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Assessing the ECB's monetary policy stance by comparing tightening cycles

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Assessing the ECB's monetary policy stance by comparing tightening cycles

Abstract

In this paper, the ECB monetary policy stance is assessed by comparing the recent tightening cycle (2022-today) with the two preceding ones, which took place in 2000-2001 and in 2006-2008. Interest rates, quantitative indicators and monetary conditions indices (MCIs) are used for this purpose. The main finding is that at the peak of the latest tightening cycle, the ECB monetary policy stance was no more restrictive than it was at the peak of the two preceding ones; actually, probably less. This contrasts with the fact that in the more recent case inflation was higher and more persistent than in the two earlier episodes.

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LIST OF ABBREVIATIONS

DFR	Deposit facility rate
ELB	Effective Lower Bound
FCI	Financial Conditions Index
FRED	Federal Reserve Economic Data (Federal Reserve Bank of St Louis database)
GFC	Great Financial Crisis
HICP	Harmonised Index of Consumer Prices
MCI	Monetary Conditions Index
MRO	Main Refinancing Operations
QE	Quantitative easing
r	Current rate of interest
r*	Neutral (or natural) rate of interest
r^{gap}	r - r* = Interest rate gap
TLTRO	Targeted Longer Term Refinancing Operations
SSM	Single Supervisory Mechanism
US	United States of America
VAR	Vector Auto-Regressive model
ZLB	Zero Lower Bound

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EXECUTIVE SUMMARY

- **The monetary policy stance of the ECB is assessed by comparing the recent tightening cycle, started in 2022 and now in the process of being concluded, with the two preceding tightening cycles, dated 2000-2001 and 2006-2008.** This approach is limited in scope, in that it permits only comparisons between moments in time and does not provide a formal measure of whether and to what degree the current stance is actually restrictive or not. On the other hand, this approach is methodologically easier because it does not require an estimate of where the neutral interest rate currently is.
- **The main conclusion is that the ECB monetary policy stance at the peak of the recent tightening cycle was no more restrictive than it was at the peaks of the two preceding ones.** Actually, it was probably less restrictive. This contrasts with the fact that the recent inflation outburst was far stronger and more persistent than during the two preceding episodes.
- **This raises the question of whether the current stance is consistent with the goal of completing the disinflation process**. To provide elements for an answer, two remarks are made.
- **First, the disinflation process is, indeed, not complete**. The recent drop of headline inflation (in September and October, at or below 2% price stability benchmark) depended entirely on the fall of imported energy prices, notoriously volatile and dependent on imponderable global factors.
- **Second, current short-term rates, nominal and real, especially after the cuts decided since June 2024, are below historical (pre-global financial crisis) levels.** Coupled with information from other sources, including the ECB Bank Lending Survey, this suggests that euro area monetary and credit conditions currently are not restrictive.
- It must be stated up front that **this paper deals exclusively with area-wide data, in particular on inflation. No references or conclusions are made on specific national or sectoral inflation rates, or to differentials among them**. The ECB does not have a mandate or instruments to control inflation differentials, although its policy may affect them if the transmission process differs across nations or sectors. Therefore, any reference to inflation differentials while assessing the ECB monetary policy stance would be improper.

1. MEANING AND MEASUREMENT OF THE MONETARY POLICY STANCE

The term "stance" is frequently used in monetary policy discussions, yet its meaning is usually taken for granted and rarely explained. The concept is complex and not always well understood. A brief introductory clarification may thus be useful.

In everyday language, "stance" means where we stand and how: our position and posture. Referred to a public policy, the term characterises the way that policy is positioned in relation to the purpose it is supposed to serve. Importantly, the stance of a policy – monetary or other – is never defined in absolute terms but only in relation to a goal.

The principal goal of monetary policy is price stability, today consensually defined as a stable rate of inflation around some low number (2% for both the ECB and the US Federal Reserve). Accordingly, the stance of monetary policy means the way that policy's setting affects inflation[1].

Measuring the monetary policy stance is a difficult technical task; models and other evidence are necessary to measure how monetary policy transmits to the economy and ultimately to inflation. Several different indicators have been proposed and are being used for the purpose.

1.1. Interest rate

To start, consider what according to Bernanke and Blinder (1992) as well as Blinder (1998) is the "best" (simplest and most effective) measure of the monetary policy stance: the short-term interest rate, more specifically a money market rate controlled by the central bank. A given monetary policy stance is said to be "more restrictive" than another if it reduces inflation more (or it increases inflation less) than the other one. One can safely assume that, at a given point in time, an interest rate of, say, 3% is more restrictive, other things equal, than one of 2%. However, this is a relative judgement, not an absolute one. Without more information, one cannot say whether a level of 3% is "restrictive" in an absolute sense, i.e. it actually makes inflation go down. The absolute judgement is more complex because it requires identifying a point in the interest rate scale that is "neutral", meaning that it does not make inflation go either up or down.

The interest rate at which, all other factors given, inflation neither increases or decreases is usually referred to as "r-star" or r*. It is normally expressed in real terms, i.e. net of current or expected inflation. The metric of the stance then becomes the real rate "gap", i.e. the difference between the current rate and the neutral rate. In symbols, $r^{gap} = r - r^*$. It follows from the definition of r* that a positive r^{gap} makes inflation decline, whereas a negative gap makes it rise.

Most controversies regarding the conduct of policy, in Europe and elsewhere, revolve precisely around the question: where is the neutral interest rate? Is it constant or has it moved over time, and how? Unfortunately, measuring r*, a latent variable, is shrouded by theoretical and methodological complexities.

No new estimates of r* are provided in this paper, which relies on existing research. The main goal is to compare degrees of restriction or expansion across the aforementioned time periods. Yet, even to do that, a notion of whether the neutral rate has moved across those periods is needed. Based on that research, in the next section this paper argues that, while r* has probably changed significantly in the course of the recent decades, in particular declining after the Great Financial Crisis (GFC), it has

[1] The Treaty on the Functioning of the European Union in Article 127 (1) specifies that without prejudice to the objective of price stability, the ECB shall also support the general economic policies in the EU with a view to contributing to the achievement of the Union's objectives as laid down in Article 3 of the Treaty on European Union. The US Federal Reserve actually has a dual mandate, referred to price stability and maximum employment. In this paper, we will not refer to these other objectives but focus on price stability only.

subsequently risen (see Benigno et al., 2024, and other references in the next section). Around the end of 2023, where the peak of the most recent monetary tightening cycle is approximately located, r* was probably not that different from what it was at the peak of the two preceding tightening cycles. Equivalently, any difference in r* that may exist between those periods is not significant and certain enough to be used as a basis for policy.

This conclusion allows us to compare the stance of monetary policy across those three tightening cycles by looking at interest rate levels, and other indicators, as described below[2].

1.2. Monetary conditions index

While the short-term interest rate is the most important and most frequently used measure of the stance, it is not the only one. Another one, popular especially a few years back, is the so-called "monetary conditions index" (MCI). MCI combines the short-term interest rate and the exchange rate in a synthetic index whose weights depend on the effect of each variable on inflation. The exchange rate is a quintessential monetary variable: it is the relative value of two monies, or, in the case of an effective trade-weighted exchange rate, the value of one money relative to that of all its trading partners. Besides that, its choice as a companion of the interest rate in a combined index is justified by the observation that the exchange rate is heavily influenced by the interest rate; which justifies merging them in a single expression of the monetary stance. That assumption is only partly valid, however, because in fact no central bank has full control over its exchange rate in today's floating exchange rate system.

MCI is also often calculated expressing both the interest and the exchange rate in real terms ("real MCI"). This implies deflating both variables by an inflation rate and a price index, respectively. Choosing between the "nominal" and the "real" version is not straightforward. Fortunately, as we shall see, the messages that emerge from the two variants regarding the ECB monetary stance are not that different.

1.3. Financial conditions index

In recent years, emphasis in macro-policy discussions has moved from MCIs towards broader "financial conditions indices", or FCIs. FCIs are also combined indices, calculated as weighted averages. Instead, if including just strictly monetary variables, like the short-term interest rate and the exchange rate, they include a vast range of financial variables that are deemed to potentially affect aggregate demand.

The best known frequently used of such indices is the one calculated by Goldman Sachs (see Goldman Sachs, 2021). This index combines the following variables: a policy-controlled short-term interest rate, long-term Treasury yields, corporate credit spreads, equity prices and the effective (trade weighted) exchange rate. The weights, displayed in Table 1 (drawn from the aforementioned Goldman Sachs publication), reveal that in the case of the United States (US), most of the index is driven long-term Treasuries and credit spreads, variables not controlled by the central bank but subject to a host of outside influences. For this reason, the FCI, while possibly being a useful summary metric of all the financial influences affecting the economy, is not well suited as a measure the monetary policy stance nor should it be used as a direct input into monetary policy decisions – though it may be a factor in those decisions[3].

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[2] Forbes et al. (2024) provide an extensive historical analysis of interest rate cycles at the global level. However, their focus is different from this paper in that they do not offer measures or comparisons of the monetary stance at the peaks of those cycles. Likewise, Ivanova et al. (2024) conduct a comparative analysis of 48 monetary policy cycles in nine different economies over a period of 50 years, but again do not provide estimates or assessments of the degree of tightness at the peak.

