

# Analyses of the Czech Republic's Current Economic Alignment with the Euro Area ——— 2023



# Contents

<b>I. OVERALL MESSAGE OF THE ANALYSES</b>	<b>6</b>
The Czech Republic's cyclical and structural alignment with the euro area	7
Adjustment mechanisms of the Czech economy	9
Situation in the euro area and the European Union	11
<b>II. THEMATIC CHAPTERS</b>	<b>12</b>
II.1 Institutional developments in the euro area and the European Union	12
II.2 The exchange rate as a partial indicator for (non-)adoption of the euro	18
II.3 Euro financing of Czech firms	21
II.4 The labour market in the spotlight	26
II.5 Inflation heterogeneity and its impact on the convergence of price levels in euro area countries: every cloud has a silver lining	30
<b>III. CHARTBOOK</b>	<b>36</b>
III.1 The Czech Republic's cyclical and structural alignment with the euro area	36
III.1.1 Direct alignment indicators	36
III.1.2 Similarity of monetary policy transmission	48
III.2 Adjustment mechanisms of the Czech economy	55
III.2.1 Fiscal policy	55
III.2.2 The labour and products market	59
III.2.3 The banking sector	66
III.3 Economic alignment of euro area countries	67
<b>IV. THEORETICAL FOUNDATIONS OF THE ANALYSES</b>	<b>72</b>
<b>V. REFERENCES</b>	<b>74</b>

## Authors

Kateřina Arnořtová, Oxana Babecká Kucharčuková, Jan Babecký, Marek Benda, Soňa Benecká, Jan Brůha, Kamil Galuřčák, Jakub Grossmann, Eva Hromádková, Luboř Komárek, Zlatuře Komárková, Jan Král, Petr Král, Ivana Kubicová, Vojtěch Molnár, Martin Motl, Filip Novotný, Renata Pařaličová, Lukáš Pfeifer, Michaela Ryřavá, Branislav Saxa, Marek Souček, Milan Szabo, Matěj Šarboch, Radka Štiková, Josef Švéda, Martin Vojta

## Editors

Kateřina Arnořtová, Vojtěch Molnár

# Introduction

Every year, the CNB's "Analyses of the Czech Republic's Current Economic Alignment with the Euro Area" (hereinafter the "Alignment Analyses") presents a long-term and structural view of economic developments in the Czech Republic in the context of the country's obligation to join the euro area. In preparing this document, the CNB – in line with the Czech Republic's Euro-area Accession Strategy – fulfils its obligation to regularly assess the Czech Republic's progress in laying the groundwork for euro adoption. The analyses contained in the publication assess the Czech Republic's economic alignment with the euro area and the ability of the Czech economy to absorb potential asymmetric shocks by means of other mechanisms after losing its own monetary policy. The document also monitors the economic and institutional developments in the European Union and the euro area, and the resulting obligations relating to euro area entry.

The analyses focus on the traditional range of macroeconomic topics without any ambition to assess all issues relevant to the Czech Republic's entry to the euro area. The document does not examine the overall advantages and disadvantages of adopting the euro<sup>1</sup> and does not formulate recommendations on this step. The political decision on the date of entry into the euro area falls to the government of the Czech Republic.<sup>2</sup> Nor does this document analyse in detail the impacts of the Czech Republic's joining the banking union, including 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 consequences of changes to the process of ERM II entry, which is a pre-condition for euro area entry, are not assessed either.<sup>3</sup>

The current economic situation is signalling a gradual recovery from the impacts of previous crises. The short period of economic recovery following the coronavirus pandemic was interrupted last year by Russia's invasion of Ukraine and an escalating energy crisis, which further strengthened the already elevated global inflation pressures. The high inflation is already fading this year in the context of monetary policy tightening, but is still well above the inflation target in most EU countries, including the Czech Republic. The impacts of these events differed across euro area countries, thereby further highlighting the economic heterogeneity of the euro area.

The core of the Alignment Analyses is the **Overall Message of the Analyses**, which summarises the results of the traditional analyses. Their outputs are shown in the charts and tables presented in the **Chartbook**. The findings underlying these analyses are described in the **Theoretical Foundations of the Analyses**. The motivation for each of the analyses and their technical descriptions are contained in a separate **Methodological Annex**, which is available as an e-document on the CNB website.

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<sup>1</sup> A description of the costs and benefits of potential euro adoption and the motivations for these analyses are contained in the *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area 2018*, available on the CNB website: <<https://www.cnb.cz/en/monetary-policy/euro-adoption>>.

<sup>2</sup> A recommendation to the Czech government on the timing of euro adoption from the economic perspective is given in the *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area* issued jointly by the Ministry of Finance and the CNB, available on the CNB website: <<https://www.cnb.cz/en/monetary-policy/euro-adoption>>.

<sup>3</sup> Certain new conditions may be imposed on countries not only during their membership, but also before their entry into ERM II. Bulgaria's and Croatia's entry into ERM II was, for the first time ever, accompanied by accession to the banking union. Although the entry of the two countries into the banking union was formally their voluntary commitment, it was de facto a condition for joining ERM II. Moreover, such an approach was identified by the ERM II parties as a precedent for other ERM II candidates and can be assumed to be required of all future applicants for ERM II entry. However, EU law does not stipulate accession to the banking union as a condition for joining ERM II. The Czech Republic does not feel legally obliged to adopt Bulgaria's and Croatia's approach and does not regard participation in the banking union as a necessary condition for its own entry to ERM II.

This year's Alignment Analyses have been supplemented with five **thematic chapters**. The first examines in more detail the current institutional developments in the euro area and the European Union. The second investigates the impacts of changes in the koruna exchange rate on the competitiveness of the Czech economy. The third thematic chapter deals with the euroisation of the Czech economy, specifically the currently increased euro financing of Czech corporations. The fourth section provides a more detailed view of the Czech labour market. The last thematic chapter describes the heterogeneity of inflation developments across euro area countries in recent years.

**The analyses assess the evolution of individual indicators over time and in selected countries.** Unless stated otherwise, the countries assessed are Austria, the Czech Republic, Germany, Hungary, Poland, Portugal, Slovakia and Slovenia. These countries 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. However, the large weight of Germany in the calculation of aggregate or average indicators for the euro area must be taken into account when making comparisons with those economic indicators.

**Croatia became the newest member of the euro area in January 2023. This is also reflected in the processing of statistical indicators.** The euro area is thus abbreviated in several ways in the tables and charts depending on data availability. EA refers to the euro area total with a variable structure reflecting the actual number of euro area member countries in each period. EA19 and EA20 denote the fixed-structure totals comprising 19 and 20 euro area countries respectively (i.e. excluding and including Croatia), including retrospectively in data for the previous years.

The euro area countries are abbreviated as follows:




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

The selected non-EA countries under analysis are:




CZ	Czech Republic
HU	Hungary
PL	Poland

**The messages of the analyses for the Czech Republic have been illustrated graphically with arrows of different colours and directions.**

The colour underlying the arrow gives information on the message of the indicator in terms of the risks associated with potential euro adoption in the areas analysed:

-  relatively low level of risk associated with potential euro adoption
-  economic risks associated with potential euro adoption
-  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 results of a specific analysis in a selected area of the economy.** 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 single summary indicator cannot be compiled by adding up the individual coloured indicators or arrows.

## I. OVERALL MESSAGE OF THE ANALYSES

**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 and part of transaction costs in relation to the euro area. Foreign trade and investment will thus become more effective.

**Besides these benefits, however, euro adoption simultaneously entails risks arising from the loss of independent monetary policy and the stabilising role of a flexible exchange rate.** Following euro area entry, Czech economic policy will have fewer tools at its disposal to respond to the domestic economic situation. **Euro adoption is also associated with costs arising from new institutional commitments due to developments in the euro area, including the obligation to join the banking union or the European Stabilisation Mechanism.**

**The key factors for the Czech economy will be its alignment with the euro area and its ability to absorb potential asymmetric shocks by means of other mechanisms after losing its own monetary policy.** The analyses presented in this document thus assess the similarity of the long-term trends, medium-term development and structure of the Czech economy to the euro area, including the similarity of monetary policy transmission. The ability of the economy to adjust by means of autonomous fiscal policy, labour market flexibility and the absorption capacity of the banking sector is also examined.

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

### Indicators suggesting a relatively low level of risk associated with potential euro adoption in the area analysed

This group has long included the Czech economy's close trade and ownership links with the euro area. These factors represent preconditions for the realisation of the benefits of euro adoption and also foster alignment between the Czech and euro area business cycles. The latter is currently very high. However, it is not clear to what extent its increase is only a temporary consequence of the similar impacts of strong global economic shocks. The close trade links are also reflected in an increasing share of euro-denominated financing of Czech corporations. This was fostered last year by a high interest rate differential between koruna and euro interest rates as well. The Czech koruna remains aligned with the euro vis-à-vis the dollar, and inflation persistence, which is relatively low in the Czech Republic, is not a barrier to joining the euro area either. As regards the adjustment mechanisms of the Czech economy, the low long-term unemployment rate, which is still among the lowest in Europe, can be positively assessed. The development of the domestic banking sector is also favourable. The sector is characterised by a robust capital and liquidity position, high profitability and a low ratio of non-performing loans. Its resilience to potential negative shocks thus remains high.

### Indicators with a neutral message

This category primarily includes the similarity of monetary policy transmission in the Czech Republic and the euro area. Although the Czech Republic differs from the monetary union average in some financial indicators such as the structure of households' financial assets and the structure of loans for house purchase by fixation period, this cannot be considered a fundamental barrier to euro adoption. The depth of financial intermediation and the level of private sector debt in the Czech Republic are relatively low and thus do not represent a potential source of systemic risk. The alignment of the Czech and euro area financial cycles, which was little changed last year, and in the longer run the convergence of interest rates are also assessed as neutral. The latter has increased again since the second half of 2022 amid flat domestic interest rates and a tightening of ECB monetary policy. The volatility of the koruna exchange rate, which fell back to pre-crisis levels as the energy crisis subsided and uncertainty on financial markets calmed, does not pose a risk either. The alignment of the Czech and euro area financial markets is also returning to the levels of the previous decade. Most labour market indicators are also neutral. The geographical mobility of the labour force is rising further due to an increase in the share of foreigners in the population, while labour efficiency indicators are little changed. The participation rate of early-middle aged women in the labour market also remains low, which is linked with long parental leave and a low share of part-time jobs. The Czech Republic's competitiveness score has improved slightly. As regards the risks associated with potential euro adoption, the assessment of general government debt is also neutral. However, the debt increased again last year.

### Indicators suggesting economic risks associated with potential euro adoption in the area analysed

These indicators include the unfinished process of economic convergence of the Czech Republic towards the euro area, especially as regards the convergence of the price and wage levels. Their lag behind the euro area average remains significant despite faster convergence last year, most notably in the case of wages and prices of some

services. The relatively low structural similarity of the Czech economy with the euro area consisting in an above-average share of industry in domestic GDP would be a risk in the event of euro adoption. The persisting structural imbalance of Czech public finances is a problem as regards the adjustment mechanisms of the Czech economy. Several measures have been taken in recent years which have had a negative impact on public finance long-term sustainability. At present, however, the government is seeking to improve fiscal indicators, either as a result of public finance consolidation via a recovery package or changes to the pension system. As regards the future smooth functioning of the Czech Republic in the euro area, it will be desirable to bring the general government budget closer to an approximate structural balance in the coming years (a medium-term objective of no more than -0.5% of GDP is usually applied to euro area countries), as is also expected in the current domestic legislation.

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

### Direct alignment indicators

**The economic level of the Czech Republic (as measured by GDP per capita at purchasing power parity) diverged slightly from the euro area average in 2022, while convergence of the price and wage levels accelerated.** However, the lag behind the euro area average remains significant, especially for the price level and to an even greater extent for the wage level. The unfinished process of convergence thus remains a factor arguing against early euro adoption. If the euro was adopted, there could be sustained pressure on the slight overshooting of the current 2% inflation target due to appreciation of the equilibrium real exchange rate and convergence of the wage level. (See [Chartbook, page 36.](#))

**The correlation of economic activity in the Czech Republic and the euro area has long been high, as business cycles in the last fifteen years have been largely determined by common external shocks.** These economies have become even more cyclically aligned in recent years as a result of the pandemic and the war in Ukraine. This has been reflected in a high correlation of GDP growth in the Czech Republic and the euro area and a strong correlation of Czech exports with economic developments in the euro area. However, this increase in cyclical alignment is to a large extent likely to be only a temporary consequence of the combined effect of strong global economic shocks. (See [Chartbook, page 39.](#))

**The persisting differences in the structure of the Czech economy compared with that of the euro area consist mainly in an above-average share of industry in Czech GDP.** As regards euro adoption, the structural differences pose a risk of asymmetric effects of economic shocks, to which the single monetary policy would not be able to respond in full. There have been no major changes in the structural similarity of economies in recent years. For example, the rapidly growing electromobility remains a challenge for the domestic economy, as the automotive sector is represented well above average in domestic industry by European comparison. (See [Chartbook, page 41.](#))

**The Czech Republic's strong trade and ownership links have long been one of the strongest arguments for it joining the euro area.** The Czech Republic's transition to the euro would eliminate exchange rate risk and reduce transaction costs for all trade with euro area countries. At the same time, the high intensity of international economic relations, including the high intensity of intra-industry trade, leads to greater synchronisation of economic shocks and cyclical alignment and hence to lower costs associated with the loss of independent monetary policy. Alignment is also being supported by a high level of ownership links with the euro area in terms of investment from euro area countries in the Czech Republic. (See [Chartbook, page 42.](#))

**The alignment of the Czech and euro area financial cycles remained broadly unchanged in 2022 and thus remains only partial.** A marked increase in financial cycle alignment is still prevented by differences in the evolution of the individual components of the simplified indicator.<sup>4</sup> (See [Chartbook, page 44.](#))

**The tightening of monetary policy in the euro area from the second half of 2022 onwards, amid flat domestic rates, was reflected in a decline in the interest rate spread.** The ECB's rate increases were gradually catching up with the previous tightening of the CNB's monetary policy, which led to a marked decline in the interest rate differential in short-term rates. The response in long-term rates was also significant and the spread between Czech and German government bond yields dropped to the pre-pandemic level. (See [Chartbook, page 45.](#))

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<sup>4</sup> The construction and composition of the simplified indicator differs from the official financial cycle indicator (FCI) used in the Financial Stability Report, mainly because of the unavailability of similar data for all the countries analysed. The results for the Czech Republic may therefore differ from the official FCI.

**The Czech currency reacts to changes in the environment outside the euro area similarly to the euro.** The correlation of the koruna-dollar exchange rate with the euro-dollar exchange rate remains high, although it has decreased slightly compared to the second half of last year. The volatility of the exchange rate of the Czech currency against the euro has been falling since mid-2022. A relatively mild recession during the energy crisis and an improvement in financial market sentiment (following the panic in the first half of 2022), among other things, has helped stabilise the exchange rate. The CNB's foreign exchange interventions against the depreciation of the koruna vis-à-vis the euro and its declared readiness to prevent excessive fluctuations of the koruna last year have also had an effect. (See [Chartbook, page 46.](#))

**The results of analyses of financial market convergence show a return to the pre-pandemic situation due to the fading impacts of the coronavirus and energy crises and the ongoing decline in inflation in the context of global monetary policy tightening.** The deterioration in the alignment of the Czech and German government bond markets in previous years reversed, as did that of the alignment of the Czech money and foreign exchange markets with the euro area market. The rate of transmission of global news to the Czech government bond market has increased significantly. By contrast, it decreased slightly in the money market and remained elevated on the foreign exchange market. Financial market alignment has thus increased overall. (See [Chartbook, page 47.](#))

### Similarity of monetary policy transmission

**The depth of financial intermediation and the level of private sector debt in the Czech Republic are relatively low and thus do not pose a systemic risk.** As in the other countries under review, their levels fell year on year in 2022 and remain well below the euro area average. However, the relatively high euro area levels do not represent levels to which the Czech financial sector should converge, as an excessively large financial sector and overleveraged private sector could pose a risk of exacerbating the cyclical decline in the real economy due to a possible negative shock in certain circumstances. At the same time, in an environment of elevated inflation and high interest rates, more indebted economic agents may be exposed to risks associated with growth in debt service. This applies especially to non-financial corporations, but the risks may also be elevated for overindebted households, mostly in countries where loans with a variable interest rate predominate. Household debt is relatively low in the Czech Republic, with a preference for five-year interest rate fixations prevailing for housing loans. (See [Chartbook, page 48.](#))

**The similarity of the structure of the financial liabilities of Czech and euro area corporations has remained relatively high compared to the countries under review.** It declined temporarily in the last year as a result of a marked swing in financial derivatives purchased by energy companies. However, this swing was caused by the exceptional energy situation and had no permanent impact on the structural similarity of Czech firms with those in the euro area. A decrease in the structural mismatch in the last year has been fostered by growth in the proportions of shares and other equity in the total liabilities of Czech firms. A decrease in the structural mismatch has long been fostered by a gradual decline in other accounts payable (especially trade credits and advances)<sup>5</sup> of Czech firms, whose share in the total liabilities of the domestic business sector used to be much higher than in euro area countries. (See [Chartbook, page 49.](#))

**Despite a continued increase, the similarity of the structure of the financial assets of Czech households and households in the euro area remains rather low.** The persisting dissimilarity is due mainly to Czech households' preference for cash and deposit holdings, together with holdings of investment fund units and shares, while households in the euro area hold a large part of their balance sheets also in insurance and pension schemes. These categories have converged in the last year, leading to a decrease in the mismatch in the asset structure. Differences in the asset structure of households in the Czech Republic and in the euro area may imply their different sensitivities to changes in interest rates and hence the different impacts of a possible single monetary policy. (See [Chartbook, page 49.](#))

**The structure of loans to non-financial corporations by interest rate fixation remains similar in the Czech Republic and the euro area.** More than 86% of loans to non-financial corporations have floating rates or rates fixed for up to one year in the Czech Republic and in most of the euro area countries under review. Such a high share of loans with short fixation periods implies fast transmission of changes in monetary policy rates and, in turn, market rates to rates on loans provided to non-financial corporations. (See [Chartbook, page 50.](#))

**Changes in monetary policy rates are most often transmitted to client rates on loans to non-financial corporations through the three-month PRIBOR.** The transmission of the increase in monetary policy rates to client rates is thus substantial and with a minimal lag. The same applies to the euro area. The spread between client rates

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<sup>5</sup> Short-term financing by bridging the period of time until the due date of invoices.



on loans to non-financial corporations and the three-month interbank rate (the risk premium) in the Czech Republic fluctuated around its long-term average (1.5 percentage points) in the first half of this year. The spread in the Czech Republic is currently slightly higher than in the euro area, reflecting an increase in banks' perceived riskiness of corporations in the Czech Republic and banks' view of future economic developments. (See [Chartbook, page 50.](#))

**As regards loans for house purchase, the trend of choosing longer-term fixations reversed in most countries under review.** Households more often opted for shorter fixations than in previous years due to higher market interest rates. As indicated above, in the Czech Republic this meant a shift back to five-year fixations, which are now predominant. In the euro area, there was a move away from fixation periods of over ten years and a rise in the share of a floating rates or fixations of up to one year. Loans to households were provided at significantly higher interest rates. In addition to a shift towards shorter or flexible fixation periods, this naturally led to a decrease in total loans in the Czech Republic and the euro area. The main difference between the fixation structure in the Czech Republic and that the euro area still consists in the share of fixations of over ten years. This is negligible in the Czech Republic, while it is 50% in the euro area, despite having declined. The other main difference is an almost 25% share of variable fixations or fixations of up to one year in the euro area as a whole relative to their negligible share in the Czech Republic. In addition, euro area households with long interest rate fixations are less sensitive to fluctuations in interest rates on loans for house purchase. (See [Chartbook, page 51.](#))

**Companies have increased their financing in foreign currency (especially in euro), albeit at a slower pace than in the previous period, while the share of foreign currency loans and deposits of Czech households has long remained very low.** The share of foreign currency in the financing of Czech companies from domestic banks and from abroad via multinational groups within foreign direct investment or directly by domestic corporations abroad exceeded 60%. Monetary policy thus affects a smaller proportion of corporate debt financing through the interest rate channel of the transmission mechanism than in the past. (For more details, see the thematic chapter [Euro financing of Czech corporations](#)). The share of foreign currency loans from domestic banks remains above the long-term trend due to a previous sharp increase associated with the high interest rate differential between domestic and foreign interest rates, reaching a new historical high in the last year (48% in June). However, its growth has lessened in intensity over the last year due to a narrowing interest rate differential. Some sectors are already showing stabilisation of the share of euro-denominated loans. In manufacturing, however, this share has increased further, albeit at a slower pace than in the previous period. The gradual euroisation of Czech companies can be expected to initially slow due to a further narrowing of the interest rate differential and then continue in line with the long-term trend, i.e. not as fast as in the previous period. In addition to the cyclical component affected by the interest rate differential, the upward trend in euroisation has long been due mainly to high trade integration with the euro area and corporations' efforts to naturally hedge against exchange rate risk. The slowdown in the dynamics of euroisation will also be fostered by an expected weakening of the koruna against the euro, which will increase the koruna value of the debt. The currently high share of euro-denominated loans may represent an increase in exchange rate risk in some corporations in the event of more significant depreciation of the koruna. The degree of euroisation in Czech companies may increase further due to the government's intention to allow firms to keep accounts and tax records in euro. (See [Chartbook, page 51.](#))

## ADJUSTMENT MECHANISMS OF THE CZECH ECONOMY

### Fiscal policy

**Unfavourable economic developments along with fiscal stabilisation policy focusing on supporting households and firms led to sizeable general government deficits in the Czech Republic in 2020–2022.** Although the deficit decreased in 2022 due to the fade-out of many temporary measures adopted during the Covid-19 pandemic, it remained above the 3% reference level of the Maastricht convergence criterion for the general government deficit for the third consecutive year due to the adoption of new measures in response to the refugee and energy crisis. The medium-term objective for the Czech Republic (a structural balance of -0.75% of GDP) was also significantly exceeded. Given the application of the general escape clause of the Stability and Growth Pact (SGP), this development remained in line with European legislation.

**However, the structural imbalance of Czech public finances is not related solely to the implementation of temporary fiscal measures adopted to stabilise the Czech economy during the recent crisis.** A number of measures which were adopted, especially during the Covid-19 pandemic, were not directly linked to the pandemic and

had significant lasting fiscal impacts.<sup>6</sup> These measures thus exerted additional pressure on Czech public finance. However, given the relatively favourable initial level of general government debt, the fulfilment of the Maastricht debt criterion has not been jeopardised, and the national debt limit (the “debt brake”) has not been exceeded.<sup>7</sup>

**Given the national and European commitments in the area of budget responsibility, the Czech government will start consolidating Czech public finances in 2024.** In May this year, it introduced a set of measures representing the first step towards correcting imbalances,<sup>8</sup> to be followed by further measures to ensure sustainable public finances in the long term. Fiscal discipline and a reduction in excessive deficits will broaden the room for reducing the cyclical fluctuations of the economy, which is particularly necessary if a country loses its domestic monetary policy after euro adoption. Public finance consolidation is also necessary due to population ageing, which will adversely affect, among other things, the funding of the public pension and health care systems. (See [Chartbook, page 55.](#))

## The labour and product market

**Following a temporary deterioration, Czech labour market indicators are gradually improving overall and are now close to the pre-pandemic levels.** Employment is rising steadily, while the rate of economic activity of the population has reached historical highs. The long-term unemployment rate, which is among the lowest in Europe, also remains a positive factor. The growing labour market flexibility is being fostered by an increasing share of foreign nationals in the population, significantly affected by the arrival of refugees fleeing the war in Ukraine last year. However, some long-running problems persist in the labour market. The number of vacancies is still higher than the number of unemployed persons. The share of part-time jobs remains low, with the Czech Republic lagging well behind Germany and Austria in this area. Tax changes in 2021 helped reduce overall labour taxation last year. This was reflected in a decline in the risk of a “low wage trap”, which reduces the incentive to seek better-paid work. The risk of an “unemployment trap”, which reduces the incentive to return to employment, also fell slightly. The Czech Republic is one of the better-scoring countries under review as regards the overall competitiveness of the economy. (See [Chartbook, page 59.](#))

## The banking sector

**The Czech banking sector developed favourably in 2022 and maintained its high resilience to potential adverse shocks.** Its capitalisation remained robust and high by international comparison thanks in part to capital buffers and capital surpluses in excess of the regulatory requirements. Capital buffers create favourable conditions for smooth lending to the real economy and absorption of any increased credit losses. The banking sector’s resilience to a crisis is also being enhanced by gradual compliance with a minimum requirement for own funds and eligible liabilities.<sup>9</sup> The profitability of the banking sector is high by international comparison. It has developed favourably mainly due to slower transmission of tighter monetary policy to client interest rates on current and time accounts and relatively low loan impairment losses. The liquidity position remains robust due to a persistently high proportion of liquid assets and stable funding. The default rate decreased in almost all the countries under review despite an environment of elevated inflation and relatively high interest rates. In the Czech Republic, it remained at historical lows not only for loans to households, but also for loans to non-financial corporations.<sup>10</sup> However, a potential deterioration in loan portfolio quality, caused by sustained elevated inflation or a potential economic recession, remains a key risk. (See [Chartbook, page 66.](#))

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<sup>6</sup> These included, for example, a reduction in personal income tax, the abolition of road tax and higher pension indexation.

<sup>7</sup> The “debt brake” is defined in the Act on Budget Responsibility. It is a rule requiring the approval of balanced and long-term sustainable budgets of all government institutions if general government debt exceeds 55% of GDP (taking into account the government debt financing reserve).

<sup>8</sup> The government subsequently submitted some of the proposed measures for debate in the Chamber of Deputies as part of a draft law on the consolidation of public budgets (e.g. an increase in corporate income tax rates, a reintroduction of sickness insurance, a reduction in and the abolition of tax exemptions, an increase in excise duties, etc.). Some of the measures will be implemented through separate legislative changes, or will not require such changes and instead will be put into effect using executive tools within the government’s remit (e.g. a decrease in state budget subsidies, a reduction in operating expenses, etc.). The law is expected to take effect on 1 January 2024. Selected provisions will enter into force on different dates (especially during 2025).

<sup>9</sup> An intermediate objective for a minimum requirement for own funds and eligible liabilities (MREL) has been in effect since 1 January 2022, while the final objective will enter into force on 1 January 2024. The MREL is designed to ensure that banks have sufficient capacity for the absorption of losses and subsequent recapitalisation in the event of resolution. For details see Kahoun, T. (2019): Minimum Requirement for Own Funds and Eligible Liabilities (MREL): General Approach of the Czech National Bank. Thematic Article on Financial Stability 4/2019, CNB.

<sup>10</sup> For details on credit risk, see Financial Stability Report – Spring 2023, section III.2.2., CNB:  
<<https://www.cnb.cz/en/financial-stability/publications-on-financial-stability/>>

## SITUATION IN THE EURO AREA AND THE EUROPEAN UNION

**The short period of improvement in the economic situation following the coronavirus crisis came to an end last year with the onset of the energy crisis caused by Russia's attack on Ukraine.** However, the impacts of these events differed from country to country, thus further highlighting the already visible economic heterogeneity in the euro area. Euro area countries recorded renewed economic growth at the start of 2022. However, this growth subsequently weakened significantly in both 2022 and 2023, and some economies even entered a recession. The fiscal positions of most euro area countries remain unfavourable, budget deficits from the coronavirus crisis are being reduced only gradually and some countries' debt levels are at the sustainability threshold. In 2022, only six euro area countries met both fiscal criteria – debt and deficit. This is only a negligible improvement compared to 2021. A combination of supply factors (problems in global value chains, sharp growth in energy and commodity prices, changes in firms' behaviour) and demand factors (the repercussions of deferred household consumption and government fiscal stimuli) led to a surge in consumer and producer price inflation, which peaked in October 2022 in the euro area and is now slowing visibly. The observed disinflationary process is due to the fading of the above-mentioned inflationary factors and the ECB's restrictive policy (see below). However, core inflation has not yet declined significantly. Higher interest rates have already been reflected in lower growth in loans to companies and households, while their effects on the labour market have so far been rather negligible. (See [Chartbook, page 67.](#))

**From mid-2022 onwards, the ECB has responded to the high inflation rate by gradually raising interest rates by more than 4 percentage points overall.** The ECB also initially further reduced and later completely discontinued its APP government and private bond purchase programme (including an end of maturing principal reinvestment). In 2023, it also reduced the remuneration of banks' minimum reserves to 0%. The ECB is yet to use the Transmission Protection Instrument (TPI). This is the government bond purchase instrument introduced in 2022 to "protect the transmission" of monetary policy. In the context of the increases in interest rates (and the resulting drop in bond prices), the ECB's bond purchase programmes implemented in recent years will adversely affect the profitability of Eurosystem central banks in 2023 and in the years ahead.

**Turning to institutional developments in the euro area, the most important event of 2023 was its enlargement to include Croatia, which became its 20th member on 1 January.** An important initiative, not only for the euro area, is the submission of a legislative package to review the economic governance framework (Economic Governance Review, EGR), including a review of the rules of the Stability and Growth Pact (SGP). The review aims to streamline fiscal rules while improving their enforcement. As regards the banking union, discussions on earlier proposals continued, especially on the transposition of the Basel III standard into EU law. In line with the Eurogroup statement of June 2022, the European Commission limited its new legislative proposals for the banking union only to an initiative on bank crisis management and deposit insurance in the EU. A legislative package on a digital euro (creating the legal framework for its possible future introduction) and the protection of euro cash as legal tender in the euro area may also have significant impacts going forward.

**In order to address the rising cost of financing the EU budget, a debt management reform introducing the single name of "EU Bonds" for all EU bonds was implemented.** Although these common bonds remain, at least formally, time-limited and specific in terms of their purpose, some countries and institutions have not completely abandoned their efforts to push through an alternative approach (e.g. permanent fiscal capacity for the euro area and market recognition of EU bonds as government bonds). The European Commission has also put forward a proposal to expand own resources of the EU budget and to review the Multiannual Financial Framework, which would include, among other things, funds for a special instrument to support Ukraine. To sum up, there was no substantial progress in the deepening of the economic and monetary union or euro area integration in 2023, due both to the approaching end of the current institutional cycle and, in particular, persisting fundamental differences of opinion between Member States regarding the specific form of such integration.

**As regards the decision on the timing of the Czech Republic's potential entry into the euro area, it should be noted that not all future fundamental obligations for the Czech Republic that may potentially arise from euro adoption are known at this time. This is due to the unfinished nature of some key projects which will greatly affect the functioning of the euro area and some persisting problems of the economic and monetary union. The potential decision about the timing of joining the monetary union is thus still accompanied by major uncertainties.**

## II. THEMATIC CHAPTERS

### II.1 INSTITUTIONAL DEVELOPMENTS IN THE EURO AREA AND THE EUROPEAN UNION

*Marek Benda, Jan Král, Marek Souček, Martin Vojta*

*Developments in the EU and the euro area over the past year have unfolded amid the ongoing war in Ukraine and monetary policy tightening in response to high inflation. There has been no major progress this year in the further deepening of the economic and monetary union and euro area integration. The general escape clause of the Stability and Growth Pact (SGP) is due to expire at the end of this year. Discussions are currently underway regarding a proposal for new economic governance rules (EGR). Some progress has also been made on completing the banking union, deepening the capital markets union and on the digital euro project. Croatia became the twentieth member of the euro area in January this year.*

**Macroeconomic developments in the euro area and the EU were affected by Russia's aggression against Ukraine and higher inflation.** The ECB continued the gradual tightening of monetary policy, which it had started in July 2022. Restrictive monetary policy was also pursued by the central banks of non-euro area EU Member States. The monetary policy tightening had a downward effect on the outlook for economic growth and general sentiment in the euro area and the EU as a whole. This was accompanied by a high degree of uncertainty in the external environment, be it the continued tightening of monetary policy in the USA or the weak economic recovery in China. Member States' debt-to-GDP ratios improved only moderately, standing at 90.3% of GDP for the euro area and 83.1% for the EU as a whole in 2023 Q2. Only slightly more than half of EU Member States complied with the debt reference value of up to 60% of GDP. Here again, however, the outlook remains rather uncertain given the rising debt service costs following the increase in interest rates. At the same time, the European Commission (EC) and EU Member States continuously responded to the impacts of Russia's aggression against Ukraine, including by adopting additional sanction packages against Russia, Belarus and entities helping them circumvent the sanctions already adopted. They did this by providing further financial and material support to Ukraine, and launching a debate on the possible use of extraordinary revenues generated from the management of immobilised Russian assets in favour of Ukraine.<sup>11</sup>

**Croatia became the twentieth member of the euro area on 1 January 2023.** In connection with its joining the euro area, the Croatian National Bank (HNB) repaid the ECB the remainder (EUR 68 million) of its subscribed capital in accordance with the relevant key, and transferred part of its international reserves to the ECB amounting to EUR 640 million.<sup>12</sup> On the other hand, Bulgaria, another candidate for monetary union membership, which joined the European Exchange Rate Mechanism 2 (ERM II) in 2020 along with Croatia, has again postponed its target date of entry by one year for domestic political reasons and its insufficient compliance with relevant criteria for euro area membership. Bulgaria's target date is now 1 January 2025.

