

ANALYSES OF THE CZECH REPUBLIC'S CURRENT  
ECONOMIC ALIGNMENT WITH THE EURO AREA

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## INTRODUCTION

**By joining the EU, the Czech Republic undertook to adopt the single European currency and acquired the status of a Member State with a derogation from introducing the euro.** Nevertheless, setting the date for joining the euro area is within the competence of the Member State concerned and depends on its degree of preparedness to join the monetary union. That preparedness should be assessed in a broader context than solely from the perspective of legal compatibility and compliance with the Maastricht convergence criteria.<sup>1</sup> For the Czech Republic to function successfully in the monetary union, it is crucial that the Czech economy is able to operate without an independent monetary policy and without a flexible exchange rate of the koruna as effective stabilising macroeconomic instruments. However, the economic and institutional situation in the euro area and convergence of the economic levels of its individual member states are also important.

**The current state of alignment of the Czech economy with the euro area economy with regard to potential euro adoption is assessed every year in the *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area (Alignment Analyses)*.**<sup>2</sup> The balance of the costs and benefits of introducing the euro will depend mainly on the timing of euro area entry. The undoubted benefits in the form of a reduction in transaction costs and the elimination of exchange rate risk which will arise from euro adoption due to the Czech economy's strong links with the euro area economy are broadly constant over time. However, the costs and potential risks change over time depending on several factors. These include the degree of economic convergence towards the euro area achieved in the economic and price level, which affects the long-term equilibrium of the Czech economy. The Czech Republic's degree of alignment with the euro area over the business cycle, which determines the appropriateness of the single monetary conditions for the Czech economy, is equally important. The economy's ability to absorb the impacts of potential asymmetric economic shocks using other adjustment mechanisms after the loss of its own monetary policy is also crucial. The Czech Republic would also simultaneously join the banking union on euro adoption at the latest. This would mean, among other things, that a large proportion of the current powers of the national supervisory and resolution authorities would be transferred to EU authorities and that supervision of systemically important banks would be performed by the ECB. Finally, the direct financial costs and obligations arising from joining the euro area and integrating into the stabilisation mechanisms – both those already in place and those being created on an ongoing basis as part of the deepening integration of the euro area – must also be considered.

**The Alignment Analyses assess both the preparedness of the Czech economy to join the euro area and the economic and institutional situation of the euro area itself. However, they do not examine the overall advantages and disadvantages of adopting the euro and do not formulate recommendations on this step.**<sup>3</sup> The political decision on the date of entry into the

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<sup>1</sup> To join the euro area, EU Member States are required to achieve, besides legal compatibility, a high degree of sustainable convergence, assessed using the Maastricht convergence criteria. These comprise a criterion on price stability, a criterion on the government financial position, a criterion on the convergence of interest rates and a criterion on participation in the exchange rate mechanism. The integration of selected markets (such as the financial, goods and labour markets), the situation and evolution of the current account balance and the evolution of unit labour costs and other price indices are also taken into account. Other requirements may ensue from the interpretation of the requirement of "the achievement of a high degree of sustainable convergence". An assessment of the fulfilment of these four Maastricht convergence criteria by the Czech Republic is contained in a related *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area (Assessment)* drawn up by the Ministry of Finance in partnership with the CNB.

<sup>2</sup> The Alignment Analyses are a CNB analytical document. A recommendation to the Czech government on the timing of euro adoption is given in the related Assessment issued jointly by the Ministry of Finance and the CNB.

<sup>3</sup> The Alignment Analyses do not examine in detail the potential implications of joining the banking union either. Banking union entry is dealt with in the February 2015 *Impact Study of Participation or Non-participation of the Czech Republic in the Banking Union* and its May 2016 update published by the Ministry of Finance in partnership with the Ministry of Foreign Affairs, the Office of the Government and the CNB. That study will also be regularly updated in the future.

euro area falls to the government. The Analyses have been drawn up in line with the Czech Republic's Euro-area Accession Strategy. They annually monitor the most important indicators of the Czech economy and assess their implications for entering the monetary union. The analytical part of the document is divided into four sections. The first two deal with the situation in the euro area and the following two assess the economic preparedness of the Czech Republic to adopt the euro.

## TECHNICAL INTRODUCTION

**Several major modernisation changes have been made to Alignment Analyses this year.** The changes are intended to make the document clearer and more readable for both experts and the general public.

- 1) The first change is that the sections of the Alignment Analyses have been shortened and **condensed** and merged into four core sections (see the *Introduction*).
- 2) The second change is that the messages of the analyses have been illustrated graphically with **arrows** of different colours and directions. The colours express the message of the indicator in terms of the risks associated with euro adoption in the areas analysed, while the arrows illustrate the shift in the results compared to the previous round of the analysis (see below for details). These graphical symbols should give the reader a quick overview of the analysis results.
- 3) The third change is that an annex of tables and charts – a **Chartbook** – has been compiled as a separate part of the Alignment Analyses. It pools all the tables and charts illustrating the results of the analyses contained in the four core sections of the document. It therefore has the same structure as those sections.
- 4) The final change is that a **separate Methodological Annex** to the Alignment Analyses has been created. The annex contains the theoretical foundations, motivations and technical descriptions of each of the analyses and lists the literature used. It is located in a separate e-document updated only as needed (i.e. not necessarily every year) on the CNB website at [https://www.cnb.cz/en/monetary\\_policy/strategic\\_documents/emu\\_accession.html](https://www.cnb.cz/en/monetary_policy/strategic_documents/emu_accession.html).

### Selection of countries under comparison

In the sections dealing with the Czech Republic's economic preparedness to adopt the euro, the Alignment Analyses assess the evolution of individual indicators over time and in comparison with selected countries.

The countries under comparison are either euro area members showing similar features in terms of economic level and trade integration as the Czech Republic, or are countries expected to adopt the euro in the future. The above selection is not related to any assessment of how successfully these economies have performed in the euro area. Germany, the largest trading partner of the Czech Republic, also provides a useful benchmark as a core country of the euro area, although the large weight of Germany in the calculation of those indicators must be taken into account when making comparisons with aggregate or average economic indicators.

The euro area as a whole is abbreviated as EA in the tables and charts, i.e. unless indicated otherwise in a note, this refers to the EA19:

AT Austria	EL Greece	IT Italy	NL Netherlands
BE Belgium	ES Spain	LT Lithuania	PT Portugal
CY Cyprus	FI Finland	LU Luxembourg	SI Slovenia
DE Germany	FR France	LV Latvia	SK Slovakia
EE Estonia	IE Ireland	MT Malta	

The selected non-EA countries under comparison are:




HU Hungary
PL Poland






### Meaning of graphical symbols

To make the analysis results clearer, they are summarised graphically at the beginning of each section using arrows and colours.

The colour underlying the arrow gives information on the message of the indicator:

-  relatively low level of risk associated with potential euro adoption in area analysed
-  economic risks associated with potential euro adoption in area analysed
-  neutral message

The direction of the arrow gives information on the change in the indicator since the previous (last year's) analysis:

-  improved
-  deteriorated
-  neither improved nor deteriorated

The assessment of the message of the indicator applies only to the analysis results for that specific economic area. Likewise, the direction of the arrow indicates only whether the situation in that area has improved, has stayed at approximately the same level or has deteriorated over the last year.

However, the message should in no way be interpreted as a CNB recommendation for the Czech Republic to adopt the euro, much less as the Czech Republic's final euro adoption decision. Similarly, a summary indicator cannot be compiled by adding up the individual coloured indicators or arrows.

## A SUMMARY

### Overall message

**Future adoption of the single European currency should further increase the benefits accruing to the Czech Republic from its intense involvement in international economic relations.** Euro adoption will lead to the elimination of exchange rate risk in relation to the euro area and thus to a reduction in the costs of trade and investment. Besides these benefits, however, euro adoption simultaneously entails risks arising from the loss of independent monetary policy and exchange rate flexibility and costs arising from new institutional commitments, including the obligation to join the banking union and the ESM. The factors that will influence whether adopting the euro will be advantageous thus include not only developments in the Czech economy, but also developments in the euro area and changes in its institutional set-up.

**The key factors for the Czech economy will be its alignment with the euro area and its ability to absorb potential asymmetric shocks after losing its own monetary policy.** The analyses presented in this document assess the similarity of the Czech Republic's long-term economic trends, medium-term development of economic activity and economic structure to the euro area, including the similarity of monetary policy transmission. The ability of the economy to adjust by means of autonomous fiscal policy, flexible labour and product markets and the banking sector is also examined. **By contrast, this document does not analyse in detail the impacts of the Czech Republic's entry into the banking union, especially the transfer of powers in the area of prudential supervision and resolution of credit institutions to the supranational level and the related economic and financial impacts, the costs linked with ESM membership and other – for example legal and political – aspects of joining the euro area.** The document thus does not address all the consequences associated with potential adoption of the single currency, but focuses solely on selected economic aspects, primarily those related to the loss of independent monetary policy.

**The analysed characteristics of the Czech economy as regards its economic preparedness to adopt the euro can be divided into three groups:**

**The first group consists of economic indicators suggesting a relatively low level of risk associated with potential euro adoption in the area analysed.** They have long included the high degree of openness of the Czech economy and its close trade and ownership links with the euro area. These factors provide for the existence of benefits of euro adoption, such as the aforementioned reduction in transaction costs and the elimination of exchange rate risk. The strong trade and ownership integration also fosters a high degree of alignment between the Czech and euro area business cycles, although that has decreased somewhat in recent years. The Czech koruna is aligned with the euro with respect to the US dollar, and inflation inertia is not a barrier to joining the euro area either. Some indicators are also suggesting preparedness for adopting the euro as regards the adjustment mechanisms of the Czech economy. They include the current favourable condition of Czech public finances, which – unlike in the past – is creating potential room for fiscal policy to fulfil its macroeconomic stabilisation role in the future. Increasing labour market flexibility (mainly a growing rate of economic activity and a falling long-term unemployment rate) and a stable banking sector resilient to economic shocks are also positive factors.

**The second group consists of indicators with a neutral message.** These include the small differences in the level of interest rates from the longer-term perspective and the overall similarity of monetary policy transmission in the Czech Republic and the euro area. The Czech Republic differs from the monetary union average in some financial indicators, such as depth of financial intermediation, private sector debt and the balance sheet structure of non-financial corporations and households, but this cannot be considered a disadvantage or a fundamental barrier to euro adoption. The spontaneous euroisation of the Czech economy has increased slightly, but remains relatively small in scale and does not tilt the balance of arguments in the debate about joining the euro area in one direction or the other. Some labour and product

market indicators, such as geographical mobility and labour market efficiency, and the assessment of the competitiveness of the Czech economy are also neutral.

**The third group consists of indicators suggesting economic risks associated with potential euro adoption in the area analysed.** They include a renewed but still unfinished process of real economic convergence of the Czech Republic towards the euro area and persisting lower structural similarity of economies. Czech public finance sustainability has also yet to be resolved. Labour market flexibility is being reduced by a relatively deep unemployment trap. Misalignment of the business cycles of the Czech Republic and the euro area is also a barrier to euro adoption. Growth in residential property prices and property purchase loans remains a risk to the Czech banking sector. This risk can be addressed more effectively if domestic monetary policy, macroprudential policy and banking supervision are independent.

### Situation in the euro area

**Despite having recorded a slowdown in GDP growth in the first half of 2018, the euro area is continuing to experience an economic expansion across its member states, but numerous problems persist.** The economic growth is being reflected in falling unemployment, among other things. However, the level of economic development in euro area countries remains uneven. Public sector accounts have seen a positive shift in recent years, but public debts remain high and governments have little room to respond fiscally to negative economic shocks. Government bond yields increased slightly at the start of this year in response to global factors and a change in expectations regarding the ECB's monetary policy stance. However, the ECB's unconventional monetary policy led to a further easing of financial conditions over the last year. Headline inflation in the euro area countries increased towards the ECB's inflation target in the middle of the year due to higher energy prices, but core inflation remains close to 1%.

**The work of the EU and particularly of the euro area on deepening integration, especially in the economic and fiscal policy areas, saw no substantial progress in 2018.** The negotiations on some of the pillars of the banking union have yet to be finalised and the reduction of risks in banking sectors also remains incomplete. The reform aimed at safeguarding the stability of the euro area in the event of a future economic or financial crisis has not been finished either. The outcome of the negotiations with the UK on Brexit and the future configuration of mutual – particularly economic – relations is unclear at present. The risks arising from some countries' sovereign exposures and high public debts also unresolved. Although they cannot be accurately estimated at the moment, the impacts of these issues on the Czech Republic and the other EU countries will have to be weighed in the future decision about the timing of monetary union entry. The new institutions and regulations created in previous years in response to the economic and financial crisis have fundamentally changed the form of the euro area and hence also the content of the euro adoption obligation assumed by the Czech Republic on acceding to the EU. Their functioning must therefore be properly assessed. Besides direct costs of participating in the euro area's existing rescue mechanisms, account should be taken of the limits imposed on national powers in the supervision of credit institutions. The implications of the future set-up of, and institutional changes to, the euro area should not be overlooked either. The fiscal costs associated with potential fiscal problems in euro area member states and their financial sectors must also be assessed. Finally, attention should be paid to the euro area member states' new demand that countries wishing to enter the ERM II must simultaneously join the banking union. In light of the above, it should be noted that not all the potential obligations associated with euro adoption for the Czech Republic in the future are known at present.

### Similarity of the Czech economy with the euro area

**An important indicator of the Czech economy's similarity with the euro area is the degree of real convergence, which remains unsatisfactory.** Although the convergence process has renewed in all key indicators in recent years, the distance of the Czech Republic from the euro area average remains significant in most indicators. The unfinished process of long-term convergence towards the advanced euro area countries thus remains a barrier to early accession to the monetary

union, as domestic inflation could rise above the CNB's current 2% target due to equilibrium appreciation of the real exchange rate and convergence of the wage level if the euro was adopted.

**The Czech Republic has been showing high correlations of economic activity with the euro area over the last ten years.** This is true both in absolute terms and relative to the other countries under comparison. This alignment increases the likelihood that the ECB's single monetary policy will be appropriately configured from the perspective of the Czech economy. However, this partly a one-off effect of the strong common external shock in the form of the global financial and economic crisis. Cyclical alignment with the euro area has thus been declining again recently. A continuation of this trend might lead to a less favourable assessment of cyclical alignment with the euro area in the future.

**There are still differences in the structure of the Czech economy compared with that of the euro area, consisting mainly in an above-average share of industry in GDP.** The lower structural similarity poses a potential risk as regards euro adoption, as it could lead to asymmetric shocks, to which the single monetary policy would not be able to respond in full.

**By contrast, the persisting strong trade and ownership links with the euro area have long been one of the strongest arguments for the Czech Republic joining the euro area.** Strong trade and ownership integration increases the probability of economic alignment with the monetary union economy and reduces the risk of asymmetric shocks occurring in the event of euro adoption. It thus reduces the potential costs associated with adopting the single monetary policy. At the same time, it creates the potential for large benefits stemming from the elimination of exchange rate risk and from transaction cost savings upon euro adoption. The Czech Republic's high share of foreign trade with the euro area and the membership of domestic firms in multinational groups also represent a significant channel for the transmission of economic stimuli from the euro area to the Czech economy.

**The alignment of the positions of the Czech and euro area economies in the financial cycle has been decreasing in the longer run.** While the ECB's persisting accommodative monetary policy supported an upward shift of most euro area countries in the financial cycle, the Czech economy stopped moving further into the growth phase owing to a tightening of national policies. The positions of the euro area and the Czech Republic as measured by the financial cycle indicator have converged due to these circumstances, but the correlation of their cycles is showing a downward trend and the differences in the contributions of the individual factors causing the shifts in the financial cycle have moreover increased further. The decrease in the alignment of the Czech Republic's financial cycle with that of the euro area increases the potential costs arising from the loss of national monetary policy and the limits imposed on national powers in the supervision of credit institutions as a result of adopting the euro.

**The growing short-term interest rate differential between the Czech Republic and the euro area indicates that the ECB's monetary policy would not fully meet the needs of the domestic economy in the current phase of the cycle.** In the long run, however, koruna interest rates are close to euro ones, so the risk of there being a large shock associated with interest rate convergence upon euro adoption remains relatively small.

**The Czech currency reacts to changes in the environment outside the euro area similarly to the euro, indicating a high degree of alignment.** The rolling correlations of all the currencies under review in the region with the euro-dollar exchange rate have been relatively high in recent years, with the Czech koruna attaining the highest levels. The volatility of the koruna-euro exchange rate naturally increased following the exit from the exchange rate commitment, but is now lower than before the commitment was introduced.

**The depth of financial intermediation and the level of private sector debt in the Czech Republic are well below the euro area average.** However, the latter does not represent a level which the Czech financial sector should converge, as several euro area countries have overleveraged private sectors. The banking sector remains the dominant component of the financial system in the Czech Republic. The share of the non-banking component has also been increasing in recent years, but remains well below the usual level in advanced euro area countries.

**While the similarity of the balance sheet structure of corporations in the Czech Republic with that of firms in the euro area has been gradually increasing, differences in the balance sheets of households persist.** Czech households maintain a conservative approach to investing in financial assets. These balance sheet differences may cause monetary policy to have an asymmetric effect.

**The Czech economy is characterised by many similarities but also by differences compared to the euro area as regards the functioning of the interest rate channel of monetary policy transmission.** The transmission of changes in financial market interest rates to client rates in the Czech Republic is relatively fast. Client rates on loans to non-financial corporations are more strongly affected by changes in interbank rates than are rates on loans to households, due, among other factors, to contractual links between rates in the former loan category and interbank rates. Transmission through the individual channels works with different intensities in the Czech Republic and the euro area. The spread between Czech client rates on loans to non-financial corporations and the overnight interbank rate is lower than that in the euro area and its structure is also slightly different, mainly reflecting the greater heterogeneity of euro area countries' risk premia.

**The process of spontaneous euroisation of the Czech economy is characterised by gradually rising use of the euro by non-financial corporations.** This is due mainly to high trade integration with the euro area and to natural hedging against exchange rate risk. This process is likely to continue, strengthening the arguments in favour of adopting the euro. In the case of households, by contrast, euroisation has long been very low.

#### Adjustment mechanisms of the Czech economy

**The current favourable condition of Czech public finances is creating room for the stabilising function of fiscal policy to operate.** In the past, however, it has tended to have a procyclical effect. Moreover, fiscal room will be limited in the future by recently approved discretionary measures, which will lead to growth in mandatory expenditures and will be reflected in a deterioration in public budget sustainability.

**Labour market indicators have been improving in recent years largely because of the favourable phase of the business cycle.** However, they are showing signs of a gradual rise in labour market flexibility in most of the areas under review. Labour market flexibility is being favourably affected by a rising share of foreign nationals in the population and a higher share of part-time jobs. The Czech Republic is one of the better-scoring countries under review as regards overall competitiveness. A negative aspect is the persisting unemployment trap and low incomes caused by the configuration of the tax and social benefit system.

**The Czech banking sector maintains high profitability, good liquidity and solid capitalisation and hence a high level of resilience to potential adverse shocks.** It would therefore be able to perform its function as an adjustment and stabilisation mechanism in the event of euro adoption. A spiral between property prices and property purchase loans remains the main source of risk to the banking sector. Risks may also be associated with euro adoption and related entry into the banking union, which will entail the transfer of some powers to the EU level without any transfer of responsibility for the overall condition of the national financial sector.

## **B ANALYTICAL SECTION**

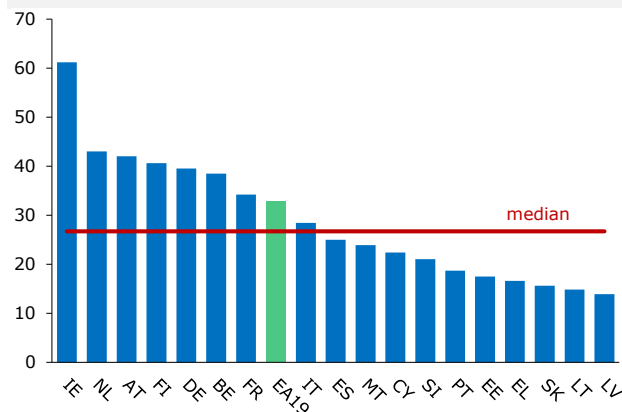
## 1 ECONOMIC ALIGNMENT OF EURO AREA COUNTRIES

-  Convergence of euro area countries' wealth levels<sup>4</sup>
-  Public finance sustainability
-  Business cycle alignment
-  Monetary policy transmission (interest rate channel)
-  Financial cycle alignment as captured by credit growth
-  Inflation alignment

Despite having recorded a slowdown in GDP growth in the first half of 2018, the euro area is continuing to experience an economic expansion across its member states. The growth is being reflected in declining unemployment, among other things. Public sector accounts have seen a positive shift in recent years, but public debts remain high and governments have little room to respond to negative economic shocks by a fiscal stimulus. Government bond yields increased slightly at the start of this year in response to global factors and a change in expectations regarding the ECB's monetary policy stance. However, the ECB's unconventional monetary policy has led to a further easing of financial conditions over the last year. Headline inflation in the euro area countries increased towards the ECB's inflation target in the middle of the year due to higher energy prices, but core inflation remains close to 1%.

**The level of economic development in the euro area countries remains uneven and a convergence process is under way in only some of the new member states.** GDP per capita in most of the founding members of the euro area (EA-11) recorded similar levels in 2017, mostly exceeding EUR 30,000 (see Chart 1).

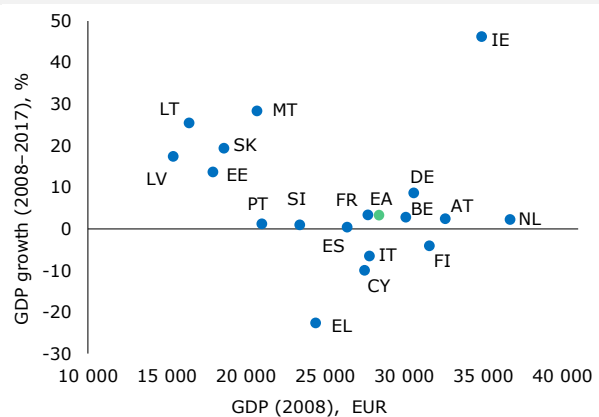
**Chart 1: GDP per capita in euro area countries**  
(2017, GDP at current prices in EUR thousands)



Note: Luxembourg is not included in either of the charts due to the many specificities of its economy, which result in exceptionally high GDP per capita.

Source: Eurostat.

**Chart 2: Beta-convergence of real GDP in euro area countries**



Note: The chart depicts the relation between GDP growth per capita in each country and its initial level (beta-convergence). X-axis – the GDP per capita of each country in 2008 in PPS. Y-axis – real GDP growth in 2008–2017.

Source: Eurostat.

<sup>4</sup> The explanation of the colour and direction of arrows is given in the Technical introduction at the beginning of this document.

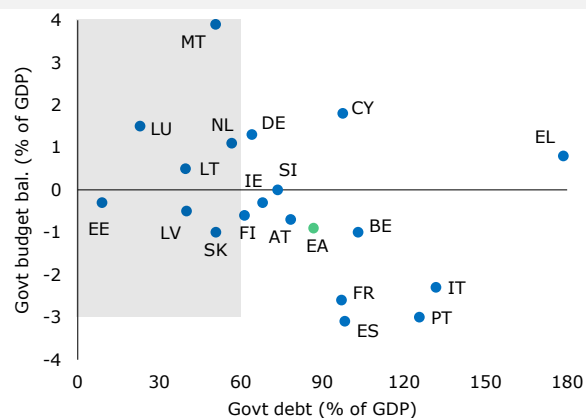
By contrast, the same indicator for countries that have recently adopted the euro (Estonia, Lithuania, Latvia and Slovakia) was at around one-half the level recorded by the above group of countries. Some of the new member states (such as Malta, Lithuania, Slovakia, Latvia and Estonia) are growing at a faster rate on average than the wealthier countries (see Chart 2) and are thus catching up in terms of economic level, albeit slowly. However, no convergence is occurring in the countries hit by the financial and debt crises (Greece, Cyprus and Italy), which recorded a decline in output and thus diverged from the wealthier countries.

**The slow convergence or even divergence of the southern euro area countries is partly related to their high public sector indebtedness.** The high level of debt sparked financial market concerns about public finance sustainability in these countries and caused the subsequent debt crisis in the euro area after 2010. The governments of these countries were then forced to pursue restrictive fiscal policy despite a cyclical contraction or stagnation of their economies. Despite some positive shift in the public finance area, the situation in the euro area is still far from ideal. Between 2011 and 2017, general government finances shifted towards balanced budgets or surpluses, but only Germany, Ireland, Austria, Latvia and Malta recorded decreases in their debt-to-GDP ratios.

**The fiscal indiscipline of individual EMU members is a long-standing problem in the euro area, restricting governments' ability to respond to negative shocks.** Although there are mechanisms designed to ensure public finance sustainability in the euro area (the Maastricht convergence criterion on the government deficit and debt before entry into the monetary union and the Stability and Growth Pact applicable to all EU Member States), they were often disregarded before the crisis. The debt of some countries surged during the crisis due to bail-outs of their banking sectors. In the last few years, the situation has improved or at least stabilised, especially in the case of the deficit criterion, due to fiscal consolidation and renewed economic growth in previous years. Nonetheless, only seven countries were compliant with both the government deficit and debt thresholds in 2017 (see Chart 3).

**Besides fiscal consolidation, economic growth has fostered a positive development in the euro area public finance in the euro area in recent years.** The growth started in 2013, gradually spread to all countries and accelerated strongly in the second half of last year. GDP growth slowed down at the start of this year, but remains solid compared with the post-crisis years. In addition to stronger expansion, the business cycles of the euro area countries have become more aligned, as indicated by a decrease in the standard deviation of real GDP growth (see Chart 4). This trend is positive as regards the internal economic cohesion of the euro area.

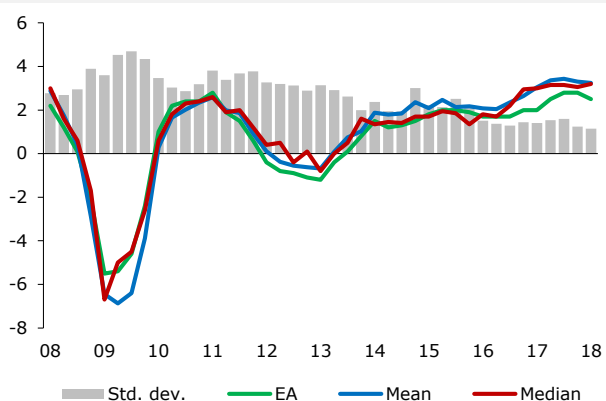
**Chart 3: Fiscal positions of euro area countries**



Note: 2017 data. Countries compliant with the Stability and Growth Pact lie in the grey area.

Source: Eurostat.

**Chart 4: Real GDP growth in euro area countries (y-o-y, %)**



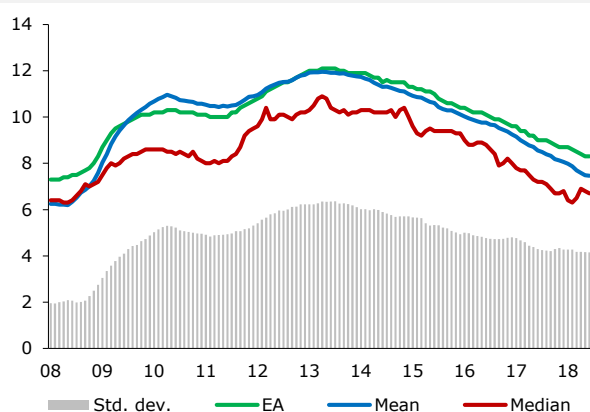
Note: The mean series depicts the unweighted arithmetic mean of GDP growth in the given quarter across euro area countries. Data for Ireland were not included due to exceptionally high growth in 2015. The source series are seasonally adjusted.

Source: Eurostat, CNB calculations.



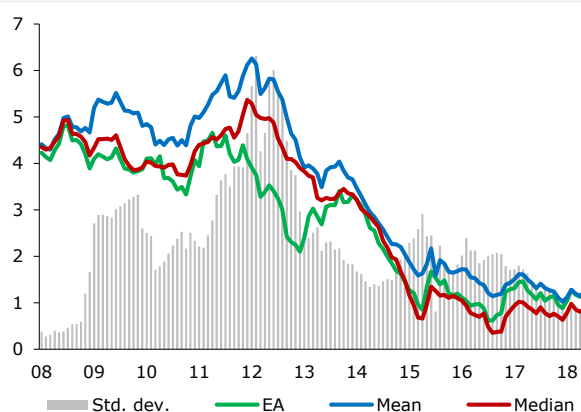
**The economic expansion is also reflected in the labour market, where the unemployment rate is decreasing and the cross-country dispersion of its levels is also going down** (see Chart 5). After the onset of the financial crisis, unemployment rates increased in all countries and rates in the hardest hit countries (Estonia, Greece, Italy, Lithuania, Slovakia and Spain) diverged upwards from the rest of the euro area. The labour market recorded a turnaround approximately in 2013. Last year, unemployment in the euro area dropped to the 2009 level (i.e. below 9.5%) and in June 2018 it reached 8.3%. The differences between countries meanwhile narrowed further. Nevertheless, high unemployment, especially among population aged 16–24, remains a key macroeconomic and social issue in some countries (in particular Greece, Spain and Italy).

**Chart 5: Unemployment in euro area countries (%)**



Note: The mean series depicts the unweighted arithmetic mean of unemployment in the given month across euro area countries. The source series are seasonally adjusted.  
Source: Eurostat, CNB calculations.

**Chart 6: Long-term government bond yields in euro area countries (%)**



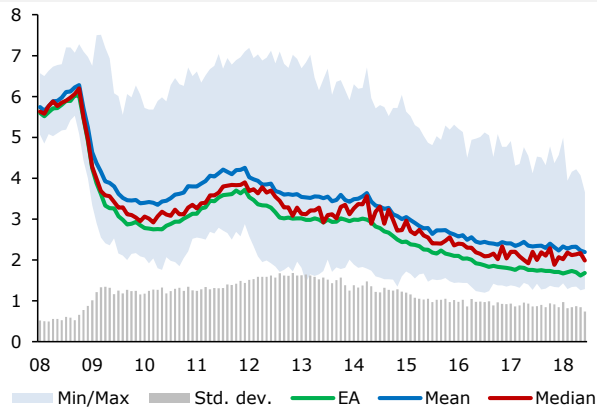
Note: Bond yields for the convergence criteria. The bond maturity is about ten years. Estonia is not included because the time series is not available. The EA series is a weighted average of ten-year euro area government bonds.  
Source: ECB (including the EA series), CNB calculations.

**These positive developments in the euro area economy have been supported by the ECB's very accommodative monetary policy, which has also contributed significantly to a decline in long-term government bonds yields since 2012** (see Chart 6). It has thus reversed the trend that started during the financial crisis, when government bond yields in some euro area countries started to rise and increased markedly further during the sovereign debt crisis. Cross-country differences in yields narrowed significantly at the end of 2012 when the ECB announced its Outright Monetary Transactions (OMT) programme, which led to a stabilisation of government bond markets. Bond yields declined sharply further at the end of 2013 on the back of expectations of, and the subsequent announcement of, the Public Sector Purchase Programme (PSPP) by the ECB. Cross-country differences in yields are thus at their lowest levels since the financial crisis, but the degree of interest rate convergence seen between the establishment of the euro area and the onset of the crisis has not resumed. The growth in bond yields observed at the start of this year was due to several factors – a global drop in prices of safe assets related to tighter Fed monetary policy, and the recovery in the euro area and the subsequent change in expectations regarding the normalisation of ECB monetary policy. Fairly sharp growth in the Italian government bond yield has been observed since May due to financial market concerns about the new government's fiscal policy. Markets can therefore play a stabilising role, which can be positive in terms of fiscal discipline.

**The ECB's unconventional policy measures have also helped improve the functioning of the interest rate channel of monetary policy transmission.** The channel was disrupted during the financial crisis and the subsequent sovereign debt crisis by a rise in government bond yields in the southern euro area countries and the fragmentation of the euro area banking sector. Client interest rates on loans to non-financial corporations thus increased in some countries after 2010, although the ECB's base rates remained unchanged, and the difference between the lowest and highest client loan rates in the euro area also rose significantly (see Chart 7). This trend reversed at the end of 2012, when the mean and median costs of financing fell and their misalignment declined. The largest drop

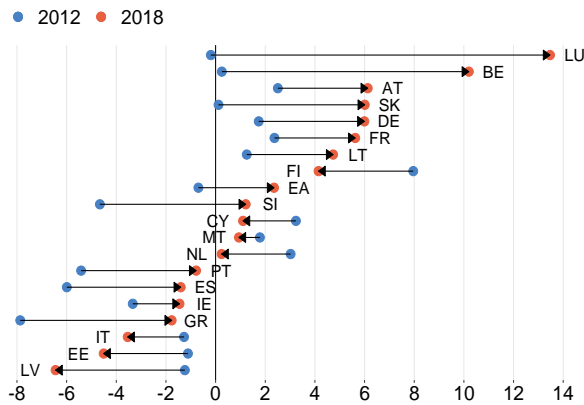
in financing costs was recorded in countries hit by the debt crisis.<sup>5</sup> The decline in client rates halted last year. Unlike long-term bond yields, however, rates did not increase in the first half of the year.

**Chart 7: Funding costs of non-financial corporations (%)**



Note: The composite indicator comprises a weighted average of short-term and long-term loans to non-financial corporations.  
Source: ECB (MIR database), CNB calculations.

**Chart 8: Growth in bank loans to domestic non-financial corporations (y-o-y, %)**

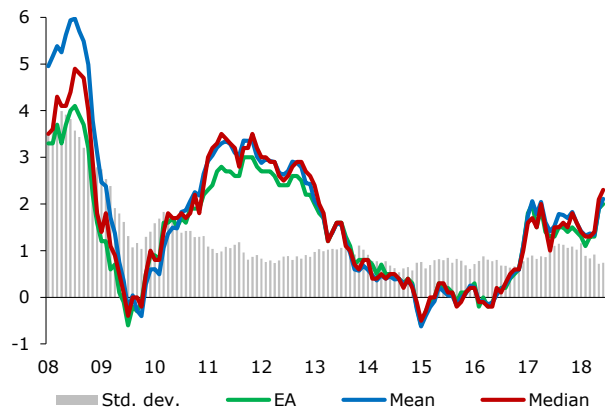


Note: Annual growth in loans (total outstanding amounts) provided by monetary financial institutions; average growth rates in H1 of the given year.  
Source: ECB (BSI database).

**Although bank lending rates have decreased across the euro area countries in recent years, the trends in the volume of bank loans remain mixed.** Chart 8 shows the annual growth rates of bank loans to non-financial corporations, which are a major source of private investment financing. Although monetary policy has fostered a decrease in loan financing costs in this sector, loan volumes are still declining in several countries, including those in the southern part of the euro area. This is due to a combination of factors, most notably private sector deleveraging, banking sector problems in some countries and the lack of investment opportunities in an environment of persisting uncertainty and relatively low economic growth.

**Despite the robust expansion and further easing of financial conditions, the euro area economy is not currently generating any major inflation pressures.** In June 2018, headline inflation in the euro area reached 2% for the first time in a long time, thus hitting the ECB's de facto target (see Chart 9). However, the rise mainly reflected a larger contribution of energy prices. As energy prices affect inflation in all countries, the misalignment between inflation rates has declined further in recent months (inflation was at or above the ECB's inflation target in 13 euro area countries in June). However, core inflation remains close to 1% in the euro area and its misalignment across countries has not fallen. Compared to headline inflation, it more strongly reflects domestic inflation pressures, which are only apparent in a few countries with well above-average wage growth (the Baltic countries and Slovakia in particular).

**Chart 9: Inflation in euro area countries (y-o-y, %)**



Note: The mean series depicts the unweighted arithmetic mean of inflation in the given year across euro area countries.  
Source: Eurostat, CNB calculations.

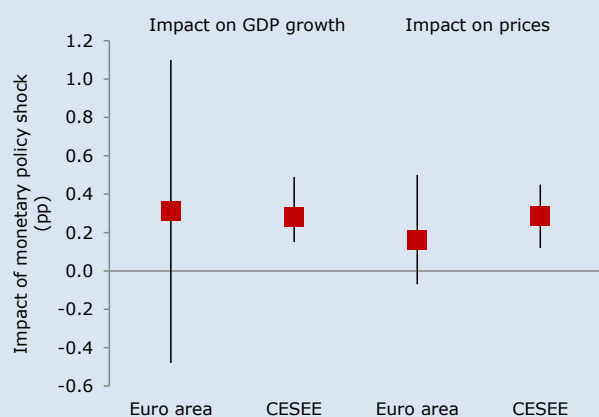
<sup>5</sup> It should be noted that the series are calculated on the basis of actual loans provided. It is thus not possible to capture the credit constraints faced by small and medium-sized enterprises in the southern euro area countries, which have eased significantly in recent years.

### Box 1: Asymmetric impacts of ECB monetary policy shocks on EU countries

**Convergence of the countries in a monetary union fosters identical responses to monetary policy shocks and hence contributes to the success of the single monetary policy.** During the sovereign debt crisis, however, the euro area became fragmented and its member states started to respond differently to monetary policy shocks. This posed a major monetary policy challenge. The ECB's unconventional measures affected GDP growth primarily in the Baltic countries and the core euro area member states, whereas an effect on prices was recorded mainly by Greece and Spain.<sup>6</sup> The reasons for the mixed impacts across the euro area included different economic levels and banking system vulnerability and were amplified by cross-country spillover effects.

**The question is whether the entry of new countries into the euro area will increase the heterogeneity in member states' responses to monetary policy shocks.** This box compares the impacts of ECB monetary policy<sup>7</sup> on individual euro area countries with those on selected EU countries with their own currencies (the Czech Republic, Poland, Hungary, Bulgaria and Romania, referred to as the CESEE countries)<sup>8</sup> and to explain the significance of the factors behind the differences. The existence of various monetary policy and exchange rate regimes makes it impossible to make assumptions about the CESEE countries' future behaviour in the monetary union. However, very different responses of these countries would indicate a dominant influence of structural misalignment and a potential threat to the functioning of the single monetary policy.

**Chart B1: Comparison of the shock impacts on GDP and prices by regions (pp)**



Note: The red dot denotes the average for the given region and the line represents the spread between the minimum and the maximum.

Source: Benecká, Fajejeva and Feldkircher (2018), CNB calculations.

**A simple comparison by regions reveals that the CESEE countries respond more strongly than the euro area to monetary policy shocks on average** (see Chart B1). The average impacts on real GDP are almost comparable for the two regions, but the spread between the minimum and maximum response is substantial in the euro area, reflecting its fragmentation. The standard deviation for the CESEE countries is equal to or lower than that for the euro area. This is favourable for future enlargement of the monetary union.

**The bigger price level response in CESEE countries is due mainly to Bulgaria, Romania and Hungary** (see Chart B2). The strongest responses in the euro area were those of Ireland, Greece and the Baltic countries. By contrast, prices in Italy and France respond little to changes in monetary policy. The price impact is higher in the Czech Republic than in Austria, Germany and Slovakia.

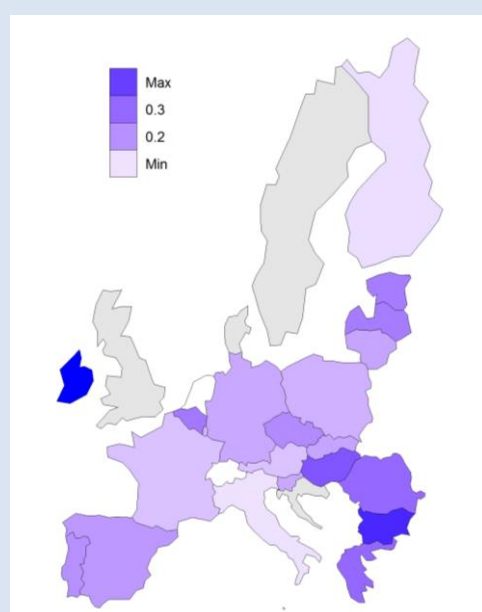
<sup>6</sup> See, for example, Burriel and Galesi (2018).