[3] Were monetary policy to react systematically to changes in the FCI, it would inject into the monetary policy process a vast range of external and possibly erratic influences, which would make monetary policy excessively volatile.

Table 1: Weights of the Goldman Sachs Financial Conditions Index (FCI) for the US

GS US FCI Components		
Variable	**Description**	**Weight**
Nominal Policy Rate	Target Federal Funds Rate	4.4%
Nominal Riskless Bond Yield	10-Year Treasury Yield	45.1%
Corporate Spread	iBoxx Domestic Non-Financials BBB 15Y+ Spread over 10-year Treasury Yield	39.6%
Equity Price	S&P 500, Scaled by 10-year Moving Average of Earnings	4.9%
Trade-Weighted Exchange Rate	GS Broad Trade-Weighted Index	6.0%

Source: Goldman Sachs Global Investment Research.

Recently the ECB has constructed its own FCI (Angelopoulou et al., 2024). The ECB FCI includes over 20 variables, including multiple credit flow data and credit spreads, liquidity and securities markets indicators, asset prices and respective volatilities, inflation (which is a policy objective, not an instrument), survey results, and more. The extent to which this index is used in the formulation of monetary policy in the ECB is not known. Because of its complexity and for the reasons already mentioned, its usefulness as an input to monetary policy decisions is probably low.

1.4. Policy innovations vs overall stance

Much academic literature in the recent years has referred not to the overall stance of monetary policy, but only on its "innovation" component – the part of which that, in each time period, is not expected and discounted by market participants from previous periods. Overall stance and innovation component have different meanings and purposes. Innovation analysis informs on the additional information monetary policy conveys every period. However, what affects the economy and inflation at any time is the overall stance, including the part derived from past and systematic policy actions. Innovation analyses typically rely on prior knowledge, narratives and econometric techniques (vector autoregression models, or VARs) in order to filter out the anticipated component from the overall stance.

The best-known contribution in this literature is Bernanke and Mihov (1998), who use time series techniques to separate the innovation from the systematic components of US monetary policy over a 30-year period. They explain the complementary between overall stance and innovation component as follows:

> *"A frequently heard criticism of the VAR-based approach is that it focuses on monetary policy innovations rather than on the arguably more important systematic or endogenous component of policy. We believe this criticism to be misplaced. The emphasis of the VAR-based approach on policy innovations arises not because shocks to policy are intrinsically important, but because (as we discuss further below) tracing the dynamic response of the economy to a monetary policy innovation provides a means of observing the effects of policy changes under minimal identifying assumptions. However, although we disagree with the view that analysis of policy shocks is uninteresting, we also recognize that it would be useful to have an indicator of the overall stance of monetary policy, including the endogenous component."*
> Bernanke and Mihov, 1998, pp 872-873.

This passage clarifies that innovation analysis helps studying the transmission mechanism with minimum prior identifying information. However, when it comes to assessing the policy stance, the overall measure is needed. This is the approach taken in this paper.

The distinction just explained has practical relevance in the debate on the monetary policy stance because a frequently used popular way to assess the monetary policy stance is to use innovations calculated simply by taking first differences of the short-term interest rate. In much popular discourse on monetary policy, it is assumed that an interest rate increase means that the policy stance is restrictive, and vice versa that an interest rate reduction means the policy is expansionary. This reading of the data is misleading, because the impact of monetary policy on inflation depends on the overall stance of policy, measured by the levels of interest rates, or other indicators like MCI, not their changes[4].

1.5. Unconventional policy instruments

A further point that needs to be noted here regards the role played by "unconventional" monetary policy instruments, i.e., monetary policy measures other than adjusting the short-term interest rate. Unconventional policy instruments have come to be used extensively after the GFC of 2008-10, when central bank-controlled short-term rates reached the "zero lower bound" (ZLB). With interest rates reaching zero, central banks have adopted other approaches to expand the stance of policy.

One way used by virtually all of them was to expand their balance sheets with massive purchases of securities. The ensuing liquidity creation was largely redeposited at the central bank itself, in the form of free liquidity reserves. Another instrument used was the "forward guidance", a communication technique involving the commitment to keep future short-term rates at a low level, hence pegging down the term structure of interest rates at longer maturities. The effect of forward guidance is expansionary, over and above what happens to the short-term rate, because expectations of lower future rate make long term interest rates fall as well. Finally, another unconventional approach was to "break the taboo" that interest rates are indeed bounded at zero, and experimenting with negative central bank rates. The ECB has brought its policy rate below zero in 2014, and kept them negative until 2022. The Swiss National Bank and the Bank of Japan also undertook this approach. By contrast, the US Federal Reserve, the Bank of England and the Bank of Canada did not.

When the central bank enlarges its balance sheet or engages in forward guidance, the overall stance of policy depends not only on the level of the short-term rate, which is constrained at zero or at the effective lower bound (ELB), but also on those additional actions. Taking them into account, however, is not easy because it requires establishing some equivalence between the short-term interest rate and other instruments that are different in nature. We will not attempt to solve this problem here, only make qualitative judgemental statements about the additional expansionary impact of those unconventional monetary actions.

[4] This argument was made by this author in a recent newspaper column; see Angeloni (2024).

2. ESTIMATING THE NEUTRAL RATE OF INTEREST

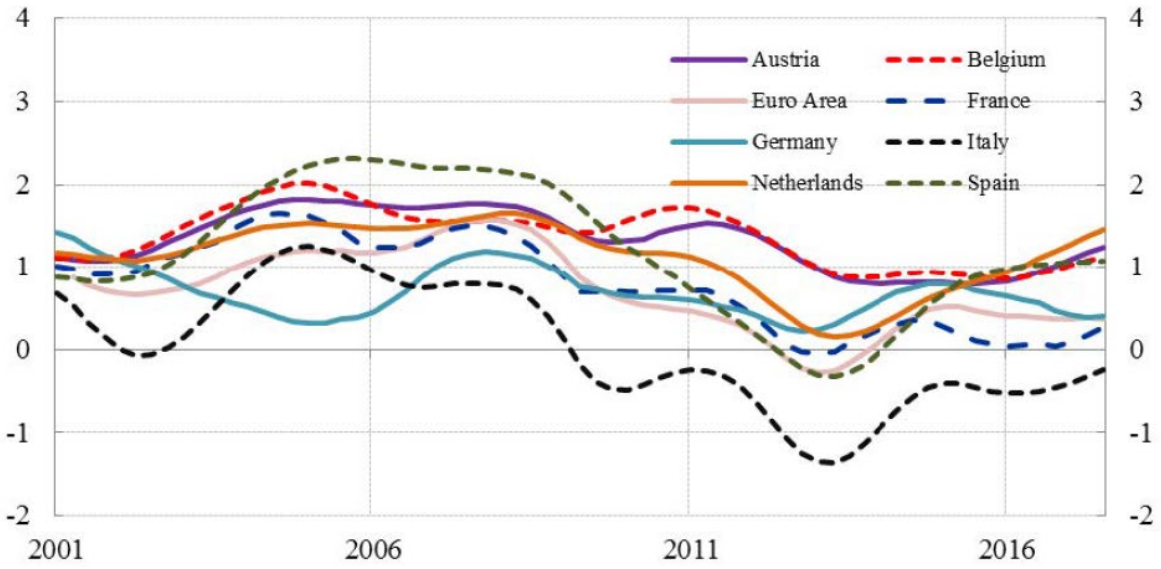
The original idea of a neutral (or natural) rate is attributed to Knut Wicksell (1989). He defined it as the interest rate at which aggregate investment equals full employment savings, or equivalently, ex-ante aggregate demand equals aggregate supply at full employment. At that level, excess aggregate demand is zero and inflation is constant.

Both r* and r^{gap} are not observable; no statistics exist and their values are estimated using models and other information. They depend on the linkages between the interest rate, the economy as a whole and inflation – in other words, on the monetary policy transmission mechanism (for a discussion of these linkages and their relevance for monetary policy, see for example Amato, 2005).

Following seminal work conducted at the Federal Reserve by Thomas Laubach and John Williams (2003), an active strand of empirical literature has developed in the last two decades on estimating r* and r^{gap} for the US and other countries. Besides the methodology, the central contribution of Laubach and Williams is the finding that r* has been steadily declining in recent decades. They attribute this development to secular trends in demographics, a structural decline in productivity and other long-term slow-moving fundamental phenomena. Holston, Laubach and Williams (2017) extended the analysis, showing that a similar trend is observed not only in the US but in other countries as well. They also find that the tendency for r* to decline has accelerated after the GFC.

Eurosystem researchers have been quite active in estimating r* for the euro area. Brand et al. (2018)'s study surveys the potential factors affecting it using a variety of empirical models. They come up with estimates for the US, the euro area and individual euro area countries that broadly confirm the finding of a gradual decline of r*. This idea is reflected in the ECB's official view, see for example Lane (2019). However, their estimates, which end in 2017, suggest that the supposed "secular" decline may actually have flattened at the end of their estimation period. See Figure 1 below, showing their estimates of r* for the euro area and for some constituent countries.

