EUROFI Monetary Scoreboard

SEPTEMBER 2025

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with the support of Elias Krief

Inside

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- Significant impacts in terms of indebtedness and wealth inequalities
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Monetary Scoreboard

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Executive summary

This Scoreboard aims to analyse the evolution of monetary policy and central bank decisions and their impact on financial stability and the real economy over the last two decades, using a comprehensive set of data[1].

The size of central banks' balance sheets in relation to GDP has never been so high. This document opens the debate on monetary policy and the need to change course by presenting key figures and Charts.

During the Global Financial Crisis (GFC), the EU Sovereign Debt, and Covid-19 crises, central banks played a crucial role, intervening on an unprecedented scale to keep financial markets liquid, stabilise the financial system, and prevent the economy from falling into a tailspin. In addition, in Europe, the ECB's actions mitigated financial fragmentation in sovereign and corporate bond markets.

However, the 2% inflation target has locked monetary policy into a systematic and asymmetric accommodative stance over the past two decades. Persistently accommodative monetary policy has pushed global debt to an all-time high of 338% of world GDP in 2022 and increased the monetary base of OECD economies – *i.e.* the total amount of money created by the central banks – by a factor of 10 since 2000. Persistently low interest rates have encouraged liquidity hoarding at the expense of productive investment, particularly in Europe. The price paid in terms of excessive leverage, reduced business dynamism and productivity growth, asset bubbles, and instability has been high. With its monumental government bonds purchasing programme launched in 2015, the ECB has become a de facto agent of fiscal policy. In turn, this huge leverage has weakened the stability of the financial system: the search for yield has fuelled swelling bubbles. The prolonged highly accommodative monetary policy has also been accompanied by a significant increase in wealth inequality.

Since the second quarter of 2021, inflation has risen to levels not seen in decades, fuelling concerns about the rising cost of living for households. As a result, central banks have tightened monetary policy over the past two years. In the Euro area, the ECB raised its key interest rates by 450 basis points between July 2022 and September 2023, while the Fed raised them by 550 basis points in the US between March 2022 and August 2023. This shows that maintaining zero or negative interest rates for many years has also contributed to the return of inflation and that interest rates remain the main weapon in the fight against inflation.

The good news is that inflation has continued to fall since the fourth quarter of 2022. Since June 2024, the ECB has cut its interest rates by 250 basis points and the Fed by 100 basis points. But lower inflation is not low inflation. inflation is likely to remain above 2% particularly in the US because of the increase in trade tariffs imposed by President Trump. In the Euro area, real wages are trying to catch up in a context of very low productivity, pushing up unit labour costs; the challenges of the green transition, loose fiscal policies and adverse demographic forces limiting the responsiveness of aggregate supply could also keep inflationary pressures elevated.

In such a context, the fight against inflation must remain the priority of central banks, despite the vulnerabilities they have created over the previous decade. Maintaining positive real interest rates is necessary to achieve price stability and to encourage long-term savings for productive investment. Quantitative tightening must be implemented firmly and intelligently. Every victory over inflation comes at a price: lower growth and fewer jobs. If we do not accept this price, the spectre of stagflation is likely to return.

1. Charts and statistics in this report are based on data released as of to 3 August 2025. The authors would like to thank Mr. Philippe d'Arvisenet for his insightful comments.

1. The monetary base of OECD economies has increased tenfold since 2000, mainly due to the 2% inflation target which was the absolute guideline for monetary policy until 2022

Key interest rates have been kept at 0 and even lower in real terms for twenty years. The monetary base in OECD economies has increased significantly as a result of the unconventional monetary policies implemented in response to the 2008 and Covid-19 crises. These policies were aimed at tackling the zero lower bound constraint and maintaining the 2% inflation target, which has become the absolute guideline for monetary policy. Central bank balance sheets have ballooned over the past 20 years, following the continuous monetary stimulus that started with the 2008 crisis and continued until 2022.

Monetary policy, especially in the Euro area, has been asymmetric over this period, stimulating activity at the first signs of slowing growth, while being reluctant to tighten policy when overheating emerged. Indeed, the 2% inflation target locked monetary policy into this systematic accommodation until 2022.

1.1 Central Banks balance sheets between 2000 and 2022: facts and figures

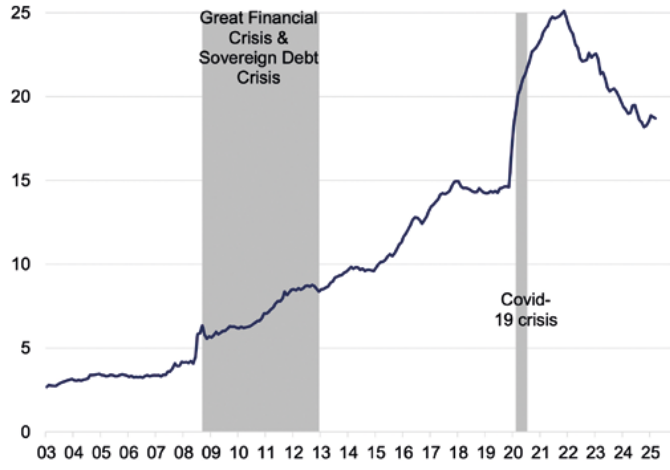
Since the financial crisis of 2007-2008, the monetary policy of the major central banks following the Fed's lead has been consistently stimulative, leading to an unprecedented expansion of central bank balance sheets. Money creation has been "firing on all cylinders" for more than 15 years.

The monetary base of the OECD countries increased tenfold between 2000 and 2022. Chart 1 highlights this extraordinary development. The aggregate monetary base of the OECD countries (US, Eurozone, Japan, UK) has increased from $2.5 trillion in 2000 to a peak of $25 trillion in March 2022, an increase of 900%.

Two phases must be distinguished in this unprecedented expansion:

- From January 2008 to the end of 2019, the monetary base increased by $10.7 tn, reaching $14.6 tn in December 2019.
- Between March 2020 and March 2022, the amount of money issued by the central bank increased by a further $10 tn, reaching $24.7 tn in March 2022.

CHART 1.
OECD*: Monetary base (USD trn)



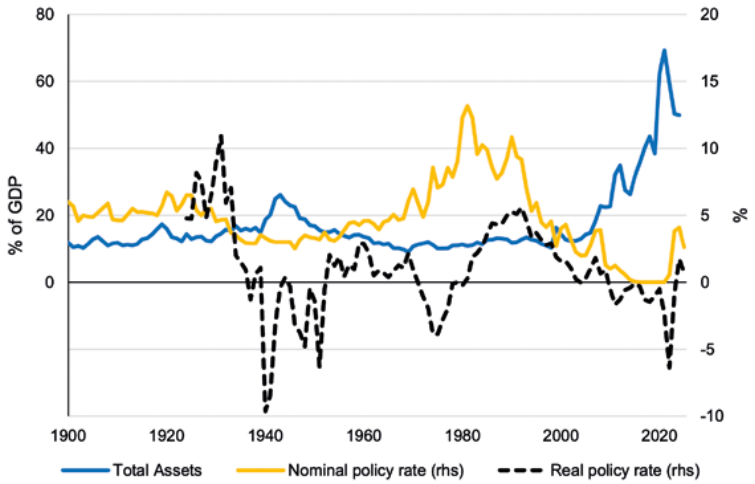
Source: Ekonomics, based on national central banks data
Notes: Last data are from June 2025
**OECD = US, UK, EA, JP*

As a percentage of GDP, central bank balance sheets in advanced economies reached 69% in 2021 before declining to 49,9% at the end of 2024.

Despite the downward trend that started in 2022 as a result of quantitative tightening policies (see Parts 4 & 5), the current level of central bank balance sheets remains by far the highest in the last 120 years. According to Bank for International Settlements, the previous massive expansion of central bank assets in advanced countries dates back to the Second World War, when central bank balance sheets peaked at 26% of GDP in 1943, before falling back to pre-war levels (16%) six years later (*see Chart 2*).

This 120-year historical review illustrates the unprecedented nature of the monetary policy accommodation over the last 20 years, both conventional (real and nominal interest rates close to zero or even negative) and unconventional (asset purchases of up to 70% of GDP).

CHART 2.
Policy rates and central bank balances sheets since 1900



Sources: BIS Annual Economic Report (June 2025)
Notes: The real policy rate is calculated by adjusting the nominal rate for inflation; Economies include AT, AU, BE, CA, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, JP, LU, NL, NO, NZ, PT, SE and US

Chart 3 shows that since 2000, the growth of the monetary base has consistently exceeded that of GDP in the United States and the Euro area.

Between 2008 and 2019, M0 grew extremely fast: 13.5% annually in the advanced countries, while their GDP grew by an average of 2% in real terms. The average nominal GDP growth was around 3.5%, thus, the monetary base grew almost four times faster than nominal GDP over the decade.

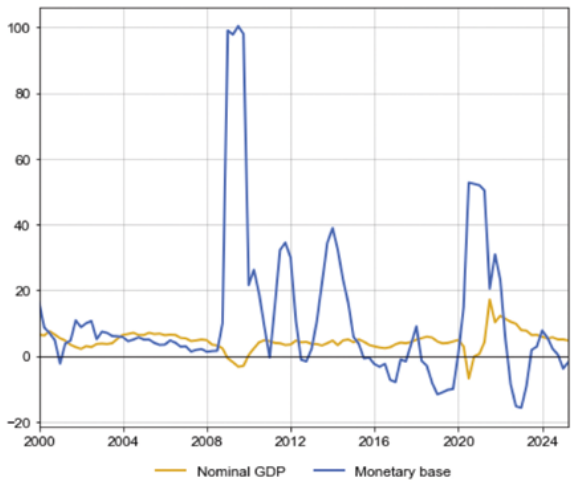
In the Eurozone (*see Chart 3a*), the monetary base grew by an annual average of 13.9% between the end of 2007 and the end of 2019, 6.5 times faster than nominal GDP growth (+2.2%).

Over the same period, the monetary base in the United States grew by an annual average of 14.8%, 4.3 times faster than nominal GDP (+3.4%).

CHART 3.
Nominal GDP against Monetary base,% annual change

Chart 3a : Euro area

Chart 3b : United States



Sources: Ekonomics, based on data from the ECB and the Federal Reserve
Notes: last observations are from Q1-2025

1.1.1 The expansion of the monetary base is the result of central banks' asset purchase programmes, which have increased their balance sheets by more than 500% between 2008 and 2022

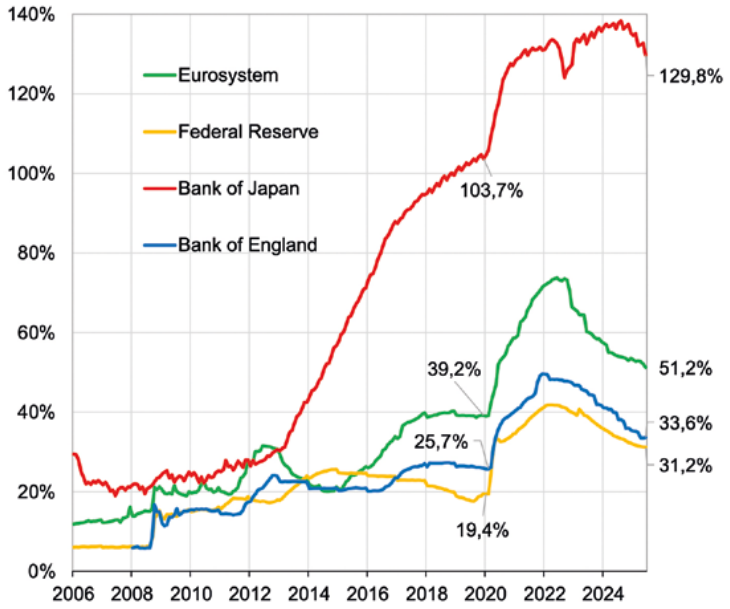
Between January 2008 and June 2022,

- The balance sheet of the Federal Reserve grew by 890%, an increase of $8 tn.
- The balance sheet of the Eurosystem grew by 560%, an increase of €7.5 tn.
- The increase in the size of the balance sheet was 548% in Japan and 1056% in the UK.

The size of the assets held by the Fed reached 41.7% of the US GDP in June 2022, compared with 6.1% in 2008. The assets of the Eurosystem amounted to 73.3% of the Eurozone GDP in June 2022, compared with 13.8% in January 2008 (*see Chart 4*).

The assets of the Bank of Japan (which began its asset purchase program in March 2001) reached 132.6% of the Japanese GDP in June 2022, against 21.7% in January 2008.

CHART 4.
Central Banks' Total Assets Relative to GDP, %



Source: Ekonomics, based on national central banks data
Notes: Last data are from June 2025; the ratio is calculated on the basis of the 2019 nominal GDP for all the data since 2019

The fact that a central bank such as the ECB has decided to buy – and in effect monetise – bonds equivalent to more than 70% of Euro area GDP gives an idea of the unprecedented scale of the explosion in monetary support for the economy since 2014.

J. de Larosière highlights[2] (*see Chapter V*), the issues that arise in this case: "When [the ECB] buys – through money creation – the equivalent of ¾ of the national economy, we get problematic results:

- A certain form of "nationalizationc of the economy by the issuing institution,
- A "fiscalization" of the role of the central bank insofar as it becomes an essential part of the financing of the treasuries,
- The substitution of a public body for market forces and, by the same token, a decisive influence on the yield curve (such a subordinate position of the Central Bank in relation to the public authorities was usually only encountered in times of war when governments set rates)."

1.1.2 A significant proportion of the overall increase in the monetary base occurred outside periods of recession, a consequence of the asymmetry of monetary policy

As we have seen, the aggregate monetary base increased by $22.5 tn between 2000 and 2022:

- $13.4 tn were issued during crises: $4.5 tn in the wake of the Great Financial Crisis and the European Sovereign Debt crisis between 2008 and 2013 and $8 tn in response to the Covid-19 crisis in 2020.
- The remaining $9.1 tn was issued outside of recessionary periods (*see Chart 1*): +$1.6 tn between 2000 and 2008, +$5.3 tn between early 2014 and late 2019 and +$2.3 tn between January 2021 and early March 2022.

1.2 Central banks reacted swiftly and strongly during the Lehman Brothers, EU sovereign debt, and Covid-19 crises

Since the beginning of the 21st century, a series of extraordinary events – the Great Financial Crisis, the EU Sovereign Debt crisis and the Covid-19 pandemic – have severely tested the conduct of monetary policy. As the BIS

2. J. de Larosière, "Putting an end to the reign of financial illusion: for real growth", Odile Jacob, September 2022.

Annual Report 2024 reminds us, central banks' forceful, unprecedented, and repeated responses to financial stress have stabilised the system and limited the damage caused to the economy. Because central banks are the ultimate source of liquidity in times of stress, their actions are critical to bolster confidence, address market dysfunction, and support the flow of credit to businesses and households.

1.2.1 The rapid and powerful intervention of Central Banks prevented the collapse of the financial system

The Federal Reserve's response to the Great Financial Crisis (2008-2010).

In response to the 2008 financial crisis, the Fed implemented several measures to support the financial system, including interest rate cuts, the provision of liquidity to financial institutions, and large-scale purchases of private and public securities.

Starting in September 2007, the Fed **reduced the federal funds rate** from 5.25% to a range of 0 to 0.25% by December 2008, with most of the reductions occurring between January and March 2008 and between September and December 2008.

It also **created a number of new credit facilities to provide liquidity to financial institutions**. These included the creation of lending facilities for investment banks in March 2008 as well as lending facilities to address funding liquidity issues following the collapse of Lehman Brothers in September 2008. The expansion of the Fed's lending programs during the 2008–2009 financial crisis peaked at over $1.5 tn by the end of 2008.

In addition to lending programs, the Fed engaged **in large-scale asset purchase programs**, also known as quantitative easing. In November 2008, the Fed announced that it would purchase Mortgage-Backed Securities (MBS) from US agencies and government-related housing debt. From November 2008 to March 2010, the Fed accumulated a total of $1.75 tn in securities, doubling the total value of its assets.

All of these actions led to a significant expansion of the Fed's balance sheet. From $860 billion in May 2007, the Fed's total assets rose to $2.31 trillion in March 2010, when the first wave of quantitative easing ended, and GDP growth returned to positive territory.

The ECB intervened several times between 2008 and 2012 to counter the effects of the GFC and the EU sovereign debt crisis.

In the aftermath of the Great Financial Crisis of 2008, the ECB's emergency measures led to an expansion of its balance sheet less important than that of the Fed. However, with the prolongation of the crisis period with the EU sovereign debt crisis (2010-2012), the Eurosystem balance sheet expanded dramatically.

On top of cutting its key interest rates from 4.25% to 1% between October 2008 and May 2009, the ECB introduced several measures to provide its so called "enhanced credit support" to banks, which were extended during the sovereign debt crisis. The ECB's response to financial fragmentation in the Euro area between 2010 and 2012 was twofold:

First, it injected liquidity to offset the drying of market funding sources. The ECB extended the maturity of its **refinancing operations** from a few months to several years[3]. It also **eased the requirements**, for accessing to these refinancing operations by accepting lower-rated securities, fixed-term deposits and subordinated debt as collateral. According to G. Claeys[4], the cumulative take-up of these two operations between October 2008 and February 2012 exceeded €1 tr.

Second, it addressed tensions in several market segments through the **Securities Markets Program** (SMP) and the **Covered Bonds Purchase Program** (CBPP). Introduced in May 2010, the SMP involved the purchase of Eurozone sovereign bonds on the secondary market in order to reduce the risk premium that had been inflated by investor mistrust. Under the SMP, the ECB purchased around €220 bn of Greek, Irish, Portuguese, Italian, and Spanish government bonds between 2010 and 2012. It also launched the CBPP in 2009 to revive the covered bond market. After an initial purchase of €60 billion of securities between July 2009 and June 2010, the ECB launched a second wave of CBPP in November 2011 for a total of €40 bn. The program was discontinued in October 2012, after the purchase of €16.4 bn of covered bonds.

Until mid-2012, these measures failed to ease tensions in sovereign bond markets, as yields on bonds issued by vulnerable Euro area Member States soared. Financial conditions eased significantly when ECB President

3. After 2008, the maturity of LTROs – originally of 3 months only – was lengthened, introducing operations with maturity of, first, 6 months, then 1 year and eventually by conducting two massive very long-term refinancing operations (VLTROs) with a maturity of 3 years (in December 2011 and February 2012).

4. 0G. Claeys, "The (not so) Unconventional Monetary Policy of the European Central Bank since 2008", EU Parliament Publications, 2014.

Mario Draghi assured in a speech on 26 July 2012 that the "ECB [was] ready to do **whatever it takes** to preserve the euro." A few weeks later, in August 2012, the Governing Council disclosed the design of the **Outright Monetary Transactions** (OMT) program, enabling the ECB to purchase unlimited amounts of government bonds of Member States already subject to a program of the European Stability Mechanism, provided that they adhered to the conditions of the ESM program. Although it was never activated, the announcement of the OMT contributed significantly in reducing troubled Member States' government bond yields.

Taken together, these measures contributed to the doubling of the size of the Eurosystem's balance sheet from €1.5 trillion in December 2007 to €3 trillion in December 2012.

1.2.2 The Covid-19 outbreak (March 2020-June 2021) triggered a new wave of monetary policy easing in the Euro area and the United States

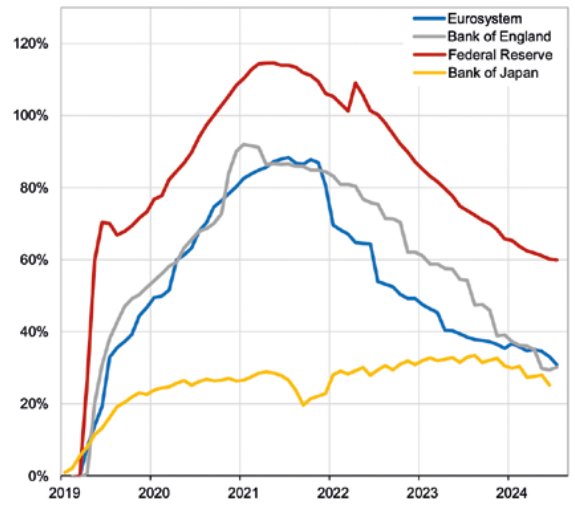
Following the global outbreak of the Covid-19 pandemic in early 2020, the central banks acted swiftly and forcefully to mitigate the economic and financial consequences of the pandemic. In addition to lowering policy rates, central banks significantly expanded their balance sheets and used other unconventional monetary policy tools to restore market functioning.

As a result, the size of central bank balance sheets increased rapidly in many countries, in many cases reaching record levels. Between December 2019 and June 2021, when most of the pandemic-restrictive measures were lifted and economic growth returned to positive territory, the Eurosystem's total assets increased by 70.2 %, while the Federal Reserve's balance sheet grew by 97.2 % (*see Chart 5a*).

Moreover, the increase in central bank balance sheets in response to the Covid-19 crisis was much larger than in response to the 2008 global financial crisis. Between December 2019 and June 2021, the Eurosystem's balance sheet, as a percentage of GDP, more than doubled compared to its size during the four years of the GFC and the EU sovereign debt crisis [2008-2012] (*see Chart 5b*). In the US, the total increase in the Fed's balance sheet was 18.3% of GDP in less than two years, between March 2020 and December 2021, compared with an increase of 6.7% of GDP between 2008 and 2010.

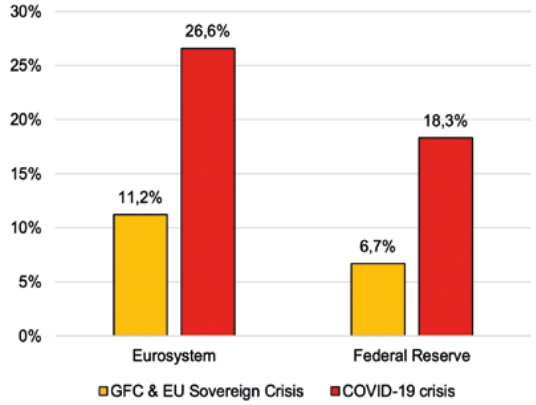
CHART 5.
Central Banks' balance sheet expansions during the Covid-19

Chart 5a : Change in Central Banks' balance sheet since December 2019, %



Source: Ekonomics, based on national central banks data
Notes: Last data are from June 2025

Chart 5b : Expansion of Central Banks' Balance sheet during the Global Financial Crisis and during the Covid-19 crisis (% of GDP)



Source: Ekonomics, based on national central banks data
Notes: the period associated to the Eurosystem's Balance sheets extended from 2008 to 2012; and from 2008 to 2010 for the Fed ; the Covid-19 period extends from December 2019 to June 2021; data are calculated on the basis of the 2019 nominal GDP

Measures taken by the ECB in response to the pandemic.

When the pandemic struck in March 2020, the ECB provided very accommodative funding conditions, as its deposit rate was negative at -0.5%.

In March 2020, the Governing Council decided to launch the Pandemic Emergency Purchase Program (PEPP), in addition to the existing Asset Purchase Program (APP) in place since 2015. The PEPP had an initial volume of €750 billion, which was increased twice in 2020, reaching €1,850 billion in December 2020 (*i.e.* around 15.5% of Euro area GDP in 2019). Regarding the APP, a temporary envelope of €120 billion of net asset purchases was added from March to December 2020.

From March 2020 to May 2021, cumulative net purchases under the PEPP amounted to €1.18 trillion. All in all, purchases of government securities accounted for 80% of all purchases. In contrast to the APP, the range of assets included in the PEPP was expanded by broadening the eligibility criteria, allowing the Eurosystem to purchase low-rated sovereign bonds such as Greek bonds. The PEPP also allowed the Eurosystem to hold more than 33% of a country's sovereign bonds, whereas the APP did not allow the Eurosystem to exceed this threshold. In addition to asset purchase programs, the Eurosystem extended its lending operations to commercial banks through its LTROs programs. According to the ECB[5], the total amount used exceeded €1.5 trillion in June 2020, and subsequent operations brought it to €2.2 trillion as of June 2021.

The combination of asset purchase programs and lending operations contributed to a significant increase in the Eurosystem balance sheet, rising from €4.7 tn in December 2019 to €7.88 tn in June 2021.

Measures taken by the Federal Reserve in response to the pandemic.

The Fed cut the federal funds rate by a total of 1.5 percentage points at its meetings on March 3 and March 15, 2020. These reductions brought the federal funds rate to a range of 0% to 0.25%. To support the smooth functioning of the markets for Treasury securities and government-guaranteed mortgage-backed securities (MBS), the Federal Open Market Committee (FOMC) announced that it would increase its holdings of Treasury securities and MBS. On **15 March 2020**, it stated it would purchase at least $500 bn in Treasury securities and $200 bn in MBS over "the coming months".

On 23 March 2020, it made the purchases open-ended, stating it would purchase securities "in the amounts needed to support smooth market functioning and effective transmission of monetary policy to broader financial conditions." **By June 2020**, the Fed set its pace of purchases at $80 billion per month in Treasuries and $40 billion in residential and commercial MBS until further notice. In **December 2020** it updated its guidance to indicate that it would slow these purchases once the economy had made "substantial further progress" towards the Fed's goals of maximum employment and price stability.

As of June 2021, the Federal Reserve's assets' holdings stood at $8.1 tn, double the amoun in December 2019 ($4.2 tn).

1.3 The 2% inflation target has led to asymmetrical monetary policies of the ECB and the Fed over the past 20 years

Over the past two decades, monetary policies have been asymmetric and accommodative to achieve their 2%-inflation target. This primary objective has guided monetary policy ever since. The massive expansion of central bank balance sheets outside recessionary periods (*Charts 1 & 4)* illustrates this asymmetry.

Monetary policy seems to have become disconnected from the business cycle: it has been highly expansionary over the past two decades. Central banks did not tighten monetary conditions when economic conditions improved. This has led to an over-financialization of the economy.

An inflation target is designed to protect the system from excessive price increases or deflation, but not to seek an artificially higher rate of inflation than that which would result from market forces. The problem with the 2% target is that, until the Covid-19 crisis, a structural equilibrium was actually achieved with an inflation rate of around 1%. This was the level at which both deflation and excessive inflation were avoided.

But instead of letting inflation evolve around 1%, central banks wanted to raise inflation from 1% to 2% at all costs. This misguided and doctrinaire view led central banks to massively and unnecessarily inflate money creation. The pretext was: "we have not yet reached the sacrosanct 2% target" (even though this 2% figure is artificial and, even if it had been reached, would not have guaranteed prosperity). In fact, the dangers of deflation were exaggerated, while the disadvantages of persistently low interest rates were completely underestimated.

According to J. de Larosière[6], "an illustration of this asymmetrical approach was the liquidity injection by the Fed to prevent a feared, but mistaken, deflationary trend in 2002. This overreaction produced a huge demand bubble. If, as political correctness would have it, there was no willingness to raise interest rates in the face of this widespread indebtedness, it would at least have been desirable to implement an appropriate macroprudential policy tailored to different countries and circumstances. Some countries particularly prone to inflation would have tightened regulatory constraints (*e.g.*, by increasing the minimum capital contribution required to obtain a mortgage). But these reactions to the scale of indebtedness did not take place. The lessons were not learned, and subsequent crisis episodes were not avoided as the warning signs of excessive indebtedness continue to appear..."

5. F. Barbiero & al. "TLTRO III and bank lending conditions", ECB Economic Bulletin, 2021.

6. See J. de Larosière, "Putting an end to the reign of financial illusion: for real growth", Odile Jacob, September 2022.

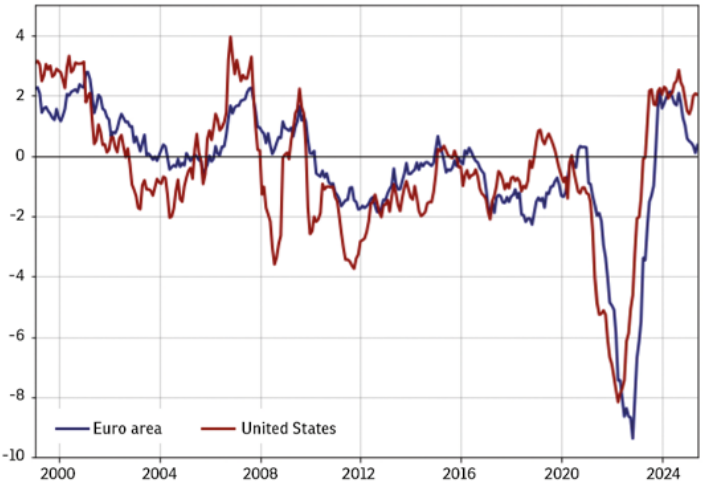
1.3.1 The asymmetry of the monetary stances of the Fed and the ECB over the past 20 years can be illustrated by the trajectory of their real short-term interest rates

As shown in Chart 6, short-term real interest rates have been predominantly negative in both the Euro area and the United States over the past two decades. With real interest rates close to zero or even negative, central banks have used QE programs during and after crises to turn the zero lower bound.

The ECB's failure to tighten monetary conditions when the economic situation improved limited its ability to act decisively at the next turning point.

However, changes in interest rates cannot affect the structural reasons for the downward pressure on inflation (the ageing of our societies, the opening up of international trade to imports from low-wage countries, changes in labour market behaviour, productivity gains resulting from new technologies, etc.).

CHART 6.
Real Refinancing Rates in the US and Euro Area
Policy rate minus headline inflation rate, % points



Source : Ekonomics, based on Bank for International Settlements' data
Notes : Latest data from May 2025

1.3.2 When the economic situation improved after the sovereign debt crisis, the ECB did not tighten or normalize its monetary policy

The Global Financial Crisis and the EU Sovereign Debt crisis legitimately required substantial bond-buying programs. But from the end of 2013 onwards, as the Eurozone economy recovered from the recessionary years of 2011-12, the ECB monetary policy remained very accommodative.

In a 2014 speech[7] in which he expressed his concern about the "unwarranted tightening of the policy" and the "deterioration in the medium-term inflation outlook", ECB President Mario Draghi signalled the continuation of unconventional instruments to "effectively deal with the risks of too prolonged a period of low inflation".

The first measure was the use of negative interest rate policy, with the deposit rate cut from 0% to -0.10% in June 2014. Further cuts followed until September 2019, when the deposit rate was reduced to -0.5%.

Another decision was the launch of asset purchase programs in October 2014. Initially designed to purchase asset-backed securities, the program was expanded in January 2015 to include corporate and government securities. Combined monthly purchases reached €60 bn from March 2015 to March 2016, and were intended to continue "until at least September 2016" according to the Governing Council[8]. However, net assets purchases continued at a monthly pace varying from €15 bn to €80 bn between 2016 and 2019.

The negative interest rate policy and asset purchases continued in 2018 as inflation approached the 2% target, even reaching this level between August and October 2018. Although net purchases were halted in December 2018, they resumed in September 2019 at a monthly pace of €20 bn.

A total of €2.6 tn euros of public and private securities were purchased under the APP between October 2014 and February 2020, before the Covid-19 crisis.

Had monetary policy over the past 15 years been geared towards a more realistic inflation target of around 1% instead of 2% and taken into account the increasing financial vulnerabilities associated with the very accommodative stance (*see Section 3*), the world would have avoided this unnecessary expansionary monetary policy as well as deflation.

7. M. Draghi, "Monetary policy communication in turbulent times", Speech at the Conference De Nederlandsche Bank 200 years, Amsterdam, April 2014.
8. "ECB announces expanded asset purchase programme", ECB Communication (January 2015).

1.3.3 The Fed ended QE policy 6 years after the end of the 2007-2009 recession

After the collapse of Lehman Brothers in September 2008, the Fed launched its QE policy to deal with dysfunctional financial markets. However, this emergency policy continued until 2015, six years after the end of the 2007-2009 recession, as officially dated by the NBER[9].

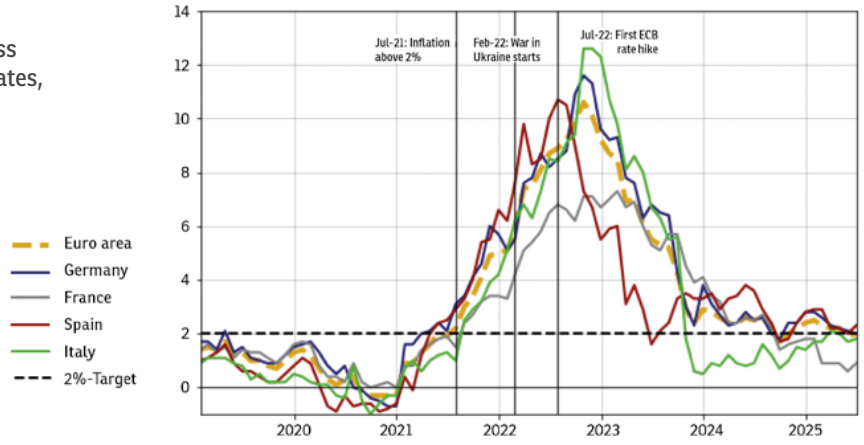
After completing its first wave of securities purchases from November 2008 to March 2010 (QE1), the Fed launched a second round of QE (QE2) involving $600 billion of US Treasury securities. This was completed in June 2011. In September 2012, the Federal Reserve announced a third large-scale asset purchase program, QE3, with monthly purchases of $40 billion in MBS and $45 billion in long-term US Treasuries, which ended in October 2014.