<sup>7</sup> The box examines the impact of the non-systematic component of ECB monetary policy (the component which is not a systematic response to inflation pressures), represented here by monetary policy shocks (a decrease in shadow rates of 25 bp).

<sup>8</sup> The CESEE abbreviation generally refers to Central, Eastern and South-Eastern European countries, but in this box it represents the five selected countries. GVAR model results reported by Benecká, Fajejeva and Feldkircher (2018) were used to study the impacts of conventional and unconventional monetary policy measures on both euro area and non-euro area countries. The paper covers 37 countries, including 17 euro area member states, between 2001 and 2006. The data used for each country consisted of real GDP, the price level, short-term and long-term rates, the real exchange rate and the oil price.

**As for real GDP, the Baltic countries, Ireland and Finland display the strongest responses to monetary policy shocks, while Greece and Portugal show the smallest** (see Chart B3). The response of the Baltic countries is amplified by indirect effects via other EU countries outside the euro area, mainly Poland. The response of the Czech Republic is also sizeable and only slightly smaller than that of the Baltic countries. Unlike the Baltics, however, this is a direct effect of integration with the euro area. The responses of Poland and Hungary are less than half the size of that of the Czech Republic. The response of the core euro area countries is stronger for GDP than for the price level.

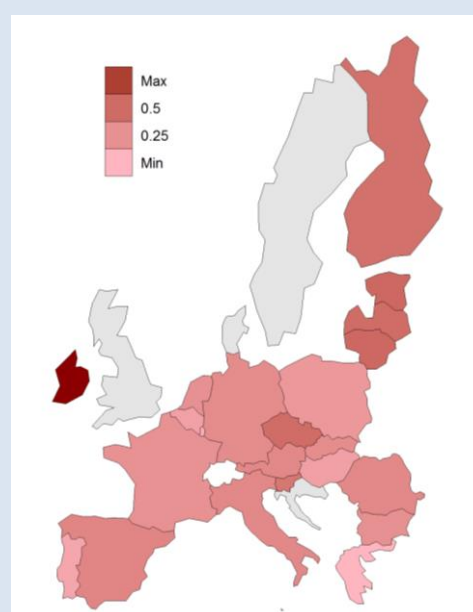
**Chart B2: Comparison of the shock impacts on prices by countries (%)**



Note: Long-term impulse responses to a monetary policy shock in the euro area for selected EU countries. The darkest shade represents the strongest response.

Source: Benecká, Fajejeva and Feldkircher (2018), CNB calculations.

**Chart B3: Comparison of the shock impacts on real GDP by countries (%)**



Note: Long-term impulse responses to a monetary policy shock in the euro area for selected EU countries. The darkest shade represents the strongest response.

Source: Benecká, Fajejeva and Feldkircher (2018), CNB calculations.

**To understand the different impacts on euro area member states and CESEE countries, economic and institutional characteristics other than the single or national currency should be taken into account.** A robust regression analysis using basic macroeconomic characteristics such as foreign trade openness (the share of foreign trade in GDP), the degree of capital restrictions, financial variables (such as the share of banks' capital in assets) and structural indicators (such as the degree of regulation) was therefore conducted.

Less regulation of the labour and product markets and the conditions for doing business, the presence of spillover effects and higher value added in manufacturing foster a larger impact on real GDP. By contrast, a higher share of banks' capital in assets, i.e. lower vulnerability of the banking sector, and greater foreign trade openness are associated with a smaller impact. As regards the strength of the price level response, the capitalisation of the banking system and capital restrictions play a particularly significant role.

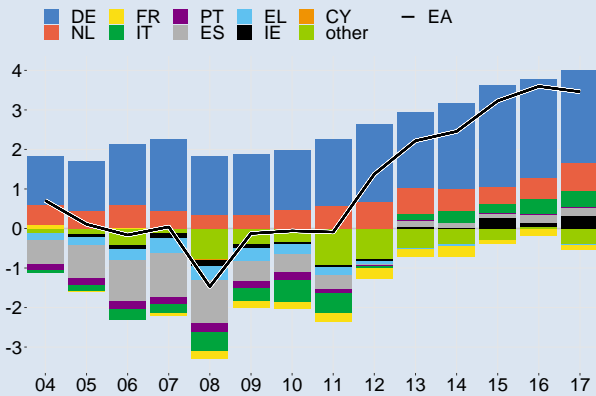
**To sum up, the size of the impact of monetary policy actions on real GDP and the price level is affected by financial and trade integration in addition to structural barriers.** The effect of trade links is dominant for GDP, whereas the price channel is affected by openness to capital transactions and stability of the banking system. Euro area membership is not a sufficient factor for explaining the cross-country differences. On the contrary, the analysis emphasises the effect of spillover channels/barriers on the overall effect of monetary policy.

**Box 2: External macroeconomic imbalances in euro area countries<sup>9</sup>**

The euro area recorded a balanced current account in the initial post-crisis years and then a gradual increase in surplus after 2012 (see Chart B4). The growth in the overall surplus is due mainly to two factors. On the one hand, most of the member states which had current account deficits before the financial crisis are now showing surpluses or at least much lower deficits. On the other, the positive balances of countries traditionally reporting current account surpluses, such as Germany and the Netherlands, have grown.

The sizeable current account imbalances recorded by deficit euro area countries before the financial crisis have therefore improved to a large extent. These imbalances reflected growth in public and private sector debt and a loss of competitiveness, particularly in the southern euro area countries (Spain, Italy, Portugal and Greece).

**Chart B4: Euro area current account (% of GDP)**

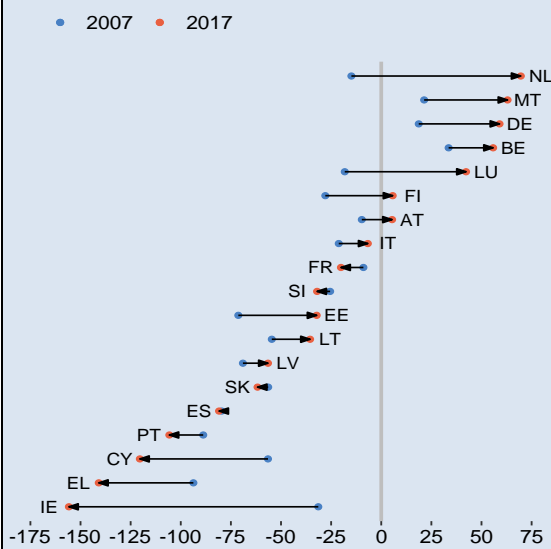


Source: Eurostat and the central banks of the Netherlands, Greece, Ireland and Cyprus, CNB calculations.

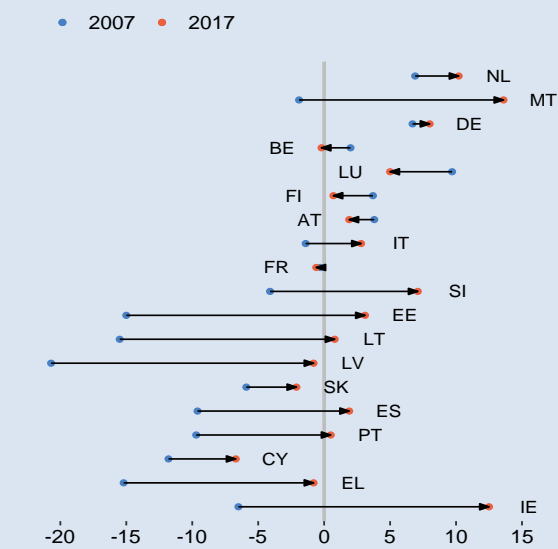
Although the current account balances of most euro area states have improved, their net international investment positions (NIIPs) have seen no great improvement (see Chart B5). The debtor member states' negative positions are thus not rising markedly, but there is probably still

**Chart B5: External imbalances in euro area countries**

**Net international investment positions (NIIP/GDP, %)**



**Current account balances (CA/GDP, %)**



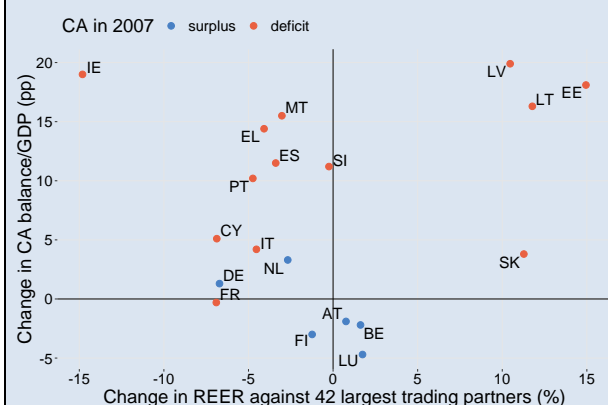
Source: Eurostat.

<sup>9</sup> This text is a follow-up to Box 1 in last year's Alignment Analyses, which described macroeconomic imbalances from the perspective of the indicators used in the Macroeconomic Imbalance Procedure (MIP) in 2017. This year's box goes into more detail about the external imbalances of euro area countries after the financial crisis.

a very long way to go towards reducing them. The monetary union therefore consists of countries with significant positive international creditor positions (such as Germany, the Netherlands, Belgium and Luxembourg) on the one hand and on the other hand of countries with large negative positions. The latter include Ireland (due mainly to significant inflows of foreign direct investment) and also Greece, Cyprus, Portugal and Spain, whose negative investment positions mainly reflect public and private sector debt. By contrast, the net investment position of Italy, where general government debt exceeds 130% of GDP, is only slightly negative (at around 7% of GDP), because most (almost 70%) of the public debt is held by domestic entities.

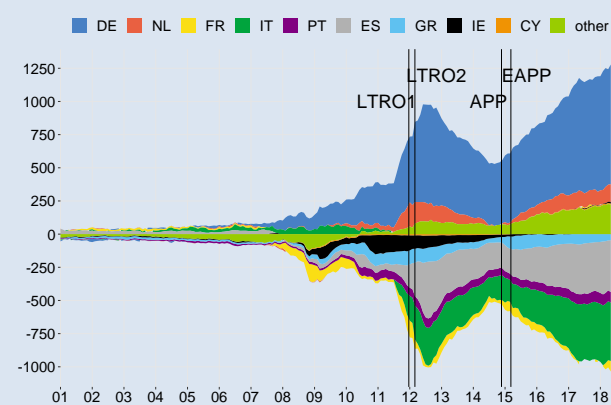
**During and after the crisis, monetary union membership precluded the option of deficit countries' relative external imbalances being corrected by the standard adjustment mechanism, namely depreciation of their nominal exchange rates against the currencies of surplus countries.** The euro area countries thus had to rely mainly on the remaining price and income adjustment mechanisms. As regards the price adjustment mechanism, where a country's competitiveness is renewed through internal devaluation, i.e. a relative drop in domestic prices (wages and salaries), the southern euro area countries recorded a weakening of their real effective exchange rates against their largest trading partners and an improvement in their current accounts (see Chart B6). However, this real depreciation was lower than, for example, in Germany, whose current account surplus grew only slightly. On the other hand, the exchange rates of Slovakia and the Baltic countries strengthened in real terms, and this was accompanied by a drop in their current account deficits. Besides the decrease in relative prices, a contraction in GDP and a subsequent slowdown in GDP growth from its pre-crisis rates also contributed to the reduction of the external imbalances in these countries (the income adjustment mechanism). However, both these mechanisms (price and income) have their limitations. A long-term qualitative improvement in competitiveness cannot occur without the implementation of structural reforms and a systemic solution to excessive public and private sector debt.

**Chart B6: Change in the real effective exchange rate and change in the current account balance**



Note: REER against the 42 largest trading partners; positive value – appreciation. Changes between 2007 and 2017.  
Source: Eurostat.

**Chart B7: TARGET2 balances of individual countries (EUR billions)**



Note: LTRO1/LTRO2: the ECB's two extraordinary liquidity operations; APP – the launch of the asset purchase programme; EAPP – the launch of the extended asset purchase programme.  
Source: ECB.

**On the other hand, the very construction of the monetary union averted the crisis scenario of a sudden stop in the inflow (or even outflow scenario) of capital and a subsequent balance of payments crisis.** The euro area countries de facto did not need their own foreign

exchange reserves to settle transactions in the monetary union during the crisis, as they were automatically supplied with the necessary euro liquidity through the Eurosystem itself.<sup>10</sup> This mechanism helped the southern euro area countries to avoid a liquidity crisis, particularly when banks from northern countries were withdrawing their assets from the southern periphery and southern commercial banks were having problems securing market funding. Essentially, the ECB thus substituted for the interbank market, prevented the financial crisis from deepening further and enabled deficit countries to gradually adjust their current accounts.

**At the height of the debt crisis, the liquidity supplied by the Eurosystem, coupled with the capital flows from southern euro area countries, resulted in growth in balances in the TARGET2 settlement system** (see Chart B7).<sup>11</sup> TARGET2 balances reflect, among other things, the accumulated deficits and surpluses of a country's balance of payments vis-à-vis the other euro area member states.<sup>12</sup> Until around the end of 2007, no national central bank had a significant TARGET2 balance, because the euro area countries' current account deficits had been financed by capital inflows from surplus countries. However, a change occurred after 2008 with the onset of the financial crisis: capital inflows to problem countries stopped as risk increased. Moreover, investors, including domestic ones, started to sell off their assets in these countries. One uncertainty factor was the continued euro area membership of a country (especially Greece) and the resulting risk of a fall in the value of the originally euro-denominated investments in that country due to it switching to its own devalued currency (so called redenomination risk). The combination of current account deficits and investment outflows from risky countries to surplus core euro area member states thus led to the accumulation of large TARGET2 balances after 2010.

**However, the growth in TARGET2 balances in recent years has been linked mainly with the ECB's unconventional policy.** In late 2011 and early 2012, the ECB conducted two extraordinary LTRO operations to supply liquidity to the Eurosystem, under which commercial banks took out advantageous secured loans from the ECB while the interbank market was dysfunctional. Excess liquidity was subsequently transferred from the southern countries mainly to Germany and the Netherlands, whose positive TARGET2 positions increased as a result. These positions then gradually became balanced as the loans were repaid. A further rise in the balances since September 2014 reflects the programme of asset purchases by Eurosystem central banks (initially the APP and from March 2015 the EAPP).<sup>13</sup> As a large proportion of the purchases (about 50%)<sup>14</sup> are made by non-resident banks based in financial centres (Germany and the Netherlands), the positive TARGET2 balances of these countries' central banks have been growing. In 2018, Germany's claims on the Eurosystem in the TARGET2 system exceeded 28% of its GDP.

<sup>10</sup> Since 15 October 2008, the ECB has been conducting refinancing operations at a fixed rate and with full allotment, so the amount of liquidity supplied to the banking sector was demand-driven and limited only by the amount of collateral pledged.

<sup>11</sup> Trans-European Automated Real-time Gross Settlement Express Transfer System.

<sup>12</sup> See Cecchetti et al. (2012).

<sup>13</sup> The balances increase mechanistically when one national central bank with a negative TARGET2 balance buys a security from a commercial bank in a country whose central bank has a positive balance.

<sup>14</sup> See *ECB Bulletin* 3/2017.

## 2 ECONOMIC POLICY AND INSTITUTIONAL DEVELOPMENTS IN THE EUROPEAN UNION AND THE EURO AREA

*The work of the EU and particularly of the euro area on deepening integration, especially in the economic and fiscal policy area, saw no substantial progress in 2018. The negotiations on some of the pillars of the banking union have yet to be finalised and the reduction of risks in banking sectors also remains incomplete. The reform aimed at safeguarding the stability of the euro area in the event of a future economic or financial crisis has not been finished yet either. The outcome of the negotiations with the UK on Brexit and the future configuration of mutual – particularly economic – relations is unclear at present. The risks arising from some countries' sovereign exposures and high public debts are also unresolved. Although they cannot be accurately estimated at the moment, the impacts of these issues on the Czech Republic and the other EU countries will have to be weighed in the future decision about the timing of monetary union entry. The new institutions and regulations created in past years in response to the economic and financial crisis have fundamentally changed the form of the euro area and hence also the content of the euro adoption obligation assumed by the Czech Republic on acceding to the EU. Their functioning must therefore be properly assessed. Besides the direct costs of participating in the euro area's existing rescue mechanisms, account should be taken of the limits imposed on national powers in the supervision of credit institutions. The implications of the future set-up of, and institutional changes to, the euro area should not be overlooked either. The fiscal costs associated with potential fiscal problems in euro area member states and their financial sectors must also be assessed. Finally, attention should be paid to the euro area member states' new demand that countries wishing to enter the ERM II must simultaneously join the banking union. In light of the above, it should be noted that not all the potential obligations associated with euro adoption for the Czech Republic in the future are known at present.*

**No major changes were recorded in economic policy coordination in the EU compared to previous years.** The eighth European Semester started in November 2017 with the publication of the 2018 Annual Growth Survey, in which the Commission reaffirmed the economic and social priorities set out in previous years. It continues to emphasise (i) boosting investment, (ii) pursuing structural reforms and (iii) ensuring responsible fiscal policies, taking into account the different phases of the business cycle in which the Member States find themselves. The next standard step in the European Semester was the publication of country reports by the European Commission in March 2018. This was followed by national reform programmes and convergence/stability programmes drawn up by the Member States and by a proposal for country-specific Council recommendations.

**The economic policy coordination system remains hindered by a low rate of compliance with the recommendations, which are not legally binding and thus not enforceable.**

Insufficient respect for, and compliance with, the fiscal rules laid down in the Stability and Growth Pact (SGP), largely enabled by political benevolence, is a barrier to the necessary fiscal stability and resilience.<sup>15</sup> Budget policies in a number of Member States are thus still potentially teetering on the edge of SGP non-compliance. However, compliance with the fiscal rules is gradually improving overall. Following the closure of the excessive deficit procedures (EDPs) for Croatia, Portugal, Greece and the UK in 2017, the EU Council decided to close the EDP for France in June 2018. The only country currently subject to the EDP is Spain. Excessive macroeconomic imbalances were identified for two euro area countries (Cyprus and Italy)<sup>16</sup> under the macroeconomic imbalance procedure (MIP), but the excessive imbalance procedure (EIP) had not been opened against them as yet.

**Greece ceased to draw financial assistance from the European Stabilisation Mechanism (ESM) in 2018.**<sup>17</sup> The negotiations about its debt situation continued and the June 2018 Eurogroup

<sup>15</sup> This problem has been pointed out repeatedly; see, for example, IMF (2018) and European Court of Auditors (2018).

<sup>16</sup> Within the EU as a whole, an excessive imbalance was also identified in Croatia.

<sup>17</sup> The ESM financial assistance programme ended on 20 August 2018. The IMF's Stand-By Arrangement allowing the Fund to be formally involved in providing assistance to Greece, which had been a condition for the ESM



meeting agreed debt relief measures which the euro area believes will help make the Greek government debt sustainable. The measures mainly involve an extension of the maturity of loans from the EFSF,<sup>18</sup> i.e. a 10-year deferral of interest and amortisation. Under the agreement, Greece was also paid the last tranche of the ESM programme<sup>19</sup> and will get back the income on bonds issued (the profit of the ECB and euro area national central banks) from the Eurosystem in semi-annual transfers until 2022. These transfers are conditional on Greece pursuing the reforms agreed under the ESM programme. Since the programme ended, Greece has been subject to enhanced surveillance performed by the Commission, the ECB and the ESM together with the IMF on a quarterly basis. European creditors have also pledged to provide additional debt relief to Greece if necessary. However, the views on the sustainability of Greece's debt differ among European creditors and the IMF, which continues to express doubts about the sustainability in the long run.

**The ESM's claims on Greece may be a crucial factor in the Czech Republic's euro area entry decision.** The European resolution mechanisms (the ESM and its predecessor the EFSF) are Greece's largest creditors, with a total claim of over EUR 190 billion, i.e. more than half of Greece's public debt. Adoption of the single European currency by other EU countries, including the Czech Republic, is tied to participation in the ESM.<sup>20</sup> This implies an obligation to contribute to the ESM's capital and assume all the rights and duties of membership.<sup>21</sup> The sustainability of the Greek debt is therefore also important in terms of the Czech Republic's financial interests. Although the ESM's claims on Greece will not start to mature until 2034, the need for further debt reprofiling going beyond the measures agreed cannot be ruled out in the future. In this respect, the IMF's stance is closer to the Czech interests in the longer run. Before making any decision to join the euro area, this aspect of the Greek debt must therefore be weighed carefully and efforts should be made to eliminate the uncertainty surrounding its sustainability or to free new euro area member states from bearing the risk of loss arising from ESM exposures built up before their accession to the monetary union.

**The EU and the UK are continuing to conduct formal negotiations on Brexit, which is due to happen on 30 March 2019.** The talks focused on the conditions of exit and the configuration of new, mainly economic, relations with the EU. A milestone was the presentation of a draft withdrawal agreement by the Commission in March 2018. This agreement would cover citizens' rights, some separation provisions, the transition period, the financial settlement, institutional relations and so on. Were this withdrawal deal to be agreed and duly ratified, there would be a transition period until 31 December 2020 during which most EU rights would essentially still apply in the UK, but without the participation of UK representatives in EU bodies. This would be followed by a comprehensive free trade agreement governing future economic relations. However, this agreement would be concluded only after the UK's withdrawal from the EU. The UK outlined its vision of future economic relations in a White Paper published in June 2018. The basic principles of future relations would be incorporated into a political declaration accompanying the withdrawal agreement and forming the basis for negotiating a free trade deal.

**However, a hard Brexit is not ruled out either.** This involves the possibility of agreement not being reached on the withdrawal deal or the deal not being ratified in time, and the UK leaving the EU

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programme to continue, expired almost simultaneously on 31 August 2018. However, no funds were paid out under the IMF programme, as in the Fund's view the debt sustainability condition had not been met.

<sup>18</sup> The predecessor of the ESM, which disbursed a total of EUR 141.8 billion under the second bailout programme for Greece, EUR 130.9 billion of which is outstanding.

<sup>19</sup> The last ESM tranche amounted to EUR 15 billion (raising the total outstanding amount under the ESM programme to EUR 59.9 billion of the total approved maximum sum of EUR 86 billion).

<sup>20</sup> The Czech Republic could theoretically adopt the euro without becoming a contracting party to the ESM, but the euro area members can de facto make their consent to euro adoption in the Czech Republic conditional on ESM entry.

<sup>21</sup> In the hypothetical case of the Czech Republic participating in the ESM, its total capital commitment would be around CZK 416 billion, about CZK 48 billion of which it would be obliged to pay up within four years. The remainder is callable capital. The calculation is based on relevant Eurostat figures, the capital key calculation rules in the Treaty Establishing the European Stability Mechanism and on an exchange rate of CZK 25.6 to the euro. In the hypothetical case of a write-off of the ESM's total current claim on Greece (EUR 59.9 billion), i.e. the maximum possible loss, the share of the Czech Republic as an ESM member would be around CZK 35 billion.

with no specific legal framework and no transition period. Preparations for the possibility of a hard Brexit, after which EU-UK economic relations would be subject to general WTO rules, are therefore also progressing at both the EU and national levels. The negotiations are being accompanied by constant internal political tensions on the British side, as manifested, for example, in the resignations of Brexit Secretary David Davis and Foreign Secretary Boris Johnson.

**Brexit will also affect the de facto position of non-euro area EU Member States in discussions about the future of the EU and could be a factor influencing considerations of euro adoption.** The deepening of the 27-member economic and monetary union (EMU) is generally a challenge for small and medium-sized countries, regardless of their membership status. There are still large differences of opinion between groups of countries about the future shape of the union. On one side, the countries in the south of the euro area are advocating faster integration with greater risk and fund sharing. On the other, the northern European countries are emphasising budgetary responsibility in individual countries, fiscal stability and reducing risks in the EU financial sector.<sup>22</sup> Brexit will also weaken the group of countries – including the Czech Republic – advocating trade liberalisation, a lower regulatory burden and a deeper internal market in the EU. In this context, a group of northern countries is being formed as a counterweight to potential French-German dominance in the EU.

**The debate about deepening the EMU was affected by the unveiling of several Commission initiatives in 2018.** Those are contained in the Communication on completing the banking union and the December 2017 Roadmap for deepening Europe's Economic and Monetary Union. In May 2018, together with the draft Multiannual Financial Framework for 2021–2027, the Commission presented proposals to create a European Investment Stabilisation Function (EISF) and a Reform Support Programme. The EISF is intended to support euro area member states and countries participating in the ERM II by intermediating subsidized loans to finance public investment in the event of large asymmetric shocks leading to a qualified increase in unemployment, subject to certain eligibility criteria. The EISF aims to maintain the level of public investment channelled into pre-defined projects. Under the Reform Support Programme, the member states would receive financial aid to prepare and implement growth-enhancing structural reforms. The programme would contain a special instrument – a Convergence Facility – available to non-euro area Member States that have expressed a commitment to adopt the euro. According to the Commission's proposal, such funding would be conditional on the country declaring a specific euro adoption date.

**In the December 2017 initiative, the Commission also proposed that the ESM be renamed the European Monetary Fund.** The Fund would simultaneously serve as a backstop for the Single Resolution Fund (SRF).<sup>23</sup> The December 2017 package also contained initiatives to integrate the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (the Fiscal Compact) into the EU legal framework and an idea to establish the functions of a European Minister of Economy and Finance. However, no major progress has been made on these initiatives so far.

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<sup>22</sup> Some Member States have also formulated positions on the further deepening of the EMU. The "non-paper" published in March 2018 by eight northern European countries (Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, the Netherlands and Sweden) emphasises compliance with obligations at the national level and the rules already in place ahead of further far-reaching proposals. By contrast, Spain's April position paper calls for more vigorous steps to build the EMU architecture, including the establishment of a common fiscal backstop. The French-German Meseberg declaration signed in June 2018 contains proposals to create a euro area budget and a European unemployment stabilisation fund. Given the above Member States' different positions, no major progress has been made in the area of deepening the EMU this year.

<sup>23</sup> The ESM was established on an intergovernmental basis and the Commission has proposed its transformation into EU law through an EU regulation. At the EU level, however, political agreement has been reached on maintaining the intergovernmental nature and current name of the ESM while introducing the backstop and several other changes in its functioning (conditions for the use of rescue tools, the ESM's role in the preparation and monitoring of individual programmes etc.). The specific draft of the legislative text should be submitted by the end of 2018.

The SRF is a fund financed by contributions from the banking sectors of the states participating in the banking union. Its purpose is to ensure an orderly resolution of failing banks with minimal costs to taxpayers and to the real economy.

**Other proposals besides the SRF backstop were discussed, in line with the Council conclusions of 17 June 2016 on a roadmap to complete the Banking Union.** The Council's roadmap sets out a sequence of steps and conditions for discussing individual proposals. The discussion on risk-sharing measures is conditional on sufficient progress being made on risk reduction. A debate on updating and refining the 2016 roadmap to complete the Banking Union and setting criteria for determining whether the progress made on reducing risk can be considered sufficient was held in 2018. The statement of the June 2018 Euro Summit, held in inclusive format with representatives of non-euro area countries present, endorsed the sequence set out in the 2016 Council conclusions. The persisting absence of agreement on fundamental reforms of the EMU is confirmed by the brevity of the statement, which, without going into further detail, states that work will continue on the reform proposals and the Euro Summit will come back to them in December 2018.

**As part of the risk-reduction measures, the Council in May 2018 agreed its stance on a package of measures to strengthen the EU banking sector.** These legislative proposals were submitted by the Commission in November 2016 and are aimed at strengthening the banking sector by reducing risk in individual national banking sectors (the RRM package).<sup>24</sup> The legislative process will continue in a "trialogue" with the European Parliament. The discussions about the proposal to establish a European Deposit Insurance Scheme (EDIS), which would imply risk-sharing, are continuing only at a technical level, in line with the above-mentioned 2016 Council conclusions. Nevertheless, the June 2018 Euro Summit statement contains a sentence saying that work should start on a roadmap for beginning political negotiations on the EDIS.

**The Czech Government's position is still not to join the banking union in the current situation.** The reasons for this are the current non-completion of the banking union project, the insufficient experience with its practical application and the uncertainty surrounding its final shape and the related costs.<sup>25</sup> The government intends to review participation in the banking union on the basis of a further update of the Impact Study of Participation or Non-participation of the Czech Republic in the Banking Union, which should be submitted in March 2019.

**The idea of European Safe Bonds, or joint euro area bonds, has long been discussed in the EU.** It crops up regularly in various forms in the European debate. The Commission introduced its latest version in May 2018 in the form of a proposal for a regulation on sovereign bond-backed securities (SBBS). These securities would be euro-denominated securitised financial instruments whose underlying assets would be sovereign bonds of euro area member states. However, the proposal failed to gain support among the member states and the discussion was suspended by the Austrian presidency.

**Also of key importance from the Czech Republic's perspective is the new approach to accepting new members into the European Exchange Rate Mechanism (ERM II) as a euro area "anteroom".** In June 2018, following informal discussions about the conditions for the entry of Bulgaria into ERM II, the Bulgarian authorities officially declared their intention to apply to join ERM II by July 2019 and to enter the banking union on the same date. Bulgaria also voluntarily undertook to implement numerous reform measures before ERM II entry. In response to Bulgaria's letter, the euro area member states, Denmark and the ECB issued a statement on 12 July 2018 welcoming Bulgaria's reform commitments and expecting it procedurally to apply first for participation in the Single Supervisory Mechanism (SSM) by entering into close cooperation between the ECB and the Bulgarian central bank.<sup>26</sup> After the ECB decides on the specific date of commencement of close cooperation,

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<sup>24</sup> The RRM package contains an amendment to the legislation governing the pursuit of business of credit institutions and investment firms and the prudential requirements and rules on recovery plans and resolution applying to them.

<sup>25</sup> See Czech Government Resolution No. 480 of 30 May 2016 regarding an update of the Impact Study of Participation or Non-participation of the Czech Republic in the Banking Union.

<sup>26</sup> In addition, Bulgaria must adjust its national legislation accordingly and ratify the Intergovernmental Agreement on the transfer and mutualisation of contributions to the Single Resolution Fund in order to be ready to participate fully in the Single Resolution Mechanism as of the date of entry into the banking union. The ECB will assess the

Bulgaria will join ERM II as of the same date. Another de facto condition for joining ERM II is implementation of the announced reform commitments, which will be assessed by the ECB and the Commission. The statement also declares that a similar approach will be followed for other Member States wishing to join ERM II, in line with the principle of equal treatment. It can thus be assumed that the authorities will in the future endeavour to apply the above approach, i.e. to make ERM II entry conditional on simultaneous entry into the banking union, to other countries wishing to join ERM II, including the Czech Republic.

**The new procedure represents a significant change from the previous approach to the entry of new members into ERM II.** Such entry is now de facto conditional on entry into the banking union and other commitments, albeit formulated as voluntary ones, the implementation of which must moreover be positively assessed by the Commission and the ECB. No such conditions for ERM II entry are laid down in EU primary law, the ERM II legislation, the SSM regulation and other EU legislation. The new approach thus represents a fundamental change in the conditions. Moreover, the ERM II entry obligations of individual candidate countries are de facto being expanded through legally non-binding statements made by a group of EU Member States.

### Box 3: Overview of selected institutional impacts of euro area entry

On adopting the single European currency, the country concerned delegates monetary and exchange rate policy-making powers to the European Central Bank. After euro area entry, national central banks participate in the creation of the single monetary policy through the membership of their governors in the Governing Council, the main decision-making body of the ECB.<sup>27</sup> Following euro area entry, the national central bank must pay up the outstanding amount of the subscribed capital of the ECB.<sup>28</sup> Upon adoption of the single European currency, the national currency is replaced by the euro<sup>29</sup> and the national central bank becomes a full member of the TARGET2 payment system.

Euro adoption has other crucial impacts besides the said fundamental change in the pursuit of monetary policy. The country concerned becomes a member of the banking union on euro adoption at the latest<sup>30</sup> and entry into the banking union may become a de facto condition for joining ERM II in the future. Membership of the banking union is associated with participation in the Single Supervisory Mechanism (SSM), under which the ECB takes over key powers of the national supervisory authority, such as the granting and withdrawal of authorisations for credit institutions and direct supervision of important credit institutions. A Supervisory Board has been established at the ECB for supervisory purposes. It is composed mostly of representatives of national supervisory authorities of banking union member states. Credit institutions of the acceding state are obliged to participate in covering the ECB's supervision-related costs in the form of annual fees.

The Single Resolution Mechanism (SRM) is another pillar of the banking union. It is made up of national resolution authorities and a Single Resolution Board, which decides on the bank resolution method and the use of funds from the Single Resolution Fund (SRF). Entry into the banking union is conditional on concluding and ratifying an intergovernmental agreement on the transfer and mutualisation of contributions to the SRF. The agreement lays down progressive filling of the SRF with contributions from the banking sectors of the participating states. These contributions are pooled in

application before issuing a decision on close cooperation. This will include an assessment of the importance of credit institutions and a comprehensive assessment if deemed necessary.

<sup>27</sup> Nevertheless, as a member of the Governing Council, the governor of a central bank of a Member State represents the interests of the euro area as a whole rather than the interests of his country or central bank.

<sup>28</sup> Central banks of non-euro area EU Member States have to pay up just 3.75% of their shares in the subscribed capital of the ECB.

<sup>29</sup> The ECB and euro area national central banks are the only institutions authorised to issue banknotes as legal tender in the euro area. The right to issue coins resides with euro area countries but is limited to low denominations and the volume of coins issued is subject to ECB approval.

<sup>30</sup> Entry into the banking union is possible even before euro adoption.

the relevant national resolution fund before the country joins the banking union and are transferred to the SRF after entry. Credit institutions of the acceding state are also obliged to participate in covering the costs related to the administration of the Single Resolution Board.

The importance of other stabilisation policies available to the national bank – macroprudential policy and microprudential supervision in the case of the CNB – increases after euro adoption. If the business and financial cycles in the Czech economy were not synchronised with the overall euro area cycle and the ECB’s monetary policy was not in line with domestic conditions, the CNB would have to use its macroprudential and supervisory (microprudential) instruments to a greater extent. A major complication, however, is that key supervisory powers of the national supervisory authority would by then have been transferred to the Single Supervisory Mechanism, i.e. essentially to the ECB. Given the efforts to harmonise the use of instruments in the banking union, the response of the ECB as supervisory authority to cyclical risks in the Czech economy might not be sufficient and there would be a need to respond with more active macroprudential policy instruments, which would remain primarily with the national authority. Nevertheless, here too, banking union membership would limit the national macroprudential authority’s room to react, specifically in the areas of setting capital buffers for systemically important banks and applying Pillar 2 supervisory instruments for macroprudential purposes. As a result, tax or fiscal policy, for example, might also have to respond to the risks to financial stability in this situation.

Although entry into the European Stabilisation Mechanism (ESM) is not a formal condition for euro adoption, the current Member States could make their agreement to the accession of a new state to the euro area conditional on ESM participation. This entails an obligation to participate in the ESM’s capital and cover its potential losses up to the equivalent of the country’s share in the capital.

Euro area entry also has an impact on the demands placed on national fiscal policy. Some additional rules contained in the Stability and Growth Pact (SGP) start to apply after euro adoption. Unlike non-euro area EU Member States, euro area states can be given financial penalties for failure to comply with the rules within the framework of surveillance of members’ budgetary policies or surveillance of macroeconomic imbalances. Although ratification of the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (known as the Fiscal Pact) is not a formal condition for euro adoption, it is possible that the current member states will make their consent to the entry of a new country into the euro area conditional on completion of this ratification. All the provisions of the Treaty then apply to the contracting parties which are euro area members, while non-euro area contracting parties can choose which provisions they will be bound by until euro adoption.

### 3 THE CZECH REPUBLIC'S CYCLICAL AND STRUCTURAL ALIGNMENT WITH THE EURO AREA

#### 3.1 DIRECT ALIGNMENT INDICATORS

	Real economic convergence <sup>31</sup>
	The Czech Republic's cyclical alignment with the euro area
	Structural similarity of the Czech economy to the euro area economy
	Trade links with the euro area
	Intensity of intra-industry trade with the euro area
	Ownership links with the euro area
	Financial cycle alignment
	Interest rate convergence vis-à-vis the euro area
	Volatility of the Czech currency against the euro
	Alignment of the Czech koruna with the euro

#### Real economic convergence

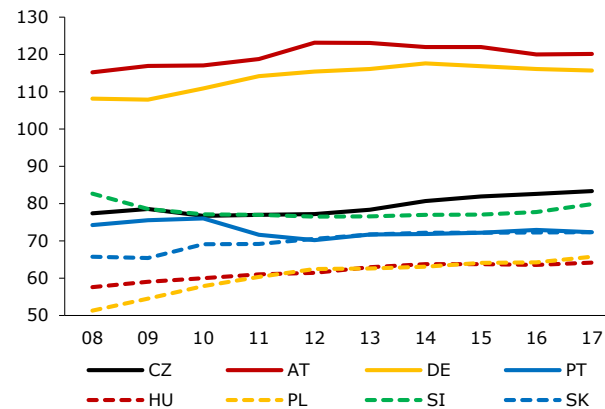
*The unfinished process of long-term convergence towards the advanced euro area countries remains a barrier to early euro adoption. Although this process has resumed in all key indicators in recent years, the distance of the Czech Republic from the euro area average remains significant in most indicators. If the euro was adopted, domestic inflation could rise above the CNB's current 2% target due to equilibrium appreciation of the real exchange rate and convergence of the wage level.*

**Czech GDP at purchasing power parity per capita has been converging towards the euro area average again since 2013, but is still lagging visibly behind it.** This level only slightly exceeded 83% in 2017 (see Chart 10). On the one hand, this means the Czech Republic is more advanced than some current euro area member states. On the other hand, a considerable gap persists with regard to the "core" euro area countries.

**The convergence of the price level of GDP of the Czech Republic towards the euro area has also resumed, but the gap in this indicator remains substantial.** In 2017, the convergence process was accelerated by appreciation of the koruna after the exit from the CNB's exchange rate commitment and the Czech price level exceeded 66% of the euro area average (see Chart 11). However, it remains lower than in some of the countries under comparison with similar or lower GDP per capita levels.

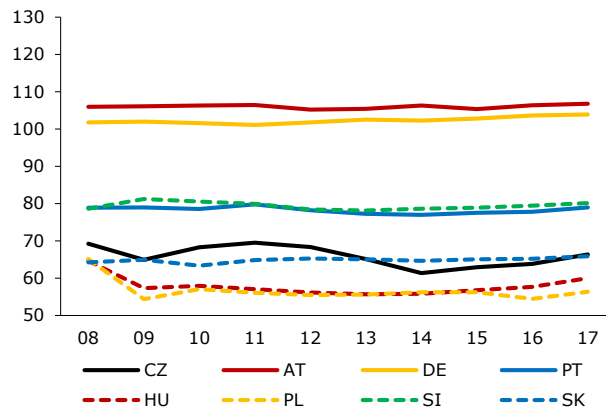
<sup>31</sup> The colours and directions of the arrows are explained in the *Technical introduction* at the start of this document.

**Chart 10: GDP per capita at purchasing power parity (PPP)**  
(EA = 100)



Source: Eurostat, CNB calculations.

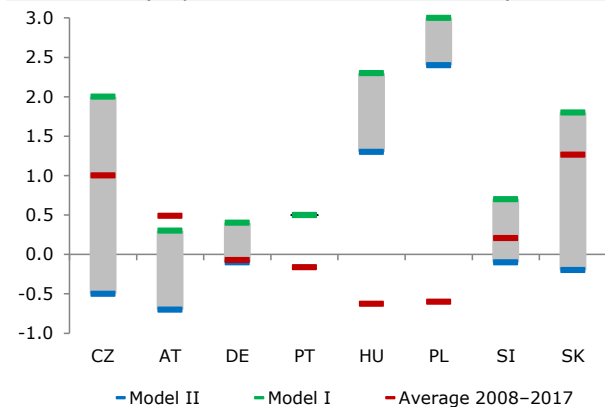
**Chart 11: Price level of GDP**  
(EA = 100)



Source: Eurostat, CNB calculations.