**There was no significant shift in the deepening of the economic and monetary union and euro area integration in 2023.** This was partly due to the winding down of legislative initiatives, as the 5-year term of the European Parliament (EP) and EC nears an end. However, the key reason for this is the persisting divergence of views among Member States on the specific form of the economic and monetary union. On the one hand, mainly "southern" Member States are advocating faster integration with a stronger sharing of risks and financial resources, and on the other, the countries of the European "north" seek to emphasise countries' individual fiscal responsibility, fiscal stability and risk reduction in the EU financial sector. In this context, the Conference on the Future of Europe, whose initiatives (beyond those already planned and discussed) were not significantly reflected in specific legislative or non-legislative proposals, did not provide any major impetus for a further deepening of integration. At the end of the Czech Presidency of the Council, a "feedback event" was held in the EP on 2 December 2022,<sup>13</sup> which will likely remain the last event linked to the Conference. The EP continued its longer-term efforts to change some important institutional issues, such as obtaining a legislative initiative or abolishing unanimity and moving to exclusive qualified

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<sup>11</sup> See the FT summary "[EU discusses plan to send profits from €196.6 of frozen Russian assets to Ukraine](#)" of 24 May 2023 and [point 6 of the conclusions of the European Council meeting from 29 and 30 June 2023](#).

<sup>12</sup> As a result, the fully paid-up subscriptions of the euro area national central banks in the ECB's capital amount to just under EUR 8.9 billion. The total amount of foreign reserve assets transferred to the ECB from euro area NCBs was around EUR 40.7 billion as of 30 June 2023.

<sup>13</sup> See the [EP press release](#) of 2 December 2022 and the [audio-visual recording of the event](#).

majority voting in the Council.<sup>14</sup> However, in view of the upcoming EP elections in June 2024, a significant shift on these issues cannot be expected in the near future. Also significant for institutional developments in the EU is the current debate between the Council and the EP on possible modifications to the decision-making on the seats of decentralised agencies,<sup>15</sup> in which the EP must be newly involved. Until now, this was exclusively a decision of the Council.

### Banking union and capital markets union

#### **As regards the completion of the banking union, discussions on strengthening its components continued.**

Work followed the procedure set out in the statement of the Eurogroup in inclusive format (i.e. with the participation of non-euro area EU Member States) of 16 June 2022. This statement reflected the lack of agreement on a single European deposit insurance scheme (EDIS) and other risk-sharing measures within the banking union even after several years of negotiations.<sup>16</sup> On 18 April 2023, the EC submitted only proposals in the area of bank crisis management and partial harmonisation of deposit insurance schemes in the EU (the CMDI package), while the debates on other areas were postponed (EDIS, the approach to the riskiness of sovereign exposures in banks' portfolios, as well as the deepening of the cross-border integration of banks, which has an impact on the home-host balance<sup>17</sup>). The declared aim of the CMDI package is above all to extend the use of resolution tools to manage failing medium-sized and smaller banking institutions, the wider use of national deposit insurance schemes' funds in the resolution context, and strengthening the harmonisation of deposit protection across the EU and its extension to cover depositors and funds that are not yet fully covered. During the Spanish Presidency, the Member States reached a common position on part of the CMDI package, the Daisy Chains proposal, which allows for regulatory relief for banking groups in the area of minimum requirements for own funds and eligible liabilities (MREL).

**The completion of the banking union is also related to the implementation of the Basel III standard into EU law**, i.e. into the Capital Requirements Directive and Regulation for Banks (CRD/CRR IV). In June 2023, the Swedish Presidency announced an agreement in a trilogue, including finding a preliminary agreement on the most controversial issue of the Basel III standard, the output floor.<sup>18</sup> However, the group of 13 host states of banking groups, including the Czech Republic, did not agree with this conclusion due to the EC's mandate to prepare an analysis of the overall state of the banking sector in the internal market by 2028, including the impacts of the application of the output floor. According to the aforementioned host states, this may lead to a de facto reassessment of the adopted regulation, contradict the political mandate of the above-mentioned Eurogroup statement of June 2022, and threaten the regulatory balance between *home* and *host* states. Negotiations on the completion of the package continued during the Spanish Presidency and a compromise was found at the end of November 2023, which included an amended EC's mandate for the above-mentioned analysis acceptable also for the *host* states. This compromise is likely to be formally confirmed by end of 2023.

#### **The ratification of the amended Treaty on the European Stability Mechanism (ESM) is yet to be completed.**

It is still awaiting approval by the Italian Parliament, while the Italian government has sought to link ESM ratification to the promise of "softening" the proposed modification of the economic governance rules (EGR – see below).

**As regards the capital markets union (CMU), negotiations on numerous legislative proposals were concluded or progressed significantly in 2023.** The legislative processes have been completed as concerns the

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<sup>14</sup> Possible EU institutional reforms are currently the subject of negotiations also at the level of the Council of the EU (General Affairs Council) and the European Council.

<sup>15</sup> The current debate concerns the new European Authority for Anti-Money Laundering and Countering the Financing of Terrorism (AMLA), but its outcome is likely to be applied to all other decisions on the seats of EU agencies.

<sup>16</sup> See the [extended Eurogroup statement on the future of the banking union](#) of 16 June 2022.

<sup>17</sup> The issue relates to the risks for host countries (i.e. countries where a parent company is not established within a banking group but only its subsidiaries) resulting from integration in the banking sector, especially as regards the issue of capital collateral for individual banks within the group, the effectiveness of supervision and responsibility for the liabilities of distressed banks. Host countries seek through negotiation to ensure that subsidiary banks (and not only their parent company) are also sufficiently secured in the event of financial distress, that the competent supervisory authority has sufficient tools to carry out its activities towards banks located in their national territory, and that cases where the host state is responsible for problems caused by decisions of authorities outside its jurisdiction are limited to the maximum extent possible.

<sup>18</sup> The output floor sets the lower limit on capital requirements for banks calculated using their internal models. The decision to introduce such an output floor resulted from an analysis by the Basel Committee on Banking Supervision, according to which there is a greater propensity to underestimate risks and set capital requirements of insufficient levels when using internal models. The dispute in the EU regarding the implementation of the output floor is over the level at which it will be calculated: whether at the level of the entire banking group or individual subsidiaries. The long-term position of the Czech Republic is to apply the output floor to all levels of consolidation, i.e. also to subsidiaries in individual Member States, so as to take into account the situation of individual entities within the group and not just the group as a whole.

revision of the regulation on European Long-Term Investment Funds (ELTIFs), the revision of the regulation on Central Securities Depositories (CSDs), and directive and regulation on establishing a European Single Access Point (ESAP). The ESAP platform is expected to be available from mid-2027 and gradually phased in so as to allow for a robust implementation. In the trilogue, a preliminary political agreement was reached on the revision of the regulation and directive on markets in financial instruments (MiFIR/MiFID II). The Spanish Presidency also intends to reach agreement with the EP on the package on the revision of the Alternative Investment Fund Managers Directive (AIFMD), including the framework for undertakings for collective investment in transferable securities (UCITS). In 2023, the Council also approved a mandate for trilogue negotiations and it reached a preliminary political agreement with the EP on a proposal for a revision of the regulation on credit transfers and direct debits in euro (SEPA), which introduces instant euro payments across the EU and the EEA. The preliminary political agreement of the Council and the EP, among other things, sets out in greater detail the deadlines after which payment service providers established in non-euro area Member States will also have to comply with their obligations under the Regulation.<sup>19</sup> The Council also adopted a mandate for a draft directive and regulation on the listing of companies on the stock exchange (Listing Act), which was submitted to the trilogue with the EP at the end of November 2023, and discussed a proposal for a package on EU clearing infrastructure (EMIR 3), aimed, among other things, at strengthening this infrastructure and reducing the dependence of EU clients on clearing houses from third countries (in particular from the UK after Brexit).

**The EC also presented new initiatives in 2023.** These include, for example, a proposal for a regulation on access to financial institutions' financial data to support innovation in the financial sector (Open Finance Framework), as well as a proposal for a legislative package on the protection of retail investors (Retail Investment Package).

### Revision of the economic governance framework

**On 26 April 2023, the European Commission presented a proposal for a reform of the EU's economic governance rules (EGR).**<sup>20</sup> The package revises relevant standards in order to consolidate Member States' public finances and reduce their debt more effectively, while also taking better account of country-specific circumstances so that consolidation efforts do not hinder governments from implementing the necessary reforms and investments.<sup>21</sup> The package is intended to bring changes to both the preventive and corrective arms of the rules of the Stability and Growth Pact (SGP).

**The preventative arm should strengthen the enforceability of the rules.** The EU Member States should submit multiannual fiscal-structural plans to the EC. In the event that one of the two debt (60% of GDP) or deficit (3% of GDP) reference values is exceeded, Member States would be subject to a four-year (and in justified cases, seven-year) monitoring of debt dynamics and guidance from the EC.

**In the corrective arm, the proposal sets out the excessive deficit procedure, or when the reference value for the government debt-to-GDP ratio is exceeded, replacing the previous 20th rule with the expenditure rule.**<sup>22</sup> Independent fiscal institutions at the level of the EU (European Fiscal Board) and Member States should be assigned a stronger role in the process of fiscal consolidation and the coordination of fiscal policies. The role of the Council of the EU should also be strengthened, as it would newly approve the activation and deactivation of the general escape clause of the SGP or the extension of the period of implementation of the "technical trajectory" to seven years on the basis of reform and investment proposals submitted by Member States.

**As expected, the discussion of the EGR package in the Council so far has been complex and marked by the traditional clash between the more fiscally moderate northern Member States and the southern Member States advocating greater flexibility in consolidation efforts,** especially in the form of taking into account growth-enhancing reforms and investments. This has contributed to the protracted negotiations on the EGR

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<sup>19</sup> These are 36 months after the entry into force of the Regulation for receiving instant payments and 42 months for sending such payments (i.e. 24 months and 18 months more than the deadline for providers in the euro area).

<sup>20</sup> See the [press release](#) with links to the legislative texts on the EuroGroups Register of 26 April 2023.

<sup>21</sup> The presentation of the EGR package was preceded by a relatively intensive discussion in the public space last year, both at the level of Member States and, for example, members of the European Fiscal Board and in academia. The issue was addressed in the [2022 Alignment Analyses](#) (debate on a possible reform of Stability and Growth Pact rules).

<sup>22</sup> For countries with a debt of more than 60% of GDP, the "one-twentieth" rule assumes an annual fiscal consolidation of 1/20 of the difference between their debt level and the reference value of 60% of GDP, which would mean annual consolidation in the order of several percent of GDP for the most indebted euro area countries, and therefore has not even been enforced in practice. According to the new expenditure rule, growth in net budget expenditure should always be below the estimate for medium-term economic growth.

package in the Council, with the timely approval of the proposals being important in view of the expiry of the SGP general escape clause at the end of 2023.<sup>23</sup>

### Financing of the EU budget and proposal for a revision of the Multiannual Financial Framework

**The “single approach to financing the EU budget on capital markets”, consisting of issuing EU bonds under the single “EU Bonds” label was implemented for the first time in 2023.** This complements the existing common format for EU Bills since September 2021.<sup>24</sup> The new bond format replaced the issuing of bonds under the headings of individual EU programmes and shall allow more flexibility in debt management, contribute to the homogenisation of the EU bond market and reduce costs,<sup>25</sup> especially in the context of higher ECB interest rates. Costs from higher-than-expected interest rates (for example, in the preparation of the post-pandemic recovery plan – NGEU) are likely to make the debt servicing costs more expensive for the EU in the long term.<sup>26</sup> Although the use of common bonds as an exceptional and temporary instrument will not change formally after the implementation of the ‘unified approach’, its introduction may support further considerations of moving towards a fiscal union, with significant implications for the budgetary sovereignty of the Member States and the inter-institutional balance enshrined in EU primary law. Moreover, the EC seeks to make the EU’s approach as close as possible to the debt management of the Member States, including efforts to convince investors to treat EU bonds not as bonds of international organisations but as standard government bonds.

**In the context of EU debt financing, the EC’s proposal of 20 June 2023 to amend the new own resources package of the EU budget is also of a relevance.** This proposal aims to introduce a temporary ‘statistical own resource’ from the profits of financial and non-financial corporations in the EU.<sup>27</sup> If approved, such a resource is expected to bring around EUR 24.5 billion per year (in 2018 prices) to the EU budget by 2028, which should also be used to repay the EU’s NGEU borrowing. As expected, the proposal has triggered mixed reactions and will be the subject of further difficult debates in the Council. Along with the own resources proposal, the EC also submitted a proposal for a revision of the Multiannual Financial Framework, which reflects, among other things, the higher costs of supporting Ukraine in the face of Russian aggression and partnerships with third countries in regulating migration.

**In 2023, calls for the creation of a permanent fiscal capacity for the euro area continued, but so far only at the margins of the discussions on the EGR package.** No specific proposals have been formulated by the EC or the EP in this respect. However, it is noteworthy that some central banks, including the ECB, have advocated the requirement for a permanent fiscal capacity in the euro area.<sup>28</sup> Support for this concept, with macro-stabilisation functions – not only for the euro area but also for the “EU as a whole” – has also been reiterated by the International Monetary Fund (IMF) apparatus.<sup>29</sup> The topic of an EU’s permanent fiscal capacity for investment in areas defined as public goods was also addressed in the discussion at the informal ECOFIN Council meeting of 16 September 2023 in Santiago de Compostela.

### Responding to the digitalisation process in payment services: a digital euro

**The proposal to create a basic legal framework for the possible future introduction of a central bank digital currency (CBDC) in the form of a digital euro, as well as for the protection of euro cash as legal tender, is a potentially important initiative.** It was published by the EC as part of the Single Currency Package on 28 June 2023. In connection with the digital euro project, the Governing Council of the ECB approved the transition from the investigation phase to the preparation and testing phase on 18 October 2023. This should take three years, with

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<sup>23</sup> If the package is not approved by the end of 2023 (and if the general escape clause is not extended), the EC should return to enforcing the existing rules under the SGP.

<sup>24</sup> See the [EU summary](#).

<sup>25</sup> [The European Court of Auditors \(ECA\) in its report on the management of NGEU debt \(No. 16/2023\)](#) points out that at the same time the EC’s capacity in debt and risk management should be strengthened, as well as the level of transparency, through the ongoing reporting on the achievement of debt management objectives.

<sup>26</sup> See the [outcome of the European Parliament’s Budget Committee \(BUDG\) workshop of 22 May 2023](#) on debt management reform in the context of reducing the EU’s borrowing costs and the analysis and other recommendations of the Bruegel think-tank of 30 May 2023 [“The rising cost of European Union borrowing and what to do about it”](#).

<sup>27</sup> This resource will take the form of a contribution paid by Member States, to be calculated as 0.5% of Eurostat’s notional profit base for EU companies.

<sup>28</sup> See the [speech by the governor of Banco de España Pablo Hernández de Cos](#) at the College of Europe in Bruges on 28 February 2023 and the [ECB Opinion on the EGR package](#) of 5 July 2023.

<sup>29</sup> E.g. in the [report on Euro Area Policies](#) discussed by the Executive Board on 12 July 2023.

the ECB making its final decision on the adoption of the digital euro only after the approval of the relevant legislation. From the point of view of the Czech Republic, it is essential that the draft regulation on the digital euro also allows for the possibility of distributing a digital euro to non-euro area EU Member States, assuming there is an appropriate legal framework (including the conclusion of a bilateral agreement between the ECB and the national central bank of the relevant state). The exact details of these contractual arrangements will be the subject of further discussions, as well as the powers delegated to the EC and the ECB, the scope of which has been the subject of certain reservations by a number of Member States. If the digital euro project is implemented and successful, it could have significant implications for the degree of euroisation in non-euro area EU Member States, and affect the discussions there about their eventual entry into the euro area and the timing of this move.<sup>30</sup> As regards the protection of euro cash, the proposal is the first binding rule on the public's right to cash payment methods.<sup>31</sup> A similar rule has so far been lacking at the European level, partly due to differing views of individual Member States on the concept of legal tender and its implications.

### Activities of the European Central Bank

**In response to persisting high inflation in the euro area, the ECB continued gradually raising interest rates in 2023.** The ECB raised interest rates by 0.5 percentage points in both February and March. Rates were raised at a more moderate pace, i.e. by 0.25 percentage points, in May, June, July and September, to the current 4.50% for the main refinancing operations, 4.00% for the deposit facility (which is the most important rate in the EA with excess liquidity in the banking sector) and 4.75% for the lending facility. In order to strengthen the transmission of monetary policy, the Governing Council of the ECB decided in July 2023 to reduce the remuneration of banks' minimum reserves with the ECB to 0%, with effect from September this year.<sup>32</sup>

**The Transmission Protection Instrument (TPI), introduced in July 2022, remains unused for the time being.** This instrument enables the ECB to proceed with the purchase of bonds of euro area Member States on the secondary market in the event of an excessive increase in spreads between bond yields of the individual Member States. The TPI has thus far successfully played a preventive role. Despite the ECB's monetary policy tightening, there has not yet been a significant increase in the spreads on bond yields in potentially higher-risk Member States, especially on the southern periphery of the euro area.

**The asset purchase programme (APP) was phased out, while the pandemic-related PEPP continues to reinvest maturing principal payments.** The first-ever ECB government and private bond purchase programme (APP) was curtailed from March 2023, also in the rate of maturing principal reinvestment. There was initially only partial reinvestment, with the Governing Council deciding to reduce the APP balance of assets at a pace of up to EUR 15 billion per month until June 2023. Reinvestments were discontinued from July 2023. By contrast, there was no change in the phasing out of the pandemic instrument for the purchase of government bonds (PEPP), under which the maturing principals from the securities acquired in this way should continue to be reinvested at least until the end of 2024.

**However, in view of the ECB's previous monetary policy tightening, the low-interest bond purchase programmes will continue to have an adverse impact on the Eurosystem's central banks' earnings even after they are curtailed.** Some of these central banks have already announced losses in subsequent years or suspensions of dividend payments to their national budgets due to increased spending on deposits to commercial banks and low yields on bonds in their balance sheets.<sup>33</sup>

### Conclusion

**The content of the euro adoption obligation assumed by the Czech Republic on its accession to the EU has been fundamentally expanded in recent years.** It remains true that the Czech Republic will have to carefully evaluate these developments and take them into account in its considerations on the timing of joining the euro area. Economic heterogeneity across the Member States of the monetary union persists. No major progress has been made in deepening the economic and monetary union, and the architecture of the euro area remains incomplete.

<sup>30</sup> See the article by Bank Board member Jan Procházka and CNB experts for the *Hospodářské noviny* newspaper: Procházka, Jan; Schwarz, Jiří; Vodrážka Michal: [The digital euro as a litmus test of interest in the common currency?](#) (in Czech only).

<sup>31</sup> [The proposed amendment takes into account, among other things, the judgment of the Court of Justice of the EU \(Grand Chamber\)](#) of 26 January 2021.

<sup>32</sup> See the [ECB press release](#) of 27 July 2023.

<sup>33</sup> See, for example, the [press conference of the President of the German Bundesbank J. Nagel](#) on 1 March 2023, or the [interview by Governor of the Austrian National Bank R. Holzmann and management member T. Steiner for the daily Die Presse](#) on 21 January 2023.



We cannot rule out continued pressures for the establishment of a dedicated budgetary capacity for the euro area in the coming years. Last but not least, it remains uncertain whether the proposed reform of the EGR, if approved, will ensure a more robust economic policy coordination framework, increase the long-term weak enforceability of fiscal rules and significantly reduce the persisting high public debt in the euro area. The above factors make the future course of the monetary union hard to predict and it is very difficult to answer questions about the appropriate timing of the Czech Republic's potential euro-area entry. Hence the impacts of such a step on the Czech Republic are very difficult to predict.

## II.2 THE EXCHANGE RATE AS A PARTIAL INDICATOR FOR (NON-)ADOPTION OF THE EURO

*Jan Brůha, Luboš Komárek a Martin Motl*

*The exchange rate is one of the stabilisation mechanisms of the Czech economy. For example, it can help the domestic economy cope with adverse external shocks. In this article, we use the local projections method to examine the effect of the exchange rate on competitiveness. If a weakening of the currency (a depreciation shock) would benefit domestic economic agents in the medium term by making them more competitive, the country could be motivated to keep its own currency. The results of our analysis do not support this benefit. However, this should be viewed as only a partial conclusion, not a comprehensive macroeconomic analysis of the merits of introducing the single currency.*

**Before joining the euro area, an EU country should be in good enough shape to function effectively within the monetary union.** Not only does this reflect the fundamental conclusions of economic theory in the field of optimum currency areas, it is also in the pragmatic interests of both the current members and the new entrants of the monetary union. However, fulfilment of the Maastricht criteria alone is no guarantee that a country is in optimal shape to join the euro area. These are only the necessary entry criteria. They do not constitute sufficient criteria for the subsequent political decision to join the euro area, nor are they criteria for the country to function smoothly in the long term within the monetary union. Monitoring a broader set of economic variables is crucial for the appropriate timing of monetary union entry.<sup>34</sup> However, one of these variables is essential to achieving price competitiveness and having a functioning monetary union, and that is the exchange rate. The exchange rate is important for analysing the costs and benefits of euro adoption from a number of perspectives, including, for example, the manner of price convergence. Such convergence may take place via higher growth in the price level of the candidate country than in the monetary union or via appreciation of the candidate country's currency, or a combination of the two.

**One of the costs of euro adoption is the loss of the exchange rate as a stabilisation mechanism.** In an economy with an independent currency, the exchange rate can respond to macroeconomic difficulties by weakening and thus maintaining the country's price competitiveness. In this context, Michl (2016) proposed examining the impacts of an exchange rate depreciation on price competitiveness. Competitive depreciation is one of the mechanisms by which an economy with an independent currency can deal with adverse macroeconomic developments in a recession. This applies if wage costs respond more moderately to a depreciation than product prices do. However, if nominal wages respond to a depreciation shock by growing at a similar or faster pace than producer or exporter prices, the depreciation will lead to growth in unit labour costs (ULC) and the competitive advantage of a weakening of the currency is lost.

**It is thus crucial to assess how individual price categories, wage costs and overall ULC respond to a weakening of the exchange rate.** The aim of this section is to conduct an empirical analysis of the relationship between exchange rate shocks and producer prices (PPI), exporter prices, wages and ULC for the Czech economy. If a depreciation of the exchange rate turns out to accelerate wage growth more than exporter price inflation, the above argument for maintaining an independent currency is irrelevant.

**To answer this hypothesis, we employed the local projections method, which is used to estimate the responses of variables to macroeconomic shocks.**<sup>35</sup> Jordà (2005) was the first to use this modern approach as an analytical method in empirical macroeconomics. In this article, we use a variant of this method described in Barnichon and Brownlees (2019). For the purposes of our empirical analysis, we must first identify structural

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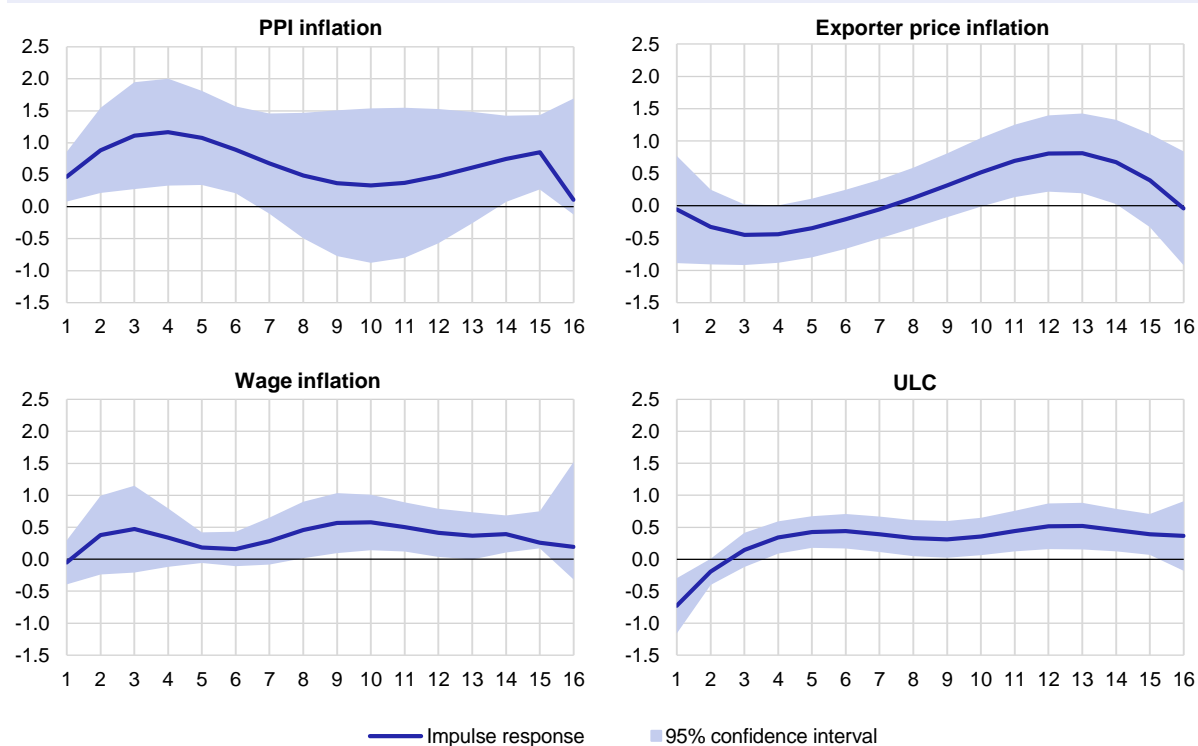
<sup>34</sup> An assessment of a broad set of indicators for the Czech Republic's accession to the euro area can be found in the *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area* issued jointly by the CNB and the Ministry of Finance and in more detail in the CNB's *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area* (both available online: <<https://www.cnb.cz/en/monetary-policy/euro-adoption/>>).

<sup>35</sup> Structural vector autoregressive models are often used in the literature to identify exchange rate shocks and estimate the relevant impulse responses. The results of these models, however, depend on the time series, lag length and identification approach selected, and can be negatively affected by structural changes in the economy. Our chosen identification approach based on an internal institutional estimate of the equilibrium exchange rate has the advantage of being a tried and tested, sophisticated model that can incorporate a priori expert information. For this reason, we prefer it for estimating exchange rate shocks, hence the local projections method is the natural choice. However, the results are conditional on our belief that the model we use faithfully captures the dynamics of the equilibrium exchange rate.

exchange rate shocks, as we cannot use changes in the exchange rate alone.<sup>36</sup> We quantified these shocks using equilibrium real exchange rate models. We first estimated the equilibrium real CZK/EUR exchange rate as the average of the BEER and FEER models (Komárek and Motl, 2012) and then calculated the deviation (overvaluation or undervaluation) of the actual exchange rate from the equilibrium exchange rate. In the next step, the structural exchange rate shocks were obtained as the shocks that drive this exchange rate deviation.<sup>37</sup> The impulse responses of the variables examined to a structural shock were then estimated on the basis of a regression analysis.<sup>38</sup> The method was applied to the quarterly time series from 2000 to the present.

**The results of our analysis show that producer, exporter and wage inflation change temporarily in response to a depreciation shock.** After about 16 quarters, the impulse responses of inflation and wage growth return close to zero. This means that the effect of the exchange rate shock on the variables has dissipated after this period. The confidence intervals are broad, so it is impossible to say by simply comparing the impulse responses whether the depreciation shock will be reflected in higher producer price inflation or faster wage growth. For this reason, we analysed the effect of an exchange rate shock on ULC separately. (All the responses are shown in Chart 1.)

**Chart 1: Impulse responses to a depreciation shock (%)**



Note: Impulse responses of the annualised quarterly growth rates.

The x-axis shows the period since the shock in quarters.

Source: CNB calculations

<sup>36</sup> Changes in the exchange rate contain the past effect of macroeconomic variables as well as exchange rate shocks. The use of changes in the exchange rate instead of shocks would thus lead to inconsistent estimates of the impulse responses, as the effect of exchange rate shocks would be mixed with past changes in macroeconomic fundamentals in the impulse responses.

<sup>37</sup> From a technical perspective, we estimated an autoregressive model of order 2, i.e. an AR(2) model, for this deviation. This model is sufficiently flexible to allow for a realistic (hump-shaped) impulse response of the exchange rate deviation to a shock. In addition, formal statistical criteria (the Bayesian Information Criterion, BIC) favour the selection of this order. Given that the equilibrium exchange rate reflects the effects of relevant macroeconomic variables (fundamentals), we consider the shocks obtained in this way to be structural, i.e. not correlated with past fundamentals.

<sup>38</sup> Estimates of the local variables method can be made statistically more robust if control variables are used to estimate the impulse responses. We selected control variables from the following set: foreign PPI inflation, foreign GDP, lagged domestic variables (PPI inflation and GDP), lagged endogenous variables and global commodity prices. The specific control variables for the specific impulse response were chosen from this set by automatic selection based on the BIC criterion.

**A depreciation shock gives rise to a statistically significant positive impulse to ULC in the longer run. This means that, *ceteris paribus*, a weakening of the koruna does not give rise to a competitive advantage in the long term.** The response of ULC is statistically significantly positive 4–15 quarters after the shock. It is negative in the first two quarters and close to zero after the 15th quarter. ULC thus show negative growth in the short term (the first two quarters). This means that a depreciation shock may offer relief in the form of a temporary competitive advantage in the short term.<sup>39</sup> In the long run, however, the argument that a depreciation of the exchange rate provides a competitive advantage does not apply to the Czech economy.

**As part of our econometric analysis, we then performed a series of sensitivity analyses. However, the above conclusions still hold.** The sensitivity analyses involved different dataset lengths. We excluded the pandemic period, divided the sample into two periods (before and after 2012), estimated the impulse responses without control variables and used a different identification of exchange rate shocks.<sup>40</sup> However, none of this changed the previous results.

## Conclusion

**Our analysis has shown that a depreciation shock does not give the Czech economy a competitive advantage in the medium term.** A depreciation shock gives rise to a temporary change in producer price inflation, exporter price inflation and wage inflation, but given the wide confidence intervals, it is impossible to say unambiguously whether producer prices or wages rise faster. The impulse response of unit labour costs nonetheless indicates that the decline in those costs that occurs after a depreciation shock offers only short-lived relief. A weakening of the koruna therefore does not lead to a competitive advantage in the longer run.

**To conclude, it is important to note that we examined only one specific aspect of the costs of adopting the euro, namely whether an exchange rate shock provides a competitive advantage.** The macroeconomic costs and benefits of the euro are multidimensional and cannot be reduced to just one, albeit important, criterion. Our analysis thus offers one of many perspectives on the costs and benefits of adopting the euro, without having any ambition to provide a final recommendation.

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<sup>39</sup> Based on the realistic assumption that wages are more rigid than prices, this impulse response profile is expected.

<sup>40</sup> Specifically, we used the “sparse” filter proposed by Andrie and Brůha (2023).