These two additional waves of QE increased further the size of the Fed's balance sheet. From $2.3 trillion in March 2010 at the end of the first wave, the Fed's balance sheet reached $4.5 trillion in October 2014, when the end of net purchases was announced. The FOMC reduced asset holdings in 2017, with the quantitative tightening policy ending in 2019.

1.3.4 The ECB continued its QE policy until July 2022, while inflation rose sharply to its highest level since the start of the Monetary Union

While inflation in the Eurozone has been consistently above 2% since July 2021 and has since reached record levels (*see Chart 7*), the ECB did not stop its asset purchase policy until July 2022, thus minimizing the risk of inflation.

CHART 7.
Recent inflation development across selected Key Eurozone Member States, annual change, %

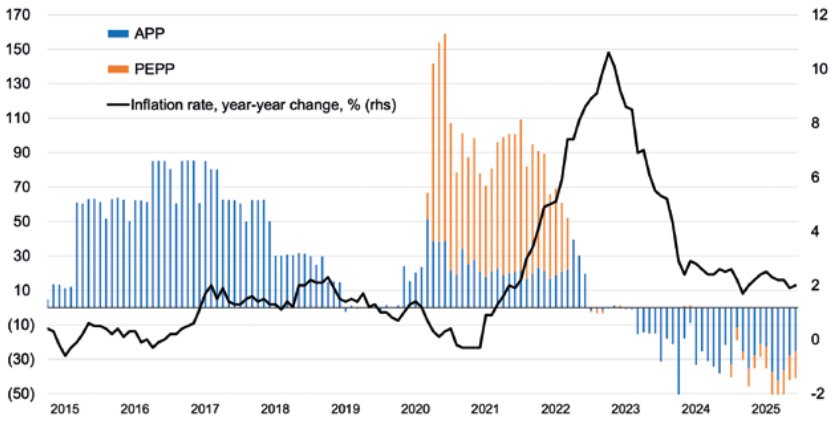


Source: Eurostat
Latest data from June 2025

After peaking at €160 bn in June 2020, the ECB's net monthly purchases of securities averaged €91.3 bn between October 2020 and November 2021 (*see Chart 8*). The pace of purchases was then reduced to €50-70 bn per month between December 2021 and March 2022.

After the end of its net purchases under the PEPP in March 2022, the Eurosystem continued to purchase securities under the APP. In April 2022, a total of €40 billion of public and private securities were bought under this program, even though headline inflation was more than three times the ECB's 2% target. Monthly net purchases then fell to €30.2 billion in May and €19.7 billion in June, before being discontinued on 1 July 2022 (*see last Section*).

CHART 8.
Asset purchases Programs of the ECB and inflation in the Euro area
Monthly Net Purchases of Debt (Billon EUR)



Source: ECB
Notes: latest data taken from June 2025

9. NBER, Business Cycle Dating – see Business Cycle Dating | NBER.

Thus, despite an accelerating inflation, including its core component, from the third quarter of 2021, the ECB maintained an extremely expansionary stance until July 2022. This was based on models that predicted that inflation would return to below 2% in any case, given the credibility of its policy. As D. Gros and F. Shamsfakhr explain, "with its own forecasts always ending with inflation below target, the ECB acquired a dovish bias. The models used by the ECB imply that shocks in energy prices drive headline inflation up to 8%, at the end of the forecast horizon inflation would return automatically anyway (*i.e.* to just below 2% without any change in policy)."[10]

The models used by the ECB had difficulty adjusting to structural changes. They implied that any wage pressures would be neutralized because the models explicitly assumed that the ECB's 2% target would be met, and the credibility of central banks is such that the public expects it to be met. Wage demands increased significantly across the Euro area, including double-digit increases in the minimum wage in several countries (*see Part 4.1*). This was to be expected: how could one imagine that European workers would accept a 7-10% loss in purchasing power without demanding compensation?

In a speech made in November 2021, M. King[11] highlighted that "the models used by central banks are based on questionable assumptions that are not necessarily those of the markets and have become the determining drivers of expectations. This type of model only works when nothing happens..."

•

J. de Larosière points out that "it is understandable for a central bank to lower its policy rate to zero at certain times and for reasons of economic adjustment. But to do so continuously for two decades (*see Chart above*) is difficult to imagine and justify. A situation of such prolonged negative interest rates is incomprehensible. It is because one of the fundamental forces of the economy has been artificially broken. This has led to profound disruptions in the financing of the economy, which has helped to shape a hyper-leveraged financial system that is prone to crises.

An inflation target is designed to protect the system from excessive price increases or deflation, but it does not aim to achieve an artificially higher price level than that which would result from market forces. The risk of deflation has been exaggerated, while the downside of persistently low interest rates has been seriously underestimated."

Instead of correcting structural weaknesses, most countries have refrained from implementing structural reforms over the last decade. Accommodative monetary and fiscal policies should normally only aim to manage the economic cycle.

A. Weber, in his article for the *Eurofi magazine 12*, emphasized that "even if monetary policy was effective in countering some of these problems, which it is not, it would have been the wrong tool. With interest rates at zero or slightly negative and central bank balance sheets massively expanded by quantitative easing, the ultra-loose monetary policy largely operated through the exchange rate channel and the asset price channel, while the traditional interest rate channel and the credit channel of monetary policy transmission had become ineffective. Policymakers were trying to solve huge structural problems by increasing debt to unprecedented levels and using cheap money to devalue their currencies and artificially inflating stock and real estate prices. The longer the underlying structural problems are not addressed, the more significant they become."

10. D. Gros & F. Shamsfakhr, "Too little too late: ECB's normalization path was model – rather than data-driven", Suerf policy brief, July 2022.

11. M. King, "Monetary policy in a world of radical uncertainty", International Monetary Research Institute, 23 November 2021.

12. % A. Weber, "Cheap money and rising debt undermined the growth potential of the Eurozone", Eurofi Magazine, April 2023.

2. Such prolonged monetary policy easing has steadily contributed to the expansion of indebtedness

Central banks have failed to control credit growth thereby contributing to the over-indebtedness of economies. In fact, credit expansion has not attracted their attention over the past two decades.

Money supply growth has consistently outpaced real economic growth between 2008 and 2022. Persistently low interest rates have contributed to the massive expansion of debt over the past two decades.

Against this backdrop, central banks have come to hold an increasing share of government debt and have become de facto fiscal agents.

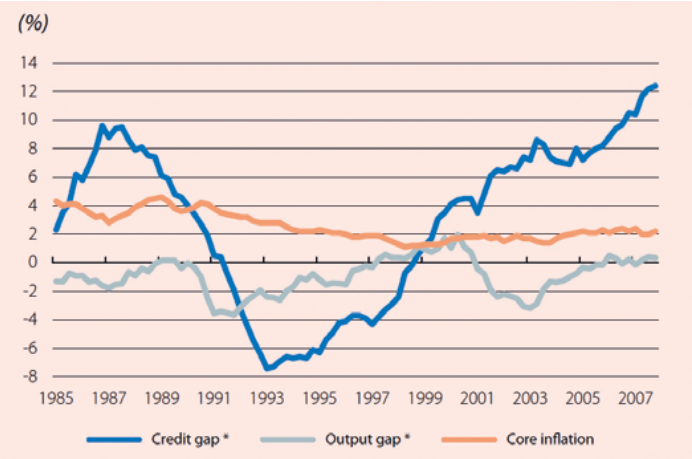
2.1 Lessons on the causes of the 2008 crisis were not learned by policymakers: financial crises are always the result of excessive debt.

The explosion of credit was a major factor behind the Global Financial crisis (2008).

J. de Larosière explained in 2010[13] that the credit boom – which is a monetary phenomenon – was a major factor in the Global Financial Crisis[14]. Certainly, the abuse of off-balance sheet operations (SIVs, conduits, etc.) and the securitisation of complex and opaque products contributed significantly to this expansion. But many central banks – and in particular the Federal Reserve which kept real interest rates close to zero for several years – fuelled credit expansion, which in turn stimulated monetary aggregates.

In the period leading up to the 2007-2008 crisis, debt rose much faster than the economy (*see Charts 9 & 10*).

CHART 9.
Measures of macroeconomic and financial stability in the United States [1985-2008]



Source: CaixaBank Research, based on data from the BIS, US Congressional Budget Office and US Bureau of Economic Analysis
** Above-potential growth in credit and economic activity, respectively*

J. de Larosière has already pointed out that "given the importance of credit for both domestic and external monetary stability, it is something of a mystery that central banks do not seem to have paid much attention to it as an indicator, even though credit growth has traditionally been an important element in the analysis and toolkit of monetary policymakers. At the very least, the magnitude of the credit bubble should have raised questions about the adequacy of monetary policies."

The BIS has finally acknowledged that "the Global Financial Crisis itself was arguably in part the result of the period of low rates that preceded it."[15]

To avoid a remake of such events, central banks will have to resume their monitoring of credit expansion to avoid inflating bubbles. J. de Larosière underlined that central banks should lean against the wind to "improve macro-economic performance by reacting systematically to asset price misalignments, over and above their reaction to inflation forecasts and output gaps.... Central banks can use different options..."

13. See J. de Larosière, "Monetary policy has played a major role in the run up to the financial crisis", Columbia University, December 2010.
14. For example, the ratio of US private sector debt to GDP skyrocketed from 112% in 1976 to 295% in 2008. In Britain, the ratio of households' mortgage debt to disposable income has surged from 80% in 1991 to 140% in 2008. In the United States, credit expanded by around 10% to 15% per year from 2004 to 2008 when economic growth in nominal terms was around 5% (the corresponding figures for the Eurozone are 8 % to 10 % for a nominal GDP growth of 4 %).
15. See page 55 of the BIS Annual Economic Report (June 2024).

Unfortunately, these 2010 analyses and proposals have not been followed up. Worse, the financialization[16] of economies has only increased since then.

There are features of the current situation that make it much worse than in 2007.

When it comes to debt, the end of the financial crisis marked a return to business as usual. Worse, "the debt engine has shifted into a higher gear". Global debt is now at its highest peacetime level:

- At the end of 2007, global debt – both private and public – stood at $113 tn. By the fourth quarter of 2024, it had more than doubled (to $236 tn), according to the Bank for International Settlements.
- As a percentage of GDP, the global debt ratio rose from 184% in 2007 to 229% in Q4-2024.

Has productive investment at least benefited from low interest rates? Unfortunately, the answer is no (*see Chapter 3*).

For 20 years, debt has exceeded investment.

McKinsey[17] calculated that, on average, 4 dollars of liabilities (debt and similar) were needed to generate 1 dollar of net investment between 2000 and 2020.

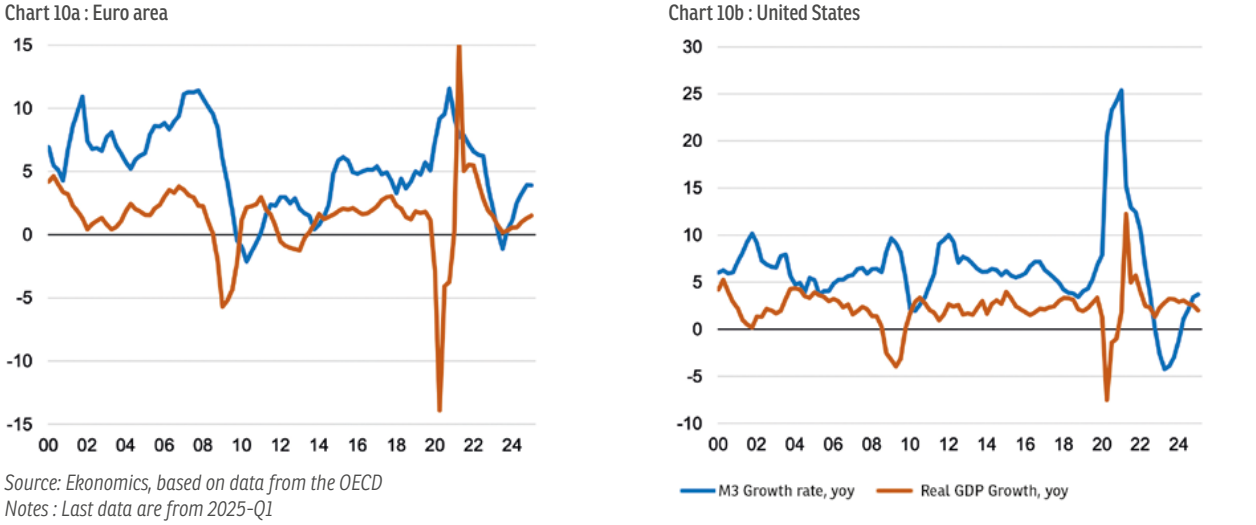
Although there is considerable variation across countries in this area, the fact remains that this multiplier of 4 indicates significant leverage – an all-time high – which raises concerns about future debt sustainability.

2.2 Central banks have not acted to control – let alone rein in – credit growth during the past decades

Two periods have to be distinguished: the first spans from 2000 to 2019, and the second from the start of the Covid-19 response to the present (early 2025).

M3 growth[18] has consistently outpaced real GDP growth in both the US and the Euro area (*see Chart 10*). Between 2000 and 2019, the volume of M3 in the US increased by 227%, while real GDP grew by only 51%. In the Euro area, M3 increased by 172%, compared to a real GDP increase of just 28%.

CHART 10.
M3 Growth Rate Against Real GDP growth rate,% annual change



Source: Ekonomics, based on data from the OECD
Notes : Last data are from 2025-Q1

Admittedly, these figures should be treated with caution, as the relationship between money creation and inflation is complex and non-linear (the velocity of circulation, and the irregularity of economic agents' demand for money, are difficult to model). But the continuity and the scale of this 'excess' of money should at least have led us to question the wisdom of such a policy... Traditionally, the growth of the financial activity has been proportional to

16. The term refers to the growing importance of international finance – and the debt it carries – in the development of the economic cycle.

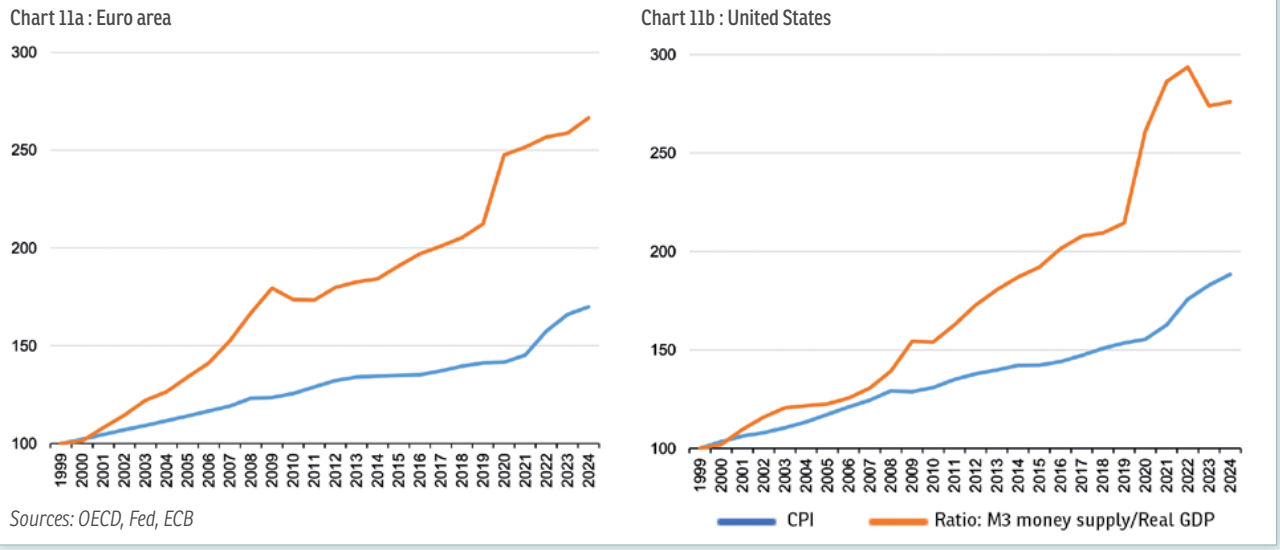
17. Mc Kinsey Global Institute, "The rise and rise of the Global balance sheet", November 2021.

18. M3 is a broad measure of the quantity of money in circulation, that includes highly liquid assets as cash and deposits accounts but also less liquid components as institutional money market funds, and short-term repurchase agreements.

the growth of the economy. Over the past 20 years, this relationship has disappeared: financing has exceeded economic needs.

The growth of credit in 2013-19 was not accompanied by a rise in the prices of goods and services, but by a rise in the prices of financial and real estate assets, which caused major instability in the financial system (*see Part 3*).

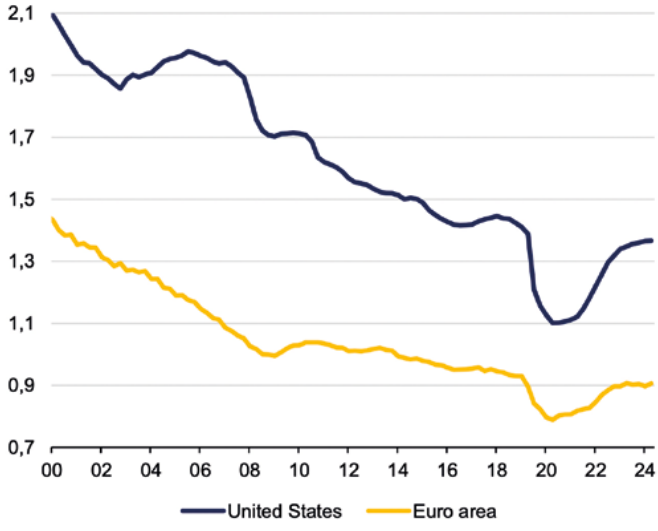
CHART 11.
Money supply, real GDP and inflation, 1999 = 100



Sources: OECD, Fed, ECB

One way of understanding the divergent trajectories of money supply growth and economic growth is to look at the velocity of money[19]. Money creation has not been reflected in the real economy because the speed of circulation has weakened: between 1999 and the end of 2019, the velocity of money fell by 52% in the Euro area and 49% in the United States (*see Chart 12*).

CHART 12.
Velocity of Money in Circulation in the United States and the Euro area, in units



Source: Ekonomics, based on data from the OECD
Last data from 2025-Q1

After the Covid-19 crisis, money supply growth driven by central banks' asset purchases accelerated significantly until mid-2022.

In the United States, the annual M3 growth rate peaked at 26.9% in February 2021 – a record since 1943 – before gradually declining to around 12% between June 2021 and January 2022, double the pre-pandemic average (+5.5% per year on average between 2014 and 2019).

19. The number of times a currency unit moves from one hand to another, over a quarter, for instance.

In the Euro area, annual M3 growth was more moderate, peaking at 12% in January 2021 and then fluctuating around 6-8% between May and December 2021. Annual M3 growth was close to 6% between April 2021 and September 2022, although it remained well above its pre-pandemic trend of 4.5% per year on average between 2014 and 2019.

Between February 2020 and April 2022, money supply increased significantly by 40% in the US and 20.2% in the Euro area, as much as in the six years before the Covid-19 crisis. Indeed, between January 2013 and December 2019, money supply increased by a total of 46.2% in the United States and 33.3% in the Eurozone.

As money supply has grown much faster than GDP, the amount of "excess money" has led to inflation, which is a monetary phenomenon (*see Section 4.1*).

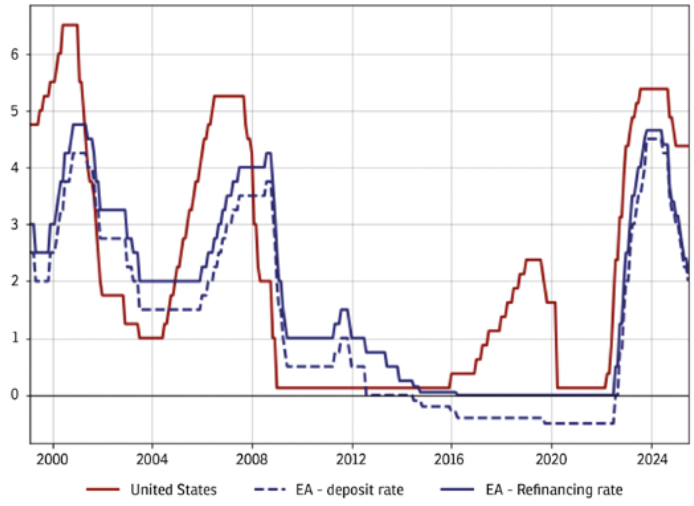
Another key factor in the current rise in inflation is the dynamics of the velocity of money. After collapsing during the Covid-19 crisis due to the sharp increase in the money supply and the fall in GDP, money velocity stabilized in the Euro area and the United States at the end of 2020 (*see Chart 12*). From June 2021, it started to increase slightly in both regions, suggesting that the excess money initially hoarded by households and firms was being used to purchase goods and services, leading to strong demand which, together with supply constraints, led to high inflation (*see Part 4.1*).

From mid-2022, monetary growth in the Eurozone fell sharply, turning negative in the third quarter of 2023 for the first time since 2010. However, this decline was temporary, as growth recovered in subsequent quarters (averaging 2.9% in 2024-2025Q1), although remaining below its pre-Covid-19 pace (5.3% on average between 2000 and 2019).

2.3 Lasting accommodative monetary policies have contributed to lower interest rates

Long-lasting accommodative monetary policies have led to lower interest rates. Notably, the ECB deposit facility rate – one of the ECB's key policy interest rates – remained negative in nominal terms between 2014 and 2022 (*see Chart 13*).

CHART 13.
Key Nominal Short-term Interest Rates for the US and the Euro Area



Source: BIS
Latest data from June 2025

The following Chart (*Chart 14*) shows the downward trend in long-term interest rates in some major advanced economies over the last 20 years. The German 10-year interest rate was the first to turn negative at the end of 2016, while the French 10-year interest rate was close to zero. From the end of 2019 to the end of 2021, both were negative.

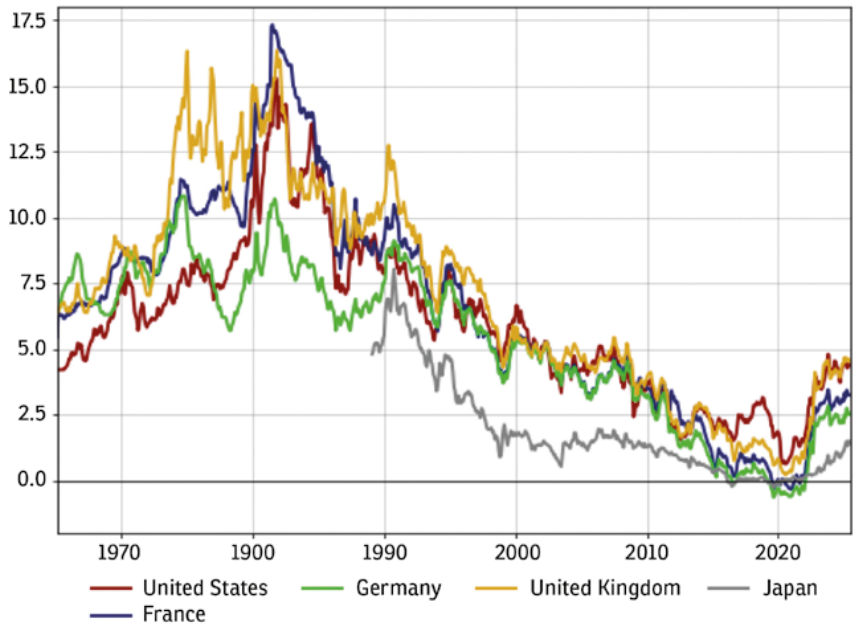
Since early 2022, French and German long-term bond yields have been back above zero (*see Part 4*).

The equilibrium real interest rate, the natural rate of interest, or "r-star"[20] has been falling for several decades and this has motivated central banks to keep interest rates permanently low by conducting unconventional asset purchase policies, even if, as the BIS explains[21], the natural interest rate is a "blurry guidepost for monetary policy".

20. The natural rate of interest, or r-star, is generally defined as the level of the risk-free short-term real interest rate that would prevail in the absence of business cycle fluctuations, with output at potential, saving equal to investment and inflation stable. In principle, this concept provides a yardstick for where real policy interest rates are heading in the medium term, once current business cycle disturbances dissipate,and the economy gravitates towards its equilibrium. The natural rate is also often used as a benchmark to assess whether the monetary policy stance is restrictive or expansionary.
Analytically, r-star is a compelling concept. But its measurement is fraught with difficulties, and our understanding of its drivers is quite limited. Ideally, frameworks as well as policy calibration should limit as far as possible dependence on notions such as r-star, which are so hard to pin down.

21. See BIS, Annual Economic Report (June 2024), page 66.

CHART 14.
10-Year Nominal Interest Rates of Selected Advanced Economies, %



Source: OECD
Latest data from June 2025

However, zero or negative nominal interest rates are not a natural phenomenon. They are largely the result of massive central bank asset purchases.

Expansionary monetary policies partly influence risk-free rates and reduce the interest rate risk premium. Without central bank intervention, risk-free rates might not be much higher as they depend in part on growth potential, which has been remarkably low in recent years. Indeed, Quantitative Easing affects long-term yields through signalling and portfolio rebalancing channels; the IMF reminds us[22] that according to the 'portfolio rebalancing' channel, asset purchases compress the term premium (*i.e.* the compensation required to hold long-term debt securities) and therefore reduce long-term yields.

This happens because QE reduces the net supply of long-term assets held by the private sector. Private sector agents, in turn, will agree to reduce their holdings of such assets if their prices rise (or if yields decrease).

The IMF also underlines that "estimates of the magnitude of QE's effect on yields in the Euro area suggest that the stock of assets currently held by the Eurosystem could be reducing long-term yields by up to 265 bps. The evidence on the magnitude of QE for the Euro area is more limited than for the US as the ECB only started its asset purchase programs in 2015."

The 2024 BIS Annual Report also states that "'the empirical evidence clearly indicates that unconventional policy measures allowed central banks to ease financial conditions much further[23]. Large-scale asset purchases helped compress risk (term and credit) premia and, by underlining central banks' willingness to keep interest rates low, influenced expectations of policy rates further out in the future – the signalling channel. Forward guidance helped shape those expectations more directly and, by reducing uncertainty about the policy rate path, compressed risk premia too. Negative interest rates were transmitted to money market and capital market rates very much like other policy rate cuts, thereby also having a similar impact on the exchange rate."

Furthermore, the massive liquidity and quantitative easing programmes implemented by AEs' central banks (such as the ECB, the Fed, or the BoJ) have blurred the meaning of long-term interest rates which no longer play their discriminatory role, leading to a mispricing of risk (*see Section 3.2.1*).

As a result, central banks managed the yield curve and took control of the traditional functions of markets.

Finally, asset purchase programs also made the interbank market less relevant by creating an environment of abundant bank reserves. The implementation of asset purchases led to the creation of reserves which, over time, brought the unsecured overnight lending rate closer to the Deposit Facility Rate. The IMF adds that "as a result, banks have become less vigilant about their counterparty risk and over time, accustomed to the abundant liquidity, which might make it difficult to withdraw such excess liquidity should they wish to do so."

22. IMF, "Quantitative tightening by the ECB: why and when?" Euro area policies, selected issues, July 2023.

23. See Borio and Zabai (2016), CGFS (2019) and Cecchetti et al (2020) for a review of the evidence on the impact of unconventional monetary policy tools on economic activity. See also Markets Committee (2019) on the impact of large balance sheets on market functioning.

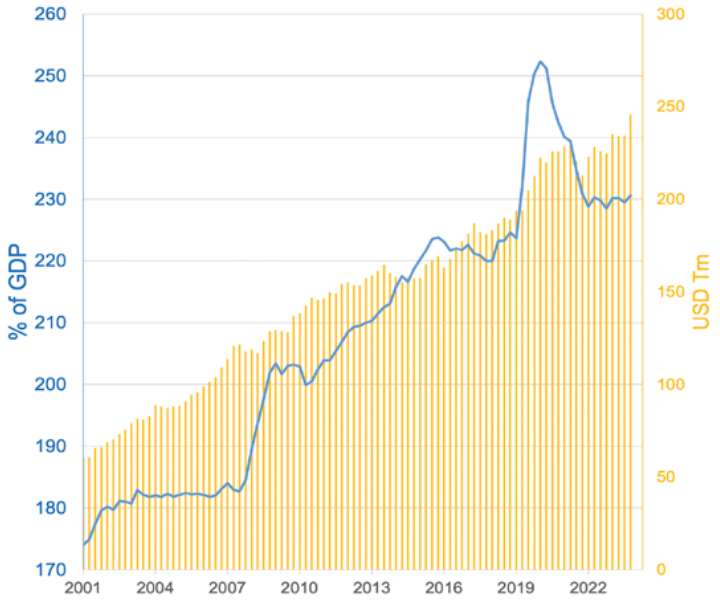
2.4 Lasting low interest rates contributed to the over-indebtedness of advanced economies

Lasting very low interest rates have pushed global debt to record peacetime levels, even before the sovereign debt crisis. According to the BIS, global debt reached a record of 252% of GDP at the end of 2020, up from 223% in 2019 and 203% in 2011.

It is important to note that public debt has been the main driver of this overall expansion, having grown much faster than private debt since 2008.

Admittedly, following the reopening of economies, which led to strong GDP growth and inflation, the global debt-to-GDP ratio fell by roughly 25 points from its peak in 2020 to the end of 2023. However, in the context of the global economic slowdown, disinflation and rising interest rates, the global debt-to-GDP ratio resumed its upward trend in the first quarter of 2024 and now stands at around 229% of GDP in the fourth quarter of 2024 (*see Chart 15*).

CHART 15.
World* public and non-financial private debt



Source: Bank for International Settlements
*Notes: *World debt regroups 45 advanced and emerging economies; last observations are from 2024-Q4*

Financial crises are always the result of excessive debt.

The higher the debt, the more borrowers – some of whom are overexposed – become indebted, and the more likely and severe future crises are. Some of the indebted countries (particularly those in the developing world) will not be able to meet the costs of their commitments[24]. This means that our overexposed financial system is vulnerable.

TABLE 1.
Credit To Non-Financial Private Sector, Public Sector, Firms and Households% of GDP

	General Government			Private Non-Financial Sector (a + b)			Non-Financial Corporations (a)			Households (b)		
	2000	2008	Q4-2024	2000	2008	Q4-2024	2000	2008	Q4-2024	2000	2008	Q4-2024
United States	48,7	66	114,1	136,7	170,8	143	66	74,8	73,8	70,7	96	69,2
United Kingdom	37,7	50,8	101,4	136	185,3	137,5	70,7	90	61,2	65,3	95,3	76,3
Japan	114,6	145,1	212,5	187,5	165,5	181,4	117,7	105,3	116,3	69,8	60,2	65,1
China	22,7	26,7	88,4	104,4	106,3	198,1	n.a	88,4	138,1	n.a	17,6	60
Euro area	69,2	69,6	87,5	125	158,1	157	76,2	98,3	105,5	48,8	59,9	51,5
France	59,6	69,8	113,1	139,6	166,5	215,5	104,8	117,2	155	34,8	49,4	60,5
Germany	59,2	65,2	62,4	147,7	143,3	139,3	77,3	84,5	89,4	70,5	58,8	49,9
Italy	108,7	105,8	135,5	78,4	114,9	94,3	55,8	76,1	58,2	22,6	38,8	36,1
Spain	57,8	39,6	101,8	122,3	221,4	124	76,6	138,6	80,3	45,6	82,8	43,7
Netherlands	52,2	54,3	43,3	260,4	278,9	264,1	170,7	162,8	170,5	93,7	116,6	93,6
Austria	66,6	69,6	81,7	132,9	143,2	132,8	87,7	90,8	88,9	45,2	52,4	43,9
Portugal	54,2	75,6	94,9	142,8	206,3	130,5	83,9	117,4	77,2	58,8	88,9	53,3
Belgium	109,6	93,2	104,7	146,2	192,1	180	105,4	142,2	122,6	40,8	49,9	57,4
Aggregate	n.a	56	87	n.a	131,7	145,2	n.a	77	90,3	n.a	54,7	54,9

Source: Bank For International Settlements. 'Aggregate' regroups 45 advanced and emerging economies

According to the BIS, the global debt-to-GDP ratio increased by 40.3 percentage points between the end of 2008 and the end of 2024.

24. W. Rhodes and J. Lipsky, "Act now to prevent a new sovereign debt crisis in the developing world", 23 March 2022.

According to BIS data (*see Table 1*), global debt[25] increased from 189.5% of GDP in 2008 to 229.8% in Q4-2024. It is worth noting that the global debt had already increased by 34.2 ppts between 2008 and 2019, reaching 223.7% of the GDP before the onset of the pandemic.