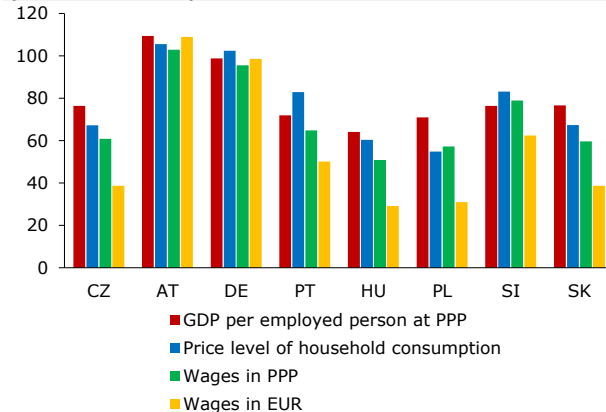
**There remains significant room for further convergence, which would be associated with real exchange rate appreciation and thus upward pressure on inflation after potential euro adoption.** The koruna’s real appreciation trend has resumed in recent years. Based on empirical models, its pace can be estimated at between -0.5% and +2.0% a year for the next five years (see Chart 12).<sup>32</sup> If the euro were adopted in that period (i.e. without the option of real appreciation through the nominal exchange rate), this trend could assert itself solely through a positive inflation differential of the same size vis-à-vis the euro area average. Inflation could thus rise significantly compared to the CNB’s current 2% target. This would simultaneously create pressure for sustained low or negative real rates after euro adoption with possible implications for financial stability.

**Chart 12: Real exchange rate appreciation: average for last ten years and range of five-year estimates** (% p.a., EA = 100, HICP-deflated)



Note: The left-hand chart shows the geometric mean for 2008–2017. The estimate of the average pace of equilibrium real exchange rate appreciation for the next five years is based on two panel regressions linking the price level of final consumption of households compared to the euro area average with GDP at purchasing power parity per capita.  
Source: Eurostat, CNB calculations.

**Chart 13: Other indicators of long-term convergence**  
(2017, EA = 100)



**A significant aspect of the incomplete convergence process is a lower wage level compared to the euro area average.** The wage level in the Czech Republic is around 60% of the average euro area level when converted using purchasing power parity and less than 40% using the exchange rate (see Chart 13). The situation is similar in Slovakia, which has a comparable GDP level per employed

<sup>32</sup> Starting with *Inflation Report IV/2013*, the CNB’s forecasts work on the assumption of long-term equilibrium real appreciation of the koruna at a rate of 1.5% a year vis-à-vis the “effective euro area”.

person with the Czech Republic at purchasing power parity (around 76% of the euro area average). The other countries under comparison with a similar level of this labour productivity indicator, namely Portugal and Slovenia, have higher wage levels. Pressure for more pronounced convergence of the domestic wage level towards the euro area than observed in the last ten years affected by the global crisis can therefore be expected in the years ahead. If the Czech Republic remains outside the monetary union, this process will take place through a combination of nominal appreciation of the Czech koruna and faster nominal wage growth in the domestic economy than in the euro area. If the euro were adopted, only the latter channel would be available, which would again foster the said higher inflation relative to the euro area average.

### Cyclical alignment of economic activity

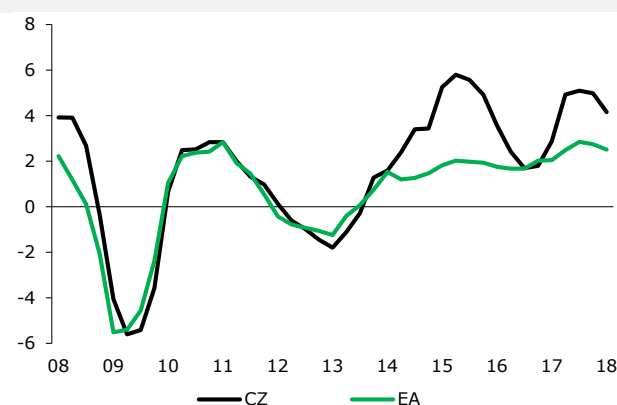
*The Czech Republic has been showing high correlations of economic activity with the euro area both in absolute terms and relative to the other countries under comparison over the last ten years. However, this is partly a one-off effect of the strong common external shock in the form of the global financial and economic crisis. Cyclical alignment with the euro area has thus been declining recently. A continuation of this trend might lead to a less favourable assessment of cyclical alignment with the euro area in the future.*

**Two very different periods can be identified in the alignment of economic activity in the Czech Republic and the euro area over the last ten years.** During the global financial crisis, the Czech economy recorded similar rates of contraction/growth in GDP as the euro area. In 2014 and 2015, partly due to the adoption of the exchange rate commitment, the Czech Republic accelerated sharply compared to the euro area, and it also recorded higher growth last year (see Chart 14). This was fostered mainly by stronger domestic demand and related growth in household consumption and fixed investment.

**The alignment of the Czech Republic's business cycle with the euro area is high from the longer-term perspective.** This is indicated by the results of a simple correlation analysis

of individual countries' GDP time series (or lags thereof) compared to the euro area time series (see Chart 15). The correlation measured for the Czech Republic can be assessed as above-average relative to the other countries under review, with only Germany and Slovenia recording higher levels. Rather less strong, but still significant, is the correlation of Czech exports to the euro area with euro area GDP (see Chart 16). Theoretically, exports should be one of the major channels of transmission of business cycles for small open economies.

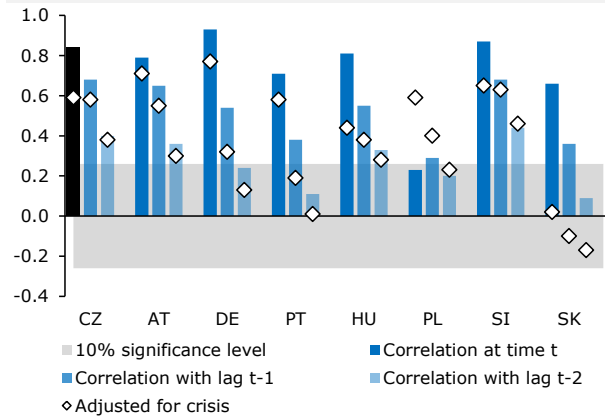
Chart 14: Year-on-year changes in real GDP (%)



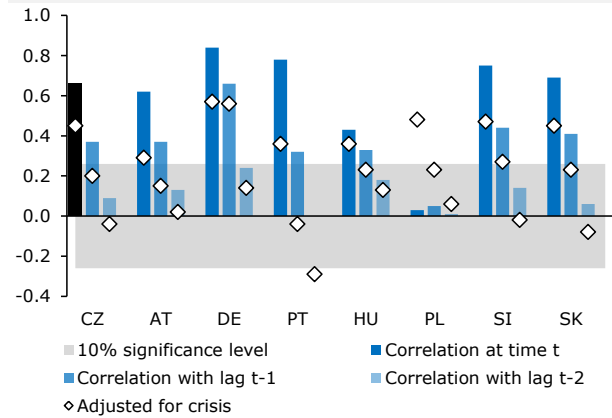
Source: Eurostat, CNB calculations.



**Chart 15: Correlation coefficients of GDP with the euro area**



**Chart 16: Correlation coefficients of exports to the euro area with euro area GDP**



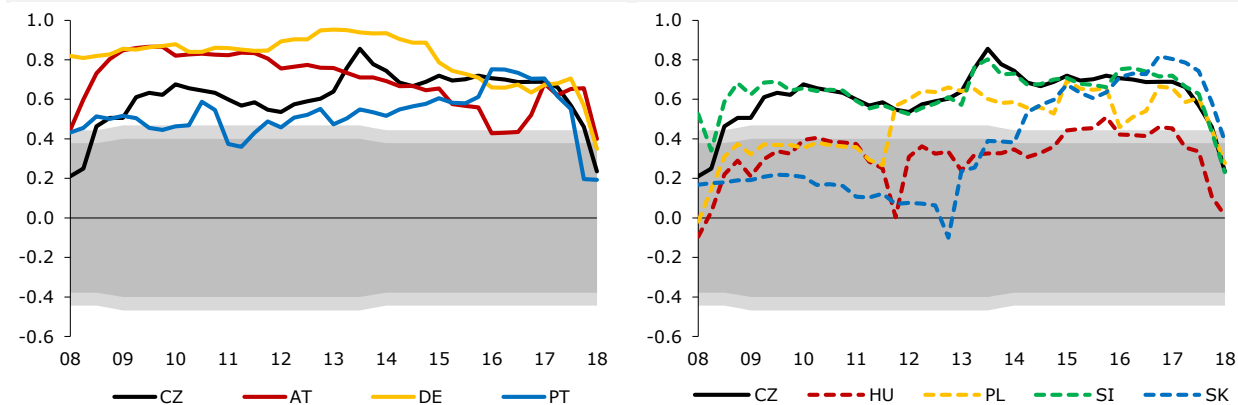
Note: The calculation is based on the quarter-on-quarter changes in the logarithms of the seasonally adjusted data. For the crisis-adjusted values, the crisis quarters of 2008 Q4 and 2009 Q1 are dropped from the calculation.

Source: Eurostat, CNB calculations.

**We observe a lower correlation for the variables under review after adjustment for the global economic and financial crisis.** The crisis was a common external shock that strongly affected the correlations measured for all the economies under review.<sup>33</sup> It is even a key determinant of the high correlations seen for countries such as Slovakia and Hungary.

**The rolling correlation of real GDP growth for moving five-year time windows indicates a sharp decrease in the Czech Republic’s cyclical alignment with the euro area recently** (see Chart 17). For the last two observations, the correlation even dropped into the band where it is no longer significantly different from zero. All the countries under review including Germany recorded similar declines in correlation. This implies growing differences in the path of economic activity even within the euro area.

**Chart 17: Rolling correlations of economic activity with the euro area**



Note: The time data indicate the end of the rolling window of five years (in periods containing the crisis quarters of 2008 Q4 and 2009 Q1, those quarters are dropped from the calculation, i.e. the periods are 4.5 years long). The calculation is based on the quarter-on-quarter differences in the logarithms of the seasonally adjusted data. The statistical significance of the correlation coefficients is indicated in the chart: values statistically significant at the 5% level lie in the white area of the chart, and values statistically significant at the 10% level lie in the white or light grey parts of the chart. Values in the dark grey part of the chart are not statistically significant at the 10% level.

Source: Eurostat, CNB calculations.

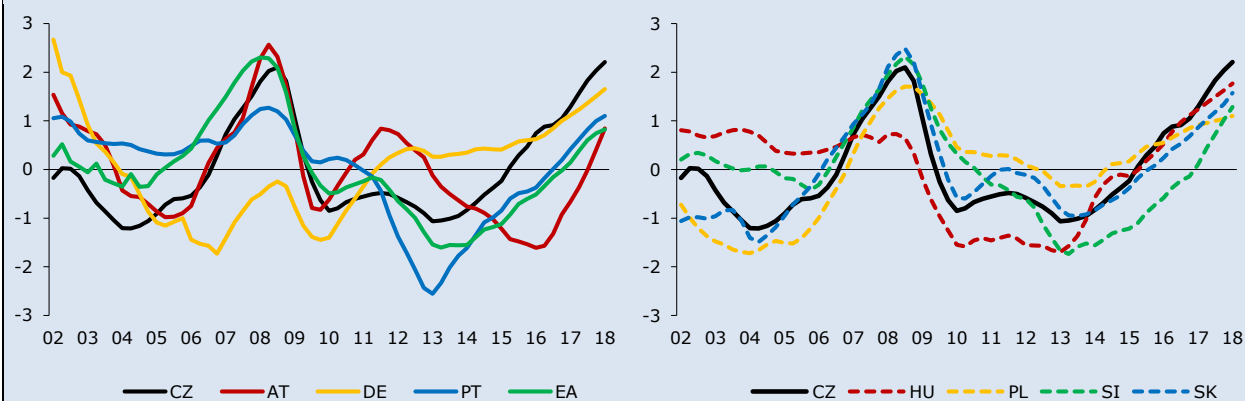
<sup>33</sup> The exception is Poland, which was one of the few European countries not to record a sharp decline in economic activity during the crisis.

**Box 4: Alignment of the Czech and euro area labour markets from the LUCI perspective**

**Labour market alignment is one of the key aspects of overall economic alignment in the monetary union.** Owing to its effect on domestic inflation pressures, the labour market situation is an important consideration in setting monetary policy. Moreover, the institutional characteristics of the labour market are reflected in the sensitivity and resilience of economies to external shocks. Any major differences in sensitivity to external shocks result in divergence of economies,<sup>34</sup> increasing the macroeconomic and political costs of maintaining the monetary union.

**The labour market situation can be described by means of numerous indicators, so it is useful to construct an aggregate index – LUCI.**<sup>35</sup> This index is used by the CNB to assess tightness in the domestic labour market and is also used in this box.<sup>36</sup> The LUCIs for individual countries aggregate the information contained in 12 time series using the principal components method. A construction property of LUCI is that zero corresponds to the long-run average in terms of labour market tightness. Positive values indicate a period with above-average pressure in the labour market and negative values the opposite. In an ideal situation, LUCIs should be synchronised across Member States, i.e. the tightness in individual labour markets should be the same and result in an identical monetary policy stance.

**The LUCI for the Czech labour market shows a quantitatively similar economic profile as those of most of the other countries under review** (see Chart B8), which recorded positive figures in 2007 and 2008 and also post-2016. Their LUCIs reflected the global economic situation: the performance of European economies was well above potential until 2008 H1 and then cooled as a result of the global financial and economic crisis. Most countries' LUCIs thus stayed negative until around 2015 and turned positive again only after the crisis faded away in 2016.

**Chart B8: LUCIs**

Source: Eurostat, CNB calculations.

**Aside from this fundamental common trend, though, there are big quantitative differences.**

The Czech labour market is specific in currently showing greater pressures than immediately before the crisis broke out in 2008. Only the Slovak labour market is similar to the Czech one in this regard. Another large difference is the situation in 2012–2013. Unlike in the Czech economy, in many euro area countries it culminated in a debt crisis, which had a major negative impact on the labour market.

<sup>34</sup> Babecká Kucharčuková and Brůha, 2017.

<sup>35</sup> Labour Utilisation Composite Index. For a more detailed description see the *Methodological Part*.

<sup>36</sup> In the CNB's Inflation Reports, LUCI is based on information from a larger number of time series. Given the limited availability of microdata for individual EU countries, the number of series used in this box is reduced so that LUCI can be estimated for all countries in a comparable manner. However, the LUCI methodology remains the same as in the CNB's regular publications and was described in Box 1 in *Inflation Report IV/2017*.

**At the same time, there are countries such as Germany with very different LUCI time profiles.** Unlike in other countries, the German labour market faced structural issues before the crisis. Labour market reforms known as HARTZ I–IV were implemented in response. HARTZ IV, which was introduced in 2005, had a particularly positive effect on the labour market and LUCI started to go up in 2006.<sup>37</sup> Consequently, the recession pressure in the labour market was minimal in 2007 and 2008 and LUCI has been rising gradually in positive territory since 2011. This shows the favourable effect of policy measures, which can be used to cushion adverse macroeconomic shocks.

**Seen through the lens of LUCI, the Czech labour market is thus only partially aligned with the euro area labour market; major differences also persist within the euro area.** The imperfect alignment of labour markets reflects the individual countries' different cyclical, structural and institutional characteristics. They affect the individual economies' responses to external shocks<sup>38</sup> and increase the macroeconomic cost of the single currency. As the German example shows, appropriate policy can significantly dampen the adverse impacts of shocks on the labour market and especially on unemployment.

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<sup>37</sup> See Gehrke et al. (2017) and Hochmuth et al. (2018).

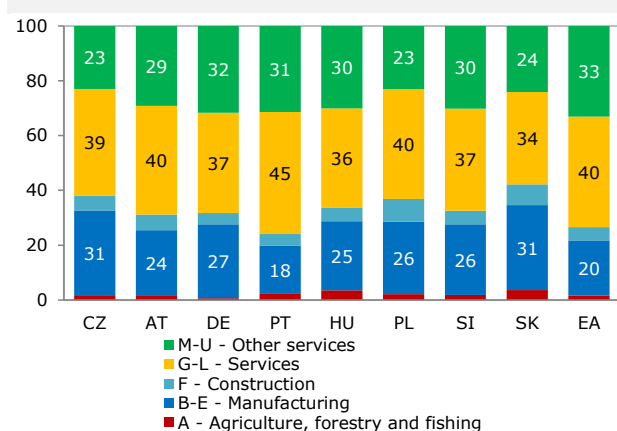
<sup>38</sup> This was shown in Box 2 in the 2016 Alignment Analyses.

### Structural similarity of the economies

The structural similarity of the countries under review with the euro area saw no major changes compared to last year. The Czech economy thus still ranks among those that differ the most from the euro area. The lower structural similarity poses a potential risk as regards euro adoption, as it could lead to asymmetric shocks, to which the single monetary policy would not be able to respond in full.

**Most of the countries under review, including the Czech Republic, have an above-average share of industry in GDP compared to the euro area.** Moreover, the Czech Republic saw a further slight increase in the share of industry last year (to 31%; the potentially strongly cyclical and technological change-intensive car industry dominates). Nevertheless, Germany also has a relatively high share of industry in GDP (see Chart 18).

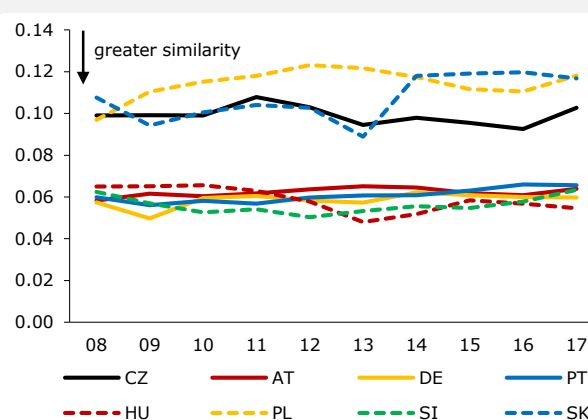
**Chart 18: Shares of economic sectors in GDP in 2017 (%)**



Note: The sectors are broken down by NACE classification: A – agriculture, forestry and fishing; B–E – industry; F – construction; G–L – services (wholesale and retail trade, transport, hotels and restaurants, ICT, financial intermediation, real estate); M–U – other services.

Source: Eurostat, CNB calculations.

**Chart 19: Structural similarity vis-à-vis the euro area**



Note: The Landesmann index takes values in the range [0;1]. The closer the index is to zero, the more similar is the structure of the economies under comparison. Given the methodological changes in the GDP calculation and the revisions of the historical GDP data, the results published in previous issues of this publication may differ slightly from this year's figures.

Source: Eurostat, CNB calculations.

**The different structure of value added is also reflected in the Landesmann index,<sup>39</sup> which in 2017 was highest in Slovakia and Poland, followed by the Czech Republic** (see Chart 19). In addition to high shares of industry in GDP, these countries have below-average shares of public administration, defence, education and health and social care compared to the euro area. Conversely, the other countries under review have been showing high structural similarity, i.e. low Landesmann index levels, over the last few years.

### Integration of the economy with the euro area

By contrast, the persisting strong trade and ownership links with the euro area have long been one of the strongest arguments for the Czech Republic joining the euro area. Strong trade and ownership integration increases the probability of economic alignment with the monetary union economy and reduces the risk of asymmetric shocks occurring in the event of euro adoption. It thus reduces the potential costs associated with adopting the single monetary policy. At the same time, it creates

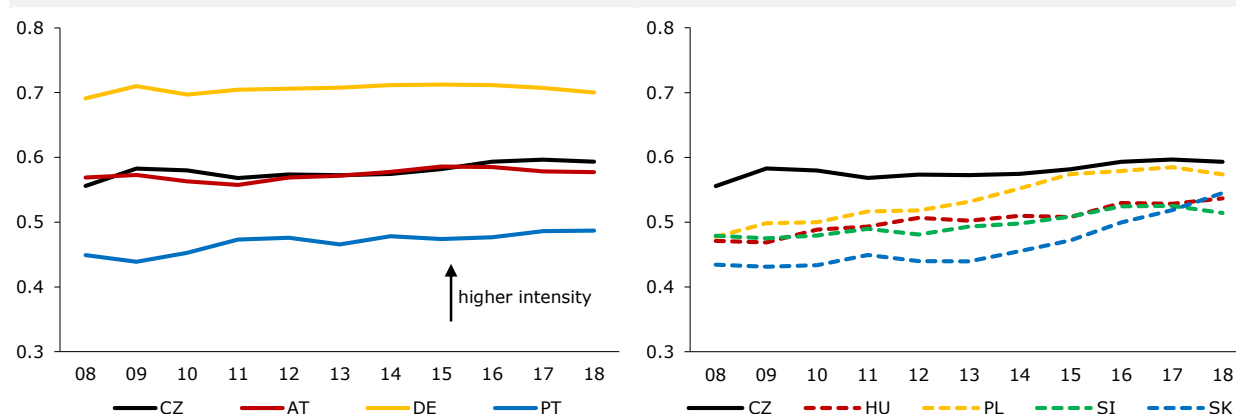
<sup>39</sup> The Landesmann index compares the shares of the ten main sectors of the economy according to the NACE classification in total value added between the countries under comparison and a reference country, in our case the euro area. As the index sums deviations from the average, two countries with the deviation of the same size in different sectors may have the same Landesmann index level.

potential for large benefits stemming from the elimination of exchange rate risk and from transaction cost savings upon euro adoption. The Czech Republic's high share of foreign trade with the euro area and the membership of domestic firms in multinational groups also represent a significant channel for the transmission of economic stimuli from the euro area to the Czech economy.

**The share of trade with the euro area in total trade turnover has long been very high in the Czech Republic.** The Czech Republic is characterised by strong links with the euro area on both the import and export sides. The share of exports to the euro area<sup>40</sup> in total Czech exports is the highest among the countries under review, with only Portugal reaching the same level in 2018 (65%).<sup>41</sup> The share of imports from the euro area in total Czech imports was only slightly lower in 2018 (60%). Of the countries under review, only Austria and Portugal have higher shares of imports from the euro area in total imports.

**The Czech Republic also has a high intensity of intra-industry trade with the euro area** (see Chart 20). This indicator of the structural similarity of economies has also long been stable, showing high levels comparable with Austria; only Germany has a higher intensity of intra-industry trade with the euro area. The other Central European countries under review have a lower intensity of intra-industry trade with the euro area, although the trend is slightly upward. Intra-industry trade is usually particularly significant for technology-intensive products, which similarly advanced countries trade among themselves. Strong intra-industry trade fosters cyclical convergence and can also favourably affect the economy's ability to absorb economic shocks.<sup>42</sup>

**Chart 20: Intensity of intra-industry trade with the euro area**  
(under SITC5)



Note: The results were calculated using the five-digit SITC classification. To analyse intra-industry trade we used the Grubel-Lloyd index, which indicates the share of the absolute amount of intra-industry trade in total foreign trade turnover with the euro area. The 2018 figure is for the first four months of the year.

Source: Eurostat, CNB calculations.

**Alignment of economic activity is also fostered by ownership links,<sup>43</sup> which, in the case of investment from the euro area in the Czech Republic, are the highest among the countries under comparison.** They amount to more than 65% as measured by the share of foreign direct investment from the euro area in domestic GDP. By contrast, ownership links with the euro area defined in the other direction, i.e. direct investment from the countries under review in the euro area as a percentage of their GDP, are still low in the case of the new EU members, averaging around

<sup>40</sup> Around half of Czech exports to the euro area go to Germany. The second-largest trading partner is Slovakia.

<sup>41</sup> Figure for the first four months of 2018.

<sup>42</sup> Among other things, intra-industry trade growth may have a positive effect on the costs and speed of restructuring, since the transfer of resources may be faster and less costly if effected within an industry rather than between industries.

<sup>43</sup> Ownership links with the euro area are measured by the ratio of the stock of foreign direct investment from the euro area in the countries under review to GDP and by the ratio of the stock of direct investment (DI) from the country under review in the euro area to GDP.

10%. The Czech Republic has much higher ownership links with the euro area than do the other new Member States (18.5%), but is at a much lower level than the advanced EU Member States (where this indicator exceeds 30%).

### Alignment of financial cycles

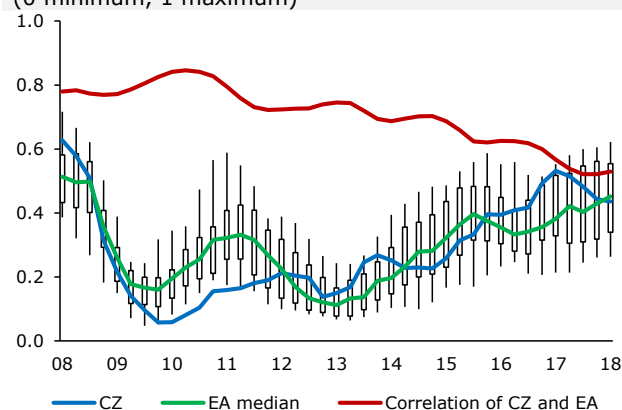
The ECB's persisting accommodative monetary policy supported an upward shift of most euro area countries in the financial cycle. The Czech economy, by contrast, stopped moving further into the growth phase owing to a tightening of national policies. The positions of the euro area and the Czech Republic in the financial cycle have converged due to these circumstances, but the correlation of their cycles is showing a downward trend and the difference in the contributions of the individual factors causing the shifts in the financial cycle have moreover increased further. The observed developments thus led overall to a decrease in the alignment of the positions of the Czech and euro area economies in the financial cycle as measured by the financial cycle indicator. This increases the potential costs arising from the loss of national monetary policy and the limits imposed on national powers in the supervision of credit institutions as a result of adopting the euro.<sup>44</sup>

#### The financial cycles of the Czech Republic and the euro area showed different developments in 2017.<sup>45</sup>

While the euro area economy moved higher into the growth phase of the financial cycle, the growth in the Czech economy halted during the year (see Chart 21). The time-varying correlation of the financial cycle indicators has been decreasing in recent years and fell to 0.5 in 2017. However, the opposite movements in the financial cycle indicators in the Czech Republic and the euro area in 2017 helped align their positions in the financial cycle. Moreover, the path of the indicator suggests that the financial cycle of the Czech economy has in many instances been outside the interquartile range of the euro area countries since 2007.<sup>46</sup> In 2009–2011, the Czech indicator was at the lowest levels recorded by the euro area countries. In 2014, by contrast, the Czech economy entered an expansionary phase of the financial cycle, and in 2016 it attained the highest levels among the countries under review. The observed developments thus point rather to misalignment of the Czech and euro

**Chart 21: Simplified financial cycle indicators for the Czech Republic and the euro area<sup>44</sup> and their correlation**

(0 minimum, 1 maximum)



Note: The simplified financial cycle indicator takes values from 0 to 1, with higher values corresponding to an expansionary phase of the financial cycle. The boxplot shows the maximum value, the 75% quantile (the start of the rectangle), the 25% quantile (the end of the rectangle) and the minimum value of the simplified financial cycle indicator in the euro area countries for each period.

Source: Eurostat, ECB, BIS, national central banks, CNB calculations.

<sup>44</sup> The effect of monetary and macroprudential policy on the financial cycle is discussed in detail in Box 5.

<sup>45</sup> A simplified financial cycle indicator has been constructed for this document in order to assess the country's position in the financial cycle. For details see Box 5 and the *Methodological Part*. However the position of the economy in the financial cycle should be interpreted bearing in mind that there are numerous ancillary factors affecting the cycle which this simplified indicator does not cover due either to unavailability of sufficiently granular data or to complexity of measurement. The construction and composition of the simplified indicator differs from the financial cycle indicator used in the CNB's Financial Stability Report, mainly because of the unavailability of similar data for all the countries analysed. As a result, the results for the Czech Republic may be different.

<sup>46</sup> Some small euro area economies which might have diverged significantly (e.g. Malta, Cyprus and Luxembourg) were excluded from the analysis. Also excluded were some Eastern European countries for which sufficiently long time series are missing (the Baltic states). Overall, 13 euro area countries, with a total share in GDP exceeding 97%, were included in the analysis.

area financial cycles in the short and medium term. The significant heterogeneity in financial cycles across euro area member states should also be taken into account when assessing the alignment of the Czech and euro area financial cycles. From the long-term perspective, the financial cycle in the Czech Republic is synchronised more with those in other Central and Eastern European countries than with those in Western European countries.

**The biggest contributors to the movements in the simplified financial cycle indicator for the Czech Republic in 2017 were the interest margin on loans to households, property prices and consumer confidence.** The largest change was a decline in the contribution of the credit impulse in the household sector, as loans for house purchase – despite recording continued large volumes – saw a modest fall in growth. Downward pressure on interest margins in the household sector had the opposite effect. Although the simplified financial cycle indicator is currently showing similar values for the Czech Republic and the euro area, the contributions of the individual cyclical factors are different. This difference widened further in 2017. This implies a need for different stabilisation policies and potential preventive measures.

#### **Box 5: The effect of monetary and macroprudential policies on the financial cycle**

**In addition to their intended impacts on the real economy, monetary policy instruments act on the financial system via the transmission mechanism.** Monetary policy affects the position of a country in the financial cycle mainly by influencing credit standards, lending activity, the degree of risk taken by financial institutions and prices of financial and non-financial assets.<sup>47</sup> Under certain financial and economic conditions, monetary policy – the instruments of which do not respond primarily to the financial cycle – may amplify the volatility of the financial cycle, resulting in a need to respond additionally to such volatility with macroprudential policy instruments.

**Timely application of appropriate macroprudential instruments and possibly also instruments of financial market supervision to some extent neutralises the unintended side effects of monetary policy and thereby averts a decrease in the resilience of a country's financial system to negative shocks.** Financing sources in financial systems became significantly cheaper in the period of very accommodative monetary policy that persisted in European countries after the global financial crisis. This supported credit growth and a rise in investment asset prices for an extended period of time. In response, several countries introduced prudential instruments<sup>48</sup> such as DTI, DSTI, LTV limits or increased countercyclical capital buffer rates to prevent a fall in the quality of loans provided and to increase the resilience of lenders.

**However, the application of macroprudential policy instruments or supervisory instruments may be complicated by the existence of various institutional and technical restrictions<sup>49</sup> which will be extended further after entry into the banking union** (see Box 3 in these Alignment Analyses). At the same time, the effectiveness of macroprudential instruments hinges on the competent authority showing an optimum degree of aggressiveness so that overreaction by the authority does not create additional undesirable effects in the system. When applying the single monetary policy in the Czech Republic, it would therefore be desirable to ensure that it does not foster excessive swings in the financial cycle of the Czech economy, as overly aggressive national macroprudential policy of the CNB, which is lagged in its effect, might ultimately become very costly.

**The aforementioned interaction between monetary and macroprudential policies in various European countries was analysed using the financial cycle indicator.** Among the four

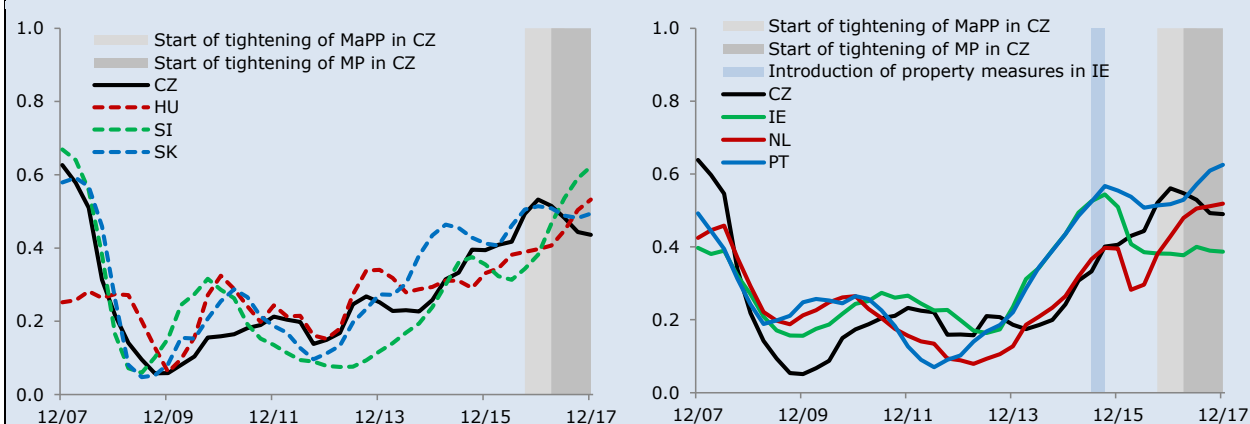
<sup>47</sup> The effects of monetary policy on financial stability are described clearly and concisely in, for example, *The interaction of monetary and macroprudential policies – background paper* (IMF, 2012) and *The interaction of monetary and macroprudential policies in the pursuit of the central bank's primary objectives* (Frait, Malovaná, Tomšík, 2015).

<sup>48</sup> European countries and the macroprudential instruments employed by them are described, for example, in *Financial Stability Report 2017/2018*, Table V.4.

<sup>49</sup> This includes, for example, the need to apply politically unpopular instruments, the length of the approval process and notifications of macroprudential instruments.

converging Central European economies (the Czech Republic, Hungary, Slovenia and Slovakia), comparisons were made between the countries with their own monetary policy (the Czech Republic and Hungary) and the euro area member states (Slovenia and Slovakia) and also the countries with more active (the Czech Republic and Slovakia) and less active (Hungary and Slovenia) macroprudential policies. In the Czech Republic, the rapid upward shift in the financial cycle halted as a result of gradual macroprudential policy tightening, and the simplified indicator even declined slightly after monetary policy was tightened (see Chart B9, left-hand side). Slovakia managed to postpone a further shift into the growth phase of the financial cycle through active macroprudential policy. Although macroprudential policy is slightly tighter in Slovakia than in the Czech Republic, the financial cycle indicators for the Czech Republic and Slovakia diverged, partly because of the continued expansionary monetary policy of the ECB. A rapid upward shift in the financial cycle has recently also been observed for Hungary and Slovenia due to easy monetary policy,<sup>50</sup> which has not been corrected through active macroprudential policy.

**Chart B9: Effect of monetary and macroprudential policies on the financial cycle in selected countries**  
(0 minimum, 1 maximum)



Note: The simplified financial cycle indicator takes values from 0 to 1, with higher values corresponding to an expansionary phase of the financial cycle.

Source: CNB calculation using ECB, Eurostat, BIS and NCB data.

**It is also interesting to compare the effects of monetary and macroprudential policies between the Czech Republic and selected Western European countries** (Ireland, the Netherlands and Portugal; see Chart B9, right-hand side). This selection includes countries with active macroprudential policy (the Czech Republic and Ireland) and two less active countries (the Netherlands and Portugal). A comparison of developments in Ireland and Portugal shows the effect of macroprudential policy on the economy in the financial cycle. Both countries were hit hard by the global financial crisis of 2008–2009 and later recorded almost identical financial cycle movements.<sup>51</sup> Following very intense growth in the cycle in both countries, divergence is apparent after the Irish macroprudential authority significantly tightened certain macroprudential measures,<sup>52</sup> thereby slowing the upward shift in the financial cycle and stabilising the position (similarly to macroprudential policy in the Czech Republic). On the other hand, Portugal moved upwards in the cycle in the absence of more active macroprudential policy and is currently above the peak reached in 2006 despite a slight correction in 2016. Similar developments as in Portugal can be observed for the Netherlands.

<sup>50</sup> Hungary has been easing monetary policy since 2012 and has not started tightening it yet.

<sup>51</sup> The simple correlation of the two countries' financial cycles was around 0.81 until the introduction of macroprudential measures.

<sup>52</sup> The Irish central bank introduced limits for mortgage loans in February 2015. The loan-to-value (LTV) ratio for first-time buyers was limited to 90% of the value of a residential property not exceeding EUR 220,000 and to 80% of any balance above EUR 220,000. The loan-to-income (LTI) ratio was also limited to 3.5.



### Interest rate convergence

The growing short-term interest rate differential between the Czech Republic and the euro area indicates that the ECB's single monetary policy would not fully meet the needs of the domestic economy in the current phase of the business cycle. In the long run, however, koruna interest rates are close to euro ones, so the risk of there being a large shock associated with interest rate convergence upon euro adoption remains relatively small.

**The nominal interest rate differential for the short-term and long-term rates of the Czech Republic vis-à-vis the euro area increased, mainly as a result of gradually tightening domestic monetary policy.** The three-month interest rate differential vis-à-vis the 3M EURIBOR started rising in late 2017, reaching 1.3 pp in June 2018 (see Chart 22). In Hungary, by contrast, the 3M rate neared zero in 2017 Q4 due to additional unconventional monetary measures taken by the central bank, so the interest rate differential vis-à-vis the euro area narrowed. In Poland, the 3M rate has been stable since 2015 and the differential with respect to euro rates remains at around 2 pp.

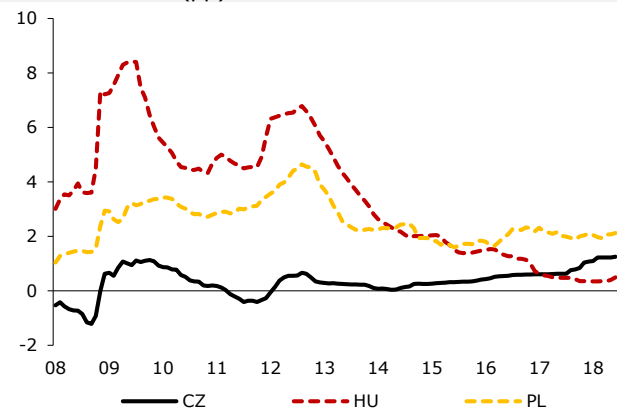
Turning to ten-year government bonds, Czech yields rose more than German ones,<sup>53</sup> the gap between them reaching 1.8 pp on average in June 2018. In addition to current negative sentiment towards emerging markets, the growth in Czech yields was fostered by expectations of further increases in the CNB's rates. This notwithstanding, Czech bond yields are below Polish and Hungarian ones, whose differentials vis-à-vis German yields remain around 3 pp despite some swings.

### Exchange rate volatility and alignment

The implied and historical volatility of the koruna-euro exchange rate remains elevated following the exit from the exchange rate commitment. The rolling correlations of all the currencies under review in the region with the euro have been relatively high in recent years. The correlation of the exchange rates of the koruna and the euro against the dollar remains the highest by comparison with the Hungarian forint and the Polish zloty. The Czech currency therefore reacts to changes in the environment outside the euro area similarly to the euro. This indicates a high degree of alignment.

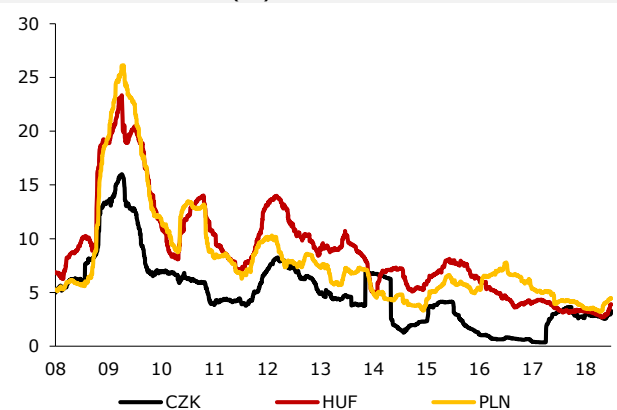
**The implied and historical volatility of the Czech currency vis-à-vis the euro was little changed last year.** The exit from the

**Chart 22: Differences in 3M interest rates vis-à-vis the euro area (pp)**



Source: Eurostat, CNB calculations.

**Chart 23: Historical volatility of exchange rates vis-à-vis the euro (%)**



Source: Datastream, CNB calculations.

<sup>53</sup> German government bond yields are used as the reference for long-term rates. Long-term rates in some euro area countries have recorded extreme values in the past, so the euro area average influenced by such countries cannot be considered a suitable benchmark.

CNB's exchange rate commitment in April 2017 increased the historical volatility to similar levels as those recorded by the Polish and Hungarian currencies (see Chart 23). Financial market tensions linked with the threat of a global trade war fostered an increase in the volatility of all the currencies in the region in 2018 Q2. At the end of the period under review, a similar trend can be observed for the implied volatility, i.e. the expected volatility of the countries' exchange rates as reflected in the prices of options for the individual currencies. Overall, however, the volatility of the exchange rate of the koruna remains lower than before the exchange rate commitment was introduced.

