

Central Bank Monitoring

IV/2024



In this issue

The ECB continued to cut interest rates in October and December. The US Fed also cut rates for the first time in September and then again in November. Except the Norwegian NB and the Polish NBP, the other monitored central banks lowered their rates over the past three months. In past months, high-level ECB representatives made several statements indicating possible shifts in the ECB's monetary policy strategy. The CNB published the results of an external review of the monetary policy analytical and modelling framework. The Bank of England decided on the rate of contraction of its balance sheet for the following year.

Spotlight focuses on central banks' balance sheets in selected countries and describes their effect on the central banks' finances. In our selected speech, German Bundesbank Vice-President Sabine Mauderer discusses the economic impacts of climate change and the green transition and talks about their implications for central banks and monetary policy.

This publication aims to familiarise experts with recent monetary policy developments, monetary policy strategy, and communication by selected central banks.

Current and past issues are free to download from the Monetary Policy section of the CNB website: <https://www.cnb.cz/cs/menova-politika/monitoring-centralnich-bank/>, where you can also download a list of all thematic articles and speeches.

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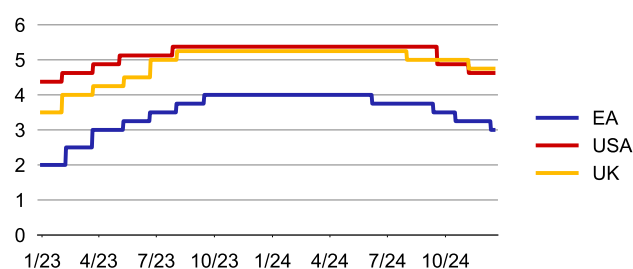
I. LATEST MONETARY POLICY DEVELOPMENTS AT SELECTED CENTRAL BANKS

I.1 KEY CENTRAL BANKS IN THE EURO-ATLANTIC AREA

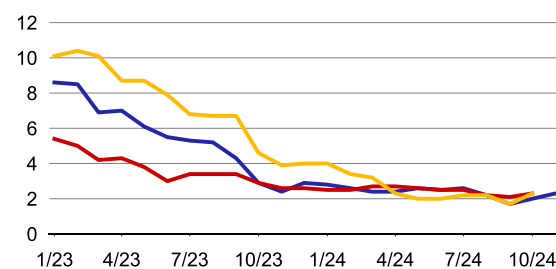
	euro area (ECB)	USA (Fed)	United Kingdom (BoE)
inflation target	2% (HICP)	2% (PCE) ¹	2% (CPI)
latest inflation	2.3% (11/2024, flash)	2.3% (10/2024) ¹	2.3% (10/2024)
current basic rate	3.00%	4.50–4.75% ²	4.75%
publication of MP decision (rate changes)	17 October (-0.25) 12 December (-0.25)	18 September (-0.50) 7 November (-0.25)	19 September (0.00) 7 November (-0.25)
expected MP decisions	30 January 6 March	17–18 December 28–29 January	19 December 6 February

Note: ¹ PCE (Personal Consumption Expenditures); ² graph shows band centre.

Key interest rates



Inflation



In its meetings in October and December, the **ECB** lowered its interest rates by a total of 0.5 bp, to the level of 3% in the instance of deposit rates. At the end of this year, the reinvestment of due securities as part of the PEPP pandemic emergency programme will be completely discontinued. Inflation in November increased to 2.3%, according to preliminary estimates, which was primarily caused by the baseline in the area of energy prices. Compared to this, inflation slowed in the categories of groceries and services. In Q3, the eurozone's economy increased by 0.4% quarter on quarter, in large part due to consumption (partially reflecting the growth of tourism in the summer months) and the creation of company stocks. The labour market remains resilient. Employment increased by 0.2% and unemployment remained at the lowest level in history of 6.3% in October, though demand for manpower weakened. The eurozone's economy will get stronger in the future, though at a slower rate than previously expected. According to ECB prognoses, economic growth this year will reach 0.7%, 1.1% next year and 1.4% in 2026. The prognosticated growth is based mainly on the increasing real household income, which could enable the growth of household consumption and an increase of corporate investments. The disinflation process will continue, according to forecasts. Inflation this year will amount to 2.4%, then 2.1% next year and 1.9% in 2026. The forecast core inflation remains unchanged at 2.9% this year with it expected to drop in the coming years.

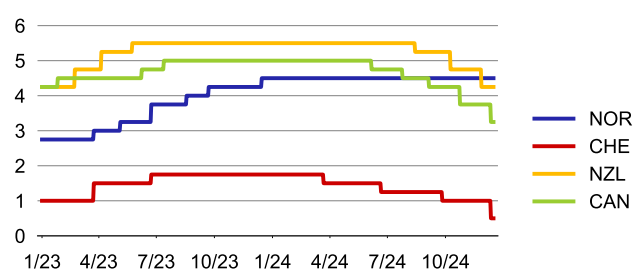
At the last two meetings, the **Fed** lowered the range for its key interest rate by 0.75 bp overall to the level of 4.50–4.75%. In addition, the Fed is continuing to reduce the volume of its balance sheet. In the third quarter, the US economy grew by 2.8%, strengthened by solid growth in consumer spending and the accelerating dynamism of investments. Labour market conditions remain solid and its metrics are at levels consistent with the Fed's mandate. Unemployment has stopped rising in recent months, standing at 4.1% in October. PCE inflation stood at 2.3% in October. The FOMC's September forecast expected economic growth of 2% this year and the next. PCE inflation will be 2.3% this year and 2.1% next year. Core prices will rise slightly more, by 2.6% and 2.2% respectively.

The **BoE** lowered its key interest rates by 25 bp to 4.75% in November. The BoE's monetary policy is now focusing on suppressing the remaining inflationary pressures in the economy, so that the 2% inflation target is achieved in a sustainable manner. According to a first estimate by the office for statistics, GDP in the United Kingdom increased by 1% year-on-year in the third quarter. The labour market is continuing to ease, although it remains relatively tight by historical standards. Inflation rose to 2.3% in October, in line with the BoE's forecast that inflation will approach 2.5% at the end of the year, as last year's fall in energy prices exits the year-on-year comparison. At the same time, the BoE expects the measures contained in the UK government's newly published autumn budget to increase inflation by as much as half a percentage point in the coming years.