The public sector and non-financial corporations were the main contributors to the increase in global debt between 2008 and 2023.

- Between end-2008 and end-2024, the global public debt increased by 31 percentage points, from 56% of GDP in 2008 to 87% of GDP in Q4-2024.
- The private non-financial sector debt increased by 13.4 ppts, from 131.4% of GDP in 2008 to 145.2% of GDP in Q4-2024.
- Non-financial corporations were the main contributors to the rise in private sector debt since 2008, increasing by 13.3 percentage points – from 77% of GDP in 2008 to 90.3% in Q4-2024. In contrast, the increase in household debt was marginal, with the ratio stabilizing at around 55% of GDP since 2008.

CHART 16.
Evolution of global debt in advanced economies

Chart 16a : Credit by sector in advanced economies, Q1-2000= 100

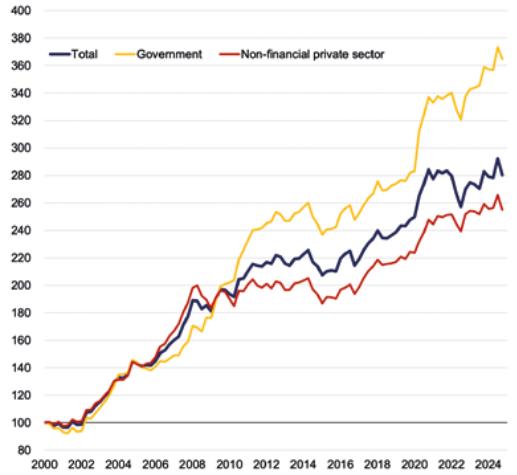
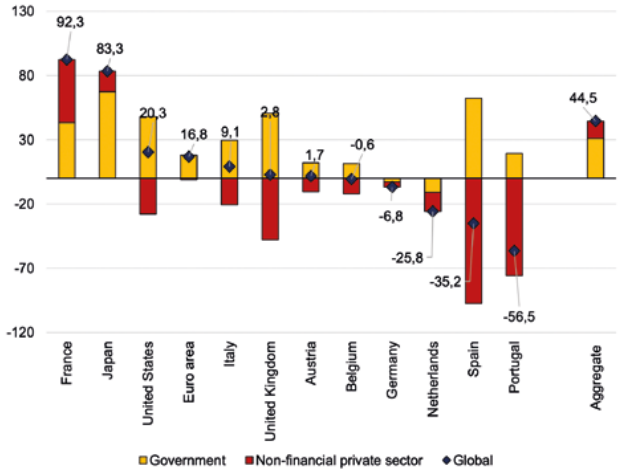


Chart 16b : Change in debt to GDP between Q4-2008 and Q4-2024, percentage points



Source: Ekonomics, based on data from the Bank for International Settlements

2.4.1 Loose credit conditions led to a huge public debt overhang

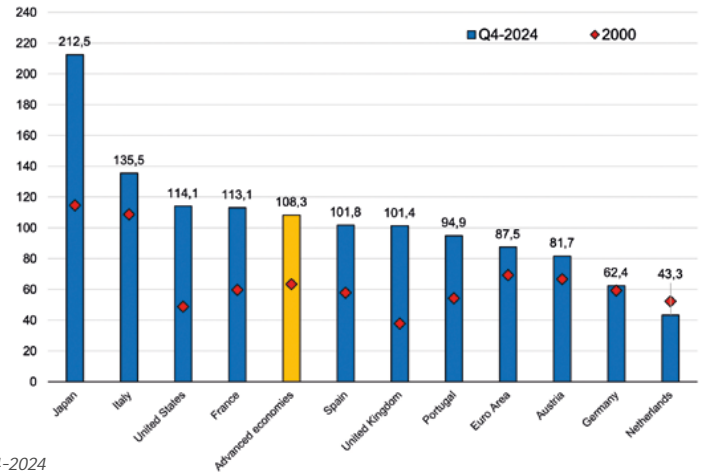
Over the past two decades, the public debt in advanced economies has risen steadily from 63.3% of the GDP in 2000 to 99% in 2019. Following the Covid-19 crisis, the public debt in advanced economies peaked at 118.8% of the GDP in Q1-2021. Helped by higher growth and inflation, it declined to 108.3% of the GDP in Q4-2024, although it remained 9.3 ppts above its pre-pandemic level.

Among the major advanced economies, the US, the UK, France, Italy and Spain saw their government debt-to-GDP ratio increased by more than 30 ppts between 2000 and 2024 (*see Chart 17b*).

CHART 17.
Gross Public Debt, as % of Nominal GDP

Chart 17a : Advanced economies

Chart 17b : Main Advanced Economies



Source: Bank For International Settlements. Last observation from Q4-2024

25. The global debt is based on aggregated using data covering 45 advanced and emerging economies.

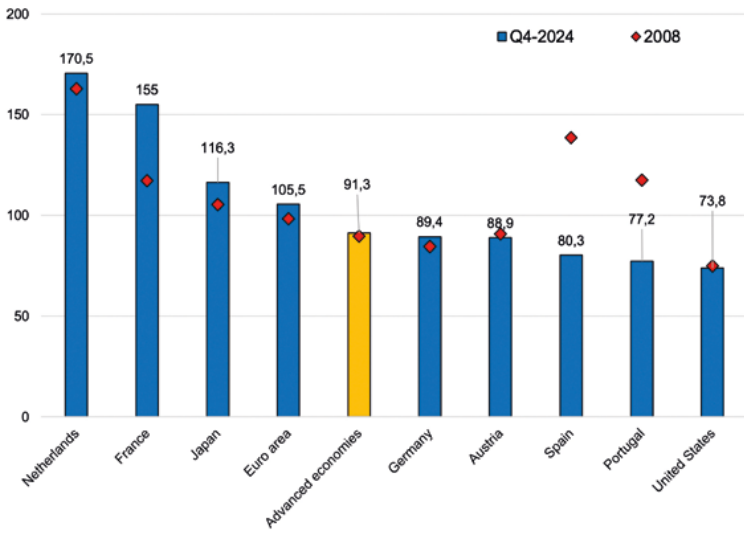
2.4.2 The corporate sector also entered the Covid-19 crisis with high levels of debt

In such a context, the non-financial corporate debt in advanced economies (loans + bonds) stood at 92.9% at the end of 2019, compared with 77.9% in 2000 (*see Chart 18*). In December 2024, the debt of non-financial corporations reached 91.3% of the GDP. Unlike the public sector, non-financial companies have managed to reduce their ratio since the Covid-19 crisis, bringing it down to below 2019 levels by the end of 2024.

CHART 18.
Credit to Non-Financial Corporations, % of nominal GDP

Chart 18a : Advanced economies

Chart 18b : Main Advanced Economies



Source: Bank For International Settlements. Last observation from Q4-2024

At the end of 2019, the global stock of outstanding non-financial corporate bonds reached a record level of $13.5 trillion. Notably, around 20% of the total amount of all bonds issued has been consistently rated below non-investment grade since 2010, indicating a persistent problem with overall bond quality[26].

This decline in corporate bond quality has also affected the global investment grade segment: while BBB-rated bonds accounted for an average of 38.9% of the global investment grade issuance between 2000 and 2007, they reached an average of 44.1% in 2008-2018 and 53.8% in 2018. This shift in the share of BBBs occurred at the expense of AA and AAA-rated bonds: the annual average share of AA-rated bonds fell from 16.7% to 13.7% between 2000-2007 and 2008-2018, and that of AAA-rated bonds fell from 5.4% to 2.3%.

Thus, as the OECD stressed in February 2020, "this prolonged decline in bond quality points to the risk that a future downturn may result in higher default rates than in previous credit cycles."

As a result, the corporate sector entered the Covid-19 crisis with high levels of debt and had to continue to borrow during the crisis, causing concern among many borrowers.

As explained by J. de Larosière in the first chapter of his book[27], "the policy of low interest rate has long played an important role in this deterioration in credit quality. Indeed, an environment of persistently very low interest rates leads financial operators to search for returns and therefore to take more risks. This may concern credit risks (operators agree to lend to companies that are already over-indebted) and liquidity risk (the duration of loans is extended and the level of cash down payments required is reduced)."

2.5 Central banks have de facto become fiscal agents

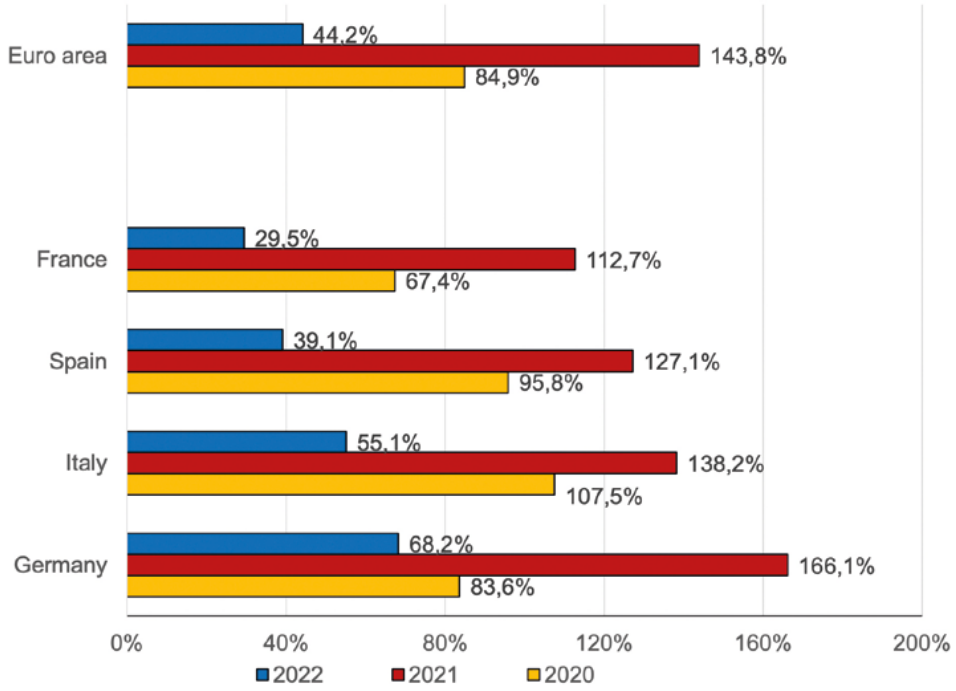
National Central Banks hold a significant share of their country's general government debt.

The Eurosystem played a leading role in the monetisation of public debt during the Covid-19 crisis, with its

26. Celik. S, Demirtas, G, Isaksson .M, Corporate bond market trend, emerging risks and monetary policy – OECD capital market series, 2020.
27. See footnote n°5.

purchases of government securities accounting for the bulk of government borrowing needs (*see Chart 19*). The scale of this intervention conferred a significant advantage to the borrowing governments (*i.e.* "fiscal dominance").

CHART 19.
Share of Public Debt purchased by the Eurosystem



Source: Ekonomics, based on data from the ECB and Eurostat

In 2020, the Euro area governments issued €1063 bn of public securities of which €902.3 bn of bonds were absorbed by the Eurosystem, representing 84.9% of new issues[28].

In 2021, the Euro area governments issued €629 bn (€400 bn less than in 2020). However, the amount of assets purchased by the Eurosystem increased slightly compared with 2020, reaching €904.7 billion in 2021 (*i.e.* 143,9 % of public debt issuance). In other words, in addition to absorbing all new issues, the Eurosystem also repurchased part of the rollover debt maturing in 2021.

According to Ekonomics calculations, more than all the debt securities issued by the French, German, Spanish, and Italian governments in 2021 were also purchased by the Eurosystem (*see Chart 18*)[29].

In 2022, the net purchases of securities by the Eurosystem amounted to 45.3% of the Euro area government debt issuances. The reduction and subsequent interfruption of net asset purchases in July 2022 explains this decline compared to the previous two years: in 2022, €203.3 bn of securities were purchased by the Eurosystem, one fifth of the amount purchased in 2021.

The purchase of sovereign bonds since 2015 has led the Eurosystem to hold more than one third of the Euro area government debt outstanding in 2022.

The share of government debt held by National Central Banks started to rise steadily after 2015, when the ECB included government securities in the APP (*see Section 1*). Between January 2015 and December 2019, it increased from 4,9% to 19.8%.

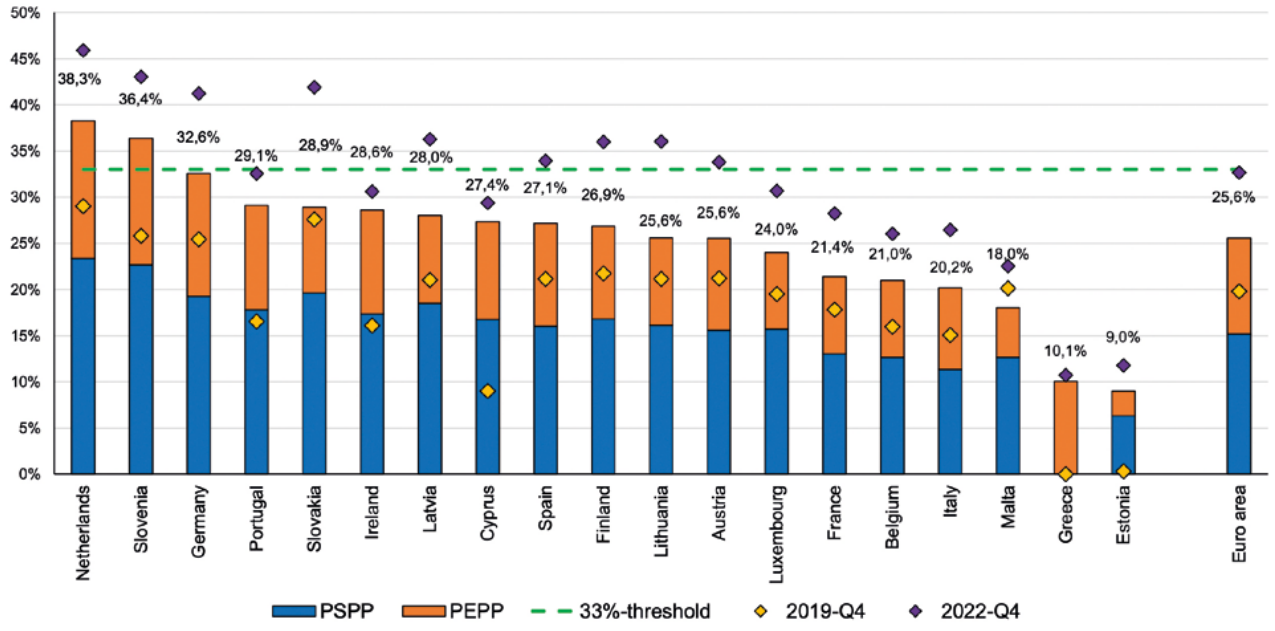
By December 2022, six months after the ECB officially ended its net purchases under the APP (*see Section 4*), this share has declined to 32.7%. Despite the ECB's quantitative tightening policy which started in March 2023, the stock of debt held has decreased marginally: in March 2025, the Eurosystem held a quarter of the public debt issued by Eurozone governments (*see Chart 20*).

In March 2025, the Eurosystem held 21.4% of French government debt and 20.2% of Italian government debt. Almost a third of German and Dutch debt was still on the Eurosystem's balance sheet in March 2025.

28. We calculate the share of Eurosystem purchases in government refinancing needs, by dividing the total amount of net purchases of Eurosystem securities in a year to the annual change in government debt.

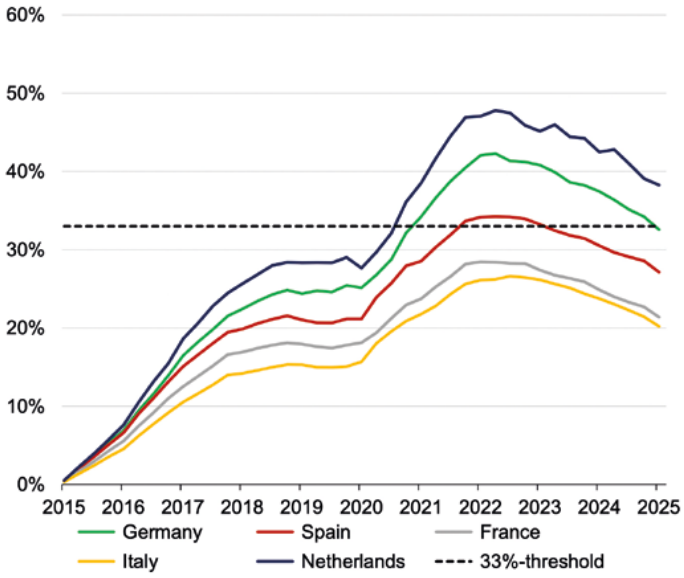
29. When the Eurosystem purchases more than the newly issued debt, *i.e.* more than 100%, it means that the figure includes principal repayments of maturing securities purchased previously.

CHART 20
Share of Government Debt held by the Eurosystem as of March 2025, %



Source: Ekonomics, based on data from the ECB and Eurostat

CHART 21
Share of public debt held by the Eurosystem



Source: Ekonomics, based on data from the ECB and Eurostat
Last observation from 2025-Q1

The link between sovereign states and central banks has been strengthened.

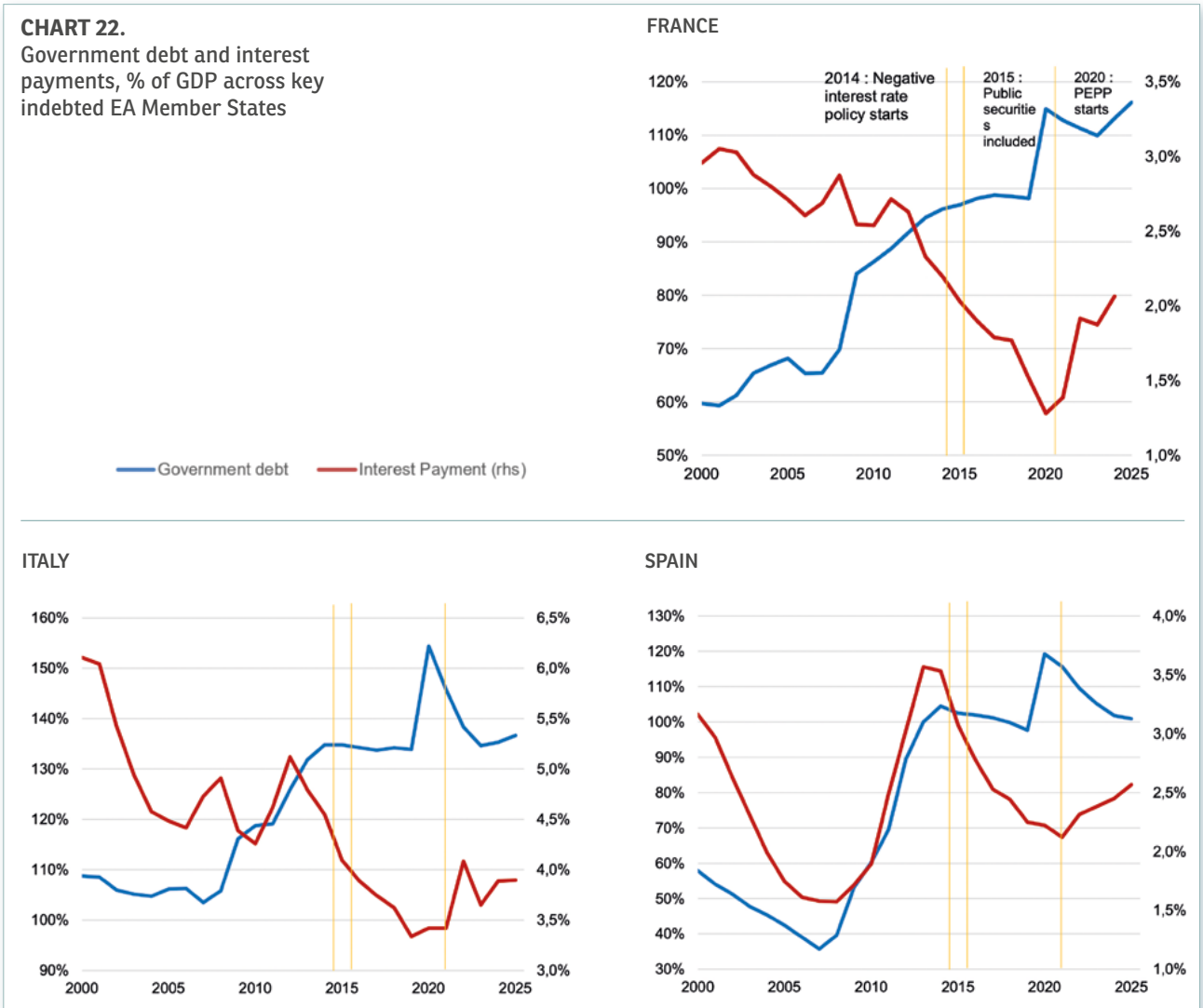
In advanced economies, central banks have assumed on greater responsibility, strengthening the sovereign-central bank link between 2008 and 2022.

Ultra-low interest rates and other monetary interventions have lowered government debt service ratios, masking the fiscal excesses of over-indebted countries. Indeed, between 2012 and 2021, the French, Spanish and Italian debt service costs fall while their public debt increased or stabilized at high levels (above 100% of GDP) – see Chart 22.

This encouraged governments to believe that the economic situation was under control and that they could continue to operate in a "business as usual" mode.

It should have been clear that the systematic purchase of sovereign bonds should not allow governments to finance large stimulus packages unconditionally. Consideration should also have been given to increasing the efficiency of public spending and prioritizing public investment over current spending.

CHART 22.
Government debt and interest payments, % of GDP across key indebted EA Member States



Source : European Commission, Spring Forecast (May 2025)

This "fiscal dominance"[30] poses three big dangers.

First, it raises doubts about the independence of central banks.

Second, it has acted as a powerful disincentive for governments to control or reallocate public spending towards productive uses, and to implement the structural reforms that are essential to meet the fundamental challenges of the green transition, which cannot be solved by printing more and more money.

Indeed, lasting zero or even negative interest rates have discouraged many Member States in the EU from launching structural reforms that could boost potential growth. Indeed, ultra-low interest rates encouraged them to borrow more. And if government borrowing becomes a free lunch there is a clear disincentive to fiscal discipline. Furthermore, most EU large economies have not complied with the rules of the Stability and Growth Pact (*e.g.* Italy, Spain, France, and Belgium).

In other words, the certainty of low interest rates in the face of political imperatives has encouraged governments to increase debt further. But the idea that money creation can solve the problems of excessive debt is an illusion. The end of the pandemic now shows that we have a debt overhang problem that only governments, not central banks, can solve.

This fiscal dominance raises a third problem: the excessive indebtedness of several large Member States (Italy, France, Belgium, etc.) may constrain the conduct of monetary policy to the point of preventing it from effectively fighting inflation. Higher debt raises the sensitivity of fiscal positions to policy rates.

30. In a fiscal agent regime, debt sustainability is therefore maintained by low long-term interest rates and not by a reduction of fiscal deficits if they are excessive.

Concerns about the sustainability of the public debt in some countries can limit the actions of central banks in their decisions on interest rates and balance sheet reduction. In addition, fiscal expansion can overstimulate demand and complicate the objective of disinflation.

Fiscal consolidation in these over-indebted EU countries is therefore an absolute priority. In the short term, this would help to reduce inflationary pressures. If fiscal positions are not brought under control, the risks to financial and macroeconomic stability will increase.

•

While debt is acceptable when it is used to finance investments that will eventually generate additional income (which will allow the debt to be repaid), it should be a cause for concern when it is used to finance current expenditures or public deficits. In this case, unless there is some unlikely euphoric growth, it can only be repaid by incurring more debt, creating an infinite process of debt accumulation.

The excessive growth of debt unsecured by future income has a major drawback: it weakens the financial system by multiplying bad risks, triggering defaults, or artificially propping zombie firms that survive on the subsidy of low interest rates and prevent the development of new competitors. The extreme increase in global indebtedness demonstrates the over-financialization of our system and the danger of a financial crisis as soon as monetary conditions reverse.

"The productive potential of the economy diminishes as debt levels rise because the interest burden associated with servicing higher public debt has once again become a major government expense with higher interest rates. This will lead to further increases in taxes, with all their negative effects on economic incentives and future growth. In the long run, the price to be paid for this recent period of cheap money will be high."[31]

31. A. Weber, "Inflation and monetary policy: way forward", Eurofi Magazine, April 2023.

3. Persistent ultra-loose monetary policies have led to negative economic and financial stability consequences

Lasting ultra-accommodative policies (2008-2021) have been detrimental to productive investment and growth, with a preference for liquidity prevailing over investment, particularly in Europe. These policies have fuelled capital misallocation, encouraged the proliferation of zombie firms, and increased share buybacks.

In addition, persistently low interest rates have exacerbated financial vulnerabilities, leading to mispricing of risks and asset bubbles. They have encouraged unfavourable financial valuations at the expense of growth and have been accompanied by a significant increase in wealth inequality.

As the BIS summarises in the introduction to its Annual Report (June 2024), "exceptionally strong and prolonged monetary easing has limitations. It exhibits diminishing returns, it cannot by itself fine-tune inflation in a low-inflation regime, and it can generate unwelcome side effects over the long term. These include weakening financial intermediation and inducing resource misallocations, encouraging excessive risk-taking and the build-up of vulnerabilities, and raising economic and political economy challenges for central banks as their balance sheets balloon. These limitations were not fully appreciated at the time the measures were first introduced."

3.1 Lasting zero interest rates have damaged productive investment and growth in Europe

Ultra-loose monetary policy has undermined the Eurozone growth potential. Abundant liquidity and low interest rates have not led to increased productive investments but to liquidity hoarding. With interest rates set to remain at zero for an indefinite period, investors have been discouraged from investing in risky projects, turning instead to high-yielding speculative assets. In addition, the savings of household and non-financial corporations had shifted into liquid and non-risky assets, as the returns on investments were insufficient in relation to the risk taken – particularly in Europe.

Furthermore, low or negative interest rates induce a fatalistic state of mind that decreases – and not increases – the propensity to invest. In what John Maynard Keynes called the 'liquidity trap', investors play safe by placing their savings in very short-term instruments rather than deploying them over longer term ones, as low interest rates generate inadequate returns for higher risks.

As the BIS[32] has stated, "no well-functioning economy should operate with real interest rates that remain negative for too long: capital is misallocated and growth impaired."

3.1.1 Signs of the liquidity trap: preference for liquidity prevails over productive investment

Loose monetary policies combined with the expectation of low returns on earnings, lead to a preference for liquidity.

The following Chart shows that, from 2008 to 2021, while interest rates decreased, a significant increase occurred in the purely liquid component (currency and sight deposits) of households' and non-financial corporations' financial portfolios across the main Euro area countries. Once the investor's risk is no longer rewarded, investors turn away from riskier long-term projects.

Indeed, the share of liquid financial assets held by households and non-financial corporations increased from 10.2% in 2007 to 20.1% in 2021 in Germany and from 5.3% in 2007 to 7.8% in 2021 in France. The increase was also important in Spain and Italy over the same period (respectively +10.2 ppts and +6.6 ppts). This trend continued during the Covid-19 crisis and even intensified after it.

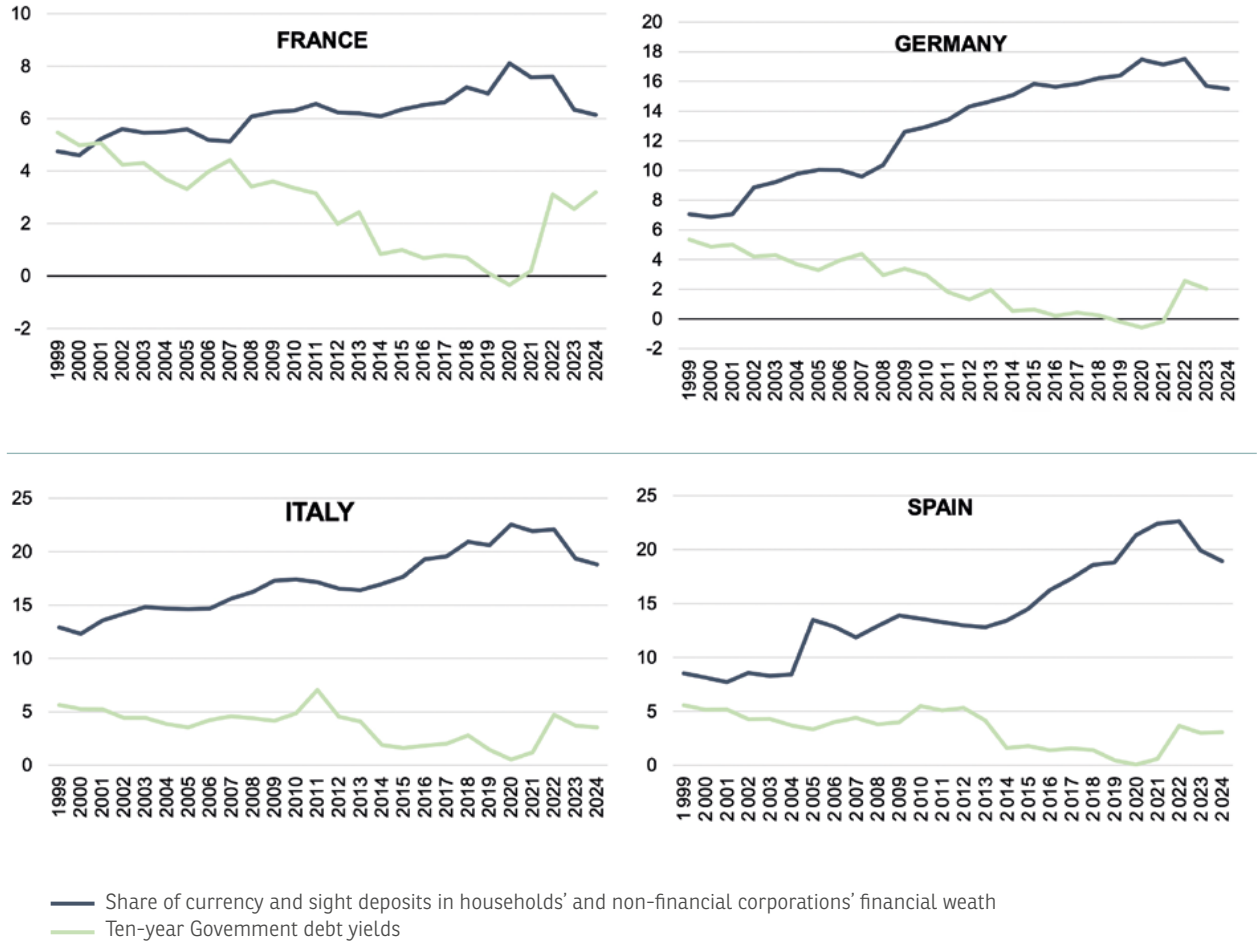
The long-running low-interest rate policies tended to undermine productive investments.

It is long-term productive investments that enable an economy to progress, increase its productivity, and face up to the necessary transitions (green, digital…). Investment is the lifeblood of competitiveness and productivity. Long-term investment means betting on the future and taking risks.

Lasting low interest rates do not encourage more productive investment. Indeed, entrepreneurs are discouraged from investing in an environment where interest rates remain low, meaning that growth prospects are weak. When uncertainty, risk aversion and lack of return combine, it is obvious that the prospect of long-term investment fades in favour of defensive, risk-free, and liquid investments.

32. Keynes justified low interest rates in adverse circumstances, but he specified not too low interest rates. Indeed, when they are too low, they deter savers from investing in long-term bonds and encourage them to either keep their savings in liquid forms, which they are doing, or in assets remunerated only because they are risky. On the other hand, entrepreneurs, discouraged by the prospect of no growth emanating from zero interest rates for a long time, are turning away from productive investment in favour of things like share buybacks and speculative opportunities.

CHART 23.
Evolution of the liquid assets of economic agents as proportion of financial wealth and long-term government bonds

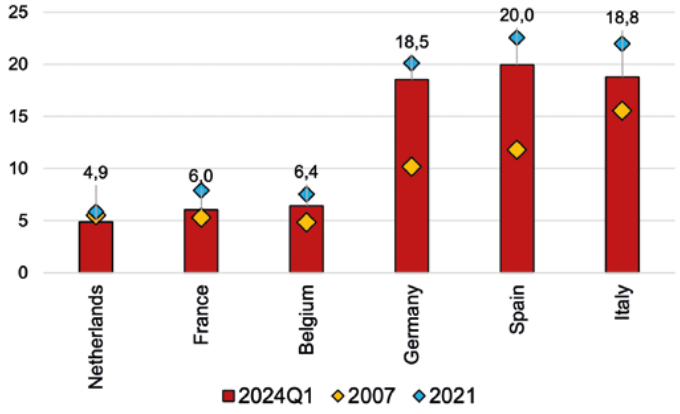


Sources: Eurostat, Refinitiv Eikon, OEE (Observatoire de l'Épargne Européenne)

According to World Bank data[33] "France and the US have invested nearly two percentage points of GDP less since 2000 than they did in the 1970s and 1980s; Germany and Italy about 4.5 pts less; the UK and Japan 6 and 10 ppts less respectively. These are enormous numbers."