**The movements in the exchange rates of the currencies under review vis-à-vis the dollar were similar to the euro movements** (see Chart 24). The movements in the exchange rates of these currencies were influenced to a large extent by geopolitical developments and related increasing risk aversion in 2017 H2 and 2018 H1.<sup>54</sup>

**The similar exchange rate movements were reflected in increased rolling correlations of the currencies under review vis-à-vis the dollar with euro movements vis-à-vis the dollar.**

The rolling correlation between the exchange rates of the Czech koruna, the Hungarian forint and the Polish zloty against the dollar on the one hand and the exchange rate of the euro against the dollar on the other reached levels close to 0.9 in late 2017 and early 2018. The correlation of the koruna's exchange rate recorded a temporary sharp decline following the exit from the CNB's exchange rate commitment<sup>55</sup> but later rose quickly again to the levels of around 0.9 observed before the commitment was introduced. As in the past, throughout 2018 it has also been higher than the correlations of the Hungarian forint and the Polish zloty (see Chart 25). A high correlation of the exchange rates of two currencies vis-à-vis a third, reference currency reflects similarity of the factors which affect those exchange rates, and is a sign of lower intensity of asymmetric pressures.

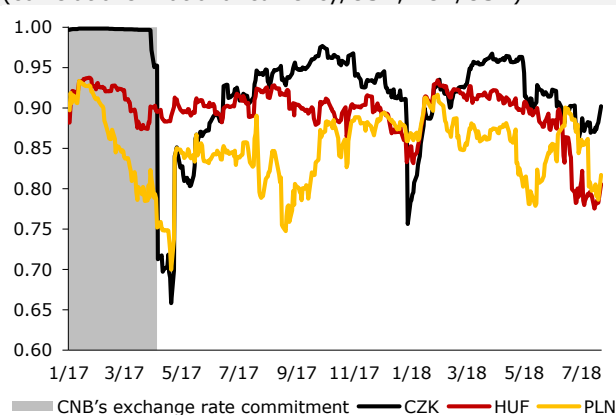
**Chart 24: Exchange rates against the US dollar**  
(index, January 2017 = 100)



Source: Datastream.

**Chart 25: Correlations of exchange rates against the US dollar**

(correlations: national currency/USD, EUR/USD)











Source: Datastream, CNB calculations.

<sup>54</sup> The risk of US policy-related trade wars, Brexit, disagreements in the German government on migration policy, political tensions in Italy and the situations in North Korea and Turkey took centre stage politically.

<sup>55</sup> See Box 3 in the 2017 Alignment Analyses.

### 3.2 SIMILARITY OF MONETARY POLICY TRANSMISSION

-  Depth of financial intermediation
-  Private sector debt
-  Structural similarity of non-financial corporations' balance sheets in the Czech Republic and the euro area
-  Structural similarity of households' balance sheets in the Czech Republic and the euro area
-  Structural similarity between the volume of loans of non-financial corporations in the Czech Republic and the euro area
-  Structural similarity between the volume of loans for house purchase in the Czech Republic and the euro area
-  Spontaneous euroisation
-  Inflation persistence

#### Financial system

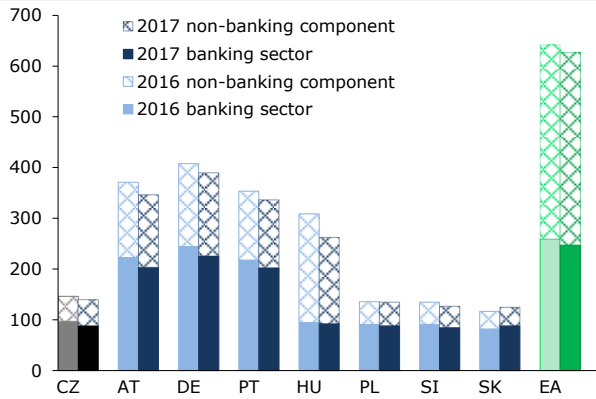
*The depth of financial intermediation and the level of private sector debt in the Czech Republic are well below the euro area average. However, the latter does not represent a level to which the Czech financial sector should converge, as several euro area countries have overleveraged private sectors.*

**The difference in the extent of financial intermediation between the Czech Republic and the euro area narrowed slightly last year but remains pronounced.** The depth of financial intermediation<sup>56</sup> fell by 6.2 pp year on year to 140% in the Czech Republic and declined by 15.4 pp to 626.4% in the euro area (see Chart 26). However, the depth of financial intermediation in the euro area should not be regarded as a level to which the Czech financial sector should converge, as an excessively large financial sector combined with the interconnectedness of individual financial institutions can represent a source of risks.

The banking sector remains the dominant component of the financial system in the Czech Republic.<sup>57</sup> Nonetheless, the high rate of growth of the assets of investment and pension funds has also been increasing the importance of the non-banking component in recent years. However, the share of the non-banking component in the assets of the banking system as a whole remains well below the usual level in advanced euro area countries.

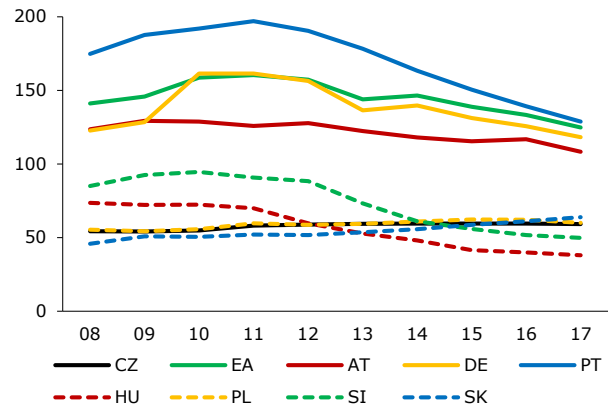
<sup>56</sup> The depth of financial intermediation is expressed as the ratio of the assets of financial institutions (excluding the central bank) to GDP. The banking sector's total assets are adjusted for exposures to the central bank. Financial accounts statistics and monetary and financial statistics data were used to prepare this section. These statistics enable international comparisons to be made, but may not always be identical to the national supervisory statistics on supervised financial institutions in individual countries due to certain methodological differences.

<sup>57</sup> The banking sector accounts for 79% of the assets of domestic financial institutions (excluding the CNB). Domestic banks are linked to the euro area banking sector mainly via the foreign ownership structure of the domestic banking sector. Foreign owners were managing 92.1% of the banking sector's assets at the end of 2017.

**Chart 26: Depth of financial intermediation**  
(assets of financial institutions as % of GDP)

Note: The financial sector excludes central bank assets. The banking sector's total assets are adjusted for exposures to the central bank. The euro area value exceeds the other countries in the charts due to the large volume of assets of financial corporations in Luxembourg, Ireland, the Netherlands and France both as a percentage of their GDP and in comparison with the total financial assets of the euro area.

Source: CNB, ECB, Eurostat, national central banks.

**Chart 27: Private sector debt**  
(% of GDP)

Note: EA represents the average of the euro area member countries weighted by the size of GDP.

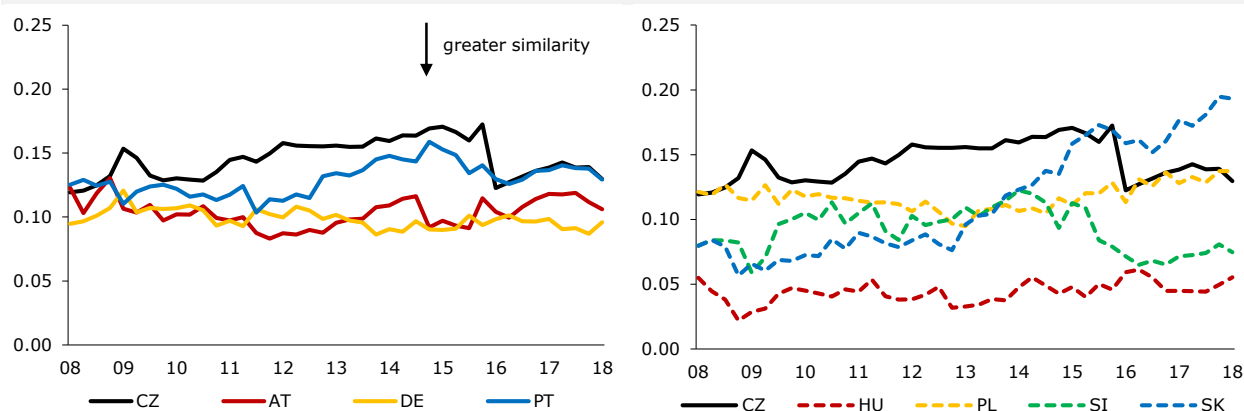
Source: IMF IFS, Eurostat.

**Czech households and firms remain significantly less indebted than their euro area counterparts.** The private sector debt ratio in the euro area has been gradually declining. It fell from an all-time high of 160% of GDP in 2011 to 125% of GDP in 2017. In the Czech Republic, by contrast, the ratio increased slightly in this period, from 58% to 59% of GDP (see Chart 27). However, given the loan growth in the domestic economy and ongoing private sector deleveraging in some euro area countries, convergence towards the euro area can be expected to continue in this area.

### Structure of financial assets and liabilities of corporations and households

A steady change in the balance sheet structure of corporations in the Czech Republic is leading to a gradual increase in their structural similarity with firms in the euro area. By contrast, the balance sheet structure of Czech households is showing inertia, so the differences in structure between the Czech Republic and the euro area remain bigger overall. This largely reflects the conservative approach of Czech households to investing in financial assets.

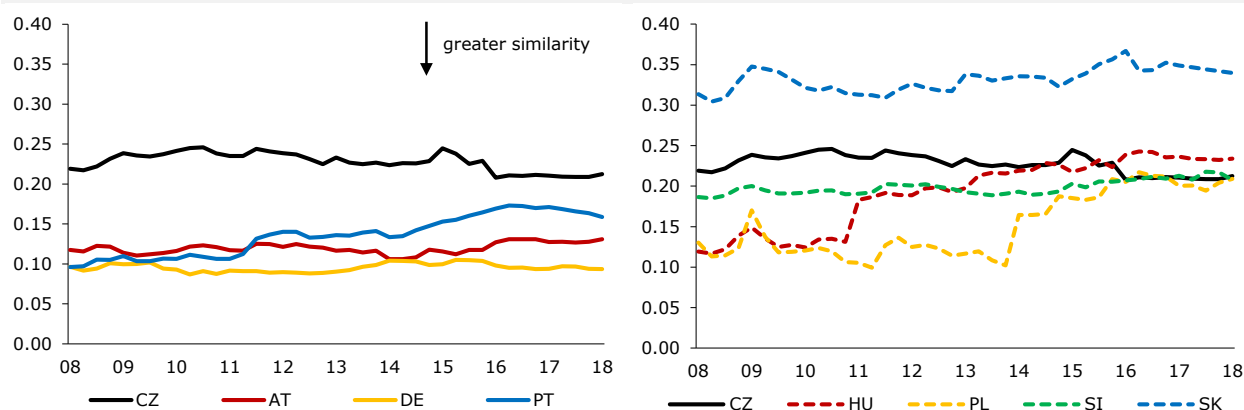
**The structural similarity of the balance sheets of Czech corporations with firms in the euro area increased slightly** (see Chart 28). This was due mainly to a decline in the share of other accounts payable, which are traditionally an important liability item in the Czech Republic and are used for very short-term financing (up to three months). Convergence of the share of bank loans also fostered greater structural similarity. Conversely, the recent downturn in issuance of debt securities in the Czech Republic is leading towards slight structural divergence. Corporations in the Czech Republic show greater similarity with the euro area than those in Slovakia and broadly the same similarity as those in Portugal and Poland.

**Chart 28: Structural similarity of non-financial corporations' balance sheets from the perspective of financial liabilities**

Note: The Landesmann index takes values in the range [0, 1]. The closer the index is to zero, the more similar is the structure of the balance sheets under comparison. The shares of the individual categories of liabilities in total liabilities were used for non-financial corporations. The sharp fall in the Landesmann index in late 2015 and early 2016 was caused by an increase in the proportion of shares of Czech corporations in the aggregate balance sheet due to a change in methodology.<sup>58</sup>

Source: ECB, CNB calculations.

**The structural similarity of the balance sheets of Czech households with households in the euro area is conversely little changed.** This is due to only very gradual convergence of the shares of liquid and investment balance sheet items. The last time the balance sheet structure of Czech households converged significantly towards the euro area, i.e. the share of currency and deposits in total assets decreased in favour of units and pension schemes, was in 2015 (see Chart 29). A similar trend has not continued since then. The Landesmann index is thus currently stuck at around 0.21 and is higher than in the other countries under comparison except those in the Central European region. Compared to households in the euro area, Czech households have so far thus taken less advantage of the opportunity to invest in financial assets. Given households' persisting different balance sheet structure, their sensitivity to a change in interest rates can thus be expected to differ as well.

**Chart 29: Structural similarity of households' balance sheets from the perspective of financial assets**

Note: The Landesmann index takes values in the range [0, 1]. The closer the index is to zero, the more similar is the structure of the balance sheets under comparison.

Source: ECB, CNB calculations.

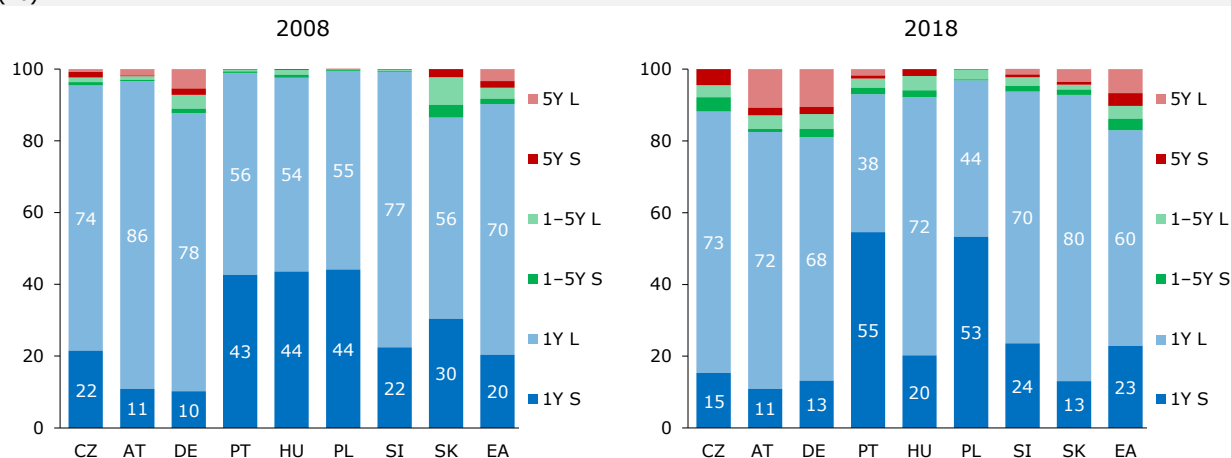
<sup>58</sup> The method used to calculate financial instruments AF.512 (Unlisted shares) and AF.519 (Other equity) was revised. This calculation was used to revise the data for 2016 Q1–2017 Q3; the data for 2017 Q4 were compiled using the revised method. A revision of the data for 2004 Q1–2015 Q4 is planned for 2020.

### Effect of monetary policy on client interest rates

The transmission of changes in financial market interest rates to client rates in the Czech Republic is relatively fast. Client rates on loans to non-financial corporations are more strongly affected by changes in interbank rates than are rates on loans to households, due, among other factors, to contractual links between rates in the former loan category and interbank rates. Transmission through the individual channels works with different intensities in the Czech Republic and the euro area due to different phases of the monetary policy cycle and to the use of unconventional instruments in the euro area. It is thus currently not feasible to compare transmission in the Czech Republic with that in the euro area. The spread between Czech client rates on loans to non-financial corporations and the overnight interbank rate is lower than that in the euro area and its structure is also slightly different, mainly reflecting the greater heterogeneity of euro area countries' risk premia.

**Most non-financial corporations in the countries under review take out loans with floating rates or rates fixed for up to one year. This gives rise to relatively fast transmission of changes in monetary policy rates and subsequently market rates to loan rates in this segment.** In the pre-crisis period, the transmission of a change in market rates to client rates in the Czech Republic was fairly fast for these loans (with 60% of the transmission taking place within a month).<sup>59</sup> In the post-crisis period, however, the short-term response to a change in the interest rate disappeared and the transmission weakened overall; the length of transmission stayed at 1–3 months, even for loans of up to CZK 30 million with fixation periods of over one year.<sup>60</sup> Going forward, the gradually increasing share of loans with fixation periods of over one year might lead to less sensitivity of total transmission (see Chart 30). However, this segment is currently not of great significance in the Czech Republic, as the weight of these loans is still low (12%).

**Chart 30: Structure of new loans to non-financial corporations by interest rate fixation period (%)**



Note: 1Y S and 1Y L stand, respectively, for small (up to EUR 1 million) and large (over EUR 1 million) loans with a floating rate or a rate fixed for up to one year, and the other items in the key denote such loans with longer interest rate fixations. The structure of the euro area total varies according to the increasing number of countries. The 2018 data are as of June.

Source: ECB, CNB calculations.

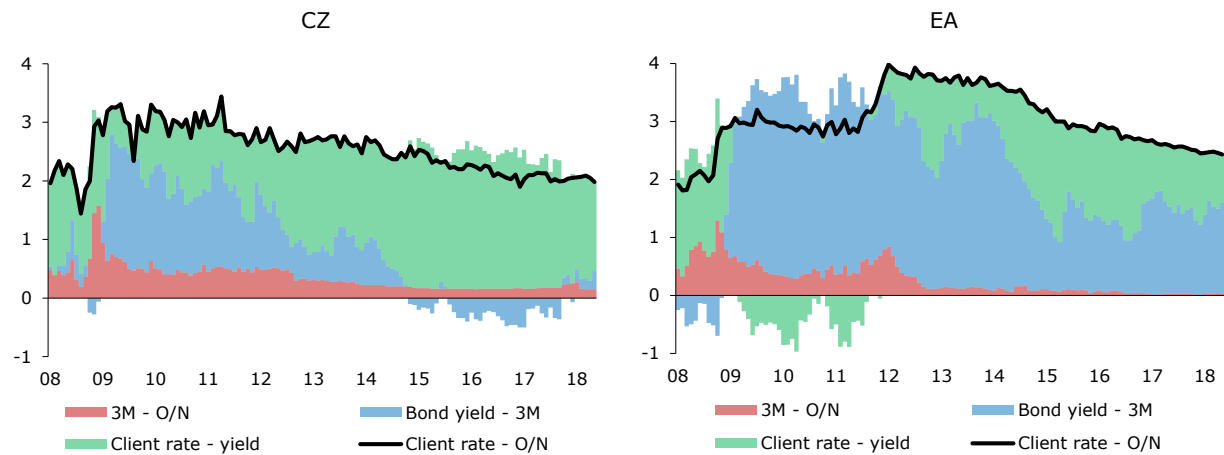
**The spread between client rates on loans to non-financial corporations and the overnight interbank rate is lower in the Czech Republic than in the euro area.** This reflects the lower client credit risk perceived by domestic banks and the substantial heterogeneity of the risk premia of the member states of the euro area, whose periphery countries increase the overall credit risk in the monetary union. In the euro area, the spread started to rise in 2011 as bond yields and later also client rates surged as a result of the debt crisis (see Chart 31). Since then it has been falling steadily,

<sup>59</sup> Horváth and Podpiera (2009) and Babecká-Kucharčuková et al. (2013).

<sup>60</sup> Havránek et al. (2016).

whereas in the Czech Republic a gradual downward trend has been observed since 2009. The crisis is also reflected in different spread structures in the Czech Republic and the euro area. The spread in the domestic economy is due predominantly to the difference between client rates and government bond yields, while that in the euro area is more strongly affected by sovereign default risk as captured by the difference between sovereign bond yields and the three-month money market rate.

**Chart 31: Decomposition of the spread between interest rates on loans to non-financial corporations and O/N interbank rates (pp)**



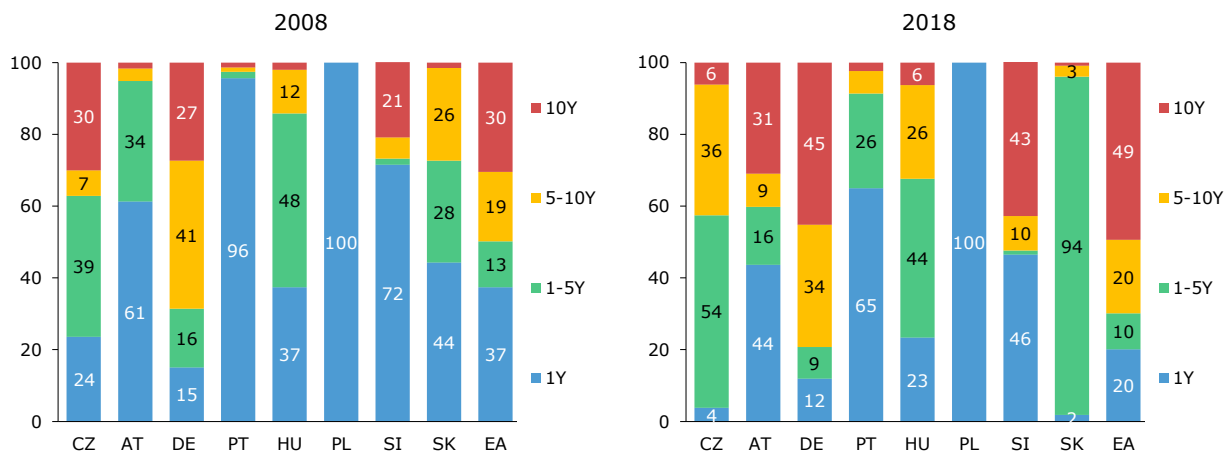
Note: 3M - O/N is the difference between the three-month rate and the overnight interbank rate. Bond yield - 3M is the difference between the five-year government bond yield and the three-month interbank rate. Client rate - yield is the difference between the client rate on loans to non-financial corporations and the five-year government bond yield. The data are monthly averages.

Source: ECB, CNB, CNB calculations.

**The share of loans with fixation periods of over five years in loans for house purchase, which are the main segment of household debt, rose in most of the countries under review.**

This was due to very low client rates and the incentive for households to fix rates as low as possible for as long as possible. In the Czech Republic, as in the euro area, households mostly take out loans with rates fixed for over one year. This contributes to similarity of monetary policy transmission to households' balance sheets (see Chart 32). However, loans with fixation periods of over one year and up to five years are still predominant in the Czech Republic, while loans with longer fixation periods dominate in the euro area (where almost half of all loans currently have rates fixed for ten years). Compared to last year, however, the Czech Republic saw a shift towards fixation periods of between five and ten years. This may lead to slower transmission and thus to alignment with the euro area.

**Chart 32: Structure of new loans to households for house purchase by interest rate fixation period (%)**



Note: The structure of the euro area total varies according to the increasing number of countries. The 2018 data are as of June. Source: ECB, CNB calculations.

### Spontaneous euroisation

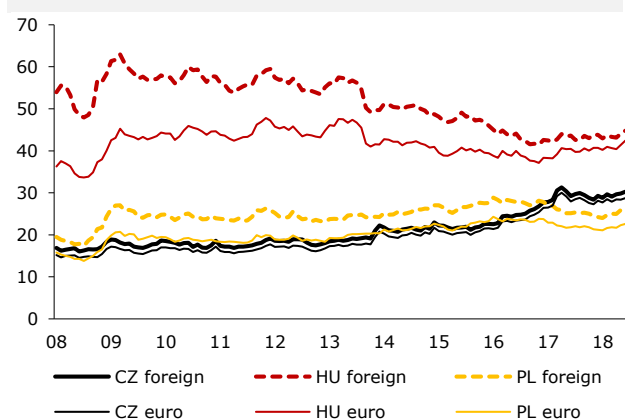
The process of spontaneous euroisation of the Czech economy is characterised by gradually rising use of the euro by non-financial corporations. This is due mainly to high trade integration with the euro area and to natural hedging against exchange rate risk. This process is likely to continue, strengthening the arguments in favour of adopting the euro. In the case of households, by contrast, euroisation has long been very low.

**The degree of spontaneous euroisation was essentially unchanged over the past year, but is gradually rising in the long run due to the Czech economy's high openness.** This is reflected in greater use of the euro in domestic payments by firms and higher drawdown of euro-denominated corporate loans. However, the share of foreign currency loans in total loans to the private sector is still one of the lowest in Central Europe (at 15%; the ratio of such loans to GDP is 8%). The share of foreign currency loans in total bank assets remains relatively low (6%). Deposit euroisation is negligible. Households' demand for foreign currency loans and deposits is low due to their high confidence in the domestic currency and to the stable macroeconomic and institutional environment.

**In the case of firms, the share of foreign currency loans in total bank loans remains close to a historical high, futures hedging by firms is increasing** (see Chart 33 and Chart 36). The drawdown of foreign currency loans is connected with significant trade integration with the euro area and with natural balance sheet hedging against exchange rate risk, which rose sharply before the exit from the exchange rate commitment in April 2017. After the exit, growth in foreign currency loans slowed. This was accompanied by a rise in export hedging by firms using classical futures operations.<sup>61</sup> The share of foreign currency loans in total loans to non-financial corporations thus stabilised at about 30%. By contrast, the ratio of foreign currency deposits to total corporate loans is below the long-term average.

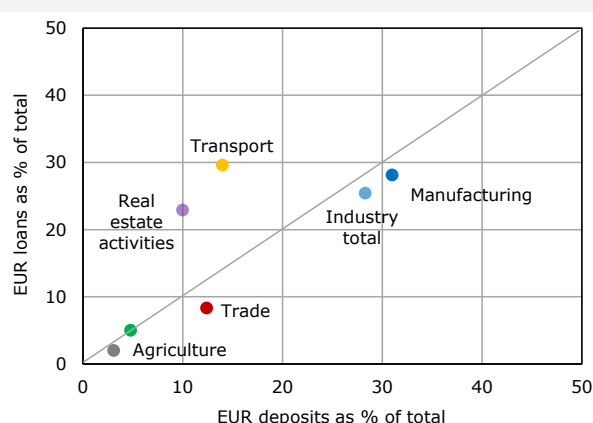
**As regards sector structure, euro-denominated loans are used mostly in industry and the real estate business, but they are also rising in volume in trade, transport and construction.** The share of euro-denominated loans provided by domestic banks to manufacturing has long followed an upward trend and now stands at a high 47%. This is related to the large proportion of exporters in this sector. The euroisation of loans and deposits is also asymmetrical as regards individual sectors (see Chart 34). The share of euro-denominated loans has increased in major sectors over the last ten years, while the share of euro-denominated deposits at domestic banks has been broadly flat or has even fallen in some sectors.

**Chart 33: Foreign currency loans to firms**  
(Shares in total loans with domestic banks, %)



Source: ECB, CNB calculations.

**Chart 34: Euro-denominated loans and deposits by sector**  
(2018, shares in total loans and deposits, %)



Source: CNB.

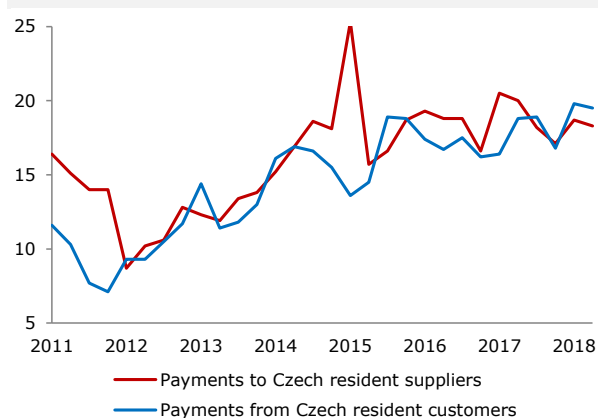
<sup>61</sup> According to a survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic (the "Survey"), about 44% of firms' exports were hedged using financial futures in 2018 Q2.



**Growth in euro-denominated corporate loans has recently also been fuelled by an increase in the differential between Czech and euro area client interest rates.** For large loans of over EUR 1 million, this differential is around 1 pp, supporting continued stronger growth in foreign currency loans (8.8% in June 2018) than koruna loans.

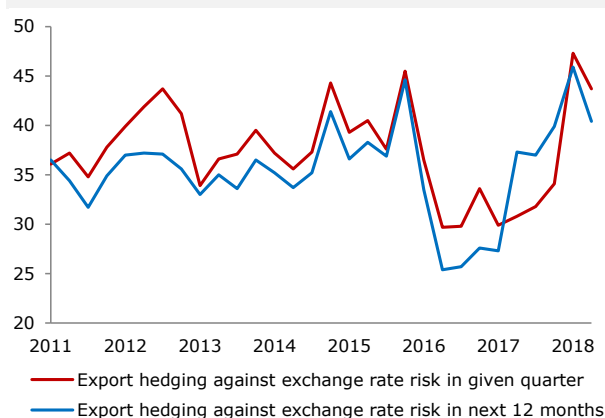
**The share of euro payments between Czech firms was little changed during 2018, but has doubled over the last few years.** Large, export-oriented industrial firms are thus preferring to pay domestic suppliers in euro in order to reduce exchange rate risk. The share of euro payments for materials, products and services between domestic non-financial corporations thus now stands at about 20% (see Chart 35).<sup>62</sup>

**Chart 35: Shares of euro payments between Czech firms (%)**



Source: Survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic.

**Chart 36: Shares of export hedging against exchange rate risk (%)**

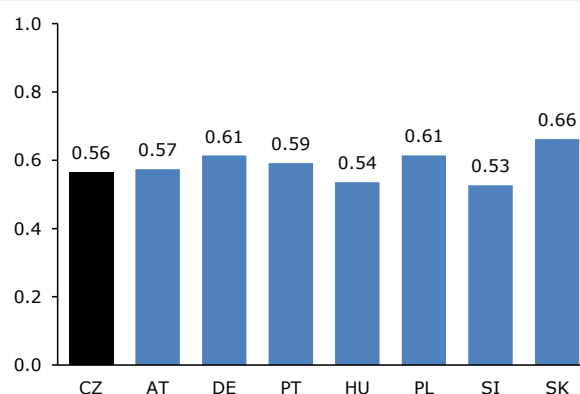


Source: Survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic.

## Inflation persistence

**Inflation persistence is generally lower in the Czech Republic than in the other countries under review** (see Chart 37). Inflation therefore returns to equilibrium relatively quickly, indicating a relatively good ability of the Czech economy to absorb macroeconomic shocks effectively. However, the differences in the estimated persistence between the countries in the group tested are economically insignificant and there is no obvious difference between the existing euro area countries and the non-euro area countries. The potential impacts of the single monetary policy would thus be similar in this respect in all the countries under comparison.

**Chart 37: Inflation persistence estimates**







Note: Calculation for 2008 Q1–2018 Q2. The closer the values are to one, the more persistent is inflation.

Source: Eurostat, CNB calculations.

<sup>62</sup> According to the Survey.

## 4 ADJUSTMENT MECHANISMS OF THE CZECH ECONOMY

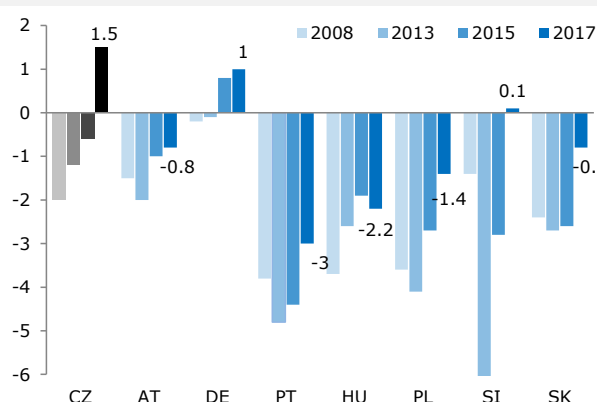
### 4.1 FISCAL POLICY

-  Cyclically adjusted general government balance
-  General government debt
-  Procyclical effect of fiscal policy
-  Long-term sustainability of public finances

The current favourable condition of Czech public finances is creating room for the stabilising function of fiscal policy to operate. However, that room will be limited in the future by recently approved discretionary measures, which will lead to growth in mandatory expenditures and will be reflected in a deterioration of long-term fiscal sustainability.

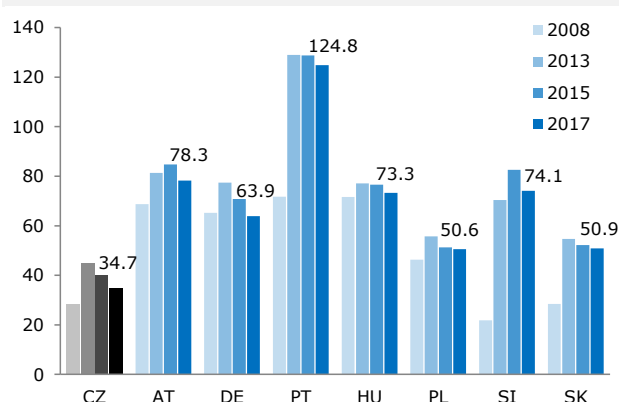
**Czech fiscal policy can be assessed favourably from the perspective of fulfilment of the convergence criteria and the Stability and Growth Pact obligations.** In the last two years, owing partly to sustained strong economic growth, the general government balance has recorded a sizeable surplus, which in 2017 reached 1.5% of GDP. Surpluses are also being achieved in structural terms. The medium-term objective (MTO) of a structural deficit of 1% of GDP is thus safely met. The current favourable public finance development is linked with a gradual decrease in the government debt-to-GDP ratio to 34.7% of GDP in 2017. Within the countries being compared, the Czech Republic currently has the best results in terms of both the general government balance and general government debt (see Chart 38 and Chart 39). The current favourable situation has created potential room for the implementation of necessary structural reforms and for fiscal policy to have the desired countercyclical effect both during the likely continued expansion of the domestic economy and in any future economic downturn.

**Chart 38: General government balance (% of GDP)**



Source: Eurostat.

**Chart 39: General government debt (% of GDP)**



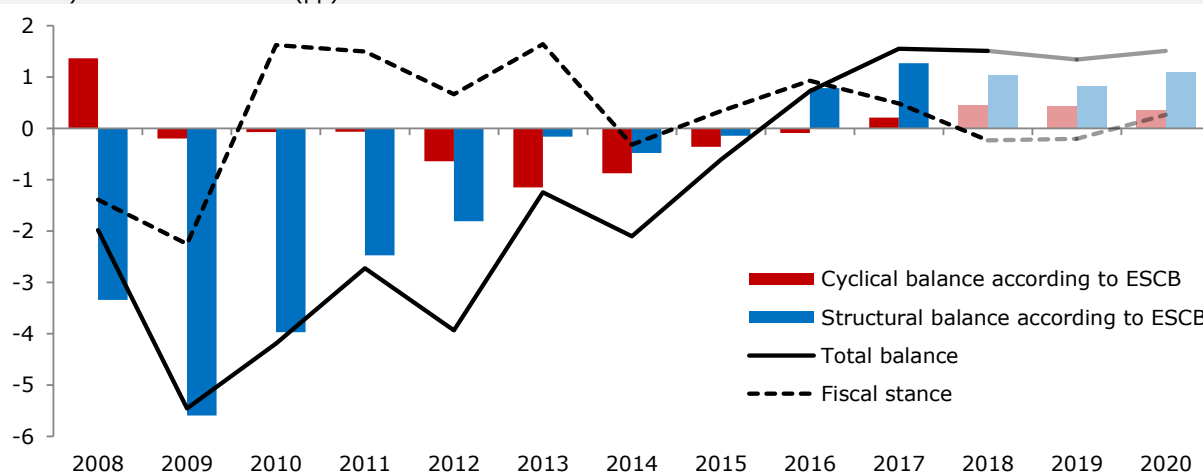
Source: Eurostat.

**The degree of operation of automatic stabilisers in the Czech economy is not very high.** This is due to relatively moderate progressivity of the tax system and a low amount of social benefits dependent on the cyclical position of the economy. These factors are reflected in lower total budgetary elasticity<sup>63</sup> to the output gap compared to the other countries under comparison.<sup>64</sup> In the

<sup>63</sup> Total budget elasticity expresses the total sensitivity of the general government balance to economic developments (to the output gap respectively).

past, the cyclical component has thus been around zero – usually below 1% of GDP (see Chart 40). The exceptions were 2008 and 2013–2014, when favourable and unfavourable developments, respectively, were so strong that the cyclical component deviated significantly from near-neutral levels. The lower effectiveness of automatic stabilisers in the Czech Republic was confirmed by an analysis of automatic stabilisers across income groups.<sup>65</sup>

**Chart 40: The Czech Republic's general government balance, its cyclical and structural components (% of GDP) and fiscal stance (pp)**



Note: The fiscal stance measures the year-on-year change in the structural balance. A positive figure indicates fiscal restriction and a negative figure fiscal expansion. The structural balance is the general government balance adjusted for the business cycle and one-off measures.

Source: CZSO (2008–2017) and CNB (2018–2020 forecast and calculations).

**The stabilising effect of fiscal policy via targeted discretionary measures has also been rather problematic in the Czech Republic over the long term.** The development of the structural balance illustrates that Czech fiscal policy has often been procyclical. Fiscal policy was significantly countercyclical only in 2009, when government anti-crisis measures leading to a deterioration of the structural deficit were adopted. The subsequent, too rapid switch to fiscal consolidation was one of the causes of the economic downturn in 2012 and 2013. Fiscal policy is expected to be procyclical this year, too, as the impacts of discretionary measures adopted last year with a negative effect on the general government balance will manifest themselves against a background of robust economic growth and rapidly rising tax revenues.<sup>66</sup> Growth in spending will additionally be fostered by an expected recovery in government investment co-financed from EU funds.

<sup>64</sup> According to the latest OECD estimates, total budgetary elasticity in the Czech Republic corresponds to 0.45. Slovenia and Poland have similar levels. Austria and Germany have the highest elasticities (0.60 and 0.66 respectively).

<sup>65</sup> This analysis is part of the *Report on Public Finance in EMU 2017* (European Commission, 2018c). It contains an estimate of the overall effect of the automatic stabilisation of fiscal policy on income, consumption and GDP using the Commission's macro-simulation model (QUEST) and also presents results from the EUROMOD micro-simulation model. According to these estimates, the degree of automatic stabilisation of average income in the Czech Republic is just below 30% (the EU average is 33%). Among the countries under comparison, the highest automatic stabilisation effects are in Austria (45%) and Germany (39%). The estimates for all the countries under consideration except Poland are higher than that for the Czech Republic. This is due to the lower progressivity of the Czech tax system compared to other countries.

<sup>66</sup> These measures include a strong growth in wages of government employees, a discretionary increase in pensions and a package of other measures in the social area.

**Recently adopted changes to the pension system and other social benefits will cause mandatory expenditures to increase.**<sup>67</sup> The recent changes to the pension system with the biggest adverse impacts on government expenditure include an adjustment of the indexation scheme, from 2019 a rise in the flat-rate component of pensions to 10% of the average wage from 2019, an increase in pensions for pensioners aged over 85 and a ceiling on the retirement age at 65 years.<sup>68</sup> A higher share of mandatory expenditures in total expenditures significantly limits the room for manoeuvre in the implementation of discretionary fiscal policy. As the majority of the recently increased mandatory expenditures will not act as automatic stabilisers in the Czech economy, i.e. their effect on the economy will not be significantly countercyclical, the potential stabilising role of fiscal policy in the Czech economy will decrease further.

**Mandatory expenditures are already considered to be relatively high in the Czech Republic.** In recent years (with the exception of 2015), they have accounted for more than 55% of total state budget expenditures, and their ratio to state budget revenues has usually been even higher (Table 1). Additionally taking into account quasi-mandatory expenditures,<sup>69</sup> the share of state budget expenditures of a binding nature exceeds three-quarters of total expenditures. For 2018, the state budget expects total mandatory and quasi-mandatory expenditures to account for 78.3% of total expenditures and 81.3% of total revenues.