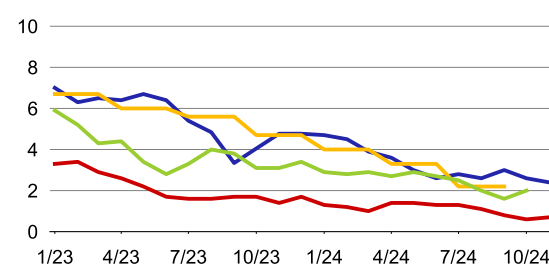
I.2 SELECTED NON-EU CENTRAL BANKS WITH INFLATION-TARGETING REGIMES

	Norway (NB)	Switzerland (SNB)	New Zealand (RBNZ)	Canada (BoC)
inflation target	2% (CPI)	0-2% (CPI)	2% (CPI)	2% (CPI)
latest inflation	2.4% (11/2024)	0.7% (11/2024)	2.2% (Q3 2024)	2.0% (10/2024)
current basic rate	4.50%	0.50%	4.25%	3.25%
publication of MP decision (rate changes)	19 September (0.00) 7 November (0.00)	26 September (-0.25) 12 December (-0.50)	9 October (-0.50) 27 November (-0.50)	23 October (-0.50) 11 December (-0.50)
expected MP decisions	19 December 23 January	20 March	19 February	29 January

Key interest rates



Inflation



The **NB** left its interest rate unchanged at 4.50% and expects it to stay at this level until the end of this year. According to the forecast, the interest rate will gradually decline from the first quarter of 2025. The Monetary Policy Committee considers that restrictive monetary policy remains necessary to bring inflation down to the target within a reasonable time frame. Norwegian inflation fell to 2.4% in November, while inflation adjusted for tax changes and energy, on the contrary, increased to 3%. Growth in the Norwegian economy remains low, although household consumption has been recovering since the spring. The number of new houses sold increased slightly compared to last year, but the number of new housing starts remains low. Unemployment remains stable at 4%.

The **SNB** lowered its interest rate in September and December by 0.75 bp to 0.5%. If necessary, the SNB remains willing to active on the foreign exchange market. Since the September meeting, inflation decreased more than expected, amounting to 0.7% in November, with goods and services playing a role. The Swiss GDP increased only slightly in the third quarter, with solid growth in the services sector, while added value in industry decreased. Unemployment increased slightly and the growth in employment is weak. The SNB's new forecast expects inflation inside the target band throughout its horizon and it is based on the assumption that the policy rates will remain at 0.5%. According to the SNB, however, the forecast for the Swiss economy is shrouded in significant uncertainties coming primarily from abroad.

The **RBNZ** lowered its key interest rate by 1 bp overall to 4.25% in October and November. The GDP decreased slightly quarter on quarter in Q2 and, as expected by the RBNZ, also in Q3. Inflation fell to 2.2% in the third quarter and is inside the target band of 1–3%. The decline in inflation is due to a 1.6% drop in the prices of tradable goods reflecting a decline in import prices, weak retail expenditure and lower fuel prices. Price inflation for non-tradable goods remains elevated, but is falling due to spare capacity in the economy. Core inflation continued to decline and corporate inflation expectations are close to 2%. The RBNZ expects to lower its interest rate further as inflation pressures continue to recede.

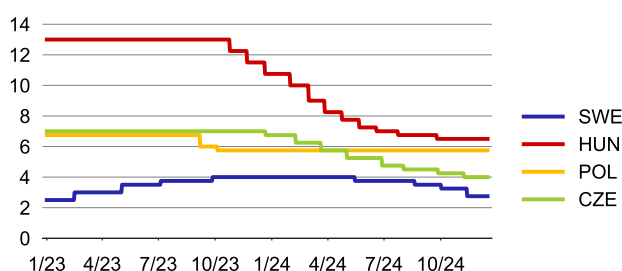
In October and December, the **BoC** lowered its interest rate by 1 bp to 3.25%. Inflation has remained close to 2% since the summer and the BoC also expects it to remain close to the inflation targets in the years to come. In the third quarter, the Canadian economy increased by 1% year on year. Corporate investments, especially stocks and exports, slowed economic growth. Consumer expenditures and activity in real estate, on the contrary, are reviving, with lower interest rates contributing to this. Unemployment increased to 6.8% in November, since employment continued to grow at a slower rate than manpower. The growth of wages shows signs of slowing, but remains high in proportion to the growth of productivity. The economic outlook, according to the BoC, is shrouded by uncertainty ensuing from the possibility of customs duties being placed on Canadian exports by the USA's incoming administration. Several measures were announced in Canada that will influence the short-term outlook on economic growth and inflation (a decrease in immigration, the temporary cancellation of some taxes on goods and services, one-time transfers of households, or changes in the mortgage rules). When making decisions, the BoC will take into consideration the temporary effects of these measures and will concentrate on the underlying trends.

I.3 SELECTED CENTRAL BANKS OF INFLATION-TARGETING EU COUNTRIES

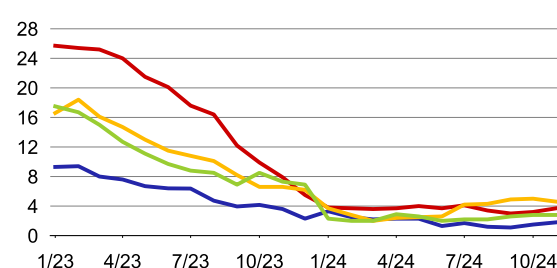
	Sweden (Riksbank)	Hungary (MNB)	Poland (NBP)	Czech Republic (CNB)
inflation target	2% (CPIF) ¹	3% (CPI)	2.5% (CPI)	2% (CPI)
latest inflation	1.8% (11/2024) ¹	3.7% (11/2024)	4.6% (11/2024, flash)	2.8% (11/2024)
current basic rate	2.75%	6.50%	5.75%	4.00%
publication of MP decision (rate changes)	25 September (-0.25) 7 November (-0.50)	24 September (-0.25) 22 October (0.00) 19 November (0.00)	1–2 Oct (0.00) 5–6 Nov (0.00) 3–4 Dec (0.00)	25 September (-0.25) 7 November (-0.25)
expected MP decisions	19 December 29 January	17 December 28 January 25 February	15–16 January 4–5 February	19 December 6 February

Note: ¹ CPIF (Consumer Price Index with a Fixed Interest Rate).