Chart 25 highlights that in advanced countries, the level of gross non-residential investment in tangible assets has fallen significantly over the past two decades, from 14.6% of GDP in 2000 to 11.4% in 2022. Almost half of this decline occurred between 2008 and 2019.

CHART 24.
Share of financial liquid assets held by households and non-financial corporations, % of financial wealth



Sources: Eurostat, Refinitiv Eikon, OEE (Observatoire de l'Epargne Européenne)
Notes: Labels refer to 2024-Q1

33. M. Sadbu, "The investment drought of the past two decades is catching up with us", Financial Times, 20 July 2022.

The rise in intangible investment over the same period was less than the fall in tangible non-residential investment (*see Chart 25b*). Indeed, non-residential intangible investments which include patents, brands, trademarks, copyright, and software have stagnated or risen slightly over the past two decades, reflecting the digitalisation of advanced economies. In AEs, they increased from 4.3% of GDP in 2000 to 5.6% in 2022. But this did not offset the decline of total non-residential investment, which dropped from 18.9% of GDP in 2000 to 17% in 2022.

CHART 25.
Non-Residential Investments in Advanced economies,% of GDP

Chart 25a : Non-residential Tangible Investments in selected Advanced economies

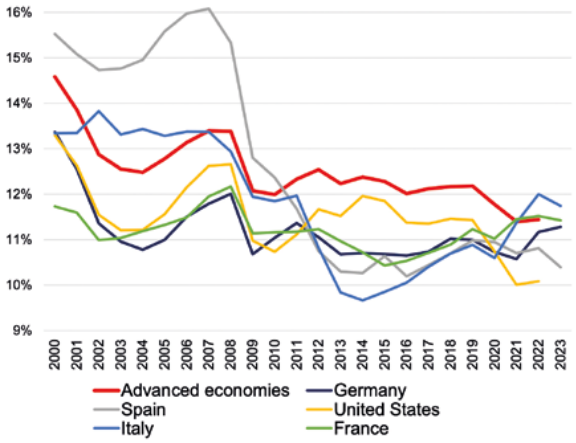
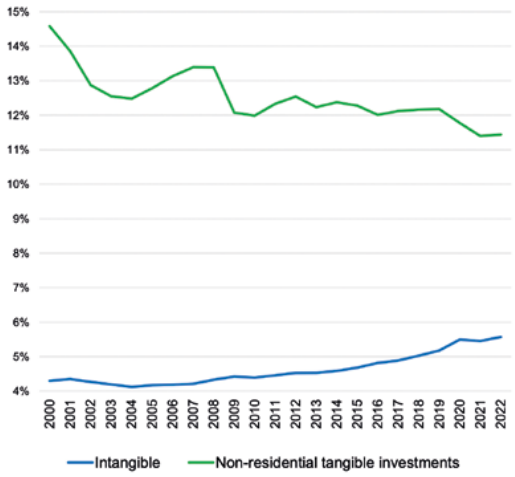


Chart 25b : Non-residential tangible versus intangible investment in Advanced Economies

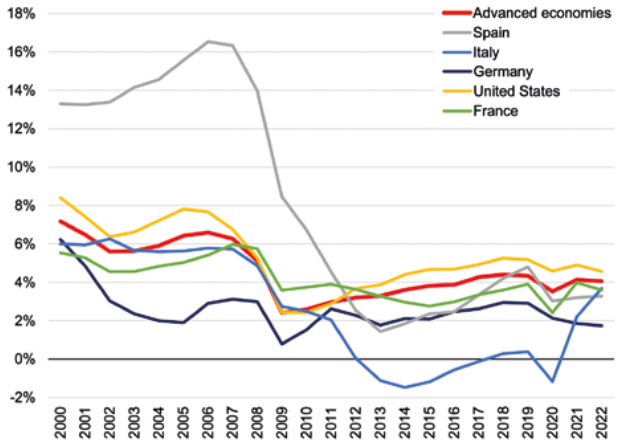


Sources: OECD, IMF Staff Calculations
Notes: Advanced economies = Australia, Canada, France, Germany, Italy, Japan, Korea, Spain, United Kingdom, United States ; the series include government and corporate investment

As a major source of long-term growth, non-residential investment in tangible assets results from spending on such items as infrastructures, commercial real estate, machinery, and industrial plants.

The gradual decline in non-residential investment in tangible assets has been widespread in the major advanced economies. In the United States, it has fallen by 3.2 points since 2000, reaching 10.1% of GDP in 2022. In Germany, it has fallen by 2.2 points since 2000, reaching 11.2% of GDP in 2022. Italy and Spain have also seen significant declines, with investment falling by 1.3 and 4.7 points respectively since 2000, reaching 12% and 10.8% of GDP in 2022. French non-residential tangible investment recorded one of the smallest declines of the last two decades (-0.2 points).

CHART 26.
Net corporate investment
(as % of nominal GDP)



Sources: OECD, IMF Staff Calculations
Note: Advanced economies = Australia, Canada, France, Germany, Italy, Japan, Korea, Spain, United Kingdom, United States ; the series include government and corporate investment

The picture is similar if we focus on net investment, which represents the flow of investment that is not intended to compensate for capital depreciation, but to increase companies' production capacity. The evolution of this ratio (*see Chart 26*) shows that net corporate investment as a proportion of the GDP has fallen in most advanced

economies over the last twenty years or more. Indeed, while the average net level of investment was 6.3% of GDP per year in advanced countries between 2000 and 2007, this figure has fallen to 4% between 2014 and 2022. Italy, in particular, has seen a decrease of the investment level over the last decade, showing that the volume of investment was insufficient to at least compensate for the depreciation of existing capital.

All these data show that persistently low interest rates have not been a favourable factor for productive investment. On the contrary, low interest rates have encouraged liquidity traps and discouraged investors from making risky long-term investments.

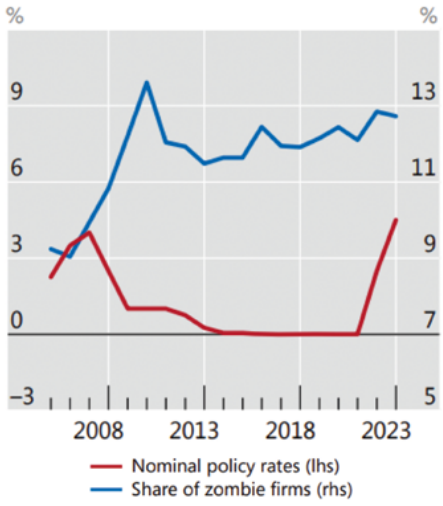
3.1.2 'Too low for too long' policies have favoured the survival of weak firms, thereby increasing capital misallocations

As Claudio Borio explains[34], "prolonged monetary easing has helped to keep in business structurally unprofitable firms – so-called "zombies". Indeed, favourable borrowing conditions ensured the survival of non-productive firms *i.e.* firms whose profitability is so low that they would not be viable if interest rates were higher.

Over the past decade, loose monetary policy has hampered the process of creative destruction, securing the survival of zombie firms that should have gone bankrupt. This has further compromised the aggregate productivity growth, and this excess supply perpetuated the disinflationary pressures that prevailed in the run-up to the Covid-19 crisis. Acharya et *al.* (2020)[35] have detailed the process: in sectors where zombie firms predominate, prices fall (so do profits). However, increased competition for factors of production raises costs and furthers lower profits for all. This reduces investment, particularly for healthy firms, and decreases future productivity growth. The level of productivity in the sector also falls arithmetically as it includes low-productivity zombie firms. In short, zombie firms increase short-term disinflationary pressures as excess capacity is maintained; but they also reduce the level of competition as they deter the entry of new firms, and the growth of productivity.

According to the BIS[36] the share of zombie firms in OECD economies has risen from 9% in 2008 to 13% in 2023 (*see Chart 27*) worsening the allocation of labour and capital by crowding out more productive businesses. The expansion of zombie firms has contributed to the downward trend in potential growth in OECD countries during the 2010s: as the share of zombie firms in an economy increases, total factor productivity growth declines[37].

CHART 27.
Share of zombie firms in listed Non-Financial Companies across advanced economies,%



Sources: Banerjee and Hofmann (2022), BIS Annual Economic Report (2024)
Notes: Across 14 advanced economies, zombie firms defined as firms with both an interest coverage ratio of less than 1 and a Tobin's q below the median firm in the sector over two years. To be declassified as a zombie firm, an ICR larger than one or a Tobin's q above the sector median over two years is required. Zombie share is the ratio of zombie firms to all firms

According to W. White, the sharp reduction in corporate default rates through 2022 also testifies to the growing zombification of many economies. Since the pandemic, the drawing down of bank lines and heavy recourse to the bond market have probably exacerbated this problem. In fact, insolvencies have fallen further in many countries over this period.

As the June 2024's BIS Annual Report explains, "it is easier for unprofitable enterprises to remain in business when borrowing costs are very low and lenders have a greater incentive to "extend and pretend", given the lower

34. C. Borio, "Monetary policy in the 21st century: lessons learned and challenges ahead", BIS, 30 June 2024.
35. V. Acharya, M. Crosignani, T. Eisert & C. Eufinger, "Zombie credit and dis-inflation: evidence from Europe", National Bureau of Economic Research, May 2020.
36. Cf. C. Borio, quoted above.
37. R. Banerjee et B. Hofmann, "The rise of zombie firms: causes and consequences", BIS, September 2018.

opportunity cost of forbearance. Eventually, some firms might even borrow primarily to service existing debt and avoid exiting or restructuring – these are the so-called zombies. This contributes to the misallocation of labour and capital by crowding out more productive businesses. Empirical evidence tends to confirm this observation. It finds a ratcheting up in the prevalence of zombies since the late 1980s linked to reduced financial pressure and hence lower interest rates even after accounting for other factors. The evidence also points to crowding out effects."

3.1.3 Lasting low interest rates encouraged companies to take on cheap debt to buy-back their shares rather than invest in long-term projects

The evolution of share buybacks cannot be dissociated from monetary policy.

A 2021 OECD report[38] points out that "this link is particularly important in the current low-interest environment, which greatly affects the relative cost of debt and equity. Low interest rates may drive increases in corporate debt issuance to finance share buybacks, rather than invest in future projects. Expansionary monetary policy initiatives such as the ones undertaken in many OECD countries after the 2008 crisis and the Covid-19 pandemic may directly affect the development in payout policy and adjustments in the companies' capital structures."

According to the OECD, of the total value of share buybacks in 2018, around 83% was attributable to US corporations. A significant proportion of US share buybacks took place in the financial sector, which profitability was boosted by lasting low interest rates. In 2018, share buybacks by US companies amounted to around $ 1.1 tn, more than double the amount in 2010.

In 2019, total share buybacks in OECD countries amounted to $ 599 bn, more than twice the amount of new equity issuance. The amount spent on share buybacks exceeded the amount of equity issuance every year from 2016 to 2019[39].

CHART 28.
Share buybacks by non-financial corporations

Chart 28a. : as % of nominal GDP

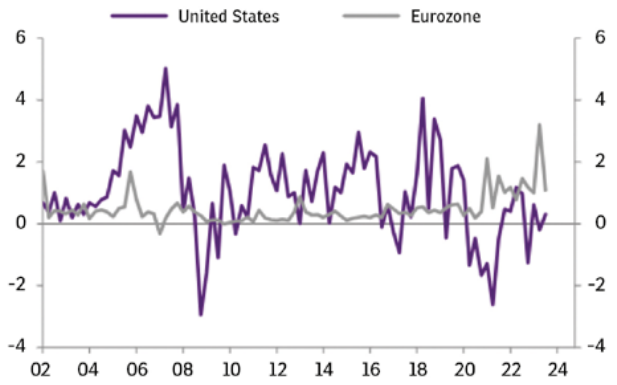
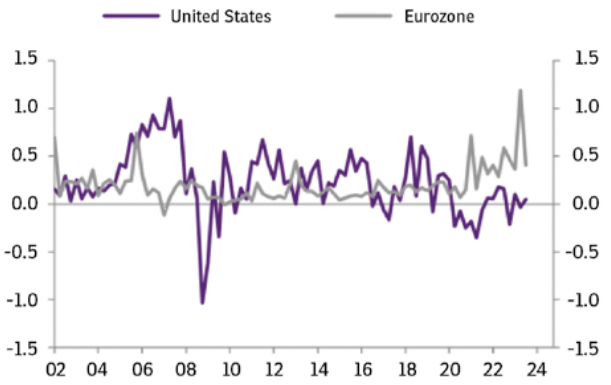


Chart 28b : as % of market capitalisation



Sources: P. Artus, "Share buybacks and stock market indices in the United States and the Eurozone", Natixis Economic Research *(February 2024)*
Notes: share buybacks are calculated as the difference between Gross issuance and net issuance of listed shares

A significant increase in the value of shares repurchased by listed corporates on both sides of the Atlantic occurred in 2022: in the United States, a new record was reached at $1.139 tn (1.8% of GDP), against $1.026 tn in 2021, according to the S&P Global data[40].

In Europe, $286 bn buybacks (1.4% of GDP) occurred in 2022, down from $291.5 bn in 2021.

In the 11 largest European markets, the value of shares repurchased by listed corporates amounted to €161 bn in 2022, almost double the €84 bn of share buybacks executed in 2021, according to BNP Paribas Exane. The four major markets (UK, France, the Netherlands, and Germany) alone accounted for 77% of executions in 2022. Takeovers doubled in Germany, tripled in the UK, and even increased sixfold in Italy.

38."Trends in the corporate sector and capitals markets pre-Covid-19", *OECD* - July 2021.

39. Idem.

40. "Un millésime 2022 record en Europe et aux Etats-Unis pour les 'buybacks'", AGEFI, 17 March 2023.

As a study by Natixis points out[41], "the real motivation for share buybacks is to boost share prices, using the portion of profits that would otherwise be invested at a lower return on equity than the standard of corporate profitability."

These share buybacks did not help the transfer of savings to finance more efficient investments by companies, and therefore the *Schumpeterian reallocation of capital* to more efficient companies did not really materialize. Indeed, share buybacks have coincided with a decline in capital accumulation (*see Charts 24 & 25*) and a rise in share prices over the past decade (*see Chart 26*).

This situation is worrying, as companies will have to invest massively to achieve decarbonization, and the return on such investment is quite low. As noted by P. Artus[42], "share buybacks will deprive companies of some of this financing needed for energy transition investment."

3.2 Persistent low rates have exacerbated financial vulnerabilities

With ultra-expansionary monetary policies, net wealth grew much faster than income, and asset prices were massively distorted. High leverage increased market valuations significantly, stimulating the development of asset bubbles. In such a context, wealth inequalities between asset and non-asset owners and across generations have widened.

3.2.1 Net wealth has grown much faster than income

As a result of highly accommodative monetary policy, financial and real asset prices have risen disproportionately relative to incomes. This represents a break with historical precedents.

Before 2000, net wealth (*i.e.* the value of assets at market prices) largely evolved, with some exceptions, in line with GDP.

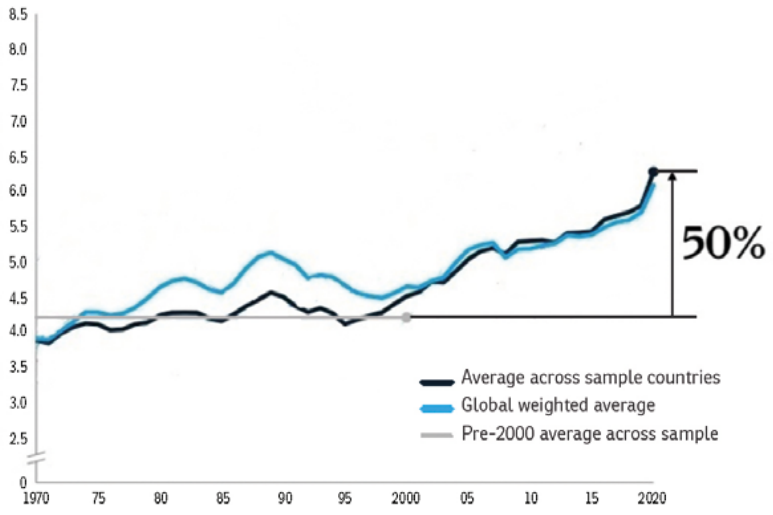
Since 2000, net worth has exploded (the ratio of net wealth to GDP has increased by 50%) while GDP has grown only moderately. Chart 29 illustrates the break that occurred around the year 2000.

Savings, which were not allocated to productive investments, were largely channelled into real estate. All in all, it is a system that is not very productive (financing current expenditure through debt, transactions in existing homes, and buildings) and is generating high asset valuations while real growth remains modest.

The main conclusion of McKinsey's report is that, at the level of the global economy, the historical link between net worth and output (GDP) growth no longer holds. Economic growth has been modest over the past 20 years, while valuations have soared. The pace of valuations – which traditionally followed that of GDP – is now 50% above the historical trend.

Two systems: before 2000 net worth follows GDP; after 2000 it takes off (*see Chart 29*).

CHART 29.
Net worth at market prices relative to nominal GDP, 1970–2020



Sources: CEIC; Federal Reserve Board; national statistics offices; OECD; World Inequality Database; World Bank; McKinsey Global Institute analysis
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Labels for values <1 not shown. Figures may not sum to 100% because of rounding

41. "European corporate share buyback volumes almost doubled in 2022", Global Markets, February 2023.
42. P. Artus, "What about share buybacks?", Natixis Economic Research, February 2023.

McKinsey has calculated that 77% of the increase in net worth between 2000 to 2020 comes from higher asset prices (and only 23% from real value creation).

In the environment of monetary easing and low – or negative – interest rates artificially maintained by central banks for almost 15 years, the valuation of financial assets has soared, enabling equity holders in particular to realize gains over normal remuneration ("operating returns").

One can understand, given these conditions, that investors have preferred and still do make quick profits on valuations rather than commit themselves (without remuneration) to financing risky long-term projects.

An economy cannot function in the long term and for the good of all if investors' choices are oriented (notably because of monetary policy) towards immediate speculative opportunities and gains on valuations, rather than towards long-term projects.

3.2.2 Interest rates no longer play their discriminating role, thus leading to a mispricing of risks

In a market-based economy, financial markets should distinguish between signatures based on their quality and not be dominated by the setting of interest rates by central banks. However, as we have underlined in Section 1, central banks in OECD countries have controlled the prices of an increasing number of assets through their large-scale purchases: not only short-term interest rates but also longer-term interest rates, targeted by quantitative easing programmes, leading to the control of the yield curve. Indeed, by controlling long-term interest rates through purchases of government bonds, sovereign risk premia do not reflect market forces and do not provide savers with adequate information about economic and financial developments. In other words, government bond prices have been transformed from market prices to administered prices.

How can free markets assess fundamental values in these conditions? The significance of losing benchmarks should not be underestimated, as zero interest rates blur risk premia. This reduction of risk premia had already happened before the 2007-08 crisis.

One illustration of the mispricing of risk has been the growing share of negative-yielding debt securities worldwide between 2015 and 2022. By the end of 2020, almost 40% of the global government debt was offering negative returns, equivalent to $ 18.4 tn (*see Chart 30*), according to *The Economist*[43].

By March 2021, roughly 20% of bond yields in Europe were negative, and around 60% were below 1%, according to the Banque de France. Even the Greek 5-year bond yield turned negative for the first time in May 2021.

CHART 30.
Amount of Global Negative Yielding Bonds, $ tr

Source: Wall Street Journal/Bloomberg
As of January 2023

With such a high proportion of very low-yielding assets, financial markets ignored economic fundamentals. This has pushed investors in search of yield into riskier segments, forcing them to invest in lower quality companies and countries.

The pandemic-related measures taken by the Central Banks in 2020-21 distorted financial markets by incentivizing even more risk-taking, which was already at all-time highs. In the US, for instance, the Fed's actions had the predictable consequence of pushing Treasuries and MBS yields to the downside across all maturities and leading to a classic "search for yield" by investors, as Better Markets reports[44].

43. *The Economist*, "A requiem for negative government-bond yields", 23 April 2022.

44. D. Kelleher & P. Basil, "Federal Reserve Policies and Systemic Instability", Better Markets, January 2023.

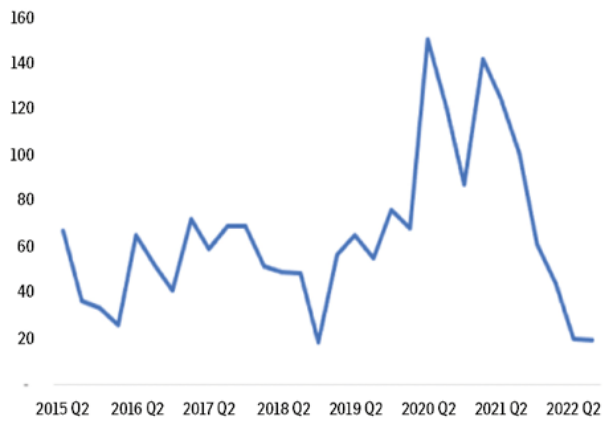
According to their report, "because financial returns had been lowered, investors were willing to take on more risk aimed at reaching the financial returns they wanted. As a result, the cost of credit was greatly reduced, and the availability of credit was greatly increased." For example, in 2021, junk bond spreads reached lows unseen since 2007 (*see Chart 31a*). The lower credit cost led to a doubling of the average of high-yield debt issuance in the six quarters following the 2020 Pandemic Stress, compared with the average issuance in the previous three years (*see Chart 31b*).

CHART 31.
Corporate bond Spreads and High-Yield debt issuance in the United States

Chart 31a : Spreads on CCC and Lower Rated Corporate Bonds (basis points)

Source: St. Louis Fed
Last observation from 10 March 2025
The red line represents the 2007-average; spreads are computed as the difference between CCC and Lower rated bond yields and investment grade rated corporate debt publicly issued in the US domestic market

Chart 31b : Issuance of High Yield Bonds (USD bn)



Source: taken from the Banking report of Better Market 'Federal Reserve Policies and Systemic Instability : Decoupling Asset Pricing from Underlying Risks'

3.2.3 High leverage has massively increased market valuations and thus spurred the development of asset bubbles

Money growth has been abundant over the past 20 years but has failed to generate commensurate economic growth. This massive wave of money creation has failed to achieve the 2% inflation target by 2021 but has been reflected in the prices of financial and real estate assets. High leverage has led to a massive increase in market valuations, which threatens financial stability, especially in the context of inflation and rising interest rates.

The lack of a 'lean against the wind' stance exacerbated financial imbalances. The disconnect between financial and real estate asset prices on the one hand and economic fundamentals on the other has been a source of market bubbles. Indeed, prolonged low interest rates open the credit floodgates to governments and the private sector, encourage yield-seeking behaviour, and are a source of financial instability.

This can be illustrated by the inflation of equities and real estate assets, and more recently by the volatility of the bitcoin price.

The BIS[45] explained that "prolonged monetary easing can inadvertently contribute to the build-up of financial vulnerabilities. This is in part inherent to the transmission mechanism. Monetary policy works to an important extent by boosting credit and asset prices, including by compressing risk premia and encouraging risk-taking. These effects remain contained during normal business fluctuations but can generate vulnerabilities if the easing is prolonged. Indeed, growing empirical evidence indicates that such easing can, over time, increase the probability of financial stress."

Lasting periods of very low interest rates weaken the profitability of financial intermediaries and erode their resilience.

Strong and lasting very low interest rates reduce banks' net interest margins and erode the profitability of life insurance companies and pension funds, given that their liabilities have a higher duration than their assets.

45. BIS, Annual Economic Report, June 2024.

We will limit ourselves here to quoting the latest BIS Annual Report.

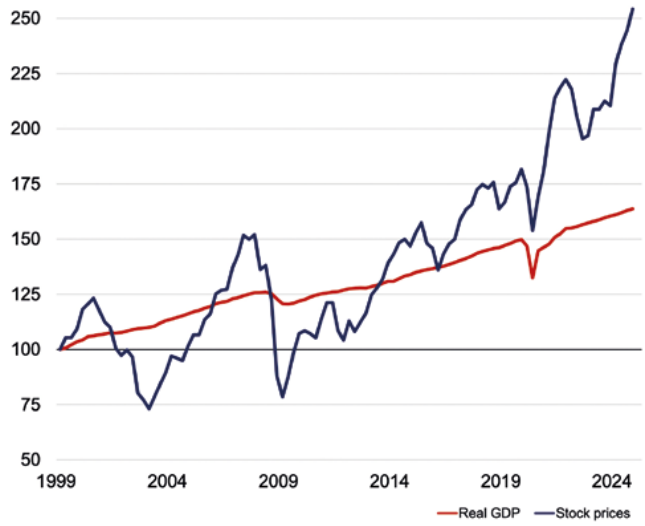
"Banks are a case in point. To be sure, an easy stance lifts profits by boosting asset values and spurring economic activity. But in the longer run these effects tend to wane or even reverse, and the more lasting impact operates through compressed net interest margins, as deposit rates are sticky, and through lower returns to maturity transformation, particularly if LSAPs depress the term premium. Central banks have actively sought to limit such side effects by providing relief through interest offered on intra-marginal reserve holdings. Insurance companies and pension funds also suffer. This is mainly because the maturity of their liabilities exceeds that of their assets so that their value increases by more as interest rates decline."

In recent years, stock markets have mainly been governed by central bank monetary expansion.

Chart 32 highlights the widening gap between stock prices and real GDP growth in OECD economies, indicating a clear disconnect between financial markets and fundamentals. Between early 2013 and early 2020, stock prices in the OECD countries increased by 45.5%, three times more than real GDP (+15.4%). Their disconnection from the economy was also illustrated by the 16.26%[46] rise in the S&P500 and 43.6% in the Nasdaq in 2020, while the world experienced a 4.2% recession that year.

Stock markets rose even further in 2021, with the S&P 500 and the Nasdaq indices increasing by 27.2% and 20.1% respectively.

CHART 32.
Stock prices versus Real GDP in OECD Economies*
(1999:Q1 =100)



Source : Ekonomics, base on data from the OECD
**including the United States, the eurozone, Canada, Australia and the United Kingdom ; data are quarterly ; last observation from Q1-2025*

This Chart also highlights that, given the persistently loose monetary policies over the past decade, equity price declines caused by negative shocks (*cf.* Lehman Brothers' bankruptcy and Covid-19 crisis) were immediately followed by an upturn.

In 2022, the year in which central banks began to raise interest rates in most OECD countries, stock market indices fell worldwide. For example, the S&P500 lost 19.4% over 2022 as a whole. This decline was temporary, however, as these indices rebounded from the end of 2022 and globally continued to rise throughout 2023.

This 'rally' coincided with market expectations that the major central banks would cut interest rates in the following months. Indeed, the S&P 500 rose by around 24% in 2023, its best year since the 27% return of 2021 and well above its median annual gain of around 10% observed since 2000.

Stock market indices continued to grow strongly in 2024, particularly in the United States where the S&P and Nasdaq rose by 23.3% and 29.6% respectively between January and June 2024.

As K. Warsh explains[47], "the Fed is no longer the backstop to the financial system on a dark day. It is the dominant player day in and day out. A dollar four years ago can buy less than 80 cents of goods and services today. But a dollar in the stock market is worth about $1.80. Much of Wall Street applauds the Fed's big balance sheet and monetary dominance in Washington. Households and businesses on Main Street have far less reason for enthusiasm.

46. Excluding dividends for S&P500 and Nasdaq.

47. K. Warsh, "Interest Rates Are a Sideshow in the Fed Drama", Wall Street Journal, 30 July 2024.

A sharp rise in house prices due to the overwhelming influence of central banks' liquidity.

The associated Charts (*Chart 33 a & b*) illustrate the sharp rise in housing prices, both in the United States and the Euro area, which has been stimulated by abundant money supply growth in recent years. Between 2015 and 2019, housing prices rose by roughly 27.5% in OECD economies (*see Chart 33a*). They rose by 31.8% in the United States and 22.8% in the Euro area.

After the Covid-19 crisis and central banks' actions that pushed interest rates to even lower levels, house prices were 96.7% higher than their 2015 level as of March 2025 in OECD economies, up to 53.5% more in the Euro area and to 108.2% for the US.

Note that the increase in real estate values since 2015 at the OECD level is higher than that observed between 2000 and 2007, which led to the subprime crisis of 2008[48]. This comparison should be a cause of concern.

Since the end of 2022, real estate prices in the Eurozone have begun to adjust to rising borrowing costs. Although there was a brief decline, with prices falling by 2% from their post-pandemic peak in September 2022 to March 2024, this contraction proved temporary. Prices rebounded thereafter, surpassing the previous peak by 3.6% as of March 2025. In the United States, however, the rise in prices has never been interrupted.

Rising interest rates have contributed to the contraction of property prices in some European countries, particularly those that experienced strong growth up to mid-2022. Between December 2021 and March 2025, residential property prices declined by 6.1% in Germany and by 0.5% in France. In contrast, prices continued to rise in Italy (+9.3%) and the Netherlands (+17.2%), though at a much slower pace than before 2022. Among European countries, Spain stands out, recording cumulative growth of 26.8% over the same period – surpassing even the United States, where prices increased by 21%.

CHART 33.
Residential House Prices development, Q4-2014=100

Chart 33a : At the OECD level

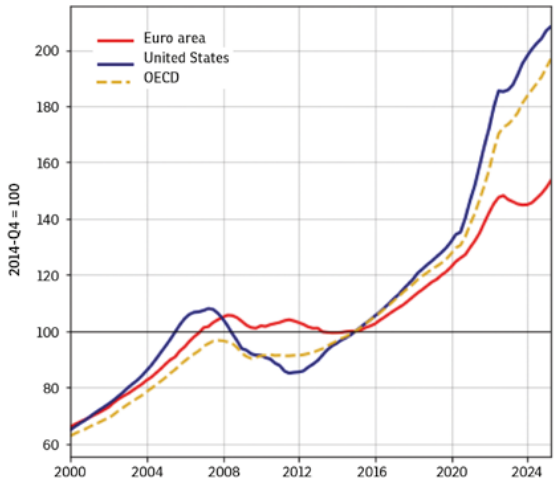
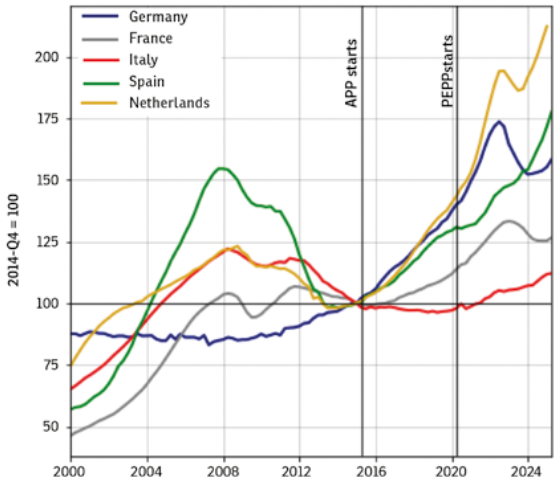


Chart 33b : Across Euro area Member States



Source: OECD. Last data are from Q1-2025, except for the Nertherlands which dates from Q4-2024

Despite falling prices in some Eurozone countries, valuations remain high, making access to housing more difficult than ever for some segments of the population. The price/income ratio is a measure of housing affordability for households (*see Chart 34*). Its increase indicates that housing prices are rising faster than the disposable income.

From a level of 100 in 2015, the ratio rose to 107 at the OECD level in December 2019. After the Covid-19 crisis, the index continued to rise, peaking at 124.4 in Q2-2022. Despite the slowdown that began at the end of 2022, the price-to-income ratio remained 16.3% above its 2015 level on average in OECD countries in the first quarter of 2025 (*see Chart 33a*).

The United States played a major role in this trend, with the price-to-income ratio increasing almost continuously by 32.8% between December 2014 and March 2025. Although the rise was more modest in the Eurozone – up 7.1%

48. For OECD at the whole, the increase in house prices between 2014 and 2022 was 19 ppts higher than in 2000-2007. This is also the case for the US, where the increase in 2014-22 was 26 ppts higher than in 2000-2007. In the Eurozone, house price increases, by 47% between 2014 and 2022, and are still 10 ppts lower than in 2000-2007, a period which price grew by a cumulated +58%.

over the same period, with a peak of 19.7% in mid-2022 – this aggregate figure masks substantial disparities among member states. Over the past decade, the ratio rose by nearly 10% in Germany, over 15% in both Spain and Austria, and by more than 30% in the Netherlands and Portugal.