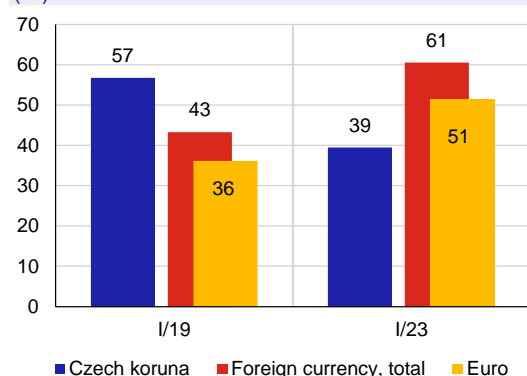
## EURO FINANCING OF CZECH FIRMS

Jakub Grossmann, Renata Pašaličová

The increase in the differential between domestic and foreign interest rates due to the tightening of monetary policy by the CNB has been accompanied by a rise in the share of foreign currency (mostly euro-denominated) financing of Czech corporations. A higher share of foreign currency financing in the economy, *ceteris paribus*, weakens the monetary policy transmission mechanism. This section examines the currency structure of corporate financing by domestic banks and from abroad, the relationship between the share of euro-denominated loans and the interest rate differential, and the euroisation of the Czech economy.

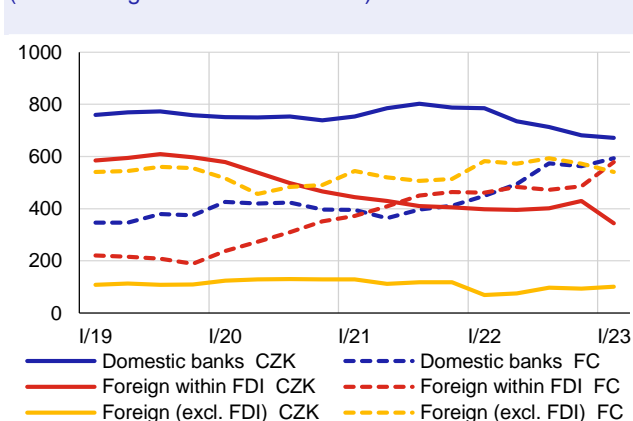
**Euro financing of Czech firms by domestic banks and from abroad has recently increased.** The share of euro financing in 2023 Q1 was 51%, while that of overall foreign currency financing was 61% (see Chart 1). The amount of euro-denominated loans provided to firms by domestic banks has been rising since mid-2021 due to monetary policy tightening by the CNB (see Chart 2). Domestic monetary policy thus now affects a smaller proportion of corporate debt financing via the interest rate channel of the transmission mechanism than it did in the past. Firms with access to foreign currency loans are usually less sensitive to changes in domestic interest rates. *Ceteris paribus*, this weakens the impact of monetary policy on the economy. The euro financing of foreign-controlled corporations from abroad via loans and other funds from multinational (parent) corporations under foreign direct investment (FDI) has also increased since 2019 (share of euro: 46%; share of total foreign currency: 63%). As for other forms of financing from abroad, euro funding is essentially unchanged (share of euro: 71%; share of total foreign currency: 84%).<sup>41</sup> These sources of foreign financing also affect monetary policy transmission, since, as we show below, the pass-through of monetary policy rates is weaker in such cases even if the financing is in koruna.

**Chart 1: Shares of foreign currency corporate financing (%)**



Source: CNB, CNB calculations

**Chart 2: Corporate financing structure (outstanding loans in CZK billions)**



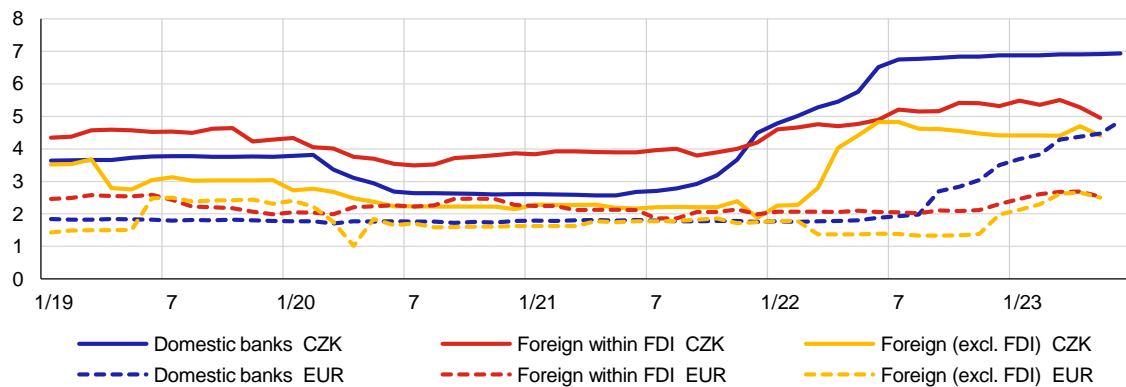
Source: CNB, CNB calculations

**There have been no transfers recently of financing from domestic banks abroad.** The shares of total corporate financing from abroad and by domestic banks remain relatively stable. This year, the share of loans from domestic banks is 45%, that of financing from abroad within multinational companies is 32% and that of other forms of foreign financing is 23%. In other words, the rise in the share of foreign currency financing of Czech corporations has not led to a significant increase in their foreign liabilities.

**Interest rates on corporate loans taken out abroad within multinationals and on other forms of foreign financing are lower than those on loans from domestic banks** (irrespective of the currency in which the financing is denominated; see Chart 3). There are two main reasons for this. First, larger firms with lower risk, greater bargaining power and thus lower interest margins usually have access to foreign financing. By contrast, not only large companies, but also smaller firms have recently been taking out euro-denominated loans from domestic banks. Second, longer fixed-rate periods are dominant in foreign financing. Monetary policy tightening thus naturally shows up more gradually in rates on these loans than in rates on loans from domestic banks, where floating rate loans predominate.

<sup>41</sup> Financing from abroad by multinational corporations under FDI or directly by domestic corporations abroad (e.g. from foreign banks) covers all forms of debt and other instruments denominated in foreign and domestic currency.

**Chart 3: Interest rates on loans to corporations from domestic banks and from abroad**  
(%; rates on outstanding loans with maturities of over one year)

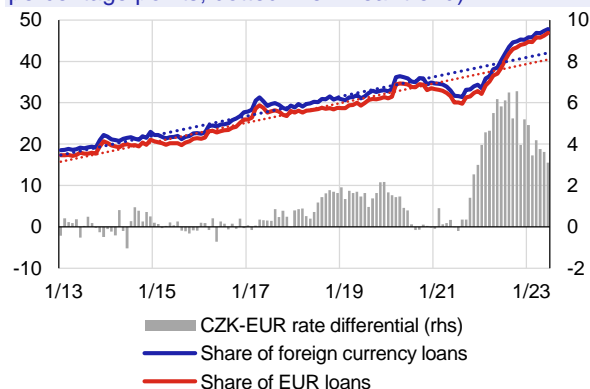


Note: The chart shows interest rates on outstanding loans to non-financial corporations from domestic banks and from abroad. Interest rates on loans from abroad are based on a CNB external statistical survey. This survey provides information on loans over a certain threshold with maturities of over one year and their interest rates. Interest rates on loans with maturities of over one year provided by domestic banks were calculated in a similar way.

Source: CNB, CNB calculations

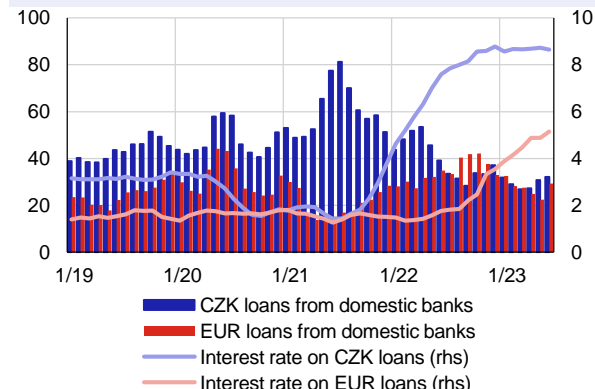
**The share of euro-denominated loans in total loans to corporations provided by domestic banks has been above the long-term trend over the last year and is at a historical high** (see Chart 4). In September, this share stood at 48%. The figure for total foreign currency loans was 49%. The long growing share of euro-denominated loans reflects the Czech Republic’s close trade links with the euro area, especially in the manufacturing sector, and firms’ efforts to hedge naturally against exchange rate risk. Moreover, from mid-2021 onwards, this growth was boosted significantly by an increase in the interest rate differential between domestic and euro interest rates owing to monetary policy tightening by the CNB.<sup>42</sup> After the ECB began raising interest rates in July 2022, the interest rate differential started to decline gradually, but it remains relatively high from a historical perspective. The previous sharp growth in the share of euro-denominated loans has started to slacken in recent months because of the narrowing interest rate differential.<sup>43</sup> Another contributing factor has been the tightening of banks’ credit standards in this credit market segment last year, supported by prudent CNB supervision. While the annual growth rate of foreign currency loans is still relatively high, it is below the peak recorded in August 2022. This reflects a decline in new euro-denominated loans (see Chart 5).

**Chart 4: Share of foreign currency corporate loans from domestic banks**  
(share in %; interest rate differential on new loans in percentage points; dotted line: linear trend)



Source: CNB, CNB calculations

**Chart 5: New corporate loans from banks and interest rates**  
(monthly volumes in CZK billions; interest rates in %)



Note: 3M moving average.

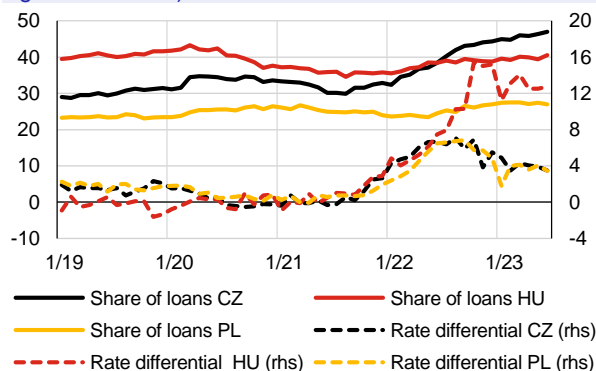
Source: CNB, CNB calculations

<sup>42</sup> The rise in the share of euro-denominated loans put appreciation pressure on the koruna in the previous period due to firms converting borrowed euro into koruna on the foreign exchange market.

<sup>43</sup> Data from the CNB’s AnaCredit survey show that around 10% of domestic non-financial corporations financed by domestic banks currently have euro-denominated loans, while in 2021 it was less than 5%.

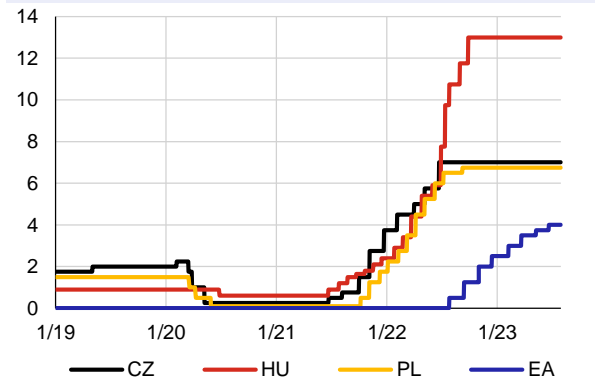
**The rise in the share of euro-denominated loans has been more pronounced in the Czech Republic than in the other Central European countries that have their own currencies.** The monetary policy tightening by the central banks of the Czech Republic, Poland and Hungary, which started around mid-2021, has been accompanied by an increase in the share of euro-denominated corporate loans in all these countries (see Charts 6 and 7). However, the largest increase in this share has been recorded in the Czech Republic, where, unlike in the past, the share of euro-denominated loans is currently higher than in Poland and Hungary. The Czech Republic also has a higher share than other non-euro area European countries (Bulgaria, Romania and Sweden).

**Chart 6: Share of euro-denominated loans in selected countries**  
(share in %; rate differential in percentage points – right-hand scale)



Source: CNB, CNB calculations

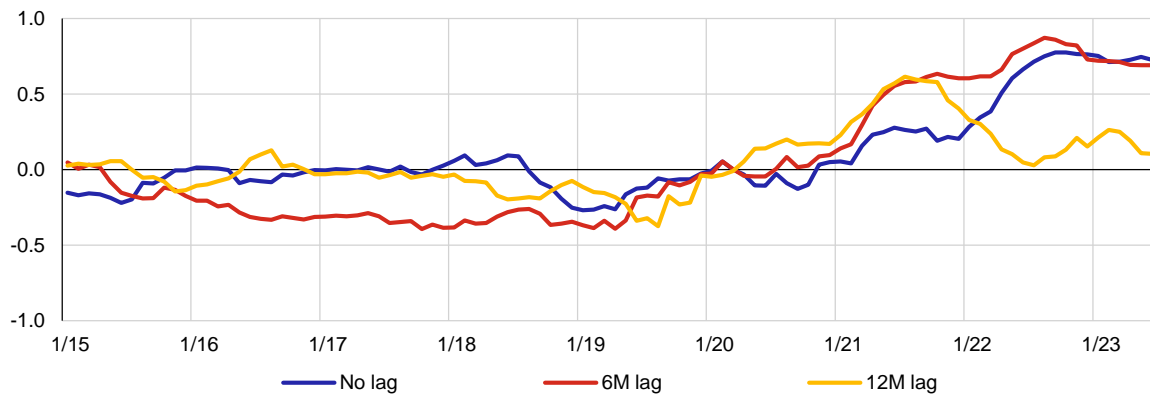
**Chart 7: Monetary policy rates (%)**



Source: CNB, ECB

**A relatively strong positive correlation has recently been observed between the share of euro-denominated loans and the interest rate differential.** Chart 8 shows the strength of the correlation between the share of euro-denominated loans and the interest rate differential between domestic and euro rates on new corporate loans. The rolling correlation between these variables varies over time. The strongest correlation in the period review has been recorded since 2021. The correlation coefficient is relatively high for both the response of euro-denominated loans to changes in the interest rate differential lagged by six months and the response with no lag. This is due mainly to a marked rise in the differential caused by the increase in the CNB’s monetary policy rates. Corporations have thus recorded a sharp rise in costs arising from koruna loans, reflected in growing interest in cheaper euro-denominated loans. By contrast, this correlation is not visible in the period of 2015–2019, as the changes in the interest rate differential were small. The increase in the share of euro-denominated loans in 2015–2017 was linked mainly with the exchange rate commitment, the expected appreciation of the koruna after the commitment ended and with the role of balance-sheet exchange rate risk hedging, which euro-denominated loans started to offer firms to a greater extent in this situation. To sum up, increased demand for euro-denominated loans owing to a wider interest rate differential is a phenomenon only of recent years. This correlation was not seen previously.

**Chart 8: Correlation between the share of euro-denominated corporate loans and the interest rate differential**  
(correlation coefficients for the response of a change in the share of euro-denominated loans to a change in interest rate differential)

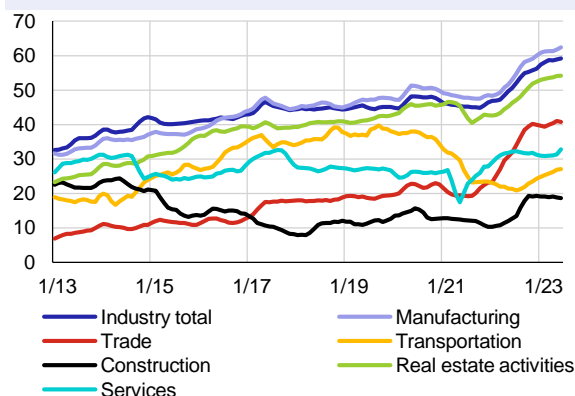


Note: The chart shows the correlation between year-on-year changes in the share of new euro-denominated loans to non-financial corporations and year-on-year changes in the interest rate differential for client rates on new koruna and euro-denominated loans to corporations. The input data are monthly observations. The correlations shown are calculated for three-year moving windows. The chart shows the correlations with the same timing and with the changes in the interest rate differential moved 6 and 12 months back.

Source: CNB, CNB calculations

**A gradual decrease in the interest rate differential between domestic and euro interest rates will foster a stabilisation of the share of euro-denominated loans in the period ahead and a return to the long-term trend** (in September, the share was around 7 percentage points above the trend). The gradual euroisation of the Czech economy can then be expected to continue in line with the trend (see Chart 4). This is also indicated by the sector structure of euro-denominated loans (see Chart 9). The previous surge in the share of euro-denominated loans has stabilised to some extent, amid tightened credit conditions and rising euro interest rates in some sectors (wholesale and retail trade, for example). However, the share of euro-denominated loans is rising further – albeit at a slower pace – in sectors characterised by revenues in euro, which are contributing significantly to the long-term upward trend in the share of euro-denominated loans due to natural hedging against exchange rate risk (industry and real estate activities). Moreover, the interest rate differential between koruna- and euro-denominated corporate loans is still elevated in all sectors of the economy, despite having declined recently (see Chart 10).<sup>44</sup> This continues to motivate firms with euro revenues to borrow in euros.

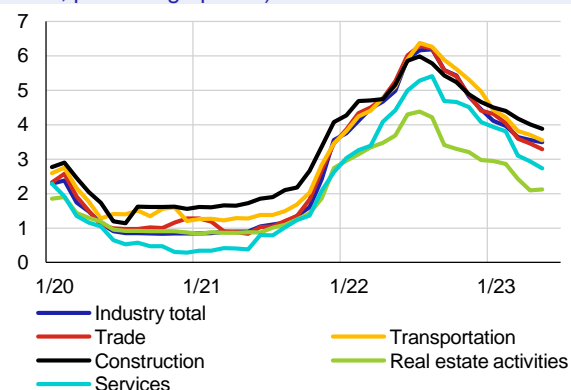
**Chart 9: Share of euro-denominated loans in selected sectors**  
(%)



Note: 3M moving averages.

Source: CNB, CNB calculations

**Chart 10: Interest rate differential in selected sectors**  
(from interest rates on koruna and euro-denominated loans; percentage points)



Source: CNB AnaCredit, CNB calculations

<sup>44</sup> The interest rate differential differs in some sectors of the economy, mainly because of how they are financed. The differential is highest in construction, due to a prevalence of koruna financing. The rate on koruna loans is currently highest in this sector. By contrast, the low interest rate differential of firms in the real estate sector (such as real estate companies that collect rents in euro) is linked, among other things, with the foreign currency financing of this sector. Firms with access to euro financing can substitute their high-interest koruna loans for euro loans and keep only those koruna loans which have rates that are favourable to them.



## Conclusion

**The share of the euro in corporate loans from domestic banks and in financing from abroad has recently increased. Domestic monetary policy is thus affecting a smaller proportion of corporate debt than it did in the past.** The rise in the interest rate differential between domestic and euro interest rates since 2021 has fostered a rise in the share of euro-denominated loans. Monetary policy, via the interest rate channel of the transmission mechanism, is thus currently affecting a smaller proportion of corporate debt financing through debt servicing costs than it did previously. The share of euro-denominated loans in total loans to corporations from domestic banks is above the long-term trend and is highest among the non-euro area countries of the Central European region. The analysis reveals a strong correlation between the share of euro financing and the interest rate differential between domestic and euro interest rates since mid-2021. This correlation was not seen previously. The previous sharp growth in the share of euro-denominated loans has started to slacken in recent months because of a decrease in the interest rate differential. The gradual euroisation of Czech companies can be expected to continue in line with the long-term trend in the period ahead, i.e. not as fast as in the last two years.

## II.3 THE LABOUR MARKET IN THE SPOTLIGHT

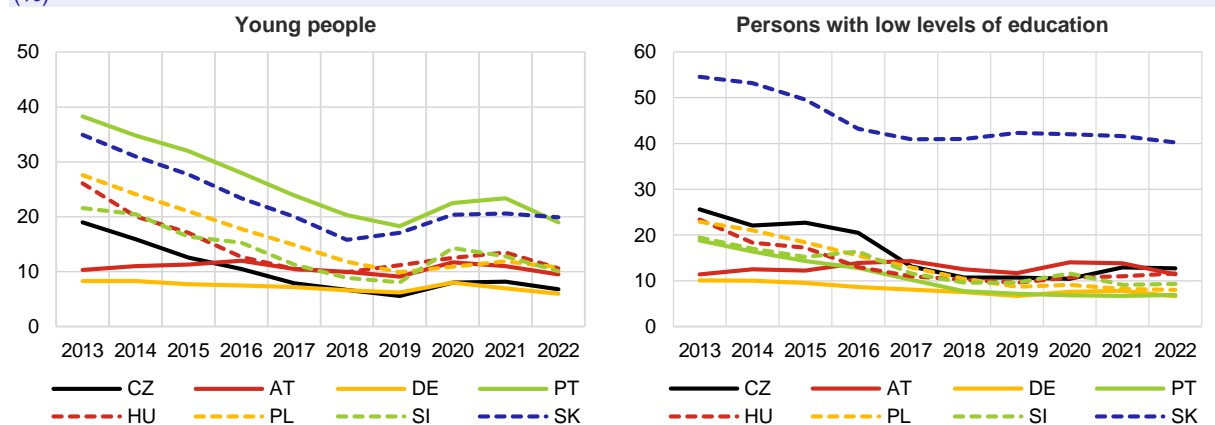
*Kamil Galuščák*

*The Czech Republic has long had a very low unemployment rate – the lowest among the EU countries in recent years – and a high level of economic activity. However, a deeper look at the labour market (beyond the indicators regularly monitored in this report) shows that the situation is less favourable in some age and education categories of the Czech population.*

**Labour market regulation affects macroeconomic indicators,<sup>45</sup> the economy’s ability to absorb asymmetric shocks and, in the case of newer EU Member States, the convergence process.** However, these measures, including, for example, the minimum wage, lay-off costs and the calibration of the tax and social benefit system, have different effects on different demographic groups. Greater impacts can be expected on people with lower levels of education, young people with little work experience and higher turnover in the workplace, and women with children. The ratio of the minimum wage to the average wage has been increasing in the Czech Republic in recent years (from 32.6% in 2013 to 40.0% in 2022). However, the available literature shows that minimum wage increases did not adversely affect youth employment in the Czech Republic, Hungary, Poland and Slovakia in 2003–2016 (Fialová and Misíková, 2021). Grossmann (2021) finds a negligible impact on the employment of low-income workers in the Czech Republic in 2012–2017.

**A more detailed look at the unemployment rate in the Czech Republic reveals large differences between education and age categories.** Although total unemployment was 2.2% in the Czech Republic last year, it was about three times higher among the under 24s (6.8%) and as high as 12.7% among the low-educated. However, the youth unemployment rate is very low in the Czech Republic compared to the other countries under review. It is much higher in Portugal and Slovakia (see Chart 1, left-hand side). The unemployment rate of those with lower levels of education (see Chart 1, right-hand side) is slightly higher than in the other countries under review except Slovakia, where it has long been very high. It increased slightly in the Czech Republic in 2021 and 2022, but remains below the 2013 level (as in other countries).<sup>46</sup>

**Chart 1: Unemployment rates in selected groups (%)**



Note: People aged 15–24 (% of the labour force).

Source: Eurostat

Note: People aged 15–74 with lower secondary and lower education.

Source: Eurostat

<sup>45</sup> Hutter et al. (2019) show that increased matching efficiency, greater job creation and destruction intensity, and labour force growth, linked partly with the 2003–2005 Hartz reforms, fostered a strong and sustained upswing in the German labour market by 2018.

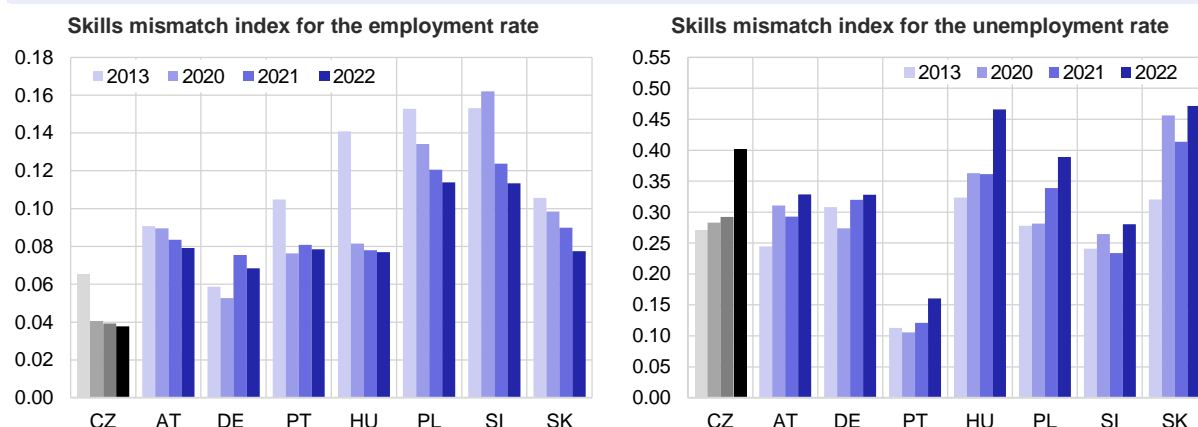
<sup>46</sup> The differences in the unemployment rates of people with lower levels of education are due to some extent to different economic structures. According to Eurostat data, the share of employed persons with lower levels of education in total employment was slightly higher in the Czech Republic (4.0%) than in Slovakia (2.7%) in 2022. It was much higher in Portugal (33.3%) and Germany (14.5%), the two countries with the lowest unemployment rates for those with low levels of education.

**A higher unemployment rate of persons with low levels of education than the overall unemployment rate may indicate a skills mismatch in the labour market. However, this mismatch is low in the Czech Republic compared to the other countries under review.** Skills mismatch can be expressed by an index expressing the relative variance of employment rates by education (Kiss and Vandeplas, 2015):

$$SMI_{E-RD} = \frac{1}{e_T} \sum_i \left| \frac{P_i}{P_T} (e_i - e_T) \right| = \sum_i \left| \frac{E_i}{E_T} - \frac{P_i}{P_T} \right|,$$

where  $e$  is the employment rate,  $E_i$  is the number of workers employed of skill group  $i$ ,  $E_T$  is total employment,  $P_i$  is the number of individuals in the working age population of skill group  $i$ , and  $P_T$  is the total working age population. The index is the ratio of the weighted sum of the absolute differences between the employment rate in group  $i$  and the total employment rate to the total employment rate. We define a similar index for the relative variance of the unemployment rate, comprising the unemployment rate, the number of unemployed persons and the labour force. These indicators express the gap between the skills structure of the population and the skills demanded in the economy. A higher value signals greater problems for low-skilled individuals in finding a job. The skills mismatch as expressed by the variance of the employment rate is the lowest in the Czech Republic among the countries under review (see Chart 2, left-hand side). The skills mismatch as captured by the variance of the unemployment rate in the Czech Republic has been fluctuating around the average in the countries under review over the last three years (see Chart 2, right-hand side). While an overheated labour market reduces differences in employment rates by education, the low-skilled unemployed may have more difficulty finding a job. The OECD (2023) therefore recommends modernising vocational training and expanding retraining programmes for the unemployed.

**Chart 2: Skills mismatch on the labour market**



Note: Relative variance of employment and unemployment rates by education level (lower secondary and lower, upper secondary and post-secondary but non-tertiary, tertiary), age group 20–64. Higher dispersion indicates greater skills mismatch.

Source: Eurostat, CNB calculations

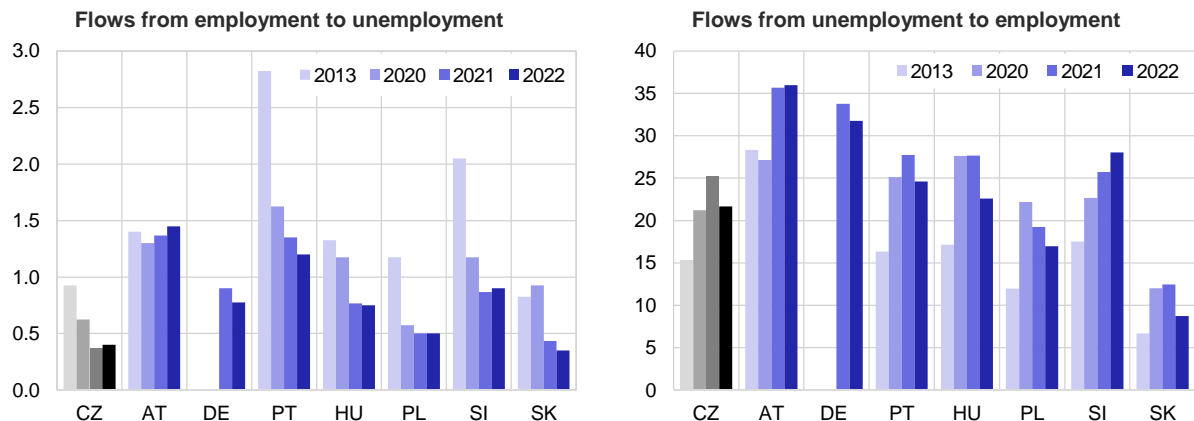
**The Czech labour market is characterised by relatively low worker turnover.** Flows from employment to unemployment and vice versa are among the lowest of the countries under comparison (see Chart 3; see also Causa et al., 2021).<sup>47</sup> The low flows from employment to unemployment may reflect caution by firms in laying off workers due to the tight labour market and previous experience with difficulties recruiting and retaining employees. Flows from unemployment to employment in the Czech Republic have remained roughly constant over the last five years. This suggests that the labour market did not slacken significantly during the coronavirus pandemic.<sup>48</sup> Higher lay-off costs probably reduce the turnover on the Czech labour market relative to other countries (Flek et al., 2022).<sup>49</sup>

<sup>47</sup> Flows between economic activity and inactivity are also low. They explain a small but non-negligible part of the cyclical responses of employment and unemployment on the Czech and Polish labour markets (Galušćák et al., 2021).

<sup>48</sup> Flows from unemployment to employment approximate job finding rates. Their cyclical component is an indicator of labour market tightness, which explains the wage and inflation pressures in the Czech Republic (Galušćák et al., 2023).

<sup>49</sup> The Employment Protection Legislation (EPL) Index indicates relatively strict legislative conditions for the dismissal of employees from regular employment in the Czech Republic (see the 2022 Alignment Analyses).

**Chart 3: Labour market flows**  
(% of baseline)

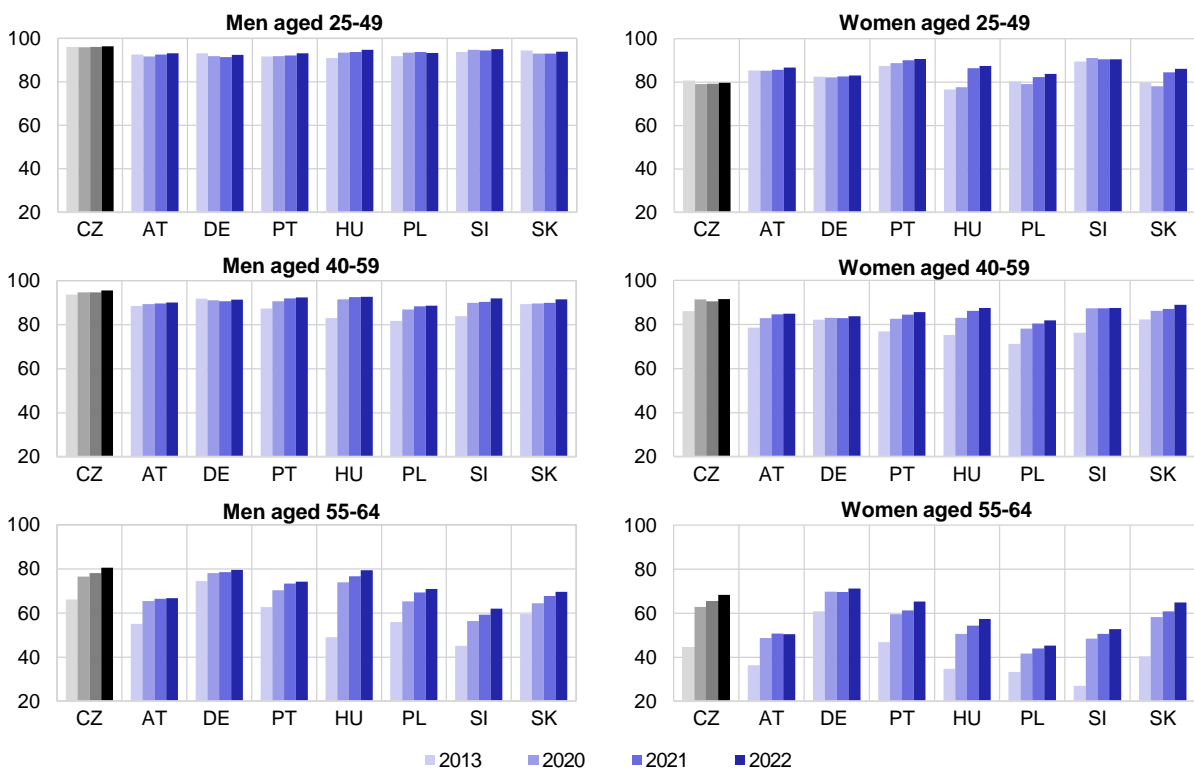


Note: Probability of transitioning from employment to unemployment (left) and from unemployment to employment (right) between two consecutive quarters. Annual averages of seasonally adjusted quarterly data, 15–74 age group. Older data are not available for Germany.