Figure 1: Euro area country estimates of r*, in %

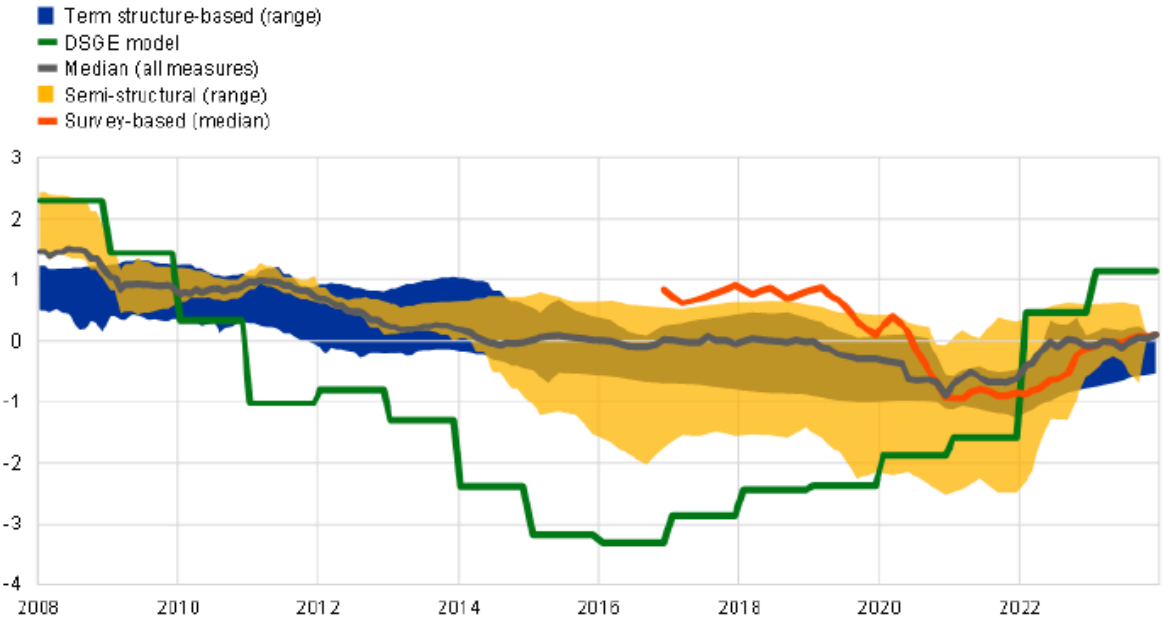


Source: Brand et al. (2018), Chart A.

A recent note by Brand, Lisack and Mazelis (2024) updates the earlier calculations and confirms that in the more recent years r* not only has flattened, but actually started to rise again, quite sharply according to some estimates. See below Figure 2, showing alternative estimate for the euro area. This finding is evidently important not only because it affects the assessment of the monetary stance as the euro area exits the protracted consequences of the GFC, but also because it puts into question the

secular or structural interpretation of the decline of r*: if r* rises when the economy recovers, at least part of its drivers must be cyclical, not secular.

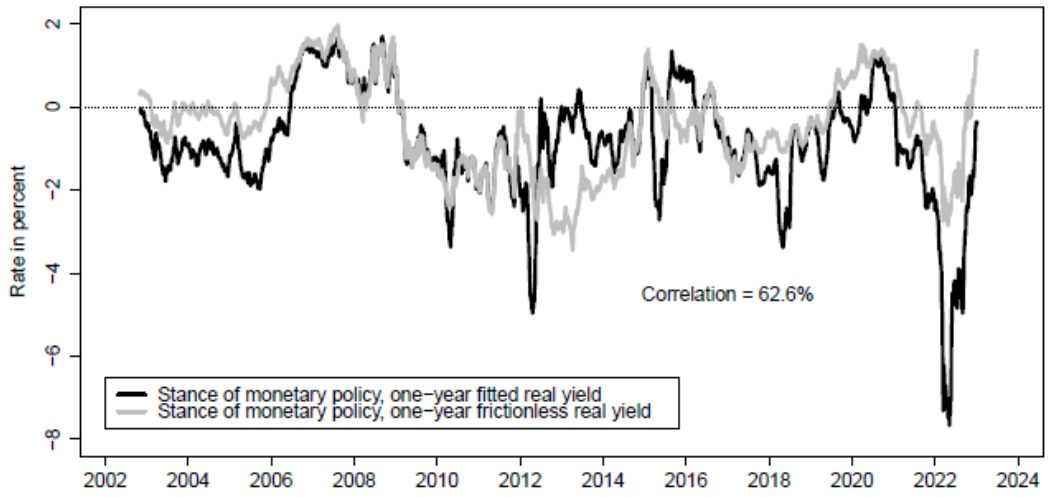
Figure 2: Real natural rates of interest in the euro area, in % per annum



Source: Brand et al. (2024), Chart A.

Subsequent Eurosystem research seems to confirm the cyclical interpretation of r*. Christensen and Mouabbi (2024) use data on indexed-linked securities to extract estimates of r* and of the ECB monetary policy stance, according to different techniques and definitions. They confirm the earlier results of a decline in the crisis years, but find a sharp pick-up recently, with timing broadly corresponding to the rise of global and euro area interest rates. Figure 3 reproduces two among their preferred estimates of the ECB monetary policy stance.

Figure 3: Market-based measures of the ECB monetary policy stance



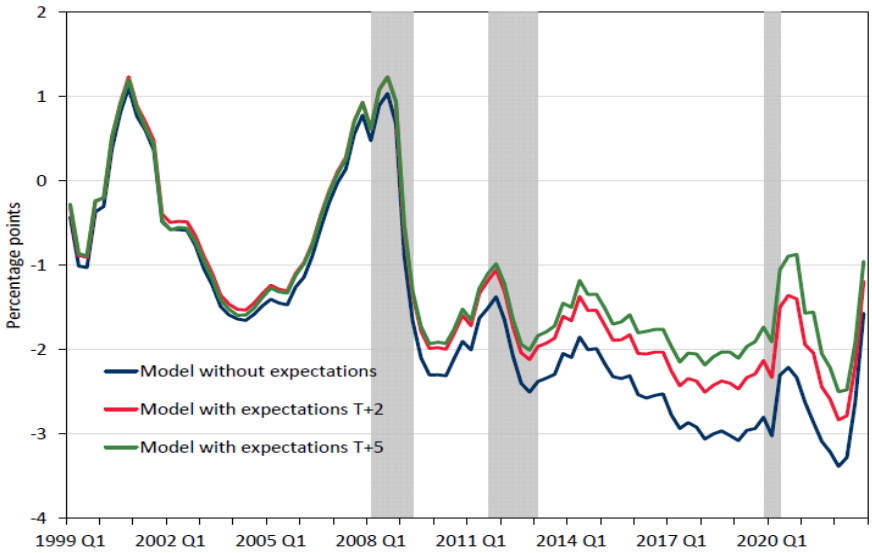
Source: Christensen and Mouabbi (2024), Figure 16.

Note: The chart shows two alternative measures of the monetary policy stance calculated applying the Affine Arbitrage-Free Class of Nelson-Siegel (AFNS) term structure model to French index-linked bonds. The two measures differ in the technique used to estimate the instantaneous short-term real rate.

Work by Carvalho (2023) at the Bank of Portugal comes up with similar conclusions. The author's estimates of r^{gap} for the euro area, ending in the first quarter of 2023, show that the sharp post-GFC

decline of r^{gap} was partly counterbalanced by the subsequent increase in interest rates; however, at that date, r^{gap} remained well below the peaks of the preceding tightening cycles. Unfortunately, Carvalho's estimates (shown in Figure 4) do not cover the full 2023 and 2024, so a clean comparison of the peak levels of the three cycles cannot be made. A rough estimate suggests that r^{gap} at end-2023 was probably not that distant from the earlier peaks[5].

Figure 4: Estimates for the euro area ex-ante real rate gap



Source: Carvalho (2023).

Note: The chart shows three alternative measures of r^{gap} using variants of the Holston, Laubach Williams (2017) model. The line labelled 'Model without expectations' uses their original model, whereas the lines labelled labelled 'Model with expectations T+2' and 'Model with expectations T+5' augment the model to account for inflation expectations estimated, respectively, from the ECB Survey of Professional Forecasters with horizons of 2 and 5 years respectively.