CHART 34.
Price-to-income Ratio (Q4-2014 = 100)

Chart 34a : At the OECD level

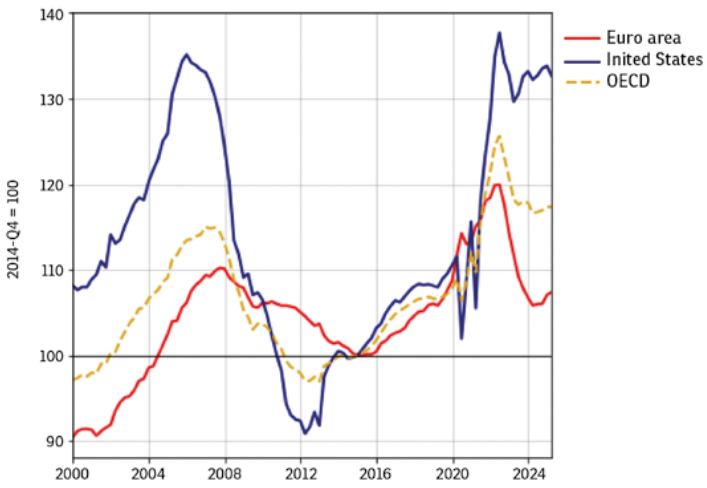
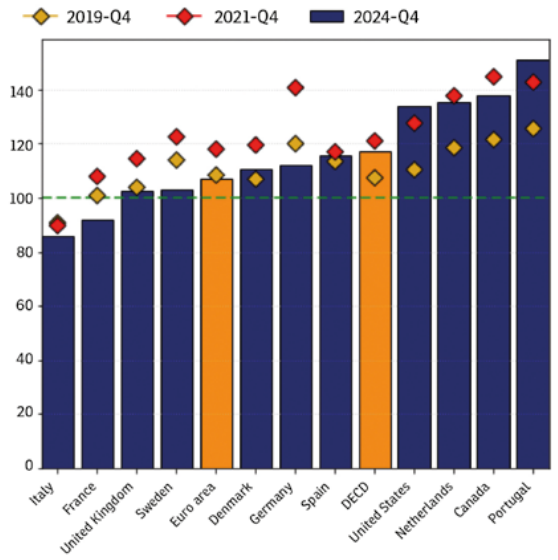


Chart 34b : Across OECD Member States



Source: OECD. last observation from Q1-2025

As J. de Larosière points out[49], "when the value of assets increases much faster than GDP, this is generally a sign of overheating, which always leads to a market correction. If the growth in net worth is the result of asset price increases rather than investment, there is a risk of favouriting the minority of the wealthiest asset holders to the detriment of wage earners with little financial savings."

Cryptocurrency and gold development.

The search for higher returns – driven by excess liquidity and historically low interest rates – has also fueled demand for alternative assets such as cryptocurrencies and gold. Bitcoin stands out in this regard, having surged by over 30,000% between early 2015 and July 2025.

While its growth has been more modest (+184%), the price of gold has also soared during periods of low interest rates. More recently, this upward trend has been reinforced by geopolitical factors, with central banks accounting for 20% of total gold demand in 2024. Purchases of gold for monetary reserves rose sharply following Russia's full-scale invasion of Ukraine in 2022 and have remained elevated. As noted by the ECB[50], some central banks in emerging and developing economies have cited concerns over sanctions and the potential erosion of major currencies' global roles as reasons for increasing their gold holdings.

CHART 35.
Gold and bitcoin prices,
January 2015 = 100

Source: Yahoo Finance
Last data from 23 July 2025

49. J. de Larosière, "Putting an end to the reign of financial illusion – for real growth", Odile Jacob, September 2022.

50. A. Brüggen & al. "Gold demand: the role of the official sector and geopolitics", article published as part of the 'International euro' report (June 2025), European Central Bank.

As a result, monetary policy widened wealth inequalities between (I) asset and non-asset owners and (II) across generations.

As we have seen, low interest rates, asset purchases, and other accommodative unconventional monetary policy instruments have tended to boost asset prices (particularly housing, equity, as well as government, and corporate bonds) and have therefore particularly benefited the wealthiest segment of society.

Ultra-accommodative monetary policy also has cross-generation distributional consequences. Since older people tend to have higher savings (accumulated from their families and during their working time), they can sell their assets whenever it is appropriate for them and smooth out their consumption levels. Therefore they really benefit from upward price variations. Younger households, on the other hand, are generally those who buy these assets at a relatively high price or to save for retirement. This absorbs a larger share of their incomes at the time when they start work.

More generally, these income inequalities have a lasting effect because they tend to be passed across generations: the wealthiest older people can easily help their offspring to buy accommodation in residential places, also giving more chances to their grandchildren to attend the best schools and universities.

A report issued by the McKinsey Global Institute[51], notes that global net worth has tripled since 2000; mainly reflecting valuation gains in real assets – especially real estate – rather than investment in productive assets. Rising asset prices and two decades of relatively low interest rates have helped drive the global "balance sheet" to high levels, far outstripping underlying economic growth and raising questions about its sustainability.

In addition, "asset values are now almost 50 % higher than the long-run average relative to income", the report continues. "Not only is the sustainability of the expanded balance sheet in question; so too is its desirability, given some of the drivers and potential consequences of the expansion. For example, is it healthy for the economy that high house prices rather than investment in productive assets are the engine of growth, and that wealth is mostly built from price increases on existing wealth?"

The main conclusion of McKinsey's work is that the historical relationship between net worth and output (GDP) growth no longer holds. Economic growth has been modest over the past 20 years, while valuations have soared. The pace of valuations – which has traditionally followed that of GDP – is now 50% higher than the historical relation.

McKinsey has calculated that 77% of the net worth growth between 2000 to 2020 comes from rising asset prices and valuations (with thus only 23% from real resource creation). It is generally observed that both have benefited most from the rise in stock prices are among the wealthiest 10% of the population.

> ***"If we take only households in the United States and China, we see that 2/3 of the wealth is held by the richest 10%. The increase in inequality in China is striking: the poorest 50% of the population are seeing their share of wealth decrease: they only held 15% of the wealth in 2015.***
> ***In the United States, household wealth held by the richest 10% of the population rose from 67% to 71% of the total between 2000 and 2019. As for the share held by the poorest 50%, it now represents only 1.5% of the total…"***
>
> *Table taken from the book J. de Larosière's latest book, "Putting an end to the reign of financial illusion – For real growth", Odile Jacob, September 2022*

I. Schnabel[52] acknowledged that QE may exacerbate inequality. "In the Euro area, residential property prices increased by nearly 50% from the start of QE in 2015 to their peak in 2022 (*see 3.2.3*). Surging asset prices do not only pose risks to financial stability but may also exacerbate wealth inequality. While monetary policy always has distributional effects, portfolio rebalancing as part of QE may amplify these effects. In the Euro area, for example, less than 0.1% of households in the bottom net wealth quintile hold bonds, compared with more than 10% of the top decile. And only around 1 to 2% of low-wealth households hold shares in mutual funds and stocks, compared with more than 35% of households in the top net wealth decile. Therefore, central banks purchasing longer-dated assets disproportionally benefits wealthier households, whose assets tend to have longer durations than their liabilities. Central banks purchasing longer-dated assets disproportionally benefits wealthier households, whose assets tend to have longer durations than their liabilities."

51. McKinsey Global Institute, "The rise and rise of the global balance sheet", November 2021.

52. "The benefits and costs of asset purchases", Speech addressed at the 2024 BOJ-IMES Conference on "Price Dynamics and Monetary Policy Challenges: Lessons Learned and Going Forward", May 2024.

According to J. de Larosière, "the fact that our financial system has favoured to such an extent the holders of assets with a high and rising stock market value casts a harsh and problematic light on the social consequences of monetary management as it has been conducted for the last twenty years. Similarly, the explosion of real estate prices prevents young people from settling in urban centers and leads to costly social inequalities. The excessive concentration of wealth in the hands of a few has never been a source of global growth..."

This assessment and its consequences lead us to question the "benefits" of the tripling of net worth described by McKinsey. A system that results in increased financial valuations for the richest 10% while allowing wage income to stagnate does not seem likely to increase employment in the productive sectors. This system poses a major political and social problem: the rich become exponentially richer than the wage earners who live from their work."[53]

•

Central banks have contained the damage of financial crises. But strong and prolonged monetary easing faces limitations. The persistent cheap money between 2008 and 2021 has undermined financial stability. Here we can quote A. Weber, who writes in this regard that "with their ultra-expansionary monetary policy, central banks have endangered their mandate of price stability and financial stability. With the recent massive reflation, the risks to price stability have materialized. Central banks have also endangered financial stability by massively distorting asset prices. Distorted prices send the wrong signals to investors, who make bad investment decisions, for example in driving liquidity-fueled boom-bust cycles in property markets or investing in the wrong financial products, firms, sectors, regions, or countries. Some of these investments will have to be written off at some point in the future...

Moreover, the ultra-loose monetary policy has undermined the growth potential. By subsidizing highly indebted countries or ailing economic sectors, central banks have not only lowered the cost of refinancing, but they also have contributed to reducing the pressure for the necessary consolidation and delaying restructuring. Labour and capital remained trapped in stagnant or, in the worst case, even value-destroying investments and were missing elsewhere. Reforms were being put off; structural crises became protracted."

In summary, as detailed in Chapter 2 of the latest BIS annual report, "When interest rates remain exceptionally low for very long, side effects and costs become apparent. These include the build-up of debt, capital misallocation, the declining profitability of financial intermediaries and impaired market functioning. In addition, such policies can have undesirable consequences for central banks themselves to the extent that they narrow the room for policy manoeuvre, reflecting difficulties in devising exit strategies and tighter interlinkages with the government."

•

After 15 years of zero or negative real interest rates, the need to raise rates to combat inflation created the ingredients for a major financial crisis: the bond portfolios built up during this period of persistent very low interest rates have seen their value plummet since then. This lasting zero-interest rate policy therefore played a major role in the genesis of the current crisis.

This financial environment is extraordinarily uncertain. Indeed, opinions are divided: the markets, which never like rate rises, are on the lookout for the slightest clue to provoke them or encourage them to fall. But the central banks know that the situation is fragile, that inflation is not yet under control, and that caution is called for.

These dilemmas are made all the more difficult by the fact that public and private debt in many countries is at record levels. The considerable excess liquidity held by banks at central banks is another reason for caution.

In such a context, the global financial system continues to face a challenging outlook. In its ongoing surveillance, the Financial Stability Board has been highlighting vulnerabilities associated with elevated public and private debt levels, stretched asset valuations, and the combination of leverage and liquidity mismatches in non-bank financial intermediation. Each of these vulnerabilities is sensitive to a tightening of financial conditions and a slowing of economic activity.

53. See J. de Larosière, "Putting an end to the reign of financial illusion: for real growth", Chapter III, *Odile Jacob*, September 2022.

4. The return of inflation: state of play and challenges

The damage caused by high inflation is well known. it reduces consumer purchasing power, increases uncertainty, and therefore investment. The longer inflation persists, the more likely it becomes entrenched and the more costly it will be to curb.

The good news is that inflation has continued to decline since the fourth quarter of 2022. The earlier surge in inflation was a global phenomenon, and its subsequent moderation has followed a similar pattern across countries.

As of June 2025, while inflation is approaching – or remaining near – central bank targets in most major economies, domestic components, particularly in services, remain elevated. This reflects a resilient labour market and stronger wage growth compared to the pre-pandemic period. Whether inflation persists will depend on whether higher nominal wage demands and increased firm mark-ups follow.

Although the Euro area appears to be less affected than the US by tariff hikes – thanks to the absence of retaliation and the euro's appreciation against the dollar – other structural factors may keep inflation above target in the medium term. Demographic ageing and the resulting labour shortages, coupled with low productivity, could sustain elevated unit labour costs. Furthermore, renewed fiscal expansion in Europe, particularly in light of Germany's substantial infrastructure and defence investment announcements, could exacerbate medium-term inflationary pressures.

This section explains why inflation could remain above 2% for longer than expected (4.1). It provides an update on the progress of the monetary policy normalisation process at the end of July 2025 across the main advanced and emerging economies (4.2). Finally, this chapter shows that the recent return of real interest rates to positive levels (most often since the second semester of 2023) needs to be put into an historical perspective, as it follows several consecutive years of negative real rates. They are in any case needed to pursue the fight against inflation (4.3).

4.1 Inflation could remain above 2% for longer than expected

The world economy has experienced an episode of inflation since March 2021, breaking with the trend of slow prices growth that prevailed during the decade preceding the Covid-19 crisis. Inflationary pressures have intensified in 2022, following the war in Ukraine and inflation reached levels not seen for decades.

The causes are numerous and complex, driven by a mix of cyclical and structural factors. Soaring energy prices, which spread to a wide range of commodities as food and raw materials, were one of the main drivers of the inflationary shock. Disruptions to the global supply-chains exacerbated price pressures.

But there are other sources of pressure too: the acceleration of inflation in 2022 is also the result of the substantial excess of broad money growth over the past years (*see Section 2*). As the BIS reminds us, there is a positive correlation across countries between inflation and the degree of monetary policy easing and fiscal expansion. Borio & al (2023)[54] highlight a significant positive correlation between excess money growth in 2020 and average inflation in 2021 and 2022 across a range of advanced and emerging markets economies.

K. Warsh also explained[55] that we should "expect inflation to rise if the central bank doesn't keep reducing the size of its balance sheet… Price stability would be more easily achieved if the Fed continues to shrink its holdings. In my view, irresponsible government spending and excessive money printing are largely to blame for triggering inflation in the first place. Had the Fed's asset holdings stayed smaller or shrunk faster, inflation would not have risen so high. Hardworking Americans would not now be suffering the twin indignities of high prices and higher credit costs."

Since the fourth quarter of 2022, headline consumer price inflation has significantly fallen in most economies, primarily due to lower energy and food prices. Although inflation has continued to ease, reaching or nearing central bank targets in many countries during 2025, service price inflation remains high and goods price inflation has increased in several economies due to rising food costs. Additionally, growing protectionist measures are contributing to inflationary pressures in the US.

54. C. Borio, B. Hofmann & E. Zakrajšek. "Does money growth help explain the recent inflation surge?", BIS Quarterly Report, January 2023.

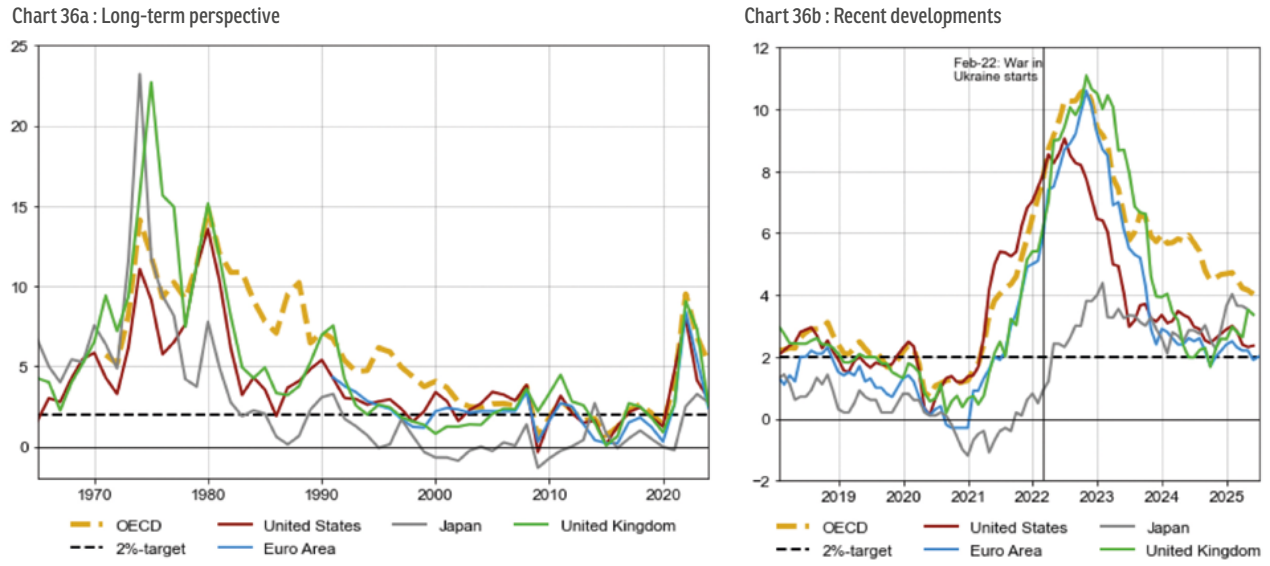
55. K. Warsh, "Interest rates are a sideshow in the Fed Drama", Wall Steet Journal, 30 July 2024.

4.1.1 Even before the war in Ukraine, inflation was already an issue for OECD countries

Between March 2021 and February 2022, consumer price index inflation was above 2% in many advanced economies.

At OECD level, inflation increased from 2.4% in March 2021, to 4% in June 2021 and 7.8% in February 2022 (*see Chart 36*).

CHART 36.
Consumer Price Index growth in key advanced economies, % annual change



Sources: OECD, Eurostat, Bank for International Settlements. Latest data from May 2025 for the right-hand side chart

In the Euro area, HICP growth rate exceeded 2% for the first time in July 2021. From November 2021, headline inflation was above 2% in all Eurozone Member States and continued to rise until February 2022. In the United States, inflation exceeded 2% after March 2021 and reached 7.9% in February 2022. In a speech delivered in August 2022, the President of the Bundesbank[56] explained this return of inflation: "One major factor driving this momentum was the global economy's unexpectedly swift recovery from the pandemic-induced recession. The fiscal and monetary policy support measures taken around the globe to limit the economic damage caused by the pandemic played a part in this. The rapid revival of economic activity then sent commodity prices soaring.

Another contributing factor was the shift in consumer demand away from services and towards goods during the pandemic – instead of heading to the cinema or the gym, people were ordering laptops and exercise bikes. That left the industry struggling to produce enough to keep up in some cases. This has further exacerbated price inflation, both for final products and at the upstream stages.

In addition, the pandemic disrupted global supply chains and transport routes. Some of these supply disruptions have proved to be more persistent than initially expected. This, too, has had a hand in pushing up prices. And, with robust demand, energy prices were already on the rise before the war began."

4.1.2 The war in Ukraine triggered a major shock on the global commodity market, pushing inflation to higher levels in OECD economies in 2022

At the **OECD** level, the aggregated consumer price index rose by 9.5% in 2022 compared to 2021, its highest level since 1988.

In the **US**, year-on-year headline inflation averaged 8% for 2022.

The war in Ukraine, and the associated pressures in energy and food supplies pushed the **Euro area** headline inflation into an unprecedented double-digit territory in October (10,6%) and November 2022 (10.1%), and to 8,4% for 2022 as a whole, the highest level recorded since the creation of the monetary union in 1999.

56. J. Nagel, "Monetary policy in times of geopolitical crises and high inflation", 30 August 2022.

As explained by P. Hernandez de Cos[57], "in the case of the Euro area, higher energy and food prices have added to the effect of other supply-side factors related in particular to supply-chain disruptions. The increased demand, mainly due to the reopening of the economy, met an inelastic supply. This and the depreciation of the euro have also played a role in the increase in inflation."

In the **UK**, inflation averaged 9% in 2022, a level not seen since 1982. In Japan, headline inflation reached 2.5% in 2022, a low level by international standards but uncommon in a country that has been fighting deflation for decades.

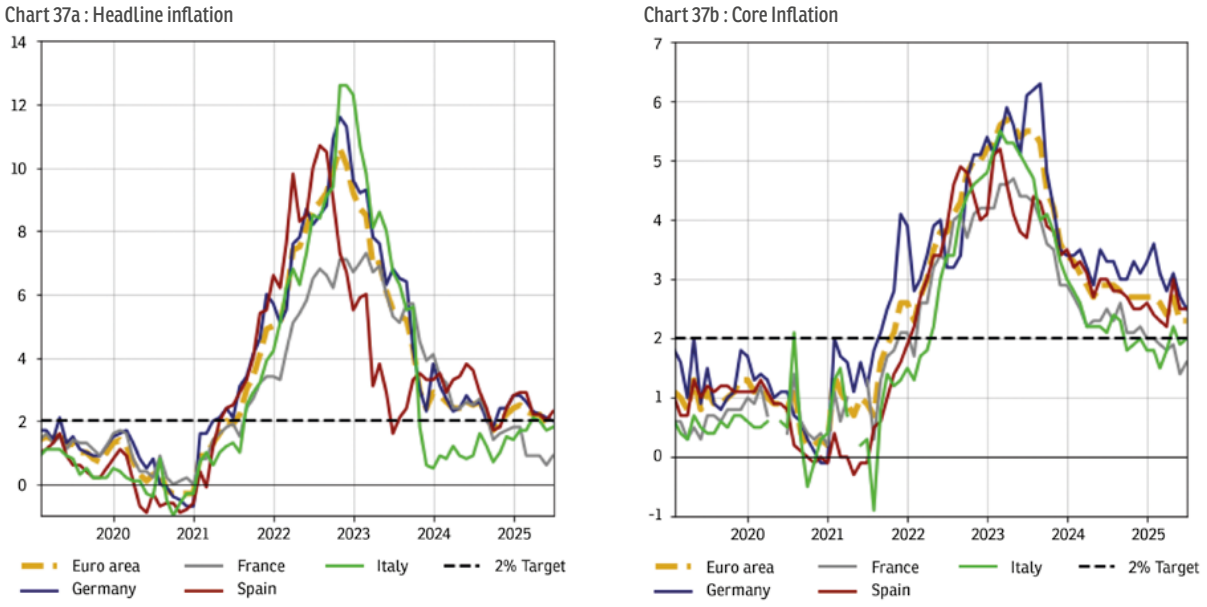
4.1.3 Since late 2022, inflation has declined toward central bank targets in most economies, though domestic inflation remains high

Global inflation continued to decline from its peak in 2022. This decline was common to both core and headline inflation, but headline inflation declined more in AEs, and inflation was still above central bank targets in much of the world.

Headline inflation fell rapidly in most economies during 2023, supported by generally restrictive monetary policy settings, lower energy prices, and continued easing of supply chain pressures. **At the OECD level**, headline inflation has more than halved, from a peak of 10.7% in October 2022 to 4% in May 2025. The decline was even more pronounced in the **United States**, where headline inflation has fallen to 2.6% in June 2025, from a peak of 9,1% in June 2022.

Following a surge in 2021–2022, Euro area inflation declined throughout 2024, primarily due to falling energy prices. A temporary increase occurred in early 2025, with inflation reaching 2.5% in January due to base effects. However, the downward trend resumed in subsequent months, bringing inflation down to 2% by June 2025. Since May 2023, energy prices have either contributed negatively or modestly to headline inflation, in stark contrast to the peak contribution of 4.8% observed in March 2022. Services are now the main driver of inflation, with a year-on-year increase of 3.2% in June. As Blot et *al.* (2025)[58] have noted, the strong contribution of services to inflation suggests that inflationary pressures are becoming more entrenched.

CHART 37.
Headline versus Core Inflation across the main Euro area Member States, annual% change



Source : Eurostat. Last data from June 2025

4.1.4 Fragmentation of international trade and demographic ageing could keep inflation structurally above central bank targets in advanced economies

The global economy is entering a new phase of persistent trade fragmentation, which is reversing decades of increasing globalization. This shift has been accelerated by recent protectionist measures. Since April, the United

57. P. Hernandez de Cos, "Consistent economic policies – a prerequisite for macroeconomic stability", Madrid, 16 January 2023.

58. C. Blot & al. "The ECB's monetary policy stance in an uncertain environment", Monetary Dialogue Papers, European Parliament, June 2025.

States has imposed additional tariffs of at least 10% on all its trading partners, with even higher duties applied to imports of steel, aluminium, cars, and automotive parts.

As global value chains are reconfigured, other structural forces – including climate change, the transition to a climate-neutral economy, and ageing population – are also reshaping the global supply side. According to the BIS[59], coupled with ageing populations and emerging labour shortages, the trade fragmentation could, "further reduce supply flexibility, leaving economies more prone to inflation pressures". Recent structural developments not only exacerbate long-standing factors that limit trend growth but also and reduce the economy's ability to respond flexibly to shocks. For example, demographic shifts are contributing to labour shortages and a less flexible labour supply in several economies. In less globally integrated goods markets, firms may also face higher costs when expanding output due to limited access to intermediate products, weaker competition, and more rigid supply chains.

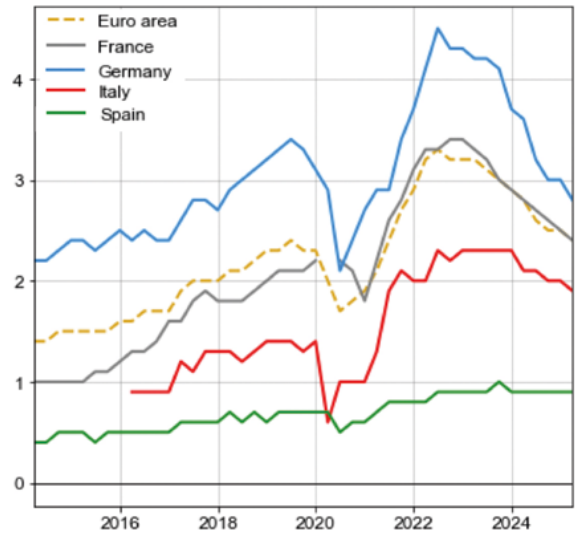
The prospect of structurally elevated inflation is particularly acute for the United States. The combination of higher import prices due to tariffs and a depreciating dollar creates immediate cost pressures. If companies pass these costs on to consumers, their disposable income will be affected. As the OECD[60] has noted, a key risk is that tariff-induced price increases are accompanied by significant second-round effects that cause further inflationary pressure to persist. Workers responding to lower purchasing power by pushing for higher nominal wages could raise costs for firms, which may be passed on to consumers in the form of higher prices.

According to a recent BIS survey[61], wage pressures are likely to be amplified by the greater sensitivity of household inflation expectations, which, have been "deeply scarred by the experience of pandemic-era inflation." Indeed, recent surveys show that households' inflation expectations for the year ahead are closely related to their perception of the increase in the price level over the past five years. Consequently, the risk that inflation expectations could become unmoored seems greater post-pandemic.

The pre-pandemic inflation experience shows that nominal wage growth was significantly stronger in the United States than in the Eurozone. Although these gains only partially offset the loss in purchasing power caused by inflation since 2021, real wages in the US rose by over 12% between Q4-2019 and Q1 2025 – twice as much as in the Eurozone. Separately, attempts by companies to maintain their existing price-cost margins could also amplify the impact of the initial rise in import costs.

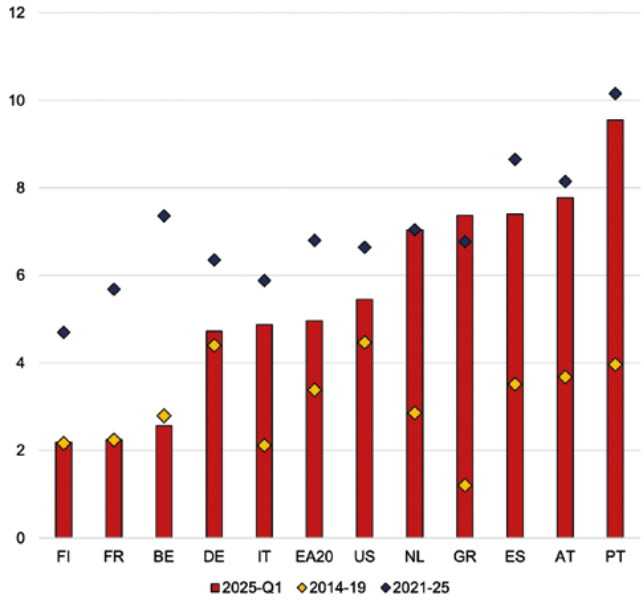
CHART 38.
Labour market and wage developments in the Euro area

Chart 38a : Job vacancy rate in the Eurozone. Proportion of vacant positions as a share of total jobs (filled and unfilled), %



Source: Eurostat. As of Last data from Q1-2025

Chart 38b : Wages and salaries of the business sector, % annual change



Source: Ekonomics, based on Eurostat and BEA data

59. BIS, Annual Economic Report, June 2025.

60. OECD, Economic outlook, June 2025.

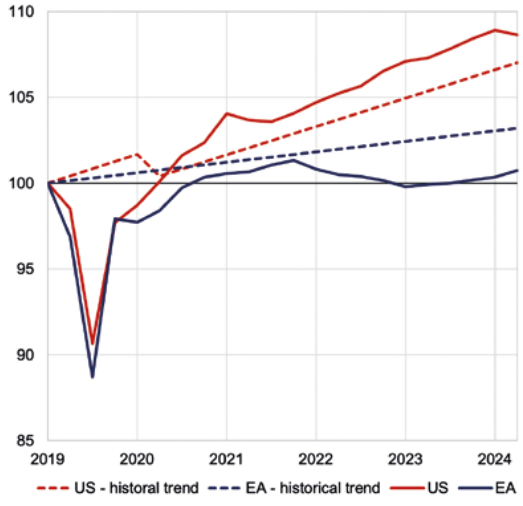
61. "Will the inflation surge leave a mark on household inflation expectations?", article from the BIS Annual Economic Report (June 2025).

While the US may face the most immediate inflationary effects of rising protectionism, the Euro area also remains vulnerable to elevated structurally inflation in the years ahead. In the absence of retaliatory tariffs and with the appreciation of the euro against the dollar, the Eurozone would not experience an increase in import costs resulting from higher US tariffs. However, structural factors emerging within the continent may also be contribute to inflationary pressures. Demographic ageing, for example, is creating labour shortages that push up wages. Over the last decade, the working-age population (15–64) in the Euro area increased by less than 7%, compared to 33% in the US. The EA working-age population is expected to shrink in the coming years and decades, with a projected loss of 18 million people by 2050. The effects of demographic ageing, characterised by an increase in older workers leaving the labour market and a decrease in young people entering it, are expected to lead to more frequent job shortages and increased labour market tensions.

Although job shortages have declined significantly from their 2022 peak, they remain well above pre-pandemic levels. According to the European Commission[62], 18% of industry managers cited labour shortages as a constraint on production in April 2025, compared to 15% just before the pandemic. Tensions remain particularly high in the services sector, where 27% of managers reported labour constraints in October – below the 2022-Q3 peak but still well above the 20% recorded in Q4 2019. Recruitment difficulties are also reflected in the job vacancy rate – the number of unfilled positions relative to total jobs in the economy – which, while having declined since 2022, remains above pre-pandemic levels in most major Euro area countries (*see Chart 38a*). The persistently tight labour market environment favours workers, who are in a stronger position to negotiate higher wages. As with labour market indicators, wage growth indicators show that wages are significantly more dynamic than in the pre-pandemic period (*see Chart 38b*).

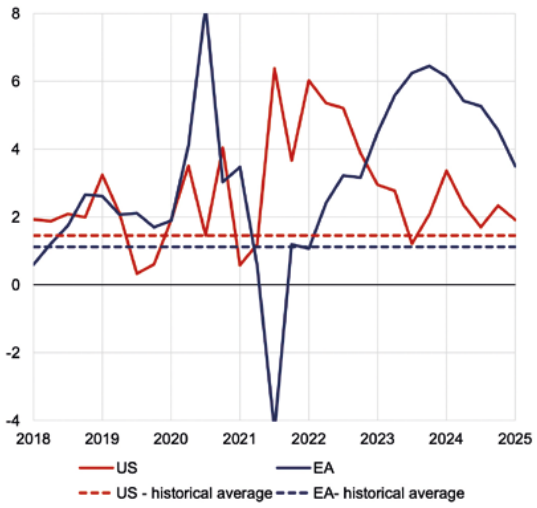
CHART 39.
Productivity and unit labour cost

Chart 39a : Real labour productivity, 100 = Q4-2019



Source: Ekonomics calculations based on Eurostat, Bureau of Economic Analysis
Notes: The historical trend refers to the path productivity would have followed if it had continued to grow at the same rate as between 2014 and 2019

Chart 39b : Unit labour costs (based on persons), year-on-year change (%)



Source: Ekonomics calculations based on Eurostat, Bureau of Economic Analysis
Notes: The historical trend refers to the path productivity would have followed if it had continued to grow at the same rate as between 2014 and 2019

If they are not accompanied by a corresponding increase in productivity, higher wages can put upward pressure on inflation. In the United States, labour productivity increased by 8.6% between Q4 2019 and Q1 2025. These gains in productivity allowed unit labour costs to slow down, falling from a peak of 5% year-on-year in mid-2022 to 1.9% in Q1 2025 – roughly in line with the pre-pandemic average of 1.7%.

However, none of this is happening in the Euro area, where productivity has barely increased since 2019 (*see Chart 39b*). G. Moëc[63] points out that "the Euro area faces a double problem: wage growth remains very robust and the institutional features of the European labour market could make it more prone to a protracted price-wage catch-up process, while declining productivity would add to inflationary pressures by pushing up unit labour

62. Spring Forecasts, May 2025.
63. G. Moëc, "Probing the last mile", Axa Macrocast, January 2024.

costs even faster than wages." I. Schnabel supports this view[64], noting that 'meager productivity growth puts additional pressure on firms' unit labour costs, which could add to inflationary pressures'.