Source: Eurostat, CNB calculations

**The high rate of economic activity in the Czech Republic** (see page 60 of the Chartbook) **conceals differences by age group and gender.** The rate is very high – the highest in the countries under comparison – among men aged 25–59 and women aged 40–59 (see Chart 4). The participation rate of early-middle aged women is conversely the lowest, probably due to long parental leave. OECD (2023) highlights the large employment gap between women with young children and women without children and the need to increase the supply of pre-school facilities, reduce the generous family cash benefits and gradually lower the duration of parental leave. The increasing retirement age is reflected in a sharp rise in economic activity in the 55–64 age group, particularly for women relative to 2013.

**Chart 4: Rate of economic activity of men and women by age group**  
(% of population)



Note: The breakdown is based on Eurostat data, where the age groups overlap.

Source: Eurostat

## Conclusion

**The Czech labour market seems relatively flexible compared to the other countries under review, but it also has its weak points.** Government structural policy should focus on eliminating these weaknesses, in particular by addressing the labour shortages, the high lay-off costs and the low rates of economic activity among women with children. Labour market flexibility increases a country's overall growth potential and also helps the economy cope with shocks. This second mechanism is particularly important for countries in a monetary union, as they cannot counter asymmetric shocks using their own monetary policy.

## II.4 INFLATION HETEROGENEITY AND ITS IMPACT ON THE CONVERGENCE OF PRICE LEVELS IN EURO AREA COUNTRIES: EVERY CLOUD HAS A SILVER LINING

Filip Novotný, Michaela Ryšavá

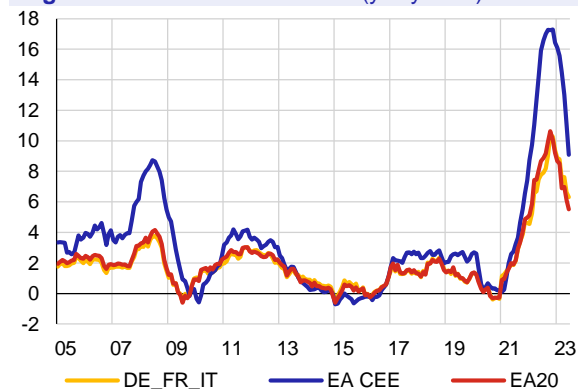
*During the recent post-Covid and energy crises, we have seen a surge in inflation, one that has been rather uneven across euro area countries. The largest price increases were recorded in the smaller newer Member States which, however, given their small weight, do not significantly affect headline inflation in the euro area. Heterogeneous developments, mainly in headline inflation (owing to energy and food prices), nevertheless contributed to the convergence of the price levels of these smaller and generally less developed countries to the euro area average. There are naturally smaller differences between countries in the prices of consumer goods as opposed to services. On closer inspection, food and beverage prices in particular have converged over the past few years, even surpassing the convergence in prices for clothing, footwear and household equipment.*

### Inflation monitored by the European Central Bank

In order to conduct the single monetary policy, the European Central Bank (ECB) monitors and assesses inflation and other economic indicators for the euro area as a whole, although the situation can vary considerably from one Member State to another. This complicates monetary policy, which has to be set in line with developments in the euro area as a whole even though such a setting may be strongly suboptimal for inflationary developments in specific countries. From the point of view of the long-term sustainability of the single currency area, in addition to the heterogeneity of inflation itself, it is also important whether economic indicators are converging across euro area countries. The different inflation dynamics in Member States<sup>50</sup> with different price levels is a natural manifestation of economic convergence and must be taken into account to some extent in the monetary union from the long-term perspective.<sup>51</sup> By contrast, the heterogeneity of inflation would be particularly problematic if it simultaneously led to a divergence of economic indicators across countries, i.e. economic divergence.

**Inflationary developments in the euro area are de facto determined by inflation in the three largest Member States – Germany, France and Italy.** Together, these countries account for 64% of the euro area.<sup>52</sup> Inflation in the remaining countries is either strongly correlated with these largest countries or – given their small weight – has little effect on headline inflation in the euro area (see Charts 1 and 2).<sup>53</sup>

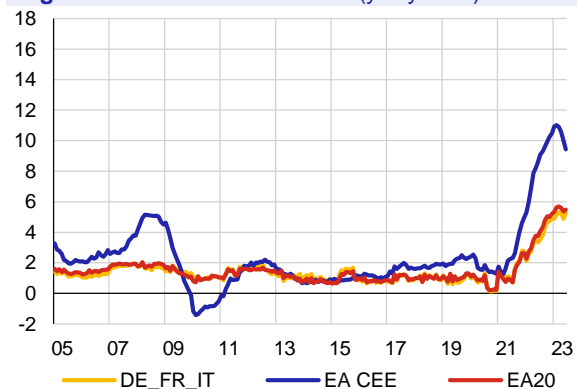
**Chart 1: Headline inflation in the euro area, its three largest countries and the CEE (y-o-y in %)**



Note: This is HICP inflation. The CEE countries here are: Estonia, Lithuania, Latvia, Slovenia and Slovakia.

Source: Eurostat

**Chart 2: Core inflation in the euro area, its three largest countries and the CEE (y-o-y in %)**



Note: This is HICP inflation. The CEE countries here are: Estonia, Lithuania, Latvia, Slovenia and Slovakia.

Source: Eurostat

<sup>50</sup> The breadth and intensity of Czech inflation in the European context were described in the [Box](#) in the Monetary Policy Report – Summer 2022.

<sup>51</sup> From this perspective, the Maastricht convergence criterion of price stability appears more appropriate for countries with similar price levels.

<sup>52</sup> This is the sum of these countries' weights in headline inflation in the euro area, as published by Eurostat. This weighs the individual euro area Member States into an aggregate indicator according to the economic size of the countries.

<sup>53</sup> The correlation coefficient of the month-on-month changes in euro area headline inflation and aggregate inflation for only Germany, France and Italy has been 0.98 since 2005. It is only 0.5 for the Central and Eastern European countries. The correlation coefficients for core inflation are 0.98 and 0.65 respectively.

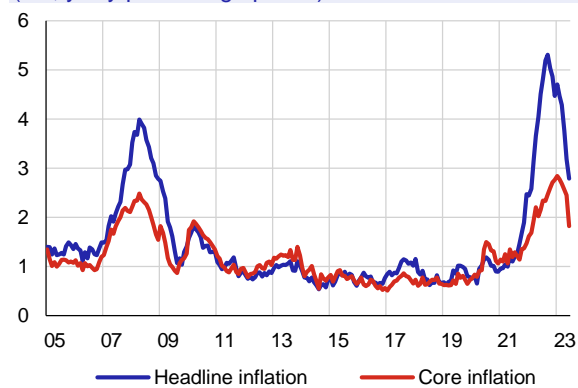
The difference in headline and core inflation compared to the euro area aggregate is apparent at first glance in the case of the later accession countries of Central and Eastern Europe (CEE: Estonia, Lithuania, Latvia, Slovenia and Slovakia).<sup>54</sup> With their weight of only 3% in the euro area as a whole, they are thus beneficiaries of the ECB's common monetary policy, which is focused on headline inflation determined by the largest countries.<sup>55</sup>

### Increased inflation heterogeneity across euro area countries

**Inflation in the euro area rose sharply after the Covid-19 pandemic subsided and remains elevated, even though there are marked differences across Member States.** Euro area annual inflation measured using the Harmonised Index of Consumer Prices (HICP) exceeded the ECB's 2% target in the second half of 2021 and continued to rise sharply to a peak of 10.6% in October last year. Consumer price inflation was generally higher in countries with lower price levels, i.e. especially in the later accession countries of Central and Eastern Europe.<sup>56</sup> The convergence of the price level in these countries towards the weighted average of the euro area countries can only take place - after their exchange rates have been effectively fixed by joining the euro area - through faster growth in their domestic prices relative to prices in the core euro area countries. By contrast, the Czech Republic and other non-euro area countries still have a nominal exchange rate appreciation channel, even though its strength has declined considerably since the Global Financial Crisis.

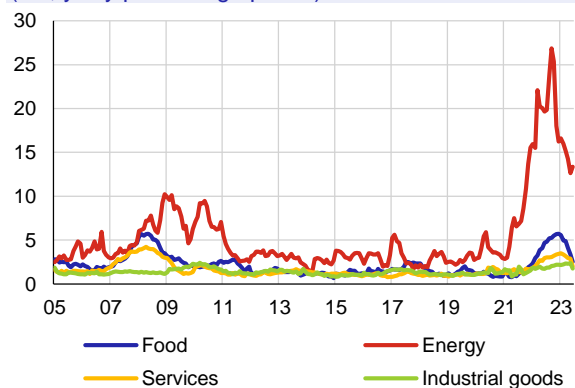
**The heterogeneity of headline inflation across euro area countries has been higher during the post-Covid period than during the global financial crisis.** The standard deviation can be used to assess inflation, i.e. the heterogeneity of inflation across euro area countries. The higher its value, the greater the dispersion of inflation around the average. Chart 3 plots the unweighted standard deviations of headline and core inflation, i.e. all euro area countries have the same weight in the calculation. It can be seen that the heterogeneity of headline consumer price inflation reached historical highs last year (the standard deviation was up to around 5 percentage points) and remains high. For core inflation, which is adjusted for volatile energy and food prices, heterogeneity is also high but considerably lower than for headline inflation and comparable with 2008, when there was also a strong (albeit somewhat smaller) increase in prices.

**Chart 3: Unweighted standard deviation of headline and core inflation in the euro area**  
(EA, y-o-y percentage points)



Note: This is HICP inflation.  
Source: Eurostat

**Chart 4: Unweighted standard deviation of individual components of inflation in the euro area**  
(EA, y-o-y percentage points)



Note: This is HICP inflation.  
Source: Eurostat

**The weighted standard deviation also points to greater heterogeneity of headline inflation than core inflation.**<sup>57</sup> The heterogeneity of headline inflation is much higher than in 2008 (the weighted standard deviation was up to around 3 percentage points last year). Until recently, the heterogeneity of core inflation was relatively subdued and below historically above-average levels, but it is slowly starting to climb higher. The generally lower

<sup>54</sup> Except in 2013–2016, the non-euro area CEE countries (the Czech Republic, Hungary and Poland) also recorded different inflationary developments compared to the euro area.

<sup>55</sup> It could be said that this contrasts with the composition of the ECB's Governing Council, where each country has one representative regardless of the country's ability to influence economic developments in the euro area.

<sup>56</sup> In October 2022, for example, inflation in the Baltic states was above 20%, while in France and Spain it was "only" just above 7%.

<sup>57</sup> The calculation assigns a country's weight at euro area level. While Germany has a weight of almost 30% and France and Italy are close to 20%, Malta and Cyprus have a negligible weight of under 0.5%.

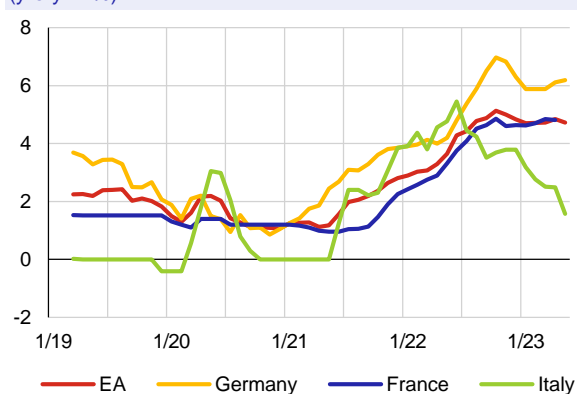
values of the weighted standard deviation compared to the unweighted deviation confirm that the increased heterogeneity of consumer price inflation is mainly due to smaller euro area countries with lower weights.

**Looking at the individual components, the heterogeneity of headline inflation in the euro area stems primarily from different increases in energy prices and, to a lesser extent, food prices** (see Chart 4). While the unweighted standard deviation of the food component of inflation at the peak of the current inflation wave was at a similar level to that during the global financial crisis, the values for the energy component were several times higher during the current shock. This was due, among other things, to the different national policies in response to the high energy and food prices. The different structures of the individual countries' economies, especially the different weights of the individual components of headline inflation, also played a role during large shocks like the pandemic and the war in Ukraine. For example, the Baltic states have a much higher weight of both these components than the rest of the euro area (household energy payments account for almost a fifth of total consumer expenditure and food for a third), and inflation has thus increased more sharply in these countries in the context of the crisis triggered by the war in Ukraine.

**However, recent months have brought a slowdown in inflation in the euro area from its peaks while heterogeneity has also moderated, mainly due to the calming of the energy crisis escalated by the war.** The rapidly declining heterogeneity of the energy component is also reducing the heterogeneity of headline inflation which, however, remains high. As core inflation has also exhibited increased heterogeneity (albeit to a lesser extent than headline inflation), the sources of the differences in inflation in euro area countries may theoretically come from developments in wages and services prices, which have been affected differently by the pandemic.

**However, the risk of a strong wage response due to high inflation has not yet materialised.** Although wage growth has been strong across euro area members since mid-2021, it started to slow in 2022 Q4. This, among other things, reduced concerns of a wage-inflation spiral. This is illustrated by the recent monitoring of wage movements based on data from online job offers, as shown in Chart 5. Wages are therefore quite restrained, probably partly reflecting the government's support packages in the context of the energy crisis triggered by the war in Ukraine (cost mitigation has reduced the need to demand more significant wage increases), but also people prioritising keeping their jobs over demands for wage increases. Looking at the heterogeneity of nominal wage growth in Chart 6, it can be seen that although the standard deviation reached levels seen during the global financial crisis in 2019, mainly due to a rise in the level of the minimum wage in some countries (especially Spain), it has stabilised since 2021 and is therefore not the reason for the high heterogeneity of headline or core inflation at present.

**Chart 5: Wage growth according to “Indeed Wage Tracker”<sup>58</sup>**  
(y-o-y in %)



Note: Three-month moving averages.  
Source: Adrjan and Lydon (2022)

**Chart 6: Unweighted standard deviation of nominal wage growth in the euro area**  
(EA; y-o-y in percentage points)



Source: Eurostat, CNB calculations

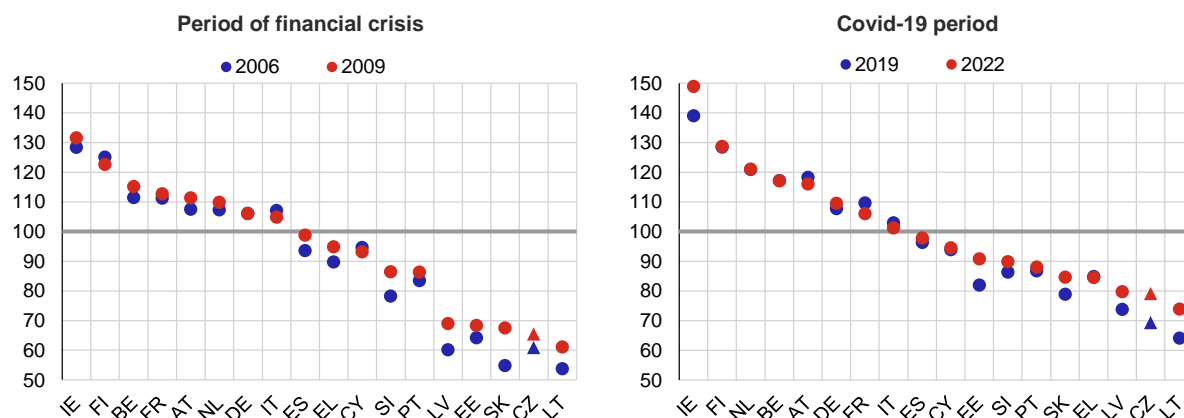
<sup>58</sup> This is an indicator measuring wage growth in jobs advertised on the Indeed portal intended to help understand wage trends in six selected euro area countries, which together account for more than 80% of euro area employment.



**Effect of different inflation dynamics on euro area countries' price convergence**

**Despite the free movement of goods, services, capital and people, there are long-term price differences between euro area countries.** At the aggregate macroeconomic level, we speak of different price levels. However, Chart 7 shows how the price levels in individual euro area countries shifted in periods of increased inflation heterogeneity (specifically during the Global Financial Crisis and the Covid crisis). The Czech Republic is also included for comparison. The global financial crisis of 2008–2009 was reflected in an upward shift of price levels towards the average in some southern countries and also in the converging Central and Eastern European countries. Prices in Italy and Finland acted in the opposite direction. The Covid crisis led to an even greater price level convergence (with two exceptions). The price convergence was most pronounced in Central and Eastern European countries, which are characterised by a catching-up process and a lower initial price level compared to the euro area average. By contrast, some of the more developed countries, whose price levels were above the euro area average, saw a slight convergence in the price level from above (France, Austria). Some countries saw no major shift in the price level relative to the euro area average. The case of Ireland, which is clearly diverging from the core of the euro area, is worth mentioning.

**Chart 7: Shift in price levels of the total consumer basket**  
(EA19 = 100 in each year displayed)

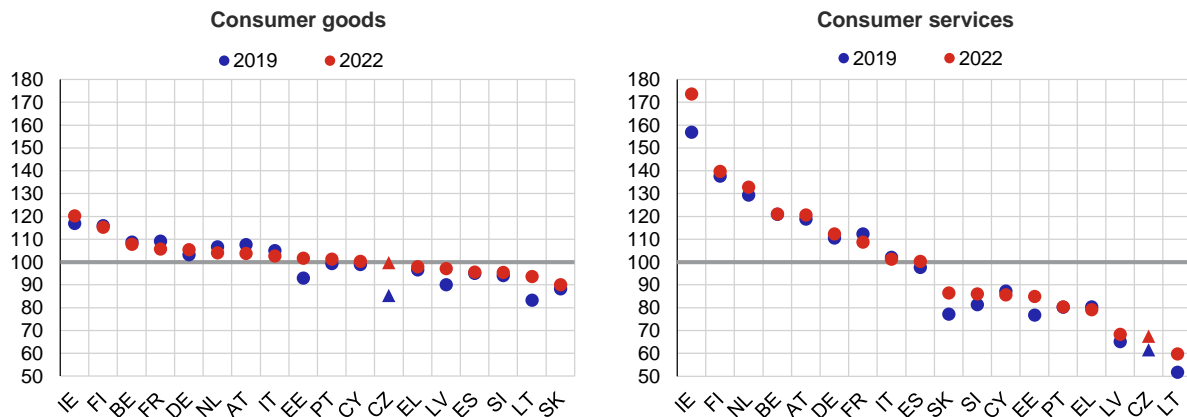


Note: Luxembourg and Malta are not included in the charts due to the many specificities of their economies. By contrast, the Czech Republic is added for comparison.

Source: Eurostat, CNB calculations

**There are naturally larger differences in price levels in services prices, whereas goods prices have now almost converged.** The remaining differences in goods prices (see Chart 8, left-hand side) may be due, for example, to different market sizes and related market structures, different national consumption habits and other factors. Since 2019, price levels have mostly decreased in countries with a relatively higher price level compared to the average, while the opposite has been the case for countries with a relatively lower price level, including the Czech Republic. In the case of the Czech Republic, consumer goods prices have significantly converged towards the euro area average over the last few years. The situation is diametrically different in the case of prices of services (see Chart 8, right-hand side), which are more closely linked with the level of still very different wage costs between the core and periphery of the euro area. Thus, despite gradual convergence, there are still huge differences between Member States in the valuation of services. There is an enormous difference between Ireland on the one hand and the Baltic States or the Czech Republic on the other: for example, the prices of services in Ireland are twice as high as in Lithuania. By contrast, the prices of services in Slovakia and Estonia have converged significantly towards the euro area average over the last few years.

**Chart 8: Shift in price levels of goods and services**  
(EA = 100 in each year displayed)



Note: Luxembourg and Malta are not included in the charts due to the many specificities of their economies. By contrast, the Czech Republic is added for comparison.

Source: Eurostat, CNB calculations

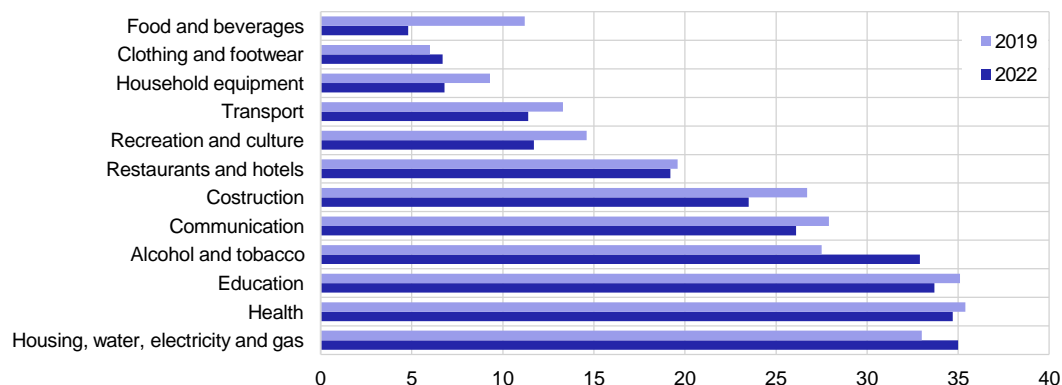
**As regards the individual expenditure groups, the smallest price differences are in food and beverage prices.**

These recorded a significant price convergence in 2019–22. The most significant convergence of price level for food and beverages with the euro area average from below was observed in Lithuania and the Czech Republic. By contrast, food and beverage prices in Austria converged significantly towards the euro area average from above. The second significantly converged commodity group is clothing and footwear. However, it is worth noting that there has been a significant upward jump in clothing and footwear prices from the euro area average, especially in the case of the Czech Republic. Together with Estonia, the Czech Republic thus has the second-highest reported price level in this commodity group, just behind Finland. Relatively low price differences between countries also exist in the case of household equipment.

**The largest price differences are apparent for electricity and gas prices for households.** In this group, some countries diverged from the euro area average between 2019 and 2022, while others converged (see Chart 9). The different government measures to cushion the impact of high energy prices on households probably had a strong effect on these developments. The largest increase in the price level in this category was recorded in the Czech Republic, reaching 28% above the euro area average. Only Ireland and Belgium have higher electricity and gas prices, which also moved upwards from the core of the euro area. Significant differences can also be seen in the prices of alcoholic beverages and tobacco, which have grown further since 2019.

**Similarly high price differences also persist among the countries under review in the case of the prices of some services.** This applies specifically to healthcare and education. Significant price differences also still exist in the prices of communication services. However, this is due to higher prices of communication services in only three of the countries under review, specifically Belgium, Greece and Ireland. Similarly high price differences are also typical for the construction sector, dominated by prices in Germany and Finland. By contrast, prices in Greece, Slovenia and Portugal are much lower. Marked price differences persist in restaurants and hotels, the highest being in Finland and Ireland and the lowest in the Czech Republic and Portugal. There are smaller differences between countries in the prices of transport, recreation and culture, which further converged between 2019 and 2022.

**Chart 9: Standard deviation (heterogeneity) of price levels within the euro area for individual groups of goods and services in the consumer basket**  
(percentage points)



Source: Eurostat, CNB calculations

## Conclusion

**Owing to heterogeneous inflation developments, price levels between euro area Member States have recently converged.** The post-Covid era has led to a strong increase in inflation heterogeneity in the euro area, driven mainly by different increases in energy prices and, to a lesser extent, food prices. Above-average price growth was recorded mainly by the new, smaller euro area countries. On the one hand, the significant inflation heterogeneity across the euro area complicates the setting of the ECB's single monetary policy for all Member States, but on the other hand, it has resulted in a majority convergence of price levels in recent years. This happened most vigorously in smaller euro area countries, especially in Central and Eastern Europe, where price levels are lower than the euro area average and which have long been catching up with the price levels of the more developed core euro area countries. Prices for goods have now almost converged in the euro area, while price level differences in services are still significant. As regards expenditure groups, we observe the smallest differences between countries in the categories of food and beverage prices, and clothing and footwear prices. By contrast, the largest differences persist in electricity and gas prices for households, as well as healthcare and education prices. The Czech Republic saw similar developments to those in the euro area Member States from Central and Eastern Europe.

### III. CHARTBOOK

#### III.1 THE CZECH REPUBLIC'S CYCLICAL AND STRUCTURAL ALIGNMENT WITH THE EURO AREA

##### III.1.1 Direct alignment indicators

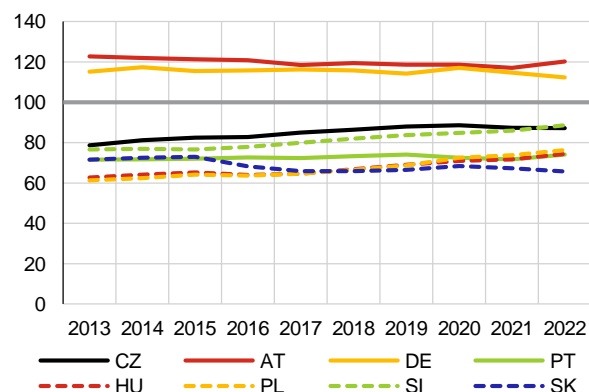
-  Real economic convergence<sup>59</sup>
-  Convergence of price levels and wages
-  Cyclical alignment of the Czech Republic's economic activity with the euro area
-  Structural similarity of the Czech economy to the euro area economy
-  Trade links with the euro area
-  Intensity of intra-industry trade with the euro area
-  Ownership links with the euro area
-  Alignment of the Czech and euro area financial cycles
-  Interest rate convergence vis-à-vis the euro area
-  Volatility of the exchange rate of the Czech currency against the euro
-  Alignment of the Czech koruna with the euro
-  Financial market alignment

#### ECONOMIC CONVERGENCE

**Czech GDP per capita at purchasing power parity exceeds that of Slovakia, Hungary and Poland, but the lag behind the more advanced euro area countries remains significant. Moreover, it moved slightly away from the euro area average last year.**

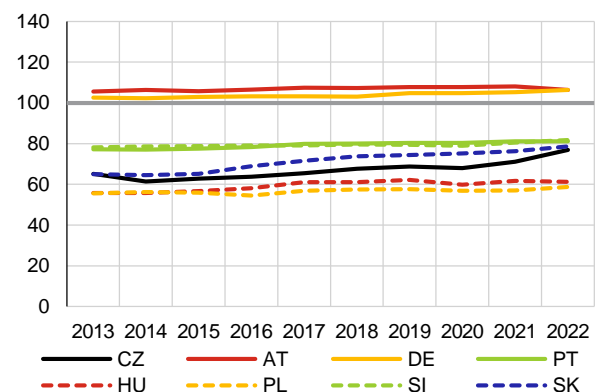
**The gap between the price level of Czech GDP and the euro area average is even more pronounced, but decreased markedly last year.**

**GDP per capita at purchasing power parity (PPP)**  
(EA19 = 100)



Source: Eurostat, CNB calculations

**Price level of GDP**  
(EA19 = 100)



Source: Eurostat, CNB calculations

<sup>59</sup> The colours and directions of the arrows are explained in the Introduction to this document.

**In 2022, the real appreciation of the koruna against the euro was strongest since 2008. The average annual rate of appreciation of the koruna's real exchange rate over the last ten years is 1.5%.**

#### Real exchange rate against the euro (HICP-deflated)

(2010 = 100; a rise in the index means appreciation of the real exchange rate)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	97.8	92.3	93.2	94.4	97.8	100.6	101.9	100.7	105.9	117.0
<b>AT</b>	101.6	102.7	103.3	104.1	104.8	105.2	105.5	105.4	106.8	107.1
<b>DE</b>	99.7	100.0	100.5	100.6	100.8	101.0	101.1	100.1	101.8	102.1
<b>PT</b>	100.2	99.6	99.9	100.3	100.3	99.7	98.9	97.4	96.9	96.7
<b>HU</b>	97.1	93.0	92.5	92.3	93.7	91.9	92.1	86.9	88.3	86.1
<b>PL</b>	96.9	96.8	96.0	91.6	94.0	93.4	93.4	92.3	93.3	94.9
<b>SI</b>	100.2	100.2	99.2	98.8	98.9	99.0	99.5	97.9	98.5	99.3
<b>SK</b>	102.7	102.1	101.6	100.9	100.7	101.5	103.1	103.7	105.1	108.7

Source: Eurostat, CNB calculations

**As in all the other countries under review, real interest rates in the Czech Republic remained significantly negative in 2022.**

#### Real 3M interest rates

(%, ex post, HICP-deflated)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	-0.9	-0.1	0.0	-0.4	-2.0	-0.7	-0.5	-2.4	-2.4	-7.4
<b>AT</b>	-1.9	-1.2	-0.8	-1.2	-2.5	-2.4	-1.8	-1.8	-3.2	-7.6
<b>DE</b>	-1.4	-0.6	-0.7	-0.6	-2.0	-2.2	-1.7	-0.8	-3.6	-7.7
<b>PT</b>	-0.2	0.4	-0.5	-0.9	-1.9	-1.5	-0.7	-0.3	-1.4	-7.2
<b>HU</b>	2.4	2.5	1.5	0.5	-2.2	-2.7	-3.1	-2.6	-4.1	-4.6
<b>PL</b>	2.2	2.5	2.5	1.9	0.1	0.5	-0.4	-2.8	-4.7	-6.4
<b>SI</b>	-1.7	-0.2	0.7	-0.1	-1.9	-2.2	-2.0	-0.1	-2.5	-8.2
<b>SK</b>	-1.2	0.3	0.3	0.2	-1.7	-2.8	-3.0	-2.4	-3.2	-10.5

Source: Eurostat, CNB calculations

**As the koruna appreciated, the gap narrowed further between Czech wages expressed in euro and the euro area average.**

#### Average wage per employee in EUR

(EA = 100)

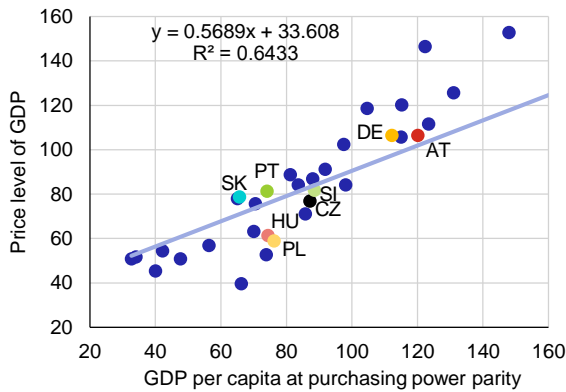
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	41.5	39.7	40.8	42.3	45.8	49.7	52.1	52.3	54.5	57.5
<b>AT</b>	112.7	113.3	114.0	115.2	115.1	116.0	116.7	119.2	117.9	117.9
<b>DE</b>	101.9	103.5	105.0	106.0	107.0	107.7	109.1	109.7	108.9	108.6
<b>PT</b>	54.8	53.2	52.6	52.6	52.9	53.8	55.1	56.2	56.2	57.1
<b>HU</b>	31.8	30.4	30.5	30.7	32.5	32.9	33.7	32.3	33.1	33.4
<b>PL</b>	32.7	33.2	33.5	33.3	35.4	37.3	39.3	40.1	39.4	41.4
<b>SI</b>	65.0	65.0	65.1	66.3	67.1	68.3	70.1	72.7	75.5	75.4
<b>SK</b>	39.5	39.7	40.7	41.1	42.4	44.0	46.0	48.0	49.3	50.0

Source: AMECO, CNB calculations

The Czech price level is now only slightly below the level corresponding to domestic GDP per capita by international comparison.