**Table 1: Shares of mandatory and quasi-mandatory expenditures of the state budget (%)**

	2008	2010	2012	2013	2014	2015	2016	2017	2018	2019
Shares of mandatory expenditure in total SB expenditure	53.7	54.3	57.7	58.2	57.8	54.2	58.2	57.0	57.3	55.0
Shares of quasi-mandatory expenditure in total SB expenditure	19.9	18.7	17.7	17.5	17.3	17.5	18.9	20.2	21.0	21.3
Shares of mandatory expenditure in total SB revenue	54.7	62.8	63.3	62.5	61.7	57.0	55.4	57.3	59.5	56.5
Shares of quasi-mandatory expenditure in total SB revenue	20.3	21.6	19.4	18.8	18.5	18.4	18.0	20.3	21.8	21.9

Note: Actual data for 2008–2017, state budget projections for 2018–2019.

Source: Ministry of Finance of the Czech Republic (2018).

**The adjustments to the pension system are also reflected in a worse assessment of the Czech Republic in the long-term fiscal sustainability area.** This is apparent from the latest estimates in the outlook for age-related expenditure published by the European Commission in May 2018.<sup>70</sup> In 2016, the Czech Republic was in the most favourable situation among the countries under review as regards pension, health care and long-term care expenditure (relative to GDP). By 2060, however, the share of these age-related expenditures will have increased significantly in the Czech

<sup>67</sup> According to the definition used by the Ministry of Finance, mandatory expenditures include expenditures arising from statutory requirements and other mandatory expenditures (mainly expenditures arising under international treaties or due to judicial and extra-judicial decisions on disputes that are binding upon the Czech Republic). Included in particular are pension insurance benefits, government payments for health insurance, government social assistance, sickness insurance benefits, debt service expenditure, state contributions related to the support of building savings schemes and private pension schemes, allocations to state funds, expenditure on contributions to political parties, payments to the EU budget and unsuccessful arbitrations.

<sup>68</sup> Under the current rules, the retirement age will be unified at 65 years sometime around 2030 following many years of gradual automatic increases. Any subsequent increases in the retirement age will be within the discretionary powers of the government, which will decide on the basis of a draft pension system report submitted every five years by the Ministry of Labour and Social Affairs. Any proposals to change the retirement age will be based on the evolution of life expectancy so that the insured can spend, on average, one-quarter of their life in old-age pension.

<sup>69</sup> Quasi-mandatory expenditures are not required to be paid by law, other legal rules or contractual obligations. Nevertheless, they are mandatory payments, as the state cannot refrain from making them. They include wages of employees of budgetary and subsidised organisations, defence expenditure and suchlike.

<sup>70</sup> *The Ageing Report* (European Commission 2018d).

Republic (see Table 2). The projected increase in expenditure is markedly higher than expected in the previous ageing report of 2015, owing to the above increases in pension and long-term care expenditure.

**Table 2: Age-related government expenditures** (% of GDP)

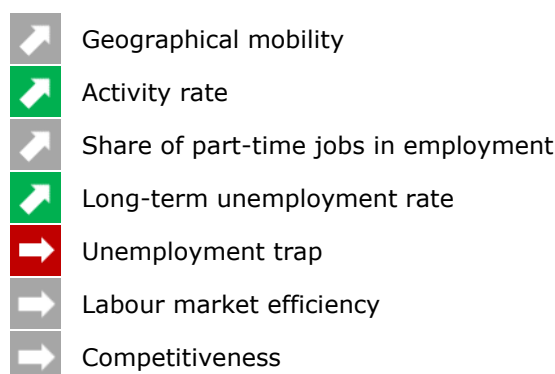
	Pensions		Health care		Long-term care		Total		Change
	2016	2060	2016	2060	2016	2060	2016	2060	60-16
<b>CZ</b>	8.2	11.6	5.4	6.6	1.3	2.8	14.9	21.0	6.1
<b>AT</b>	13.8	14.7	7.0	8.2	1.9	3.6	22.7	26.5	3.8
<b>DE</b>	10.1	12.5	7.4	8.1	1.3	2.0	18.8	22.6	3.8
<b>PT</b>	13.5	12.0	5.9	8.3	0.5	1.4	19.9	21.7	1.8
<b>HU</b>	9.7	11.1	4.9	5.8	0.7	1.1	15.3	18.0	2.7
<b>PL</b>	11.2	11.1	4.3	5.2	0.5	1.2	16.0	17.5	1.5
<b>SI</b>	10.9	15.2	5.6	6.8	0.9	1.8	17.4	23.8	6.4
<b>SK</b>	8.6	9.9	5.6	7.0	0.9	1.5	15.1	18.4	3.3
<b>EA</b>	12.3	12.4	6.8	7.5	1.6	2.7	20.7	22.6	1.9
<b>CZ<sup>a)</sup></b>	7.5	12.0	4.9	7.4	1.4	1.9	13.8	21.3	7.5

Note: a) CNB calculations.

Source: European Commission (2018d).

**The future increase in age-related expenditure poses a risk to general government debt and debt service costs, which are currently very low.** From the perspective of ensuring public finance sustainability and increasing the room for the stabilising function of fiscal policy to operate, it is now crucial to make changes to the pension system and the health care system. Changes for which there is room in the current favourable Czech public finance situation. However, the recently adopted changes to the pension system go in the opposite direction.

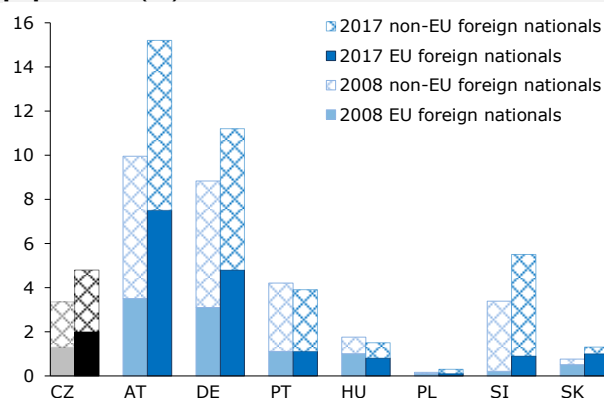
## 4.2 THE LABOUR MARKET AND THE PRODUCT MARKET



Labour market indicators have been improving in recent years largely because of the favourable phase of the business cycle. However, they are showing signs of a gradual rise in labour market flexibility in most of the areas under review. Labour market flexibility is being favourably affected by a rising share of foreign nationals in the population and a higher share of part-time jobs. The Czech Republic is one of the better-scoring countries under review as regards overall competitiveness.

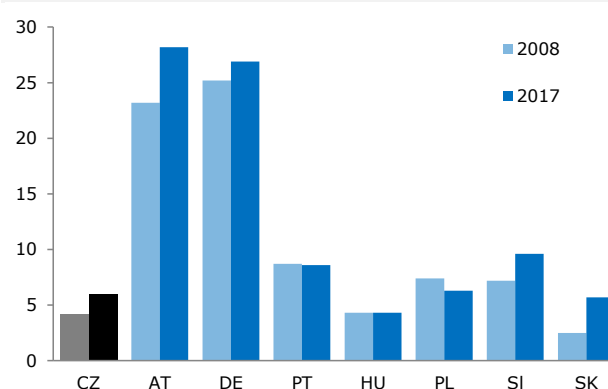
**The geographical mobility of the labour force in the Czech Republic is gradually rising.** This is due mainly to external labour mobility. One of its indicators is the share of foreign nationals in the population (see Chart 41), which has increased over the last decade in terms of foreign nationals from both EU countries and non-EU countries. Compared to Germany and above all Austria, however, the share of foreign nationals in the Czech population remains low. On the other hand, the willingness of the domestic population to migrate in search of work – within the Czech Republic or abroad – has long been low, almost constant and well behind that in other EU countries.

**Chart 41: Shares of foreign nationals in the population (%)**



Source: Eurostat, CNB calculations.

**Chart 42: Shares of part-time employment (%)**



Source: Eurostat.

**Increasing labour market flexibility is also indicated by a rising activity rate and falling long-term unemployment rate.** Over the past ten years, the rate of economic activity of the population has risen noticeably, reaching almost 76% in 2017. The Czech Republic has thus converged further towards the advanced euro area countries under review. Besides increases in the retirement age, the growth in the activity rate is due to a rising share of part-time employment in the economy, which has enabled people who often used to stay out of the labour force (e.g. parents of small children and people close to retirement age) to work. Despite this gradual rise, however, the share of part-time employment in total employment remains low by international comparison. As in other Central European countries, it is significantly below the usual levels in Germany and Austria

(see Chart 42). At the same time, there has been a continued decline in the long-term unemployment rate, which stood at its lowest-ever levels in the Czech Republic last year and was even lower than in Germany and Austria. Although this was largely for cyclical reasons, it also signals that there are no major structural problems and therefore that labour market flexibility is high.

**By contrast, labour market flexibility is being reduced by a relatively deep unemployment trap.**<sup>71</sup> It has stabilised around 80% in recent years and is among the highest in the countries under review (see Table 3). Its depth in the Czech Republic is linked with the degree of taxation and the significant role of the social system and various types of benefits. These can greatly reduce the incentive to return to work, especially among unemployed persons with low income potential. The incentive for low-income employees to seek better-paid work is relatively low for similar reasons.<sup>72</sup>

**Table 3: Unemployment trap (%)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>CZ</b>	66.9	68.2	79.5	80.0	80.2	80.1	80.1	80.2	80.3
<b>AT</b>	67.6	67.8	67.0	67.2	67.4	67.6	67.8	68.0	68.1
<b>DE</b>	74.2	73.9	74.9	72.9	73.3	73.3	73.0	73.0	73.1
<b>PT</b>	81.5	81.1	80.7	79.0	79.0	79.2	80.0	79.8	80.3
<b>HU</b>	80.6	80.3	80.6	79.9	79.6	79.5	78.8	78.6	78.4
<b>PL</b>	78.2	76.2	76.0	81.6	80.7	80.8	80.9	79.4	81.8
<b>SI</b>	80.7	83.4	83.4	83.2	89.7	89.5	89.8	89.7	89.6
<b>SK</b>	43.6	44.3	42.2	42.6	44.3	44.3	44.3	44.5	44.7

Note: The figures are based on a model example of an unmarried, childless individual with a wage of 67% of the average wage.  
Source: Eurostat.

**In an international GCI<sup>73</sup> comparison, the Czech Republic is one of the better-scoring countries in overall labour market quality.** Wage-bargaining flexibility on the Czech labour market scores particularly well (see Chart 43). This holds true despite gradual legislative increases in the minimum wage, as its ratio to the average wage is still low by comparison with the other countries under review. It therefore has no major negative effect on wage-setting flexibility, which is one of the highest among the countries under review. By contrast, high costs associated with hiring and dismissing both domestic and foreign workers and related low internal labour mobility are factors lowering labour market quality and hence also the Czech Republic's competitiveness.

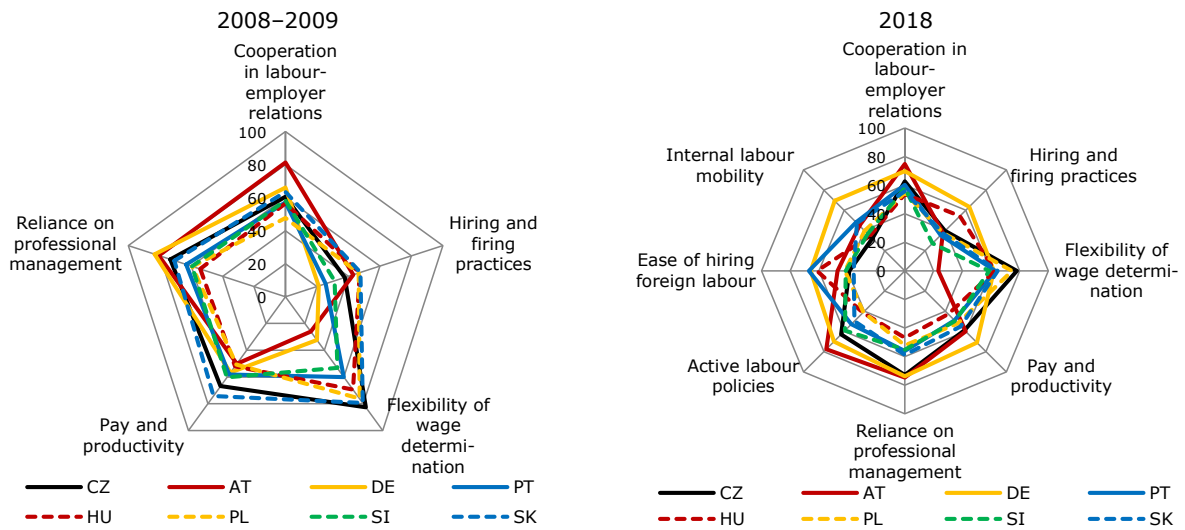
**As regards overall competitiveness, the Czech Republic has a favourable GCI score, but there is clearly room for the domestic economy to improve in the areas of institutions and innovation** (see Chart 44). Within the institutions pillar, government regulation and adaptation by the government to changes in long-term technological, social, economic and demographic trends receive particularly poor scores. Competitiveness in the innovation area is hampered mainly by customers' focus on low product prices and by low labour force diversity. Despite that, the quality of institutions and innovation scores are at the average level of the countries under comparison. By contrast, the Czech Republic scores very well for infrastructure thanks to the density and interconnectedness of its road network. The Czech Republic received its best score for macroeconomic stability, sharing first place with 30 other countries. Overall, it ranks 29th out of the 140 countries covered by the index. Among the countries under review, it ranks third behind Germany and Austria.

<sup>71</sup> The unemployment trap measures the proportion of gross income that is taken away when an unemployed person enters employment due to higher taxes and social security contributions and the loss of unemployment benefit and other social benefits.

<sup>72</sup> This situation is referred to in the literature as the low wage trap.

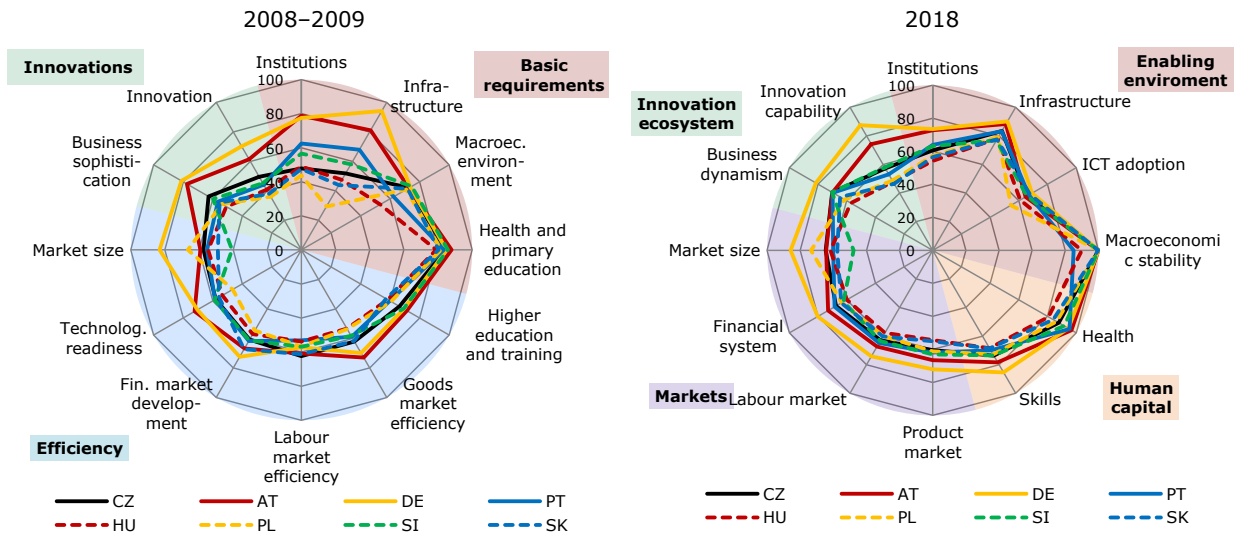
<sup>73</sup> The Global Competitiveness Index, published every year by the World Economic Forum (WEF). See the *Methodological Annex* for details.

**Chart 43: Global Competitiveness Index 4.0 – labour market scores**



Note: As from 2018, the GCI for the labour market is broken down into new categories. For each category, it now takes values ranging from 0 to 100, where a higher index value means higher competitiveness in the relevant area. To aid comparison, the 2008/2009 levels are normalised according to the new index methodology.  
Source: World Economic Forum (2009, 2018).

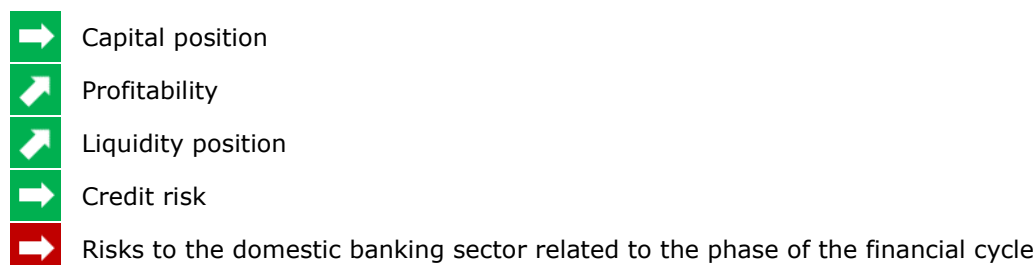
**Chart 44: Global Competitiveness Index 4.0 – overall scores**



Note: As from 2018, the GCI is broken down into new categories. For each category, it now takes values ranging from 0 to 100, where a higher index value means higher competitiveness in the relevant area. To aid comparison, the 2008/2009 levels are normalised according to the new index methodology.  
Source: World Economic Forum (2009, 2018).



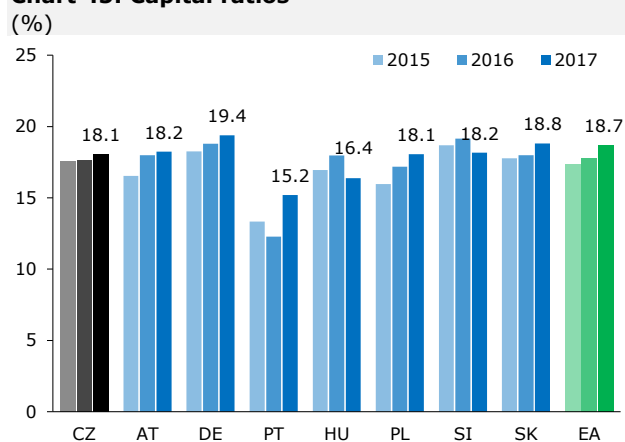
### 4.3 THE BANKING SECTOR AND ITS SHOCK-ABSORBING CAPACITY



The condition of the financial system plays an important role in the economy's ability to absorb external shocks. In particular, stability of the banking sector, which accounts for almost 80% of the total assets of domestic financial institutions (except the CNB), is of key importance in the Czech Republic. The Czech banking sector maintains high profitability, a good liquidity position and solid capitalisation and hence a high level of resilience to potential adverse shocks. It would therefore be able to perform its function as an adjustment and stabilisation mechanism in the event of euro adoption. A spiral between property prices and property purchase loans remains the main source of risk to the banking sector. Risks may also be associated with euro adoption and related entry into the banking union, which will entail the transfer of some powers to the EU level.

**The resilience of the Czech banking sector to adverse shocks is high by international comparison.** It is based on Czech banks' solid capitalisation, a major component of which is retained earnings. The capital ratio of the Czech banking sector on a consolidated basis increased by 0.4 pp to 18.1% in 2017, reaching a similar level as in the euro area, where it rose by 1.0 pp year on year to 18.7% (see Chart 45). The Czech banking sector also remains highly profitable – return on equity has long exceeded the euro area average (see Chart 46).<sup>74</sup> The profit of the Czech banking sector consists mainly of stable components such as interest income and fee and commission income.

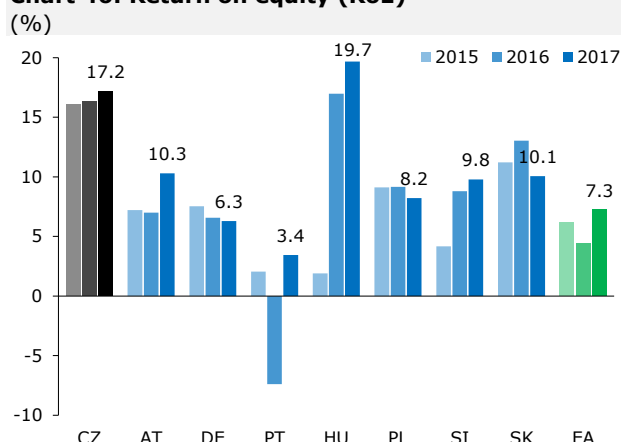
**Chart 45: Capital ratios**



Note: The capital ratio is the ratio of a bank's capital to its risk-weighted assets. EA represents the GDP-weighted average of the euro area member countries.

Source: IMF FSI.

**Chart 46: Return on equity (RoE)**



Note: EA represents the GDP-weighted average of the euro area member countries.

Source: IMF FSI, Deutsche Bundesbank.

<sup>74</sup> Data presenting international comparisons are only indicative, as the methods for calculating individual indicators and consolidating can differ across countries (with the exception of non-performing loans, the IMF FSI data for the Czech Republic are always consolidated); moreover, data revisions occur in some cases.

Thanks to their sufficient capitalisation and solid profits, domestic banks should be able to absorb potential large credit losses, as also evidenced by the latest banking sector macro stress tests.<sup>75</sup>

**The quality of the credit portfolio and the liquidity position of the banking sector are rising towards their best-ever levels. 2017 saw a decrease in manifested credit risk – as expressed by the ratio of non-performing loans (NPLs) to total loans – of 0.9 pp to 3.7% (see Chart 47). A decline in NPL ratios can also be seen in the other countries under review. This is linked with the upward phase of the business and financial cycle, which, however, may be going hand-in-hand with the taking on of greater credit risk, causing banks' vulnerability in the downward phase of the cycle to rise.**

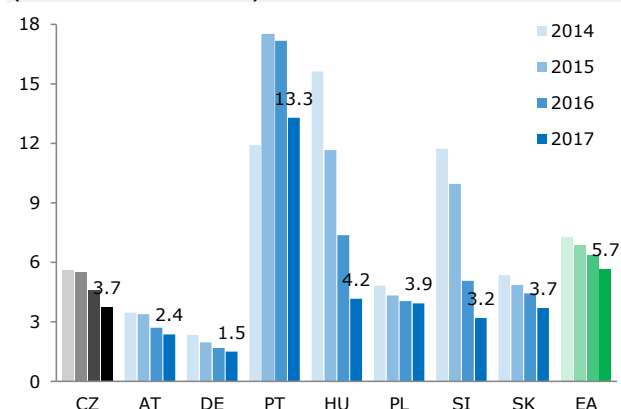
**Most domestic banks focus on a conservative business model that involves accepting deposits and providing loans to households and non-financial corporations.** The ratio of deposits to loans to residents in the Czech banking sector is 141%,

which is the highest figure among all the countries under review together with Hungary. The excess of loans over deposits and low private sector indebtedness by international comparison are creating room for banks to further expand their lending while maintaining sufficiently high liquid assets.

**The biggest risk to the Czech banking sector at the moment is that of continued growth in residential property prices, which is strongly linked with further growth in property purchase loans.** The risks to the Czech banking sector are linked mainly with a further upward shift of the domestic economy in the growth phase of the financial cycle combined with the build-up of cyclical risks. In the euro area, there are also persisting risks related to the environment of exceptionally low interest rates, which are squeezing the profitability of financial institutions.<sup>76</sup>

**There are also future euro adoption risks associated with entry into the banking union, which the Czech Republic would join upon euro adoption (at the latest).** Those risks consist in the transfer of some powers (especially direct supervision of key banks) to the EU level without any transfer of responsibility for the overall condition of the national financial sector. On entering the euro area, the Czech Republic would also join the Single Resolution Mechanism (SRM)<sup>77</sup> and contribute to the Single Resolution Fund (SRF),<sup>78</sup> whose effectiveness will only be tested by a potential future financial crisis. Macroprudential policy would increase in importance following euro adoption if the Czech business and financial cycle was not synchronised with that in the euro area.<sup>79</sup>

**Chart 47: Non-performing loans**  
(% of total bank loans)



Note: EA represents the GDP-weighted average of the euro area member countries.

Source: IMF FSI, CNB, Deutsche Bundesbank.

<sup>75</sup> See *Financial Stability Report 2017/2018*.

<sup>76</sup> ESRB (2016) discusses the impacts of low interest rates on financial stability and gives a series of policy options to mitigate the risks that have been identified.

<sup>77</sup> As domestic systemically important banks are members of international financial groups located in banking union member countries, the CNB already cooperates within colleges with the Single Resolution Board.

<sup>78</sup> Domestic banks contribute to the Resolution Fund, which is part of the national Financial Market Guarantee System. Until euro adoption, problems in the banking sector would be resolved in accordance with national legislation, i.e. using the mechanism based on Act No. 374/2015 Coll., on recovery and resolution in the financial market.

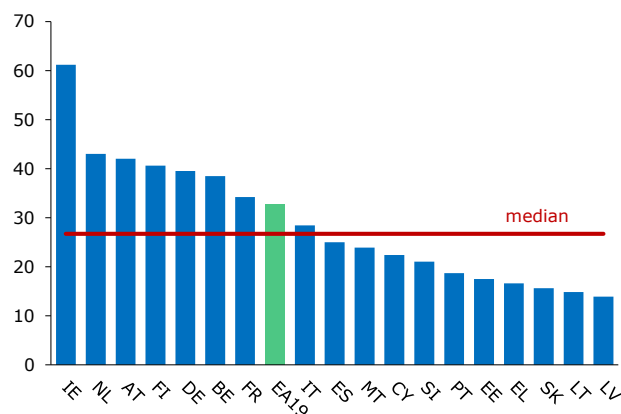
<sup>79</sup> However, the effectiveness of macroprudential policy could be reduced by the conversion of banks with legal personality in a given country (subsidiaries) into foreign bank branches (for details see *Financial Stability Report 2017/2018*, pp. 115–117, and Box 5 in these Alignment Analyses).

## **C CHARTBOOK**

# 1 ECONOMIC ALIGNMENT OF EURO AREA COUNTRIES

**Economic performance remains very heterogeneous across euro area economies...**

**GDP per capita in euro area countries**  
(2017, GDP at current prices in EUR thousands)

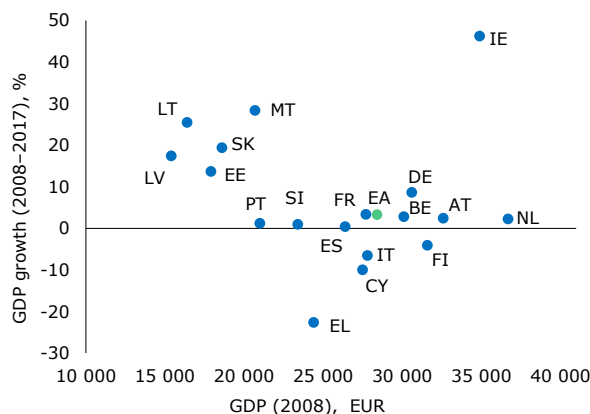


Note: Luxembourg is not included in either of the charts due to the many specificities of its economy, which result in exceptionally high GDP per capita.

Source: Eurostat.

**...with real convergence taking place in new member countries only...**

**Beta-convergence of real GDP in euro area countries**



Note: The chart depicts the relation between GDP growth per capita in each country and its initial level (beta-convergence).

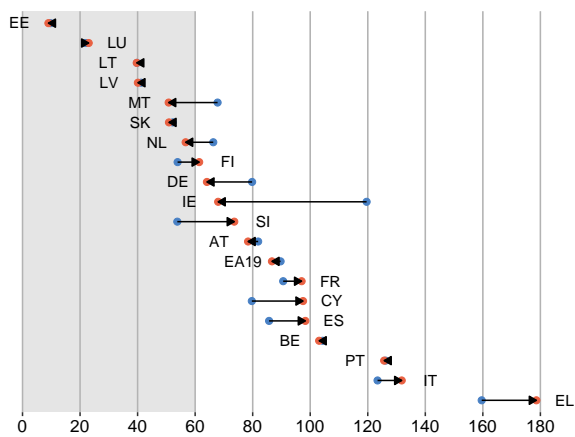
Source: Eurostat.

**...while the countries of the southern periphery have recorded a decline in performance, partly due to public finance consolidation; however, the general government debt-to-GDP ratio has not fallen.**

**Fiscal positions of euro area countries**

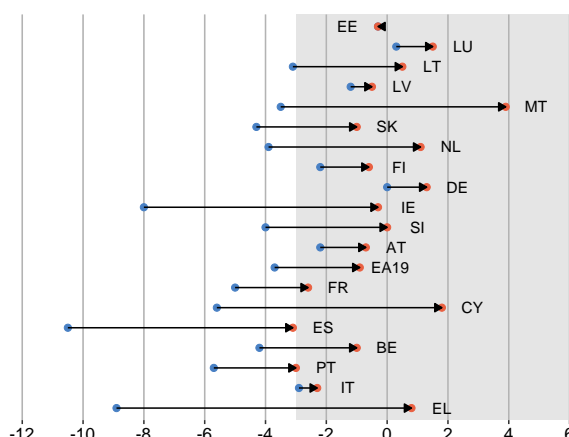
General government debt (% of GDP)

● 2012 ● 2017



General government budget balance (% of GDP)

● 2012 ● 2017



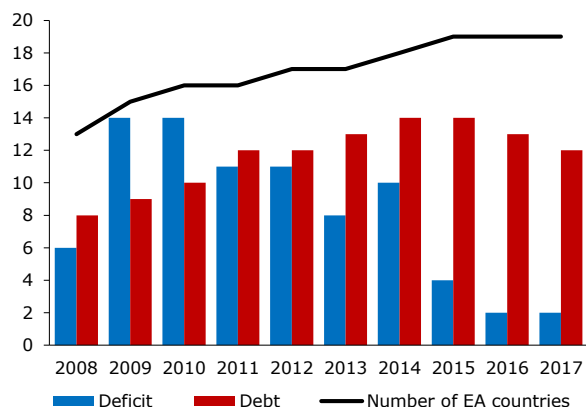
Note: Countries in the grey area are compliant with the Stability and Growth Pact (SGP) criterion. The SGP sets limits on government deficits (3% of GDP) and debt (60% of GDP). The starting point (2012) was chosen to capture the negative fiscal effects of the financial crisis (such as rescue programmes in banking sectors financed from state budgets).

Source: Eurostat.

**Fiscal indiscipline is a long-standing problem in the euro area...**

**Non-compliance with the fiscal criteria**

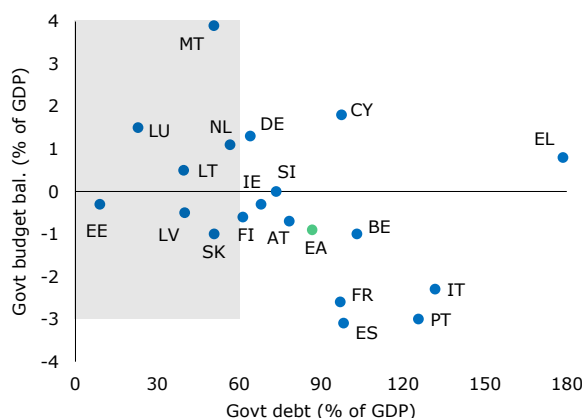
(number of countries non-compliant with the Stability and Growth Pact)



Note: Number of countries non-compliant with the deficit and debt criteria  
Source: Eurostat, European Commission, CNB calculations.

**...and only seven countries are currently compliant with both the debt and deficit criteria.**

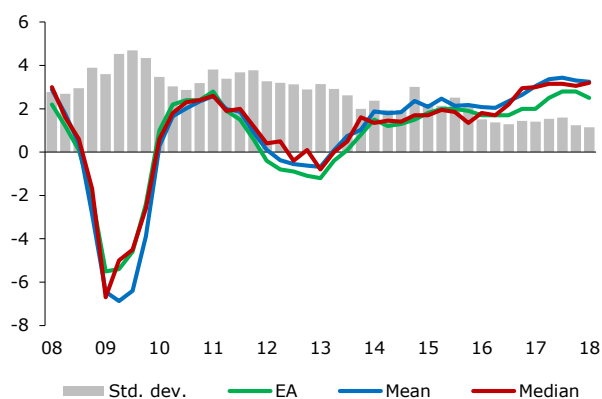
**Fiscal positions of euro area countries (2017)**



Note: 2017 data. Countries compliant with the Stability and Growth Pact lie in the grey area.  
Source: Eurostat.

**The public finance situation is being aided by economic growth, which accelerated sharply last year...**

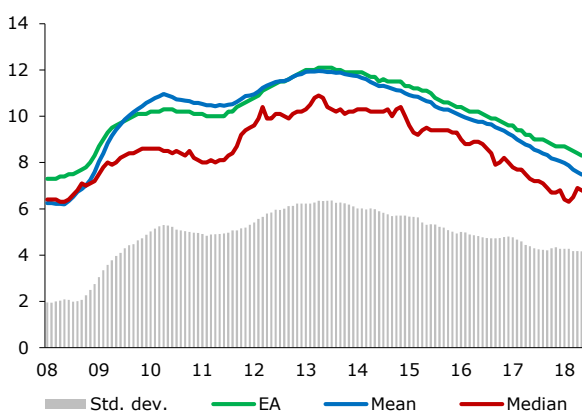
**Real GDP growth in euro area countries (y-o-y, %)**



Note: The mean series depicts the unweighted arithmetic mean of GDP growth in the given quarter across euro area countries. Data for Ireland were not included due to exceptionally high growth in 2015. The source series are seasonally adjusted.  
Source: Eurostat, CNB calculations.

**...and is also manifesting itself in a continued improvement in the labour market situation.**

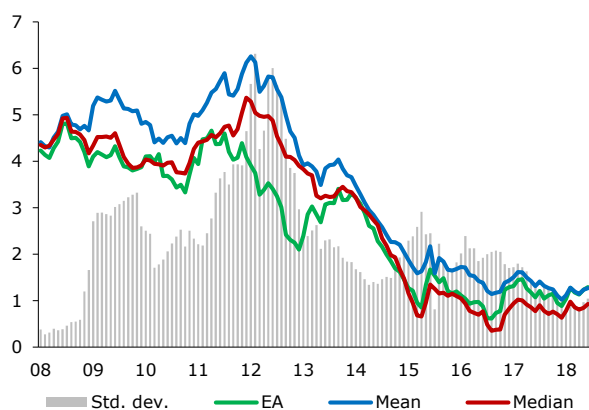
**Unemployment in euro area countries (%)**



Note: The mean series depicts the unweighted arithmetic mean of unemployment in the given month across euro area countries. The source series are seasonally adjusted.  
Source: Eurostat, CNB calculations.

**Growth in the euro area is being fostered by the ECB's accommodative monetary policy, which has led to a decline in government bond yields across countries...**

**Long-term government bond yields in euro area countries (%)**

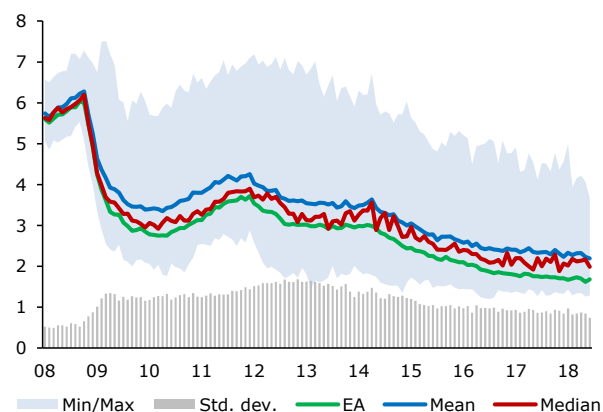


Note: Bond yields for the convergence criteria. The bond maturity is about ten years. Estonia is not included because the time series is not available. The EA series is a weighted average of ten-year euro area government bonds.

Source: ECB (including the EA series), CNB calculations.

**...and to a fall in interest rates on client loans.**

**Funding costs of non-financial corporations (%)**

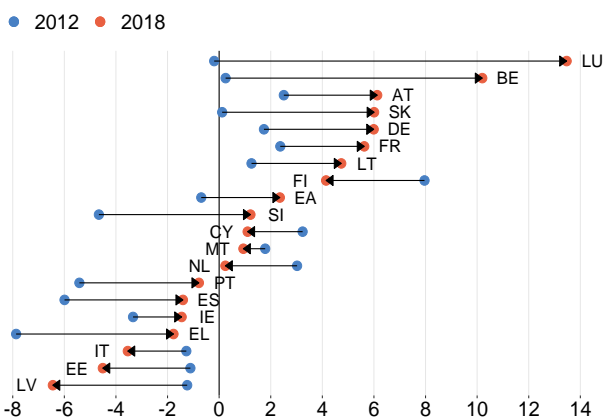


Note: The composite indicator comprises a weighted average of short-term and long-term loans to non-financial corporations.

Source: ECB (MIR database), CNB calculations.

**Loans to domestic non-financial corporations are still declining in some countries despite the very easy monetary policy...**

**Growth in bank loans to domestic non-financial corporations (y-o-y, %)**

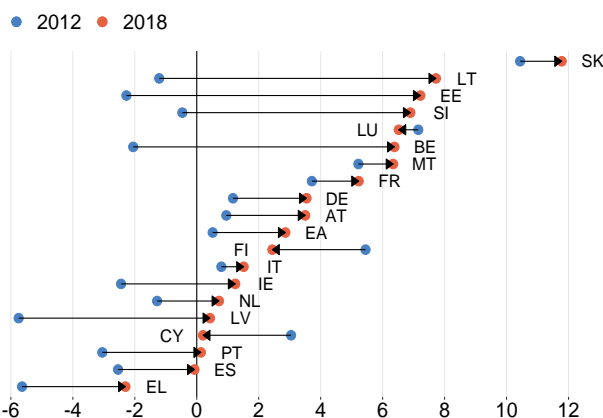


Note: Annual growth in loans (total outstanding amounts) provided by monetary financial institutions; average growth rates in H1 of the given year.

Source: ECB (BSI database).

**...but the volume of loans to households is rising in almost all countries, its high growth rates in some countries reflecting an expansion of mortgage lending.**

**Growth in bank loans to households (y-o-y, %)**

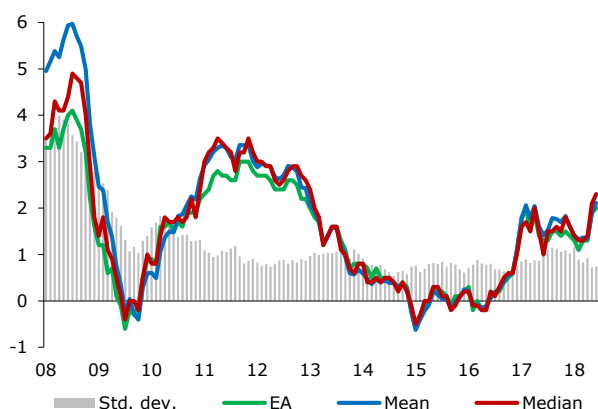


Note: Annual growth in loans provided by monetary financial institutions; average growth rates in H1 of the given year.

Source: Eurostat, CNB calculations.

**While headline inflation rose to the ECB's inflation target in June owing to a larger contribution of energy prices...**

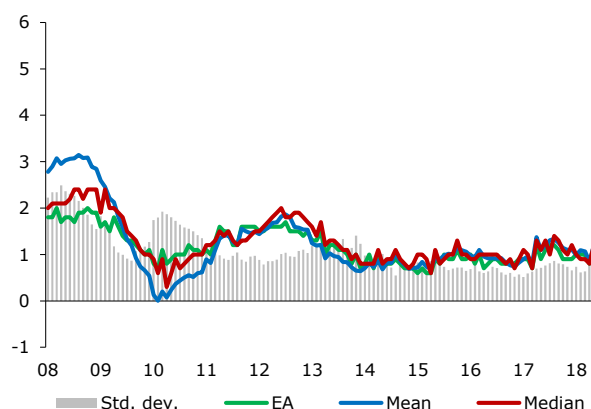
**Inflation in euro area countries**  
(y-o-y, %)



Note: The mean series depicts the unweighted arithmetic mean of inflation in the given year across euro area countries.  
Source: Eurostat, CNB calculations.