Key interest rates



Inflation



The **Riksbank** lowered its interest rates by 75 bp overall to 2.75% in September and November. The faster decline in interest rates in November was due to efforts to further boost economic activity, which, according to the Executive Board of the Riksbank, continues to show few signs of recovery. The Swedish economy grew by 0.7% year on year in the third quarter. The labour market is weak, with unemployment at 8.5% in the third quarter. Nevertheless, real wages are rising following a previous decline in inflation. CPIF inflation stood at 1.8% in November. This slight increase compared to the previous months was due mainly to increased housing expenses. The Riksbank announced that if its outlook for inflation and economic activity materialises, interest rates could be lowered again in December and the first half of next year.

The **MNB** lowered its interest rates by 25 bp to 6.50% in September and left rates unchanged in October and November. Inflation rose to 3.7% in November, with higher prices primarily reflecting rising fuel costs. Core inflation stood at 4.4% and its slight increase was driven by the continuing disinflation in the sector of market services. The MNB intends to continue monitoring inflation in the services sector closely. Compared to the September forecast, lower inflation in October indicates lower inflation in the short term, but a depreciation of the forint in recent months and changes in excise duties will act in the opposite direction next year. The MNB considers anchoring inflation expectations, maintaining financial market stability and disciplined monetary policy as important conditions for a sustained return of inflation to the target.

The **NBP** kept its interest rate the same at 5.75%. Per preliminary estimates, annual GDP growth in Poland slowed to 2.7% in Q3, owing to slower growth in consumption and investment and a decline in net exports. Unemployment remains low and wage growth substantial. According to a flash estimate of inflation in Poland, inflation stood at 4.6% in November. Inflation increased compared to the first half of this year, mainly due to growth in regulated energy transmission prices and, to a lesser extent, growth in food and non-alcoholic beverage prices. Inflation adjusted for food and energy prices remains elevated due to quite high rises in services prices. Inflation will stay well above the NBP's target of 2.5% in the quarters ahead, owing mainly to the prior increase in energy prices and the planned increase in excise duties and regulated services prices. Inflation will then return to the target given the interest rate level and the gradual moderation in wage growth.

The **CNB** lowered the 2W repo rate by 50 bp overall in September and November to 4%. Its autumn forecast implied a continuing decline in short-term market rates initially, followed by broad stability from the middle of next year. According to the forecast, inflation will be close to the upper boundary of the tolerance band around the inflation target at the end of this year and the beginning of next year, but will then fall back towards 2%. Core inflation will rise only slightly. The labour market is continuing to cool gradually, due to the downturn in domestic economic activity last year. However, nominal wage growth remains elevated. GDP growth will reach 1% this year and pick up further to 2.4% next year and in 2026. This will be helped by household consumer expenditure, supported by real wage growth and accelerating investment growth. Compared to this, growth in economic activity will be dampened by net exports.

II. NEWS OVER THE LAST THREE MONTHS

Top ECB officials hint at developments in some areas of its monetary policy strategy

Several members of the ECB's Executive Board have commented in recent weeks on topics related to the central bank's future monetary policy strategy. ECB Vice-President Luis de Guindos [spoke](#) about the upcoming monetary policy review (the ECB underwent a comprehensive monetary policy review in 2020–2021, announcing at the time that it planned to evaluate its monetary policy strategy periodically, with the next review due in 2025). De Guindos said that the upcoming review would reflect shifts in the economic and inflationary environment since the previous review, possible deglobalisation or other structural factors, and would also focus on the impact of actions previously taken, for example, as part of quantitative easing. This policy, according to him, was very useful in combating deflation and the impact of the pandemic, but it also has side effects (such as the impact on financial stability or central bank profitability), which the ECB now has more experience with and can better assess the impact of quantitative easing. Conversely, the current definition of the inflation target should not be a subject of the review.

Isabel Schnabel, a member of the Executive Board of the ECB, assessed in her [speech](#) the various monetary policy instruments in light of the experience of recent years. Interest rates remain the main instrument for her, and she considers the possible use of negative interest rates to be useful, even though they may be controversial. She sees asset purchases as useful for stabilising financial markets in times of stress (and thus in case of temporary asset purchases for financial stability reasons). In the case of quantitative easing as a monetary policy tool to reduce long-term interest rates and thus stimulate the economy, her assessment is less clear – to achieve the desired effect, the volume of asset purchases must be substantial, which entails considerable costs. In the future, according to I. Schnabel, the bar for introducing quantitative easing should thus be higher than in the past. However, targeted longer-term refinancing operations (TLTROs), for example, can be useful. Regarding forward guidance, according to I. Schnabel, this instrument should be used cautiously and the central bank should not tie its hands with hard commitments (i.e. the possible use of forward guidance should be conditional on economic development).

The ECB's chief economist, Philip Lane, said in an [interview with the Financial Times](#) that in the future (when the ECB considers the disinflation process after the previous wave of high inflation to be complete), the ECB should return to a more forward-looking monetary policy, which it has abandoned in recent years after the outbreak of the inflation wave in favour of a data-dependent approach.

The Riksbank estimates the monetary policy neutral rate

Anna Seim, a member of the Executive Board of the Swedish Riksbank, [stated](#) that based on the latest analyses, the long-term monetary policy-neutral (nominal) interest rate in Sweden was likely to be between 1.5% and 3%. An earlier estimate from 2017 had put the range at 2.5%–4%, so the Riksbank assumes that the decline in the long-term neutral interest rate had continued due to a combination of various factors – global demographic development, for example, is likely to have played a significant role (from 2017 to now, the central bank has not published any specific estimate, although it has continuously addressed the topic and communicated in 2019 and 2022 that the neutral interest rate is likely to be at or slightly below the lower end of the 2017 interval).

The CNB published the results of an external monetary policy review...

At the beginning of this year, the CNB Bank Board commissioned an external review of its monetary policy analytical and modelling framework. In November, [all three of the independent evaluations were published](#) and the CNB will subsequently conduct their internal assessment. In addition to the external evaluations, a detailed [description of the CNB's forecasting framework](#) and the [results of a questionnaire](#) of 23 inflation-targeting central banks on the role of macroeconomic forecasting models in their forecasting processes were published.