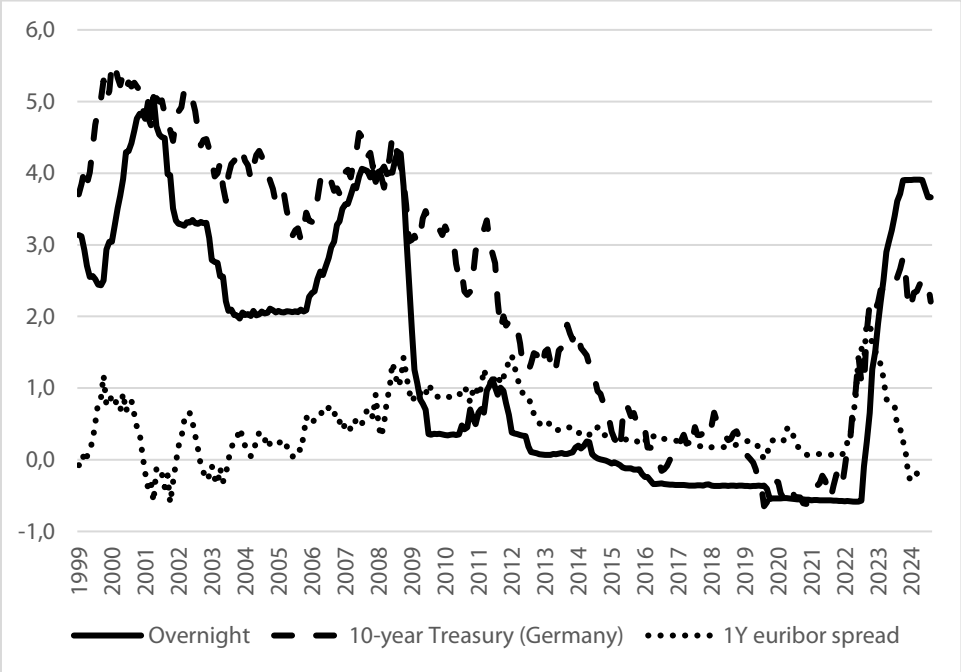
The combination of the various pieces of evidence just described suggests that, although the estimation of r* and r^{gap}, and therefore of the monetary policy stance is highly complex, model-dependent and subject to considerable uncertainly, there is convergence on three conclusions. First, there are clearly identifiable tightening peaks, respectively corresponding to 2000-2001, 2006-2008 and more recently after 2022. Second, after 2008 r* declined and the ECB monetary policy stance was sharply relaxed and remained very expansionary for several years. Third, after 2022 policy was tightened considerably from the earlier very expansionary stance, but did not surpass (nor probably did it reach) the level of tightness experienced are the peak of the two preceding cycles.

[5] Between end-2022 and end-2023 (where the tightening peak may be located), the rate on the ECB deposit facility rose by 2% (from 2% to 4%), while 1-year expected inflation (from the Survey of Professional Forecasters) declined by some 3% (from 5.8% to 2.7%). This adds to an increase in the real short-term rate of some 5%, which would have lifted Carvalho's estimate of r^{gap} from a negative 2.5% to a positive 2.5%, if r* had not changed. However, Carvalho's data show that r* was on a rising trend at that time. An increase of 1% in r* during that year would have brought r^{gap} at end-2023 to a level close to the peak levels of the preceding cycles.

3. ASSESSING THE ECB MONETARY POLICY STANCE BY COMPARING TIGHTENING CYCLES

Figure 5 depicts the ECB monetary policy stance from 1999 to 2024, by means of three variables. The solid line is the overnight interest rate, the market rate most directly controlled by the central bank. This corresponds to what Bernanke and Blinder's (1992) and Blinder's (1998) considered the best proxy of the monetary policy stance. The other two lines are additional metrics still based on interest rates. The dashed line is the 10-year bond yield on the German Bund, the closest proxy of a riskless euro area long-term interest rate. The dotted line is the 1-year spread, i.e. the difference between the 1-year Euribor rate and the overnight rate, a proxy of market expectations of how monetary policy will evolve in the next year.

Figure 5: Euro area monetary policy stance, 1999-2024 *(interest rates in %)*



Sources: ECB and FRED.

Note: Overnight: daily interbank rate, average 19 countries.

The chart highlights three monetary policy tightening cycles. Between 1999 (the start of the euro) and 2009 (the aftermath of the GFC and the start of the euro sovereign debt crisis), the overnight rate fluctuated between 2% and 5%, with two main sequences of tightening and expansion: the first around 2000-2001 and the second around 2006-2008. In both episodes, the ECB tightened policy out of concern about medium-term price stability risks, as detailed below. Eventually those risks did not materialise (possibly as a result of the ECB's tightening): inflation never departed much from the ECB's definition of price stability. Inflation developments in this period are detailed in the next section.

The first tightening episode was fuelled by the depreciation of the exchange rate of the euro in its early years, and by increases in energy and food prices largely of international origin. The euro's depreciation and the simultaneous rise in imported inflation, though moderate, raised concern on the ECB because of the young age of the new currency, whose young central bank lacked a solid track record. As noted by Hartmann and Smets (2018):

> "*Overall, the ECB's first interest rate cycle contained a first test of the ECB's anti-inflation credibility as the euro exchange rate depreciated – only stopped by the foreign exchange interventions –, and annual headline inflation peaked at 3%.*".

The second tightening episode was also triggered by increases in energy and food prices in international markets. Though in the meantime the euro had stabilised in the foreign exchange markets, the rise in inflation nonetheless caused renewed concerns about price stability risks. Eventually, again, these risks did not materialise.

After 2010, amid the recessionary impact of the GFC, the policy-controlled interest rate was brought close to zero first, then below zero, and stayed there until 2022. This long monetary expansion was justified at various stages by the ECB by the need to contrast major risks of recession and deflation, originating from the global economy and internal factors, notably the euro sovereign crisis. The expansion was initially milder, with the policy rate low but still positive; then after 2014 it became more forceful and the interest rate was driven into negative territory. This expansionary phase ended abruptly in 2022: the overnight rate was still negative at the middle of that year, then in the next 12 months rose by more than 4 percentage points.

In this third tightening cycle, the overnight rate climbed from -0.5% to around 4%, before starting to decline in the summer of 2024. The top interest rate level during this cycle is not very different from that at the peak of the 2006-2008 cycle, and a bit lower than that of the previous cycle. Based on this simple metric, therefore, one is tempted to conclude that the stance of monetary policy in the recent cycle was not very different from that in the earlier periods; possibly milder, because in this period the ECB was still holding large amounts of securities, which may have exerted an expansionary quantitative impulse.

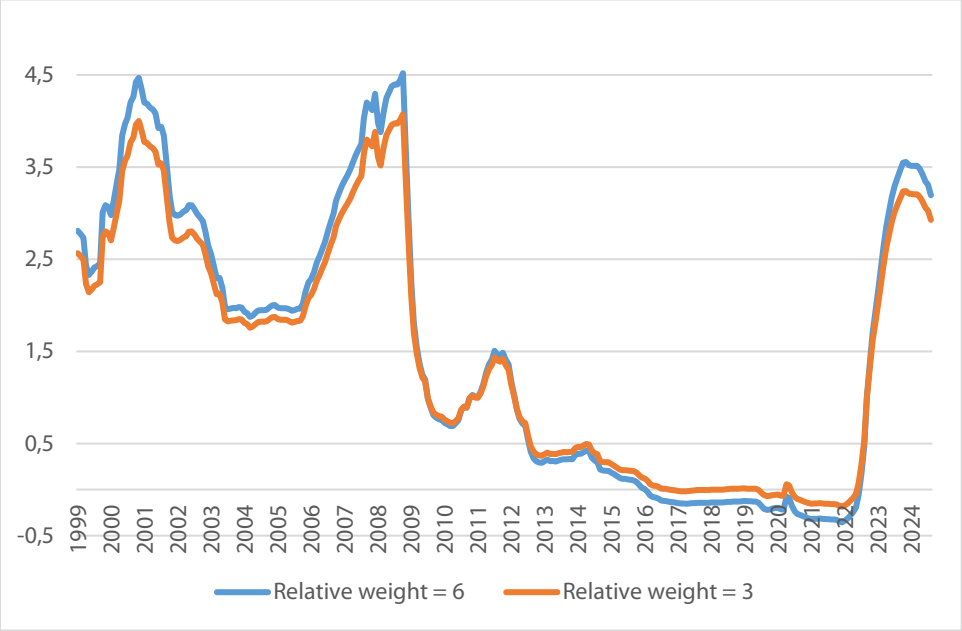
Figure 5 also shows that the long-term rate (dashed line) fell steeply after the GFC, following global bond market trends and the domestic economic recession. After 2014 (the time when the ECB introduced negative rates) the yield on long-term bonds fell further, and during the pandemic it sank into negative territory. In this period long-term rates were affected also by the ECB's "forward guidance", a communication strategy which consisted of announcing that the ECB would continue to maintain short-term rates low or negative into the future. Market expectation of continuing expansion in this period are confirmed by the forward premium (dotted line), which remained flat around zero in that period. In the 2015-2019 period, therefore, the expansionary stance of monetary policy was not measured sufficiently by the overnight rate but was more expansionary, because it was influenced also by the ECB's unconventional policy.

From 2023 on, while the long-term yield stayed in the 2%-3% range, the forward premium collapsed again. This may mean that already in that period markets expected the ECB stance to become expansionary again. Actually, monetary policy turned only in the summer of 2024.

To cross-check the evidence just presented, the Figure 6 shows the "monetary conditions index" (MCI) for the euro area, calculated using a methodology used by the European Commission (2024a). The short-term interest rate and the effective trade-weighted exchange rate, both in nominal terms, are combined in a synthetic indicator with a "weight ratio" of 6. Given the uncertainty regarding the weight ratio (ECB Monthly Bulletin, 2002), the chart shows also a second estimate, with a weight ratio equal to 3[6]. As one can see, the two estimates are not very different.

[6] This means that the ratio between the weight applied to the interest rate and that applied to the exchange rate is equal to 6. Since the weights sum to unity, they are respectively around 0.857 and 0.143 in the first case, and 0.75 and 0.25 in the second case.

