon. Accordingly, interest expenditures will decline year by year as a result of the gradual repricing of the debt (Chart 5-7).

The 2016 demand effect is expected to be lower than before and will probably be negative.[7] The main underlying reason is that the slower-than-planned absorption of EU funds reduced the investment expenditures of the government sector. The demand-reducing effect will only partly be offset by the additional expenditures announced in November and December, because they will exert their economic impact in 2017 for the most part.

Compared to the previous year, 2017 is expected to feature demand stimulus in view of the favourable underlying trends, but the deficit may still be lower than

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[7] The fiscal impact is quantified by the change in the augmented (SNA) primary balance, which gauges the impact of fiscal measures, fiscal developments and the automatic stabilisers on the income position of the other sectors.

Chart 5-8: The fiscal demand effect (as a percentage of GDP)
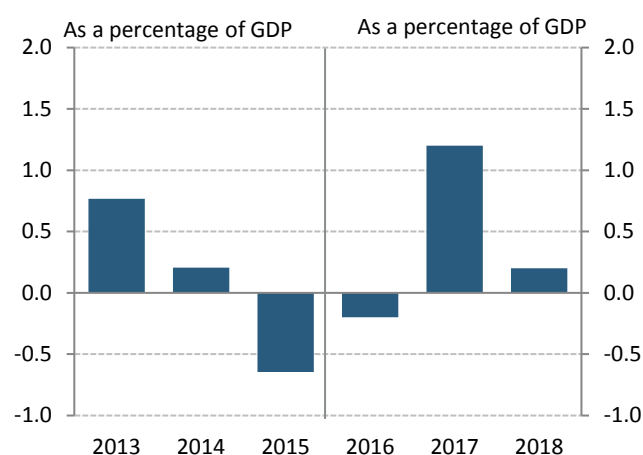
Note: The fiscal demand effect corresponds to the change in the augmented (SNA) primary balance. The fiscal impulse contains the effect of EU funds only at extent of the cofinancing. The positive prefix indicates demand expansion, while the negative prefix implies demand restraint.
Source: MNB

Table 5-2: Decomposition of the change in the 2016 ESA balance forecast (compared to the September Inflation Report; as a percentage of GDP)

	Economic developments	Measures and other
I. Central government revenues	-0.2	-0.6
Payments by economic units		-0.2
Labour taxes	-0.2	
Payments related to state property		-0.4
II. Central government expenditures	0.1	0.1 - 0.6
Net expenditures of budgetary organisations		0.2 - 0.7
Housing grants	0.1	
Pensions		-0.1
Net expenditures related to drug subsidies		-0.1
Expenditures related to state property		0.1
III. Other effects	0.1	0.0
Local governments	0.1	
Other items		0.0
Total (I.+II.+III.)	0.0	(-0.5) - 0.0

Note: The positive and negative prefixes indicate deficit-reducing and deficit-increasing effects, respectively. The sum of partial data may differ from the aggregated value because of the rounding.
Source: MNB

the target. Corporate sector competitiveness will be improved by the lowering and standardisation of the corporate tax rate as well as by the labour cost reduction through the reduction of the social contribution tax. The tax burden on the banking sector will also ease with the reduction of the bank tax and the cancellation of credit institutions' contribution. Households' disposable income will be increased by the extension of the family tax base allowance and the positive effect of social contribution tax reduction on net wages. On the expenditure side, government career path models will continue and be expanded, and the investment activity of the government sector will also increase.

Our technical forecast suggests an essentially neutral demand effect in 2018 (Chart 5-8).

5.3.2. Budget balance in 2016

According to our forecast, the 2016 ESA deficit of the general government may be between 1.5 and 2.0 per cent of GDP, i.e. slightly higher than the forecast prepared for the September Inflation Report (Table 5-2). A major change compared to September is that – in reaction to the positive underlying fiscal developments – the government is providing additional funds to economic agents through additional spending. Moreover, based on the revenue data for the first eleven months of the year, we assume that the larger part of land sales revenues will only be realised in 2017. The change in our projection for the expenditure side is the result of various contrasting factors. Significant savings will be achieved on the net expenditures of budgetary institutions as a result of the high advance payment ratio of EU disbursements. If the measures announced to date that add to government expenditures (development of industrial parks, Modern Cities Programme, Eximbank recapitalisation, hospital debt consolidation) are implemented in full, they will increase the expenditures by 0.6 per cent of GDP (by HUF 195 billion). Compared to preliminary expectations, the increase in the Home Purchase Subsidy (HPS) will entail fiscal expenditures at a later point in time. A deficit slightly over 2 per cent also can occur if the scope of government measures would be wider than we estimated.

According to the data available in early December, there is still room for manoeuvre compared to the deficit target set out in the Budget Act (Table 5-3). This stems partly from the high increase in the whole-economy wage bill and partly from the lower-than-planned level of some expenditures. A significant proportion of EU subsidies is probably paid to the fiscal authorities as an advance that does not increase the

Table 5-3: Differences between our forecast and the appropriations set out in the 2016 Budget Act (as a percentage of GDP)

	Difference from appropriation
I. Central government revenues	0.0
Labour taxes	0.3
Taxes on consumption	-0.3
Payments related to state property	-0.1
II. Central government expenditures	(-0.4) - (+0.1)
Net own expenditures of budgetary organisations	(-0.4) - (+0.1)
START public work scheme	0.2
Pensions	-0.1
Spending on healthcare	-0.2
III. Other effects	0.5
Net interest expenditures	0.2
Balance of local governments	0.3
Other items	0.0
Total (I.+II.+III.)	0.0 - 0.5

Note: The positive and negative prefixes indicate deficit-reducing and deficit-increasing effects, respectively. The sum of partial data may differ from the aggregated value because of the rounding.
Source: MNB

Table 5-4: Decomposition of the change in the 2017 ESA balance forecast (compared to the September Inflation Report; as a percentage of GDP)

	Economic developments	Measure and other
I. Central government revenues	0.5	-1.0
Payments by economic units		-0.4
Labour taxes	0.5	-1.0
Payments related to state property		0.4
II. Central government expenditures	0.7 - 0.9	-0.1
Net expenditures of budgetary organisations	0.5 - 0.7	
Housing grants	0.2	
Net expenditures related to drug subsidies		-0.1
III. Other effects	0.1	-0.1
Local governments	0.1	
Other items		-0.1
Total (I.+II.+III.)	1.3 - 1.5	-1.2

Note: The positive and negative prefixes indicate deficit-reducing and deficit-increasing effects, respectively. The sum of partial data may differ from the aggregated value because of the rounding.
Source: MNB

deficit. In addition, the number of people involved in the START labour programme tends to be lower than what was assumed upon compiling the budget bill. Savings are expected on the net interest expenditure as well, because yields declined on both short and long maturities in 2016. The balance position of the local government subsystem is also more favourable than the balance target of the Budget Act for this subsystem. Due to benign developments in the fiscal balance during the year, the leeway available for the government for additional steps at the end of the year is significant. Giving our forecast in the form of a band is justified by the uncertainty concerning the absorption of EU funds and the complete implementation of the measures planned for the utilisation of the leeway.