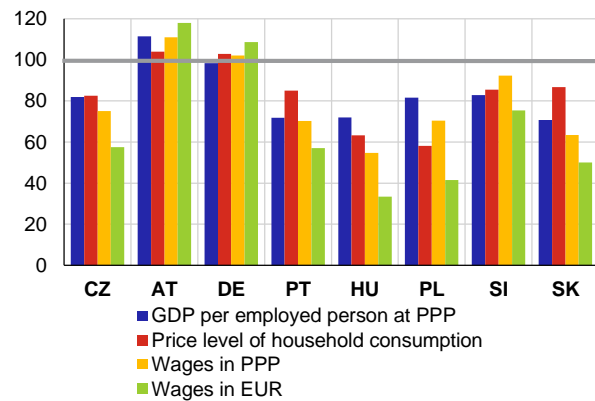
Czech wages at purchasing power parity are roughly 75% of the euro area average. In euro terms, they are just 57%.

**GDP per capita at purchasing power parity versus the price level**  
(2022, EA = 100)



Source: Eurostat, CNB calculations

**Other indicators of long-term convergence**  
(2022, EA = 100)

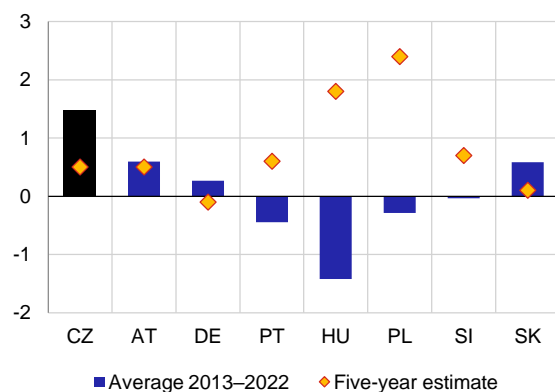


Source: Eurostat, European Commission, CNB calculations

The real exchange rate of the koruna has appreciated by 1.5% a year on average over the last ten years. Its future annual equilibrium rate of appreciation is estimated at close to 0.5%.

Real interest rates in the Czech Republic would probably be around zero following euro adoption. They have been around -2% on average over the last ten years.

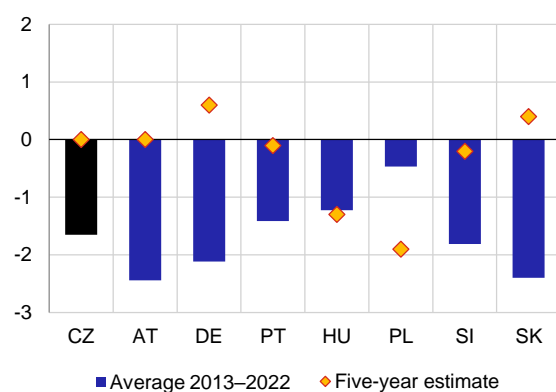
**Real exchange rate appreciation: average for last ten years and estimate for next five years**  
(% p.a., HICP-deflated)



Note: The chart shows the geometric mean for 2013–2022. The estimate of the average pace of equilibrium real exchange rate appreciation for the next five years is based on a panel regression 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

**Real 3M interest rates: average for last ten years and estimate for next five years after hypothetical euro adoption**  
(%, ex post, HICP-deflated)



Note: Simple arithmetic mean for 2013–2022. The estimated average equilibrium real interest rate for the next five years after hypothetical euro adoption is derived from the estimate 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

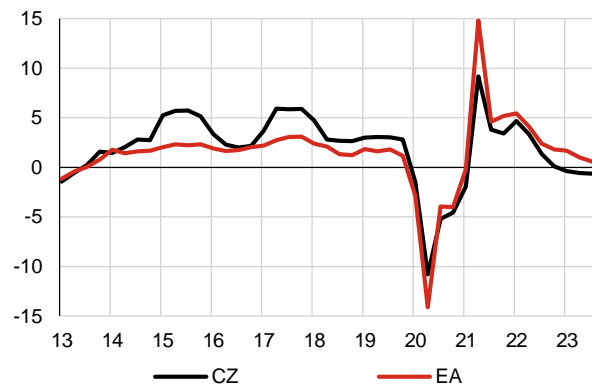
See the [Overall message of the analyses](#).

**CYCLICAL ALIGNMENT OF ECONOMIC ACTIVITY**

The growth of the Czech economy has been lagging behind that of the euro area over the last three years, with the difference increasing last year in particular.

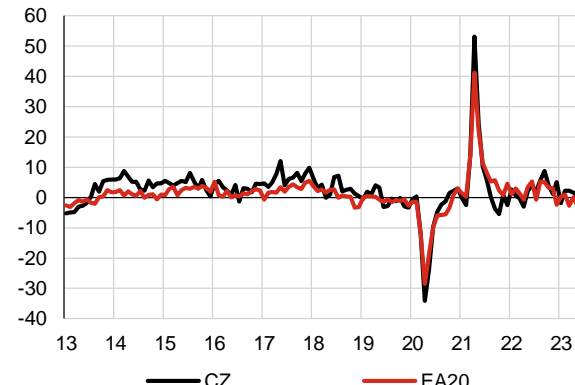
By contrast, growth in industrial production is slightly above the euro area average this year.

**Real GDP**  
(y-o-y, %)



Source: Eurostat

**Industrial production index**  
(y-o-y, %)

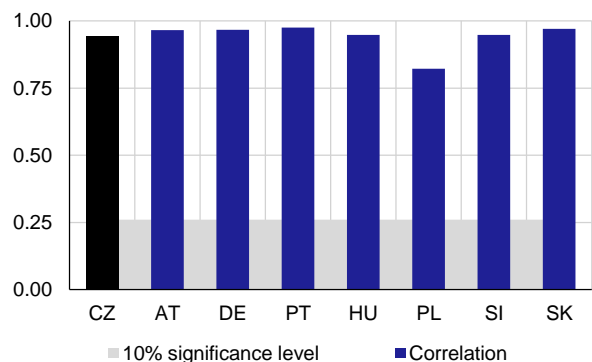


Source: Eurostat

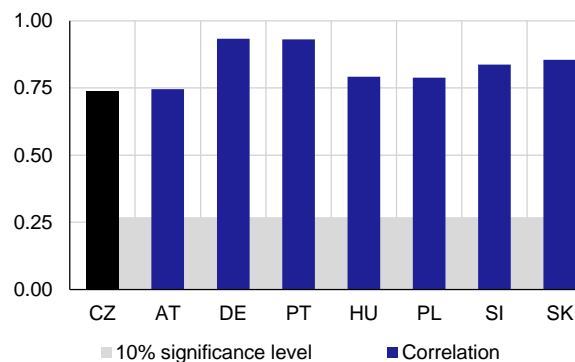
The economic impacts of common external shocks in the last three years foster a high correlation for almost all the countries under comparison.

We have also observed the synchronisation of economic activity in the relationship between the exports of the countries under review to the euro area and euro area GDP.

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



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



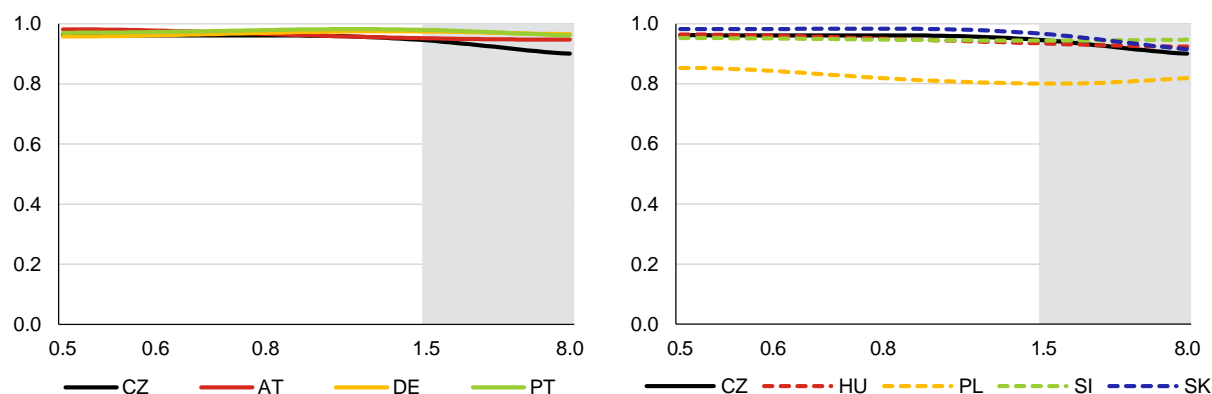
Note: The calculation is based on the quarter-on-quarter differences in the logarithms of the seasonally adjusted data in 2013Q1–2023Q1. The statistical significance of the correlation coefficients is indicated in the chart: values statistically significant at the 10% level lie in the white part of the chart (meaning that values in the grey part of the chart are not statistically significant at the 10% level).

The EA aggregate is used for the euro area.

Source: Eurostat, CNB calculations

The high alignment of the economy's response to a shock is indicated by the dynamic correlations between business cycles in the monitored band of 1.5–8 years.

Dynamic correlations of economic activity with the euro area



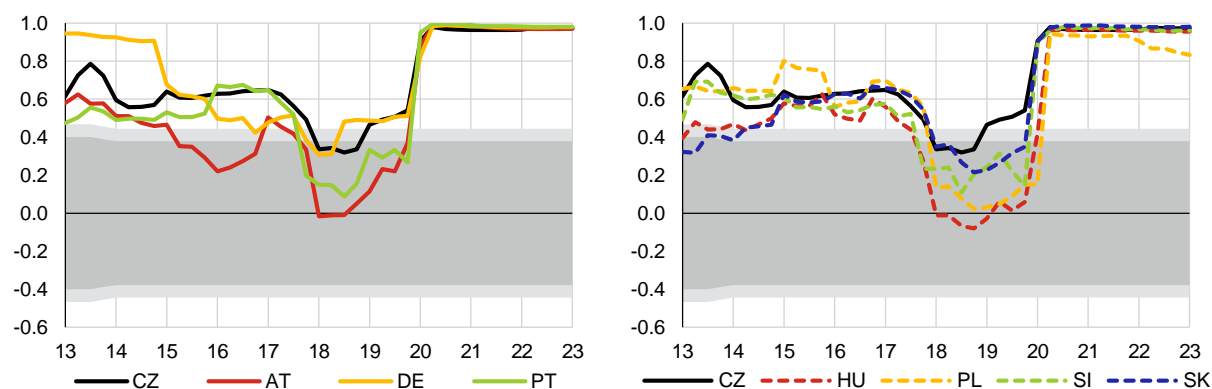
Note: The calculation is based on the quarter-on-quarter changes in the logarithms of the seasonally adjusted data. The x-axis is the cycle length in years. The grey area indicates the monitored band of 1.5–8 years, which usually covers the typical duration of the business cycle.

The EA aggregate is used for the euro area.

Source: Eurostat, CNB calculations

The five-year rolling correlations of the economic activity between the countries under review and the euro area show that the correlations surged in 2020 due to a synchronised drop in activity as a result of a common external shock (the coronavirus pandemic). Therefore, the current high correlation may not be evidence of long-term alignment between the Czech Republic and the euro area.

Five-year rolling correlations of GDP growth between individual countries and the euro area



Note: The time data indicate the end of the rolling window of 5 years. 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 light grey part of the chart. Values in the dark grey part of the chart are not statistically significant at the 10% level.

The EA aggregate is used for the euro area.

Source: Eurostat, CNB calculations

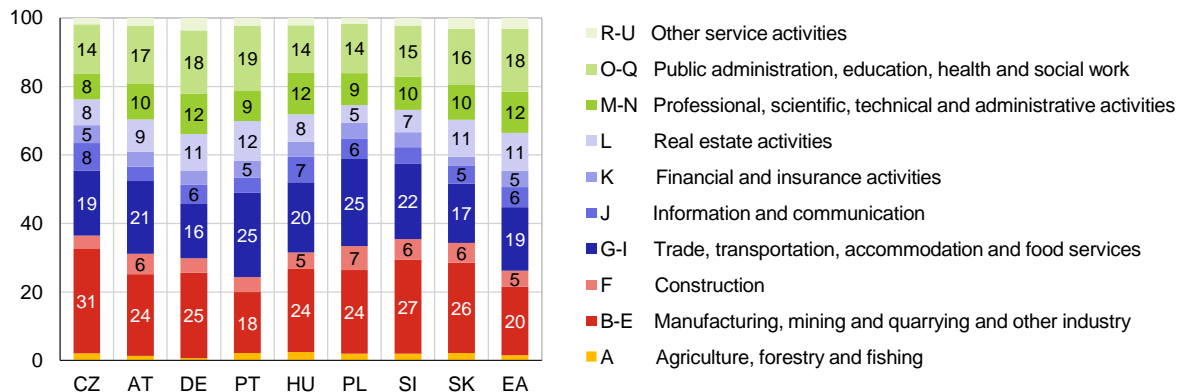
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### STRUCTURAL SIMILARITY OF THE ECONOMIES

The Czech Republic has long had a higher share of industry in GDP than the euro area.

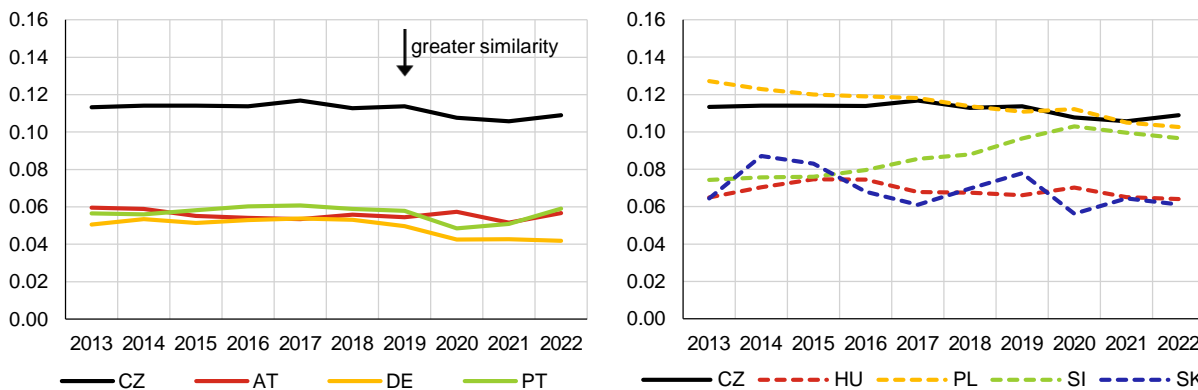
Shares of economic sectors in GDP  
(2022, %)



Source: Eurostat, CNB calculations

The different sector structure of value added is also reflected in higher values of the Landesmann index, indicating a lower degree of similarity of the Czech economy with the euro area economy.

Structural similarity vis-à-vis the euro area  
(Landesmann index)



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. The EA aggregate is used for the euro area.

Source: Eurostat, CNB calculations

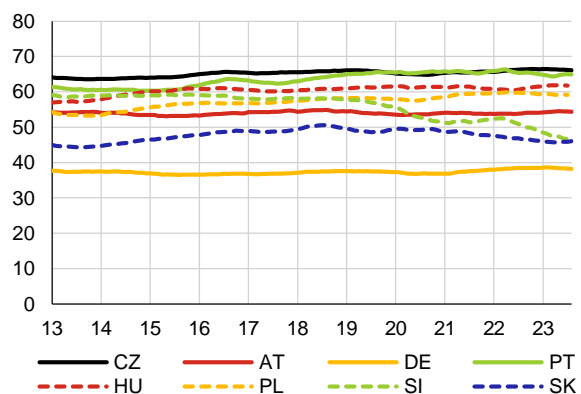
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### TRADE AND OWNERSHIP LINKS BETWEEN THE ECONOMIES

The share of exports to the euro area in total exports has long been high in the Czech Republic, consistently exceeding the shares observed in most countries under comparison.

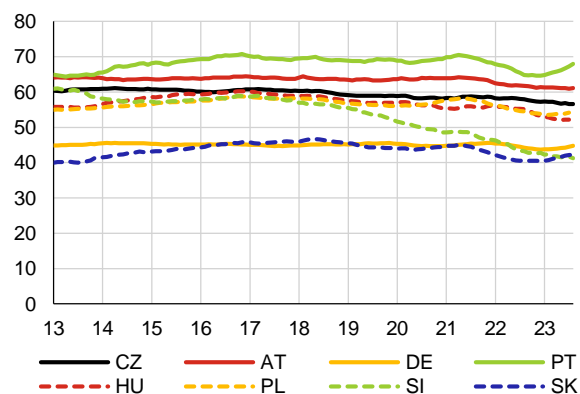
The share of imports from the euro area in total imports to the Czech Republic is slightly lower than that of exports, and has been falling slightly in recent years. Even so, it still exceeds the share of imports from the euro area to the other EU Member States of Central and Eastern Europe.

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



Note: Annual moving total of the monthly data.  
The EA20 aggregate is used for the euro area.  
Source: Eurostat, CNB calculations

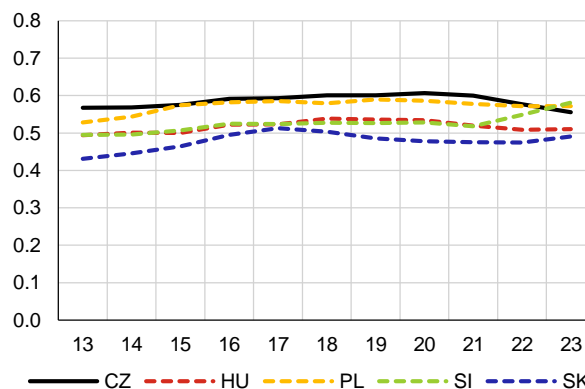
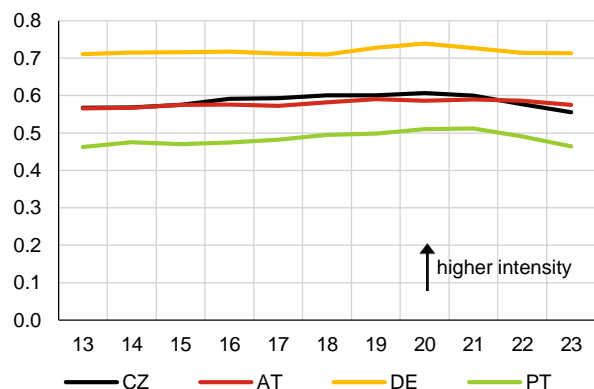
Shares of imports to the euro area in total imports (%)



Note: Annual moving total of the monthly data.  
The EA20 aggregate is used for the euro area.  
Source: Eurostat, CNB calculations

The high intensity of intra-industry trade between the Czech Republic and the euro area supports a similar reaction of the two currency areas to economic shocks. However, it has declined 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 2023 figure is for the first six months of the year.  
The EA aggregate is used for the euro area.  
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 relation to GDP, are also quite high in the Czech Republic despite a decrease last year.**

#### Ratios of FDI stock from the euro area to GDP

(%)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	58.6	61.2	62.0	63.1	64.4	63.4	62.3	66.3	67.2	60.5
<b>AT</b>	35.2	36.6	44.5	35.1	39.3	39.8	34.2	36.2	35.9	32.4
<b>DE</b>	27.0	26.3	26.3	26.6	26.7	28.9	29.0	31.0	30.3	29.6
<b>PT</b>	64.6	65.0	63.3	63.3	65.0	61.1	63.2	65.8	65.3	61.0
<b>HU</b>	56.4	56.2	57.2	50.1	46.0	46.4	42.2	42.5	41.2	40.0
<b>PL</b>	39.8	40.0	37.1	39.6	39.8	37.8	37.4	37.5	39.0	34.8
<b>SI</b>	19.6	21.9	23.7	25.6	26.1	27.0	27.0	28.9	27.6	28.6
<b>SK</b>	46.9	44.4	44.9	51.1	49.1	48.3	47.2	47.4	44.2	42.4

Note: The EA20 aggregate is used for the euro area.

Source: Eurostat, Magyar Nemzeti Bank for Hungary, CNB calculations

**Investment by the other EU Member States of Central and Eastern Europe in the euro area economies is still low, but the Czech Republic is faring much better than the other EU Member States of Central and Eastern Europe.**

#### Ratios of DI stock in the euro area to GDP

(%)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	16.5	17.3	18.5	18.0	21.4	20.4	20.6	21.3	21.0	20.2
<b>AT</b>	26.1	30.0	26.1	30.3	31.2	30.4	31.5	25.9	26.3	25.4
<b>DE</b>	27.4	27.7	28.6	29.3	30.7	33.4	35.4	38.7	38.5	38.7
<b>PT</b>	32.2	28.7	28.6	29.3	27.9	25.6	27.0	27.7	25.8	25.1
<b>HU</b>	13.2	14.1	11.1	12.0	11.0	10.7	10.5	13.1	13.4	13.2
<b>PL</b>	8.7	8.6	8.8	8.7	7.3	7.1	6.6	7.0	7.0	6.5
<b>SI</b>	3.7	4.2	4.3	4.7	5.3	5.6	6.5	6.4	6.0	10.7
<b>SK</b>	7.1	6.7	7.8	11.4	8.8	8.5	8.3	10.5	10.4	9.6

Note: The EA20 aggregate is used for the euro area.

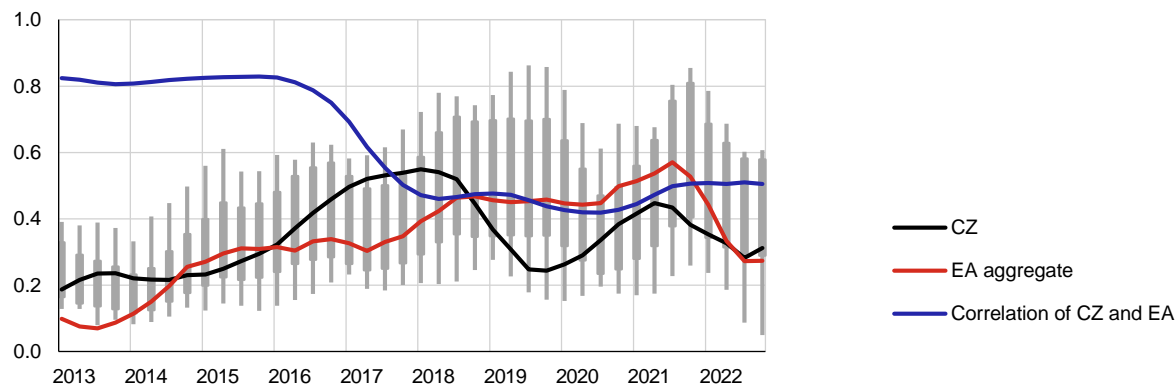
Source: Eurostat, Hungarian central bank for Hungary, CNB calculations

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### ALIGNMENT OF THE CZECH AND EURO AREA FINANCIAL CYCLES

The position of the euro area in the financial cycle has decreased similarly as that of the Czech Republic and their correlation of their movements has not changed significantly.

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 minimum value, the 25% quantile (the lower edge of the rectangle), the 75% quantile (the upper edge of the rectangle) and the maximum value of the simplified financial cycle indicator in the euro area countries for each period.

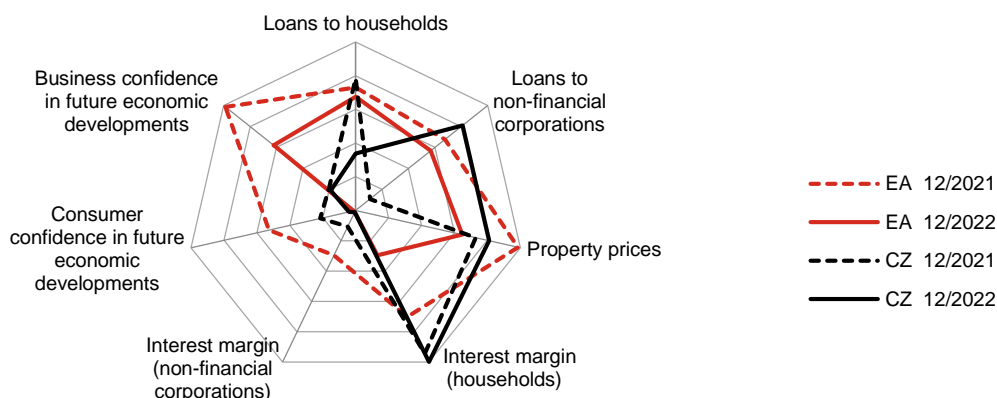
The indicator values differ from previous issues of this publication due to data revisions.

The construction and composition of the simplified indicator differs from the official financial cycle indicator (FCI) used in the Financial Stability Report, mainly because of the unavailability of similar data for all the countries analysed. The results for the Czech Republic may therefore differ from the official FCI.

Source: ECB, Eurostat, BIS, CNB calculations

The variables entering the financial cycle indicator show different dynamics, preventing significant growth in the alignment of the financial cycles.

Individual contributions of the simplified financial cycle indicator



Note: The simplified financial cycle indicator takes values from 0 to 1 (the trough and the peak of the cycle respectively). The same applies to its individual components.

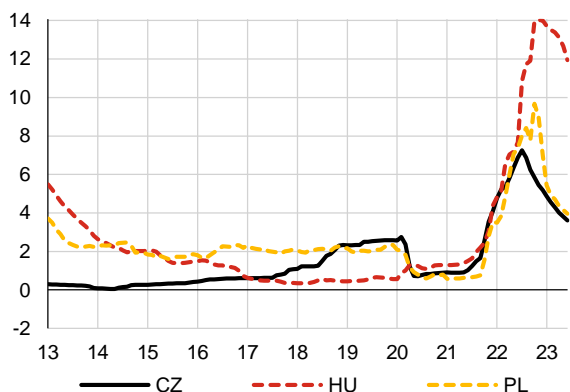
Source: ECB, Eurostat, BIS, CNB calculations

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### INTEREST RATE CONVERGENCE VIS-À-VIS THE EURO AREA

The differential between short-term interest rates in the Czech Republic and the euro area narrowed from the second half of last year due to a sharp tightening of monetary policy by the ECB. The short-term interest spreads also started to decline in Hungary and Poland in late 2022.

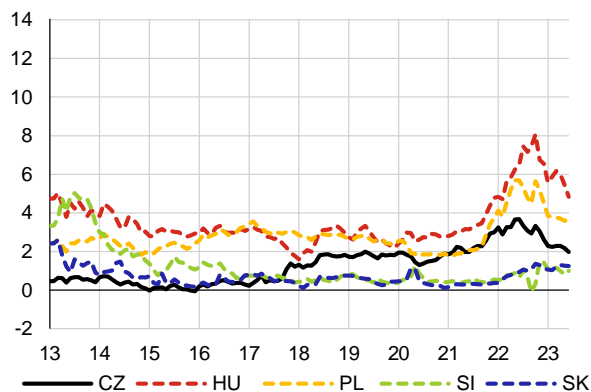
Differences in 3M interest rates vis-à-vis the 3M EURIBOR (percentage points)



Source: Eurostat, CNB calculations

The long-term rate spread also decreased, reaching a similar level as in 2019. Of the three Central European economies with their own currencies, the Czech Republic has the lowest long-term differential vis-à-vis the euro area.

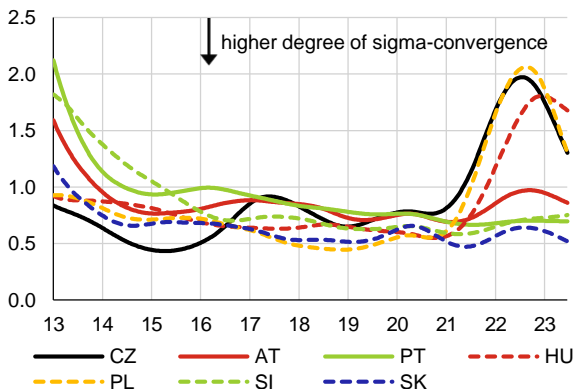
Differences in 10Y interest rates vis-à-vis Germany (differential vis-à-vis 10Y government bond yield in percentage points)



Source: Eurostat, CNB calculations

In 2023, the alignment of the Czech government bond market with the benchmark German market returned towards the levels observed over the last decade following a previous deterioration.

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

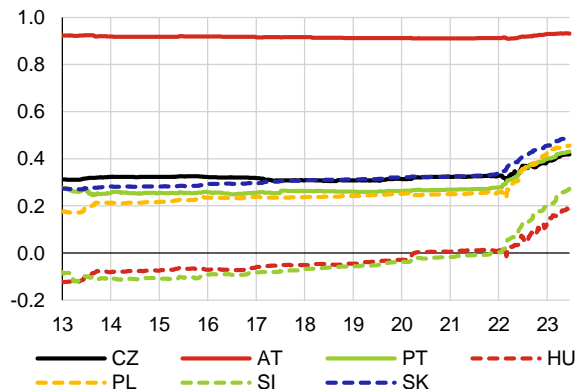


Note: Lower standard deviations (y-axis) correspond to a higher degree of convergence.

Source: Refinitiv, CNB calculations

The rate of transmission of global news on the government bond market remains relatively high in the Czech Republic by comparison with Germany. As in the other countries, it increased further at the end of the period under review, underlining the importance of global shocks in the current turbulent period.

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.

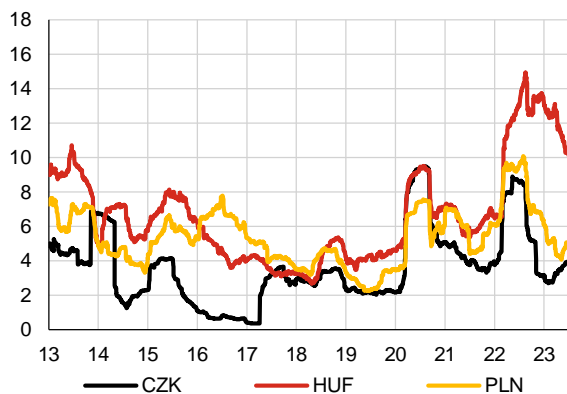
Source: Bloomberg, Refinitiv, CNB calculations

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### EXCHANGE RATE VOLATILITY AND ALIGNMENT

A calming of the financial markets and the relative resilience of the European economies in the first year without gas supplies from Russia helped to stabilise the exchange rates of Central European currencies and thereby reduce their historical volatility.

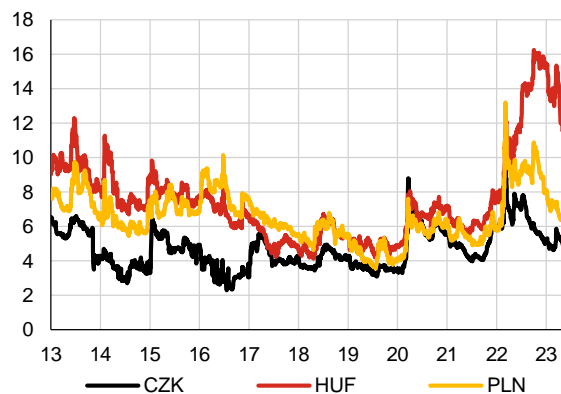
**Historical volatility of exchange rates vis-à-vis the euro (%)**



Source: Refinitiv, CNB calculations

The implied volatility of the koruna also underwent a correction and remained the lowest among Central European currencies. The koruna was also supported by the CNB's intervention regime introduced in May 2022.

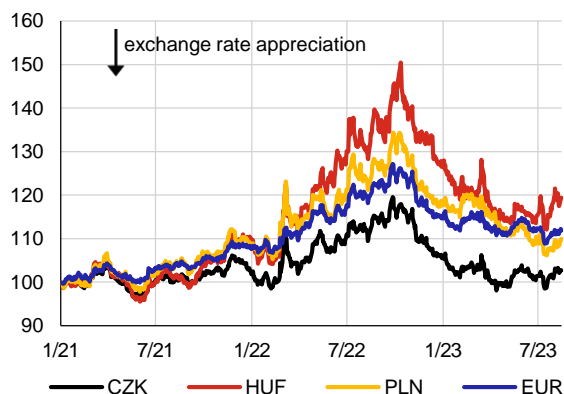
**Implied volatility of exchange rates vis-à-vis the euro**  
(daily data, expected volatility of exchange rates of national currencies based on prices of options for those currencies, %)



Source: Refinitiv, CNB calculations

In the first half of 2023, the currencies under review mostly appreciated against the dollar.