Figure 6: Monetary conditions index (MCI), nominal



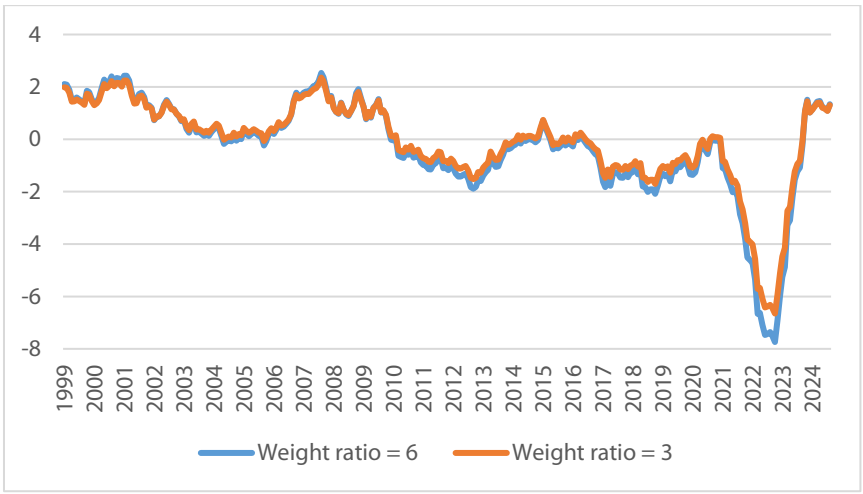
Sources: FRED, ECB and author's calculations.

As in the previous Figure, one can clearly see the three tightening cycles of 2000-2001, 2006-2008 and 2022-2024. There also is another smaller tightening cycle around 2011; this corresponds to the rate increases decided by the ECB Governing Council in the spring and summer of that year, decisions that in later years some observers have regarded as "mistakes" (e.g., Arnold, 2023).

At the end of the Figure, one can see that the peak restriction in the monetary policy stance according to this indicator is close – actually, a bit lower – than the levels touched in 2006-2008 and 2000-2001. This confirms the impression that the monetary stance at the peak of the recent restriction cycle was comparable, probably milder, than that in the two earlier tightening episodes.

As a further check, the next chart shows the MCI according to the real definition. The index is calculated as weighted average of the real short-term interest rate (deflated with the observed 12-month inflation measured by the Harmonised Index of Consumer Prices, HICP), and the real effective (trade-weighted) exchange rate. Again, Figure 7 shows the estimates with two weighting ratios, 6 and 3.

Figure 7: Monetary conditions index (MCI), real



Sources: FRED, ECB and author's calculations.

The profile of this indicator is very different from that seen earlier because of the strong impact of the rise in inflation after 2022 on the real rate. Still, here too one can see the two tightening phases in the first phase, and the expansionary phase after the GFC and in the subsequent euro crisis. By contrast, the real MCI signals a much more expansionary stance during the 2022-2023 period. The subsequent catch-up is rapid and steep, due to the combined effect of the rise in the nominal rate and the decline in inflation. Notably, the stance prevailing after the catch up is, as in the earlier charts, a bit below the 2006-2008 and 2000-2001 episodes. This confirms the impression that the monetary stance at the recent peak was less restrictive than in the earlier cases. And, *a fortiori*, the current stance after the monetary easing of mid- and late 2024 is even less restrictive.

How restrictive was the monetary policy stance in 2000-2001 and 2006-2008, in "absolute" terms? Without an estimate of the neutral rate, which this paper does not provide, any judgements cannot be made. The only inference one can draw from the literature surveyed in the previous section is that the neutral rate was probably not that different at the peak of the three tightening cycles. Nonetheless, it is interesting to recall some of the statements made by the ECB at the time, regarding its own monetary policy stance.

The 2000-2001 tightening cycle reached a peak in October, when the ECB policy rate (which was then the MRO rate) reached 4.75% and stayed there up to May 2001. At its peak (May 2001) inflation was equal to 3.1% (headline) and 1.9% (core). Therefore, at the peak of the tightening cycle, the ECB policy rate was some 1.6% above headline inflation, and 2.8% above core inflation. In its communication the ECB made clear that it regarded the imported inflationary pressure as temporary, and that it would soon be reabsorbed. Renewed confidence about price stability led to a new expansionary cycle in May, whose rationale was explained by the ECB as follows:

> *"Turning to price developments, it is expected that inflation rates will come down over time but, in the coming months, consumer prices in the euro area will continue to be affected upwards by a number of temporary factors. In April 2001, overall HICP inflation was around 3%, reflecting mainly upward pressure in the more volatile components – unprocessed food and energy prices – as well as the gradual pass-through of the effects associated with past increases in oil prices and last year's depreciation of the euro. These factors will continue to play a role, but will remain limited and temporary*.
>
> ECB Monthly Bulletin Editorial, June 2001.

The monetary policy stance continued to be softened gradually in the coming months. Even before the 11 September terrorist attacks on New York and Washington, which triggered new monetary easing, the ECB reiterated its expectation that inflationary pressures were temporary:

> *"Overall, (...) the present stance of monetary policy is considered appropriate to ensure price stability over the medium term. "*
>
> ECB Monthly Bulletin Editorial, August 2001.

With a policy (MRO) rate at 4.25% and a core inflation at 2.2%, the ECB felt that its stance was adequate to maintain price stability. After this experience, the ECB "clarified" its monetary policy strategy by stating that the inflation objective should be intended as a rate of "below but close to 2%" rather than just "below 2%" (ECB, 2003). A further hint that the stance was judged compatible with a (slight) accommodation of the inflation objective.

The 2006-2008 tightening episode was comparable to the earlier one in that the inflationary shock was imported from abroad, and that the shock judged to be temporary by the ECB. Importantly, the global

financial crisis had just happened, although its significance for the euro area was not appreciated yet. As described by Hartmann and Smets (2018):

> "*annual inflation rose sharply towards the end of 2007, reaching levels significantly above 2% (above 3% still in the same year and above 4% in the summer of 2008; (...) driven largely by sky-rocketing commodity including oil prices (...) While moderate wage developments and anchored medium to longer-term inflation expectations helped to dampen inflationary pressures, the risks to price stability over the medium term were still judged to be on the upside.*"

The pivot MRO rate kept rising from 2.25% for the whole 2006 and 2007, reaching a peak in July 2008 at 4.25%. At that moment, headline inflation was just above 4% while core inflation at just 1.7%. The ECB felt that the shocks from imported energy and food costs would be short-lived and medium-term price stability prospects would not be jeopardised. Monetary policy should make sure that the external cost-push shock would not transmit to domestic costs. The ECB's assessment was correct, as indeed headline inflation fell in the subsequent months towards 1%, staying between 1% and 2% for several years hence.

At the peak of the restrictive cycle the ECB characterised the situation as follows:

> *"annual HICP inflation has remained well above the level consistent with price stability (...) This worrying level of inflation rates results largely from sharp increases in energy and food prices at the global level in recent months (...). it is imperative to ensure that medium to longer-term inflation expectations remain firmly anchored at levels in line with price stability (...) broadly based second-round effects stemming from the impact of higher energy and food prices on price and wage-setting behaviour must be avoided. "*
>
> ECB Monthly Bulletin Editorial, July 2008.

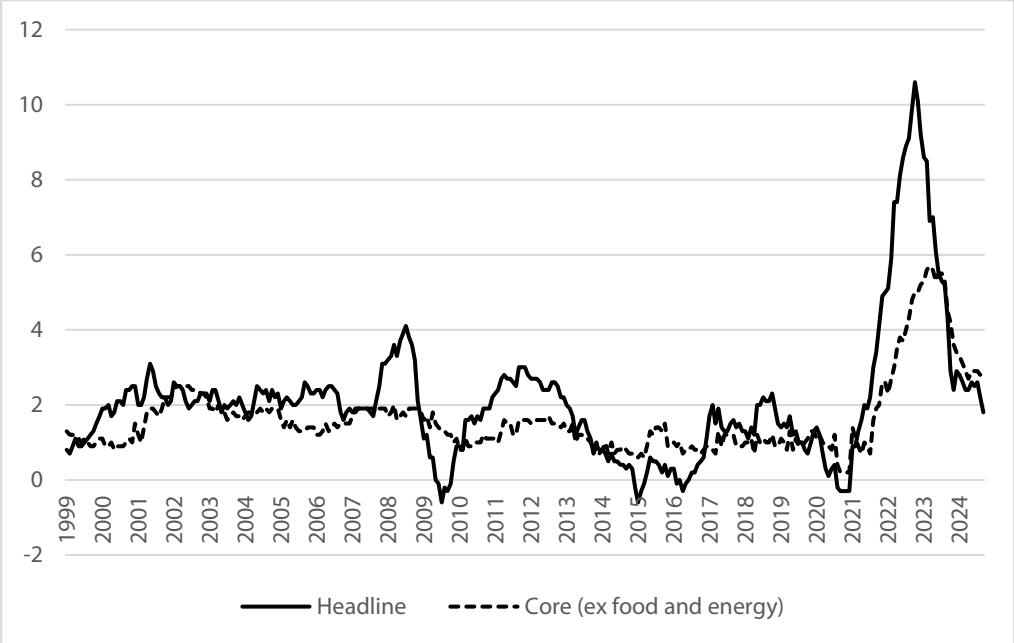
In the face of strong exogenous inflationary shocks, with core inflation firmly under control below 2%, to avoid a second-round effects to domestic costs and prices, the ECB judged that a policy interest rate 2 percentage points above core inflation would be needed.