5.3.3. Budget balance in 2017

According to our forecast the ESA deficit of the general government in 2017 may amount to 1.8-2.2 per cent of GDP, which is lower to our September forecast and also to the statutory appropriation, suggesting that there is room for measures for further growth stabilisation and to strengthen long-term competitiveness. The forecast band reflects the room for manoeuvre in the utilisation of reserves, and the uncertainty about the proportion of advances within EU grants.

The largest change compared to our September projection is caused by the tax-reducing measures (corporate tax and social contribution tax), which jointly reduce the tax burden on the economy by 1.4 per cent of GDP compared to our September forecast (Table 5-4). About one half of the social contribution tax cuts will be offset by the fact that the whole-economy wage bill in 2017 will be significantly higher than could have been previously estimated, due to the agreements on wages. Further additional revenue is the HUF 150 billion from land sales that is expected to be realised in 2017. Our forecast took into account the risk that some of the EU funding paid to the general government will not be used next year either (i.e. it remains as advance payment), and thus it will not appear among the expenditures and can significantly contribute to reducing spending.

The statutory appropriation contains a deficit-to-GDP ratio of 2.4 percent, and our projection is 0.2-0.6 percentage points lower than this (Table 5-5)**.** The deviation of the net expenditures of budgetary institutions from the appropriations is partly the consequence of the streamlining of background institutions and the contribution reduction affecting public employees as well, and partly of the fact that – similarly to this year's

Table 5-5: Differences between our forecast and the appropriations set out in the 2017 Budget Act (as a percentage of GDP)

	Difference from appropriation
I. Central government revenues	-0.5
Payments by economic units	-0.3
Taxes on consumption	-0.2
Labour taxes	-0.4
Payments related to state property	0.4
II. Central government expenditures	0.6 - 0.8
Net own expenditures of budgetary organisations	0.6 - 0.8
Net expenditures related to EU-funding	-0.1
START public work scheme	0.1
III. Other effects	0.1 - 0.3
Net interest expenditures	0.1
Cancellation of Country Protection Fund	0.0 - 0.2
Total (I.+II.+III.)	0.2 - 0.6

Note: The positive and negative prefixes indicate deficit-reducing and deficit-increasing effects, respectively. The sum of partial data may differ from the aggregated value because of the rounding.
Source: MNB

developments – some of the EU disbursements may continue to take place in the form of advance payments. In the case of the START labour programme, in view of the tightness of the labour market we expect fewer participants in the programme than the assumption used upon planning the budget.

5.3.4. 2018 fiscal balance projection

For lack of a budget for 2018, we prepared a technical projection, which suggests that the deficit will remain similar compared to the previous year. Expenditure side developments and the strong economic growth will offset the impact of the tax easing and the decline in other revenues; as a result, the balance is not expected to change.

5.3.5. Risks surrounding the baseline scenario

In the forecast, the highest uncertainty involves the disbursement and absorption of EU funds. Our projection is based on the assumption that the system of advance transfers will remain in place at a declining rate over the entire forecast horizon. Although the absorption of funds at a faster rate than our projection results in better stimulation for the economy, by increasing the cost of own contributions it also simultaneously increases the budget deficit.

5.3.6. Expected developments in public debt

Following the GDP revision by the HCSO in September, the government debt-to-GDP ratio as of the end of last year changed from the preliminary figure of 75.3 per cent to 74.7 per cent. The revision affecting the nominal GDP reduced the debt ratio by 0.5 and 0.6 percentage point in 2014 and 2015, respectively (Chart 5-9).

By the end of Q3, the government debt ratio declined to 74.2 per cent, according to the preliminary financial accounts data of the Magyar Nemzeti Bank. The debt ratio is 3.4 percentage points lower than the figure for the same period of last year, and it sank below its level observed at the end of last year (74.7 per cent). Net borrowing resulted in an increase in the debt ratio, while the expansion of the real economy and the change in the exchange rate of the forint entailed a decline in the ratio. In the first three quarters, the general government had financing capacity, i.e. the budget had a surplus; consequently, net borrowing resulted in an increase in the liquid deposits of the state.

Until the end of 2018 – assuming a constant, end-2015 HUF exchange rate – we forecast that the public debt ratio will continue to fall, and that the debt rule set forth in the Fundamental Law will be complied with. According to our

Chart 5-9: Gross public debt forecast – calculated with unchanged (end-2015) exchange rate over the forecast horizon
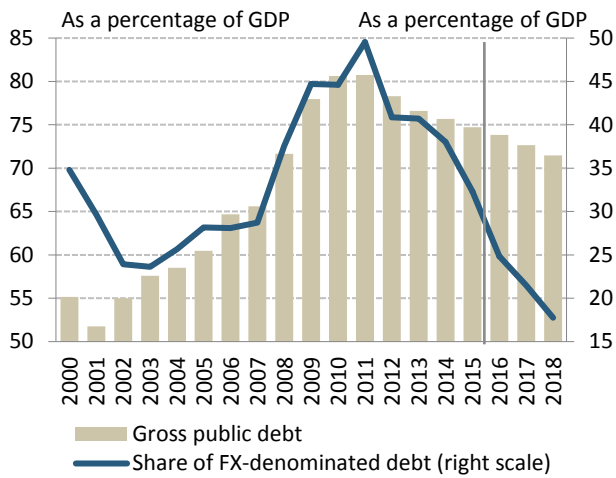

Source: MNB

projection, by the end of this year the debt ratio will decline to between 73.5 and 74 per cent as a result of the record low financing requirement. The debt ratio will continue to decline in the forthcoming years as well, supported by rising interest savings of the state due to the favourable interest rate environment, as well as by robust economic growth and the positive primary balance. Based on our forecast, the debt-to-GDP ratio will fall to below 73 per cent by end-2017 and to below 72 per cent by 2018. The negative net FX issuance expected over the forecast horizon will result in a further decrease in the share of foreign currency in government debt, contributing to the decrease in the external vulnerability of the economy.

Box 5-1: Macroeconomic impact of the corporate tax reduction

Pursuant to the amendment to the corporate tax, as of next year **the corporate profit tax will be 9 per cent and proportionate**. With the introduction of the single-digit corporate tax, in the EU the corporate tax will be the lowest in Hungary (Chart 5-10). The box below deals with the macroeconomic effect of the corporate tax reduction in detail.