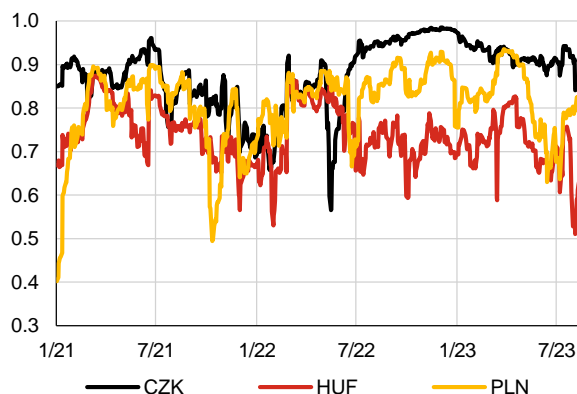
**Exchange rates against the US dollar**  
(index, 1 January 2021 = 100)



Source: Refinitiv

Despite a slight decrease, the correlation of the koruna-dollar exchange rate with the euro-dollar exchange rate remains the highest among the monitored Central European currencies. Last year's high levels were due partly to the CNB's interventions against depreciation of the koruna to the euro.

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



Note: A marked drop in the correlation of the exchange rate of the Polish zloty to the dollar with the euro-dollar exchange rate in late 2020 and early 2021 is due to the zloty weakening as a result of foreign exchange market interventions by the Polish central bank (NBP).

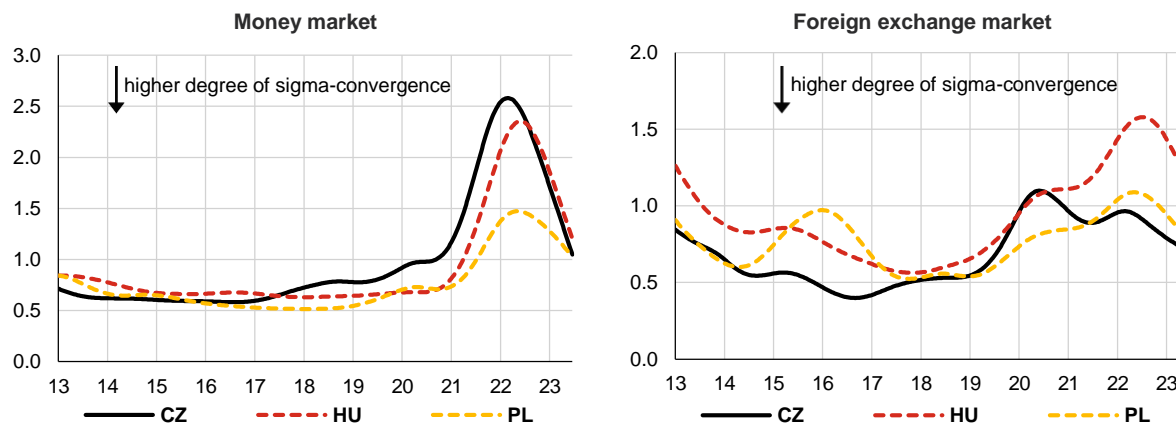
Source: Refinitiv, CNB calculations

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### FINANCIAL MARKET ALIGNMENT

**Convergence of the Czech money and foreign exchange markets to the benchmark euro area markets resumed after the fading out of the Covid-19 crisis and the calming of the energy crisis caused by the war in Ukraine.**

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

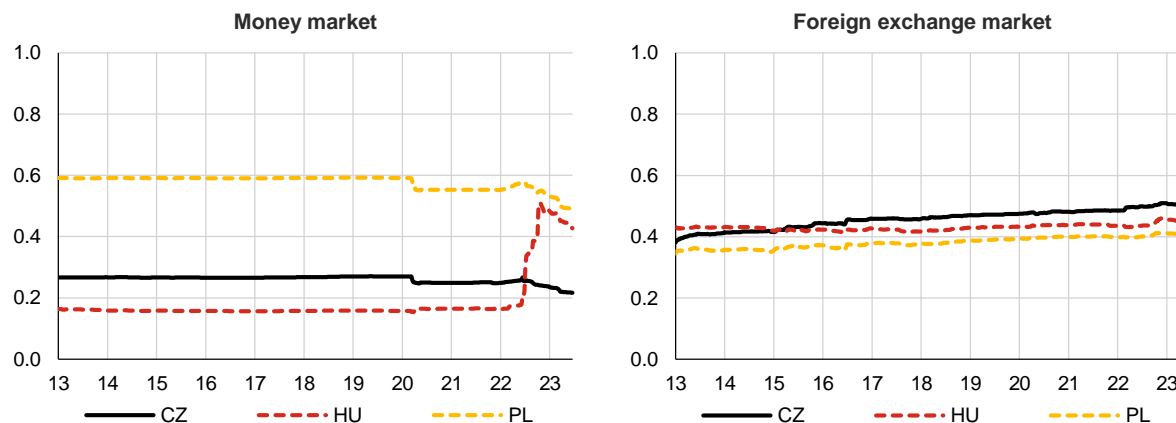


Note: Lower standard deviations (y-axis) correspond to a higher degree of convergence.

Source: Refinitiv, CNB calculations

**The rate of transmission of global news on the Czech money market fell slightly by comparison with the euro area, while it stabilised on the foreign exchange market after a previous moderate increase.**

**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, Refinitiv, CNB calculations

See the [Overall message of the analyses](#).

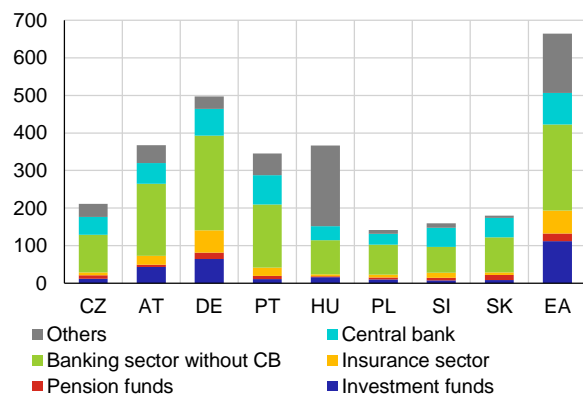
### III.1.2 Similarity of monetary policy transmission

-  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 in the Czech Republic is one of the lowest among the countries under comparison. It decreased in all countries under review between 2021 and 2022.**

**Depth of financial intermediation**  
(2022, assets of financial institutions as % of GDP)

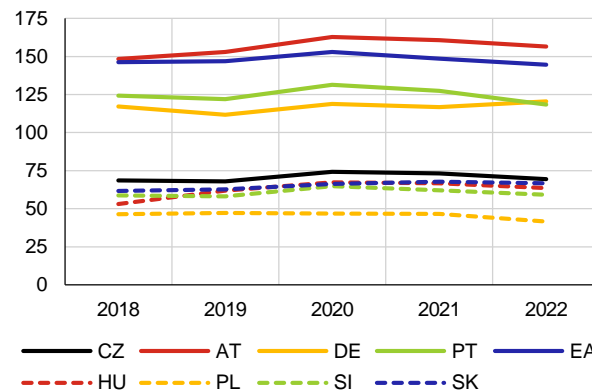


Note: The banking sector's total assets are adjusted for exposures to the central bank. The euro area value exceeds the other countries in the chart due to the large volume of assets of financial corporations in Luxembourg, Ireland, the Netherlands and France both as a percentage of their GDP and in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

Source: ECB, Eurostat

**Private sector debt in the Czech Republic is substantially below the euro area average.**

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



Note: Loans and debt securities purchased by local banks vis-à-vis the non-public sector (excluding the central banks and general government).

Source: ECB DWS, Eurostat

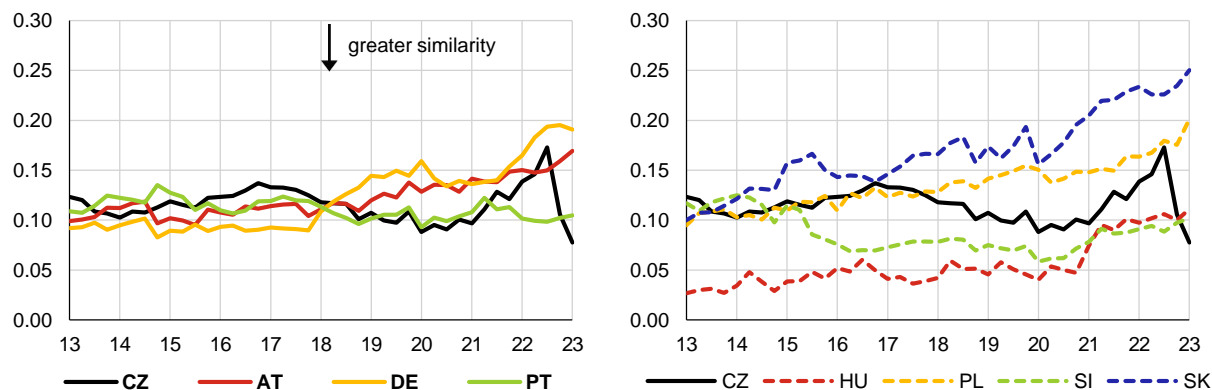
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### STRUCTURE OF FINANCIAL ASSETS AND LIABILITIES OF CORPORATIONS AND HOUSEHOLDS

The similarity of the structure of the financial liabilities of Czech and euro area firms has remained relatively high compared to the countries under review. It fell temporarily in the previous year as a result of a marked swing in financial derivatives purchased by energy companies, but this had no permanent impact on the structural similarity of Czech firms with firms in the euro area.

**Similarity of the structure of the financial liabilities of non-financial corporations and euro area corporations**  
(Landesmann index)



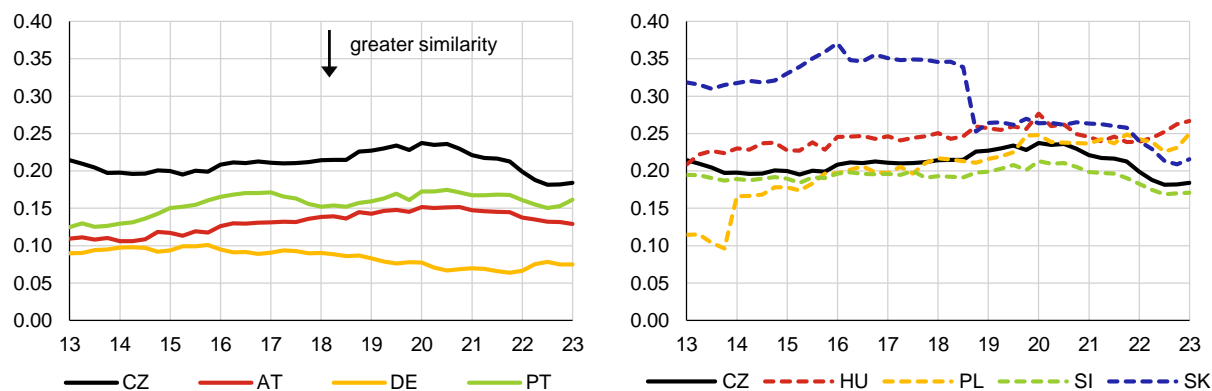
Note: The Landesmann index takes values in the range [0, 1]. The closer the index is to zero, the more similar is the structure of the balance sheets under comparison. The shares of the individual categories of liabilities in total liabilities were used for non-financial corporations. The index values differ from the previous year due to data revisions. The EA20 aggregate is used for the euro area.

Source: ECB, CNB calculations

See the [Overall message of the analyses](#).

Despite a continued increase, the similarity of the structure of the financial assets of Czech households and households in the euro area remains rather low. The persisting dissimilarity is due to Czech households' preference for cash and deposit holdings, together with holdings of investment fund units and shares, while households in the euro area invested a large part of their balance sheets in insurance and pension schemes. In the past year, however, the share of investment fund units and shares in the Czech Republic rose faster than in the euro area, whereas the share of insurance and pension schemes in euro area households' balance sheets fell (while remaining flat for Czech households), fostering a slight decrease in the mismatch in the household asset structure.

**Similarity of the structure of the financial assets of households and euro area households**  
(Landesmann index)



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 assets in total assets were used for households. The index values differ from the previous year due to data revisions. The drop for SK is due to a methodological change and data revision only until 2019. The EA20 aggregate is used for the euro area.

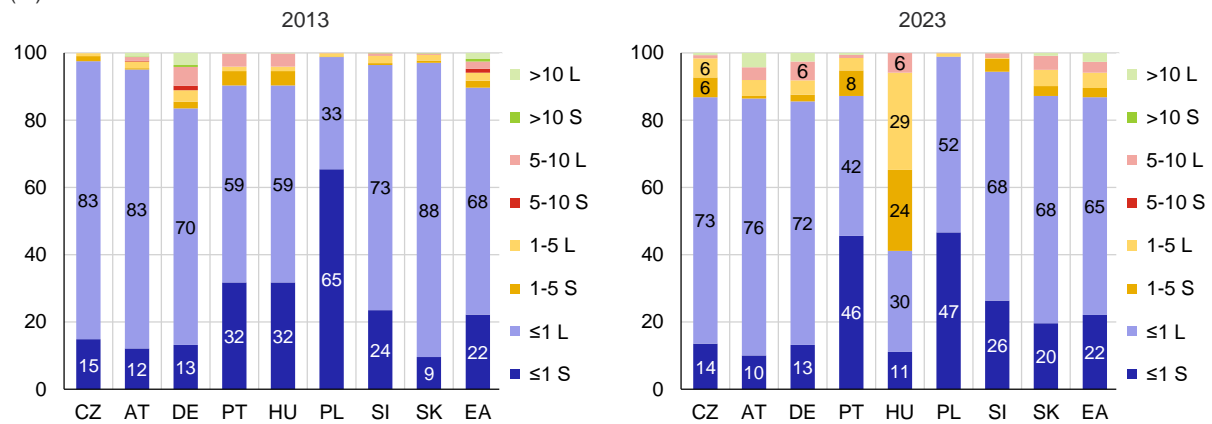
Source: ECB, CNB calculations

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

The interest rate fixation structure of loans to non-financial corporations in the Czech Republic and the euro area remains similar. Most loans to non-financial corporations in the Czech Republic and most euro area countries under review have floating rates or fixed rates of up to one year. This gives rise to the rapid transmission of changes in monetary policy rates and subsequently market rates to the loan rates provided to non-financial corporations.

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



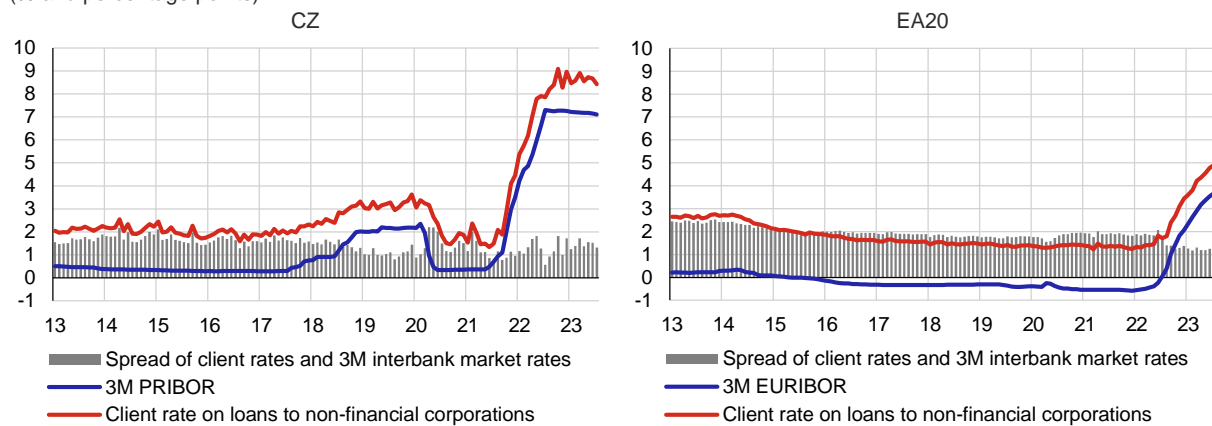
Note: The numbers in the legend stand for the fixation period in years; the <=1 category also includes loans with a floating interest rate. S and L denote small (up to EUR 1 million) and large (over EUR 1 million) loans, respectively. The 2023 data are as of June.

Source: ECB, CNB calculations

See the [Overall message of the analyses](#).

Monetary policy rate increases are mostly transmitted to client rates through the 3M interbank market rate in both the Czech Republic and the euro area. An increase in monetary policy rates is thus transmitted to client rates to a high degree and with a minimal lag.

**Spread between client rates on loans to non-financial corporations and the 3M interbank rate (% and percentage points)**



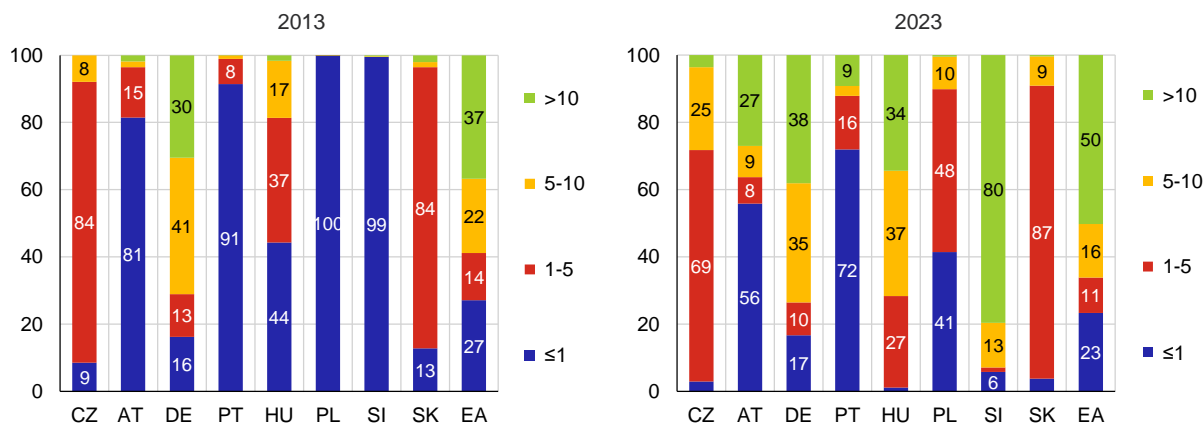
Note: The data are monthly averages.

Source: ECB, CNB, CNB calculations

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In most of the countries under review, the current trend of choosing longer-term fixations has reversed for housing loans. Households have opted for shorter fixations than in previous years due to higher market interest rates. In the Czech Republic this has meant a return to five-year fixations, which are now predominant. Austria, Germany and the euro area as a whole saw a move away from fixations of over ten years and a rise in the share of floating rates or fixations for up to one year.

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



Note: The numbers in the legend stand for the fixation period in years; the ≤1 category also includes loans with a floating interest rate. The 2023 data are as of June.

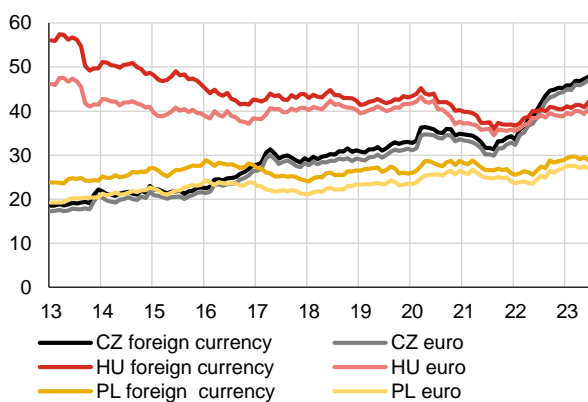
Source: ECB, CNB calculations

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### SPONTANEOUS EUROISATION

The share of foreign currency loans of Czech corporations is higher than in Poland and Hungary. However, its growth has slowed over the past year.

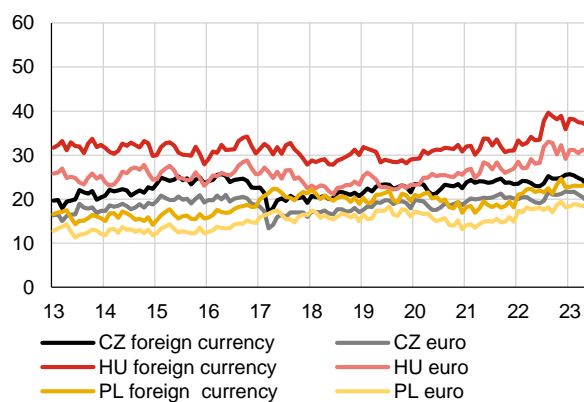
Foreign currency loans of non-financial corporations (shares in total loans to non-financial corporations with domestic banks, %)



Source: ECB, CNB calculations

The share of foreign currency deposits of corporations in the Czech Republic remains close to its long-term level.

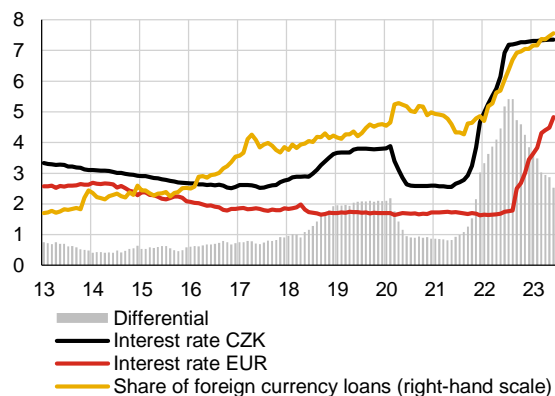
Foreign currency deposits of non-financial corporations (shares in total deposits of non-financial corporations with domestic banks, %)



Source: ECB, CNB calculations

**Growth in the share of euro-denominated loans of Czech corporations moderated partly due to a decrease in the interest rate differential between domestic and euro interest rates.**

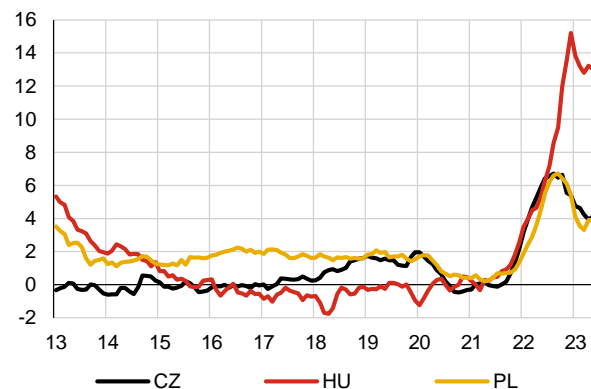
**Interest rates on koruna- and euro-denominated bank loans of Czech corporations (%)**



Source: CNB, CNB calculations.

**The interest rate differential declined in all Central European non-euro area countries this year.**

**Interest rate differentials on corporate loans in domestic currency and in euro (percentage points)**

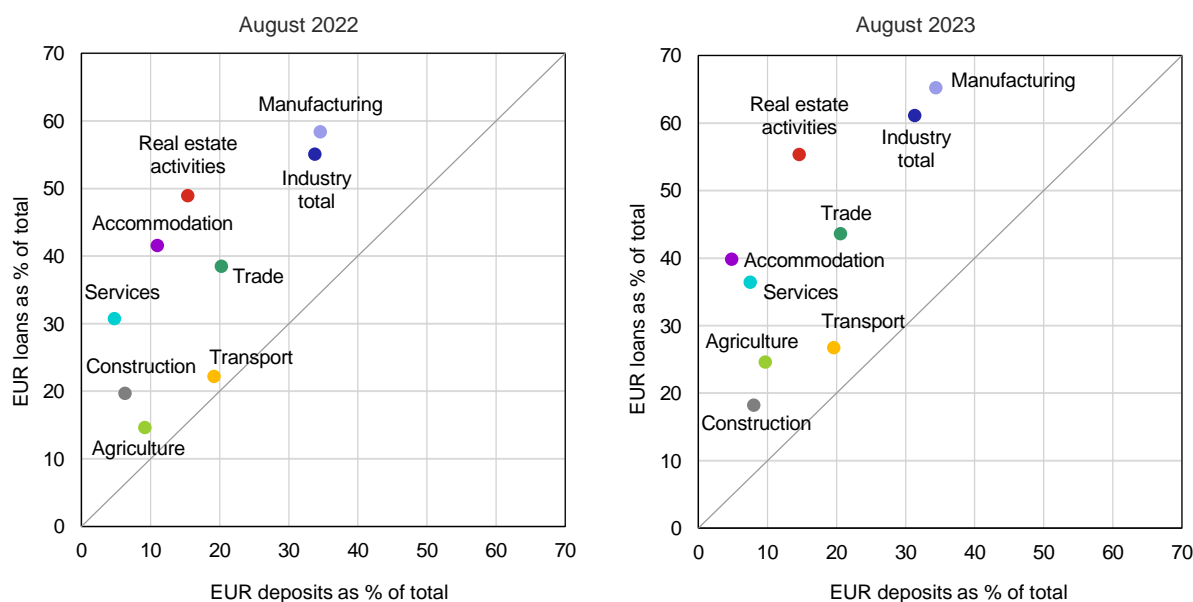


Note: 3M moving average. The data refer to new loans of over EUR 1 million with interest rates fixed for up to one year.  
Source: ECB, CNB calculations

**The euroisation of the Czech economy is asymmetrical in terms of loans and deposits. High shares of euro loans are recorded in manufacturing (65%) and real estate activities (e.g. activities connected with shopping centres, where rents are paid in euros). The share of euro loans in these sectors rose further compared to last year, but its growth rate moderated. In some sectors (e.g. wholesale and retail trade), the share of euro loans stabilised following a previous increase.**

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

(shares in total loans and deposits in given sector with domestic banks, %)

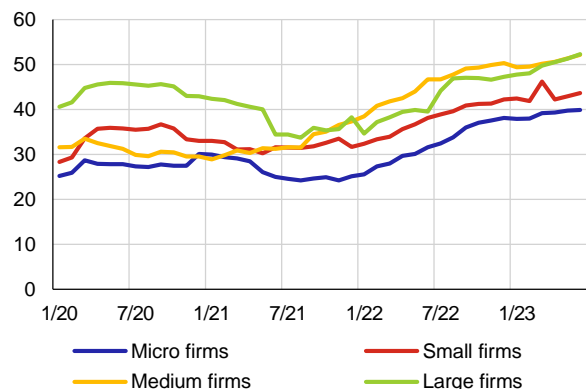


Note: The chart shows the evolution of the share of euro loans in individual sectors in August 2023 compared to August 2022, after which the intensity of its growth declined.

Source: CNB, CNB calculations

**Euro loans are mostly drawn by large and medium-sized companies.**

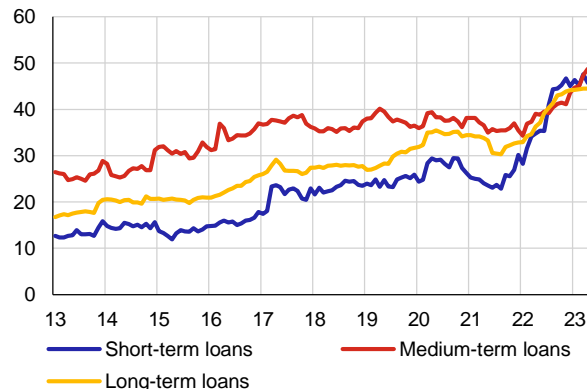
**Euro-denominated loans by company size**  
(shares in total loans in given category with domestic banks, %)



Source: CNB Anacredit, CNB calculations

**As regards maturity, growth in the share of short-term and long-term euro-denominated loans moderated, whereas the share of medium-term loans rose further.**

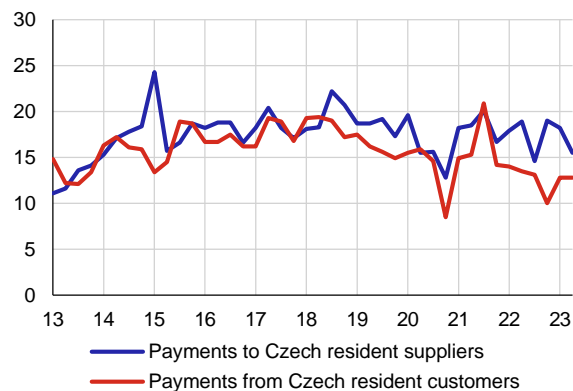
**Euro-denominated corporate loans by maturity**  
(shares in total loans in given category with domestic banks, %)



Source: CNB, CNB calculations

**The share of euro payments between Czech firms in selected sectors remains close to its long-term level.**

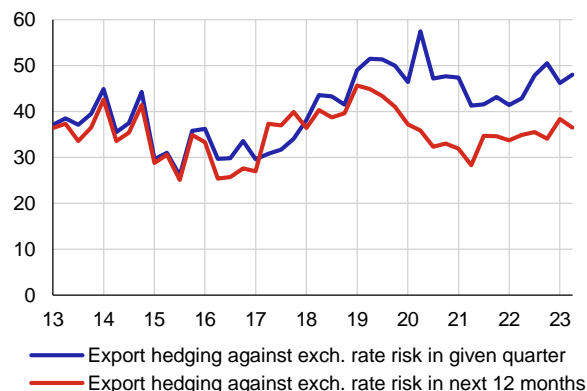
**Shares of euro payments between Czech firms**  
(%)



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

**The hedging of exports against exchange rate risk on the financial market has risen over the past year. Around 37% of exports are hedged at the one-year horizon and almost half in the given quarter.**

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

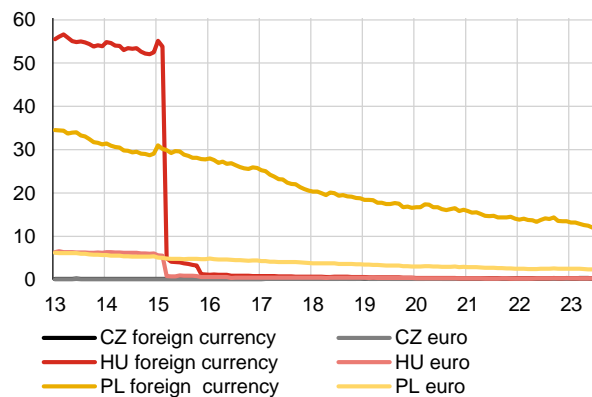


Source: Survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic

**The euroisation of households has long been very low in the Czech Republic: the share of foreign currency loans is 0.4% and the share of foreign currency deposits did not exceed 5% despite rising slightly.**

**Foreign currency loans of households**

(shares in total loans to households with domestic banks, %)

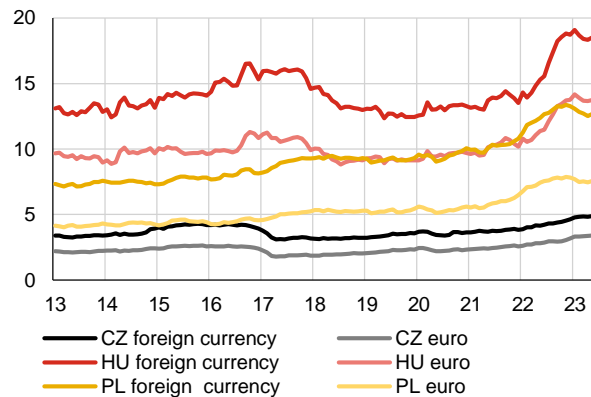


Note: The share of foreign currency loans in Hungary fell to zero in 2015 owing to administrative measures.

Source: ECB, CNB calculations

**Foreign currency deposits of households**

(shares in total deposits of households with domestic banks, %)



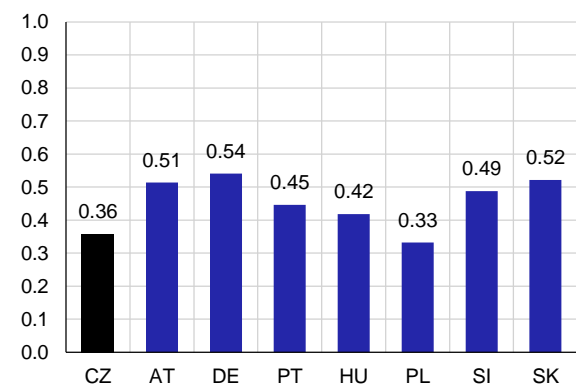
Source: ECB, CNB calculations

See the [Overall message of the analyses](#).