We can draw a few conclusions from this narrative. First, although at the time they raised considerable concerns, in both 2000-2001 and 2006-2008 the inflationary shocks turned out to be mild. Both shocks were successfully dealt with by means of significant – but limited – interest rate increases, bringing the policy controlled short-term rate, in real terms, in positive territory. By comparison, the more recent tightening cycle (2022-2024) is similar in some respects and different in others. It is similar in that the monetary policy stance at the peak was comparable – though probably milder – than in the two earlier episodes. It is different in that the inflation shock was much larger and more persistent, and in the fact that the reaction of monetary policy was delayed at the beginning and had to be sharper and more rapid later. At the time of writing, the monetary restriction is being lifted while core inflation is still above the ECB's price stability benchmark of 2%, while headline inflation is rapidly declining at or below that benchmark, due to the drop of imported energy prices. Inflation developments are described in the following section.

4. INFLATION DEVELOPMENTS AND THE CURRENT ECB STANCE

Figure 8 provides a comprehensive picture of euro area inflation developments over the last quarter century. Headline inflation is represented by 12-month percent changes in the HICP, while core inflation excludes from the index food and energy prices. Several details regarding inflation developments have already been mentioned; here we draw attention to two features which emerge over long time spans of time.

Figure 8: Euro area inflation (12-month % changes)



Source: FRED.

The first – not novel – feature is that headline inflation is much more volatile than core. In all three tightening cycles we discussed, the headline inflation increased first and more sharply than core, and also moved first and more sharply to the downside. One may be tempted on this basis to rely on headline and downplay the importance of core. However, headline and core measures are complementary and linked by reciprocal causal influences. The ECB objective is defined in terms of headline inflation because this index is a better proxy of cost-of-living conditions for citizens. Moreover, since food and energy are goods that need to be consumed virtually every day by all of us, protracted and significant changes in their prices tend to transmit after a lag to the "core" components of the index. At that point, core inflation (which covers almost 70% of the overall index and is more persistent) can delay the return to price stability. In 2021, the initial stability of core inflation at a low level contributed to mistakenly interpreting the inflationary shock as temporary. Equal attention must be paid now, as headline inflation moves downward driven by the energy counter-shock.

Figure 8 also shows that the more recent inflation outburst was much stronger and long-lasting than the two earlier ones. Like the recent one, the 2000-2001 and 2006-2008 episodes were sparked by imported inflation, and in addition, the first was compounded by the euro exchange depreciation[7]. As already mentioned, however, no matter how serious as they may have looked the time, in hindsight they were mild. In neither case did core inflation abandon the "comfort zone" around 2%. The 2021-

[7] Lane (2024) presents details of the sectoral components of inflation in the two earlier tightening episodes, showing in particular the role played by energy prices.

2023 inflationary shock was very different. Core inflation peaked close to 6% and is still well above 2%. All in all, the monetary policy response was less prompt and less forceful that in the earlier cases.

One must also consider that the monetary policy stance was in the recent case, and still is today, affected by the legacy effect of past unconventional measures. Such measures, as noted, exert an independent effect on top of the interest rate stance. In particular, during the 2022-2024 tightening cycle, the stance must have been affected, in an expansionary direction, by the large size of the ECB balance sheet and the resulting large amount of liquidity freely available to banks in their deposit facility with the ECB. This effect, admittedly difficult to quantify, contributed to make the stance more expansionary than implied by the level of interest rates.

Starting in June 2024, the ECB added interest rate accommodation, in three steps (so far) of 25 basis points each, bringing the pivot rate (on the deposit facility) from 4% to 3.25% (as of early November). Meanwhile, headline inflation was dropping sharply (latest readings in September and October, 1.7% and 2%), while core inflation remains well above the price stability benchmark (latest reading in both months, 2.7%).

Three concluding remarks are in order from this discussion.

The ongoing sharp decline of energy prices (the latest readings of the energy component of HICP in September and October are -6.1% and -4.6%, respectively) is good news both for the real economy and for inflation prospects. If persistent, that decline will transmit to the core items as well, fully reversing the effects energy prices exerted on inflation in 2021-2022 – though not on the price level.

However, the energy component (as other non-core items) is volatile and subject to imponderables, such as geopolitical risks and climatic events. This suggests caution in automatically drawing monetary policy implications from movements in energy prices and other non-core items.

Perhaps more importantly, while ECB officials characterise the current monetary policy stance as "restrictive", that judgement hinges on uncertain estimates of the neutral rate of interest. After the recent cuts, short-term interest rates both nominal and real are below the average of the pre-GFC years. One should also account for the residual impact of quantitative easing (QE) measures, which add on top of the interest rate stance. Moreover, other sources of information, particular the ECB Bank Lending Survey, signal an easing of bank lending standards, accompanied by an increase of credit demand. While an overall judgement is not easy, the above elements together suggest that the current stance is better characterised as "neutral", rather than "restrictive".

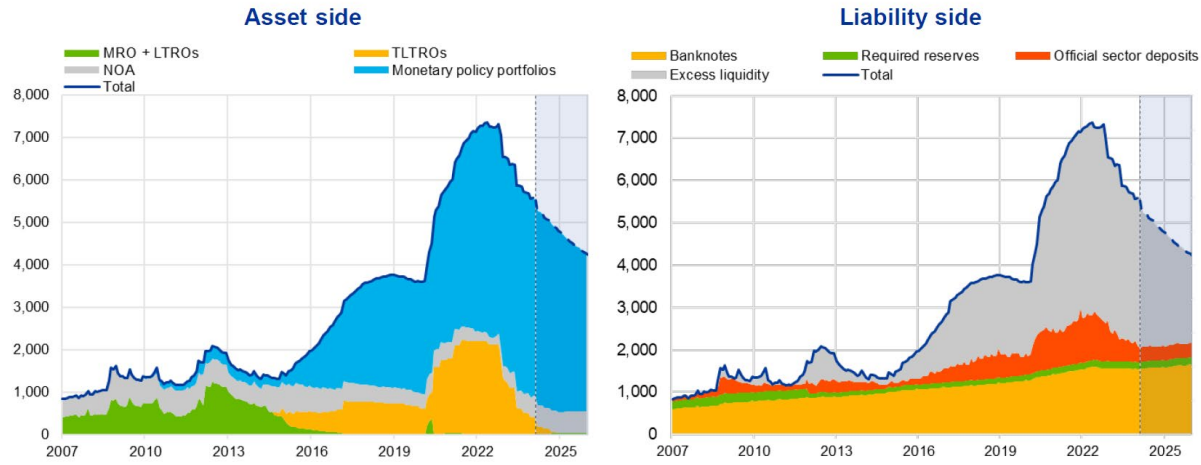
5. THE ROLE OF QE AND OF THE CENTRAL BANK OPERATING PROCEDURES

As mentioned earlier, when short-term interest rates are constrained downward by the ZLB or by their ELB, those rates and the MCIs are no longer an accurate measure of the monetary policy stance. Forward guidance helps the monetary expansion by pushing long-term interest rates downward, even if short-term rates cannot be lowered further. Another channel used extensively by the ECB and other central banks after the GFC is balance sheet policy, a set of measures to expand the central bank balance sheet consisting, on the asset side, in a variety of asset purchases, matched, on the liability side, by an expansion of the deposits of banks at the central bank (quantitative easing, or QE). QE relies on the assumption that an expansion of the quantity of central bank liquidity present in the economy has an expansionary effect independent of (i.e. over and above) that exerted by the level of interest rates.

Figure 9 shows the ECB balance sheet (assets and liabilities) in the 2007-2024 period. On the asset side, we note three "waves" of QE: the first, relatively minor, just after the GFC and euro crisis (roughly, 2010-2013); the second more massive to counter the perceived deflationary risks in the 2015-2019 period; the third, even larger, corresponding to the start of the pandemic and extending until 2023. After this year, the ECB balance sheet size has shrunk substantially, due to the maturity of existing longer term refinancing operations (TLTRO) and is now around mid-way between the peak and the level experienced before the pandemic. The decline is continuing.

On the liability side of the central bank, the QE is matched by an expansion of bank excess liquidity, consisting largely in idle funds re-deposited by banks at the central bank, and remunerated at the rate on the deposit facility (deposit facility rate, or DFR). Due to the existence of this amount of liquidity, freely available to banks, the rate on deposits is now the pivot policy rate, i.e. the rate that guides the short-term rate on the market[8]. This is unlike the system prevailing before the GFC and euro crisis, in which the pivot rate was the main refinancing operations (MRO) rate (determined either in fixed or variable rate auction), and the deposit rate marked just the "floor" below which daily rates would not go.

Figure 9: Eurosystem balance sheet: actual and projected, EUR billion



Source: Schnabel, 2024a.