Chart 5-10: Upper limit of corporate tax rates (2015)
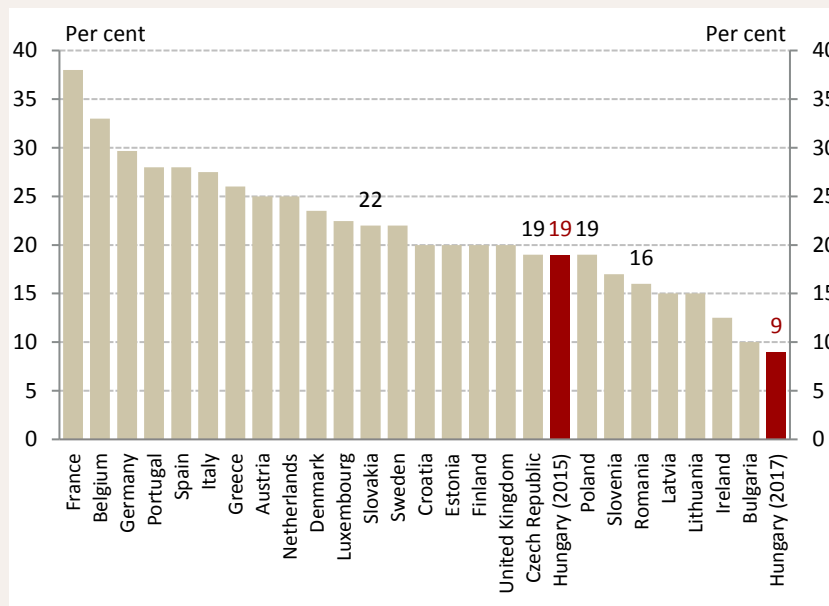
Sources: OECD Statistics, Trading Economics

Previous corporate tax rules levied a 10 per cent tax rate up to a tax base of HUF 500 million and a 19 per cent rate above tax base of HUF 500 million. **Accordingly, the announced measure is mainly effective in the case of companies whose pre-tax profit exceeds HUF 500 million.** However, the profit of the vast majority of Hungarian companies is below the limit where the rate changes; therefore, the easing is a mere 1 percentage point for them. Of the total number of around 400,000 domestic companies, there are only **800–900 firms** whose pre-tax profit is more than HUF 500 million. As a result of the uniform corporate tax cut to 9 per cent, **the decline in tax liability will primarily be perceived by large corporations**; the

amendment to the corporate tax system will bring only slight easing in the situation of smaller-size enterprises (Chart 5-11).

Chart 5-11: Decline in corporate tax liability by company size, 2017
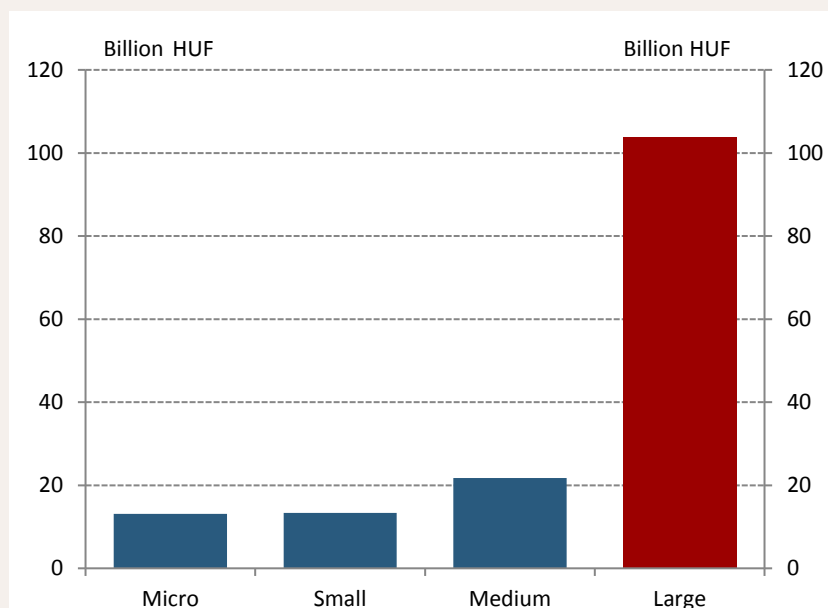
Sources: National Tax and Customs Administration (NAV), MNB calculation

The value added of corporations affected by the upper tax rate cut is around 30 percent of the total economy value added. Their revenue accounts for 40 percent of total output; their revenue from export represents 40 percent of total export and their investment the 21 percent of total investment. These corporations employ 9 percent of total workforce and pay 17 percent of the total wagebill (Table 5-6).

Table 5-6: Attributes of the companies paying the higher tax rate (2014)

	2014
Value added	28%
Turnover	40%
Export	40%
Number of employees	9%
Wage cost	17%
Investment	21%

Note: In proportion of the national economy.

Source: NTCA, HCSO, MNB calculation

In line with the decline in tax liability, the measure may primarily facilitate the investment activity of large companies in the near future. The reduction of the corporate tax rate results in a decline in the effective tax rate of companies and thus in the user cost, justifying a higher level of the optimum capital stock in a state of equilibrium, and thus it results in higher investment.

Higher investment activity, in turn, permanently increases the level of GDP, i.e. results in a more favourable growth path (Chart 5-12). **According to our estimate, in the long run, the amendment of the corporate tax system will reduce the effective corporate tax rate by 1–2 percentage points and the user cost by 0.4–0.7 percentage point, resulting in a 0.3–0.7 percentage point higher optimum capital stock level and, in line with that, generating a slightly higher employment level.** As a result of the fact that it is primarily capital-intensive large corporations will benefit from the savings originating from the corporate tax cut, the impact of the measure on employment may be subdued. **Through corporate investment, the standardisation of corporate tax rates will raise the level of GDP by 0.4–1 percentage point in the long run, resulting in a 0.1–0.3 percentage point higher economic growth over our forecast horizon.**