**...core inflation is still around 1%...**

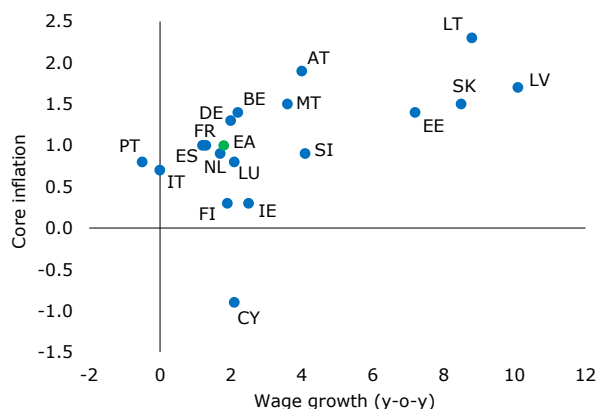
**Inflation excluding energy, food, alcohol and tobacco prices**  
(y-o-y, %)



Note: The mean series depicts the unweighted arithmetic mean of inflation in the given year across euro area countries.  
Source: Eurostat, CNB calculations.

**...and its dispersion across euro area countries reflects differences in wage growth, among other factors.**

**Growth in wage costs, core inflation**  
(y-o-y growth rates in 2018 Q1, %)



Note: The wage growth series are seasonally adjusted; data for Greece are not available.  
Source: Eurostat.

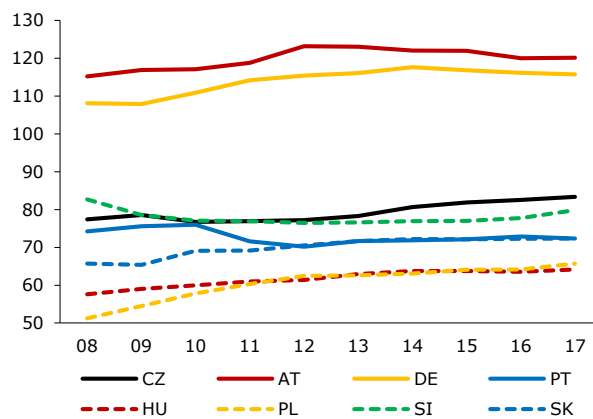
### 3 THE CZECH REPUBLIC'S CYCLICAL AND STRUCTURAL ALIGNMENT WITH THE EURO AREA

#### 3.1 DIRECT ALIGNMENT INDICATORS

##### REAL ECONOMIC CONVERGENCE

The process of long-term convergence of GDP has resumed, but the lag behind advanced euro area countries remains significant...

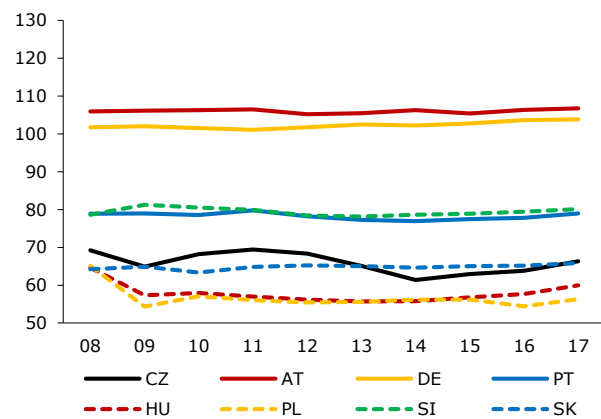
**GDP per capita at purchasing power parity (PPP)**  
(EA = 100)



Source: Eurostat, CNB calculations.

...even more so for the price level, in which the Czech Republic even lags behind Portugal and Slovenia.

**Price level of GDP**  
(EA = 100)



Source: Eurostat, CNB calculations.

The real exchange rate of the koruna has fluctuated over the last ten years in connection with the global crisis. It has weakened slightly compared to 2008, when the koruna appreciated sharply before the collapse of Lehman Brothers. Only the real exchange rates of Slovakia and Austria are stronger than in 2008.

**Real exchange rate against the euro (HICP-deflated)**  
(2007 = 100; a rise in the index means appreciation of the real exchange rate)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	114.5	108.3	112.8	115.3	113.9	110.3	104.1	105.3	106.7	110.5
<b>AT</b>	99.9	100.0	100.0	100.9	100.9	101.7	102.7	103.5	104.3	105.0
<b>DE</b>	99.4	99.4	98.9	98.7	98.3	98.5	98.9	99.0	99.1	99.3
<b>PT</b>	99.3	98.1	97.9	98.7	99.0	98.1	97.5	98.0	98.4	98.4
<b>HU</b>	102.5	95.4	100.1	99.8	99.4	97.2	93.1	92.7	92.5	93.9
<b>PL</b>	108.6	91.4	100.0	98.0	97.7	96.8	96.8	96.1	91.8	94.1
<b>SI</b>	102.1	102.7	103.1	102.4	102.8	103.3	103.3	102.5	102.1	102.1
<b>SK</b>	108.7	113.4	112.4	113.9	115.3	115.4	114.8	114.4	113.5	113.4

Source: Eurostat, CNB calculations.



**Real interest rates in the Czech Republic have been mostly negative over the last ten years, as in the other countries under comparison.**

**Real 3M interest rates**

(%, ex post, HICP-deflated)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	-2.1	1.6	0.1	-0.9	-2.4	-0.9	-0.1	0.0	-0.4	-2.0
<b>AT</b>	1.4	0.8	-0.9	-2.1	-2.0	-1.9	-1.2	-0.8	-1.2	-2.5
<b>DE</b>	1.8	1.0	-0.3	-1.1	-1.5	-1.4	-0.6	-0.2	-0.6	-2.0
<b>PT</b>	1.9	2.1	-0.6	-2.1	-2.1	-0.2	0.4	-0.5	-0.9	-1.9
<b>HU</b>	2.5	5.0	1.4	2.5	2.3	2.4	2.5	1.5	0.5	-2.2
<b>PL</b>	2.1	0.4	1.2	0.6	1.2	2.2	2.5	2.5	1.9	0.1
<b>SI</b>	-0.8	0.4	-1.2	-0.7	-2.2	-1.7	-0.2	0.7	-0.1	-1.9
<b>SK</b>	0.2	0.3	0.1	-2.6	-3.1	-1.2	0.3	0.3	0.2	-1.7

Source: Eurostat, CNB calculations.

**Wages in euro terms have not converged significantly to the euro area average over the last ten years. This is true not only for the Czech Republic, but also for the other countries under comparison.**

**Average wage per employee in EUR**

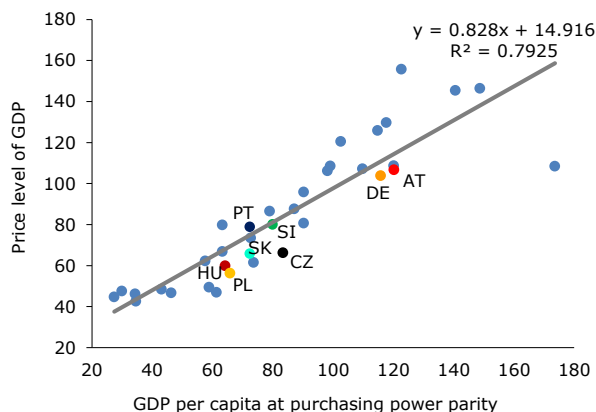
(EA = 100)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	36.1	40.4	37.2	39.4	40.8	39.8	37.8	36.1	37.0	38.7
<b>AT</b>	106.5	106.3	106.0	104.9	104.8	105.7	106.3	106.8	107.6	108.9
<b>DE</b>	95.9	94.6	93.1	93.4	94.2	94.8	95.0	96.3	97.5	98.6
<b>PT</b>	55.8	55.3	55.6	55.6	53.4	50.8	51.8	50.2	49.7	50.2
<b>HU</b>	36.1	37.3	32.4	32.8	32.7	31.5	30.8	29.5	28.5	29.2
<b>PL</b>	28.7	32.3	26.6	30.7	30.7	30.8	30.7	31.0	31.1	31.0
<b>SI</b>	60.9	63.1	63.1	64.2	63.8	62.1	61.4	61.4	61.4	62.4
<b>SK</b>	30.6	34.1	35.6	36.8	36.7	37.0	37.3	37.5	38.3	38.7

Source: AMECO, CNB calculations.

**The Czech price level is below the level corresponding to GDP per capita by international comparison. However, the situation is similar in the other Central European countries.**

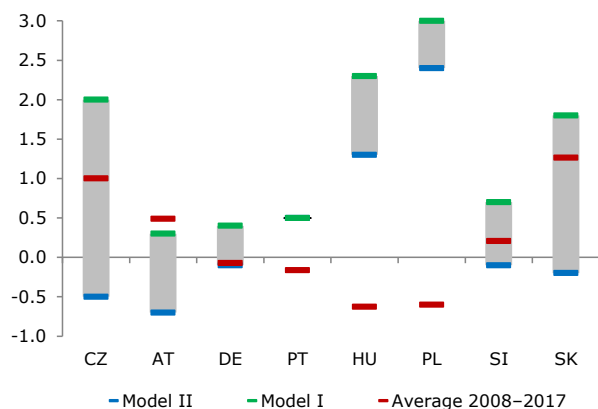
**GDP per capita at purchasing power parity versus the price level**  
(2017, EA = 100)



Source: Eurostat, CNB calculations.

**The real exchange rate of the koruna has appreciated by 1% a year on average. Its future annual equilibrium rate of appreciation is estimated at -0.5%–2.0%.<sup>80</sup>**

**Real exchange rate appreciation: average for last ten years and range of five-year estimates**  
(EA = 100, HICP-deflated)

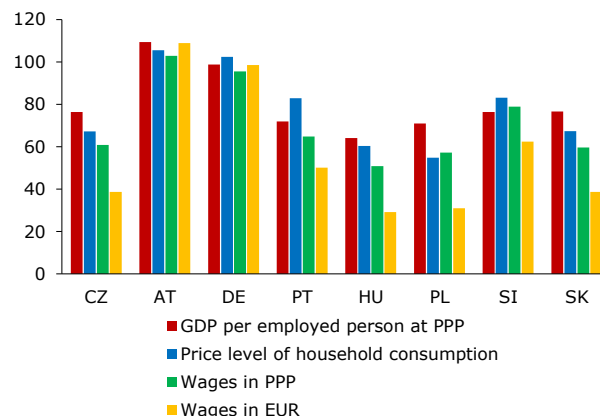


Note: The chart shows the geometric mean for 2008–2017. The estimate of the average pace of equilibrium real exchange rate appreciation for the next five years is based on two panel regressions linking the price level of final consumption of households compared to the euro area average with GDP at purchasing power parity per capita.

Source: Eurostat, CNB calculations.

**Czech wages at purchasing power parity are roughly 60% of the euro area average. In euro terms, they are only around 40%. The situation is similar in Slovakia, which has a similar level of GDP per employee.**

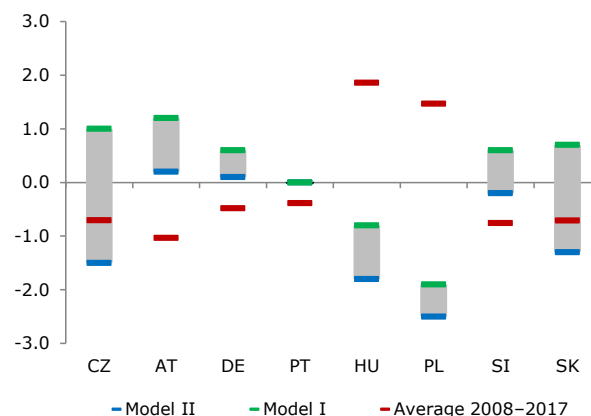
**Other indicators of long-term convergence**  
(2017, EA = 100)



Source: Eurostat, European Commission, CNB calculations.

**Czech real interest rates would probably be negative or only slightly positive following euro adoption. However, they have been negative on average for the last ten years.**

**Real 3M interest rates: average for last ten years and range of five-year estimates**  
(%, ex post, HICP-deflated)



Note: Simple arithmetic mean for 2008–2017. The estimated average equilibrium real average interest rate for the next five years is derived from the range of estimates of the pace of equilibrium real exchange rate appreciation, assuming a zero money market risk premium and an equilibrium real interest rate in the euro area of 0.5%.

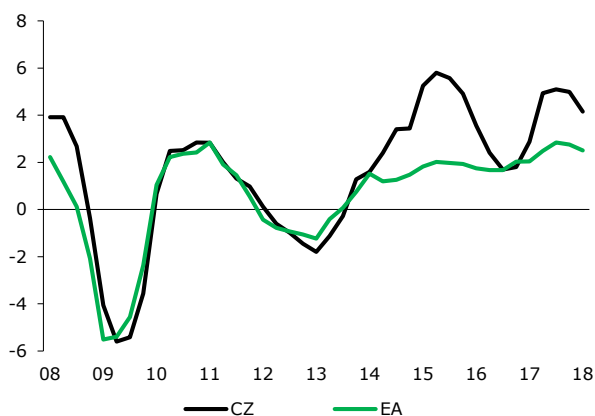
Source: Eurostat, CNB calculations.

<sup>80</sup> Starting with *Inflation Report IV/2013*, the CNB's forecasts work on the assumption of long-term equilibrium real appreciation of the koruna vis-à-vis the "effective euro area" at a rate of 1.5% a year.

**CYCLICAL ALIGNMENT OF ECONOMIC ACTIVITY**

The alignment of the Czech economy with the euro area was particularly strong during the economic crisis and declined during the recovery.

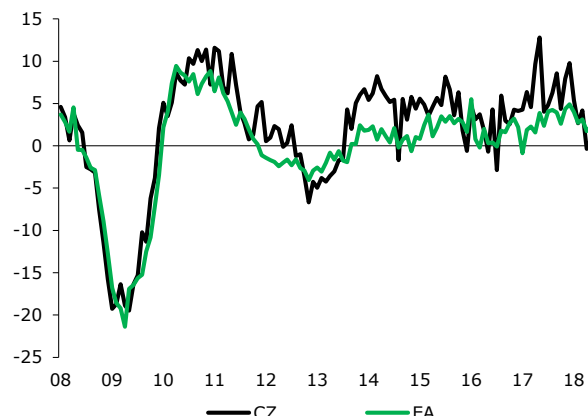
**Year-on-year changes in real GDP (%)**



Source: Eurostat, CNB calculations.

The high alignment pertains mainly to industrial production, which is rising steadily at a pace exceeding the euro area average.

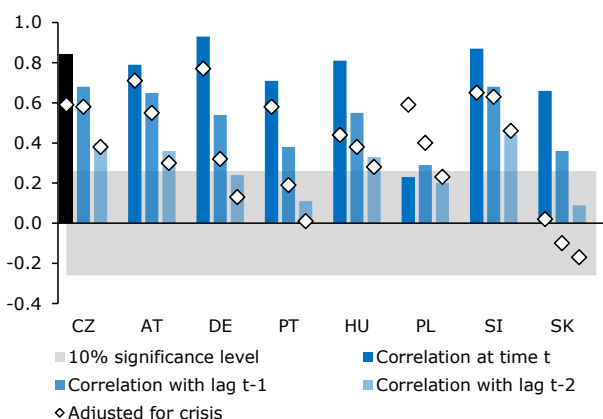
**Year-on-year changes in the industrial production index (%)**



Source: Eurostat, CNB calculations.

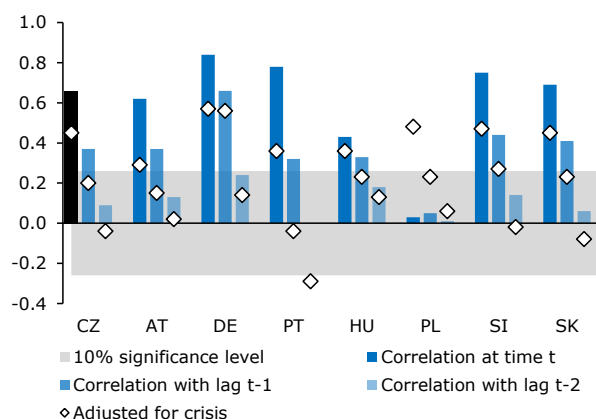
The alignment of the Czech Republic's business cycle with the euro area remains high, owing largely to the joint reaction to the global economic and financial crisis.

**Correlation coefficients of GDP with the euro area**



The situation is similar for the relationship between Czech exports to the euro area and euro area GDP.

**Correlation coefficients of exports to the euro area with euro area GDP**

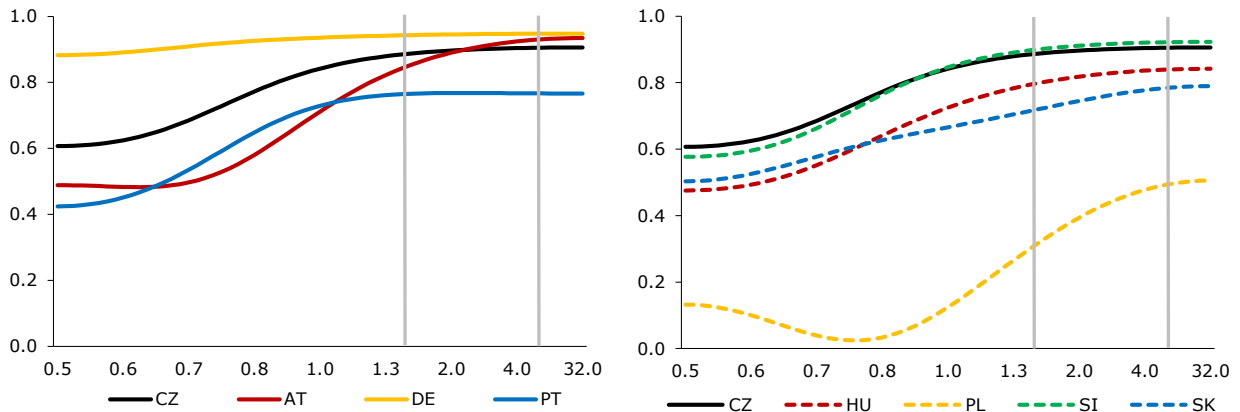


Note: The calculation is based on the quarter-on-quarter changes in the logarithms of the seasonally adjusted data. For the crisis-adjusted values, the crisis quarters of 2008 Q4 and 2009 Q1 are dropped from the calculation. The statistical significance of the correlation coefficients is indicated in the chart: values statistically significant at the 10% level lie in the white part of the chart (meaning that values in the grey part of the chart are not statistically significant at the 10% level).

Source: Eurostat, CNB calculations.

**High frequency-specific correlations indicate business cycle alignment in the monitored band of 1.5–8 years.**

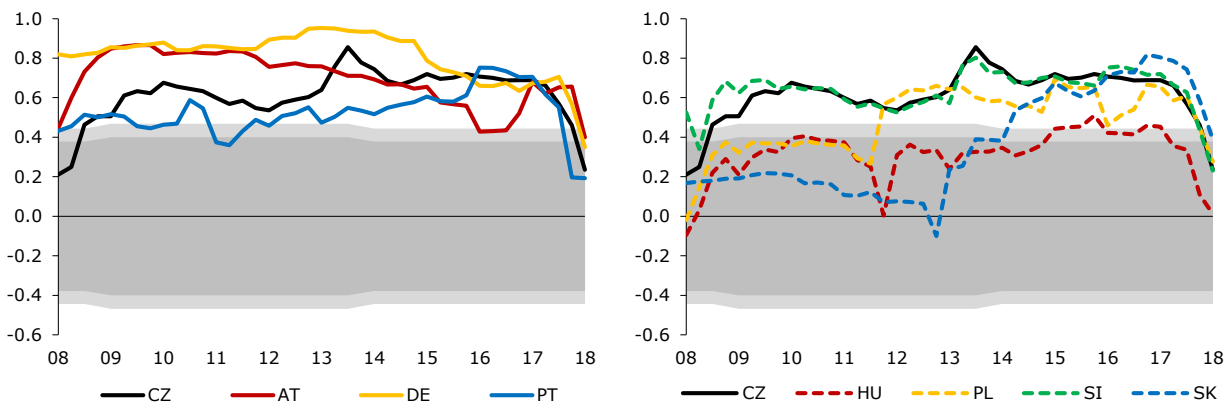
**Frequency-specific correlations of economic activity with the euro area**



Note: The calculation is based on the quarter-on-quarter differences in the logarithms of the seasonally adjusted data. For the crisis-adjusted values, the crisis quarters of 2008 Q4 and 2009 Q1 are dropped from the calculation.  
Source: Eurostat, CNB calculations.

**However, a marked drop in the rolling correlations with euro area economic activity for all the countries under review signals a possible decline in cyclical alignment.**

**Rolling correlations of economic activity with the euro area**

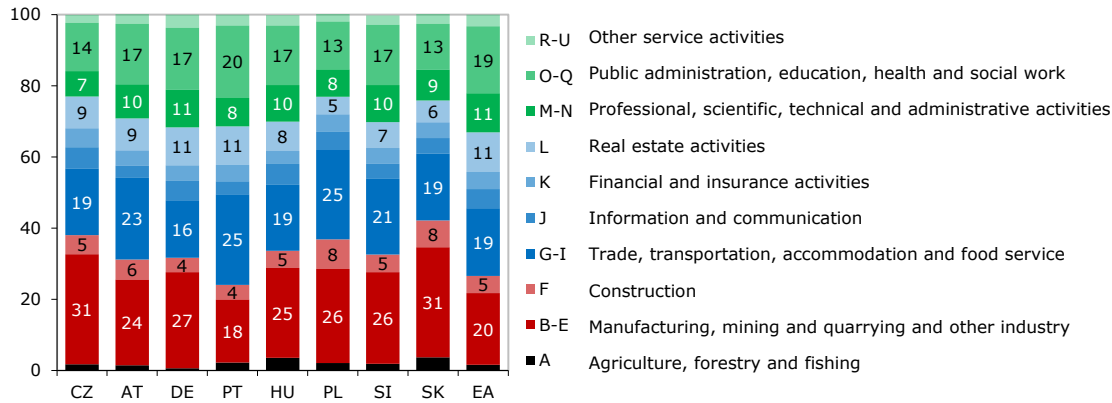


Note: The time data indicate the end of the rolling window of five years (in periods containing the crisis quarters of 2008 Q4 and 2009 Q1, those quarters are dropped from the calculation, i.e. the periods are 4.5 years long). The calculation is based on the quarter-on-quarter differences in the logarithms of the seasonally adjusted data. The statistical significance of the correlation coefficients is indicated in the chart: values statistically significant at the 5% level lie in the white area of the chart, and values statistically significant at the 10% level lie in the white or light grey parts of the chart. Values in the dark grey part of the chart are not statistically significant at the 10% level.  
Source: Eurostat, CNB calculations.

**STRUCTURAL SIMILARITY OF THE ECONOMIES**

**The Czech Republic has an above-average share of industry in GDP compared to the euro area.**

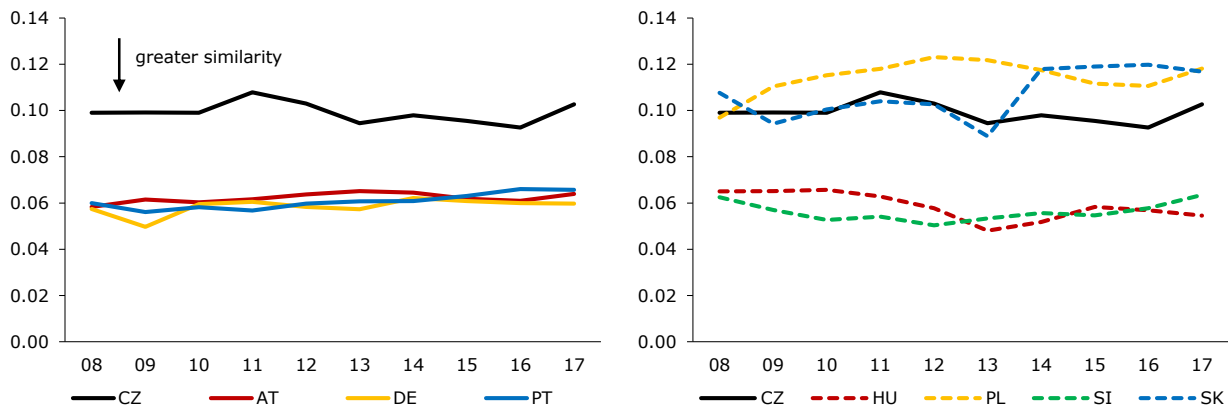
**Shares of economic sectors in value added (2017, %)**



Source: Eurostat, CNB calculations.

**The different structure of value added is also reflected in higher values of the Landesmann index.**

**Structural similarity vis-à-vis the euro area**



Note: The Landesmann index takes values in the range [0;1]. The closer the index is to zero, the more similar is the structure of the economies under comparison. Given the methodological changes in the GDP calculation and the revisions of the historical GDP data, the results published in previous issues of this publication may differ slightly from this year's figures.

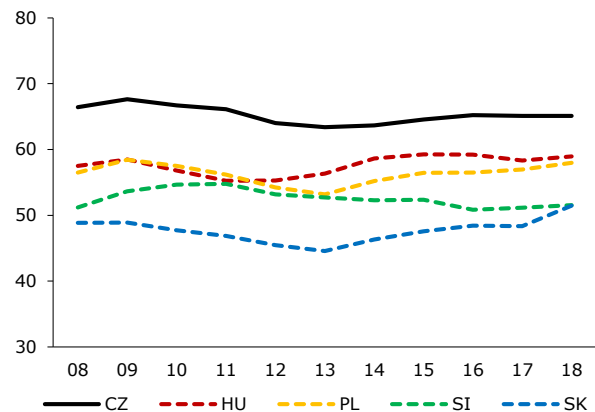
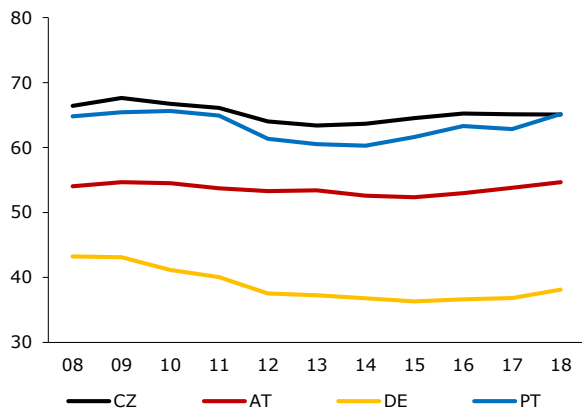
Source: Eurostat, CNB calculations.

**INTEGRATION OF THE ECONOMY WITH THE EURO AREA**

**The share of exports to the euro area in total exports has long been highest in the Czech Republic...**

**...well above the levels seen in the other new EU Member States under comparison.**

**Shares of exports to the euro area in total exports (%)**

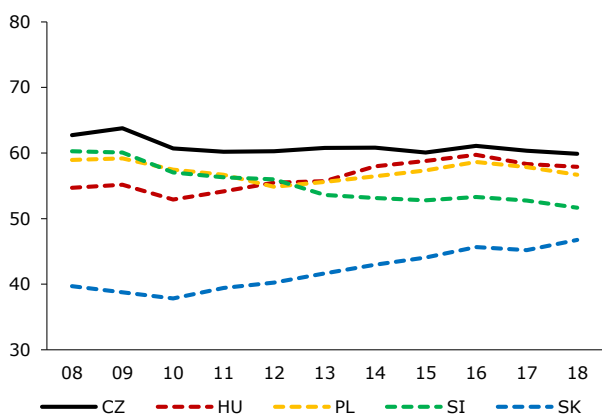
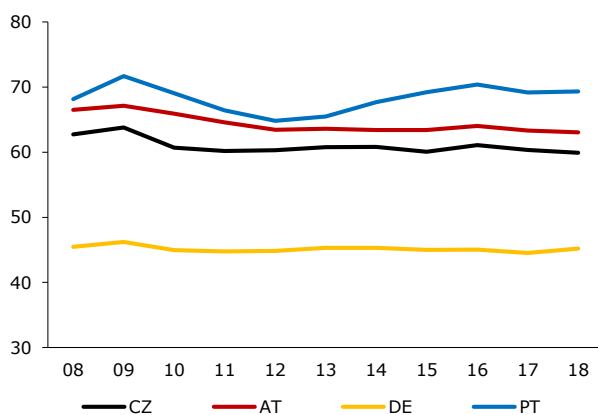


Note: The 2018 figure is for the first four months of the year.  
Source: Eurostat, CNB calculations.

**The share of imports from the euro area in total imports in the Czech Republic is slightly lower...**

**...but it is the highest among the new EU Member States.**

**Shares of imports to the euro area in total imports (%)**

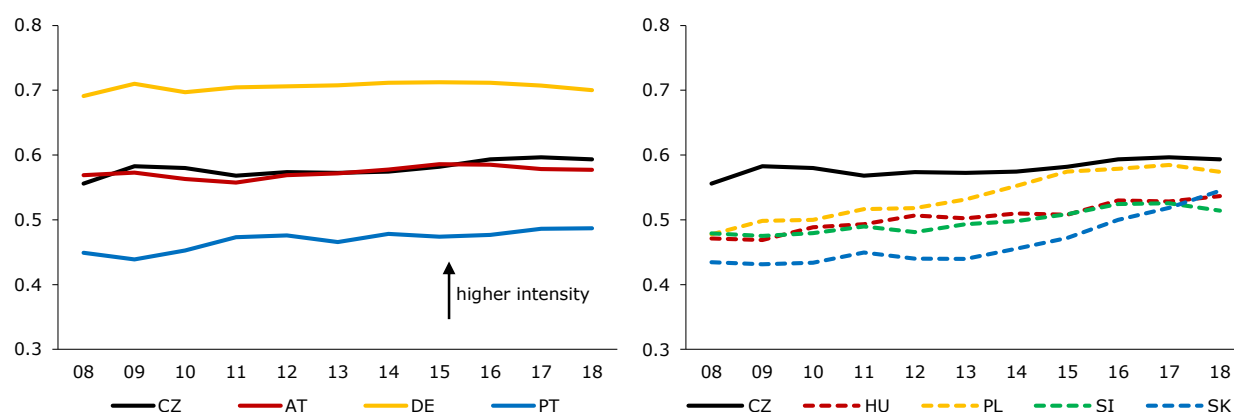


Note: The 2018 figure is for the first four months of the year.  
Source: Eurostat, CNB calculations.

The structural similarity of the Czech economy with the euro area is illustrated by a high mutual intensity of intra-industry trade...

...which is the highest among the new EU Member States. Only Poland has achieved similar levels in recent years.

**Intensity of intra-industry trade with the euro area**  
(under SITC5)



Note: The results were calculated using the five-digit SITC classification. To analyse intra-industry trade we used the Grubel-Lloyd index, which indicates the share of the absolute amount of intra-industry trade in total foreign trade turnover with the euro area. The 2018 figure is for the first four months of the year.

Source: Eurostat, CNB calculations.

Alignment of economic activity is also fostered by ownership links, which, in the case of investment from the euro area in the Czech Republic, are the highest among the countries under comparison.

**Ratios of FDI stock from the euro area to GDP**  
(%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	46.8	54.9	57.9	53.8	60.6	59.3	61.7	62.4	63.5	65.1
<b>AT</b>	39.6	44.7	36.0	35.3	35.6	35.2	36.6	44.3	34.9	35.7
<b>DE</b>	21.0	23.0	23.4	23.5	25.7	26.8	26.2	25.9	26.1	26.2
<b>PT</b>	30.6	36.4	40.8	42.0	55.5	59.1	59.8	58.6	61.5	63.3
<b>HU</b>	42.4	49.0	50.1	48.2	57.4	55.3	55.1	56.7	49.3	45.0
<b>PL</b>	24.7	31.3	36.1	32.7	37.0	39.1	39.5	36.7	39.1	39.5
<b>SI</b>	17.8	18.6	18.8	20.1	20.8	19.8	21.9	23.7	25.6	25.6
<b>SK</b>	46.4	48.8	48.4	49.8	48.7	47.1	44.5	45.6	47.0	48.5

Source: Eurostat, Hungarian central bank for Hungary, CNB calculations.

**Investment by the new EU Member States in the euro area is still low compared to the traditional investor countries. However, the Czech Republic ranks first among the new EU Member States.**

**Ratios of DI stock in the euro area to GDP**  
(%)

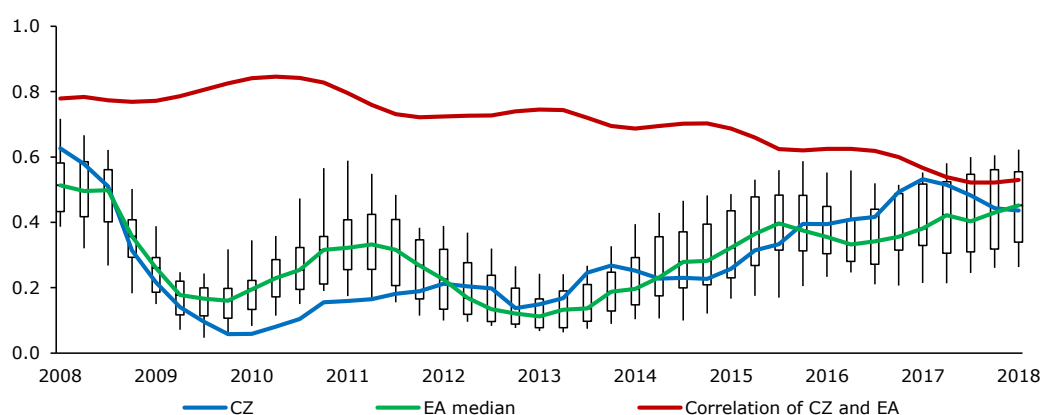
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	8.7	11.0	13.1	12.7	14.9	16.7	17.5	18.6	18.1	18.5
<b>AT</b>	19.1	21.9	24.2	25.1	25.0	26.1	30.1	26.3	29.2	31.3
<b>DE</b>	19.8	22.6	23.0	24.0	26.5	27.3	27.7	28.0	28.6	30.0
<b>PT</b>	16.4	17.2	17.4	23.7	28.7	30.2	28.8	30.1	33.1	32.2
<b>HU</b>	6.2	6.2	5.1	5.4	9.9	9.6	11.3	8.8	9.8	8.2
<b>PL</b>	3.0	4.3	7.5	7.9	8.8	8.6	8.5	8.8	9.2	7.3
<b>SI</b>	3.2	4.6	4.8	4.7	4.0	3.8	4.2	4.3	4.7	5.2
<b>SK</b>	5.2	6.2	6.0	8.1	6.6	7.1	6.7	7.9	11.4	14.2

Source: Eurostat, Hungarian central bank for Hungary, CNB calculations.

## ALIGNMENT OF FINANCIAL CYCLES

**The alignment of the financial cycles of the Czech Republic and the euro area decreased in 2017.**

**Simplified financial cycle indicators for the Czech Republic and the euro area and their correlation**  
(0 minimum, 1 maximum)



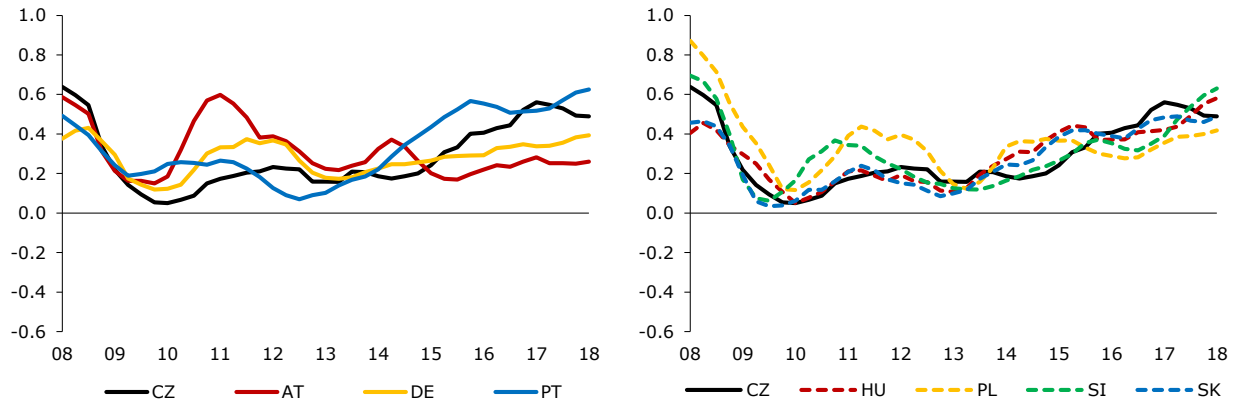
Note: The simplified financial cycle indicator takes values from 0 to 1, with higher values corresponding to an expansionary phase of the financial cycle. The boxplot shows the maximum value, the 75% quantile (the start of the rectangle), the 25% quantile (the end of the rectangle) and the minimum value of the simplified financial cycle indicator in the euro area countries for each period.

Source: Eurostat, ECB, BIS, national central banks, CNB calculations.



**The Czech Republic's financial cycle is more aligned with Central European countries than with the other European countries under review.**

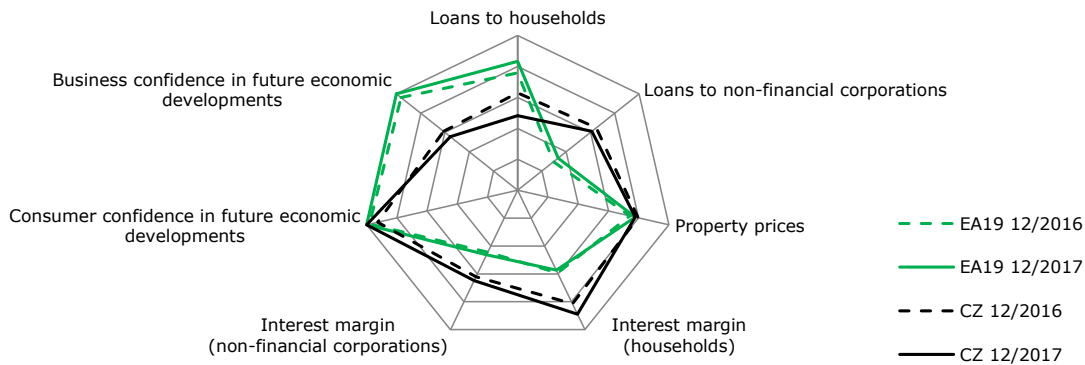
**Simplified financial cycle indicators**  
(0 minimum, 1 maximum)



Note: The simplified financial cycle indicator takes values from 0 to 1, with higher values corresponding to an expansionary phase of the financial cycle.  
Source: Eurostat, ECB, BIS, national central banks, CNB calculations.

**The alignment of the individual components of the financial cycle indicator declined overall in 2017.**

**Components of the simplified financial cycle indicator**

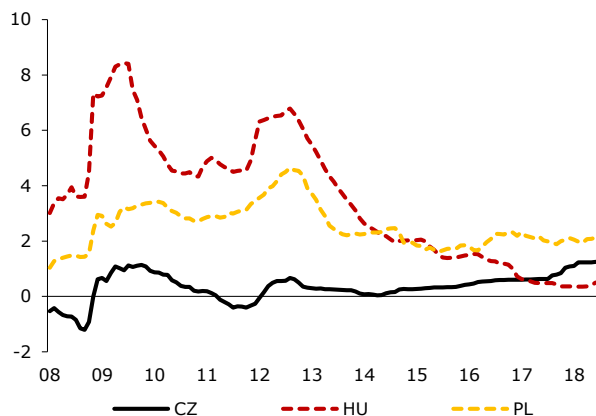


Note: The simplified financial cycle indicator takes values from 0 to 1, with higher values corresponding to an expansionary phase of the financial cycle. This also applies to its individual components.  
Source: Eurostat, ECB, BIS, national central banks, CNB calculations.

**INTEREST RATE CONVERGENCE**

The tightening of monetary policy has widened the interest rate differential between 3M rates in the Czech Republic and the euro area.