... and increased the minimum reserve requirement

The CNB Bank Board [decided](#) in October to increase the minimum reserve requirement ratio from 2% to 4%. The new rate becomes effective on 2 January 2025. The CNB took this step in order to lower the cost of implementing monetary policy while preserving its effectiveness. The CNB does not pay interest on the required minimum reserves from October 2023.

Bank of England decided to continue reducing its balance sheet at the current pace

The BoE at its [September meeting](#), in addition to leaving interest rates unchanged, also conducted its annual assessment of ongoing quantitative tightening and published its plan for the next 12 months. According to the Monetary Policy Committee (MPC), the reduction of the central bank's balance sheet is proceeding smoothly. The MPC unanimously decided that between October 2024 and September 2025, the amount of government bonds held in the APF program will fall by GBP 100 billion (the same rate at which the BoE's balance sheet fell between October 2023 and September 2024). This reduction should bring bond holdings to GBP 558 billion.

Australian parliament passed bill to reform RBA

The bill governing the operation of the Reserve Bank of Australia was successfully passed by the Australian Parliament in late November. The main consequence of the new law is the splitting of the existing Reserve Bank Board into two different boards – the Monetary Policy Board responsible for the implementation of monetary policy and the Governance Board responsible for the management of the central bank. This change is expected to take place next year after the February monetary policy meeting. The move represents the realisation of one of the recommendations of the RBA's comprehensive monetary policy review, which was published in April last year (for details see [Spotlight in Central Bank Monitoring, June 2023](#)). A number of other recommendations of the review that could have been implemented without amending the law have already been incorporated by the central bank (for example, since this year the number of monetary policy meetings has been reduced to eight per year and a press conference is held after each meeting).

III. SPOTLIGHT: A LOOK AT SELECTED CENTRAL BANKS' BALANCE SHEETS AND FINANCES

Over the past 15 years, the size of central banks' balance sheets has increased considerably, reaching record levels in many cases around 2022. Since then, balance sheets have been shrinking in most cases, but are still high from a historical perspective. The combination of large balance sheets and a sharp monetary policy tightening led to a significant deterioration in their profits and, in some cases, also to a shift in their equity to negative values. For central banks, however, their objective is not to generate profits, but to fulfil their price and financial stability mandate.

Since the global financial crisis, many central banks have taken unconventional measures (e.g. quantitative easing, various liquidity-providing programmes, exchange rate commitments, yield curve control). The common denominator in these measures was a sizeable increase in these central banks' balance sheets. Further substantial growth in central banks' balance sheets was due to measures adopted after the outbreak of the Covid-19 pandemic. Central banks' balance sheets have been shrinking in most cases over the last approximately 2–3 years, but are still high by historical standards. The combination of the large volumes on balance sheets and sharp monetary policy tightening in recent years has in many cases led to a significant deterioration in central banks' finances. After a brief theoretical introduction, this article focuses on an overview of trends in selected central banks' balance sheets, describes the impact on their finances, examines practices in profit distribution and discusses some specifics of individual countries.¹

Effect of central banks' balance sheets on their finances

Monetary policy settings and the size of a central bank's balance sheet are linked in several ways to its finances. In the case of central banks that purchased large amounts of government bonds in the past (often with a low yield and long-term maturities – and hence with high sensitivity of bond prices to changes in interest rates), the sharp increase in interest rates in recent years led to a decline in bond prices and therefore a decline in the value of these central banks' assets. Central banks' asset purchases were financed on the liabilities side by an increase in the volume of reserves for which central banks pay interest to commercial banks as a part of monetary policy in an environment of excess liquidity. Given the high volume of reserves, a rise in interest rates implies a significant increase in monetary policy costs. The radical tightening of monetary policy around 2022 thus worsened the finances of many central banks through both these channels. Accounting standards, which differ across countries, also have an effect on the reported profit or loss – some central banks value their asset holdings according to their mark-to-market value, while others use their book value (in such case, the aforementioned fall in bond prices caused by a rise in interest rates does not lead to an accounting loss until the loss is realised by selling the bonds – although as a part of quantitative tightening some central banks do not keep the bonds to maturity, but are gradually selling them and so incurring losses).²

In the case of central banks where a large proportion of assets are accounted for by foreign exchange reserves, a high balance sheet also implies greater sensitivity to exchange rate movements of the domestic currency – in the event of a strengthening of the domestic currency, the value of an asset denominated in foreign currency when converted into the domestic currency also decreases. Under otherwise identical conditions, a strengthening of the domestic currency thus leads to a worse result for the central bank, whereas a weakening of the domestic currency conversely improves it.

The effect of specific monetary policy actions on a central bank's profitability cannot be interpreted as an indicator of whether these actions were correct or not. For example, the aforementioned sharp increase in rates in the recent past had a visibly negative impact on central bank profitability and, if central banks had left rates close to zero instead, they would have achieved better results – but it would have meant forgetting the fight against high inflation.³ The central banks' aim is to achieve price and financial stability (including, for example, low unemployment in some countries) and not profit.

¹ The topic of central banks' balance sheets is quite broad and covering all the relevant aspects is beyond this article; related issues such as the detailed structure of central banks' balance sheets and the specific course of quantitative easing and tightening in recent years are not discussed in detail here. Individual quantitative easing programmes and the subsequent turn to quantitative tightening, as well as the transmission of these steps, was described, for example, in the [Central Bank Monitoring Spotlight in March 2022](#). The structure of central banks' balance sheets is described, for example, by Rule (2015).

² For a more detailed discussion of different accounting standards across central banks – as well as differences across countries in sending the central bank's profits to the central government's budget – see Chaboud and Leahy (2013).

³ In the case of converging economies with high foreign exchange reserves on the central bank's balance sheet, convergence will occur towards more advanced countries if the economy thrives and the central bank succeeds in maintaining price stability. The nominal exchange rate can be expected to appreciate and hence have a negative impact on the central bank's profitability. By contrast, any poor economic situation leading to a weakening of the domestic currency would lead to higher profits for the central bank, but it would not be positive from the viewpoint of the economy as a whole.

Moreover, central banks cannot become insolvent and can also function with negative equity in the long term (as evidenced by a number of examples in practice).