Chart 5-12: Impact of the corporate tax reduction on economic growth

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┌─────────────────────────────┐          ┌─────────────────────────────┐
│  Lower user cost of capital  │ ◄─────── │   Lower effective tax rate   │
└─────────────────────────────┘          └─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Higher optimal stock of capital │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐          ┌─────────────────────────────┐
│    Additional investments    │ ───────► │                             │
└─────────────────────────────┘          │       Economic growth        │
┌─────────────────────────────┐ ───────► │                             │
│          Employment          │          └─────────────────────────────┘
└─────────────────────────────┘
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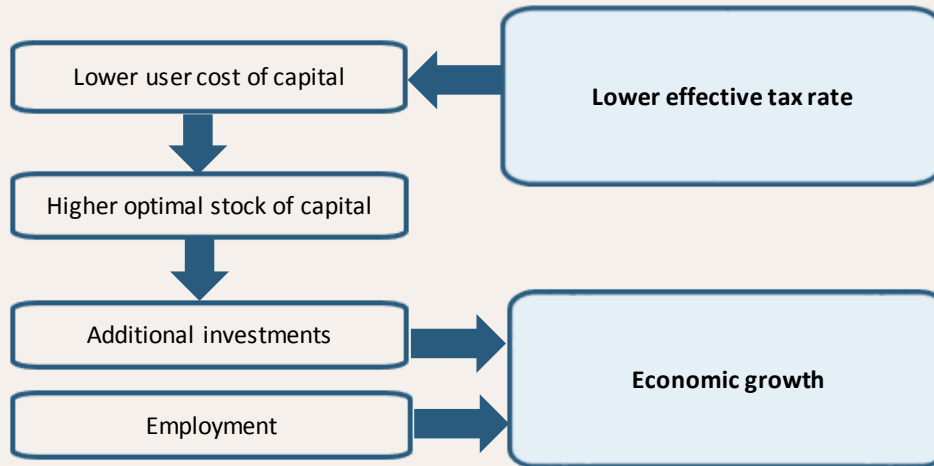
Sources: MNB

These developments will result in an increase in corporate profits. Some of that will be paid as dividends, while the rest will add to companies' retained profits, which will be spent in the future. The disbursed dividends will have an impact on GDP through increase in consumption. As some of the companies are foreign-owned, the dividends paid by them are spent abroad. Therefore, the dividends produced are broken down by corporate ownership (Chart 5-13). As foreign-owned companies are practically in 100 per cent foreign ownership, this provides a good approximation. The calculations were carried out on individual company data, and we assume that the dividend pay-out ratio corresponds to the average of the past four years.

Chart 5-13: Impact of the corporate tax cut on corporate profits

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┌───────────────────────────────────────────────────────────┐
│     Lower corporate tax rate higher profit after tax        │
└───────────────────────────────────────────────────────────┘
          │                                   │
          ▼                                   ▼
┌─────────────────────┐              ┌─────────────────────┐
│    Dividends paid    │              │   Retained earnings  │
└─────────────────────┘              └─────────────────────┘
     │           │
     ▼           ▼
┌──────────────┐  ┌──────────────┐
│ Non-resident │  │   Resident   │
│    owners    │  │    owners    │
└──────────────┘  └──────────────┘
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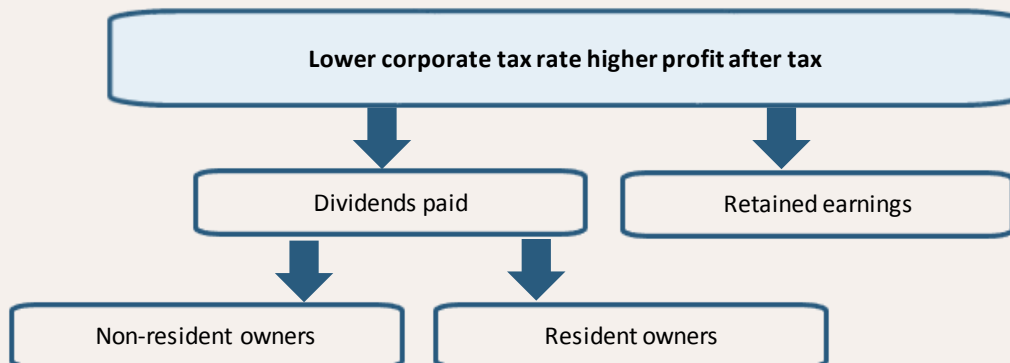
Sources: MNB

According to the results, the additional after-tax earnings resulting from the corporate tax measures amount to HUF 171 billion. Of this, dividends amounting to HUF 118 billion are paid by companies, and foreign-owned companies account for 75 per cent of this amount. Accordingly, additional dividends amounting to a total HUF 27 billion are disbursed to domestic players. **As a result of an increase in repatriated income, the current account balance may deteriorate, and the gap between GDP and GNI may increase further. The decline in the corporate tax to the lowest level** in the European Union as a result of the measures **may make Hungary more attractive for foreign enterprises**. The ensuing FDI inflows may facilitate the widening of supplier networks, stimulating the SME sector's investment activity and productivity increase.

6. SPECIAL TOPICS

6.1. Examination of the revision of GDP

In its flash estimate of GDP, the HCSO provides the best estimate based on the limited information available at the given point in time. In this special section, on the basis of past characteristics and the cyclical position, conclusions are drawn regarding the uncertainty surrounding the estimate and regarding the direction and size of the revision expected in the preliminary estimate of the increase in GDP.

The macroeconomic time series published about the recent past are of key importance in the case of both business and economic policy decisions. Accordingly, the accuracy and reliability as well as the timeliness of data are the most important aspects for analysts. Statistical data providers must meet these requirements simultaneously. **However, there is trade-off between the reliability and the timeliness of the statistical data release.** As macroeconomic data are aggregate indicators resulting from the summing up of millions of observations, upon preparing the first flash estimates not all information is available,[8] and even more than a year may elapse until the annual statistics become available. Statistical offices regularly review and revise macroeconomic time series. The HCSO publishes the national accounts for a given year in the second half of September in the following year, and includes them in the time series when releasing the Q3 GDP data.

The analysis of the revision provides a picture of the reliability of the preliminary data release. In our analysis, the reliability of the flash estimate is assessed on the basis of the following dimensions: (1) whether it describes the direction of the development of the economy well, i.e. the economy is characterised by growth or recession, (2) in which direction the growth rate is changing, i.e. growth is accelerating or decelerating, and (3) how big the average absolute revision that can be expected for when evaluating the flash estimate of the GDP. Our findings (Table 6-1) were compared to the results of a previous analysis prepared by Bauer et al. (2008) about the period between 2002 and 2007.

Table 6-1: Revision statistics of the flash estimate of GDP

	Preliminary data release
Information on the direction of economic development	96 (100)
Information on the change in growth	82 (75)
Average absolute revision (forecasting accuracy)	0.7 (0.6)

Note: The results of the analysis prepared by Bauer et al. (2008) about the period between 2002 and 2007 are given in brackets.
Source: HCSO, MNB calculations

We found the **historical characteristics of the revision** of the GDP flash estimate similar to the earlier analysis. Similarly to the earlier analysis, since 2002 the HCSO's flash estimate has provided an adequate evaluation of the direction of economic development in 96 per cent of the cases, and concerning the change in the growth rate in 82 per cent of the cases. Average absolute revision reached 0.7 percentage point, i.e. the uncertainty around the GDP flash estimate is of this degree merely because of the expected revision of the GDP.