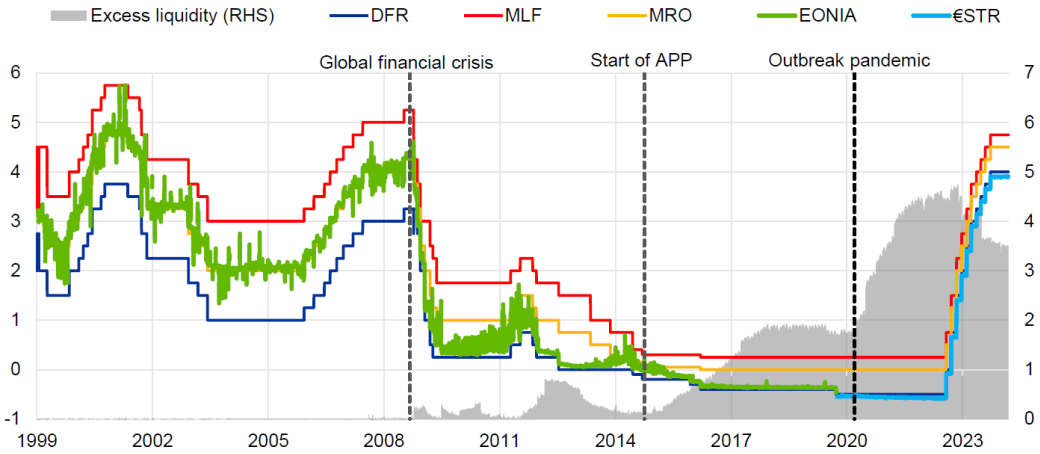
Note: NOA: net other assets.

Figure 10 juxtaposes developments in the balance sheet and those of the key interest rates. It shows the correspondence between phases of QE and corresponding phases of reduction of policy interest

[8] For details, see Angeloni (2023).

rates. In the first phase mentioned earlier (before 2015), interest rates were kept positive and, in some cases, rising. In the second phase, the bigger wave of QE corresponds with the decision of bring the deposit rate below zero (2014 and subsequent years). Finally, in the third phase (pandemic), QE intensifies and the DFR rate reaches its lowest level at -0.5%.

Figure 10: Key ECB interest rates, overnight rate and excess liquidity, % (left-hand axis), EUR trillion (right-hand axis)



Source: Schnabel, 2024.

Note: DFR: deposit facility rate, MLF: marginal lending facility, MRO: main refinancing operations, EONIA: Euro Overnight Index Average, €STR: euro short-term rate.

This broad-based examination of the data is suggestive of the way in which market operations as part of QE complemented interest rate policy in the different phases of the post-crisis period. It does not, however, tell us how through what channels and to what extent QE actually contributed to the ECB expansionary policy stance. The empirical evidence on the impact and the QE instrument is not yet sufficient for a definitive judgement; see, for example, Gern et al. (2015) and the references therein. It is probably safe to conclude that QE contributed to the overall consistency of the monetary policy actions, signalling that interest rate policy was pursued forcefully and would be long-lasting. If so, the influence on long-term rates already exerted by the forward guidance may have been strengthened. Beyond this, more definitive conclusions or quantifications of how QE and forward guidance affect the overall monetary policy stance are be highly judgemental.

A related question is whether the specific operating procedure used by the central bank (in other words, the specific techniques the central bank uses to inject or siphon off liquidity) has, in itself, an influence on the monetary policy stance. A priori it should not be so: an operating procedure is supposed to support any stance the central bank deems appropriate at any moment in time.

Reality, however, may be more nuanced. In the years after the GFC and the euro crisis, the ECB has changed its operating framework, moving from a "demand-driven" system, in which liquidity was scarce and the banking system was dependent on the central bank for its provision, to a "supply-driven" system, in which the short-term market rate adheres to the DFR by effect of the large volume of free liquidity available to banks. How this affects the monetary stance is not clear. It cannot be ruled out that, just as QE operations may have an independent expansionary effect on the stance, the presence of large liquidity buffers have a similar impact. In the opinion of this author, existing data evidence is insufficient and more research will be needed to settle the question.

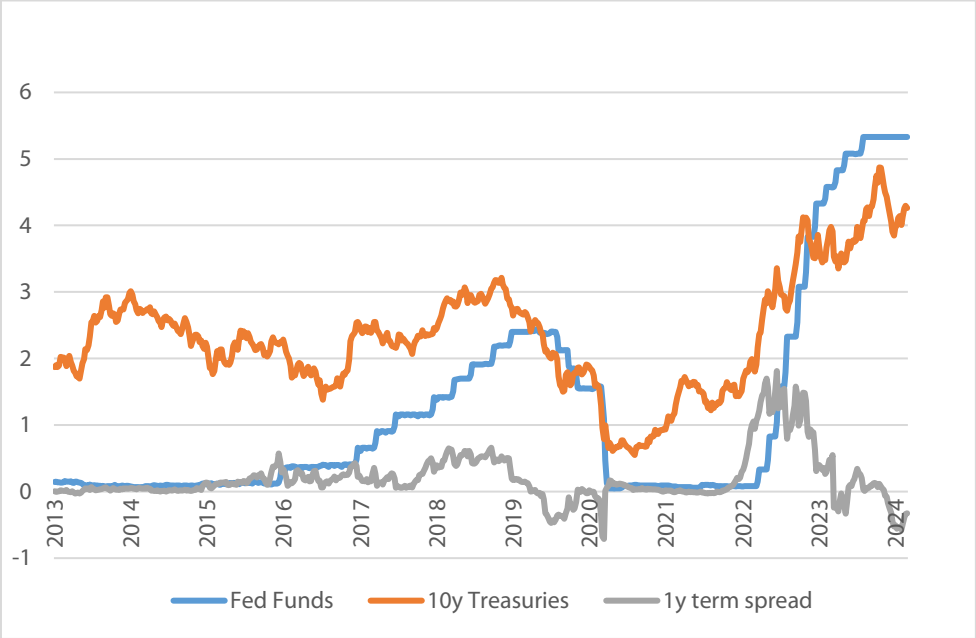
6. MONETARY POLICY STANCE AND FINANCIAL STABILITY: THE EXPERIENCE OF THE 2023 US BANKING TURMOIL

In recent years, increasing attention has been given to the nexus between the monetary policy stance and financial stability. In particular, much focus has been placed to the question of whether an expansionary monetary policy stance may increase the propensity of economic agents – investors, intermediaries, traders, etc. – to undertake risk. For a recent analysis by the ECB, including a list of references to the earlier literature, see Abbate and Thaler (2023).

The March-April 2023 banking turmoil in the US, which for a brief period – before the US authorities adopted unprecedented measures – destabilised the system of regional banks in that country and sent shock waves through the entire global financial system, exemplifies how the monetary policy stance can have unexpected consequences for financial stability. Euro area banks were not affected in a significant way by the turmoil, yet the US experience is worth considering because it highlights channels of influence between monetary policy and banks' balance sheets that can have more general relevance. The rest of this section briefly describes this case, drawing from the "*Geneva Report on the World Economy n. 27*" recently published by the International Center for Money and Banking Studies (Angeloni et al., 2024).

Figure 11 below summarised the conduct of policy in the US in the period from 2013 to today. Like Figure 6 shown earlier for the euro area, this Figure includes three variables: an overnight rate (the federal funds rate), a long-term rate (the 10-year Treasury yield) and the 1-year forward premium, a measure of monetary policy expectations.

Figure 11: US monetary policy stance, 2013-2024 (interest rates in %)



Source: FRED.

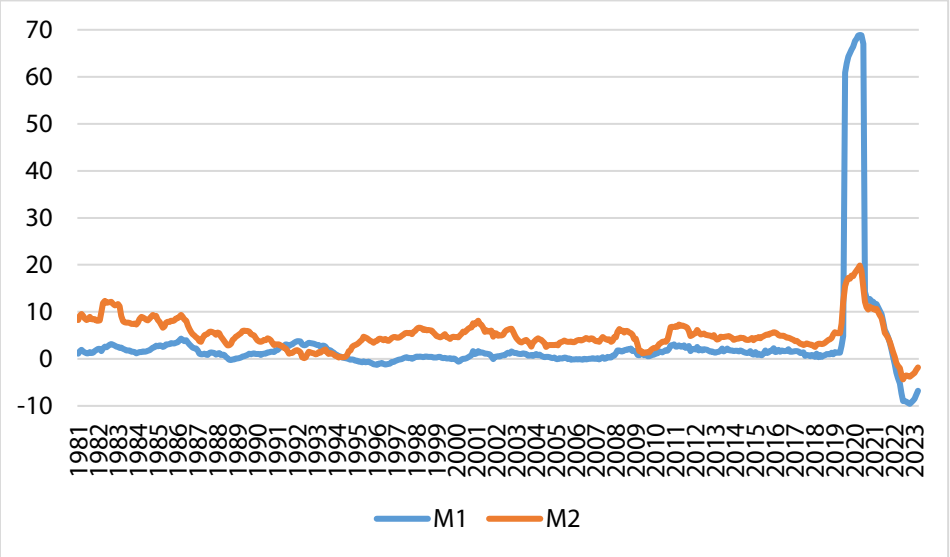
Note: The Federal Funds rate line uses weekly data centred on Wednesday.

Figures 11 and 6 compared highlight both similarities and differences between the US and the euro area monetary policy stance in that crucial period. Like the ECB, the Fed brought its rate down to near-zero after the GFC. After 2014, however, the paths diverge. The ECB brought its rate in negative territory in 2014, reducing the rate further progressively until the level of -0.5%. The Fed instead started tightened policy, raising rates until 2019 – the pre-pandemic year. Because of the different starting points, the COVID-19 pandemic-related monetary expansion enacted by the Fed in early 2020 was

much stronger than that of the ECB. To the interest rate shock the Fed adopted other regulatory measures to inject liquidity in the economy, in particular removing reserve requirements and other regulatory constraints on selected categories of bank deposits (FRED Blog, 2021).