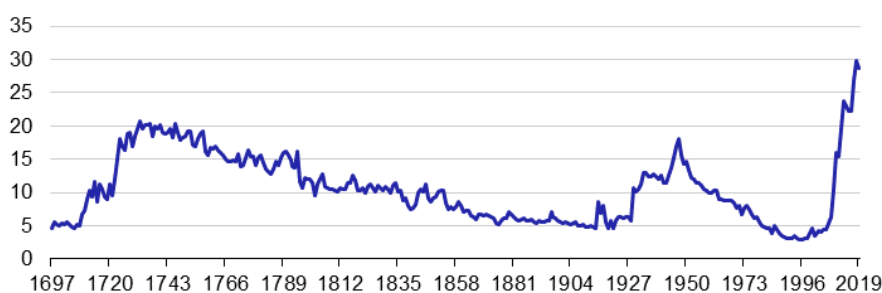
On the other hand, a central bank's profit and loss cannot be regarded as completely irrelevant. Some central banks⁴ have regularly contributed from their profits to their country's central government budget in the past. If they were to make a loss, the central government budget would lose these funds. Other countries must cover some of the losses under the legislation in force, or a central bank must be recapitalised if its capital falls below a set threshold. Even in countries where the payment of central bank profits to the central government budget was not common practice in the past and the central bank does not have to be recapitalised under the law – and therefore the central bank's losses do not have an immediate impact on the central government budget – there is a long-term impact, as even in these countries the central bank could potentially contribute to the central government budget in the future if a sufficiently high level of equity was achieved and a current loss delays this moment in the future.

A debate on the extent to which the low or negative value of equity poses a risk to fulfilling the price stability mandate is taking place in specialised literature. Bell et al. (2023) argue that a central bank's losses do not jeopardise the central bank's ability to meet its objectives. By contrast, they may sometimes be a necessary price of achieving them. However, it would be risky if the poor financial position of a central bank were to cause political pressure on the central bank or reduce its credibility. Some extreme cases, where (depending on the institutional set-up of financial transfers between the central bank and the government) the sustainability of a central bank's finances may not be consistent with achievement of the inflation target, are analysed, for example, by Hall and Reis (2015). According to the authors, such a situation is possible in theory but unlikely in practice.

Balance sheets of key central banks in the Euro-Atlantic area⁵

Before looking closely at the selected central banks' balance sheets in recent years, we will look briefly at very long-term trends, specifically using the example of the Bank of England. This is because research data for this institution are available from 1697 (although statistics that are several hundred years old should naturally be treated with considerable caution). A look at Chart 1 shows that the BoE's balance sheet has

Chart 1: Bank of England balance sheet 1697–2019



Note: These are research data, not official statistics.
Source: [Bank of England research datasets](#)

seen booms and declines (at least in relation to GDP) in the past. However, it can also be seen that the speed and size of the growth in the BoE's balance sheet since the global financial crisis is unprecedented.⁶

To make a better comparison, in the text below we present the individual central banks' balance sheets in relation to the relevant economy's nominal GDP. By definition, this ratio is affected by (nominal) economic growth in addition to the absolute size of the balance sheet. In periods when the balance sheet fell as a share of GDP in the past, this decline was usually due to growth in the denominator (GDP), while the balance sheet volume remained more or less constant.⁷ However, many banks have also reduced their balance sheets in absolute terms, especially in the last 2–3 years. An illustration can be provided by the example of the Fed in Chart 2, which compares the nominal value of its balance sheet and its balance sheet-to-GDP ratio. This phenomenon was most apparent in 2014–2017, when the Fed (after the previous several waves of QE in response to the financial crisis and its impacts) did not make net asset purchases, but merely reinvested maturing assets. The nominal value of the balance thus remained virtually constant, while the ratio of the

⁴ Specific examples of central banks are discussed in the following section.

⁵ In the remainder of this article, we focus on central banks regularly monitored in Central Bank Monitoring. For ease of reference, we follow the breakdown of these banks used in the first section of this publication. For comparison, this standard selection of central banks is supplemented by the Bank of Japan, which has long been among the central banks with the largest balance sheets relative to GDP in the world.

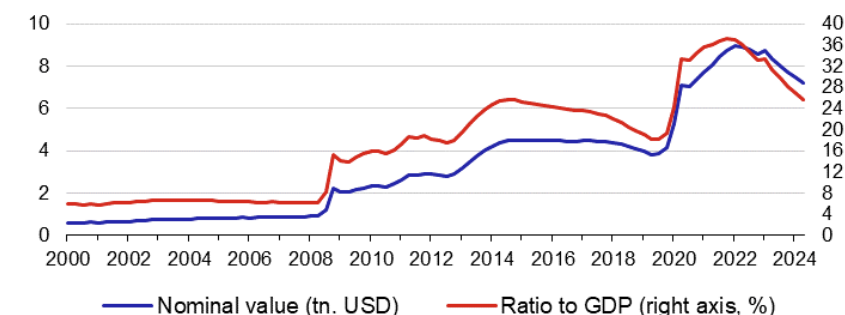
⁶ Moreover, this historical dataset ends in 2019 and therefore does not include a further increase in the BoE's balance sheet of over 45% of GDP after 2020 – see Chart 3. The values in the two charts differ slightly from each other due to methodological differences (although they are roughly in line).

⁷ In the case of banks where foreign exchange reserves play a significant role, the exchange rate at which foreign currency assets are converted into the domestic currency also plays a role – see the discussion above.

balance sheet to GDP gradually decreased. Between the end of 2017 and the start of the Covid-19 pandemic, and especially from 2022 to the present, the size of the balance sheet in absolute terms fell as a result of quantitative tightening.

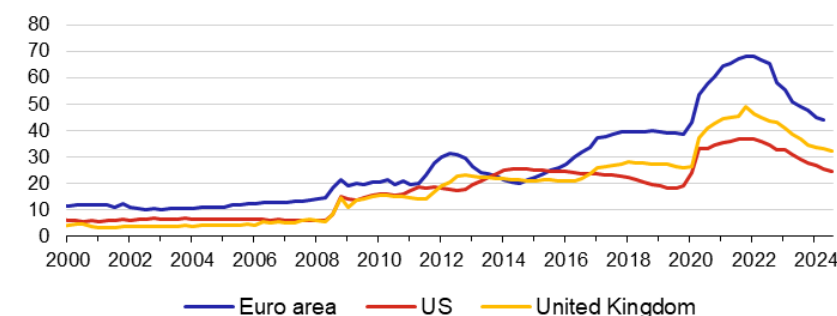
In the past, the Fed regularly sent its profits to the US Treasury, amounting to tenths of a per cent of GDP a year (between 2011 and 2021 the total was more than USD 920 billion, for details see this [blog article on the St. Louis Fed's websites](#)). A change occurred in September 2022, when the Fed posted a loss and stopped sending funds to the Treasury. Instead, the Fed created a deferred asset on its balance sheet to cover losses. After returning to profitability (which is expected in 2025 according to [this year's projections](#)), the Fed will first cover this deferred asset and subsequently be able to resume payments to the Treasury.