Expenditure components of GDP have been affected by revisions to varying extent for more than a decade. Between 2003 and 2015 the most significant revision was observable in the case of the actual final consumption of government and the gross fixed capital formation (Table 6-2). The uncertainty of the expenditure components can be measured by the standard deviation of the revision; however, this measure is distorted by the fact that the level of their dynamics may vary. Typically, the time series of investments is the most volatile while developments in household consumption are balanced. The standard deviation of the revision corrected by the standard deviation of time series determines the noise-to-signal ratio that can be regarded as a standardised measure of the standard deviation. This indicator also underpins the uncertainty of the public consumption and gross fixed capital formation. Cunningham and Jeffery (2007) found on British data that the noise-to-signal ratio for expenditure components of GDP is the highest in the case of public and household consumption, as well as in the case of investments.

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[8] To prepare the preliminary flash estimate, the HCSO uses a narrower sample, expanding it to the complete observation sample for publishing the detailed data.

Table 6-2: Statistics about the revisions of final use of GDP (2003-2015)

	Average revisions	Standard deviation of revisions	Standard deviation of latest data	Noise-to-signal ratio
Household final consumption expenditure	0.1	0.8	3.6	0.2
Actual final consumption of government	2.9	2.5	3.7	0.7
Gross fixed capital formation	0.4	2.8	6.0	0.5
Exports	-0.2	2.2	8.3	0.3
Imports	0.2	2.1	8.4	0.3
GDP	**0.2**	**0.6**	**3.1**	**0.2**

Note: Noise-to-signal ratio is obtained by dividing the second column by the third column.

Source: HCSO, MNB calculation

Upon assessing the revisions, it is also an important question as to whether there is any systematic bias in the preliminary GDP data compared to the final, annual statistics. Bishop et al. (2013) emphasise that in the time of a downturn the estimate for Australian GDP growth was revised downwards, while during an upswing it was revised upwards. **Cyclical behaviour of the revision can be observed in the case of the time series of the Hungarian GDP as well (Chart 6-1), which is attributable to the endpoint uncertainty experienced in the times of trend reversals**: the flash estimate of GDP growth is especially inaccurate near the turning points of economic performance. It can be concluded that in periods of downswing, such as at the time of the slowdown in 2007 or in the crisis period that started in 2008, subsequent, downward revision was necessary. Developments contrary to the above are observed during recovery from recessions and negative cycles, e.g. at end-2009 and in early 2010 with the end of the crisis or at the time of the change in trends in 2013. In an international comparison, Öller and Hansson (2004) also found that (between 1980 and 1998) it was typical of European countries in general that the GDP revision correlated with the cycle.[9] Consequently, the phenomenon observed by us is not only a specific Hungarian problem.

Chart 6-1: Flash estimate of GDP and its revision
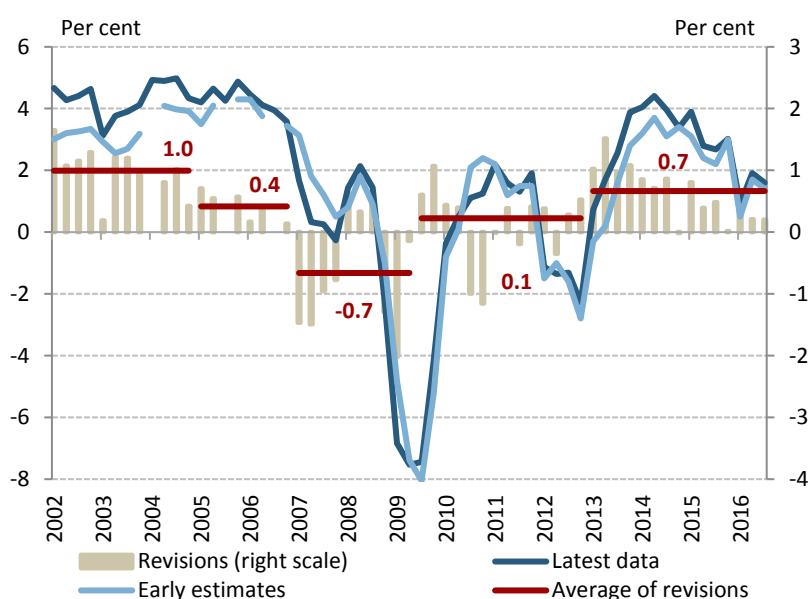
Source: HCSO

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[9] In contrast, Mogliani and Ferriere (2016) came to the conclusion regarding the flash estimate of the French GDP that taking account of business cycles does not help the forecasting, the underlying reason for which may be that it is difficult to precisely predict the dynamics of the revisions in the 2008–2009 downswing and recovery period.

For monetary policy, it is important to make decisions with the lowest possible uncertainty and relying upon the widest information base;[10] therefore, similarly to the Bank of England and the Banque de France,[11] we attempted to forecast the revision of the GDP time series. On the basis of a model estimated by us, we amended the GDP estimate published by the HCSO. At the same time, we note that one must be cautious when drawing conclusions from a past revision concerning a future one. Firstly, because a significant revision may be caused by major methodological changes as well, which will not be repeated in the future. Secondly, because the explanatory variables that performed well in predicting the revision in the past may lose their forecasting ability.

In our estimated model, we take into account that on average a considerable portion of the revision is received during the first 8 quarters following the data release. After that, data are typically revised only due to major methodological changes. The first estimates of the HCSO show a greater deviation from the actual data, but the estimates are approaching the data to a significant degree with the appearance of the latest updated data releases. Our estimation was carried out **in line with the practice of the Bank of England** (Cunningham et al. (2007)). The model is described by the following equations.

$$GDP_t = \mu + \sum_{i=1}^{q} \mathbf{A}_i GDP_{t-i} + \varepsilon_t$$

where *GDP$_t$* indicates an unobserved variable, the quarterly developments in the real GDP growth on an annual basis in period *t* which is. It is assumed that the real process of GDP growth follows an autoregressive process. The next equation presents the correlation between the observed GDP and the real, unobserved GDP.

$$GDP_t^{t+n} = GDP_t + c^n + v_t^{t+n}$$

where GDP_t^{t+n} is the statistical office's estimate for period *t*, *n* quarters later. In addition, we assume of the flash estimate that the bias of the measuring error (c^n) declines at a fixed rate as time goes by, while in the other, uncertainty-containing part of the error term (v_t^{t+n}) we took into account the bias resulting from the turning point that might occur in the next quarters. In line with the study by Bishop et al. (2013), we think that during turning points the uncertainty of the estimation of data is higher, and these periods are characterised by greater revision. Therefore, in the behaviour of the observation error term, for modelling the trend reversal we took into account that there is correlation between the revision and next year's accelerating or decelerating growth.