Another potential source of inflation is that Europe is doing more fiscal expansion. As stated by the Bundesbank Governor J. Nagel[65], "whether or not greater debt also leads to greater price pressures in the Euro area depends on many factors, such as what the additional money is spent on, how quickly it flows out, and how much money flows in from abroad. These uncertainties make it more difficult to forecast developments." In any case, the ECB Governing Council is keeping a close eye on risk. As stated in the account of our April meeting: "A boost in defence and infrastructure spending could also lift inflation over the medium term."

4.2 State of play of the normalisation process at the end of July 2025

With the exception of some emerging markets, central banks were slow to react to rising inflation in 2021. Initially seen as a "transitory" phenomenon, inflation began to worry central bankers in late 2021. This awareness led to the normalization of monetary policy materialized, first through a gradual reduction in the pace of asset purchases, followed by interest rate hikes and quantitative tightening measures aimed at reducing the size of central bank balance sheets.

TABLE 2.
Central Banks' policy rates decisions between January 2021 and March 2025

	Central Bank	First rate hike	Last rate hike	Cumulative rate hike (basis points)	Current policy rate (%)	First cut	Latest interest rate decision*	Future rate trajectory
Advanced economies	United States	mars-22	juil-23	525	4,375	sept-24	Unchanged	*"Policy should be a little bit restrictive, somewhat restrictive, because we want inflation to move all the way back to its target."*
	Euro area	juil-22	sept-23	450	2	June-24	Unchanged	*"Partly reflecting our past interest rate cuts, the economy has so far proven resilient overall in a challenging global environment. At the same time, the environment remains exceptionally uncertain, especially because of trade disputes."*
	United Kingdom	nov-21	août-23	515	4,25	July-24	Unchanged	*"Substantial disinflation over the past two years [...] has allowed the MPC to withdraw gradually some degree of policy restraint, while maintaining Bank Rate in restrictive territory so as to continue to squeeze out existing or emerging persistent inflationary pressures."*
	Japan	mars-24	mars-24	15	0,5	na.	Unchanged	*"Japan's financial conditions have been accommodative."*
	Norway	sept-21	déc-23	450	4,25	na.	Cut	*"The economic outlook is uncertain, but if the economy evolves broadly as currently projected, the policy rate will be reduced further in the course of 2025.."*
	Australia	mai-22	nov-23	425	3,85	Feb-25	Unchanged	*"The Board continues to judge that the risks to inflation have become more balanced and the labour market remains strong. "*
	Canada	mars-22	juil-23	475	2,75	June-24	Unchanged	*"Governing Council is proceeding carefully, with particular attention to the risks and uncertainties facing the Canadian economy, including the extent to which higher US tariffs reduce demand for Canadian exports; how much this spills over into business investment, employment and household spending; how much and how quickly cost increases are passed on to consumer prices; and how inflation expectations evolve."*
	Switzerland	sept-22	juin-23	200	0,5	March 2024	Cut	*Inflationary pressure has decreased compared to the previous quarter. With today's easing of monetary policy, the SNB is countering the lower inflationary pressure*
	New Zealand	oct-21	mai-23	525	3,25	oct-24	Unchanged	*The case for keeping the OCR on hold at this meeting highlighted the elevated level of uncertainty, and the benefits of waiting until August in light of near-term inflation risks*
	Sweden	mai-22	sept-23	400	2	May 2024	Cut	*The forecast for the policy rate entails some probability of another cut this year. The lower interest rate will stabilise inflation at the target and contribute to strengthening economic activity.*
Emerging markets economies	Czechia	juin-21	juin-22	675	3,5	déc-23	Unchanged	*The Bank Board confirms its determination to continue its monetary policy in order to maintain inflation near the 2% target in the long term. At present, this still requires relatively tight monetary policy.*
	Poland	nov-21	août-22	600	5	sept-23	Cut	*According to the available forecasts the CPI inflation in the coming months will fall below the upper bound for deviations of the NBP inflation target. Taking this into account, in the Council's assessment, it became justified to adjust the level of the NBP interest rates*
	Romania	oct-21	janv-23	575	6,5	juil-24	Unchanged	*Based on the currently available data and assessments, as well as in light of the elevated uncertainty, the NBR Board decided in the meeting held today, 8 July 2025, to keep the monetary policy rate at 6.50 percent per annum.*
	Hungary	juin-21	sept-22	1240	6,5	oct-23	Unchanged	*Restrictive monetary policy contributes to the maintenance of financial market stability, the anchoring of inflation expectations consistently with the central bank target and, as a result, to the achievement of the inflation target in a sustainable manner by ensuring positive real interest rates.*
	Brazil	mars-21	oct-22	1175	15	août-23	Hike	*The current scenario continues to be marked by deanchored inflation expectations, high inflation projections, resilience on economic activity and labor market pressures.*
	Mexico	juin-21	mars-23	725	8	March 24	Cut	*This decision was made considering the behavior of the exchange rate, the weakness of economic activity, and the possible impact of changes in trade policies worldwide.*

Source: National Central Banks
Notes: Data for the "cumulative rate hike" column are calculated as the difference between the interest rate level at the last rate hike date and the level at the first-rate hike date. latest interest rate decision is compared to the decision of the previous meeting

64. I. Schnabel, "The last mile", Speech at the annual Homer Jones Memorial Lecture, November 2023.

65. J. Nagel, "European monetary policy in times of high uncertainty", Lecture at ZEW – Leibniz Centre for European Economic Research, Mannheim (May 2025).

Between early 2022 and mid-2025, four phases can be distinguished to characterize the stance of monetary policy. The first focused on **the pace of interest rate hikes**, which accelerated sharply at each central bank meeting in the second half of 2022. After raising the federal funds rate by 25 basis points in March 2022, the Fed significantly accelerated the pace of rate hikes at subsequent meetings, raising it by 50 basis points in May 2022 and by 75 basis points at each of the four meetings between June and November 2022. In the Euro area, policy rates were raised by 75 bps at each of the meetings in September and October 2022, and by 50 bps in December 2022, February 2023, and March 2023. In July 2022, the Bank of Canada raised its policy rate by 100 basis points, the largest increase since 1998.

Rate hikes continued in the first half of 2023, albeit at a more moderate pace than in 2022. The new challenge in the second half of the year was **to determine the level of the "terminal"** rate, *i.e.*, the level at which central banks would consider sufficiently "restrictive" to keep inflation in check and therefore no longer require further rate hikes After several consecutive rate hikes, the Fed and the ECB left their key rates unchanged at 5.5% and 4.5% respectively in July and September, and kept them at that level for several consecutive meetings.

CHART 40.
Recent Development in nominal policy rate and headline inflation across selected advanced economies

Chart 40a : Short-term nominal policy rate (%)

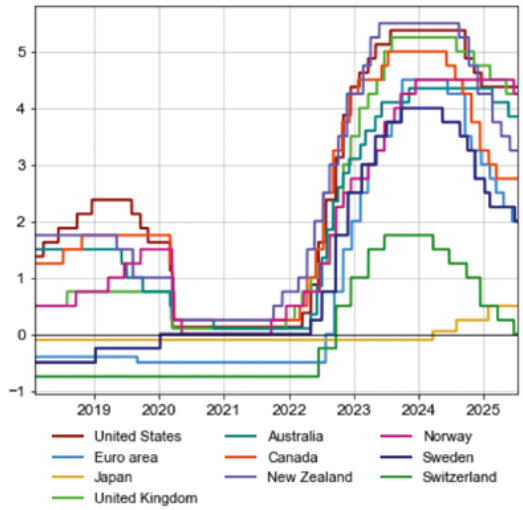
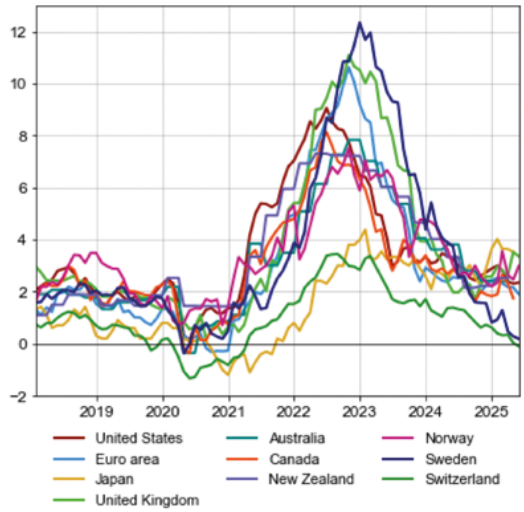


Chart 40b : Headline CPI growth, annual change (%)



Sources: Bank for International Settlments, national Central Banks

CHART 41.
Recent Development in nominal policy rate and inflation across selected emerging markets economies

Chart 41a : Short-term nominal policy rate (%)

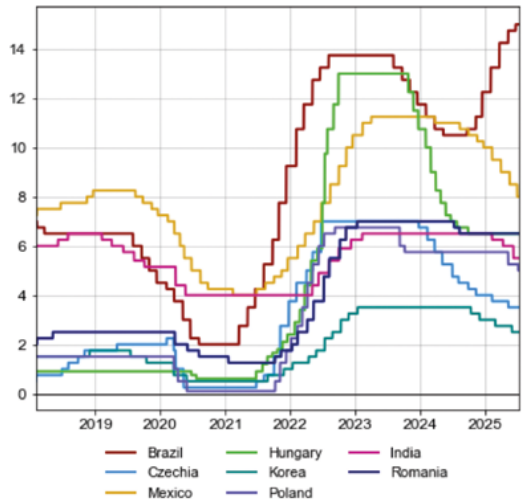
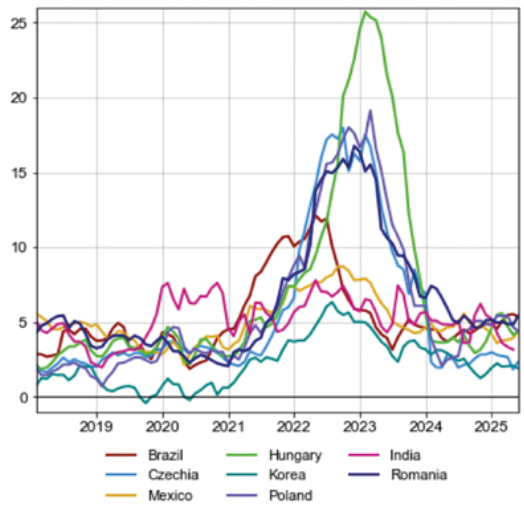


Chart 41b : Headline CPI growth, annual change (%)



Sources: Bank for International Settlments, national Central Banks

After several pauses, central banks began to cut their interest rates, with **the cycle of cuts starting in the first half of 2024**. While the first-rate cuts in some emerging countries were already decided in the second half of 2023 (Brazil, Hungary, Czech Republic, etc.), advanced countries were slower to act. Among them, the Swiss National Bank was the first to cut rates in March 2024, followed by the Bank of Canada and the ECB in June 2024. Between June 2024 and March 2025, the ECB's key interest rate fell by a cumulative 200 bps. In July 2024, the Bank of England cut the key interest rate by 25 basis points, and then again in November 2024 and February 2025, for a cumulative reduction of 75 bps. The Fed started to cut rates in September with a 50 bp reduction and reduced rates at the following two meetings, contributing to a total reduction of 100 bp.

However, rate cuts have become less frequent since the fourth quarter of 2024, and most central banks have **indicated their intention to moderate or pause the cycle of rate cuts**. While acknowledging progress in the disinflation process, most warned of the risk of loosening monetary policy too much, especially in a context of persistently high domestic inflation and uncertain environment related to the US trade policy (*see previous Section*). Commenting on the latest decision to leave interest rates unchanged for the fifth meeting in a row, Fed Chairman Jay Powell said at the July meeting that "the current stance of monetary policy leaves us well positioned to respond in a timely way to potential economic developments policy should be a little bit restrictive, somewhat restrictive, because we want inflation to move all the way back to its target."

After seven consecutive rate cuts between June 2024 and June 2025, the ECB maintained interest rates unchanged at its July meeting, citing the "economy's resilience amid a challenging environment". At its June meeting, the Bank of England also left its key rates unchanged, underlining the need for a 'gradual and careful approach to the further withdrawal of monetary policy restraint'. The wait-and-see attitude is also being adopted by some emerging countries: after being the first to lower rates, most of them (Czechia, Romania, Hungary) left them unchanged since the third quarter of 2024.

After setting itself apart from other central banks by not adjusting its monetary policy strategy throughout 2022 and 2023, the Bank of Japan finally ended the era of negative interest rates in early-2024 while maintaining an accommodative stance. In the context of the global decline in interest rates, the Bank of Japan once again stood out by raising interest rates in January. In its press release it committed to continue raising the policy rate and adjusting the degree of monetary accommodation, while inflation stood at 3.3%, the highest level since January 2023.

On top of interest rates, many central banks are reducing their holdings of securities, either by not reinvesting the proceeds of maturing bonds (passive quantitative tightening, or QT) or by selling bonds (active QT).

4.2.1 The Federal Reserve has been gradually raising the federal funds rate since March 2022, reaching 5.5% in July 2023, but has been cutting rates since September 2024. The Fed has also been reducing its bond holdings since June 2022

Until November 2021, J. Powell considered inflation to be a "transitory" phenomenon. In fact, between December 2020 and November 2021, the Fed continued to purchase US Treasuries and mortgage-backed securities (MBS) at a monthly pace of $120 billion and kept the federal funds rate unchanged at its lower bound of 0.25%.

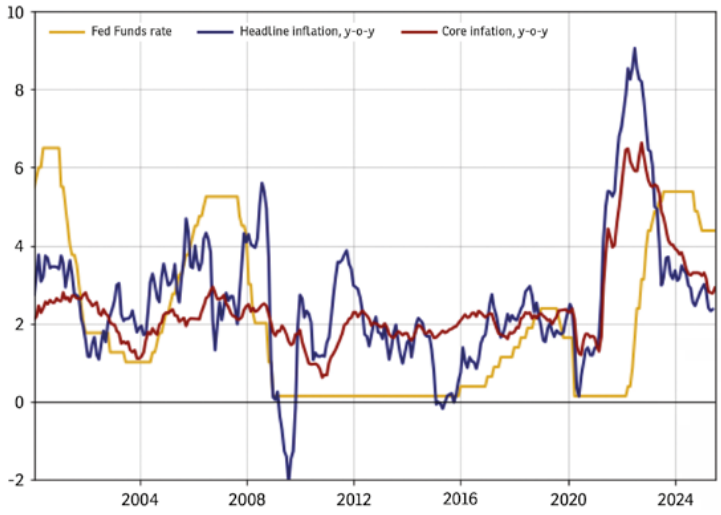
Starting in December 2021, the Fed gradually reduced the pace of net asset purchases, which ended in March 2022. **In March 2022**, the FOMC raised the Federal Funds rate by 25 basis points for the first time since 2019 and formally ended purchases of public and private securities.

The pace of rate hikes accelerated significantly at subsequent meetings, with the FOMC raising the Fed Funds rate by 50 bps in May 2022 and by 75 bps at each of the four meetings between June and November 2022. The fed funds rate was raised again by 50 basis points in December 2022 and by 25 basis points at **each of the three meetings between February and May 2023.**

After leaving the policy rate unchanged in **June 2023**, the Committee raised it by a further 25 basis points to a level of 5.5% from July 2023. After remaining unchanged for the next fifteen months, the Fed funds rate was cut for the first **time in September 2024**, by 50 bps. This was followed by two further cuts in November and December, bringing the federal funds rate down to 4.5%. However, the cycle of cuts was interrupted in **January 2025**, with Chairman Powell stating that "with our policy stance substantially less restrictive than it has been and the economy remaining strong, we do not need to be in a hurry to adjust our policy stance." The Fed funds rate has been left unchanged since then, as Chair Powell reiterated during the **July meeting** the need that "policy should be a little bit restrictive, somewhat restrictive, because we want inflation to move all the way back to its target."

In June 2022, the FOMC began its quantitative tightening (QT) by reducing its holdings of US Treasuries and mortgage-backed securities (MBS). At that time, the Fed held $5.8 trillion in US Treasuries, or a quarter of the national debt. It also held $2.7 trillion in MBS.

CHART 42.
Fed funds rate versus headline inflation in the United States



Source: Federal Reserve
Last observation from June 2025

The monthly pace of balance sheet reduction has increased from $47.5 bn between June and September 2022 to $95 bn since then. As a result, the Fed's balance sheet shrank from a total of $8.9 trillion in June 2022 to $8.3 trillion at the end of February 2023. Outstanding US Treasuries fell by $400 billion to $5.4 trillion in February 2023, and outstanding MBS fell by $89 billion to $2.6 trillion.

According to Caixa Bank[66], this pace of reduction is much more aggressive than in previous tightening cycles: in 2017, the Fed set a monthly cap of $50 bn, although in practice the initial pace was closer to $10 bn. Between 2017 and 2019, nearly $613 billion of private and public securities have been sold or not reinvested. Assuming the monthly cap of $95 bn remains unchanged, the Fed's balance sheet should have fallen by more than $1.6 trillion by December 2023.

CHART 43.
Federal Reserve balance sheet, stock and flows

Chart 43a : Total Assets, breakdown by purchase program, USD Trn

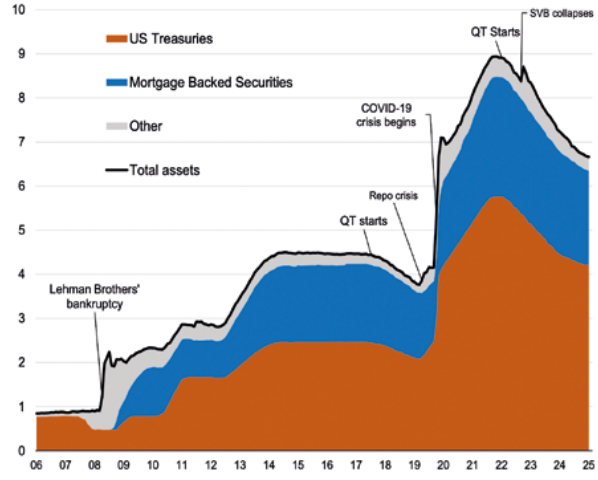
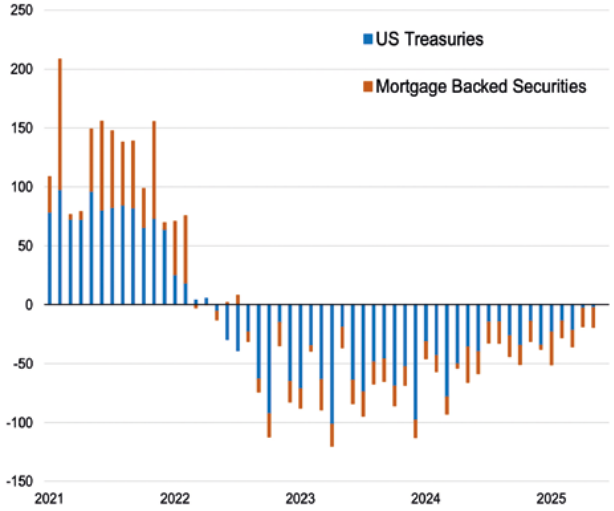


Chart 43b : Monthly change in securities holding, breakdown by purchase program, USD bn



Source: Ekonomics, based on data from the Federal Reserve
Notes: Last data from June 2025

However, the banking turmoil triggered by the SVB bankruptcy in March 2023 has caused the Fed's balance sheet to grow again since mid-March 2023. In fact, the Federal Reserve, in cooperation with the Treasury Department, set up a "bank term funding program" to provide short-term liquidity assistance to U.S. banks. In the 10 days following the SVB bankruptcy, the Fed's assets increased by nearly $400 billion, while they had fallen by nearly $600 billion between June 2022 and February 2023 due to QT.

66. A. Montilla, R. Gili, "On the reduction of the central banks' balance sheets" Caixa Bank Monthly Report No.468, June 2022.

After the SVB bankruptcy, the Fed continued to reduce its holdings of securities at a monthly pace of $95 billion ($60 billion of US Treasuries + $35 billion of MBS), as it has been doing since September 2022. However, in May 2024, the FOMC decided to slow the pace of the reduction in US Treasury holdings from $60 billion to $25 billion per month. The move took effect in June 2024.

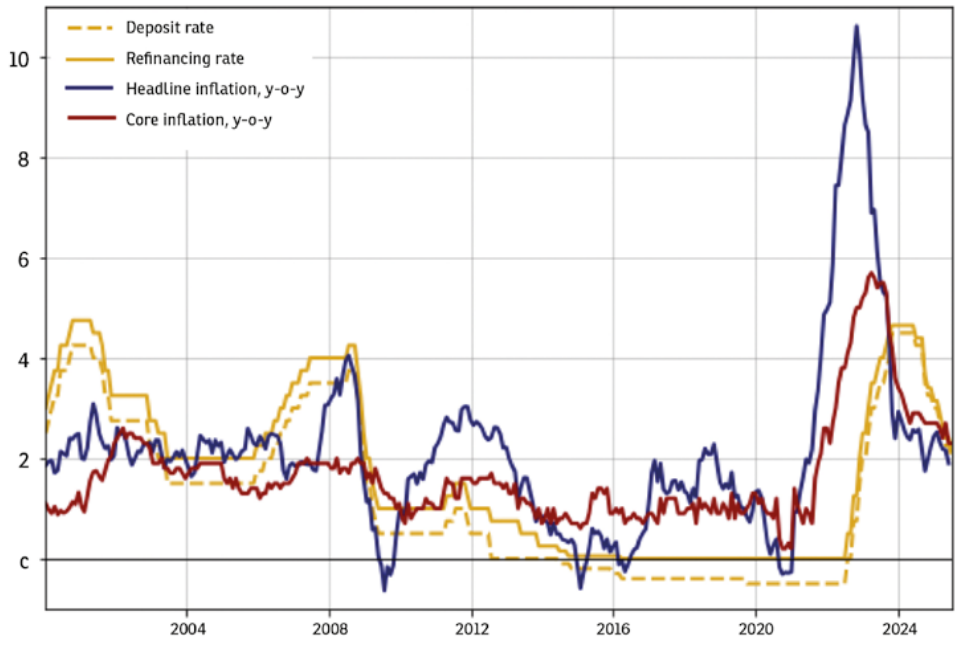
As a result, the balance sheet fell back below its pre-banking crisis level of March 2023. At the end of June 2025, the Fed's total assets stood at $6.7 trillion, down from $8.4 trillion in February 2023. After a QT lasting for more than two years and a half, the Fed has sold nearly 45% of the Treasury securities it bought during pandemic QE.

4.2.2 Between July 2022 and September 2023, the ECB raised interest rates by a total of 450 basis points. It then maintained this level for nine months before implementing seven rate cuts from June 2024 to June 2025

Until December 2021, the Governing Council continued to believe that "monetary accommodation will be needed to ensure that inflation stabilizes at the 2% inflation objective over the medium term." This view justified the continuation of the bond-buying programs and the maintenance of key interest rates at their current levels. Between December 2021 and March 2022, net monthly purchases under the PEPP and APP averaged €60 billion, while the deposit facility rate remained negative at -0.5% since September 2019.

At the end of March 2022, the Governing Council stopped its net purchases under the PEPP, although it planned to reinvest the principal payments from maturing securities purchased under the program "until at least the end of 2024". According to ECB President C. Lagarde, the reinvestment package amounted to €1.7 trillion. Meanwhile, the ECB continued to purchase sovereign and private securities under the original APP, at a monthly net purchase pace of €40 billion in April, €30 billion in May, and €20 billion in June. In June 2022, it decided to end net asset purchases under the APP by July 1, 2022, but intends to continue reinvesting in full the principal payments from maturing securities purchased under the APP "for an extended period of time". **In July 2022**, the Governing Council decided to raise the three key ECB interest rates by 50 basis points – the first increase since July 2011 – to end the negative interest rate policy in place since 2014.

CHART 44.
Policy rate versus headline inflation in the Euro area



Source: European Central Bank
Last observation from June 2025

Separately, it approved the creation of the Transmission Protection Instrument (TPI), a new tool designed to support the effective transmission of monetary policy across all Euro area countries. Indeed, it "can be activated to address unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the Euro area."[67]

67. TPI purchases would be focused on public sector securities (marketable debt securities issued by central and regional governments as well as agencies, as defined by the ECB) with a remaining maturity of between one and ten years. Purchases of private sector securities could be considered, if appropriate.

Since July 2022, rates have been raised at every meeting, by 75 bps in **September and October 2022**, and by 50 bps in **December 2022**, **February 2023**, and **March 2023**. Since then, the ECB has slowed the pace of rate hikes, raising rates by 25 bps at the next four meetings in **May, June, July, and September 2023**. After holding the key rate at 4.5% for nine months, the Governing Council decided to cut it by 25 bps in **June 2024**. Five further cuts have since been decided, bringing the key rate down to 2.0% in **June 2025**.

The cycle of rate cuts was interrupted at the **July 2025** meeting, which took place just before the EU–US trade agreement, when the ECB decided to keep rates unchanged with Eurozone inflation at 2%. "Partly reflecting our past interest rate cuts, the economy has so far proven resilient overall in a challenging global environment. At the same time, the outlook remains exceptionally uncertain, especially due to ongoing trade disputes", President Lagarde noted during the press conference.

Given the Euro area's relative economic resilience and inflation stabilizing at the 2% target, President Lagarde remarked, "We are in a good place because inflation is at 2%." However, she emphasized that the ECB is "not focused on individual data points", and reiterated the commitment to a "data-dependent, meeting-by-meeting approach" to determining the appropriate monetary policy stance.

This cumulative increase in the policy rate has been complemented by several measures to reduce the size of the Eurosystem's balance sheet as part of the "quantitative tightening".

Between October 2022 and July 2025, European banks repaid almost all of the €2.2 trillion in LTROs they had borrowed from the ECB. Repayments related to refinancing operations accounted for more than two-thirds of the decline in the Eurosystem's balance sheet since October 2022 (*see Chart 45a*).

CHART 45.
Eurosystem's balance sheet, stock and flow

Chart 45a : Total Assets, breakdown by purchase program, EUR Trn

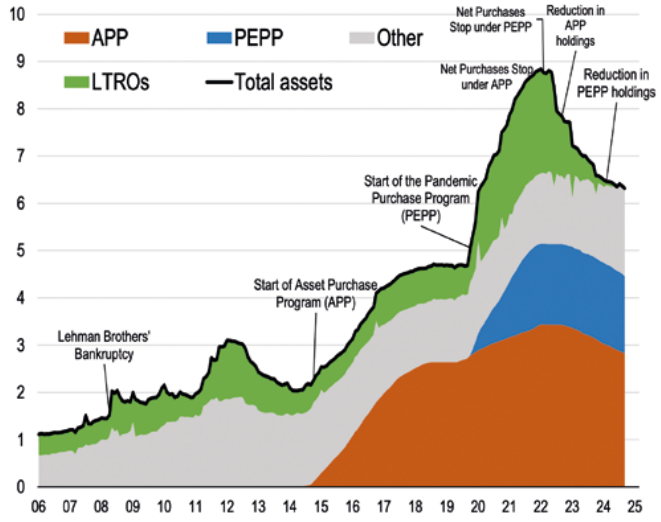
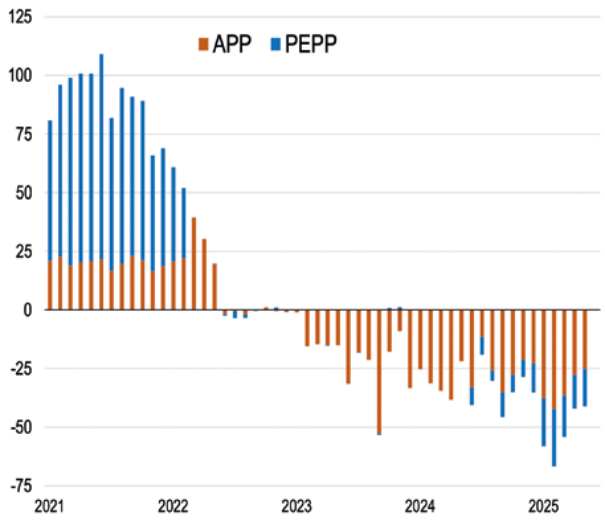


Chart 45b : Monthly change in securities holding, breakdown by purchase program, EUR bn



Source: Ekonomics, based on data from the European Central Bank
Notes: Last data from June 2025

In addition, the Governing Council has started to reduce its APP holdings. From the beginning of **March 2023 until the end of June 2023**, the APP portfolio declined by an average of €15 billion per month, as the Eurosystem did not reinvest all the principal payments from maturing securities. Since July 2023, the Eurosystem has decided to stop reinvesting redemptions under the APP. This decision has increased the pace of the reduction of securities holdings to an average of **€25 billion per month** (*see Chart 47b*).

While the securities purchased under the PEPP have not been subject to QT until 2023, the ECB announced **in December 2023** that it intends to reduce its PEPP portfolio by an average of €7.5 billion per month in the second half of 2024. Since July 2024, the stock of bonds held under the PEPP has declined by an average of €13 billion per month.

These measures have contributed to reducing the size of the Eurosystem's balance sheet. In June 2025, total assets stood at €6.1 trillion, down from their peak of €8.84 trillion in June 2022 (*see Chart 47a*).

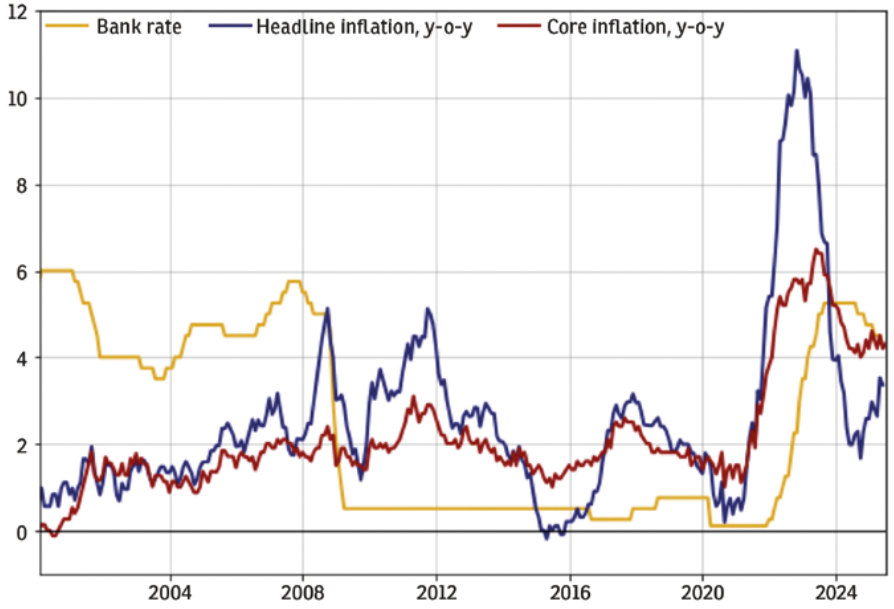
4.2.3 After raising its policy rate for fourteen consecutive meetings from 2021, the Bank of England decided to keep it unchanged at 5.25% from July 2023, before cutting between July 2024 and May 2025

The BoE was the first major central bank among the G7 economies to raise interest rates since the start of the pandemic. In December 2021, it raised the Bank Rate from 0.1% to 0.25%. Since then, the Bank Rate has been raised fourteen consecutive times, reaching 5.25% in July 2023. The Bank Rate remained unchanged until July 2024, when the CPI inflation was at the 2% target in both May and June 2024. The MPC reduced the Bank's rate by 100bp to 4.25% in June 2025.

While there has been "substantial disinflation over the past two years, as previous external shocks have receded and the restrictive monetary policy stance has curbed second-round effects and stabilised longer-term inflation expectations", the Committee emphasised the need for a "gradual and careful approach to further withdrawing monetary policy restraint."

Accordingly, the Bank Rate has remained in "restrictive territory, in order to continue to eliminate existing or emerging persistent inflationary pressures." In addition to rate hikes, the BoE has reduced its holdings of UK government bonds. In February 2022, well ahead of the Fed and ECB, it stopped reinvesting maturing bonds. After a temporary reversal in October 2022, when the gilt market was severely disrupted, the BoE resumed its QT in November 2022. By June 2025, the BoE's total holdings of gilts had fallen to £622.5 billion from a peak of £895 billion in December 2021.

CHART 46.
Policy rate versus inflation in the United Kingdom



Source: Bank of England
Last observation from June 2025

4.2.4 The Bank of Japan finally ended its negative interest rate policy in March, in response to the resurgence of inflation until 2024, but has so far maintained a very accommodative stance

Compared to other central banks, the Bank of Japan has been much less reactive in rising inflation since 2021. While inflation exceeded 3% for most of 2022 and 2023 – the highest in 40 years – BOJ members kept the monetary policy framework unchanged since 2016 in the form of (I) maintaining the negative interest rate policy, (II) yield curve control (YCC), which consisted of unlimited purchases of government bonds to prevent the 10-year government bond yield from rising above 0.25%, and (III) continued purchases of corporate bonds and stock market ETFs. This "patient" monetary accommodation was justified at the time by "the aim of achieving the price stability Target of 2 percent in a sustainable and stable manner, accompanied by wage increases."