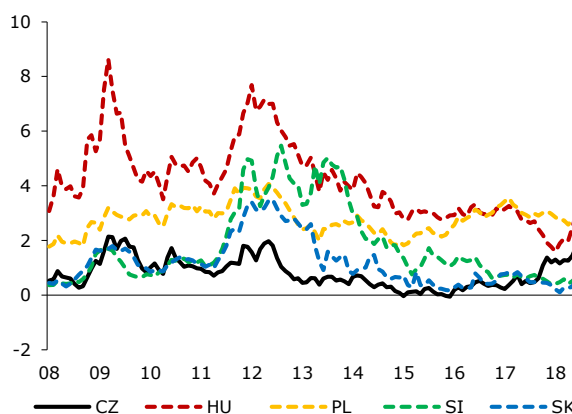
**Differences in 3M interest rates vis-à-vis the euro area**  
(pp)



Source: Eurostat, CNB calculations.

The spread for long-term rates in the Czech Republic has increased due not only to financial market sentiment, but also to expectations of further increases in CNB rates.

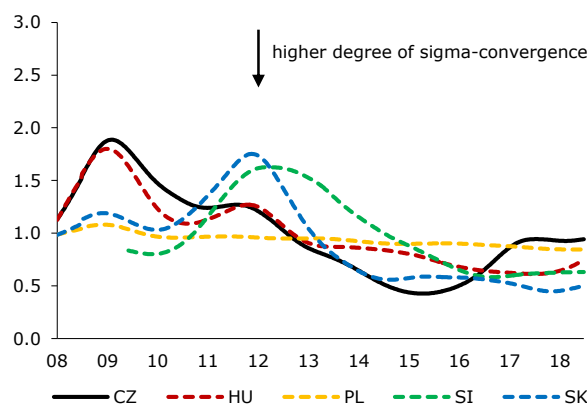
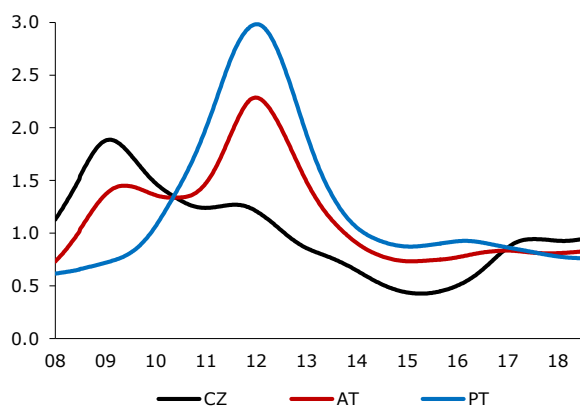
**Differences in 10Y interest rates vis-à-vis Germany**  
(differential in pp vis-à-vis 10Y government bond yield)



Source: Eurostat, CNB calculations.

The alignment of the Czech government bond yield market with the benchmark German market remains low.

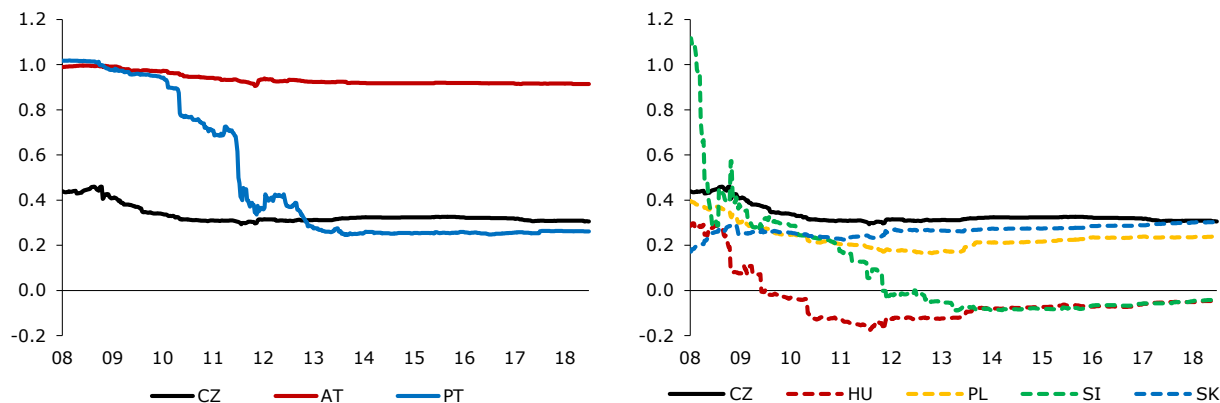
**Degree of convergence of government bonds compared to Germany**  
(sigma-convergence)



Note: Lower standard deviations (y-axis) correspond to a higher degree of convergence.  
Source: Datastream, CNB calculations.

**The rate of transmission of global news on the government bond market remains high in the Czech Republic.**

**Sensitivity of asset prices to global news by comparison with the euro area (gamma-convergence)**



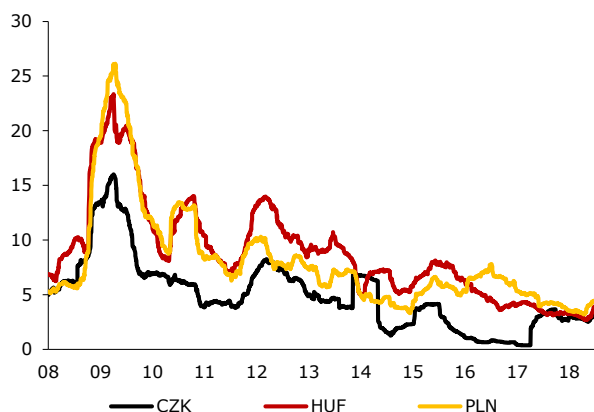
Note: Positive (negative) gamma values close to one express the same (opposite) directional and similarly strong sensitivity to news and hence a higher degree of integration; values close to zero express low integration.  
Source: Bloomberg, Datastream, CNB calculations.

**EXCHANGE RATE VOLATILITY AND ALIGNMENT**

Since the exit from the exchange rate commitment, the historical volatility of the koruna has been stable and only slightly lower compared to the other currencies in the region.

Implied volatility increased again following a slight decline related to the adoption of the exchange rate commitment.

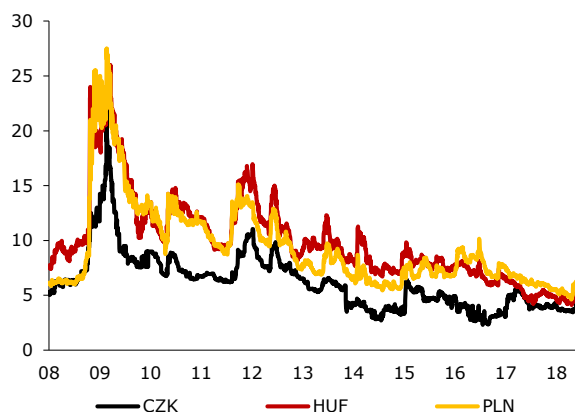
**Historical volatility of exchange rates vis-à-vis the euro (%)**



Source: Datastream, CNB calculations.

**Implied volatility of exchange rates vis-à-vis the euro**

(daily data, expected volatilities of exchange rates of national currencies based on prices of options for those currencies, %)

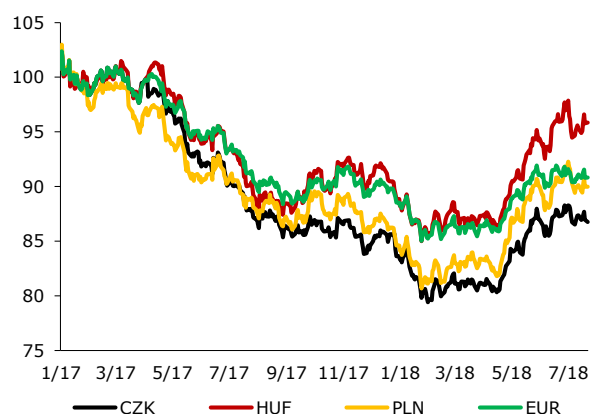


Source: Datastream, CNB calculations.

The movements in the exchange rates of the currencies under review vis-à-vis the dollar were similar to the euro movements...

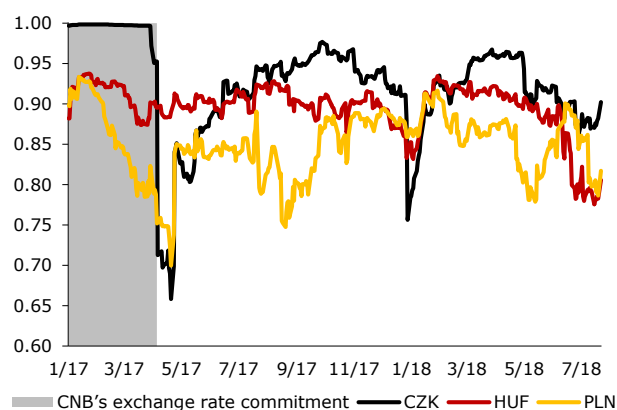
...which was reflected in a high rolling correlations of the exchange rates of these currencies against the dollar with the euro-dollar exchange rate.

**Exchange rates against the US dollar**  
(index, January 2017 = 100)



Source: Datastream.

**Correlations of exchange rates against the US dollar**  
(correlations: national currency/USD and EUR/USD)



Source: Datastream, CNB calculations.

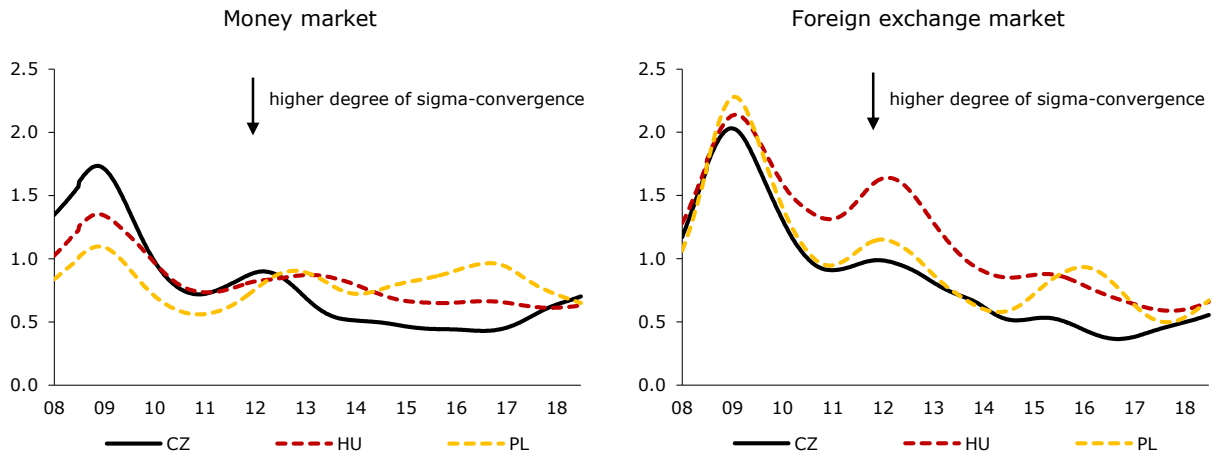
**Correlations of the exchange rates of national currencies against the US dollar with movements in the euro-dollar exchange rate**

	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
<b>CZ</b>	1.00 (0.00)	1.00 (0.00)	0.99 (0.00)	1.00 (0.00)	1.00 (0.00)	0.84 (0.08)	0.94 (0.02)	0.94 (0.03)	0.91 (0.05)	0.92 (0.03)	0.88 (0.01)
<b>HU</b>	0.81 (0.04)	0.87 (0.03)	0.89 (0.02)	0.87 (0.03)	0.91 (0.02)	0.90 (0.01)	0.91 (0.01)	0.89 (0.02)	0.91 (0.03)	0.88 (0.03)	0.79 (0.01)
<b>PL</b>	0.75 (0.07)	0.79 (0.06)	0.85 (0.03)	0.82 (0.04)	0.87 (0.05)	0.82 (0.04)	0.82 (0.03)	0.88 (0.01)	0.88 (0.02)	0.85 (0.03)	0.82 (0.03)

Note: Calculation using daily data; quarterly averages. Standard deviations in parentheses.  
Source: Datastream, CNB calculations.

**The alignment of the Czech money and foreign exchange markets with the benchmark German market remains high, but has diverged somewhat in the last two years.**

**Degree of convergence of national financial markets to the euro area (sigma-convergence)**

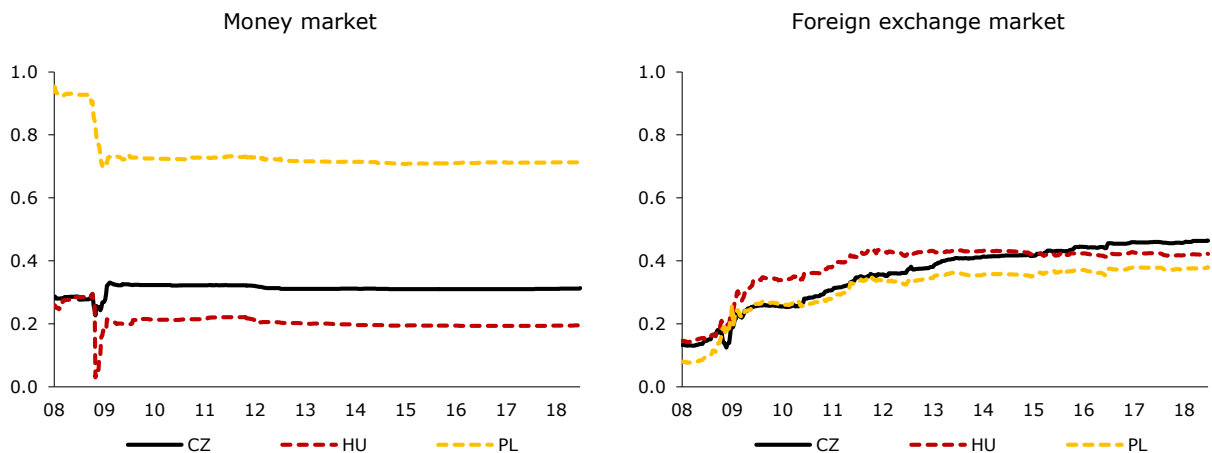


Note: Lower standard deviations (y-axis) correspond to a higher degree of convergence.  
Source: Datastream, CNB calculations.

**The rate of transmission of global news on the money market remains stable in the Czech Republic...**

**...while on the foreign exchange market it is rising gradually.**

**Sensitivity of asset prices to global news by comparison with the euro area (gamma-convergence)**



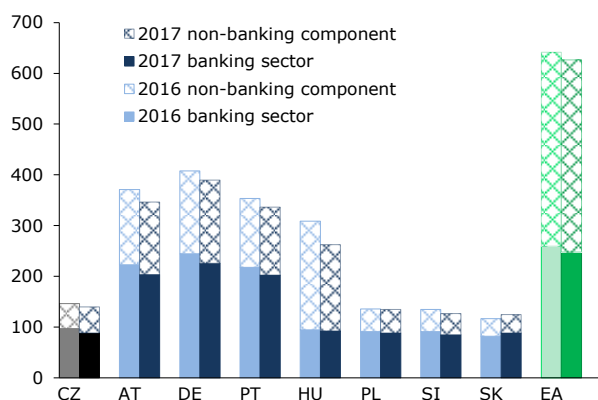
Note: Positive (negative) gamma values close to one express the same (opposite) directional and similarly strong sensitivity to news and hence a higher degree of integration; values close to zero express low integration.  
Source: Bloomberg, Datastream, CNB calculations.

### 3.2 SIMILARITY OF MONETARY POLICY TRANSMISSION

#### FINANCIAL SYSTEM

The depth of financial intermediation in the Czech Republic is much smaller than that in the euro area.

**Depth of financial intermediation**  
(assets of financial institutions as % of GDP)

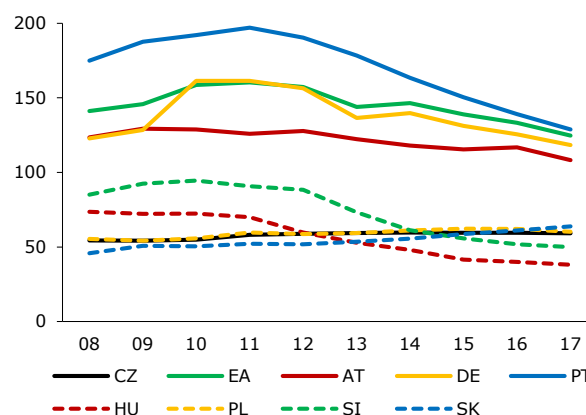


Note: The financial sector excludes central bank assets. The banking sector's total assets are adjusted for exposures to the central bank. The euro area value exceeds the other countries in the charts due to the large volume of assets of financial corporations in Luxembourg, Ireland, the Netherlands and France both as a percentage of their GDP and in comparison with the total financial assets of the euro area.

Source: CNB, ECB, Eurostat, national central banks.

Private sector debt remains well below the euro area average.

**Private sector debt**  
(% of GDP)



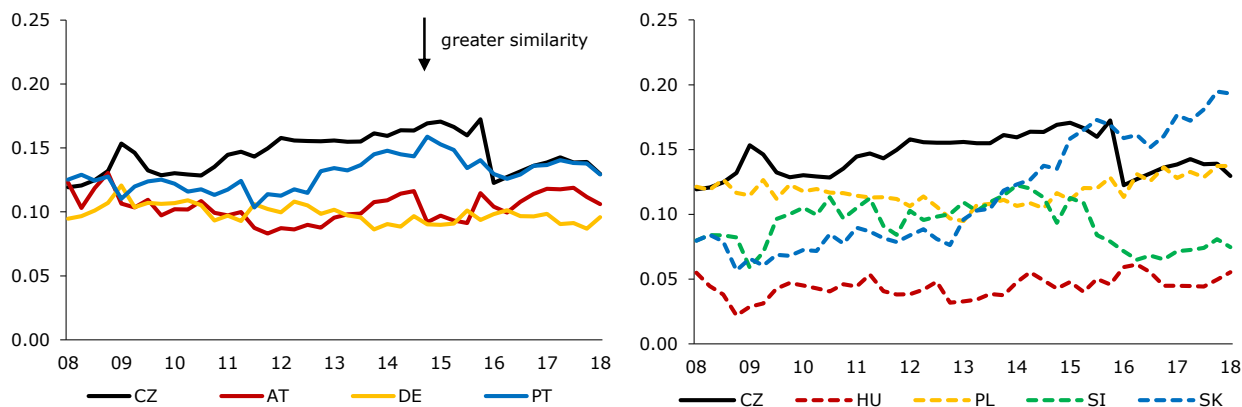
Note: EA represents the average of the euro area member countries weighted by the size of GDP.

Source: IMF IFS, Eurostat.

#### STRUCTURE OF FINANCIAL ASSETS AND LIABILITIES OF CORPORATIONS AND HOUSEHOLDS

The structural similarity of the balance sheets of Czech corporations with firms in the euro area has increased slightly.

**Structural similarity of non-financial corporations' balance sheets from the perspective of financial liabilities**

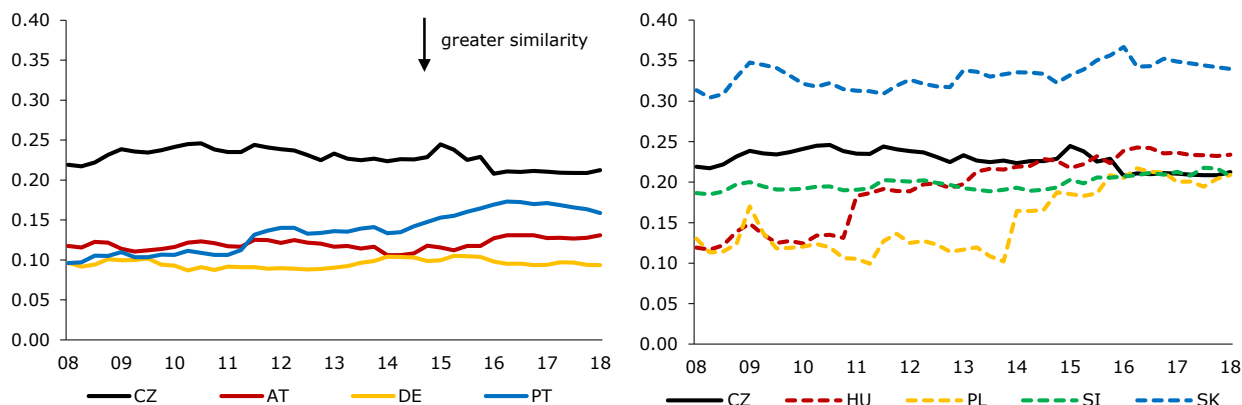


Note: The Landesmann index takes values in the range [0, 1]. The closer the index is to zero, the more similar is the structure of the balance sheets under comparison. The shares of the individual categories of liabilities in total liabilities were used for non-financial corporations.

Source: ECB, CNB calculations.

**The structural similarity of the balance sheets of Czech households with households in the euro area is conversely little changed and is lower than in advanced euro area countries.**

**Structural similarity of households' balance sheets from the perspective of financial assets**

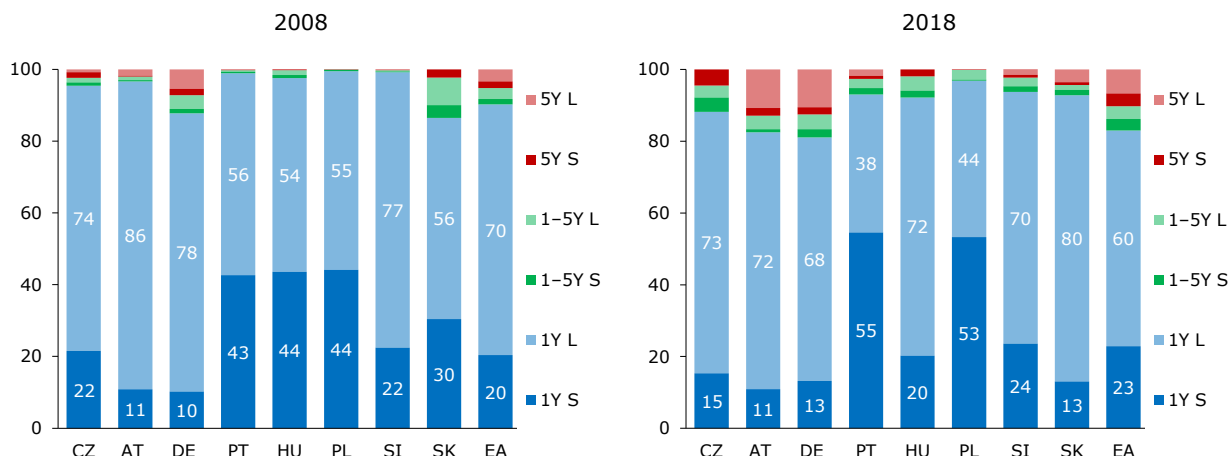


Note: The Landesmann index takes values in the range [0, 1]. The closer the index is to zero, the more similar is the structure of the balance sheets under comparison.  
Source: ECB, CNB calculations.

**EFFECT OF MONETARY POLICY ON CLIENT INTEREST RATES**

**Most non-financial corporations in the countries under review take out loans with floating rates or rates fixed for up to one year. This gives rise to relatively fast transmission of changes in monetary policy rates and subsequently market rates.**

**Structure of new loans to non-financial corporations by interest rate fixation period (%)**

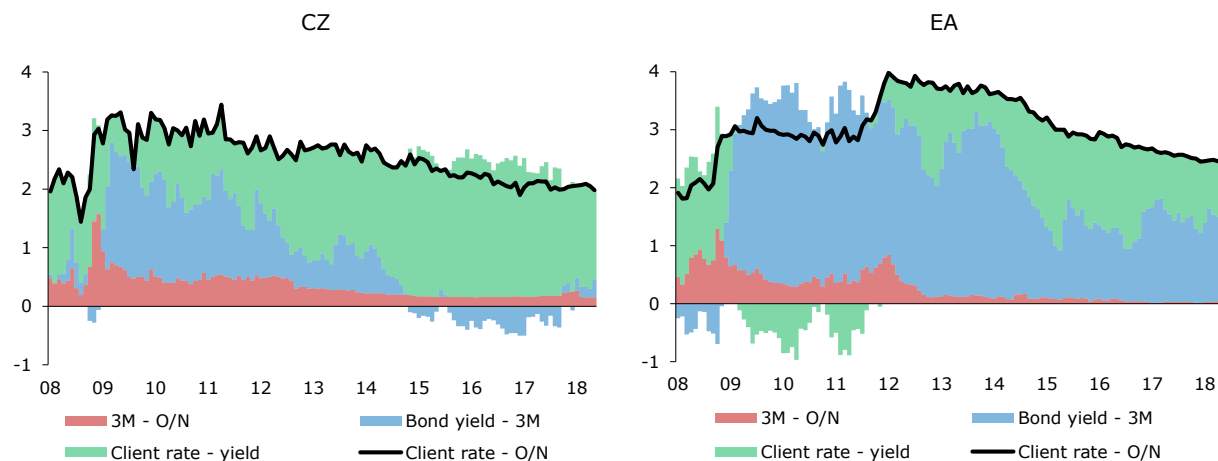


Note: 1Y S and 1Y L stand, respectively, for small (up to EUR 1 million) and large (over EUR 1 million) loans with a floating rate or a rate fixed for up to one year, and the other items in the key denote such loans with longer interest rate fixations. The structure of the euro area total varies according to the increasing number of countries. The 2018 data are as of June.  
Source: ECB, CNB calculations.

**The spread between client rates on loans to non-financial corporations and the overnight interbank rate is lower in the Czech Republic than in the euro area and has a different structure.**

**Decomposition of the spread between interest rates on loans to non-financial corporations and O/N interbank rates**

(pp)



Note: 3M - O/N is the difference between the three-month rate and the overnight interbank rate. Bond yield - 3M is the difference between the five-year government bond yield and the three-month interbank rate. Client rate - yield is the difference between the client rate on loans to non-financial corporations and the five-year government bond yield. The data are monthly averages.

Source: ECB, CNB, CNB calculations.

**The share of loans with fixation periods of over five years in loans for house purchase, which are the main segment of household debt, has risen in most of the countries under review.**

**Structure of new loans to households for house purchase by interest rate fixation period**

(%)



Note: The structure of the euro area total varies according to the increasing number of countries. The 2018 data are as of June. Source: ECB, CNB calculations.

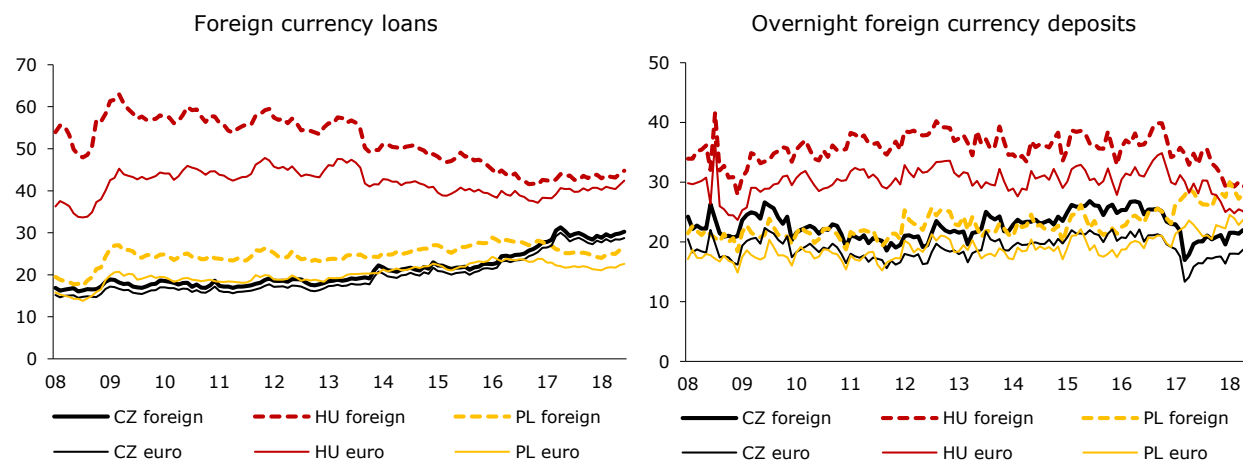


**SPONTANEOUS EUROISATION**

**The share of foreign currency loans to non-financial corporations has risen over the last ten years.**

**Foreign currency loans and overnight deposits of non-financial corporations**

(shares in total loans and overnight deposits of non-financial corporations with domestic banks, %)

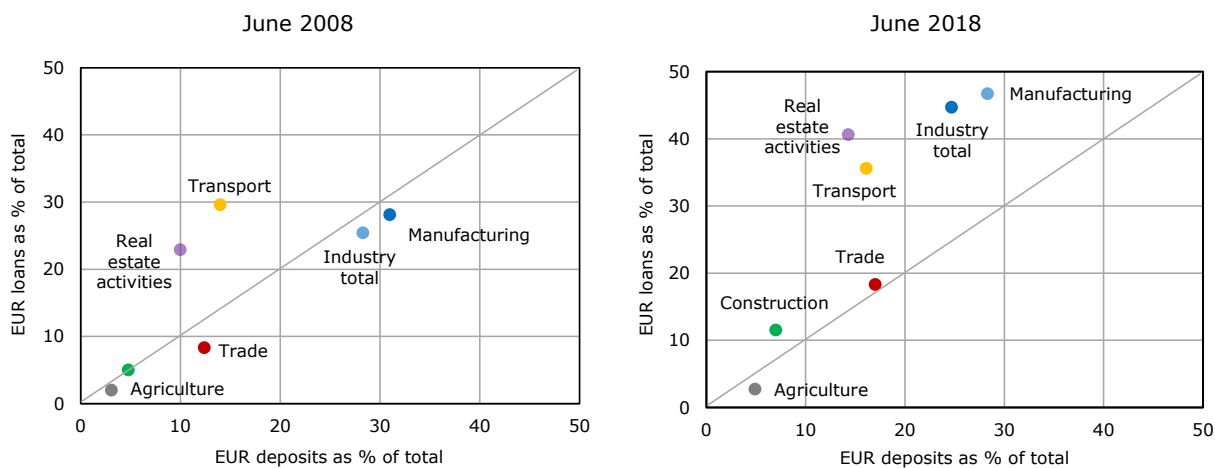


Source: ECB, CNB calculations.

**The euroisation of the Czech economy is asymmetrical in terms of loans and deposits; the share of euro-denominated loans has increased in most major sectors over the last ten years, while the share of deposits has been broadly flat or has even fallen in some sectors.**

**Euro-denominated loans and deposits by sector**

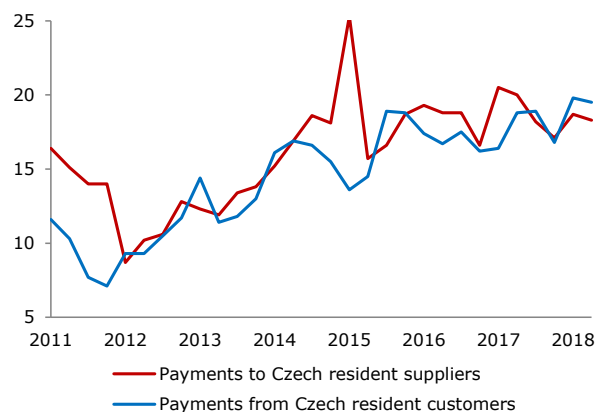
(shares in total loans and deposits of non-financial corporations in given sector with domestic banks, %)



Source: CNB.

**The share of euro payments between Czech firms has doubled over the last few years.**

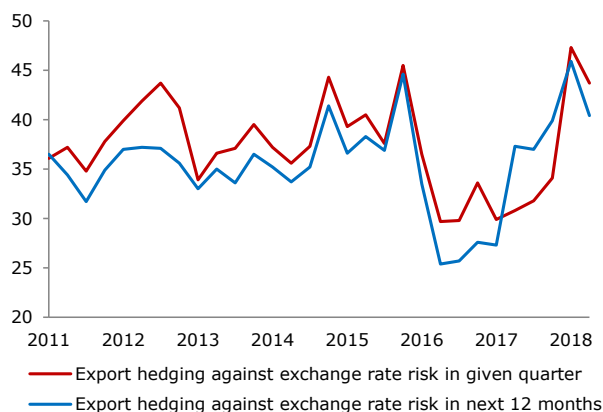
**Shares of euro payments between Czech firms (%)**



Source: Survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic.

**Hedging of exports via futures operations intensified substantially following the exit from the exchange rate commitment.**

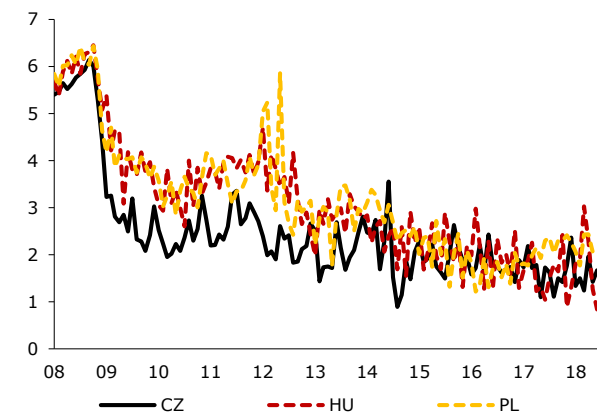
**Shares of export hedging against exchange rate risk (%)**



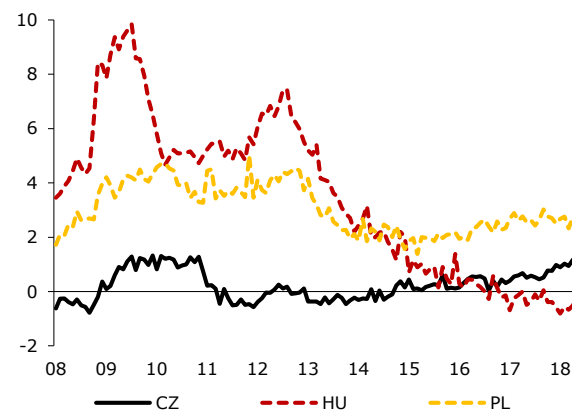
Source: Survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic.

**The interest rate differential on loans to non-financial corporations has been rising recently, providing an incentive for growth in euro-denominated loans.**

**Interest rates on euro-denominated loans of non-financial corporations (%)**



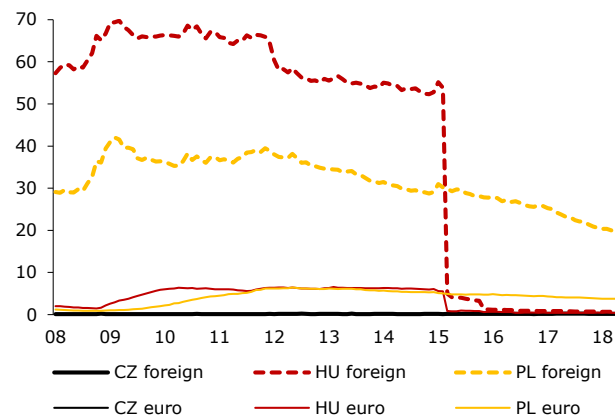
**Interest rate differentials on domestic and foreign currency loans of non-financial corporations (pp)**



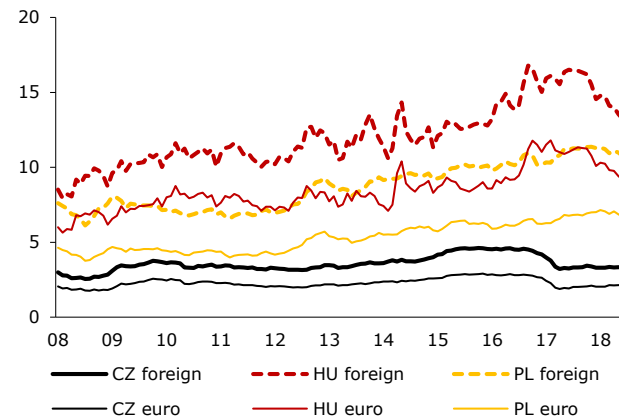
Note: The data refer to large loans of over EUR 1 million with rates fixed for up to one year.  
Source: ECB, CNB calculations.

**Financial euroisation of households has long been very low in the Czech Republic.**

**Foreign currency loans of households**  
(shares in total loans to households with domestic banks, %)



**Foreign currency overnight deposits of households**  
(shares in total overnight deposits of households with domestic banks, %)

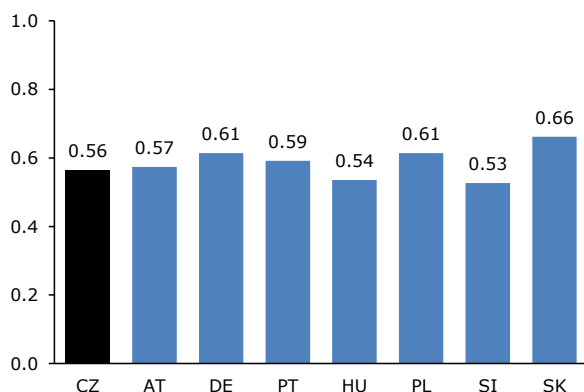


Note: The share of foreign currency loans in Hungary fell to zero in 2015 owing to administrative measures. Source: ECB, CNB calculations.

**INFLATION PERSISTENCE**

**Inflation persistence is generally lower in the Czech Republic than in the other countries under review.**

**Inflation persistence estimates**



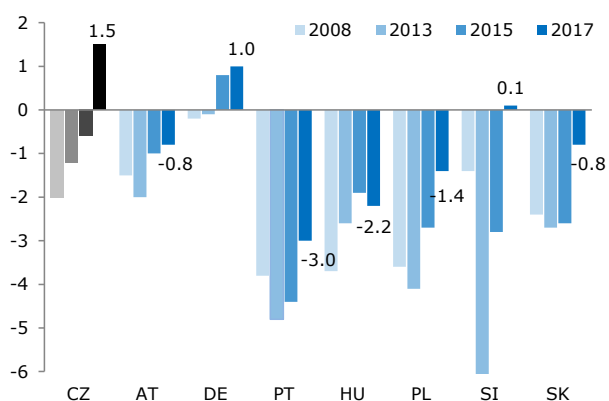
Note: Calculation for 2008 Q1–2018 Q2. The closer the values are to one, the more persistent is inflation. Source: Eurostat, CNB calculations.

## 4 ADJUSTMENT MECHANISMS OF THE CZECH ECONOMY

### 4.1 FISCAL POLICY

The Czech Republic's general government finances are currently in surplus...

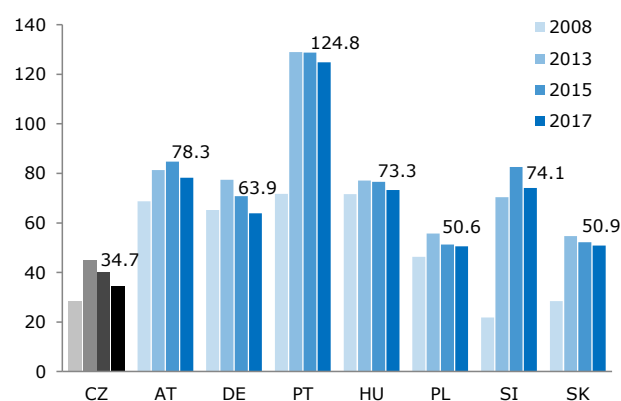
**General government balance**  
(% of GDP)



Source: Eurostat.

...and total general government debt is relatively low in the Czech Republic.

**General government debt**  
(% of GDP)



Source: Eurostat.

The Czech Republic ranks among the countries with low sensitivity of the general government balance to economic developments, i.e. with lower automatic stabilisers.