We found that the impact of the trend reversal can be observed in the Hungarian data as well. As according to forecasts, the dynamics of next year's GDP growth may significantly exceed that of this year, we expect an upward revision in the case of the 2016 growth figures later; this is most true for the data releases of the past quarters. It should be noted that in this case as well the findings confirmed that the revision carried out in the last two years has a material impact on the picture of economic developments: the effect of the trend reversal is significant in these periods. The estimate prepared on the basis of the historical characteristics of the revisions and their behaviour experienced during trend reversals implies that the 2016 growth in the GDP time series may follow a more dynamic path (Chart 6-2, Table 6-3). **According to our estimation the growth of GDP is expected to be revised by 0.3-0.5 percentage points in later publications.**

Table 6-3: Estimation of expected GDP growth revisions

	2015	2016
Expected revision (percentage point)	$0.0 - 0.1$	$0.3 - 0.5$

Source: MNB calculation

Chart 6-2: Revision uncertainty of annual change in GDP
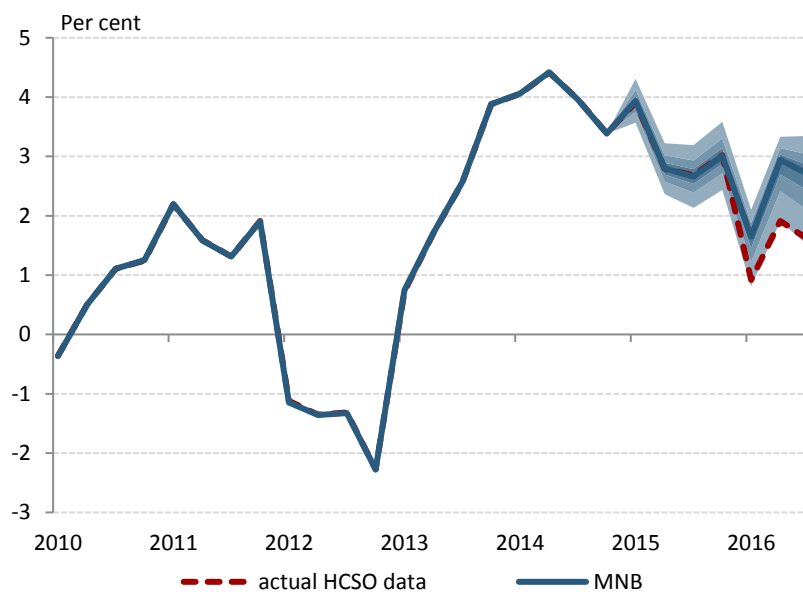
Note: Backcast and nowcast adjusted by anticipated revisions. The three bands indicate the 30, 60 and 90 per cent confidence intervals, respectively.

Source: HCSO, MNB calculation

In summary, we may conclude that in the short run, preliminary GDP figures show a significant systematic bias, which depends on the position of the economic cycle. The data are continuously revised by the HCSO over time, and the degree of the change may be significant. From the aspect of monetary policy, actual economic developments have to be taken into account for the assessment of the cyclical position and for formulating the proper monetary stance. Therefore, the preliminary estimate published by the HCSO may be amended on the basis of the model we have estimated. Based on past characteristics and the cyclical position, major upward revisions of this year's growth are expected in the coming quarters.

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6.2. Composition effects in the wage increase

The growth rate of wages is a key indicator of economic activity. The statistics reflect the cyclical and structural position of the labour market, which has a significant impact on consumption and influences price changes as well. This special topic examines **how the change in the composition of the employed had an effect on changes in wages between 2003 and 2015**. The short-term change in wages, which is attributable to economic cycles and is of key importance from a monetary policy aspect, may conceal deeply hidden developments that result in long-term wage increases. Therefore, understanding the composition effects helps monetary policy to obtain a more accurate picture of the change in wages.

From the beginning of the period under review, i.e. from 2003 until the 2008 crisis real gross average wage growth in the private sector was around 2.5 per cent on average (Chart 6-4). Significant adjustment took place during the crisis in the case of domestic companies, as the growth rate of real wages decelerated considerably before becoming stable at this historically low level. In 2012, acceleration was observed in the wage growth of the private sector, but it was attributable to the one-off impact of a relatively high minimum wage increase. **The growth rate of the real gross average wage has been accelerating since 2013, and in 2016 it exceeded 5 per cent, in which the tightening of the labour market played a key role, in addition to the historically low inflation.**

Chart 6-3: Labour market tightness and annual changes in gross real wages of the private sector
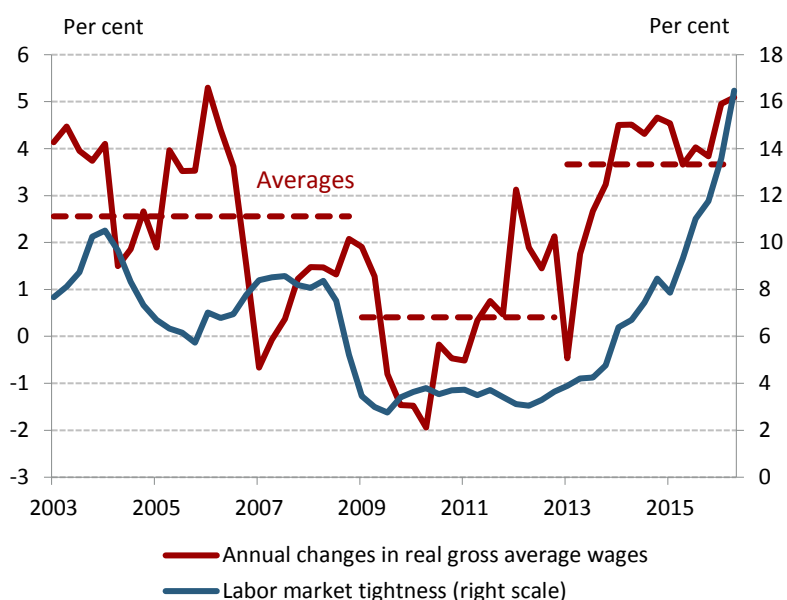
Source: HCSO, MNB calculation

In order to better understand the reasons for the changes in wage growth, **it is important to examine how the factors that determine individual wages changed in the period under review**. The characteristics of the participants in employment have an effect on the changes in wages. A simple example is, if employees' general educational level increases, average wages will presumably be higher, as employees with higher qualifications receive higher wages on average. This is called composition effect. In a wider sense, it means the impact of the changes that took place in the individual characteristics of the participants in employment on the average increase in wages.