**INFLATION PERSISTENCE**

**Inflation persistence declined in all countries under review. In the Czech Republic, it is still one of the lowest. However, the difference compared to the euro area countries is not significant, and thus a common monetary policy would have similar impacts on inflation in this respect.**

**Inflation persistence estimates**







Note: Calculation for 2013 Q1–2023 Q2.

The closer the values are to one, the more persistent is inflation.

Source: Eurostat, CNB calculations.

### III.2 ADJUSTMENT MECHANISMS OF THE CZECH ECONOMY

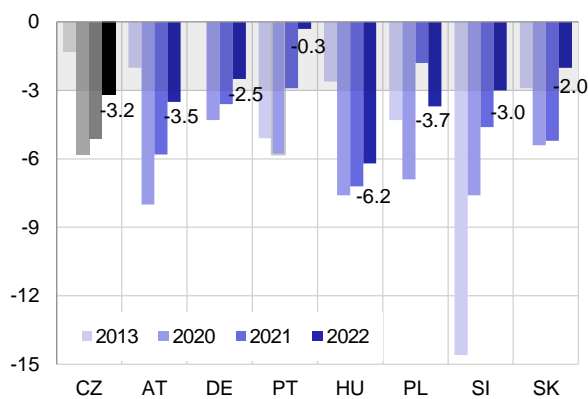
#### III.2.1 Fiscal policy

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

As the impacts of the pandemic faded out, the general government deficit fell in most of the countries under review last year. Nonetheless, the Czech Republic’s deficit exceeded the Maastricht criterion of 3%. A faster decline in the deficit was slowed due to the adoption of new measures relating to the energy and refugee crisis.

All the countries under review, except the Czech Republic, recorded a decline in general government debt relative to GDP last year. However, the Czech Republic’s debt remains well below the debt brake level and the Maastricht criterion on debt.

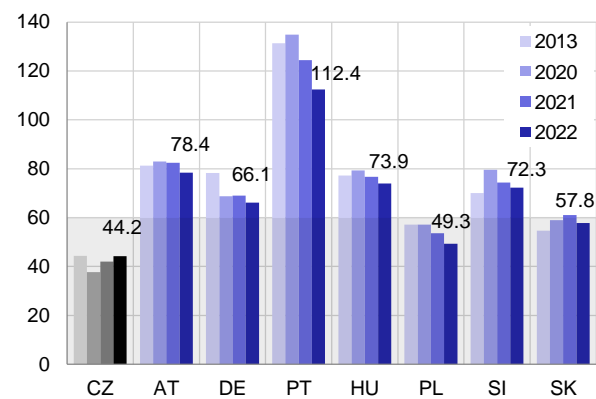
**General government balance**  
(% of GDP)



Note: Countries compliant with the Maastricht criterion (the Stability and Growth Pact) lie in the grey area.

Source: Eurostat

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

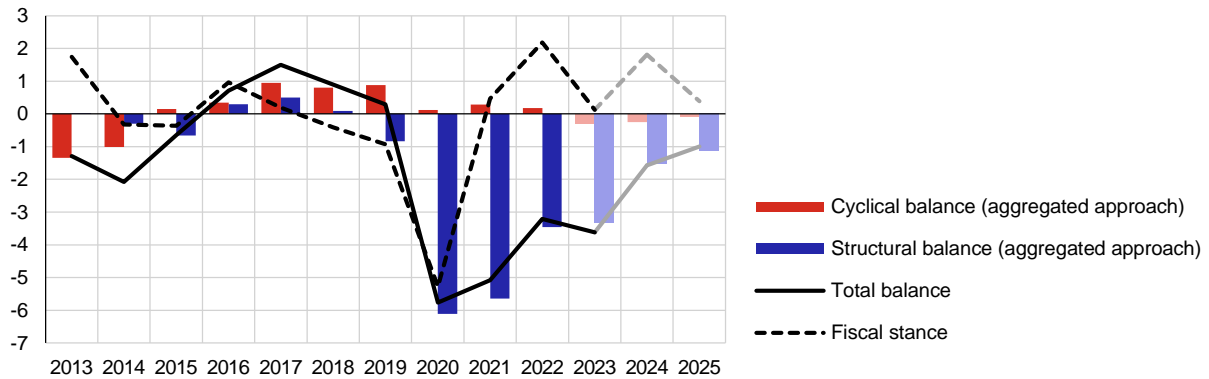


Note: Countries compliant with the Maastricht criterion (the Stability and Growth Pact) lie in the grey area.

Source: Eurostat

The implementation of a fiscal stabilisation policy to support households and firms during the Covid-19 pandemic led to a sharp increase in the structural deficit of Czech public finances. The subsequent adoption of new fiscal measures related to the refugee and energy crises, as well as the permanent adverse effect of some of the measures adopted in recent years, limited room for a faster return of the structural balance to the medium-term objective (MTO).

The Czech Republic’s general government balance, its cyclical and structural components, and the fiscal stance (% of GDP and percentage points)



Note: The fiscal stance measures the year-on-year change in the structural balance. The structural balance is the general government balance adjusted for the business cycle and one-off measures.

Source: CZSO (2013–2022), CNB calculations (2023–2025 forecast, decomposition into the cyclical component and the structural balance over the entire horizon)

After the unwinding of the fiscal costs of the pandemic and in the context of the economic recovery, the overall general government deficit fell significantly in almost all countries under review including the Czech Republic in 2022. The decline was less pronounced in the case of the cyclically adjusted balance.

General government balances, European Commission estimates (% of GDP)

	Total balance						Cyclically-adjusted balance					
	2013	2021	2022	2023	2024	2025	2013	2021	2022	2023	2024	2025
<b>CZ</b>	-1.3	-5.1	-3.2	-3.8	-2.4	-1.8	-0.2	-4.8	-3.1	-2.9	-1.5	-1.5
<b>AT</b>	-2.0	-5.8	-3.5	-2.6	-2.4	-2.2	-1.4	-4.5	-4.2	-2.3	-2.1	-2.1
<b>DE</b>	0.0	-3.6	-2.5	-2.2	-1.6	-1.3	0.5	-3.1	-2.6	-1.7	-1.1	-1.0
<b>PT</b>	-5.1	-2.9	-0.3	0.8	0.1	0.0	-2.8	-1.1	-1.0	0.0	-0.3	-0.3
<b>HU</b>	-2.6	-7.2	-6.2	-5.8	-4.3	-3.8	-1.1	-6.9	-6.6	-4.8	-3.5	-3.5
<b>PL</b>	-4.3	-1.8	-3.7	-5.8	-4.6	-3.9	-3.2	-2.2	-4.4	-5.3	-4.0	-3.5
<b>SI</b>	-14.6	-4.6	-3.0	-3.7	-3.3	-2.9	-10.9	-6.1	-4.5	-4.4	-3.6	-3.2
<b>SK</b>	-2.9	-5.2	-2.0	-5.7	-6.5	-6.8	-1.6	-5.3	-2.2	-5.6	-6.3	-6.7
<b>EA</b>	-3.1	-5.2	-3.6	-3.2	-2.8	-2.7	-1.2	-4.5	-4.0	-3.2	-2.8	-2.8
<b>CZ *)</b>	-1.3	-5.1	-3.2	-3.6	-1.6	-1.0	0.1	-5.4	-3.4	-3.3	-1.3	-0.9

Note: \*) Total balance: data according to the CZSO's statistics and notifications (autumn 2023) until 2022, and the CNB's forecast from Monetary Policy Report – Autumn 2023 for 2023–2025. The cyclically adjusted balance is calculated according to the aggregated approach.

Source: European Commission (2023a, 2023b), CNB (2023b)



### The Czech Republic is among the countries with a lower ratio of general government expenditures and revenues to GDP compared to the euro area.

Ratio of general government revenues and expenditures to GDP  
(2022, % of GDP)

	CZ	AT	DE	PT	HU	PL	SI	SK	EA
<b>Total revenues</b>	<b>41.4</b>	<b>49.6</b>	<b>47.0</b>	<b>43.8</b>	<b>42.6</b>	<b>40.2</b>	<b>44.1</b>	<b>40.2</b>	<b>46.9</b>
taxes	19.2	28.2	24.6	25.6	25.0	21.4	21.3	20.0	26.7
social contributions	16.0	15.2	17.2	12.2	9.9	13.7	16.3	14.9	14.8
<b>Total expenditures</b>	<b>44.6</b>	<b>53.2</b>	<b>49.5</b>	<b>44.1</b>	<b>48.8</b>	<b>43.9</b>	<b>47.2</b>	<b>42.3</b>	<b>50.5</b>
compensation of employees	10.2	10.4	7.9	10.7	10.3	9.8	11.4	10.6	9.9
intermediate consumption	5.8	7.2	6.1	5.5	8.6	6.4	6.6	6.0	5.9
social payments	13.8	18.2	16.0	16.5	10.4	15.0	16.0	14.5	16.7
gross fixed capital formation	4.7	3.4	2.6	2.4	5.4	4.1	5.4	3.0	3.0
interest expenditure	1.1	0.9	0.7	1.9	2.8	1.5	1.1	1.0	1.7

Source: Eurostat

### 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  
(%)

	2013	2015	2017	2018	2019	2020	2021	2022	2023	2024
<b>Shares of mandatory expenditure in total SB expenditure</b>	58.2	54.2	57.0	55.0	52.6	51.0	51.4	54.2	53.8	63.4
<b>Shares of quasi mandatory expenditure in total SB expenditure</b>	17.5	17.5	20.2	20.6	20.9	20.6	21.6	20.3	19.6	15.1
<b>Shares of mandatory expenditure in total SB revenue</b>	62.5	57.0	57.3	54.9	53.6	63.7	65.9	66.2	62.0	71.7
<b>Shares of quasi mandatory expenditure in total SB revenue</b>	18.8	18.4	20.3	20.6	21.3	25.8	27.7	24.9	22.6	17.0

Note: Actual data for 2013–2022, state budget projections for 2023–2024.

A methodological change in the classification of Ministry of Defence expenditure will come into effect in 2024. Following the enactment of the obligation for state budget defence spending of at least 2% of GDP, this expenditure moved from quasi-mandatory to mandatory expenditure.

Source: Ministry of Finance of the Czech Republic (2023)

**In 2022, debt service costs to GDP rose significantly in the Czech Republic as a result of an increase in general government debt and a sizeable pick-up in government bond yields on financial markets. However, the Czech Republic is still among the countries with a lower ratio by comparison with the countries under review and the euro area average.**

#### Debt service

(European Commission estimate, % of GDP)

	2013	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>CZ</b>	1.3	0.7	0.7	0.7	0.8	0.8	1.1	1.3	1.4	1.3
<b>AT</b>	2.6	1.8	1.6	1.4	1.3	1.1	0.9	1.2	1.4	1.4
<b>DE</b>	1.8	1.0	0.9	0.8	0.6	0.6	0.7	0.8	0.9	0.9
<b>PT</b>	4.8	3.8	3.4	3.0	2.9	2.4	1.9	2.0	2.2	2.3
<b>HU</b>	4.5	2.6	2.3	2.2	2.3	2.3	2.8	4.4	4.4	4.2
<b>PL</b>	2.6	1.6	1.4	1.4	1.3	1.1	1.5	2.1	2.2	2.3
<b>SI</b>	2.5	2.5	2.0	1.7	1.6	1.2	1.1	1.3	1.3	1.4
<b>SK</b>	1.9	1.4	1.3	1.2	1.2	1.1	1.0	1.0	1.2	1.3
<b>EA</b>	2.8	1.9	1.8	1.6	1.5	1.5	1.7	1.7	1.9	2.0

Source: European Commission (2023b)

**Adjustments to the Czech pension system in recent years have fostered a deterioration in what was already an adverse outlook for Czech public finance long-term sustainability. An amendment to the Pension Insurance Act approved this year and additional proposals for pension reform aim to reverse this unfavourable trend.**

#### Age-related general government expenditures

(% of GDP)

	Pensions		Health care		Long-term care		Total		Change 70-19
	2019	2070	2019	2070	2019	2070	2019	2070	
<b>CZ</b>	8.0	10.9	5.6	6.6	1.5	3.2	15.1	20.7	5.6
<b>AT</b>	13.3	14.3	6.9	8.1	1.8	3.5	22.0	25.9	3.9
<b>DE</b>	10.3	12.4	7.4	7.8	1.6	1.8	19.3	22.0	2.7
<b>PT</b>	12.7	9.5	5.7	7.3	0.4	0.8	18.8	17.6	-1.2
<b>HU</b>	8.3	12.4	4.8	5.6	0.6	1.2	13.7	19.2	5.5
<b>PL</b>	10.6	10.5	4.9	7.4	0.8	2.4	16.3	20.3	4.0
<b>SI</b>	10.0	16.0	5.9	7.4	1.0	2.2	16.9	25.6	8.7
<b>SK</b>	8.3	14.2	5.7	8.2	0.8	2.9	14.8	25.3	10.5
<b>EA</b>	12.1	12.1	6.7	7.6	1.7	2.6	20.5	22.3	1.8

Note: Adjustments to the pension system that lowered the sustainability of Czech public finances included: a change to the regular increases in old-age pensions (from 2018, the amount by which old-age pensions are increased takes into account one-half of the growth in the real wage instead of the previous one-third, plus inflation for all households or the increase in pensioners' living costs, whichever is higher), a ceiling on the retirement age at 65 years (in January 2018), an increase in the flat-rate component of pensions from 9% to 10% of the average wage and a bonus of CZK 1,000 a month for senior citizens aged over 85 (from 2019), a higher-than-usual (i.e. higher than the minimum mandatory) indexation of pensions in recent years, and an addition of a child-raising bonus to pensions from 2023.








The amendment to the Pension Insurance Act reduces the weight of real wage growth in the indexation equation back to one-third, implements a full transition to CPI in the indexation equation for pensioners' households, sets rules for extraordinary pension increases and tightens conditions for early retirement. Beyond this amendment, the pension reform involves discussions about switching to a variable retirement age depending on life expectancy, a joint assessment base for spouses and higher minimum contributions for the self-employed.

More recent data are not available.

Source: European Commission (2021)

See the [Overall message of the analyses](#).

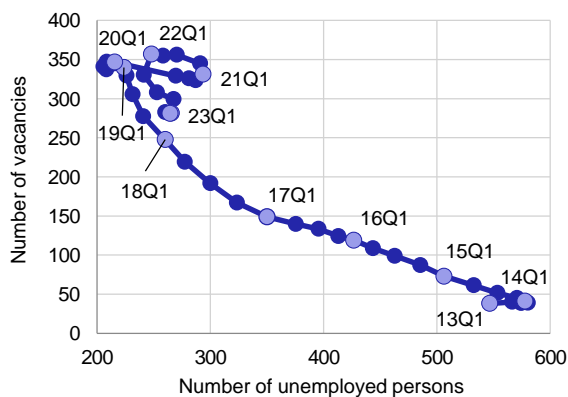
### III.2.2 The labour and products market

-  Geographical mobility
-  Rate of economic activity of the population
-  Share of part-time jobs in employment
-  Long-term unemployment rate
-  Unemployment trap
-  Labour market efficiency
-  Competitiveness of the Czech economy

The coronavirus crisis put an end to the downward trend in the number of unemployed persons and the upward trend in the number of job vacancies. In recent years, the number of unemployed persons has been between 200,000 and 300,000, while the number of job vacancies has been gradually decreasing. However, it still slightly exceeds the number of job seekers.

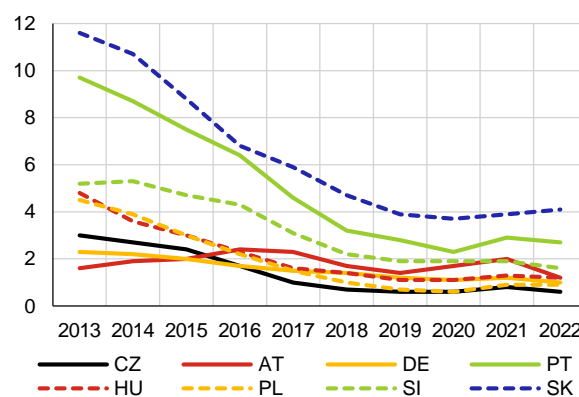
Following a slight increase in 2021, the long-term unemployment rate in the Czech Republic returned to its pre-pandemic level and remains the lowest among the monitored countries.

**Beveridge curve**  
(thousands)



Source: Ministry of Labour and Social Affairs, CNB calculations

**Long-term unemployment rate**  
(%)

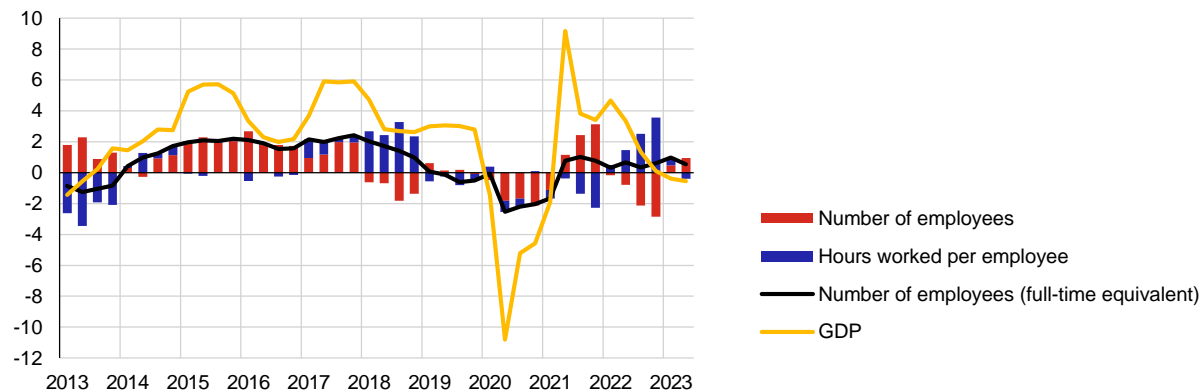


Note: Shares of persons unemployed for 12 months or more in the labour force (under ILO methodology).

Source: Eurostat

Following years of favourable economic developments, when the number of employees converted into full-time equivalents picked up, both the number of employees and average hours worked per employee started to fall with the onset of the coronavirus crisis. Growth in the converted number of employees resumed in 2021. The converted number of employees also continued to rise at a solid pace in 2023 H1, when GDP growth turned negative.

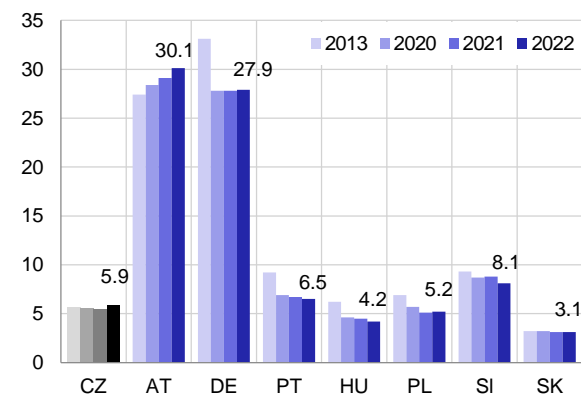
**Average hours worked per employee**  
(annual changes in %, contributions in pp)



Source: CZSO, CNB calculations

The share of persons working part-time in the Czech Republic rose slightly last year but is still well below the levels of Austria and Germany.

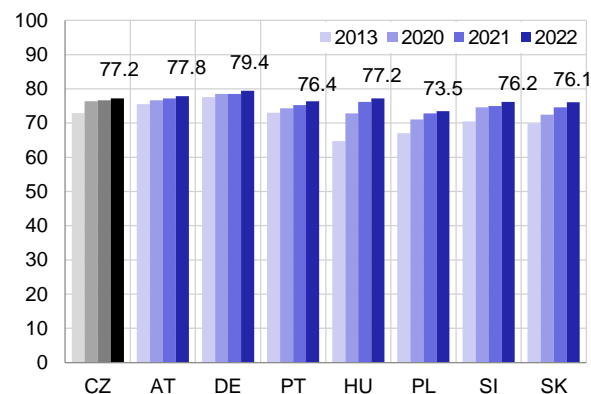
**Part-time employees**  
(%)



Source: Eurostat

The rate of economic activity of the population is relatively high in the Czech Republic and has been rising slightly in recent years. However, the participation rate of early-middle aged women is still low. This is related to long parental leave and the low share of part-time jobs.<sup>60</sup>

**Rates of economic activity in the 15–64 age category**  
(%)



Note: The rate of economic activity is the share of economically active persons (employed and unemployed) in the population in each age category.

Source: Eurostat (LFS)

<sup>60</sup> See Chart 4 in the thematic chapter [The labour market in the spotlight](#) in these Alignment Analyses.

The regional differences in the unemployment rate in the Czech Republic are medium-high compared to the other countries under review. They decreased significantly during the Covid crisis but have been rising again since 2021, reaching the pre-Covid level last year.

Coefficients of variation of the unemployment rate  
(%)

	NUTS II regions										NUTS III regions									
	12	13	14	15	16	17	18	19	20	21	12	13	14	15	16	17	18	19	20	21
<b>CZ</b>	31	30	33	33	30	34	38	26	30	38	32	30	33	34	32	36	41	29	33	41
<b>AT</b>	39	43	45	46	47	56	57	52	51	50	41	45	47	49	49	57	58	54	53	54
<b>DE</b>	39	39	37	32	32	31	28	26	23	24	46	-	-	-	-	-	-	-	41	42
<b>PT</b>	16	13	14	14	13	12	13	13	9	14	-	-	-	-	-	-	-	-	18	17
<b>HU</b>	21	31	34	42	46	44	44	37	43	48	25	36	37	47	51	52	54	44	52	57
<b>PL</b>	18	19	21	26	30	35	29	30	29	33	27	27	29	33	37	43	39	39	42	47
<b>SI</b>	-	-	-	-	-	-	-	-	-	-	19	22	21	21	17	26	24	23	18	24
<b>SK</b>	29	28	26	29	37	41	-	-	-	-	31	30	31	33	42	45	46	43	48	53

Note: The coefficient of variation is the ratio of the standard deviation weighted by region size to the average unemployment rate in per cent. Higher levels of the coefficient of variation represent greater regional differences in unemployment. Some data are not available.

Source: Eurostat (LFS)

The willingness of the domestic population to migrate within the Czech Republic has been roughly stable over the last 10 years, at around half the level of Germany and Austria.

Internal migration  
(per 1,000 inhabitants)

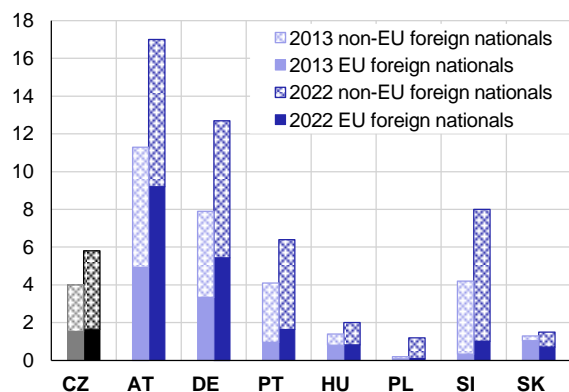
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	22	23	23	24	23	23	23	22	24	23
<b>AT</b>	39	40	43	44	42	41	40	40	41	44
<b>DE</b>	48	49	53	54	48	48	47	45	46	-
<b>HU</b>	19	22	22	26	27	29	29	27	32	30
<b>PL</b>	11	11	10	10	11	12	12	11	12	-
<b>SI</b>	55	55	53	54	54	50	47	67	53	62
<b>SK</b>	16	17	17	18	18	18	18	16	17	19

Note: Migration between municipalities (HU, PL and SI – all changes in permanent residence). Data for Portugal are not available over the entire observed horizon. Data for Germany and Poland for 2022 will be available after the publication of this document. 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 via an increasing share of foreign nationals in the population. This year's figures can be expected to reflect the arrival of refugees fleeing the war in Ukraine.

**Shares of foreign nationals in the population**  
(%)

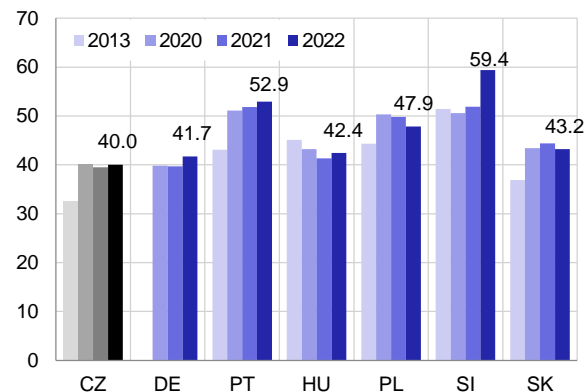


Note: Data on the population as of 1 January of the given year are used in the calculation. Therefore, the 2022 data do not include Ukrainian refugees. They will be included in the 2023 data.

Source: Eurostat, CNB calculations

The ratio of the minimum wage to the average wage in the Czech Republic has been around 40% since 2020 and should stay at that level this year. It will thus remain below the levels recorded in the other monitored countries.

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



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

Source: Eurostat

Overall labour taxation was relatively high in the Czech Republic until 2020 but decreased significantly in 2021 after the implementation of tax changes. It is now among the lowest in the countries under review.

**Overall labour taxation**  
(%)

	100% of average wage						67% of average wage					
	2013	2018	2019	2020	2021	2022	2013	2018	2019	2020	2021	2022
<b>CZ</b>	42.4	43.7	44.0	44.1	40.0	39.8	39.4	41.4	41.7	41.9	37.7	37.4
<b>AT</b>	49.2	47.6	47.9	47.5	47.8	46.8	44.6	43.3	43.6	42.9	43.3	41.9
<b>DE</b>	49.3	49.5	49.3	48.8	48.1	47.9	45.1	45.3	45.2	44.7	44.3	43.7
<b>PT</b>	41.4	40.9	41.4	41.5	41.9	41.9	34.8	35.2	35.0	34.1	34.2	31.3
<b>HU</b>	49.0	45.0	44.6	43.6	43.2	41.2	49.0	45.0	44.6	43.6	43.2	41.2
<b>PL</b>	35.6	35.8	35.6	34.8	34.9	33.6	35.2	36.7	37.1	37.3	37.6	38.0
<b>SI</b>	42.4	43.2	43.5	43.2	43.5	42.8	38.5	39.8	40.3	40.2	40.4	39.7
<b>SK</b>	41.3	41.9	41.9	41.3	41.5	41.6	38.7	39.7	39.7	39.0	39.2	39.5

Note: Income tax and contributions paid by employees and employers as a percentage of total labour costs. Data for employees (childless individuals) earning 100% (left-hand part of the table) and 67% (right-hand part of the table) of the average wage. The reduction in labour taxation in the Czech Republic was due mainly to the abolition of the “super-gross wage” as the tax base with effect from 2021.

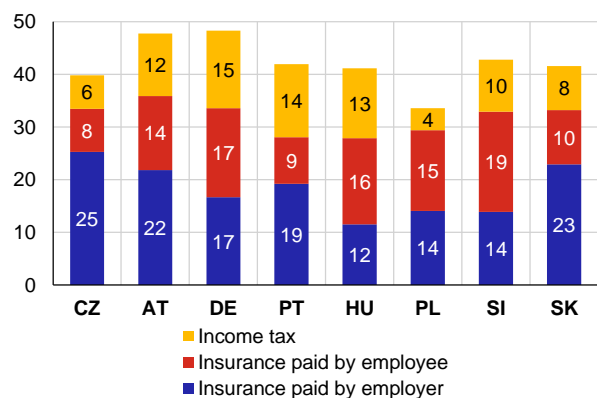
Source: OECD

In particular, high insurance contributions paid by employers contribute to labour taxation in the Czech Republic. The contribution of income tax is among the lowest in the countries under review owing to the abolition of the “super-gross wage”.

Before the income tax cuts, the overall implicit labour taxation rate in the Czech Republic was one of the highest among the countries under comparison. In 2021, it fell roughly to the level observed in Germany.

**Components of labour taxation**

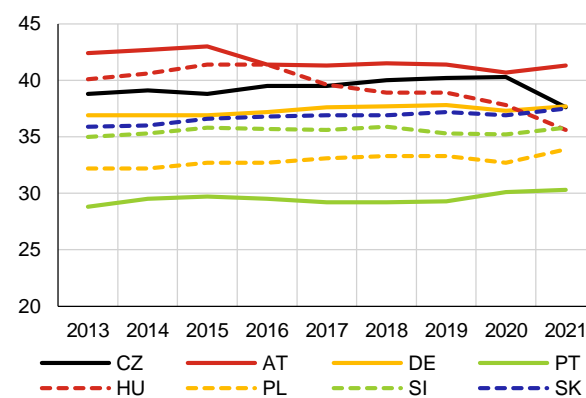
(2022, % of average wage)



Source: OECD

**Implicit labour taxation rates**

(%)



Note: The implicit labour taxation rate is defined as the sum of all direct and indirect taxes and social security contributions of employees and employers paid from wages, divided by the total compensation of employees plus income tax. More recent data are not available.

Source: Eurostat

Tax changes in 2021 led to a slight improvement in the unemployment trap indicator, the configuration of the Czech tax and social system thus leads to a relatively strong incentive to return from unemployment to employment by comparison with the other countries under review.

**Unemployment trap**

(%)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	71.6	71.7	71.8	72.0	72.3	72.5	72.7	72.8	70.8	70.7
<b>AT</b>	74.6	74.3	73.9	72.0	72.1	71.7	71.2	70.5	70.2	69.6
<b>DE</b>	73.0	73.1	73.1	73.3	73.3	73.2	73.2	73.0	72.8	72.8
<b>PT</b>	79.9	79.8	80.3	80.3	80.4	80.4	80.6	80.6	80.7	80.8
<b>HU</b>	78.8	78.6	78.4	78.1	78.5	78.5	77.1	76.4	73.3	76.0
<b>PL</b>	80.4	78.9	78.0	77.2	75.6	74.6	73.5	71.4	76.1	74.5
<b>SI</b>	89.8	89.7	89.7	89.7	91.0	91.7	91.6	90.0	86.9	83.9
<b>SK</b>	69.6	69.8	70.0	70.3	70.7	71.1	70.2	70.5	71.0	71.5

Note: The unemployment trap measures the proportion of additional gross income associated with finding employment that is paid to public budgets 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.

Source: European Commission (Tax and benefits)

**After a wage increase from 67% to 100% of the average income, about one-fifth of the additional gross income is paid to public budgets due to the configuration of the tax and social system, which is much less than in previous years. This is the lowest level among the countries under comparison.**

#### Low wage trap

(%)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	43.0	41.3	38.4	39.0	41.1	47.3	46.2	45.8	34.4	20.8
<b>AT</b>	58.4	57.2	55.7	48.8	48.4	46.9	44.5	44.7	45.1	44.0
<b>DE</b>	49.2	47.9	46.6	55.1	53.8	51.3	49.6	57.8	55.6	54.8
<b>PT</b>	26.6	25.5	25.5	24.0	25.9	27.2	28.3	29.6	30.5	31.4
<b>HU</b>	22.9	25.9	25.9	33.5	33.5	33.5	33.5	33.5	33.5	33.5
<b>PL</b>	46.7	47.4	53.4	54.6	54.4	86.6	91.5	59.0	58.6	39.7
<b>SI</b>	49.7	49.8	36.7	33.2	35.4	38.7	67.8	65.6	55.3	47.1
<b>SK</b>	21.5	22.5	23.4	24.5	26.0	27.9	28.2	27.0	28.8	29.9

Note: The low wage trap measures the proportion of additional gross income that is paid to public budgets due to the combined impact of income taxes, social security contributions and the loss of benefits when gross income increases from 67% to 100% 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.