**Indicators of the sensitivity of the general government balance to economic developments**

	CZ	AT	DE	PT	HU	PL	SI	SK
Total budgetary elasticity	0.45	0.60	0.66	0.54	0.56	0.47	0.45	0.38
Automatic stabilisation of average revenue (in %)	29	45	39	33	34	27	38	31

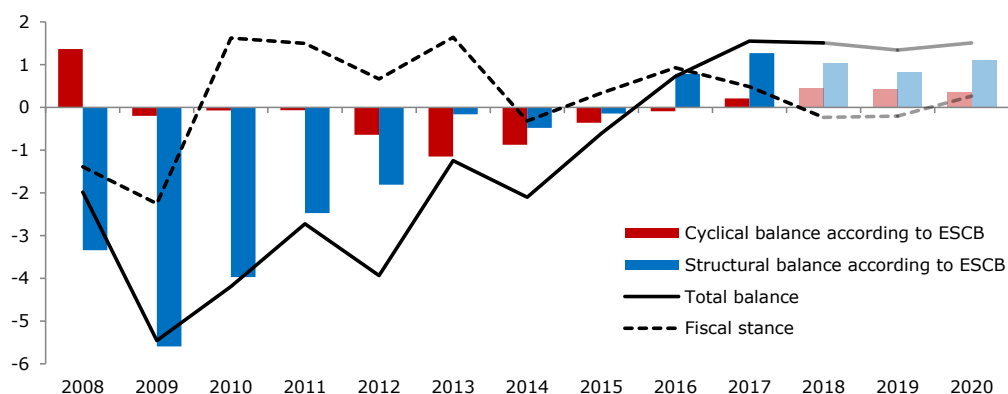
Note: According to the CNB's internal estimates, total budgetary elasticity in the Czech Republic is even lower, at around 0.33, while the Ministry of Finance estimates it at 0.43. The estimates for the Czech Republic differ due to different estimates of the elasticities of individual tax revenues.

Source: Price et al. (2015), European Commission (2018c).

### Czech fiscal policy has often been procyclical.

#### The Czech Republic's general government balance, its cyclical and structural components and fiscal stance

(% of GDP, pp)



Note: The fiscal stance measures the year-on-year change in the structural balance. A positive figure indicates fiscal restriction and a negative figure fiscal expansion. The structural balance is the general government balance adjusted for the business cycle and one-off measures.

Source: CZSO (2008–2017) and CNB (2018–2020 forecast and calculations).

### The Czech Republic is also expected to attain general government surpluses over the forecast horizon.

#### General government balances, European Commission estimates

(% of GDP)

	Total balance						Cyclically-adjusted balance					
	2008	2016	2017	2018	2019	2020	2008	2016	2017	2018	2019	2020
<b>CZ</b>	-2.0	0.7	1.5	1.4	0.8	0.7	-3.8	0.9	1.1	0.9	0.2	0.2
<b>AT</b>	-1.5	-1.6	-0.8	-0.3	0.0	0.1	-2.6	-1.2	-0.8	-0.8	-0.4	-0.2
<b>DE</b>	-0.2	0.9	1.0	1.6	1.2	1.1	-1.1	0.8	0.6	1.2	1.0	1.1
<b>PT</b>	-3.8	-2.0	-3.0	-0.7	-0.6	-0.2	-4.2	-1.6	-3.3	-1.4	-1.3	-1.0
<b>HU</b>	-3.7	-1.6	-2.2	-2.4	-1.9	-1.8	-4.6	-1.8	-3.1	-3.8	-3.3	-3.0
<b>PL</b>	-3.6	-2.2	-1.4	-0.9	-0.9	-1.0	-4.8	-1.9	-1.9	-2.0	-2.0	-1.8
<b>SI</b>	-1.4	-1.9	0.1	0.5	0.4	0.2	-4.6	-1.2	-0.5	-0.8	-1.0	-1.0
<b>SK</b>	-2.4	-2.2	-0.8	-0.6	-0.3	-0.1	-5.1	-2.1	-0.9	-0.8	-0.8	-0.6
<b>EA</b>	-2.2	-1.6	-1.0	-0.6	-0.8	-0.7	-3.1	-1.0	-0.9	-0.8	-1.2	-1.1
<b>CZ<sup>a)</sup></b>	-2.0	0.7	1.5	1.5	1.3	1.5	-3.7	1.0	1.4	1.5	1.3	1.4

Note: <sup>a)</sup> Total balance: data according to the CZSO's statistics and notifications (autumn 2018) until 2017, and the CNB's forecast from *Inflation Report IV/2018* for 2018–2020. The cyclically adjusted balance is calculated under EC methodology.

Source: European Commission (2018a, 2018b), CNB.

**Together with Slovakia and Poland, the Czech Republic is among the countries with a lower ratio of public expenditures and revenues to GDP compared to the euro area.**

**Ratios of public revenues and expenditures to GDP in the Czech Republic**

(2017, % of GDP)

	<b>CZ</b>	<b>AT</b>	<b>DE</b>	<b>PT</b>	<b>HU</b>	<b>PL</b>	<b>SI</b>	<b>SK</b>	<b>EA</b>
<b>Total revenues</b>	<b>40.5</b>	<b>48.4</b>	<b>45.0</b>	<b>42.7</b>	<b>44.7</b>	<b>39.7</b>	<b>43.2</b>	<b>39.4</b>	<b>46.1</b>
- taxes	20.2	27.1	23.5	25.0	25.3	21.0	21.9	18.3	25.8
- social contributions	15.1	15.1	16.7	11.7	12.8	13.9	14.8	14.8	15.2
<b>Total expenditures</b>	<b>39.0</b>	<b>49.2</b>	<b>43.9</b>	<b>45.7</b>	<b>46.9</b>	<b>41.1</b>	<b>43.2</b>	<b>40.2</b>	<b>47.0</b>
- compensation of employees	9.2	10.6	7.5	10.9	10.9	10.2	11.2	9.2	9.8
- intermediate consumption	5.9	6.2	4.8	5.4	7.9	5.5	6.3	5.7	5.1
- social payments	11.8	18.2	15.4	16.5	12.2	15.1	15.1	13.5	16.7
- gross fixed capital formation	3.4	3.1	2.2	1.8	4.5	3.8	3.1	3.2	2.6
- interest expenditure	0.7	1.8	1.0	3.8	2.8	1.6	2.5	1.4	2.0

Source: European Commission (2018a).

**A large proportion of state budget expenditures in the Czech Republic are mandatory or quasi-mandatory.**

**Shares of mandatory and quasi-mandatory expenditures in the state budget**

(%)

	<b>2008</b>	<b>2010</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Shares of mandatory expenditure in total SB expenditure	53.7	54.3	57.7	58.2	57.8	54.2	58.2	57.0	57.3	55.0
Shares of quasi mandatory expenditure in total SB expenditure	19.9	18.7	17.7	17.5	17.3	17.5	18.9	20.2	21.0	21.3
Shares of mandatory expenditure in total SB revenue	54.7	62.8	63.3	62.5	61.7	57.0	55.4	57.3	59.5	56.5
Shares of quasi mandatory expenditure in total SB revenue	20.3	21.6	19.4	18.8	18.5	18.4	18.0	20.3	21.8	21.9

Note: Actual data for 2008-2017, state budget projections for 2018-2019.

Source: Ministry of Finance of the Czech Republic (2018).

**The decrease in general government debt as a percentage of GDP in the Czech Republic is being accompanied by falling debt service costs.**

**Debt service**

(European Commission estimate, % of GDP)

	2008	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>CZ</b>	1.0	1.4	1.3	1.3	1.1	0.9	0.7	0.7	0.8	0.8
<b>AT</b>	2.9	2.7	2.6	2.4	2.3	2.1	1.8	1.6	1.5	1.4
<b>DE</b>	2.7	2.3	2.0	1.6	1.4	1.2	1.0	0.9	0.9	0.8
<b>PT</b>	3.1	4.9	4.9	4.9	4.6	4.2	3.8	3.5	3.3	3.2
<b>HU</b>	4.0	4.6	4.5	4.0	3.5	3.2	2.8	2.5	2.4	2.4
<b>PL</b>	2.1	2.7	2.5	2.0	1.8	1.7	1.6	1.5	1.4	1.4
<b>SI</b>	1.1	2.0	2.6	3.2	3.2	3.0	2.5	2.0	1.7	1.6
<b>SK</b>	1.3	1.8	1.9	1.9	1.7	1.6	1.4	1.3	1.2	1.1
<b>EA</b>	2.9	3.0	2.8	2.6	2.3	2.1	2.0	1.9	1.8	1.8

Source: European Commission (2018a).

**Recent adjustments to the Czech pension system will foster a further deterioration in the adverse outlook for Czech public finance sustainability.**

**Age-related government expenditures**

(% of GDP)

	Pensions		Health care		Long-term care		Total		Change 60-16
	2016	2060	2016	2060	2016	2060	2016	2060	
<b>CZ</b>	8.2	11.6	5.4	6.6	1.3	2.8	14.9	21.0	6.1
<b>AT</b>	13.8	14.7	7.0	8.2	1.9	3.6	22.7	26.5	3.8
<b>DE</b>	10.1	12.5	7.4	8.1	1.3	2.0	18.8	22.6	3.8
<b>PT</b>	13.5	12.0	5.9	8.3	0.5	1.4	19.9	21.7	1.8
<b>HU</b>	9.7	11.1	4.9	5.8	0.7	1.1	15.3	18.0	2.7
<b>PL</b>	11.2	11.1	4.3	5.2	0.5	1.2	16.0	17.5	1.5
<b>SI</b>	10.9	15.2	5.6	6.8	0.9	1.8	17.4	23.8	6.4
<b>SK</b>	8.6	9.9	5.6	7.0	0.9	1.5	15.1	18.4	3.3
<b>EA</b>	12.3	12.4	6.8	7.5	1.6	2.7	20.7	22.6	1.9
<b>CZ<sup>a)</sup></b>	7.5	12.0	4.9	7.4	1.4	1.9	13.8	21.3	7.5

Note: a) CNB calculations.

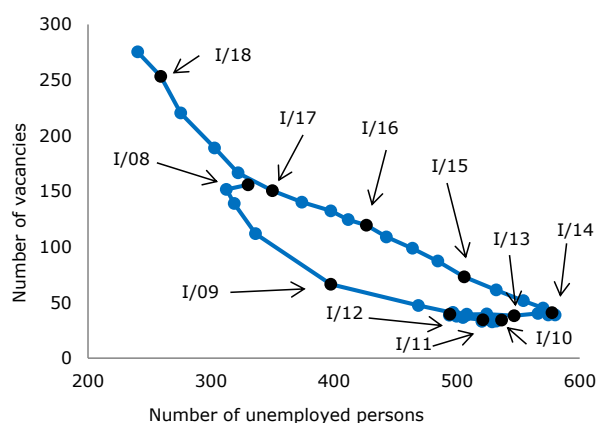
Source: European Commission (2018d).

## 4.2 THE LABOUR MARKET AND THE PRODUCT MARKET

In recent years, the number of unemployed persons has been falling cyclically and the number of job vacancies has been rising.

### Beveridge curve

(thousands, seasonally adjusted)

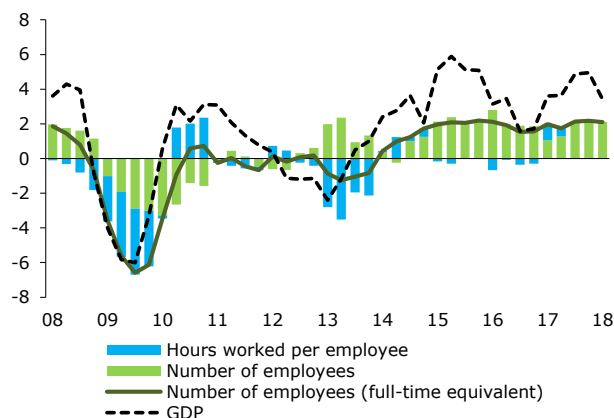


Source: Ministry of Labour and Social Affairs.

The number of employees converted into full-time equivalents has been rising steadily since 2014, while average hours worked have been broadly flat.

### Average hours worked per employee

(annual changes in %, contributions in pp)

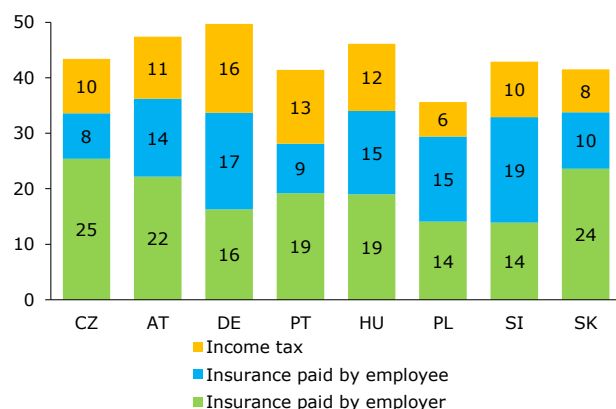


Source: CZSO, CNB calculations.

Incidental labour costs in the Czech Republic are the highest among the countries under review...

### Components of labour taxation

(% of average wage)



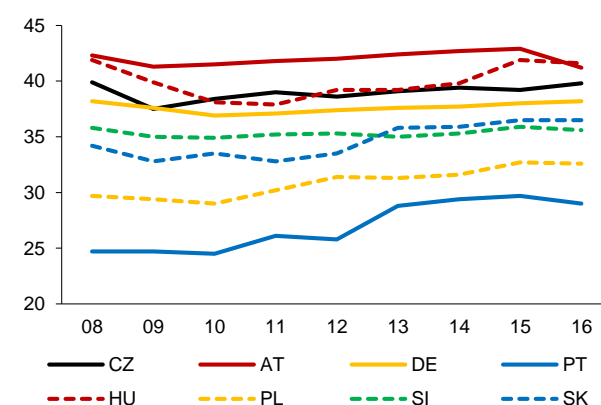
Note: Incidental labour costs comprise contributions paid by the employer.

Source: OECD.

...and the overall implicit rate of labour taxation is one of the highest among the countries under comparison.

### Implicit labour taxation rates

(%)



Source: Eurostat.



**The long-term unemployment rate in the Czech Republic has fallen rapidly recently and is the lowest among the countries under review.**

#### Long-term unemployment rate

(%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	2.2	2.0	3.0	2.7	3.0	3.0	2.7	2.4	1.7	1.0
<b>AT</b>	1.0	1.2	1.2	1.2	1.2	1.3	1.5	1.7	1.9	1.8
<b>DE</b>	3.9	3.5	3.3	2.8	2.4	2.3	2.2	2.0	1.7	1.6
<b>PT</b>	3.6	4.2	5.7	6.2	7.7	9.3	8.4	7.2	6.2	4.2
<b>HU</b>	3.6	4.2	5.5	5.2	5.0	4.9	3.7	3.1	2.4	1.7
<b>PL</b>	2.5	2.6	3.0	3.6	4.1	4.4	3.8	3.0	2.2	1.5
<b>SI</b>	1.9	1.8	3.2	3.6	4.3	5.2	5.3	4.7	4.3	3.1
<b>SK</b>	6.7	6.6	9.3	9.3	9.4	10.0	9.3	7.6	5.8	5.1

Source: Eurostat.

**The share of persons working part-time is rising gradually in the Czech Republic, but is still below the levels observed in advanced countries, i.e. Germany and Austria...**

#### Part-time employees

(%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	4.2	4.7	5.1	4.6	4.9	5.7	5.4	5.2	5.6	6.0
<b>AT</b>	23.2	24.4	24.9	25.0	25.7	26.5	27.4	27.7	28.2	28.2
<b>DE</b>	25.2	25.5	25.7	25.9	25.9	26.7	26.6	26.8	26.8	26.9
<b>PT</b>	8.7	8.4	8.4	10.1	11.0	10.8	9.9	9.6	9.2	8.6
<b>HU</b>	4.3	5.2	5.5	6.4	6.7	6.4	6.0	5.7	4.7	4.3
<b>PL</b>	7.4	7.3	7.3	7.0	6.9	6.9	6.8	6.6	6.2	6.3
<b>SI</b>	7.2	8.6	9.2	8.6	8.5	8.5	9.2	9.3	8.9	9.6
<b>SK</b>	2.5	3.4	3.7	3.9	3.9	4.5	5.0	5.7	5.7	5.7

Source: Eurostat.

**...but the rising supply of part-time jobs is fostering an increase in the rate of economic activity in the Czech Republic.**

#### Rates of economic activity in the 15–64 age category

(%)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	69.9	69.7	70.1	70.2	70.5	71.6	72.9	73.5	74.0	75.0	75.9
<b>AT</b>	73.5	73.9	74.3	74.4	74.6	75.1	75.5	75.4	75.5	76.2	76.4
<b>DE</b>	75.6	75.9	76.3	76.7	77.3	77.2	77.6	77.7	77.6	77.9	78.2
<b>PT</b>	73.9	73.9	73.4	73.7	73.6	73.4	73.0	73.2	73.4	73.7	74.7
<b>HU</b>	61.6	61.2	61.2	61.9	62.4	63.7	64.7	67.0	68.6	70.1	71.2
<b>PL</b>	63.2	63.8	64.7	65.3	65.7	66.5	67.0	67.9	68.1	68.8	69.6
<b>SI</b>	71.3	71.8	71.8	71.5	70.3	70.4	70.5	70.9	71.8	71.6	74.2
<b>SK</b>	68.3	68.8	68.4	68.7	68.7	69.4	69.9	70.3	70.9	71.9	72.1

Source: Eurostat.

**The regional differences in unemployment rates in the Czech Republic are medium-high compared to the other countries under review and are roughly the same as in Germany.**

#### Coefficients of variation of the unemployment rate

(%)

	NUTS II regions										NUTS III regions									
	08	09	10	11	12	13	14	15	16	17	08	09	10	11	12	13	14	15	16	17
<b>CZ</b>	44	34	31	28	33	31	30	33	33	30	46	35	32	29	34	32	30	33	34	32
<b>AT</b>	39	34	37	40	43	39	43	45	46	47	41	36	39	42	45	41	45	47	49	49
<b>DE</b>	45	37	36	41	40	39	39	37	32	32	51	43	42	48	47	46	-	-	-	-
<b>PT</b>	19	18	20	13	14	16	13	14	14	13	-	-	-	-	-	-	-	-	-	-
<b>HU</b>	43	31	23	26	23	21	31	34	41	46	49	36	28	30	27	25	36	37	47	51
<b>PL</b>	18	20	14	14	15	16	18	19	23	28	27	29	26	26	27	26	27	29	33	38
<b>SI</b>	-	-	-	-	-	-	-	-	-	-	-	-	22	28	21	19	22	21	21	17
<b>SK</b>	41	32	27	32	31	29	28	26	29	37	51	38	29	33	33	31	30	31	33	42

Note: The coefficient of variation is the ratio of the standard deviation weighted by region size to the average unemployment rate in per cent.

Source: European Commission (2018d).

**The willingness of the domestic population to migrate within the Czech Republic has long been low and almost constant.**

#### Internal migration

(per 1,000 inhabitants)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	24	22	23	22	22	22	23	23	24	-
<b>AT</b>	38	37	37	38	39	39	40	43	44	42
<b>DE</b>	44	44	44	47	47	48	49	53	-	-
<b>HU</b>	24	21	20	20	19	19	22	22	26	27
<b>PL</b>	11	11	11	11	10	10	11	10	10	11
<b>SI</b>	52	48	52	53	55	55	55	53	54	54
<b>SK</b>	17	15	16	16	15	16	17	17	18	18

Note: Migration between municipalities (HU, PL and SI – all changes in permanent residence). Data are not available for Portugal. The calculations do not take into account differences in the sizes of territorial units in the chosen countries.

Source: Statistical yearbooks, Eurostat, CNB calculations.

**The geographical mobility of the labour force in the Czech Republic is gradually rising, mainly via an increasing share of foreign nationals in the population.**

#### Shares of foreign nationals in the population

(%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	3.3(1.3)	3.9(1.4)	4.0(1.3)	4.0(1.3)	4.0(1.4)	4.0(1.5)	4.1(1.6)	4.3(1.7)	4.5(1.9)	4.8(2.0)
<b>AT</b>	9.9(3.5)	10.3(3.8)	10.5(4.0)	10.8(4.2)	11.3(4.5)	11.8(4.9)	12.5(6.1)	13.3(6.6)	14.5(7.1)	15.2(7.5)
<b>DE</b>	8.8(3.1)	8.8(3.1)	8.7(3.1)	7.6(2.8)	7.9(3.0)	8.3(3.3)	8.7(3.9)	9.3(4.3)	10.5(4.6)	11.2(4.8)
<b>PT</b>	4.2(1.1)	4.2(0.8)	4.3(0.9)	4.2(1.0)	4.1(1.0)	4.0(1.0)	3.8(1.0)	3.8(1.0)	3.8(1.0)	3.9(1.1)
<b>HU</b>	1.8(1.0)	1.9(1.1)	2.0(1.2)	2.1(1.3)	1.4(0.8)	1.4(0.8)	1.4(0.8)	1.5(0.8)	1.6(0.9)	1.5(0.8)
<b>PL</b>	0.2(0.1)	-	0.2(0.1)	0.2(0.1)	0.2(0.1)	0.2(0.1)	0.3(0.1)	0.3(0.1)	0.3(0.1)	0.3(0.1)
<b>SI</b>	3.4(0.2)	3.5(0.2)	4.0(0.2)	4.0(0.3)	4.2(0.3)	4.4(0.3)	4.7(0.8)	4.9(0.8)	5.2(0.9)	5.5(0.9)
<b>SK</b>	0.8(0.5)	1.1(0.9)	1.2(1.0)	1.3(1.0)	1.3(1.0)	1.3(1.0)	1.1(0.8)	1.1(0.9)	1.2(0.9)	1.3(1.0)

Note: Foreign nationals from EU countries are given in parentheses.

Source: Eurostat, CNB calculations.

**The ratio of the minimum wage to the average wage has increased markedly in recent years, but is still the lowest among the countries under review.**

**Minimum wage**  
(% of average wage)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CZ</b>	35.2	34.3	33.3	32.4	31.6	32.6	32.8	34.4	35.5	37.3
<b>DE</b>	-	-	-	-	-	-	-	41.9	41.0	41.7
<b>PT</b>	44.2	42.8	42.4	42.2	42.9	42.7	44.1	43.7	45.4	47.2
<b>HU</b>	38.8	38.3	38.0	38.6	42.5	43.3	43.3	43.2	43.4	44.5
<b>PL</b>	39.1	42.2	42.0	41.7	43.5	44.6	45.3	45.5	46.3	47.3
<b>SI</b>	43.4	44.2	50.5	51.7	52.2	53.2	52.8	52.4	52.7	53.7
<b>SK</b>	33.6	35.7	36.0	36.1	35.6	36.0	35.4	36.9	37.7	38.5

Note: No minimum wage was defined at the national level in Germany until 2014; a minimum wage was introduced in January 2015. In Austria the minimum wage is only defined for some specific occupations and represents around 30% of the average wage.

Source: Eurostat.

**The ratio of the minimum wage to the wage in the first (lowest) decile of the wage distribution is traditionally high in low-skilled occupations and has risen rapidly in recent years.**

**Ratio of the minimum wage to the gross monthly wage in selected professions**  
(%)

Main employment class	Minimum wage / 1st decile									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total for Czech Republic (business sector)	63.2	63.9	63.5	72.9	69.9	70.5	71.6	77.3	79.7	80.9
services and shop workers	85.0	85.9	86.5	91.4	85.2	84.1	86.3	91.1	91.9	92.4
workers in agriculture, forestry and fishing	67.2	67.9	65.2	71.9	61.5	60.8	62.0	75.3	81.8	83.9
elementary occupations	87.7	88.1	89.1	91.7	89.4	89.5	90.3	95.0	96.1	96.1

Source: Average Earnings Information System (Ministry of Labour and Social Affairs), CNB calculations.

**Overall labour taxation in the Czech Republic was lower than in advanced neighbouring countries (Germany and Austria) in the period under review.**

**Overall labour taxation**  
(%)

	100% of average wage					67% of average wage				
	2007	2014	2015	2016	2017	2007	2014	2015	2016	2017
<b>CZ</b>	42.9	42.6	42.8	43.0	43.4	40.6	39.7	40.0	40.3	40.8
<b>AT</b>	48.8	49.4	49.6	47.3	47.4	44.2	44.8	45.1	43.0	43.1
<b>DE</b>	51.8	49.3	49.4	49.5	49.7	47.0	45.1	45.3	45.4	45.5
<b>PT</b>	37.3	41.2	42.1	41.6	41.4	32.5	34.9	36.3	36.5	36.6
<b>HU</b>	54.5	49.0	49.0	48.2	46.2	46.1	49.0	49.0	48.2	46.2
<b>PL</b>	38.2	35.7	35.7	35.6	35.6	37.1	34.9	35.0	34.9	35.0
<b>SI</b>	43.3	42.5	42.6	42.7	42.9	40.9	38.6	38.6	38.7	40.0
<b>SK</b>	38.4	41.3	41.4	41.5	41.6	35.5	38.6	38.8	39.0	39.2

Note: Income tax and contributions paid by employees and employers as a percentage of total labour costs. Data for employees (individuals without children) earning 100% (left-hand part of the table) and 67% (right-hand part of the table) of the average wage.

Source: OECD.

### The unemployment trap indicates a relatively low incentive to return to work.

#### Unemployment trap

(%)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>CZ</b>	66.9	68.2	79.5	80.0	80.2	80.1	80.1	80.2	80.3
<b>AT</b>	67.6	67.8	67.0	67.2	67.4	67.6	67.8	68.0	68.1
<b>DE</b>	74.2	73.9	74.9	72.9	73.3	73.3	73.0	73.0	73.1
<b>PT</b>	81.5	81.1	80.7	79.0	79.0	79.2	80.0	79.8	80.3
<b>HU</b>	80.6	80.3	80.6	79.9	79.6	79.5	78.8	78.6	78.4
<b>PL</b>	78.2	76.2	76.0	81.6	80.7	80.8	80.9	79.4	81.8
<b>SI</b>	80.7	83.4	83.4	83.2	89.7	89.5	89.8	89.7	89.6
<b>SK</b>	43.6	44.3	42.2	42.6	44.3	44.3	44.3	44.5	44.7

Note: The unemployment trap measures the proportion of gross income that is taken away when an unemployed person enters employment due to higher taxes and social security contributions and the loss of unemployment benefit and other social benefits. The figures are based on a model example of an unmarried, childless individual with a wage of 67% of the average wage. More recent data are unavailable.

Source: Eurostat.

### The low wage trap indicates a low incentive to seek better-paid work, as after a wage increase from 33% to 67% a substantial part of the higher gross income is taken away due to the configuration of the tax and social system.

#### Low wage trap

(%)

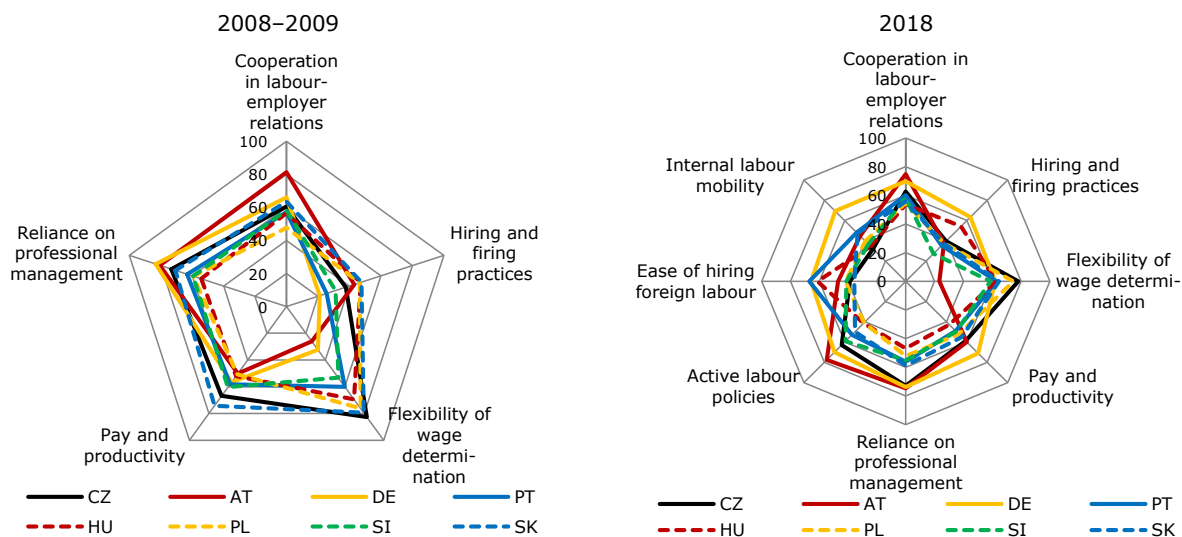
	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>CZ</b>	99.3	93.6	89.1	88.3	88.0	93.1	93.3	90.9	87.2
<b>AT</b>	70.5	71.6	67.1	69.4	94.5	95.5	96.2	97.3	96.9
<b>DE</b>	86.9	86.6	84.6	79.6	80.4	86.2	86.9	87.3	83.4
<b>PT</b>	65.5	68.9	72.3	66.5	56.0	26.9	23.6	24.6	28.2
<b>HU</b>	56.4	55.5	113.2	79.2	66.8	30.8	31.8	39.4	36.7
<b>PL</b>	68.5	58.9	54.4	44.1	37.1	33.5	62.7	53.8	44.7
<b>SI</b>	68.1	68.8	69.1	64.5	61.9	58.1	58.3	58.7	74.3
<b>SK</b>	43.7	37.1	54.9	58.3	52.0	49.6	47.6	51.4	49.9

Note: The low wage trap measures the proportion of gross income that is taken away due to the combined impact of income taxes, social security contributions and the loss of benefits when gross income increases from 33% to 67% of the average income of an employee in the business sector. This indicator is compiled for persons living as a couple, only one of whom earns an income, with two children between 6 and 11 years of age. More recent data are unavailable.

Source: Eurostat.

**In an international GCI comparison, the Czech Republic is one of the better-scoring countries in overall labour market quality.**

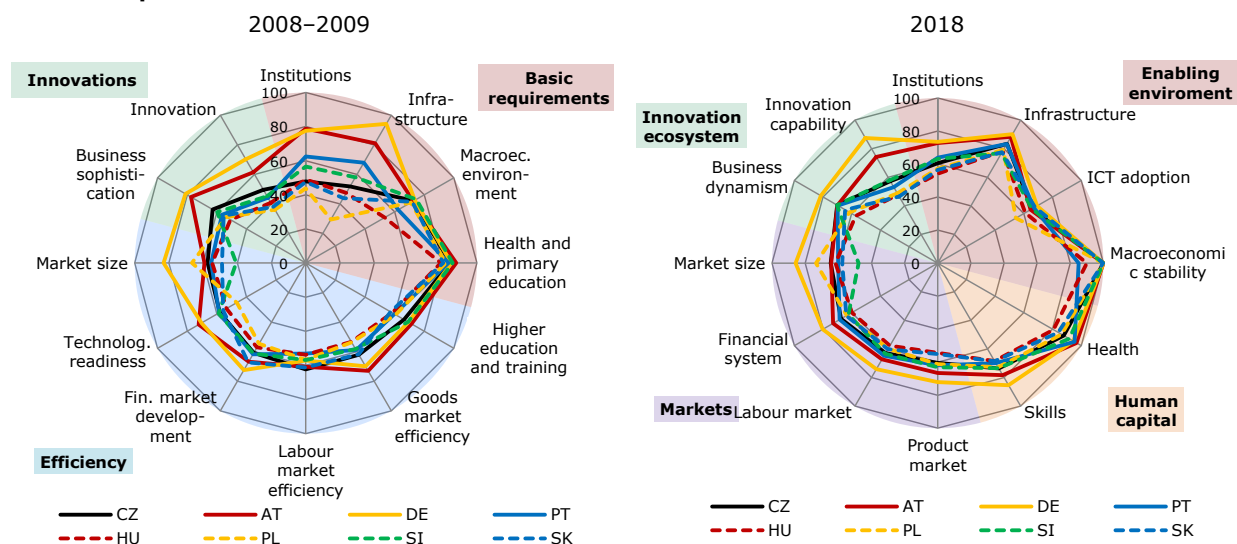
**Global Competitiveness Index 4.0 – labour market scores**



Note: As from 2018, the GCI for the labour market is broken down into new categories. For each category, it now takes values ranging from 0 to 100, where a higher index value means higher competitiveness in the relevant area. To aid comparison, the 2008/2009 levels are normalised according to the new index methodology.  
Source: World Economic Forum (2009, 2018).

**The competitiveness of the Czech economy has increased over the last ten years despite some problems.**

**Global Competitiveness Index – overall scores**



Note: As from 2018, the GCI is broken down into new categories. For each category, it now takes values ranging from 0 to 100, where a higher index value means higher competitiveness in the relevant area. To aid comparison, the 2008/2009 levels are normalised according to the new index methodology.  
Source: World Economic Forum (2009, 2018).

### The Czech Republic's score for the conditions for starting a business is similar to those of Germany and Austria.

#### Conditions for starting and closing a business

(scores in given category; country rankings in given year in parentheses)

	Starting a business							Closing a business						
	12	13	14	15	16	17	18	12	13	14	15	16	17	18
<b>CZ</b>	79.3 (140.)	79.5 (110.)	81.3 (90.)	81.3 (88.)	83.0 (81.)	83.6 (81.)	83.6 (115.)	88.7 (35.)	78.8 (20.)	79.1 (20.)	79.3 (22.)	79.6 (26.)	79.8 (25.)	80.1 (15.)
<b>AT</b>	79.9 (133.)	80.0 (113.)	82.8 (101.)	82.8 (106.)	83.1 (111.)	83.1 (118.)	83.2 (118.)	70.0 (12.)	78.7 (16.)	78.8 (16.)	78.9 (18.)	78.9 (20.)	77.4 (23.)	77.5 (21.)
<b>DE</b>	81.7 (104.)	81,73 (103.)	81,36 (110.)	82.7 (107.)	83.4 (114.)	83.5 (113.)	83.6 (114.)	89.5 (19.)	91.7 (3.)	91.8 (3.)	91.9 (3.)	92.3 (3.)	90.3 (4.)	90.1 (4.)
<b>PT</b>	90.7 (25.)	92,44 (10.)	90,98 (10.)	91.0 (31.)	91.0 (32.)	90.9 (48.)	90.9 (57.)	41.2 (22.)	83.9 (11.)	79.8 (9.)	80.6 (8.)	81.2 (7.)	79.7 (15.)	80.0 (16.)
<b>HU</b>	89.3 (54.)	89.3 (24.)	86.6 (56.)	87.1 (55.)	87.3 (75.)	87.6 (79.)	87.9 (82.)	59.0 (69.)	51.9 (64.)	52.9 (64.)	53.7 (63.)	54.4 (63.)	54.8 (62.)	55.0 (65.)
<b>PL</b>	79.0 (124.)	82.5 (80.)	82.6 (80.)	82.7 (102.)	82.8 (107.)	82.8 (120.)	82.9 (121.)	77.1 (37.)	68.6 (30.)	69.7 (31.)	70.4 (33.)	76.4 (27.)	77.7 (22.)	76.5 (25.)
<b>SI</b>	94.4 (33.)	94.4 (14.)	94.4 (14.)	94.5 (45.)	94.6 (49.)	94.7 (46.)	92.9 (38.)	58.2 (41.)	62.9 (39.)	62.9 (41.)	83.4 (12.)	84.0 (12.)	83.7 (10.)	83.7 (9.)
<b>SK</b>	81.1 (80.)	78.5 (83.)	80.3 (71.)	81.8 (64.)	81.9 (68.)	82.0 (83.)	82.0 (127.)	53.9 (38.)	69.7 (28.)	69.9 (30.)	70.0 (34.)	70.5 (35.)	66.1 (42.)	66.9 (42.)
<b>No. of countries</b>	185	189	189	189	190	190	190	185	189	189	189	190	190	190

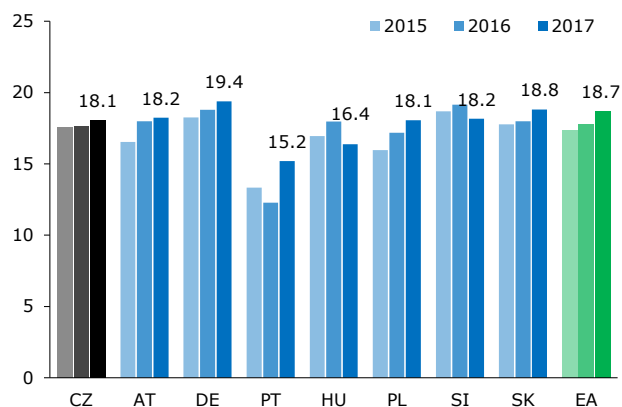
Note: Scores for conditions for starting and closing a business take values ranging from 0 to 100, where a higher value means better conditions. Starting a business: number of procedures, time (days), cost and minimum capital requirements in % of income per capita. Closing a business: time (years), cost in % of total assets and recovery rate in cents on the dollar. The country rankings include subsequent data revisions (more information can be found at <http://www.doingbusiness.org/>).

Source: World Bank (2018).

### 4.3 THE BANKING SECTOR AND ITS SHOCK-ABSORBING CAPACITY

**The capital ratio indicates high resilience of the banking sector.**

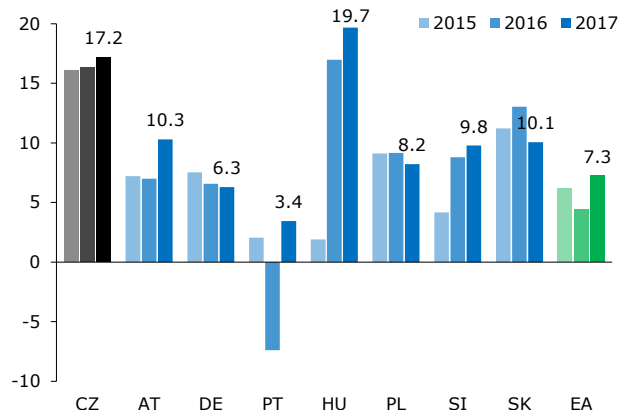
**Capital ratios**  
(%)



Note: The capital ratio is the ratio of a bank's capital to its risk-weighted assets. EA represents the GDP-weighted average of the euro area member countries.  
Source: IMF FSI.

**Return on equity remains high.**

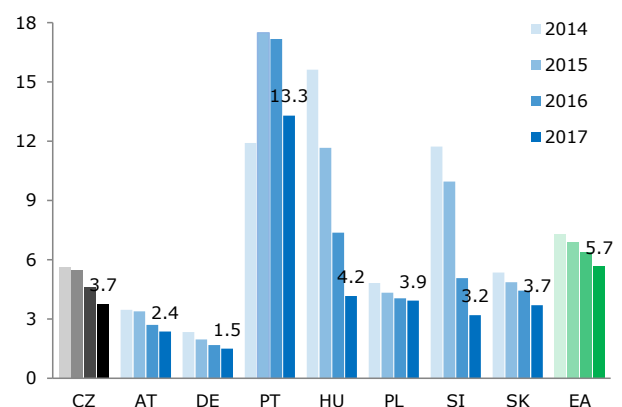
**Return on equity (RoE)**  
(%)



Note: EA represents the GDP-weighted average of the euro area member countries. The chart does not contain the figure for Germany in 2017 owing to data unavailability.  
Source: IMF FSI, Deutsche Bundesbank.

**Non-performing loans are continuing to fall.**

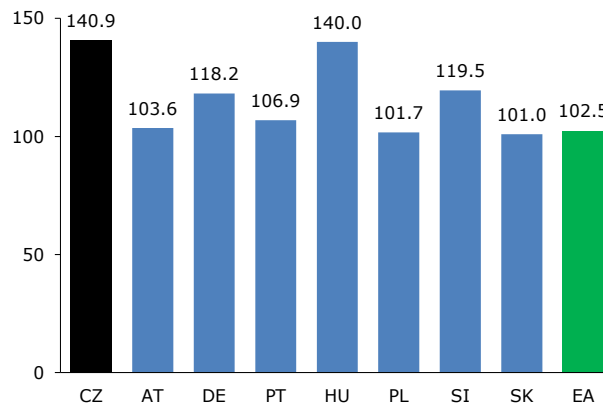
**Non-performing loans**  
(% of total bank loans)



Note: EA represents the GDP-weighted average of the euro area member countries.  
Source: IMF FSI, CNB, Deutsche Bundesbank.

**The ratio of deposits to loans remains high in the Czech Republic.**

**Ratios of deposits to loans in selected EU countries**  
(%)



Source: ECB, national central banks.

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