For calculating the impact of the composition effect on wage growth, we used the Blinder–Oaxaca decomposition method. This method decomposes the difference between average earnings measured in various years into factors that can be explained with the change in the characteristics of the persons under review and into factors that cannot be explained with that. For the decomposition, we connected the employee-level database of the Wage Tariff to the Hungarian National Tax and Customs Office database in order to be able to control for corporate heterogeneities as well. The data are available at an annual frequency, and contain characteristics by age, gender, industry, profession, term of office, educational level as well as the hourly pay. The decomposition method used by us decomposes the change in wages into components explained and not explained by the factors involved in the analysis. The latter are mainly related to economic cycles and economic

policy measures. The explained part is the composition effect, which resulted from the increase in wages due to changes in individual characteristics.

Between 2003 and 2015, the real wage per one working hour of those working for companies with at least 5 people in the private sector increased by some 31 per cent, of which the composition effect accounts for 4 percentage points (Chart 6-5). The period under review can be divided into three phases on the basis of the average level of the growth rate of real wages. **Between 2003 and 2008, the effects originating from the composition contributed to the increase in real wages by 2.2 percentage points on average.** Although between 2008 and 2012 the changes in the structure of the workforce resulted in rising real wage dynamics (by 3.5 percentage points), the impact of the crisis unfolding in that period was reflected in the slower real wage growth as well. Accordingly, in this period, business cycle effects restrained the wage-increasing impact of composition effects, resulting in negative real wage growth. **Following the crisis, the changes in the structure of the workforce from 2012 to 2015 slightly decelerated the growth rate of real wages**, which was offset by business cycle and policy effects.

Chart 6-4: Contribution of composition effects to average annual real wage growth by time period
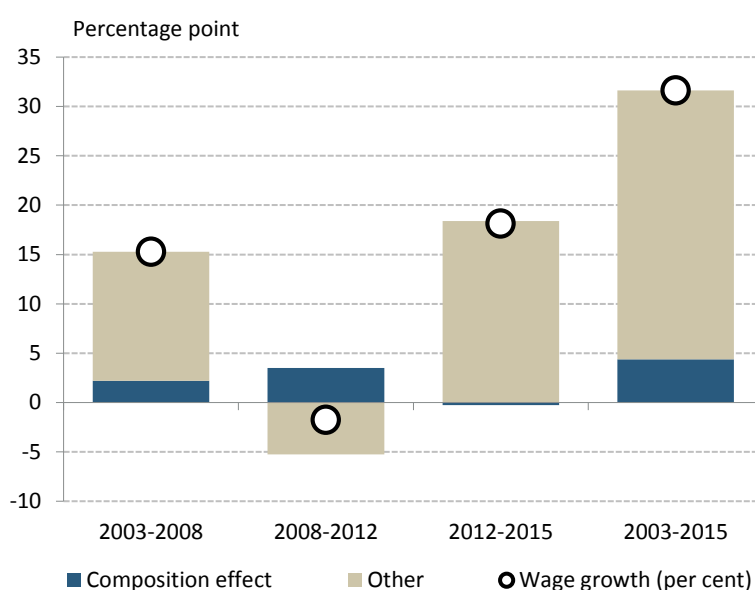
Source: Hungarian Wage Survey, MNB calculations

Within the composition effect, various factors affect the change in the growth rate of average wages through the above described channel. They typically include the age, educational level, the type of profession, the industry where the firm operates and the time spent at the given company. Of the characteristics listed above, **in terms of the change in real wages it was the educational level that contributed to the greatest degree to the factors that can be explained with the change in individual characteristics; in the period as a whole, it explains some 3.3 percentage points of the real wage increases** (Chart 6-6). Between 2012 and 2015, the wage growth stemming from the rise in educational level decelerated significantly. In this period, the labour market typically tightened, as a result of which many jobseekers with lower level of education or more disadvantaged ones according to other characteristics could return to employee status.

Chart 6-5: Composition effects on annual hourly wage growth
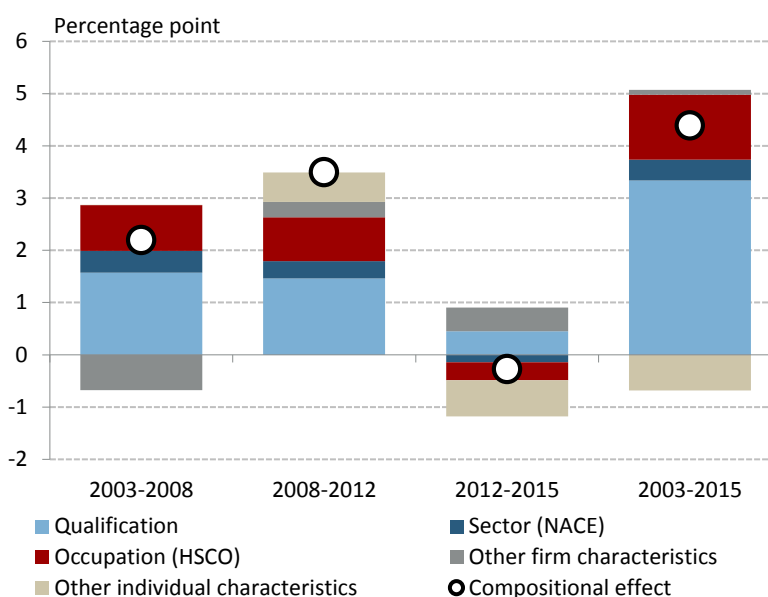
Note: Other individual characteristics: gender, age, county, tenure, collective agreement dummy, contract type. Other firm characteristics: proportion of foreign ownership, proportion of government ownership. HSCO = Hungarian Standard Classification of Occupations.
Sources: Hungarian Wage Survey, MNB calculations

The impact of the factors separated within the composition effect changes over time. In the individual periods, the composition by education shows that the average level is increasing over time; in the period under review, the ratio of graduates rose, while the ratio of those with lower educational level declined. This is also well illustrated by the fact that while in 2003 on the basis of the Wage Tariff every 8th employed person had a higher education degree, by 2015 every 5th employee had university or college degree. Using a simple example, if those with a degree earn HUF 150,000, and those with lower educational level earn HUF 100,000, in 2003 and 2015 it means average salaries amounting to HUF 106,250 and HUF 110,000, respectively. In the example, the increase in average earnings stems only from the fact that the ratio of those who have a higher education degree has changed.

In line with the higher educational level, the number of employees working in jobs that require higher qualifications also grew. **This restructuring among professions contributed to the rise in wages by 1.2 percentage points. Overall, on the basis of estimated results, the qualitative improvement in the structure of the workforce contributed to the wage increases by nearly 4.6 percentage points on average during the period as a whole.**

An examination from the companies' side reveals that the distribution across industries also plays a role in the developments in wage dynamics. **The change in the distribution of the employed across sectors of the economy increased the average real wage slightly, by 0.4 percentage points.**

The objective of our analysis was to learn what factors, which are more or less independent of developments in economic activity, influenced the changes in wage growth in the past years. Using the fact that individual characteristics (such as age, gender, educational profiles) have significant impact on wages, and thus on the changes in wages as well, we examined to what extent the change in these characteristics contributed to the growth rate of wages. The results estimated using the Blinder–Oaxaca decomposition method reveal that **the composition effects explain 4 percentage points of the 31 per cent real wage increase observed in the period under review (between 2003 and 2015).** Within the composition effect, the rise in the average educational level of the employed and the restructuring among professions contributed to growth by 3.3 and 1.2 percentage points, respectively. The change in the distribution of the employed across the different sectors increased the average real wage slightly, by 0.4 percentage points.