Chart 2: Fed's nominal balance sheet and compared to US GDP



Source: BIS

Chart 3: Balance sheet size relative to GDP (%)



Source: BIS

Before the financial crisis, the Fed implemented its liquidity-providing monetary policy. After QE was introduced, however, it had a liquidity surplus as a result of an increase in liquidity. It is planning to stay there for a long time, so no return to the levels from the start of the century can be expected, despite a continuing decline in the Fed's balance sheet. Before the financial crisis, the Fed operated under what it calls a scarce reserves regime. Following a significant increase in liquidity in previous years, it operated under an abundant reserves regime and its long-term intention is to operate under an ample reserves regime in which the amount of reserves just covers demand for them. However, there is some uncertainty about the question of how the specific volume of reserves (and the corresponding size of the Fed's balance sheet) corresponds to the ample reserves regime. The Fed thus has no specific target size for its balance sheet but continuously monitors and assesses market conditions and tries to avoid any problems with liquidity in the market. Since June this year, the Fed has reduced the monthly decline in its balance sheet from a maximum of USD 95 bn to USD 60 bn.

For the euro area, it is appropriate to speak of the consolidated balance sheet of the Eurosystem, made up of the ECB and the national central banks of euro area Member States. Although decision-making on asset purchases and other measures is up to the ECB's Governing Council, individual national central banks also contributed to the implementation and purchased assets for their balance sheets. A wide range of programmes had a significant impact on the gradual increase in the Eurosystem's overall balance sheet over time – ranging from measures taken shortly after the onset of the global financial crisis to classical quantitative easing (from 2015 the APP programme and after 2020 also the pandemic-related PEPP) and targeted longer-term refinancing operations (TLTRO). Since 2022, the Eurosystem's balance sheet has been shrinking, not only as a percentage of GDP (see Chart 3), but also due to the quantitative tightening and repayment of TLTRO loans. As in the case of the Fed, the previous increase in the Eurosystem's balance sheet brought the euro area into a liquidity surplus regime. This led, among other things, to the ECB's key rate becoming the deposit rate, at which most liquidity is absorbed (while the importance of the formerly main MRO rate decreased).

The ECB distributes part of its profits to its reserve fund, while the rest is distributed to the euro area national central banks in accordance with their paid-up shares. The subsequent distribution of national central banks' profits to individual governments is a matter of national concern – practice differs across euro area countries.⁸ Over the past two years, however, the ECB has paid out no profit, or rather has not generated one. It was able to cover the loss made in 2022 by releasing the reserve for financial risks, so the resulting profit was zero, but in 2023 it [made a loss](#) for the first time since 2004, reaching almost EUR 1.3 bn (and if EUR 6.6 bn from the reserve for financial risks had not been used, the loss would

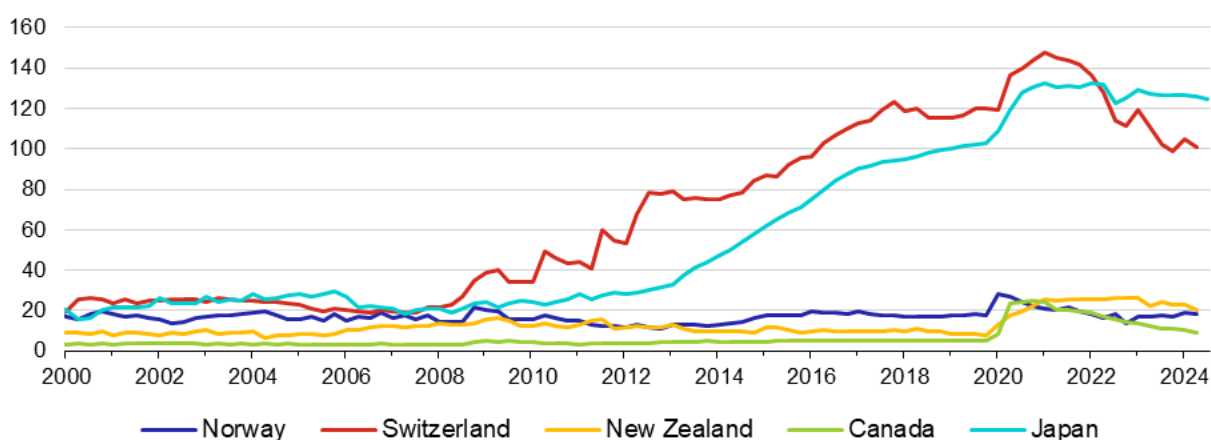
⁸ For an overview of the institutional set-up of transfers between central banks and the governments of 70 central banks, including individual euro area Member States, see Long and Fisher (2024).

have been higher). The ECB also expects to continue making losses in the next few years, after which it should return to profitability.

As regards the assets purchased under quantitative easing, a specific system is in place in the United Kingdom. The Bank of England implemented QE through the Asset Purchase Facility (APF) programme, which was implemented by a separate institution (subordinated to the BoE) set up for this purpose in early 2009. The BoE also concluded an agreement (deed of indemnity)⁹ with the Treasury to transfer APF profits to the Treasury, and losses are also to be covered by the Treasury. Originally, payments for these profits or losses were to be settled on a one-off basis after the end of the APF programme, but as its likely duration lengthened, it was agreed in 2012 to settle at a quarterly frequency. In the past, this meant payments from the APF to the central government budget,¹⁰ but from October 2022 onwards the situation was reversed after the increase in interest rates. The Treasury now has to cover losses in the APF programme. According to [projections](#) published this November, the Treasury will have to finance APF losses in the years ahead as well. The net present value of past and expected future cash flow is estimated at between GBP 50 and 95 billion paid out by the Treasury to cover losses from the APF.