The result was a massive and unprecedented injection of liquid funds into the banking sector, which can be seen in Figure 12 depicting the monetary aggregates M1 and M2.

Figure 12: M1 and M2 in the United States, yearly flows as % of bank assets



Source: FRED.

Notes: M1 consists of currency, demand deposits and other checkable deposits at commercial banks in the hands of the non-bank private sector. M2 consists of M1 plus certain categories of small time-deposits and shares of retail money market funds.

As it can be seen, the money injection into the US banking sector was and above any historical standards. The increase in M1 after the first quarter of 2020 was in the order of 70% of the bank aggregate balance sheet, and that of M2 was in the order of 20%. Banks were actually flooded with a massive unexpected amount of liquidity, which inflated their balance sheets and needed to be invested somehow at short notice.

Table 2 below shows where the funds were invested. Most of it (USD 2.3 trillion, out of 4.8 trillion) went into cash, mainly deposits at the Fed. A smaller but still sizeable part (USD 1.9 trillion) went into securities, mainly long-term Treasuries and agency bonds. A much small part went into financing corporate and personal loans, as one would have expected considering that in that period economic activity collapsed and the demand for credit was limited.

Table 2: Aggregate US banking system balance sheet, 2020-2022

Time intervals:	Securities	... of which: Treasury and Agency	Loans	Cash	Total assets	Deposits
	Flows, trillion of USD					
2020-2021	1,9	1,6	0,8	2,3	4,9	4,8
2022	-0,2	-0,2	1,2	-0,9	0,3	-0,2
	Percent changes					
2020-2021	49,6	53,3	7,5	134,9	27,9	35,9
2022	-3,6	-4,6	11,4	-22,8	1,3	-1,0

Source: adapted from Angeloni et al., ICMB (2024)

Placing most of the funds into cash and part in long public securities may have been seen at first as a safe and smart move. It kept banks liquid and at the same time allowed the banks to earn some return on their investment. Ex post, it turned out to be a fatal mistake for some of them. Massive portfolio of unhedged long-term securities exposed the banks in question to potential capital losses, in case of interest rate increases. However, nobody could have anticipated back in 2020 the massive and sudden interest increase that the central bank would enact in 2022 and thereafter. When that materialised, banks were trapped and major mark-to-market losses materialised. Most of them were unrealised, because banks in the meantime had shifted an increasing share of their portfolios from the "Available For Sale" to into the "Held To Maturity" accounting category, the compartment where mark-to-market losses do not need to be recognised. For some of them, however, first and foremost the California-based Silicon Valley Bank, depositors were spooked and ran the bank, leading to its failure. The contagion affected other banks, until the Federal Deposit Insurance Corporation intervened by (temporarily) extending the insurance cover to previously uninsured deposits.

Two lessons can be drawn from this episode. First, sudden unexpected turns of the monetary policy stance can have disruptive impacts on bank balance sheets. Monetary policymakers must be aware of them and factor in these potential effects into the information sets leading to decisions, especially if the financial stability risks can result over time in risks to price stability. Second, supervisors' alertness of those risks and their cooperation with monetary policy authorities need strengthening. Europe is ahead of the US in this respect: the Single Supervisory Mechanism (SSM), housed in the ECB, has conducted rigorous supervision in the last decade, and performs rigorous stress tests on medium- and large-sized banks within which interest rate risks are explicitly factored in. Still, internal limits in the exchanges of information between the monetary policy and supervisory wings of the ECB may prevent or delay, in certain instances, the recognition of those risks and the adoption of coordinated measures to mitigate them. The aforementioned Geneva Report puts forth policy recommendations for central banks, which are partly reproduced here because they are relevant to the topic of this paper in a broader sense:

1. Greater integration across policy domains. Within central banks, monetary, financial stability and supervisory analytical and decision-making processes should be better integrated. Analyses related to the interactions between monetary policy and financial stability should be routinely conducted and brought to relevant policy-making committees. Supervisory and bank internal stress tests should explicitly consider implications of alternative monetary policy paths, including extreme ones.

2. Decision-makers' skills and accountability processes should better reflect the interactions. Competencies of committee members and other decision-makers need to include skills in both monetary policy and financial stability, and their interactions. Policy committees should have overlap

in membership and display a mix of cross-disciplinary skills. Interdisciplinary expertise among staff and committee members should be encouraged.

3. Communication of decisions should reflect the interactions. Analyses and debates among decision-makers – including differences in views – should be transparently communicated. Financial stability implications should become part of central bank monetary policy communication, calling, when necessary, the attention of banks and other intermediaries. In monetary policy press conferences, a more active participation of financial stability officials – for the ECB, the Vice-President – is advised.

4. Internal coordination and staffing can be improved. Obstacles limiting interdepartmental professional interaction and information exchanges should be re-examined and, if possible, removed. Data and analyses on monetary policy and financial stability should be shared at the staff level as the norm, while safeguarding necessary confidentiality and avoiding conflict of interests. In recruitment and internal promotion, a multidisciplinary background should be counted as an asset.

5. More and better analyses and data on interactions are needed. Analyses should consider explicitly the interactions between monetary policy and financial stability. Macro-financial analyses, including econometric modelling of monetary-financial interactions, should be the norm. Macroprudential assessments should consider the effects of monetary policy choices and implications for financial stability.

6. Adapt monetary policy decisions in content, communication and accountability. Planned interest rate paths should include intended endpoint interest rates. Those paths should avoid excessively rapid tightening or loosening to allow banks and financial markets time to adapt. Monetary policy should be timely given macroeconomic and price developments to limit abrupt adjustments harmful to financial stability necessary when action is delayed. To the extent possible, endpoint rates should be communicated, together with their surrounding uncertainties.

7. Calibrate prudential policies to monetary policy choices. The calibrations of countercyclical macroprudential requirements should take the monetary policy cycle, including monetary aggregates, into account, in addition to customary variables such as credit gaps, asset prices, etc. Microprudential and macroprudential attention should refocus on the liability side of banks, an aspect which was partly lost in recent decades with academic and central bank researchers tending to concentrate on bank assets, in particular credit exposures with their determinants and characteristics.

7. CONCLUSION

The ECB tightening cycle initiated in mid-2022 and now heading to a conclusion is sometimes portrayed as the most aggressive ever in the history of the European monetary union (see for example Treek, 2023). This statement is both correct and misleading. Measured from trough to peak, the tightening was indeed unprecedented. Yet, this doesn't mean that the monetary policy stance resulting from it was equally aggressive, and even less that the monetary policy stance is aggressive now. What was unprecedented was the initial expansionary stance[9]. This paper argues that, at the peak of the tightening cycle, the stance was no more restrictive than at the peak of the two preceding cycles, dated at 2000-2001 and 2006-2008. Actually, it was probably less restrictive.

Combined with the fact that the recent inflation outburst was far stronger and more persistent than during the two preceding episodes, this conclusion raises two questions: first, whether the monetary response of the ECB to inflation (technically, its 'reaction function') has changed between the early 2000s and now; second, whether the current stance is consistent with the ECB's stated goal of completing the disinflation process.

The first question is not addressed in this paper but deserves being researched. Finding that the ECB's reaction function under President Lagarde departed from that under predecessors Duisenberg and Trichet (the three ECB Presidents who faced inflationary shocks) would be interesting in itself and raise important questions about the reasons and justifications of such a change – or lack thereof.

On the second question, this paper provides a few elements for an answer. As of today, the disinflation process is not complete. The recent sharp drop of headline inflation (whose September and October reading were at or even below the 2% benchmark) is due so far almost entirely to a drop of imported energy prices, notoriously volatile and dependent on imponderable global factors. Core inflation has been declining but remains well above the level consistent with price stability. Current short-term rates, nominal and real, especially after the cuts decided since June 2024, are below the historical levels prevailing before the global financial crisis (GFC). Other sources of information, notably the ECB Bank Lending Survey (ECB, 2024b), suggest that in the euro area monetary and credit conditions at present are not restrictive. Growth in the euro area is regarded by the ECB as "sluggish" because of demand side factors (ECB, 2024a), but actually it is not far from recent performance. The euro area output gap is estimated by the Commission (European Commission, 2024b) to be around zero. Finally, recent ECB analysis by Ivanova et al. (2024) suggests confidence that at the end of the current tightening cycle a "hard landing" of the economy will be avoided.

Taken together, these elements suggest that while the disinflationary process is clearly underway, it may be safe for the ECB to refrain from reducing interest rates further until price stability conditions are reliably achieved. After that, a small positive real short-term rate should be maintained.

[9] Unique among the major central banks, the ECB's monetary expansion relied on the full panoply of existing instruments: negative interest rates; quantitative easing through outright and repurchase operations in public and private securities and forward guidance. The expansionary stance was extended into a period (late 2021 and early 2022) in which inflation was already above target.

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The ECB monetary policy stance is assessed by comparing the recent tightening cycle (2022-today) with the two preceding ones, which took place respectively in 2000-2001 and in 2006-2008. Interest rates, quantitative indicators and monetary conditions indices (MCIs) are used for this purpose. The main finding is that the ECB monetary policy stance, at the peak of the tightening cycle, was no more restrictive in the recent episode than it was in the two preceding ones; actually, probably less. By contrast, in the recent case inflation was higher and more persistent than in the preceding episodes.

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