However, the persistence of underlying inflation, the distortion in the yield curve, and the sharp depreciation of the yen have since led to some adjustments in the monetary policy strategy. A first adjustment was made in **December 2022**, when the upper limit of the 10-year government bond yield targeted by the YCC policy was raised from 0.25 percent to 0.5 percent. Then, in **July 2023**, the BoJ announced that it would conduct the YCC with greater flexibility by offering to purchase 10-year JGBs at 1% for some government bond auctions. The most important decision, however, was the end of the negative interest rate policy in March 2024, when the key policy

rate was raised from -0.1% to 0.05%. It also announced that it would stop buying exchange-traded funds and Japanese real estate investment trusts but said it would not sell the 70,000 billion yen (430 billion euros) in securities it already holds. The key rate was raised again, in July 2024 and then in January 2025, to 0.5%.In addition to the rate hike, the BOJ announced that it would begin reducing its holdings of Japanese government bonds at a rate that will increase each quarter until the monthly reduction reaches its full pace of about 3 trillion yen per month ($19 billion per month at today's exchange rate) in January-March 2026.

4.3 Maintaining positive real interest rates is necessary to achieve price stability

From January 2022, rising inflationary pressures, the end of central bank asset purchase programmes and market expectations of central bank rate hikes led to a sharp rise in government bond yields.

As a result, real interest rates have returned to positive territory since 2023 in most economies, including the US and the Euro area. This is necessary to complete the disinflation process.

However, this recent return to positive real interest rates must be put into historical perspective, as it follows several consecutive years of negative real interest rates.

4.3.1 Government bond yields have increased in most countries since the start of 2022

From January 2022 to end-June 2025, the nominal yield on 10-year US government bonds more than doubled to 4.5%, its highest level since 2008. The 10-year German Bund yield, which was negative until December 2021, rose to 2.5% at the end of June 2025. In France, it rose from 0% in January 2022 to 3.2% in June 2025.

CHART 47.
Recent Trends of Sovereign Bond Yields in Selected Advanced Economies, %

Chart 47a : Long-term perspective

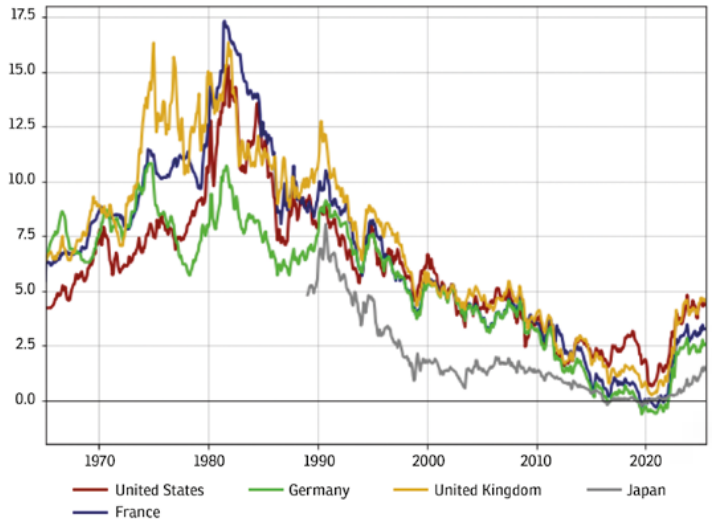
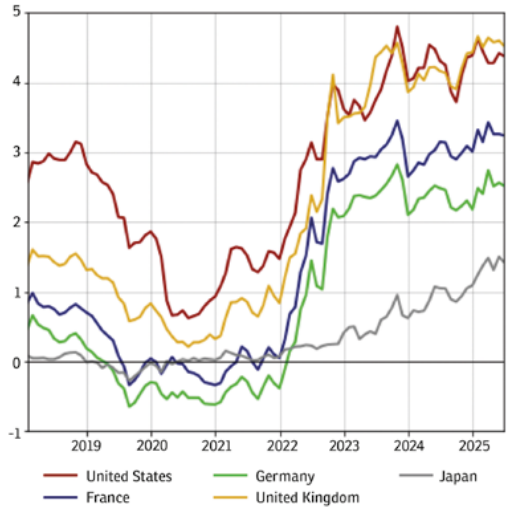


Chart 47b : Recent developments



Source : OECD
Note: Latest data from June 2025

Sovereign bond yields have also risen significantly in the southern Member States since 2022. The Italian 10-year government bond yield has risen by 250 bps since January 2022 and was approaching 3.5% in June 2025, one of the highest levels since 2014. In Greece, the long-term interest rate has increased by 200 bps over the period, reaching 3.3% at the end of June 2025.

It should be noted, however, that long-term interest rates have been very volatile in recent quarters. After peaking in October 2023, coinciding with the peak of central bank policy rates, they began to fall, driven by the prospect of central bank rate cuts, which finally materialised in the Euro area from June 2024 and in the United States from September 2024. However, persistently high inflation led the markets to revise their rate expectations during the year: in the US, only 3 of the 7 rate cuts initially predicted by the markets for 2024 took place.

The German plan to create a €500 bn infrastructure fund and change the country' s debt limits to allow borrowing to fund defence amplified the rise in long-term rates in Europe.

4.3.2 Despite the QT, the ECB has directed its reinvestment policy towards the most indebted countries until 2024 limiting the rise in long-term bond yields and sovereign spreads

Despite the end of net asset purchases under the PEPP, the Eurosystem continued to reinvest the principal payments from maturing securities purchased under the €1.7 trillion programme until the end of 2024.

Since June 2022, the reinvestment policy has focused on maturing bonds issued by the most indebted Euro area countries. Indeed, between June 2022 and May 2024, the ECB bought a further €11.5 bn of Italian and Spanish government bonds, while reducing its portfolio of German and Dutch debt by €25.3 bn.

While the flexible reinvestment policy has come to an end and the ECB has started to reduce its stock of PEPP holdings, the stock of the most indebted countries is decreasing at a much slower pace For example, between June 2022 and June 2025, the amount of French, Italian and Spanish bonds held under the PEPP fell by 4% to 7%, while the stock of German and Dutch bonds shrank by 15% to 18% (*see Chart 48a*). While 15.5% of German bonds repurchased during the pandemic were not reinvested, this percentage does not exceed 7% for Greece, France, Italy and Spain (*see Chart 48b*).

CHART 48.
PEPP portfolio dynamics since 2022

Chart 48a : Breakdown of public sector securities across key EA Member States, June 2022 = 100

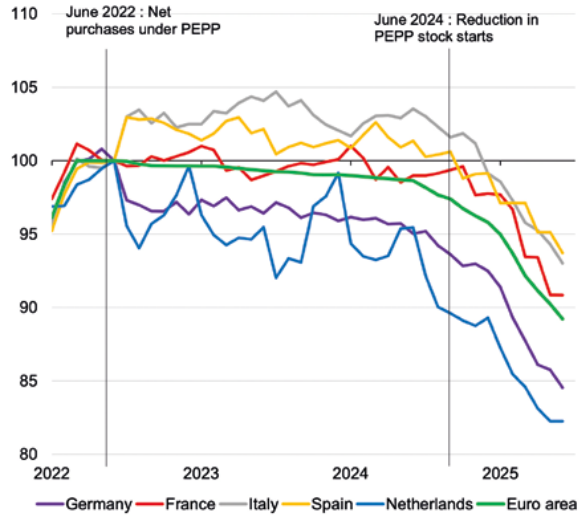
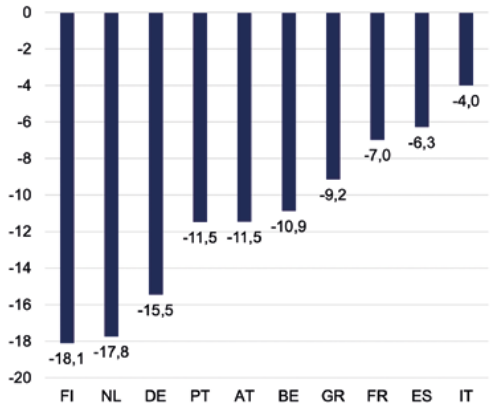
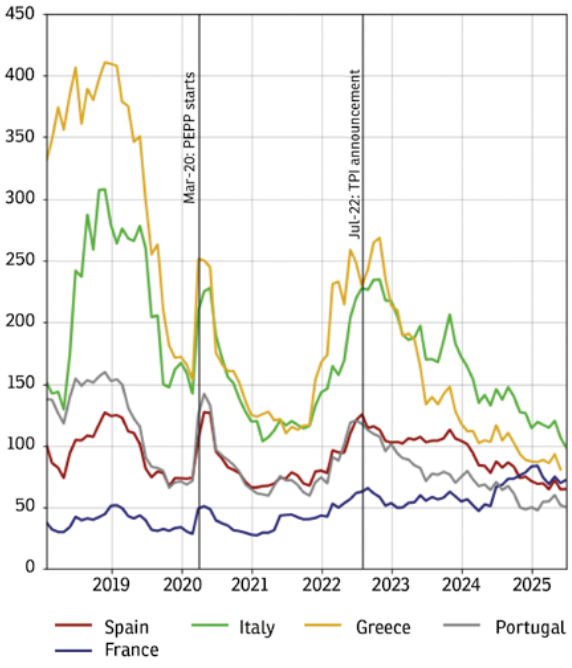


Chart 48b : Net change in the stock of public debt securities under PEPP between June 2022 and June 2025, as a % of the stock of securities held in May 2022



Source : Ekonomics, based on ECB data

CHART 49.
10-Year Government Yield of Selected Eurozone Member States over Germany, basis points



Source: Ekonomics, based on OECD data
Latest data from June 2025

The reinvestment policy of the PEPP, combined with the announcement of the Transmission Protection Instrument to "counter sudden jumps in yields", has coincided with a gradual decline in the bond yield spreads since June 2022 (*see Chart 53*).

Since the ECB started to raise its key interest rates in July 2022, sovereign bond yield spreads between Germany and peripheral EA member states have temporarily widened before returning below their pre-crisis levels: after peaking at 234 bps in September 2022, the yield spread between Italian and German 10-year government bonds declined to 98 bps at the end of June 2025, well below the 2019-average of 210 bps. In Spain and Greece, yield spreads have fallen from peaks of 118.4 bps and 271.5 bps in September 2022 to 65 bps and 80 bps, respectively, at the end of June 2025.

As noted by R. Brooks and D. March[68], "PEPP reinvestments, by distorting Euro area capital market interest rates, appear to be obscuring the true cost of public debt in the euro periphery." Italy's high debt-to-GDP means that the spread should rise when German and global yields rise. This has not happened recently."

4.3.3 Disinflation and rising nominal interest rates have allowed short – and long-term real interest rates to return to positive territory in most advanced and emerging economies by 2023

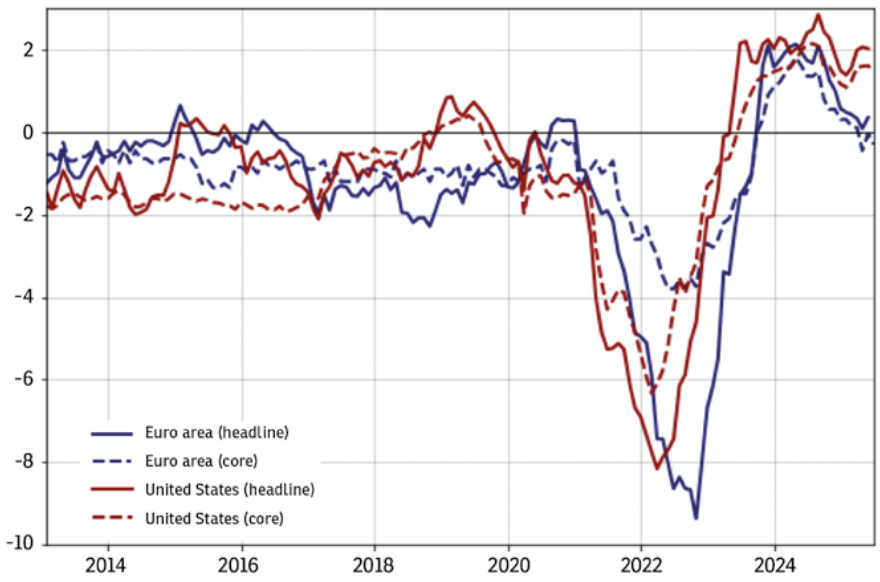
In the United States, the policy rate, adjusted for headline inflation, rose back above 0% in May 2023. In June 2024, it reached 2.3%, well above its 2000-2019 average, when it was negative overall (-0.4%).

In the Eurozone, the real policy rate returned to positive territory a few months later, from September 2023. In June 2024, it reached 1.75%, still below the US level.

Overall, the return of central banks' real policy rates to positive levels has been supported by the rise in nominal policy rates, to 550 points in the US and 450 points in the Euro area, as well as by significant disinflation in 2023.

However, the ECB's faster interest rate of decline led to a growing divergence in real interest rates relative to those in the United States in 2025. While the two were roughly aligned until the first quarter of 2024, by June 2025, the ECB rate had fallen towards 0%, standing at a difference of two percentage points to the Fed's rate.

CHART 50.
Real Refinancing Rates in the US and Euro Area
Policy rate minus annual inflation rate, % points



Source: Ekonomics, based on Fed and ECB data. Latest observation from June 2025

In most advanced and emerging market economies, real interest rates returned to positive territory in 2023. In addition to the Euro area and the United States, this was particularly the case in the United Kingdom, where real rates returned to positive territory from October 2023, Canada (January 2023), and Switzerland (June 2023).

Nevertheless, the evolution of real rates remains very heterogeneous across countries. For example, Brazil and Mexico, which started to normalise monetary policy in 2021, returned to positive real rates the following year and now have real rates above 6%, twice as high as Poland (3.1%), Hungary (3.3%) or the Czech Republic (2.75%).

68. "ECB bond reinvestments muddy Europe's fiscal rules", OMFIF.

Japan's belated adjustment of its monetary policy in the face of resurgent inflation sets it apart from other advanced countries. In June 2024, the real interest rate stood at -2.75%, well above its long-term average of 0.05%.

Although they remain positive, real policy interest rates have started to fall again in some of the countries where central banks started their first rate cuts. After peaking at 2.1% in March 2024, the real rate in the Euro area fell to 0% in June 2025, following the seven rate cuts by the ECB.

CHART 51.
Real policy rates in selected AEs and EMEs as of April 2025, percentage points ; *Nominal Policy rate minus inflation rate*

Chart 51a : Real Policy Rates as of April 2025, percentage points

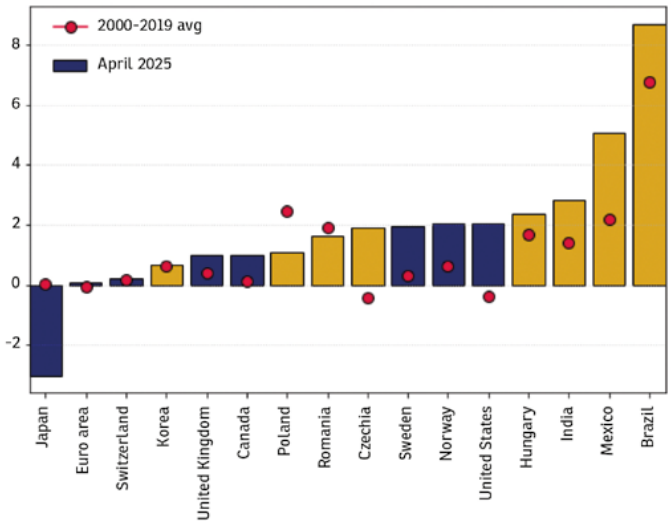
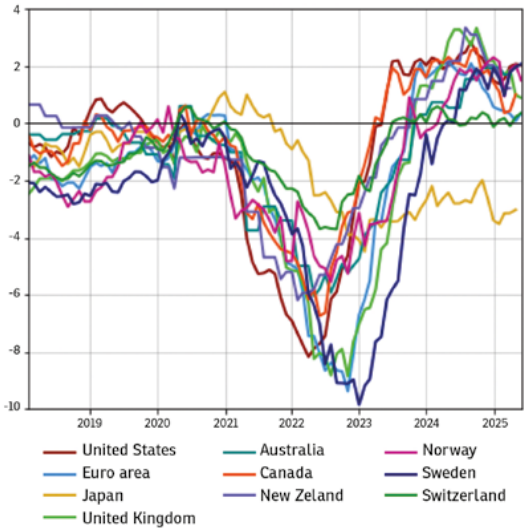


Chart 51b : Recent Real Policy Trajectory since 2018



Sources: OECD, Eurostat, BIS
All data are calculated on the basis of the June-23's inflation level, except for the Australia which date from March 2024

Real long-term interest rates have also returned to positive territory, although there are significant differences between countries.

CHART 52.
Nominal Long-term government bond yields adjusted for CPI, percentage points

Chart 52a : Real 10-Government Bond-Yields as of April 2025, percentage points

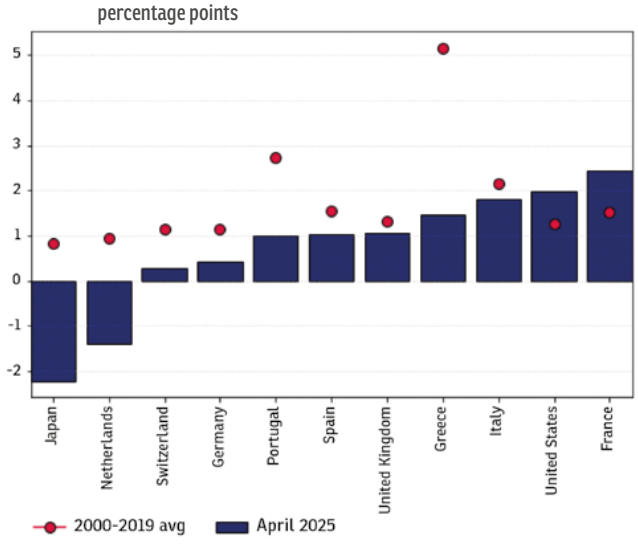
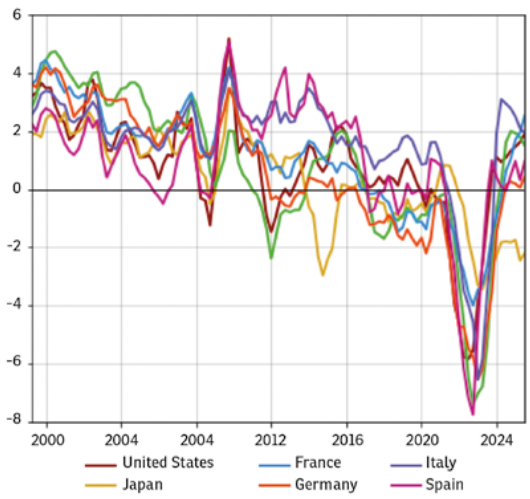


Chart 52b : Real 10-Government Bond-Yields, percentage points



Sources : Ekonomics, based on OECD and BIS data

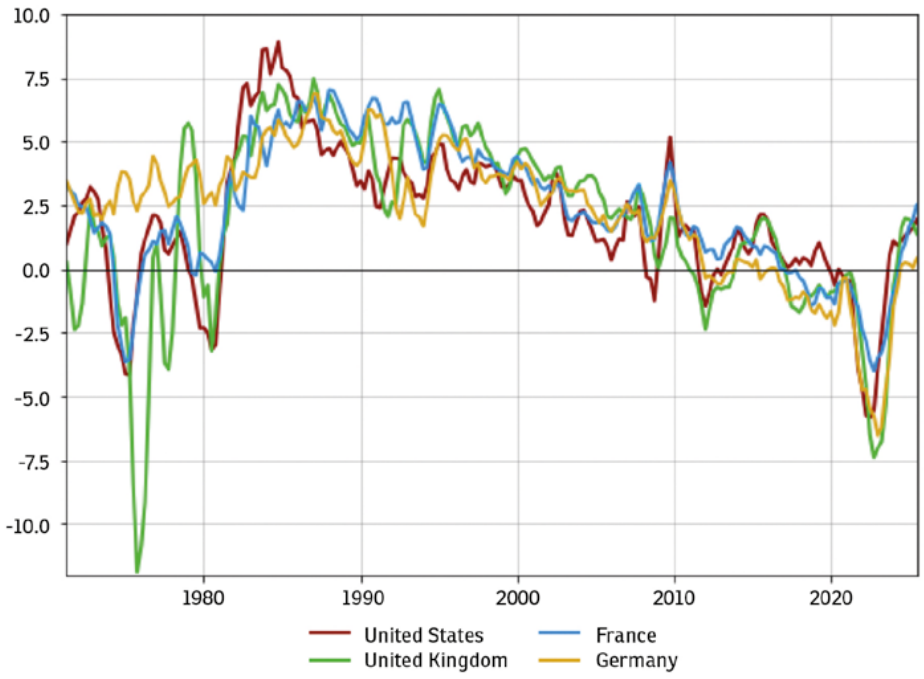
4.3.4 The recent return of real interest rates to positive territory must be put into historical perspective as it follows several consecutive years of interest rates below 0%

An analysis of interest rates over the last fifty years shows that real 10-year interest rates have never been so negative over such a long period (around 10 years).

This historical analysis shows that:

- **Real long-term interest rates in advanced countries have been negative since 2013, while they were always above 2% on average in the previous two decades.** Since 2013, German and UK real long-term interest rates remained below -1% overall, after being above 5% between 1984 and 1995 and fluctuating above 3% between 1996 and 2007.
  The real yield on French bonds has averaged -0.6% since 2013, compared with 5.9% between 1984 and 1995 and 3.1% between 1996 and 2007.
- **The negative level of real interest rates observed during the current inflationary period (2021-24) contrasts sharply with the stagflationary episode of the 1970s (1973-83), when real interest rates often tended to exceed zero in the context of double-digit inflation.** After two years in negative territory (1974-75), the French real 10-year rate climbed back above 0% at the end of 1975, and averaged 1.2% over the decade 1973-1983, despite inflation averaging 10.9% per year.
  Between mid-2021 and end-2024, the French real interest rate fell below -1.5% on average, while inflation was twice as low as in the 1970s (4.4% on average between 2021 and 2023). In Germany, the real bond yield fluctuates around -3% between mid-2021 and end-2024, compared to +3.4% in the 1970s. The inflationary episode in 2021-24 pushes it to its lowest level since the 1970s (-6% in March 2023).

CHART 53.
Real 10-year government bond yields since 1970



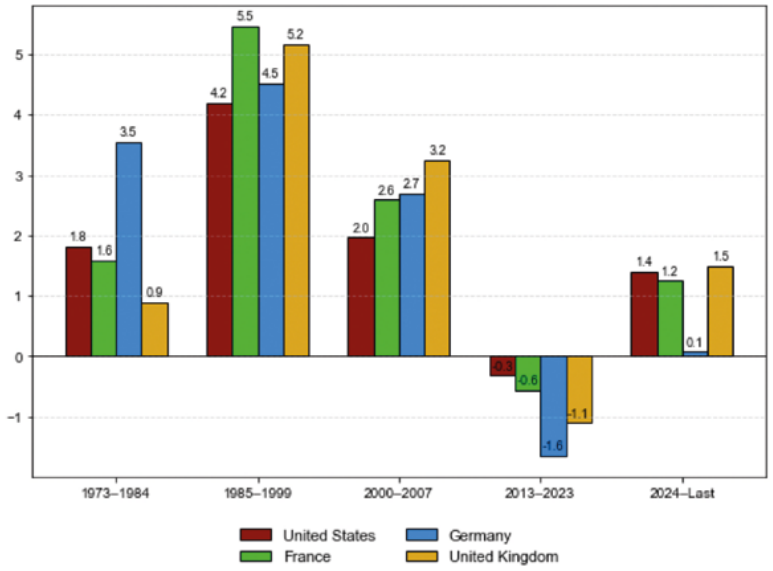
Source: OECD
Real bond yields are calculated as the difference between 10-year nominal government yield and observed year-on-year inflation of the corresponding period
Last observation from June 2025

Such a long period of negative interest rates (2010-2023) explains the unprecedented credit growth during the past decade and the associated unprecedented boom in indebtedness (*see Section 2*), which increases the vulnerability of financial market players.

This is puzzling: how could the major central banks have allowed credit to grow so massively without reacting? Historically, the explosion of credit (to governments and corporations) has been considered a leading indicator of inflation that should be watched very closely. Yet the credit boom of the past 20 years does not seem to have caused any concern among central banks.

Real interest rates reflect the real cost of borrowing and the real return on savings. The acceleration in inflation, combined with the decision by central banks to remain patient in raising interest rates, has reinforced the monetary stimulus until 2023.

CHART 54.
Real 10 year government bond yields: comparaison across decades and countries



Sources : Ekonomics, based on OECD and BIS data
Real bond yields are calculated as the difference between 10-year nominal government yield and obseverd year-on-year inflation of the corresponding period

Negative interest rates are a source of financial instability, misallocation of capital, and low growth. In its Financial Stability Review (2021), the ECB stated that these lasting highly favourable monetary conditions have also led to a build-up of longer-term risks. Rising inflation and falling real interest rates have prompted investors to take greater risks in their search for yield, which has made parts of the property, debt, and crypto asset markets "increasingly susceptible to corrections".

5. Quantitative tightening (QT): challenges and way-forward

This section explains what excess liquidity and QT mean, and what is at stake. We then present the rationale and arguments in favor of QT, its intended effects as well as the risks and side effects associated with this policy. We conclude with the necessary adjustments to the monetary policy framework in the Euro area.

5.1 What are QT and excess liquidity and what does it matter?

5.1.1 Some reminders

Quantitative tightening (QT), also known as balance sheet normalization, is an unconventional monetary policy through which central banks reduce their balance sheets. QT means that the bond holdings of the central bank decline. This can be achieved either by halting the reinvestment of maturing bonds and other assets on the balance sheet of the central bank, 'passive tightening', or by selling the assets, which is called 'active tightening'.

As D. Gros explains[69], "in assessing the effects of QT, one must thus be careful to distinguish between the (flow) effects of asset purchases or sales and the impact that large asset holdings can have on (long-term) interest rates and the term premium, *i.e.* the stock effect. Active QT, meaning asset sales by the central bank, should be equivalent to increases in the policy rate. However, merely keeping asset holdings constant maintains a constant downward pressure on long-term rates."

Excess liquidity is defined as the amount of liquidity provided by the central bank over and above the strict needs of commercial banks[70]. In the Euro area, it corresponds to the funds held by banks with the Eurosystem, either on their current account (excess reserves) or via the deposit facility. An individual bank can reduce its excess liquidity, for example by lending to other banks, purchasing assets, or transferring funds on behalf of its clients, but the banking system as a whole cannot: the liquidity always ends up with another bank and thus in an account at the central bank. It is a self-contained or, in other words, closed system. The liquidity cannot even leave the Euro area, unless physically in the form of banknotes. Only the central bank can reduce excessive liquidity by reducing its balance sheet.

The rise in the ECB's balance sheet is the product of non-standard measures – *i.e.* massive lending to the banking sector, in particular via Targeted Longer-Term Refinancing Operations (TLTROs), and – predominantly – the purchases of securities through the various Quantitative Easing (QE) programs. The corollary on the liability side is the accumulation of a huge pile of bank deposits on the ECB books.

Quantitative policies, particularly in the Eurozone, have resulted in the purchase of long-term securities with the issuance of bank reserves. This explains the ALM mismatch the Eurosystem is facing and the losses recorded and to come by central banks.

The ECB is currently relying on three tools for monetary policy tightening: I) interest rate hikes, II) quantitative tightening (QT) and III) TLTRO repayments.

5.1.2 Amounts at stake

In such a context, the Eurosystem balance sheet amounted to €7.9 tn euros in December 2022 and €6.1 tn in June 2025, or 66.4% and 51.2% of 2019 GDP[71] respectively. Reserves held by credit institutions amounted to €4.8 tn in October 2022, and €2.8 tn at the end of June 2025.

The ECB started its quantitative tightening policy in March 2023. The decline in bank reserves since October 2022 is mainly due to the repayment by banks of the LTRO programmes launched in 2019, which amounted to €2.2 tn.

The non-reinvestment of all the principal payments from maturing securities purchased under the Asset Purchase Program (APP), at an average of €15 bn per month between March and June 2023, and €25 bn since July 2023 has

69. D. Gros and F/ Shamsfakhr, "Quantitative tightening in homeopathic dioses: the ECB and the long shadow of the PSPP and the PEEPP", March 2023.

70. Euro area banks are required to hold a certain amount of funds as reserves in their current accounts at their national central bank. These funds are called minimum reserves. Banks are currently required to hold a minimum of 1% of specific liabilities, mainly customers' deposits, at their national central bank. As of 21 December 2022, minimum reserves are remunerated at the rate applicable to the deposit facility. Moreover, the Liquidity Covered ratio (LCR) has resulted in a measurable increase in the demand for high-quality liquid assets (HQLA) – which include reserve balances held at the central bank – that banks need to hold to comply with this ratio.
The Governing Council of the European Central Bank (ECB) decided on 27 July 2023 to set the remuneration of minimum reserves at 0%. The change will become effective as of the beginning of the reserve maintenance period starting on 20 September 2023.

71. It seems more appropriate to use 2019 GDP in the denominator of the ratio, to avoid fluctuations in 2020-22 GDP affecting this ratio (with a fall in GDP in 2020, the 2020 balance sheet/GDP ratio would have exploded more, whereas it would have fallen in 2021 following strong GDP growth that same year).

so far had a more limited impact on the stock of securities and thus on bank reserves[72]. Between March 2023 and February 2025, the Eurosystem's holding of securities declined by €830 bn to €4.24 tn in June 2025, compared with €5.9 tn in March 2023.

These measures to reduce the ECB's balance sheet have led to a reduction in the stock of reserves, from €4.6 tn in March 2022 to €2.8 tn in June 2025 (*see Chart 55a*).

In June 2025, 95% of these bank reserves deposited with the Eurosystem were still in excess of reserve requirements (*see Chart 55b*).

CHART 55.
Eurosystem's selected assets and liabilities

Chart 55a : Bank reserves versus selected assets of the Eurosystem, EUR bn

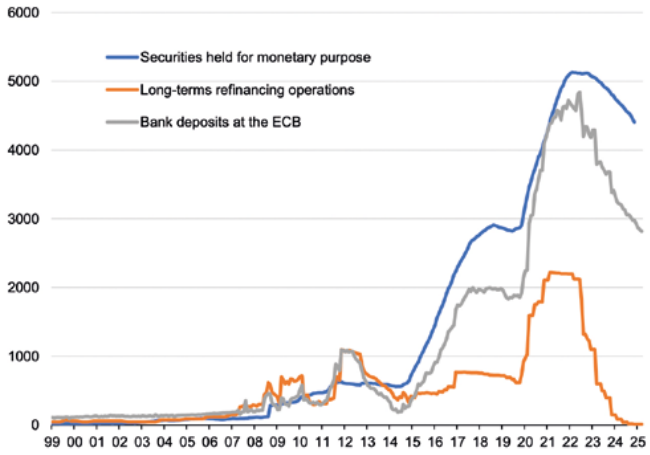
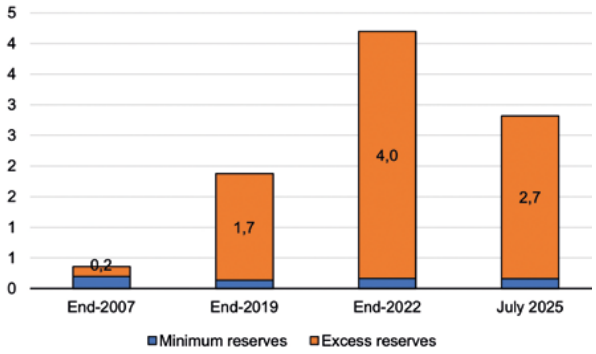
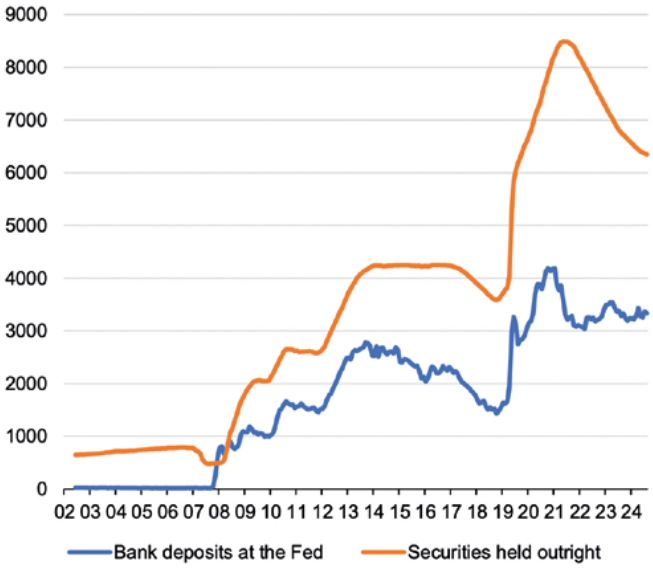


Chart 55b : Mandatory versus excess bank reserves, EUR bn



Source: ECB
Notes: last observation from July 2025

CHART 56.
Fed's holding of securities versus bank reserves, USD billion



Source: Federal Reserve
Last observation from July 2025

The ECB has been more gradual than its peers, especially compared to the Fed, both in the path of normalisation of its policy rate and in the timing and pace of QT.