7. BREAKDOWN OF THE AVERAGE CONSUMER PRICE INDEX FOR 2016 AND 2017

Table 7-1: Decomposition of inflation to carry-over and incoming effect

	Effect on CPI in 2016			Effect on CPI in 2017		
	Carry-over effect	Incoming effect	Yearly index	Carry-over effect	Incoming effect	Yearly index
Administered prices	0.0	0.0	0.0	0.0	0.1	0.1
Market prices	-0.4	0.9	0.5	0.7	1.7	2.4
Indirect taxes and government measures	0.0	-0.1	-0.1	0.2	-0.3	-0.1
CPI	**-0.4**	**0.8**	**0.4**	**0.9**	**1.5**	**2.4**

Note: The tables show the decomposition of the yearly average change of the consumer price index. The yearly change is the sum of the so-called carry-over and incoming effects. The carry-over effect is the part of the yearly index, which can be explained by the preceding year's price changes, while the incoming effect reflects the changes in the recent year. We decomposed these indices to the sub-aggregates of the consumer price index and calculated the inflationary effects of changes in the indirect taxes, administered prices, and market prices (not administered prices excluding indirect tax effects). The subgroups may not sum to the aggregate figure due to rounding.

Table 7-2: Detailed decomposition of our inflation forecast to carry-over and incoming effects

	2016					2017				
	Average carry-over effect	Carry-over indirect tax effect	Average incoming effect	Incoming indirect tax effect	Yearly index	Average carry-over effect	Carry-over indirect tax effect	Average incoming effect	Incoming indirect tax effect	Yearly index
Food	-0.6	0.0	0.8	0.0	0.2	0.1	0.0	2.7	-1.4	1.4
non-processed	-0.7	0.0	4.2	-3.2	0.3	-2.0	0.0	4.6	-2.9	-0.3
processed	-0.5	0.0	0.7	0.0	0.2	1.2	0.0	2.1	-0.7	2.6
Traded goods	0.6	0.0	0.4	0.0	1.0	0.0	0.0	0.7	0.0	0.7
durables	0.7	0.0	-0.2	0.0	0.5	-0.6	0.0	0.6	0.0	0.0
non-durables	0.6	0.0	0.7	0.0	1.3	0.4	0.0	0.5	0.0	0.9
Market services	0.5	0.0	1.5	0.0	2.0	0.8	0.0	2.7	-0.4	3.1
Market energy	0.3	0.0	-0.9	0.0	-0.6	0.9	0.0	0.3	0.0	1.2
Alcohol and Tobacco	0.3	0.4	1.0	0.6	2.3	0.6	0.6	1.3	2.1	4.6
Fuel	-6.4	0.0	-1.3	0.6	-7.1	4.4	1.7	3.8	-1.4	8.5
Administered prices	0.0	0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.0	0.4
Inflation	**-0.4**	**0.0**	**0.9**	**-0.1**	**0.4**	**0.7**	**0.2**	**1.8**	**-0.3**	**2.4**
Core inflation	0.3	0.1	0.9	0.1	1.4	0.6	0.1	1.7	0.0	2.4

Note: The tables show the decomposition of the yearly average change of the consumer price index. The yearly change is the sum of the so-called carry-over and incoming effects. The carry-over effect is the part of the yearly index, which can be explained by the preceding year's price changes, while the incoming effect reflects the changes in the recent year. We decomposed these indices to the sub-aggregates of the consumer price index and calculated their inflationary effects. The subgroups may not sum to the aggregate figure due to rounding.

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Mátyás Hunyadi

He ruled from 1458 to 1490 as King of Hungary, and had been Czech king from 1469 and Prince of Austria from 1486. Hungarian tradition regards him as one of the greatest Hungarian kings whose memory is preserved in many folk tales and legends. He is also known as Matthias Corvinus, King Matthias the Just or officially as Matthias I, but commonly he is simply denoted as King Matthias.

His father, János Hunyadi, the regent of Hungary, was one of the most outstanding military leaders and strategists in the country's medieval history who triumphed at the Battle of Nándorfehérvár in 1456. Matthias' mother was Erzsébet Szilágyi, and he had an elder brother, László Hunyadi. The future king was brought up by his mother and nurse until the age of six, and was subsequently placed under the supervision of his tutors. János Hunyadi did not have a chivalrous education in mind for his son: first, it was a Polish humanist, Gergely Szánoki who introduced him to the realm of knowledge, then this task was assigned to János Vitéz. Mátyás was brought up and educated in a humanistic spirit to become a versatile and curious-minded person who had been taught canon and constitutional law, arts and Latin. In addition to Hungarian, he also spoke German and Czech.

After the death of László V, his uncle, Mihály Szilágyi, and the armed forces supporting Hunyadi exercised pressure to have Matthias crowned as King of Hungary on 24 January 1458. Even in the early years of his reign Matthias had troubles both with the magnates of the country and Emperor Frederick III of the Holy Roman Empire. As the king was still a minor, parliament appointed Mihály Szilágyi to act as regent on his behalf. However, Matthias did not tolerate any guardianship and pushed his uncle to the background who devised a plot against the king in response. Returning from battle with the Turks, the king had the rebels captured and he imprisoned his uncle in the castle of Világos.

Upon his ascension to the throne the annual income of the treasury hardly exceeded 110 to 120 thousand forints. During his rule spanning thirty-two years the king managed to multiple revenues from taxes. Considering the average of the taxes levied, less the revenues from the Czech and Austrian provinces, this yearly amount approximated 628,000 forints and may as well reached 900,000 gold forints in the most prosperous years. This was still much less than the annual revenue of the western powers of the age. In order to raise the low income of the treasury, reform-like and comprehensive financial actions were needed. Matthias recognised that a centralised, nationwide financial system was the only solution to the problem, and that the royal revenues had to be directed to a single person, the treasurer. The reforms of Matthias were adopted by parliament and his decrees were promulgated on 25 March 1467.

We can get a glimpse of the cultural life in the royal court, which represented the elite of European civilisation at the time, at the partly reconstructed Royal Palace in Visegrád. The most distinguished pieces of the cultural legacy of Matthias are the Corvinian books, richly illustrated volumes of the former royal library.

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