Balance sheets of selected non-EU central banks with inflation targeting

Chart 4: Balance sheet size relative to GDP (%)



Note: Attention is drawn to the double y-axis relative to Charts 3 and 5.
Source: BIS

The Norges Bank's balance sheet has long been close to 20% of Norwegian GDP (see Chart 4). The NB did not undertake quantitative easing and, with some exceptions (foreign exchange interventions and other measures after the outbreak of Covid-19), also did not take further steps with a significant impact on the size of the balance sheet. Although the NB recorded a loss in 2022, it made several times higher profits the following year and has regularly contributed to the central government budget in recent years (including 2022).

Foreign exchange interventions have long been a key factor in the evolution of the SNB's balance sheet. In 2011–2015, the SNB maintained a publicly announced minimum exchange rate of the franc against the euro, which entailed purchases of foreign currency. However, it did not operate in the foreign exchange market only in these years – it intervened to weaken the franc between 2009 and 2021, which led to a gradual increase in the balance sheet to almost one and a half times the annual Swiss GDP. At the end of 2022, by contrast, the SNB started to intervene in favour of the franc in response to a surge in inflation and sold foreign currencies, which led to a reduction in its balance sheet over the last two years, which, however, is one of the largest in an international comparison. The SNB's balance sheet growth also meant greater volatility in its profit/loss. The SNB has a rich history of sending part of its profits to the federal government and Swiss cantons. Nevertheless, it recorded a record loss in 2022 and remained in the red in 2023, albeit to a much smaller extent,¹¹ so it had to suspend payments to the government and cantons.

Although New Zealand's RBNZ and Canada's BoC engaged in quantitative easing after 2020, their balance sheets are among the smaller ones in an international comparison. Like the BoE, both banks have an agreement to cover the losses

⁹ Although the basic principles of this agreement were known from the outset, the exact wording of the agreement was not public until recently. However, following a decision by the UK authority handling data protection and the right to information, the Treasury had to publish the text of the agreement with the Bank of England, which is available [here](#), in November this year (although some sensitive information was not disclosed).

¹⁰ Between 2009 and September 2022, the combined effect was around GBP 124 bn.

¹¹ The SNB sent a total of CHF 6 bn to the federal government and cantons in 2020 and again in 2021, thereby providing around 3% of their income. The SNB's loss was around CHF 132 bn in 2022 (i.e. several times more than the previous record-high loss of CZK 23 bn in 2015), in 2023 it was about CHF 3 bn. See also this [speech](#) by the then Vice-Chairman (current Chairman) of the SNB Governing Board, Martin Schlegel.

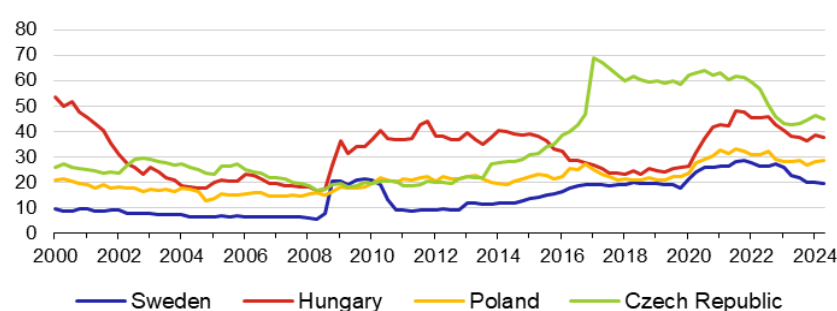
arising from the asset purchase programme (indemnity). In New Zealand, the minister of finance decides on the payment of profits to the central government budget, based on a proposal from the RBNZ. After two years without paying out profits, the RBNZ paid out just under NZD 600 bn to the central government budget in financial year 2023/2024. The Bank of Canada has not contributed to the central government's budget in recent years, as its equity turned negative in 2022 and stood at around -CAD 5.8 bn at the end of 2023.

For comparison with the countries regularly monitored in Central Bank Monitoring, Chart 4 also shows the balance sheet of the Japanese BoJ, as Japan was a pioneer of unconventional monetary policy. The BoJ was the first central bank to launch quantitative easing in 2001, even before the global financial crisis, and it pursued a yield curve targeting policy from 2016 to this year. As a result, the BoJ's balance sheet-to-GDP ratio is very high – there has long been no major difference between it and the SNB's balance sheet, but the balance sheets of the BoJ and the SNB are more than double those of the other central banks monitored. Unlike many other central banks, the BoJ has not made losses in recent years and regularly sends its profits to the government.

Selected central banks of inflation-targeting EU countries

The Swedish Riksbank implemented QE after 2015 and again after Covid-19 started. However, its balance sheet increased less significantly compared to many other central banks and has gradually shrunk since 2022 as a result of quantitative tightening (see Chart 5). However, asset purchases had a clear impact on the Riksbank's finances and it made a loss of around SEK 80 bn in 2022 following a rise in interest rates and revaluation of bond holdings, which brought its own equity into negative territory. According to an act effective from last year, the Riksbank has to submit a recapitalisation request to parliament if its equity falls below a certain threshold. This was [done in April this year](#) and it also pointed out that its 2024 economic results would be very sensitive to future interest rate and exchange rate movements, so the value of equity might soon drop again. The Riksbank subsequently received a capital injection in September, although at a lower level than originally requested.¹²

Chart 5: Balance sheet size relative to GDP (%)



Source: BIS

The Hungarian MNB's balance sheet has been relatively volatile over recent decades and it experienced more marked growth during the financial crisis and then as a result of quantitative easing after the onset of the Covid-19 pandemic. The MNB made a loss in 2021–2023, leading to a gradual decline in equity, which turned negative in 2023. This would have entailed a need for the central bank's recapitalisation in the past, but after last year's amendment to the law the situation is assessed from a longer-term perspective. The current situation has been assessed in such a way that recapitalisation is not necessary for the time being and no central government budget funds were therefore provided to the central bank.

The size of the Polish NBP's balance sheet is relatively stable compared to other countries, although a certain increase in 2020 due to quantitative easing can be seen. Given the significant role of foreign currency assets, the zloty's exchange rate has a significant influence on the NBP's finances. Its appreciation was the main factor underlying the fall in the NBP's equity into negative territory in 2023.