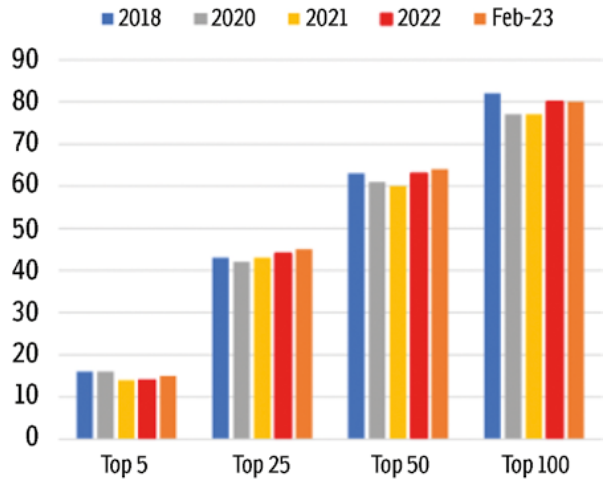
In the US, purchases of public and private securities during the pandemic led to a doubling of bank reserves relative to 2019, reaching a peak of $4.2 tn in August 2021. Since the Fed started its QT in June 2022, this amount has been reduced to $3.2 tn in June 2025 (for more details on the current monetary policy stance of the Fed and the ECB, see Part 4.2).

72. By way of comparison, it should be remembered that the public sector purchase programme (PSPP) started with purchases of €60 billion per month (from March 2015 to March 2016). After the Covid-19 crisis purchases rapidly increased throughout 2021 and continued at closed to an average of €90 billion per month (PSPP and PEPP together) at a time where inflation was already clearly above the Target.

Marek Dabrowski[73] explained that "with the current pace of QT, returning to the pre-pandemic size of CB balance sheets (at the end of February 2020), which may be taken as a reasonable policy goal, will take a long time. In the case of the Fed, with the monthly amount of QT equal to USD 95 billion, this goal could be accomplished by around October 2026. However, with an average monthly QT rate of EUR 27 billion, the ECB will require eight years."

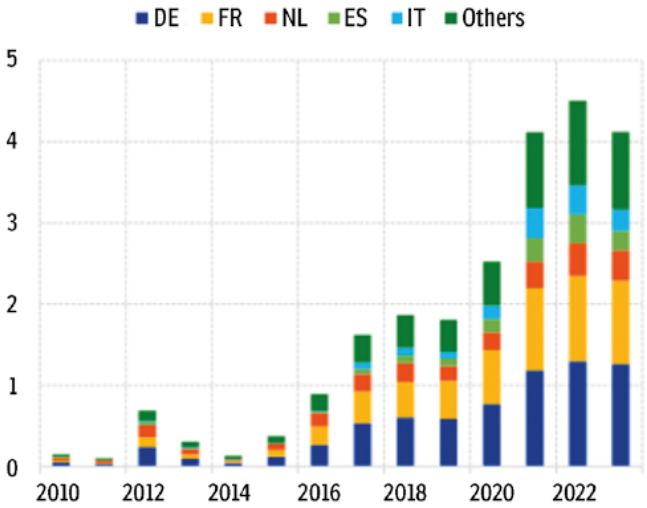
I. Schnabel underlined[74] that in the Euro area, "25 banks alone currently hold over 40% of excess liquidity, with little change over time. Moreover, excess liquidity tends to be concentrated in a few countries that are financial centres (mainly Germany, France and The Netherlands).[75]

CHART 57.
Concentration of excess liquidity in Euro area banks (%)



Source: ECB, charts extracted from I Schnabel, "Back to normal? Balance sheet size and interest rate control", 27 March 2023

CHART 58.
Excess liquidity across Euro area countries (EUR tn)



Source: ECB, charts extracted from I Schnabel, "Back to normal? Balance sheet size and interest rate control", 27 March 2023

5.1.3 From corridor to floor: the role of excess reserves

Before the Global Financial Crisis (2008), the Eurosystem implemented monetary policy in a "corridor" system[76]: It estimated the liquidity needs every week and met almost exactly the liquidity needs of Euro area banks, via

73. M. Dabrowski, "Excess liquidity in the Euro area: sources and remedies", Monetary Dialogue Papers, European Parliament, September 2023.

74. I. Schnabel, "Back to normal? Balance sheet size and interest rate control", 27 March 2023.

75. Indeed, roughly 80% of purchases were from nondomestic counterparties, and 50% of total purchases from counterparties outside the Euro area, most of them in the United Kingdom. The majority of these nondomestic counterparties transit through subsidiaries in Germany, the Netherlands or France in order to access the Target 2 transfer system, which resulted in uneven cross-border financial flows within the Euro area, which in turn had an impact on the Target 2 central account and the balance sheets of the NCBs. For more information on this issue, see C. Debever & N. Toulemond, "Target 2 Imbalances in the Euro area", Tresor Economics, May 2021.

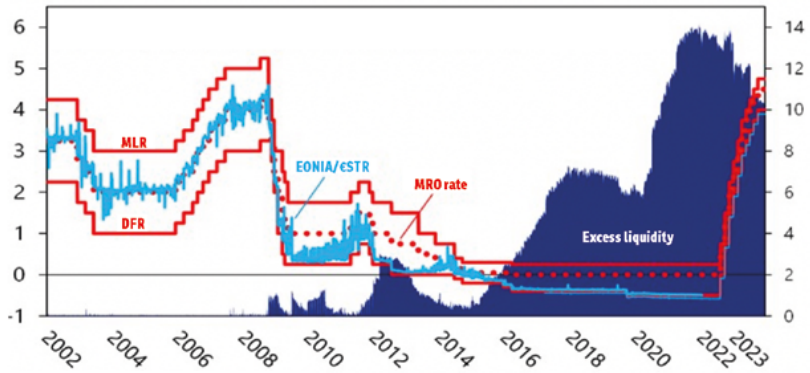
76. A corridor system sets bounds around the policy rate, with a deposit facility forming the floor of the corridor (deposit facility rate for the ECB) and a lending rate the ceiling (Marginal lending facility rate for the ECB). By adjusting the amount of liquidity in the system, the central bank aims at keeping actual rates (EONIA/ESTR in the Euro area) close to the policy rate (Main refinancing operation rate for the ECB). The corridor ensures sudden changes in liquidity conditions do not lead to large swings in market rates.

refinancing operations conducted as competitive tender procedures. Once injected into the system, liquidity was redistributed among banks according to their need to make payments or cover their reserve requirements via the interbank market. In matching supply and demand in aggregate terms, the ECB steered overnight rates to the middle of the corridor. As a result, excess liquidity was negligible.

In October 2008, in response to the severe financial crisis following the collapse of Lehman Brothers, the ECB switched to a system of full allotment at fixed rates. This means that banks can borrow as much liquidity as they want, as long as they have sufficient eligible collateral. The reason for this switch was that banks were no longer redistributing liquidity among themselves via interbank lending, as they did before the crisis. The deposit facility rate (DFR) became the floor of the interest rate corridor. This floor rate has become the key policy rate.

The implementation of asset purchases led to the creation of reserve balances which overtime shifted the unsecured overnight lending rate close to the Deposit Facility rate, resulting in a shift from a corridor to a floor system. Since 2016, and in aggregate terms, banks have been demanding more liquidity than they immediately need. As noted by J. Nagel[77], the Eurosystem subsequently kept offering refinancing operations with several maturities. Thanks to extremely favorable terms, these operations met a very brisk demand. This explains why short-term interest rates in the Euro area have, for some time now, been geared around the deposit rate. This is talked about as a de facto floor system.

CHART 59.
Euro area: Excess Liquidity, ECB Policy Rates, and EONIA/ESTR



Source: IMF

The IMF[78] underlines that "while there are merits to both a corridor and a floor system, the latter comes with a high level of excess reserves that eliminates the need for unsecured interbank transactions. As a result, banks have become less vigilant about their counterparty risk and over time, accustomed to the abundant liquidity, which might make it difficult to exit the system, should there be a desire to do so."

5.1.4 The Eurosystem is faced with an ALM mismatch

The legacy of QE – massive deposits at the Eurosystem now remunerated at a substantial rate – is also taking the form of significant income loss for the central bank, and ultimately governments.

G. Moec[79] explained that "when the Deposit Facility Rate was negative, this was painful for banks – although this was partly alleviated by making the TLTROs very generous and then 'tiering' the quantum of excess reserves subject to the negative Deposit Facility Rate.

Symmetrically, now that the DFR is very positive and rising, it has an impact on the income of the Eurosystem. Paying 3.5% on almost €4 trillion of bank deposits costs €140 billion a year, or 1% of Euro area GDP, which is not matched by the income on the asset side, as the bonds bought under QE mostly had a low, often zero or even negative yield."

Such an ALM mismatch is in principle unproblematic for the central bank – at worst it could operate with negative equity – but it still results in a lower dividend paid to governments already struggling to get their finances back in order...; central banks are always concerned about the risk of seeing their independence from governments eroded. Becoming a "cost centre" would not help.

The mistake of the Quantitative Easing policies carried out was the purchase of long maturity securities financed by short-term money which maximizes the risk of market reversal and leads central banks to keep on their balance sheet a legacy that dissolves only in the long term. This strategy explains the magnitude of the losses recorded and to come by central banks.

77. J. Nagel, "Challenges for monetary policy", Frankfurt, 4 July 2023.
78. IMF, "Quantitative tightening by the ECB: why and when", Euro area policies, selected issues, July 2023.
79. G. Moec, "Leaky pipes", Macropast, AXA Investment managers, 10 July 2023.

In monetary theory, it is better to use the purchase of short securities (punch effect) as already demonstrated by W. Bagehot[80].

Is the remuneration of bank reserves necessary to conduct monetary policy?

The standard answer of many economists is positive. There is an oversupply of reserves due to the large-scale QE operations of the past. In order to fight inflation and to raise the interest rate in this reserve abundance regime, the Eurosystem remunerates bank reserves, which results in an increase of the money market interest rate.

P. de Grauwe and Y. Ji[81] suggest that alternative policies to raising interest rates to reduce inflation without having to transfer parts of their monopoly profits to commercial banks (and making large interest payments to banks) can be envisaged. They suggest that a combination of sustained sales of government bonds and an increase of minimum reserve requirements could be raised to encompass the whole of these bank reserves...

5.2 Why quantitative tightening?

I. Schnabel explained last March that reducing the size of our balance sheet is warranted for **three main reasons**[82].

First, to regain valuable policy space in an environment in which the current large volume of excess liquidity is not needed for steering short-term market interest rates; second, to mitigate the negative side effects associated with a large central bank balance sheet and footprint in financial markets; and third, to withdraw policy accommodation to support our intended monetary policy stance.

Regaining policy space when excess liquidity is more than needed

ECB's current estimates suggest that the amount of central bank reserves currently held by the banking sector exceeds, by a significant margin, the level necessary to steer short-term market rates close to our key policy rate even under a floor system.

This implies that the current size of our balance sheet is larger than necessary to effectively implement our monetary policy stance. As such, maintaining a large bond portfolio absorbs valuable policy space that may be needed if policy rates were to become constrained again by the effective lower bound. Shrinking the balance sheet, to the extent possible, is therefore both prudent and efficient.

Mitigating negative side effects of a large balance sheet

The second reason for QT is related to the side effects of running a large balance sheet. It is well documented that bond purchases can cause asset price valuations in financial and real estate markets to diverge from their economic fundamentals, thus raising both financial stability risks and wealth inequality.

Maintaining too large a balance sheet may also have undesirable side effects. One is that it could jeopardise the central bank's credibility by giving rise to accusations of financial and fiscal dominance. A second side effect is that maintaining a larger balance sheet than necessary increases the Eurosystem's exposure to credit and duration risk. The probability and extent of net losses are significantly higher the larger the amount of long-term fixed-rate assets the central bank holds on its balance sheet.

A third side effect relates to the functioning of financial markets. The APP, together with the pandemic emergency purchase programme (PEPP), has left a visible footprint in Euro area financial markets. The Eurosystem's outright holdings of Euro area sovereign bonds currently amount to more than a third of the outstanding market. The mobilisation of collateral for longer-term refinancing operations further increases the overhang of government bonds through monetary policy operations. As a result, the "scarcity premium" that market participants must pay to obtain these assets has often been considerable, both in the repo and the bond market. The inception and expansion of the Eurosystem's securities lending facility have been able to partly alleviate these strains.

The third consideration relates to the effect of the stock of our monetary policy bond holdings on our policy stance.

The ECB has clarified that our key interest rates are currently the primary tool for restoring price stability. At the same time, the large stock of assets acquired under QE continues to provide significant monetary policy accommodation that may run counter to our efforts to bring inflation back to our 2% target in a timely manner. QT will gradually unwind this accommodative impact. Therefore, as I. Schnabel writes, "the size of the balance sheet of the Eurosystem should only be as large as necessary to ensure sufficient liquidity provision and effectively steer short – term interest rates towards levels that are consistent with price stability over the medium term."

80. The Bagehot rule ("Lombard Street" 1873) is that the Central Bank must, in a crisis, "lend freely against good collateral and at high rates".

81. Already quoted in footnote 3.

82. We have largely reproduced here the content of the speech delivered by I. Schnabel, "Quantitative tightening rationale and market impact", 2 March 2023.

Three additional arguments in favor of QT are also worth mentioning:

The first has been stressed by the Bank for International Settlements chief economist C. Borio: **the smaller the balance sheet, the less exposed a central bank leaves itself to political pressure or criticism, *e.g.* for its independence.**

The second is the fact that inflation is expected to rise if the central bank does not keep reducing the size of its balance sheet.

K. Warsch a former member of the Federal Reserve Board states[83] that "The surge in federal spending and concomitant central-bank asset purchases in 2021 and 2022 contributed to the harmful surge in inflation. The monetary base is up 60% since the pandemic... The Fed shrank its balance sheet in the past few quarters, down 7 percentage points from its peak as a share of GDP. M2 is down about 3%. Lo and behold: less money printing, less inflation.

Price stability would be more easily achieved if the Fed continues to shrink its holdings. But Fed leaders have strongly signaled the opposite: that its asset holdings are approaching steady state. They argue that the fall in inflation can be traced to lower wage increases in a softer job market. In my view, irresponsible government spending and excessive money printing are largely to blame for triggering inflation in the first place.

Had the Fed recognized the inflation problem sooner, it wouldn't have been forced to raise rates so high. Had the Fed's asset holdings stayed smaller or shrunk faster, inflation wouldn't have risen so high. Hardworking Americans wouldn't now be suffering the twin indignities of high prices and higher credit costs."

Third reason for QT, which is fundamental, is **allowing the capital markets to set the level of short-term and long-term interest rates freely: in an open market economy, it is not the role of a central bank to influence the entire yield curve: only an effective quantitative tightening would allow medium and long-term interest rates to return to being determined by market forces and not by central banks.**

5.3 Possible risks and side effects of QT

G. Claeys[84] agrees that QT is justified in the Euro area notably. Indeed, it can provide some additional tightening to complement rate hikes and steepen the yield curve. It is also a way to reduce the risk of fiscal dominance and reaffirm monetary dominance in the Euro area. However, the author points out possible risks and side effects of QT, even if they are not easy to map out given the policy's novelty. One risk linked to QT is the re-emergence of a fragmentation risk, with rising spreads between Euro area countries. Such a possibility exists. However, according to the author, for the moment, this risk is under control due in large part to the ECB's Transmission Protection Instrument (TPI), announced in July 2022.

But the ECB should also think more carefully about the risks that could arise from reducing the liability side of its balance sheet. When designing its QT policy, the ECB should avoid creating any central bank reserve scarcity according to G. Claeys. This can lead to market stress episodes and a loss of control of short-term market rates by the central bank, which is what happened to the Fed in September 2019. Nevertheless, this risk is greatly exaggerated at this stage, since the banks' excess reserves far exceed their requirements (*see Chart 58b*).

G. Claeys thinks that QT's objective cannot be the return to a balance sheet similar to that prevailing before 2007, as too much QT could lead to frequent financial stability incidents. So how much QT is feasible? To calibrate how much can be done without risking loss of central bank control over short-term rates, or without endangering financial stability, it is crucial to understand what the demand for central bank reserves is exactly, given that it is not directly observable.

5.4 What adjustments to the monetary policy framework are under discussion?

5.4.1 State of play in the Euro area: an easing of quantitative easing?

J. Nagel[85] pointed out that "on average, APP assets worth around €25 bn are maturing each month. However, measured against asset holdings totaling just under €5 tn, the pace of decline remains modest." According to him the phasing out of the TLTRO is also a signal that financial markets are ready for a normalization of liquidity conditions.

83. K. Warsch, "Interest Rates Are a Sideshow in the Fed Drama", Wall Street Journal, 30 July 2024.

84. G. Claeys, "Finding the right balance (sheet): quantitative tightening in the Euro area", March 2023.

85. J. Nagel, "Challenges for monetary policy", 3 July 2023.

D. Gros and F. Shamsfakfr[86] underlined that the time path announced by the European Central Bank (ECB) for reducing the bond holdings accumulated under the asset purchase programme does not amount to a real tightening. "Easing of Quantitative Easing" might be more appropriate. They explained that:

- "One reason why the ECB is not considering bond sales might be concerns about the stability of the bond markets for highly indebted countries. This would mean that monetary policy is at least partially subject to "fiscal dominance", *i.e.* the desire to provide governments with favorable financing conditions.
- The fear of market fragmentation does not apply to the private sector bonds acquired under the asset purchase programme (APP). The approximately €650 bn of corporate and covered bonds could, and should, be sold quickly.
- Without bond sales the Eurosystem can reduce its bond holdings only at a glacial speed, remaining above the pre-pandemic level until mid-2028, implying a continuing strong expansionary effect (because long-term interest rates would remain lower for longer)...
- The ECB is thus effectively keeping one foot on the accelerator (retaining an extensive portfolio of bonds) while the other (increasing policy rates) is on the brake. As long as the Eurosystem keeps large holdings of bonds on its balance sheet, the restrictive effect of higher interest rates will be muted and is likely to complicate the fight against inflation.
- The ECB currently has two fungible policy instruments (policy rates and balance sheet operations), which makes it impossible to determine the impact of quantitative tightening separately.
- The ECB should also announce a program to sell its holdings of private sector securities (corporate and covered bonds) over the next 12-18 months. There is no justification for keeping them on the balance of the Eurosystem as the market is working perfectly well.

The IMF stressed that a significant reduction of the ECB footprint would require an acceleration of the QT pace, all else the same. Beyond the minimum reserve requirements and currency in circulation (about 13% of 2022 GDP or €1.7 tn), the demand for bank reserves has increased since 2009. This is due to precautionary motives, prudential considerations, and changing business models.

"To determine a terminal balance sheet size requires knowing the steady state banks demand for reserves, which is an ongoing productive research area. For a back-of-the-envelope calculation, one can use the average excess reserves after the GFC and prior to the implementation of QE (2010-2022), amounting to €1.1 trillion, an average throughout the QE period (2015-2022) of €1.7 tn, or a more recent average (2017-2022) of €2.1 tn which covers more firmly the floor system period. This would result in a total Eurosystem balance sheet of between €3 and 4 trillion or 20-30 percent of 2022 GDP. Reaching this level over the next 7 years would mean an annual reduction of €554-694 bn, which corresponds to at least three times the current monthly QT pace. If continued beyond June 2023, the current QT pace would keep the Eurosystem balance sheet twice as large as the Fed's or the Bank of England by end 2024 even though the Eurosystem's has historically been larger than that of its peers."

5.4.2 Quantitative tightening hasn't really happened yet in the Euro area

Some experts say that this is not a bad thing. QE has created a lot of liquidity. Much of it ended up in reserves held by commercial banks with central banks. Insofar as these reserves are not transformed into loans, the inflationary effect of money creation would be nil. It is argued that abundant reserves and liquidity enable banks to strengthen their resilience in the event of a shock.

But, according to J. de Larosière[87] "this reasoning fails to take into account the fact that unless the mass of liquidity created by QE is significantly reduced (central bank balance sheets have reached astronomical figures, more than 50% of Eurozone GDP), we will maintain a degree of ease in financing the economy that seems hardly compatible with the fight against inflation.

The question is important: how do we purge the system of 15 years of monetary accommodation?

The majority of specialists believe that we need to proceed on two lines:

- Higher interest rates for a while (at least until mid-2024).
- Accompanied by a gradual reduction of the stock of liquidity created, without going as far as restoring pre-QE between balance sheet amounts.

86. D. Gros and F. Shamsfakfr, "Quantitative tightening in homeopathic doses: The ECB and the long shadow of the PSPP and the PEPP" March 2023.
87. J. de Larosière, "Monetary policy and inflation prospects in June 2023", GOIC, June 2023.

5.4.3 Principles for adjusting the monetary policy framework under discussion

Leaning the Eurosystem balance sheet is required for many reasons:

- The current size of balance sheets is unnecessarily large.
- Large central bank's sovereign holdings distort the price of information on underlying risks in the Euro area.
- Inflation is persistent and still too high. An effective QT is a powerful message from central banks that they are dedicated to bringing inflation back to the target.
- A large portfolio may affect liquidity conditions in financial markets.
- Future monetary policy challenges may mean central banks need greater room for manoeuvre again.
- Once some major central banks, like the Fed, undertake QT, other central banks may have no choice but to follow suit. If they do not keep up, capital flows may surge and provoke exchange movements that stand to disturb trade and undermine monetary policy.[88]
- The smaller the balance sheet, the less exposed a central bank leaves itself to political pressure, *e.g.* for its independence.
- The market should be given more space again. The ECB should act in accordance with the principle of an open market economy where prices and quantities are determined by competitive market forces.

5.5 Implementing QT firmly and intelligently

The reason why experts wish to moderate the QT is essentially the fear of a liquidity crisis.

But there remains a fundamental and unresolved question: can we fight inflation while maintaining a monumental stock of liquidity?

We need to proceed with caution, as the subject has not been much studied. In periods of high inflation, it should be absolutely essential to be concerned about the relationship between price trends on the one hand, and balance sheet inflation on the other.

There are practical recommendations for overcoming the crisis and the danger of stagflation.

We need to put an end to recipes that have not worked, such as:

The belief that interest rates can remain very low indefinitely. This is absurd for two fundamental reasons:

- Money is used to measure the value of any product or service. If it is itself worthless, *i.e.* if it can be produced at no cost and with no remuneration, the economy cannot function properly. Thus, the gauging of risks and the allocation of resources is flawed.
- Long-term savings tend to dwindle (yet 95% of productive investments are normally financed by household savings).

Expropriating or overtaxing savers can only have deleterious effects on long-term savings and the growth of productive capital (which has actually fallen for the first time during the last 20 years).

The bureaucratic and arbitrary setting of long-term low interest rates by central banks must be replaced by the free play of the market: the supply and demand of capital must determine the value of money.

88. C. Wyplosz, "Finding the right balance sheet: quantitative tightening in the Euro area", March 2023.

Conclusion

During the Lehmann Brothers, EU Sovereign Debt, and Covid-19 crises, central banks and fiscal policies played a crucial role as they intervened on an unprecedented scale to keep financial markets liquid and stabilise the financial system.

However, central banks have been overly involved during the past years. The 2% inflation target has trapped monetary policy into a systematic and asymmetric accommodative stance for the past two decades[89] The risk of deflation was exaggerated while the drawbacks of lasting low interest rates were totally underestimated. No well functioning economy should operate with real interest rates that remain negative for too long: risk is mispriced, capital is then misallocated, and economic growth is impaired.

As this *Eurofi Monetary Scoreboard* shows, **pushing the monetary pedal too hard and for too long has serious negative consequences:** the prolonged excessively accommodative monetary policy of the past decade has increased incentives to borrow more, increased financial leverage, and undermined financial stability. It also discouraged governments from undertaking structural reforms, as borrowing was 'free', and therefore undermined growth potential.

There is a fundamental specific flaw in the way monetary policy has been conducted over the past 25 years that is exacerbating Europe's economic problems. Indeed, this policy has inevitably contributed to a widening of the economic gap between North and South. Inflation rates vary from country to country within the monetary union. The ECB's key interest rates reflect by construction, an average for the Eurozone economy, which makes it easier for countries with higher inflation, fiscal and current account deficits (*i.e.* the countries of the Euro area with the worst public finances and least competitive economies). Since the creation of the euro, this factory of growing economic disparities across Member States, reinforced by the unconventional instruments used since 2015, has been able to flourish, even though inflation differentials between countries have narrowed since the Covid-19 crisis.

This situation could have been corrected. To do so, it would have been necessary to taylor-make macroeconomic policies and make them more rigorous in countries with higher inflation. But this was not done.

The idea that money creation can solve the problems of excessive debt is an illusion. In other words, supply-side obstacles cannot be overcome by money creation or by the use of demand-side policies. Yet this is what has been done too often by pursuing lax fiscal, monetary, and economic policies that will inevitably pose systemic risks to financial stability and therefore to future growth.

Indeed, the highly accommodative monetary and fiscal stance of the past decade has not translated into higher productive investment or growth. Persistently low or negative interest rates create a fatalistic mindset that reduces, not increases, the propensity to invest. In what J.M. Keynes called the 'liquidity trap', investors play it safe by investing their savings in very short-term instruments rather than in the longer term, when low interest rates offer them inadequate returns for higher risks.

The social implications of the very accommodative monetary policies of recent years (2008-2022) should not be underestimated. Have they helped to reduce social inequalities? On the contrary, they have tended to increase wealth inequalities because the beneficiaries have been those with the income and capital to benefit from inflated financial and real estate asset markets. Not poor people.

Since the second quarter of 2021, inflation has risen to levels not seen for decades, fuelling concerns about the rising cost of living for households. As a result, central banks have tightened monetary policy over the past two years. They have raised their key interest rates by 450 basis points in the Euro area between July 2022 and September 2023 and by 550 basis points in the US between March 2022 and August 2023. This shows that maintaining zero or negative interest rates for many years has also contributed to the return of inflation and that interest rates remain the main weapon in the fight against inflation.

The good news is that **inflation has continued to fall since the fourth quarter of 2022.** But lower inflation is not low inflation.

However, inflation could remain above 2% for longer than expected. Indeed, real wages are trying to catch up in a context of very low productivity, especially in the Euro area, which is likely to push up unit labour costs; the rise in geopolitical tensions could disrupt global trade and increase the cost of transporting goods; the structural challenges posed by the green transition and loose fiscal policies, as well as adverse demographic forces, could also add to inflationary pressures.

89. A. Carstens, "Where are we on the journey towards price stability", BIS, 22 January 2024.

Reducing fiscal deficits is essential not only to preserve macroeconomic stability but also to support the ongoing disinflation process. If fiscal policies were to remain expansionary, this could overstimulate demand, create financial stress, complicate disinflation efforts, and reduce the room for monetary policy manoeuvre by worsening trade-offs. While monetary policy needs to be normalised in order to reduce inflationary pressures and regain room for manoeuvre, this normalisation may be constrained by the need to ensure the sustainability of public debt in over-indebted countries.

In such a context, the fight against inflation must remain the priority of central banks. Maintaining positive real interest rates is necessary as long as needed to re-establish price stability. Quantitative tightening must be implemented firmly and intelligently. As the BIS points out in its Annual Economic Report (June 2024), a premature easing could reignite inflationary pressures and force a costly policy reversal – all the costlier because credibility would be undermined."

The temptation to return to easy monetary policy too quickly is inappropriate for two main reasons:

- There is no guarantee that inflation will continue to fall (declining labour productivity in Europe, upward pressure on wages, geopolitical uncertainties, etc.).
- We are at a crossroads. Do we want to rebuild a balanced economy for the future, with a stable currency, long-term savings attracted by productive investment, structural reforms that increase productive capacity and a reduction in public deficits (do we want these adjustments and these efforts?), or do we want to turn a blind eye and go back to taking the easy way out and postponing adjustments?

Monetary policy can reduce spread differentials in the Euro area, but it cannot revive capital flows from north to south. Indeed, since the EU Sovereign Debt crisis, member states with excess savings (notably Germany and the Netherlands) have stopped financing investment projects in countries with lower GDP per capita (Spain, Italy, Portugal, Greece, etc.). This is mainly due to the interest rate and return differentials between the US and Europe (risk is better remunerated in the US than in Europe) and the insufficient number of investment projects.

These limited cross-border capital flows in the Euro area reflect the persistent doubts of Northern European investors about the solvency of governments and companies in countries with low GDP per capita, as well as the absence of a genuine banking union and integrated financial markets.

•

A gradual, but determined, return to a more traditional and sensible monetary policy is of the essence. It should:

- Restore the oversight of credit expansion.
- Re-establish symmetry in monetary policy and not stimulate continuously.
- Not give the market a form of free insurance against possible losses; moral hazard has plagued the system, distorting the relationship between risk and reward and encouraging short-term speculation.
- Be more cautious about the risk of fiscal dominance; having created money to buy more than 60% of the Euro area's GDP, the central bank is getting so deeply involved in fiscal affairs that its independence is questionable.
- Resist the temptation to be 'popular' and have too many objectives (green, social inclusion…) that are not at the core of their primary mandate, which should be monetary and financial stability.

Only productivity-enhancing and productive investment can generate sustainable growth, not negative real interest rates or QE. Reviving productive investment requires a change in the monetary paradigm. Indeed, it is necessary to refrain from fixing administratively fixing ('or directing' the market) long-term interest rates and to accept that the market should remunerate medium – and long-term savings – according to supply and demand – the only way to remunerate long-term savings, without which there can be no productive investment or productivity gains. In other words, **long-term interest rates should no longer be set by central banks.** QE has been used and abused to artificially lower long-term yields when this should be the result of supply and demand in the financial markets.

Finally, monetary policymakers should accept that any victory against inflation comes at a cost: less growth and fewer jobs for a time. If we do not accept to pay the price, the specter of stagflation will likely reappear.

Last but not least, fostering a sustainable path to stronger growth is essential, notably in the current indebtedness environment. Raising long-term potential growth requires structural – supply-side-oriented reforms, an appropriate remuneration of risky investments, and sustainable fiscal policies designed to deliver a flexible and competitive economy. A.Carstens reminds us[90] that "achieving higher and sustainable growth can only be accomplished by boosting productive potential through measures enhancing the supply side and boosting innovation. This requires renewed efforts to design and implement structural reforms in product and labour markets which have slowed considerably over the past two decades."

The loss of competitiveness due to postponed reforms in many EU countries has led to a deterioration in potential growth, which cannot be improved by cyclical policies. Monetary policy cannot do everything, and more productive investment does not require more budgetary redistribution: only domestic structural – supply-side – reforms can address structural problems and boost productivity and growth. Unfortunately, the *Eurofi Macroeconomic Scoreboard* underlines that the EU's Next Generation Package, unlike the IRA in the US, is not useful in this respect.

In over-indebted countries, governments need to take corrective action to ensure a primary budget balance path and reduce unproductive and inefficient public spending. However, the revision of the Stability and Growth Pact was a missed opportunity. Admittedly, the revised Pact and Growth Pact do contain some positive elements. In particular, the case-by-case framework – which is a specific technical dialogue between the EU Commission and each Member State regarding their differentiated multi-annual budgetary path – has been introduced in the reformed Pact. It allows for a differentiated approach for each Member State to take account of the heterogeneity of budgetary positions, public debt and economic challenges in the EU. However, the agreement on this revision of the Stability and Growth Pact stipulates that countries subject to the excessive deficit procedure (total public deficit above 3% of GDP) will be exempted from the rule requiring them to reduce their public debt by an average of 1% per year until their deficit falls below 3%. These countries will only be subject to the procedure once their public deficit has fallen below 3%. This is not the best way to encourage the worst performers to reduce their debt-to-GDP ratios! It's as if the worst performers in a class are exempt from extra effort and sanctions as long as their results remain mediocre.

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If the fiscal, inflationary, and economic drift in the Eurozone were to continue, the 'virtuous' countries would end up paying for it. That would be the definition of an uncooperative game, in which most players try to evade their obligations by passing on the costs to those who respect them. We must therefore take the Union's destiny into our own hands and not let it drift. If this were the case, the logical outcome would be a new and inevitable crisis in the Eurozone.

90. A. Carstens, "Where are we on the journey towards price stability", BIS, 22 January 2024.

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