Source: European Commission (Tax and benefits)

**After moving from inactivity to employment at 67% of the average wage, about one-third of the additional gross income is paid to public budgets. This is the average level among the countries under review.**

#### Inactivity trap

(%)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>CZ</b>	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	25.0	33.2
<b>AT</b>	30.8	31.1	31.4	28.4	28.7	29.1	20.5	19.7	20.4	19.3
<b>DE</b>	45.8	46.0	46.1	46.1	46.1	46.1	45.2	45.0	43.8	43.8
<b>PT</b>	34.4	34.5	29.5	35.0	34.9	32.5	33.2	32.1	32.9	32.4
<b>HU</b>	34.5	34.5	34.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5
<b>PL</b>	37.0	37.0	37.1	55.9	54.7	37.2	33.4	31.9	31.9	34.7
<b>SI</b>	50.9	50.7	57.0	57.5	57.6	55.2	52.4	51.6	50.9	52.6
<b>SK</b>	29.9	29.9	29.9	29.9	29.9	29.9	28.7	29.1	29.1	29.1

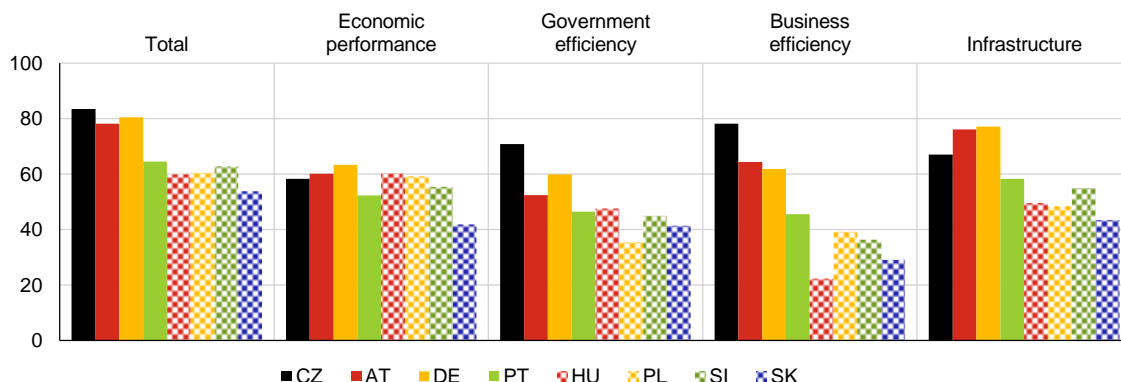
Note: The inactivity trap measures the proportion of additional gross income that is paid to public budgets due to the combined impact of income taxes, social security contributions and the loss of benefits following the return from economic inactivity to work. The figures are based on a model example of an individual with a wage of 67% of the average wage, living with a partner earning 100% of the average wage and two children. This configuration aims to be as close as possible to a person returning from maternal/parental leave to work, the statistics are therefore intended to proxy for the “maternal leave trap”. However, the age of the children is unknown, so this may not accurately reflect the situation of a parent after maternal/parental leave.

Source: European Commission (Tax and benefits)



**In an international comparison based on the IMD World Competitiveness Booklet, the Czech Republic has improved its competitiveness compared to last year and is on par with Germany and Austria.**

**World Competitiveness Booklet – overall index and main factors of competitiveness**  
(2023)

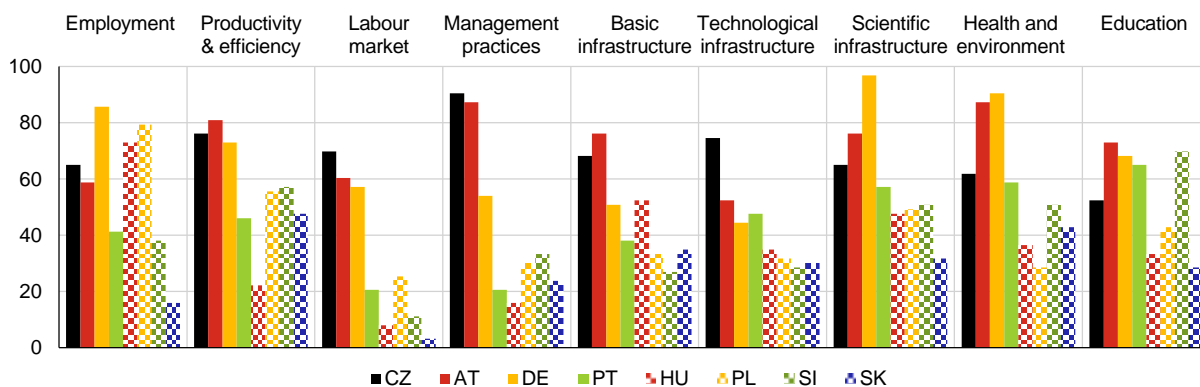


Note: A higher value denotes higher competitiveness in the given area. Official scores by the publisher are shown, with the overall index being normalised to a scale of 0–100 (for this reason, it is higher than the average of the scores for the four factors).

Source: International Institute for Management Development (2023)

**In selected subfactors, the competitiveness of the Czech economy is also solid by comparison with the countries under review.**

**World Competitiveness Booklet – selected subfactors**  
(2023)






Note: The score for each subfactor is derived from the country's ranking in a survey of 64 countries and normalised to a scale of 0–100. A higher value denotes higher competitiveness in the given area (100 denotes rank 1, while 0 denotes rank 64).

Source: International Institute for Management Development (2023), CNB calculation

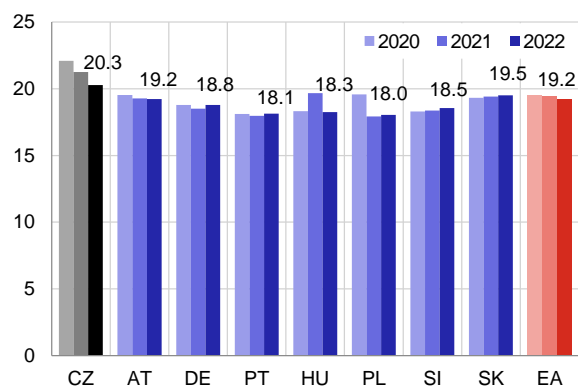
See the [Overall message of the analyses](#).

### III.2.3 The banking sector

-  Capital position
-  Profitability
-  Liquidity position
-  Credit risk

The overall capital ratio of the Czech banking sector continues to exceed the other monitored countries, indicating high resilience.

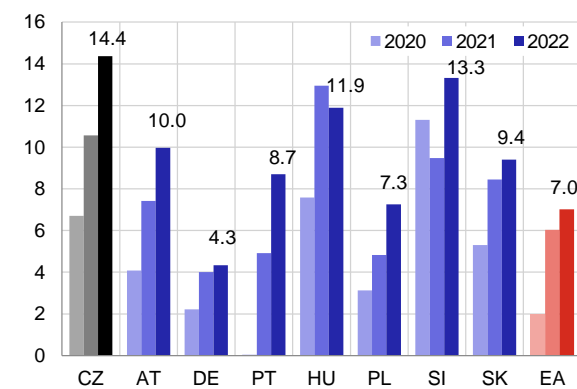
**Overall capital ratio**  
(%)



Note: The ratio of banks' capital to their risk-weighted assets.  
Source: ECB

Return on equity picked up in all the countries under review except Hungary. It is highest in the Czech Republic.

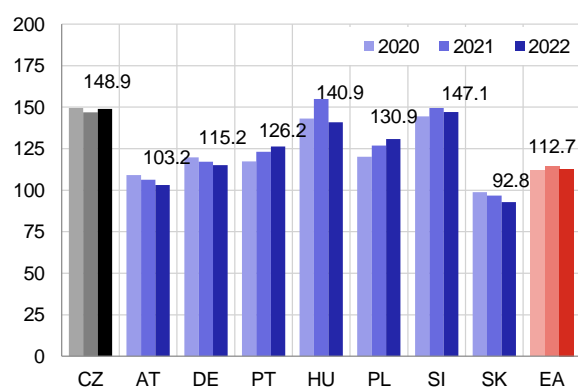
**Return on equity (RoE)**  
(%)



Source: ECB

The liquidity position of the domestic banking sector remains robust due to a high proportion of liquid assets and stable funding sources.

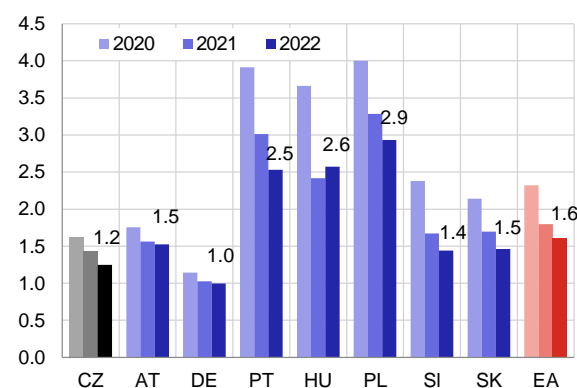
**Deposit-to-loan ratios**  
(%)



Note: Deposits/loans to residents.  
Source: ECB

The non-performing loan ratio fell across countries (with the exception of Hungary); the Czech Republic is among the countries with a lower ratio.







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



Source: ECB

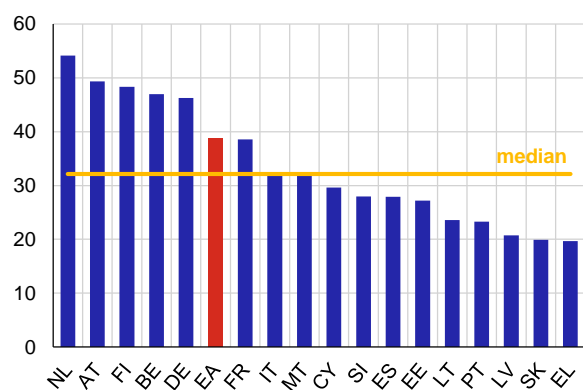
See the [Overall message of the analyses](#).

### III.3 ECONOMIC ALIGNMENT OF EURO AREA COUNTRIES

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

**Economic performance remains very mixed across euro area countries also due partly to the shocks in previous years...**

**GDP per capita in euro area countries**  
(2022, GDP at current prices in EUR thousands)

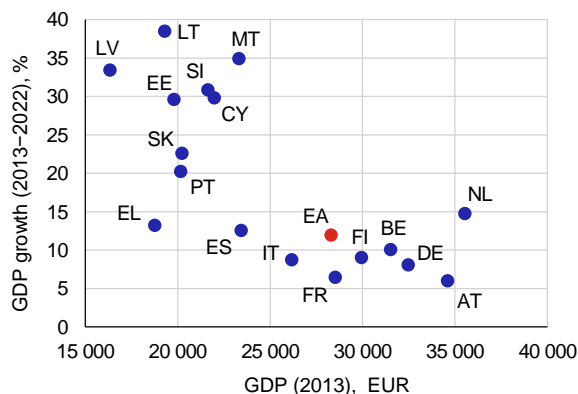


Note: Ireland and Luxembourg are not included in either of the charts due to the many specificities of their economies, which result in exceptionally high GDP per capita.

Source: Eurostat

**...but real convergence is still visible in the newest and comparatively less developed euro area economies.**

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

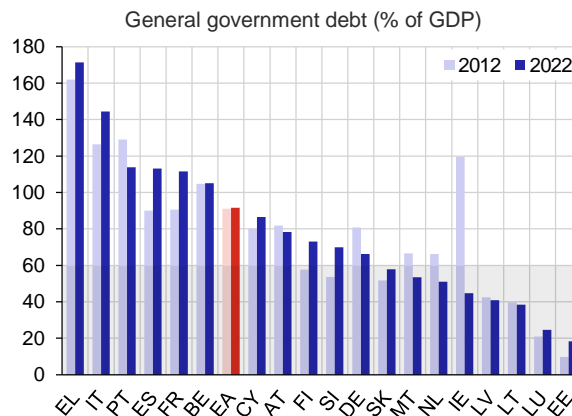
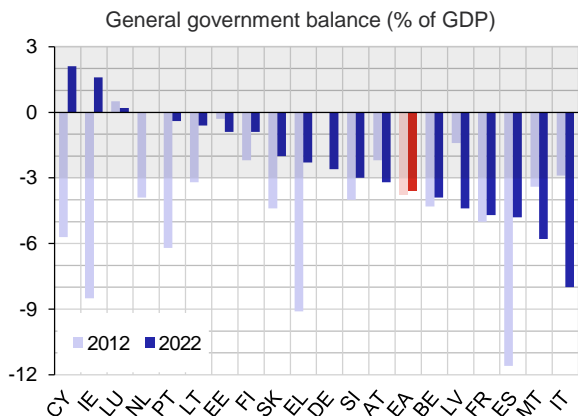


Note: The chart depicts the relation between GDP growth per capita in each country and its initial level (beta-convergence). The x-axis shows GDP per capita in purchasing power parity (PPP) and the y-axis shows real GDP growth.

Source: Eurostat

The ratio of the general government deficit to GDP decreased in most euro area countries in 2022 due to the removal of anti-pandemic measures. However, the war in Ukraine and the related increase in energy prices was an additional shock, requiring new fiscal support measures. As in the past, the government debt-to-GDP ratio thus remains generally high, especially in the southern euro area countries.

Fiscal situation of euro area countries



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) captures the negative fiscal effects of the financial crisis (such as rescue programmes in banking sectors financed from state budgets).

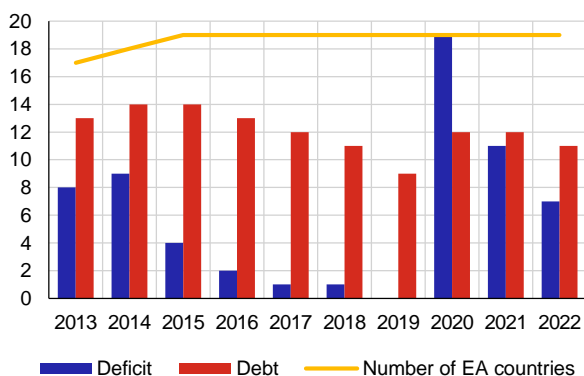
Source: Eurostat

The euro area continues to struggle with fiscal imbalances. The deficit situation has improved slightly since the pandemic, but the debt burden remains largely elevated.

In 2022, only six euro area countries were compliant with both the debt and deficit criteria, just a very small improvement compared to five from the previous year.

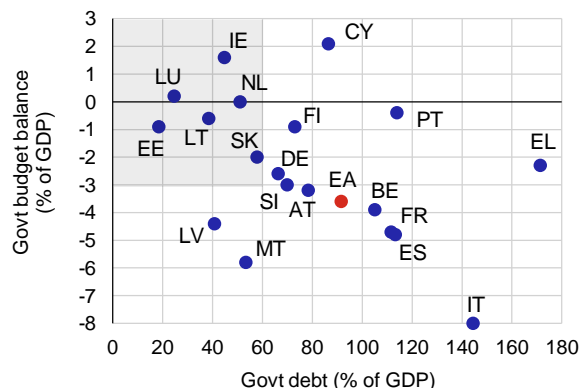
Non-compliance with the fiscal criteria

(number of countries non-compliant with the fiscal criteria)



Fiscal positions of euro area countries

(2022)



Note: Number of countries non-compliant with the deficit and debt criteria.

Source: Eurostat, CNB calculations

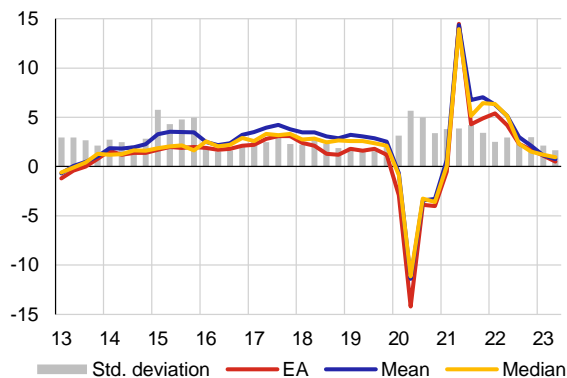
Note: Countries compliant with the Stability and Growth Pact lie in the grey area.

Source: Eurostat

**Public finances could not rely on economic growth, as it weakened substantially during 2022. High energy prices dampened expenditure and production; weakening demand and tight monetary policy amid declining confidence and uncertainty is also pushing GDP growth down this year.**

**The labour market continued to recover from the pandemic last year and was resilient overall despite the war in Ukraine. The unemployment rate was close to all-time lows in the second half of last year despite the economic downturn; it decreased slightly further this year.**

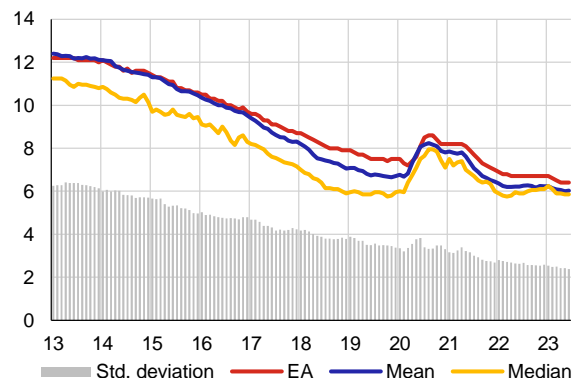
**Real GDP growth in euro area countries**  
(y-o-y, %)



Note: The quarterly series “mean” depicts the unweighted arithmetic mean of GDP growth in the given quarter across euro area countries. The source series are seasonally adjusted.

Source: Eurostat, CNB calculations

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



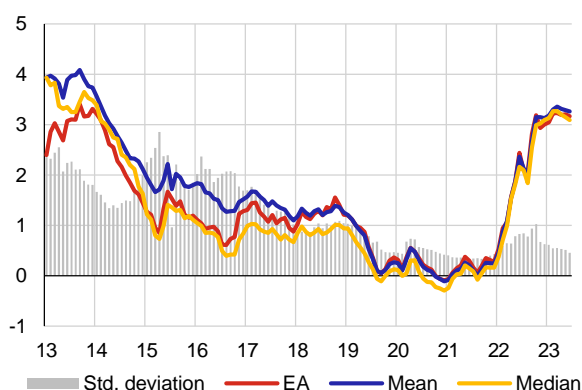
Note: The quarterly series “mean” depicts the unweighted arithmetic mean of unemployment in the given month across euro area countries. The source series are seasonally adjusted.

Source: Eurostat, CNB calculations

**Despite considerable volatility, the long-term government bond yields in the euro area rose markedly overall last year. This was due mainly to the tightening of ECB monetary policy in the fight against unusually high inflation. They stabilised above 3% at the start of this year.**

**In the context of the ECB’s steps and the overall economic developments, client loan rates also picked up significantly last year. Although they were still at all-time lows in early 2022, they rose sharply from mid-2022 onwards and continue to increase in 2023.**

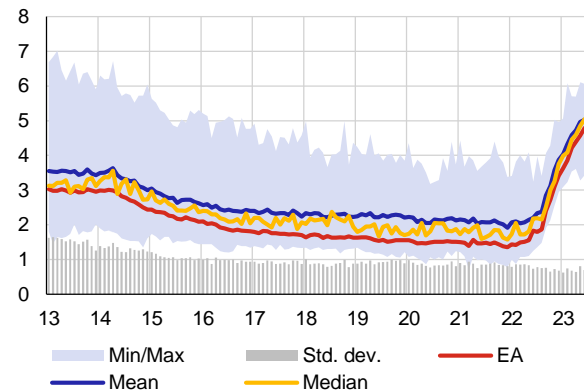
**Long-term government bond yields in euro area countries**  
(%)



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 monthly EA series is a weighted average of ten-year euro area government bonds.

Source: Eurostat, ECB (FM database), CNB calculations

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

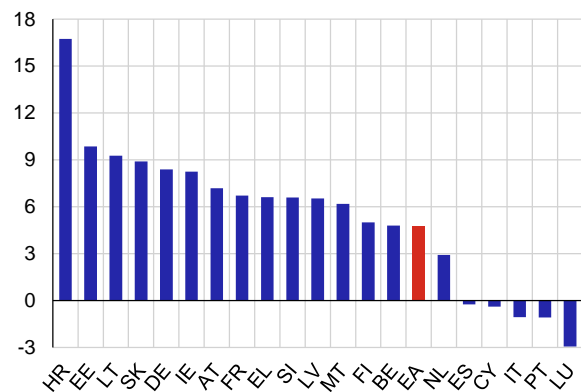


Note: The composite indicator comprises a weighted average of short-term and long-term loans to non-financial corporations. The time series are monthly.

Source: ECB (MIR database), CNB calculations

**Bank loans to non-financial corporations increased in most euro area countries. However, credit growth moderated compared to last year as a result of tighter lending reflecting the increasing level of interest rates.**

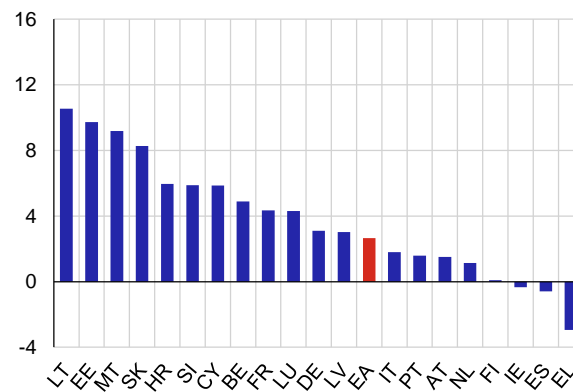
**Growth in bank loans to domestic non-financial corporations**  
(2023 H1, y-o-y, %)



Note: Average annual growth in loans provided by monetary financial institutions in the first six months of 2023.  
Source: ECB (BSI database), CNB calculations

**The growth rates of bank loans to households also weakened across euro area countries. They were affected not only by the tight lending conditions amid weak economic growth, but also by lower consumer confidence.**

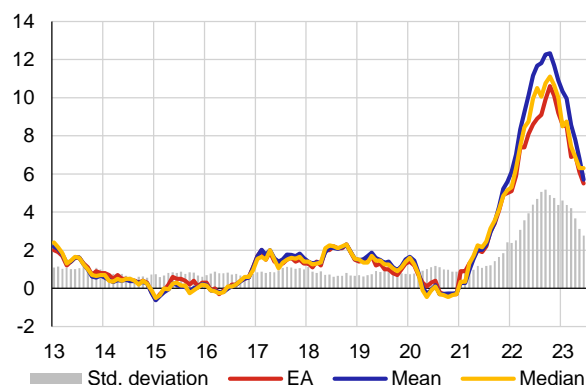
**Growth in bank loans to households**  
(2023 H1, y-o-y, %)



Note: Average annual growth in loans provided by monetary financial institutions in the first six months of 2023.  
Source: ECB (BSI database), CNB calculations

**The euro area saw a further sharp increase in headline inflation in 2022, driven mainly by high growth in energy and food prices, accompanied by rising divergence across countries. Thanks to the fading out of the shocks, inflation is slowing this year from last year's peak of over 10%.**

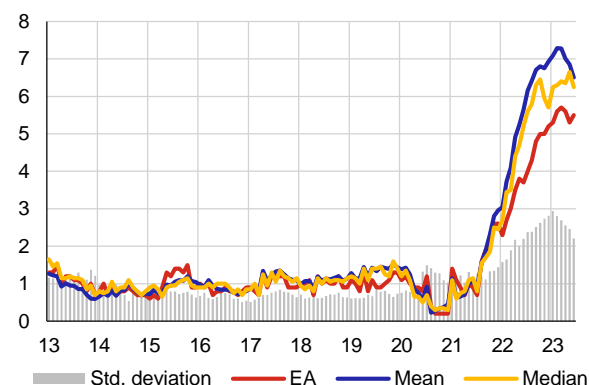
**Headline inflation in euro area countries**  
(y-o-y, %)



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

**Euro area core inflation also reached record highs; it rose sharply during last year and this year has so far not seen any significant improvement. From its long-term level of around 1%, core inflation rose to more than 5%, ...**

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

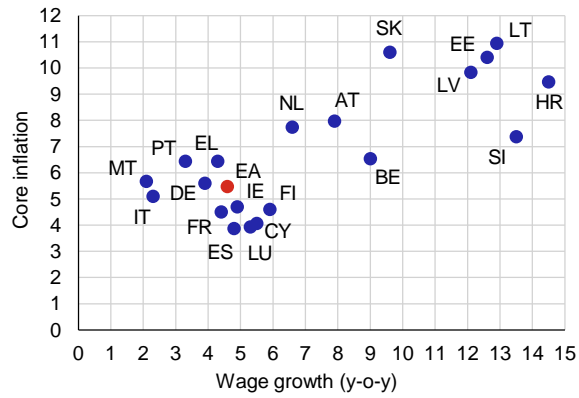


Note: The series "mean" depicts the unweighted arithmetic mean of inflation in the given period across euro area countries.  
Source: Eurostat, CNB calculations

...and its dispersion across euro area countries was accompanied by differences in wage growth rates.

**Growth in wage costs and core inflation**

(y-o-y growth rates in 2023 Q2, %)



Note: The wage growth series are seasonally adjusted.

Source: Eurostat

See the [Overall message of the analyses](#).

## IV. THEORETICAL FOUNDATIONS OF THE ANALYSES

*The basic theoretical starting point for examining whether individual countries are good candidates for introducing a single currency is the theory of optimum currency areas.<sup>61</sup> In the context of the creation of the single European currency, knowledge of this theory is often used to assess the appropriateness of the adoption of the euro by the existing euro area countries and the rationality of the same step for the new EU Member States.<sup>62</sup> Factors that contribute to the benefits of the single currency (compared to a free nominal exchange rate) make up the set of optimum currency area properties.*

**Economists agree on the general fundamental costs and benefits of introducing a single currency, but the significance of the individual arguments may change over time or depending on the specific features of the economies concerned.** The benefits include reduced international trade costs, in particular the elimination of exchange rate risk and the costs of hedging against it, as well as lower transaction costs and easier-to-compare prices. The costs include non-recurring ones stemming from the change of legal tender and long-term ones due to the risk of greater volatility in economic activity and consumption as a result of the loss of independent monetary policy and to a reduction in the effectiveness of domestic macroeconomic policy.

**The key features determining the suitability of a country's participation in a currency area are similarity of transmission mechanisms and a high degree of economic integration.** Similarity of transmission mechanisms ensures that the single monetary policy will not have different macroeconomic impacts in different parts of the monetary union. A high degree of economic integration increases the benefits arising from the single currency, as trade and investment barriers are eliminated. The latest empirical studies do indeed confirm that the introduction of the single currency has a positive effect on international trade.

**The original literature was fairly optimistic as regards the effects of the single currency on trade.<sup>63</sup>** However, later studies – such as Baldwin (2006) – were more sceptical, and Havránek (2010) even finds in a meta-analysis that the effect of euro adoption on trade between euro area countries is not statistically significant and with high probability is less than 5%. The latest studies return to positive but lower estimates.<sup>64</sup>

**The latest empirical literature has revealed considerable heterogeneity in the effects of the introduction of the single currency on trade.<sup>65</sup>** This heterogeneity pertains to both cross-country and cross-sector impacts. The effects of the single currency on trade are typically lower if a sector or country is already heavily involved in international trade before joining the monetary union. They are also lower for large economies and low or non-existent if the country had a fixed exchange rate before introducing the single currency.<sup>66</sup> The heterogeneity of effects across countries and sectors can help explain the conflicting findings of previous studies.

**Business cycle alignment and similarity of shocks reduce the costs of giving up certain adjustment mechanisms on entering the monetary union.** This is because aligned business and financial cycles mean that the single monetary policy is appropriate for all members of the monetary union. Mutual trade and structural similarity align business cycles, while differences in labour market regulation and differences in fiscal and structural policies reduce their alignment.<sup>67</sup> A further deepening of coordination of structural policies across countries is therefore important for greater alignment of business cycles in the euro area.<sup>68</sup>

**The costs of joining the monetary union also depend on the economy's ability to make use of other adjustment mechanisms.** These mechanisms include labour and product market flexibility and countercyclical fiscal policy. A flexible labour market and a mobile labour force can at least partly offset persisting asymmetric shocks in the monetary union. The loss of independent monetary policy can be offset to some extent by the use of

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<sup>61</sup> Mundell (1961), McKinnon (1963) and Kenen (1969) are regarded as the cornerstones of this theory. A newer literature survey can be found, for example, in De Grauwe (2013).

<sup>62</sup> In addition to economic arguments, the decision to adopt the euro is motivated by political and social demand, as analysed, for example, in Eichengreen (2008) and Spolaore (2013).

<sup>63</sup> Rose (2000), for example, found effects amounting to hundreds of per cent.

<sup>64</sup> Glick and Rose (2016), Rose (2016).

<sup>65</sup> Chen and Novy (2018), Vicquery (2021).

<sup>66</sup> Lalinský and Meriküll (2021).

<sup>67</sup> Duran and Ferreira-Lopes (2015), Inklaar et al. (2008).

<sup>68</sup> Lukmanova and Tondl (2017).



fiscal policy. However, the countercyclical effect of fiscal policy is critically dependent on the shape of public finances, i.e. on whether fiscal policy has the necessary room for manoeuvre.<sup>69</sup>

**Temporary effects of euro adoption may also be important for acceding countries.** These effects include a fall in the risk premium, an easing of the credit conditions and changes in productivity in the tradable and non-tradable sectors.<sup>70</sup> Another potential cost for converging countries is a persisting inflation differential,<sup>71</sup> which may be reflected in a fall in real rates and thus have a temporary destabilising effect on the economy via macrofinancial linkages.<sup>72</sup>

**The general principles are confirmed by analyses based on structural macroeconomic models.**<sup>73</sup> The conclusion of the model analyses is that the costs increase as domestic demand shocks (fiscal shocks in particular) grow in importance and decrease as the degree of trade integration increases. For example, a simulation of the costs of euro adoption in Central European countries using a DSGE model concludes that the costs of the loss of independent monetary policy are high for the Czech Republic and Poland relative to Hungary because of the large significance of domestic demand shocks, such as shocks to government consumption.<sup>74</sup>

**The attractiveness of entering the monetary union is also related to the effectiveness of its institutions.**<sup>75</sup> Studies point out that the main problem in the euro area was weak political integration,<sup>76</sup> as fiscal rules can only be effective if there is an institution to enforce them (however, the solution does not have to be a full fiscal union).<sup>77</sup> On the other hand, some studies argue that the euro area may be functioning and beneficial to all members even without a fiscal union, but only provided that rescue mechanisms are introduced within the banking union.<sup>78</sup> However, uncertainty about the future functioning of euro area institutions provides a rationale for new Member States to consider their entry thoroughly and to wait at least until the rules of operation of euro area institutions are clarified before joining the monetary union.<sup>79</sup>

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<sup>69</sup> Romer and Romer (2018), Babecká Kucharčuková and Brůha (2017).

<sup>70</sup> Ahrend et al. (2008) and Lin and Treichel (2012) point out that an excessive decrease in long-term interest rates (compared to that implied by the Taylor rule under independent monetary policy) after the adoption of the single currency in some economies gave rise to bubbles in asset markets, property markets in particular. Overvaluation of the real exchange rate, identified for Greece, Ireland and Portugal by El-Shagi et al. (2016), may also be a risk to macroeconomic stability.

<sup>71</sup> Brůha and Podpiera (2007).

<sup>72</sup> Examples for individual countries can be found in Martin (2010), Hampl and Skořepa (2011) and Lin and Treichel (2012).

<sup>73</sup> For example, Ferreira-Lopes (2010) explores the costs of euro adoption for Sweden and the UK, concluding that the costs of euro adoption would outweigh the benefits in these countries.

<sup>74</sup> Ferreira-Lopes (2014).

<sup>75</sup> For example, De Grauwe (2010a,b).

<sup>76</sup> Razin and Rosefielde (2012).

<sup>77</sup> Wyplosz (2015).

<sup>78</sup> Mongelli (2013). Similarly, a study by Neri and Ropele (2015) shows that the ECB's monetary policy helped reduce the impacts of the debt crisis even without fiscal coordination.

<sup>79</sup> Podpiera et al. (2015).

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#### Exchange rate as a partial indicator for (non-)adoption of the euro

Andrle, M., Brůha, J. (2023): “Sparse Kalman Filter: A Non-Recursive Approach,” CNB mimeo, to appear as Czech National Bank Working Paper.

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Issued by:  
CZECH NATIONAL BANK  
Na Příkopě 28  
115 03 Prague 1  
Czech Republic

Contact:  
COMMUNICATIONS DIVISION  
GENERAL SECRETARIAT  
Tel.: +420 224 413 112  
[www.cnb.cz](http://www.cnb.cz)