The CNB's balance sheet increased significantly during the exchange rate commitment period in 2013–2017, especially at the end of the commitment. The sale of foreign currency reserves, whereby the CNB prevented excessive fluctuations of the CZK exchange rate, had the opposite effect in 2022. The programme of sales of part of the income on foreign currency reserves was renewed in August 2023, slowing the growth in the balance sheet. As the bulk of the CNB's assets are foreign currency reserves, the CZK exchange rate has long had a significant effect on its results. The CNB has long been functioning with negative equity – since 2000 it has only been positive in 2014–2016. The same as many other central banks, the CNB made a significant loss in 2022, whereas in 2023 it made a profit of around CZK 55 billion, which brought its equity to around -CZK 426 bn. Owing to negative equity, the CNB does not send funds to the central government's

¹² The current act sets three limits (which are indexed for inflation) for the value of Riksbank's capital – a target value (now SEK 62.6 bn), a baseline (two-thirds of the target value) and a minimum (one third of the target value). If it falls below the minimum, the Riksbank must request recapitalisation. The Riksbank asked for a capital injection of more than SEK 40 bn in April, which would have brought its equity up to the baseline value, and finally received SEK 25 bn in September, which brought slightly negative equity just above the minimum. In September, the government also proposed [an amendment to the act](#), which, among other things, would mean the Riksbank had the option of requesting recapitalisation, but did not have to do so.

budget. Any future profits will first be used to settle the accumulated loss; after covering it, the CNB would use the additional profit initially to replenish the reserve fund and the remaining profit would be sent to the central government's budget.

Conclusion

The rapid monetary policy tightening around 2022, combined with historically high balance sheets, had a negative effect on the finances of the monitored central banks. Most of them made a loss and those banks that had previously sent transfers to the central government budget from their profits had to suspend them. Several central banks are now operating with negative equity. However, this does not constitute an obstacle to their conduct of monetary policy, as highlighted by these banks, and they will gradually settle these accumulated losses from their future profits. As regards the size of balance sheets, they have been gradually decreasing in most of the monitored central banks over the last two years, as a percentage of GDP and in absolute terms. In the case of many central banks, this is being fostered by ongoing quantitative tightening. In several cases, foreign exchange interventions played a role in strengthening their own currency. From a historical perspective, however, balance sheets are still high. Nevertheless, both the size of the central banks' balance sheets and the results are not an objective, but a side-effect of the activities of central banks seeking to fulfil their statutory mandates.

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IV. SELECTED SPEECH: Sabine Mauderer: Steering through uncharted waters – monetary policy in the face of climate change

In her November [speech](#) at the Green Swan Conference, Sabine Mauderer, Vice-President of the Deutsche Bundesbank, speaks about the economic impacts of climate change and its implications for central banks.

At the beginning of her speech, S. Mauderer claims that climate change is not only a risk of tomorrow. Climate change is already reshaping economies, financial systems, and societies today. So far, mitigation measures have been insufficient and current global political trends suggest that this situation may persist. This situation is associated with major uncertainties and entails multiple challenges for central banks and supervisors.

Tangible impacts of climate change

First, Vice-President Mauderer considers tangible risks resulting from climate change. Without substantial climate change mitigation, these risks will increase. Extreme weather events cause significant damage to infrastructure and production sites. Extreme weather can also affect prices. For instance, droughts or floods can lead to drops in agricultural production and increases in food prices. Such effects are particularly pronounced in developing economies that rely heavily on agriculture. Overall, the direction of price effects depends on the balance between supply-side effects and the reduction in demand. The economic impacts of extreme weather events can be aggravated through financial channels. Banks might tighten their credit conditions or be less willing or able to lend money in response to a worsened economic outlook.

Tangible risks also arise from long-term shifts in climate patterns, such as rising temperatures. A recent set of publications by the Network for Greening the Financial System (NGFS) shows that global estimated GDP losses from rising temperatures by 2050 could be up to four times higher than previously expected. S. Mauderer claims that our planet is on the verge of crossing multiple tipping points, which will move us even further into uncharted waters. Such a tipping point could further destabilise the climate system and put pressure on other ecosystems across the globe. These effects across ecosystems would lead to more economic damage worldwide.

Impacts of the green transition

Central banks must also pay attention to the macroeconomic effects resulting from the green transition. Another recent report from NGFS delves into three main drivers of the green transition: emission mitigation policies, such as carbon pricing, green subsidies, and regulation, innovation in green technologies, and changing consumer and business preferences.

The green transition will induce substantial structural changes. In the financial sector, new patterns of capital flows will emerge as they will shift from carbon-intensive businesses towards low-carbon ones. Such changes in investment flows could lead to asset revaluations and stranded assets. In the real economy, carbon-pricing and regulation increase the cost of using carbon-intensive inputs. These policies create incentives to adopt technologies that are climate-friendly, but more expensive. Rising costs have an adverse effect on economic activity. However, green investment demand, innovation and the redistribution of carbon revenues can reduce this negative supply-side effect.

According to S. Mauderer, the size and nature of the economic impacts will vary across countries and depend on the policy mix adopted. For example, the carbon intensity and the income level of each state will also affect how their economies respond. Regarding the policy mix, we are already seeing that, to spur the green transition, some countries are using subsidies while others are relying on carbon pricing.

Implications for central banks and monetary policy

Monetary policy must adapt to the challenges and be prepared to balance the trade-offs associated with climate-related shocks. Central banks tend to look through short-lived shocks caused by extreme weather events and climate policy, where inflation expectations remain anchored. However, both material and transition risks will intensify and the inflationary effects could get more pronounced. Then, looking through these shocks might become less suitable. Central banks may increasingly face situations in which they have to react to inflationary pressures in weak economic environments.

Climate change also increases the uncertainties in which central banks operate. Central banks might have to expect climate-related volatility in inflation and output. There is also uncertainty around the pace and effects of technological innovations. S. Mauderer presumes that central banks need to extend their view beyond the usual projection period and consider new sources of uncertainty. They must communicate their strategies and their rationale transparently to the public and financial market. Effective communication can help to anchor inflation expectations, reduce uncertainty, and build confidence in their ability to manage climate-related challenges. Moreover, to understand the macroeconomic impacts of climate change and the transition, central banks and scientists must continue to develop and refine their analytical toolkits. As more data come in, they should use them to improve our understanding of climate risks.

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