

On the persistence of services inflation and the price of services relative to goods

Despite the recent increase euro area headline inflation is substantially lower than at its 2022 peak. Services inflation, however, has remained comparatively elevated. Why has services inflation been so persistent, and what does this imply for monetary policy? This policy brief argues that elevated services inflation largely reflects a relative-price adjustment following the exceptional shocks of recent years. This adjustment is primarily driven by real economic forces such as sectoral productivity growth, demand patterns and the uneven propagation of supply shocks, which are largely outside the control of monetary policy. Instead, the role of monetary policy is to ensure that this adjustment remains consistent with price stability. Therefore, services inflation can remain above 2% for some time while headline inflation is close to the 2% target, provided that elevated services inflation does not develop into a broader, self-sustaining inflation process.

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Persistent services inflation partly reflects delayed pass-through of price shocks

Energy and supply chain shocks affected goods prices relatively quickly during 2021 and 2022, whereas their indirect effects propagated more gradually through production costs, wages and service sector prices. Pandemic reopening and the shift in demand back towards contact-intensive services reinforced this delayed response.



Recent shocks interrupted long-run rise in relative price of services

Services prices in the euro area have historically risen faster than goods prices, reflecting differences in productivity growth, household demand and tradability. While the relative price of services went down in response to the surge in goods prices after the onset of the COVID-19 pandemic, it has not yet fully returned to its pre-pandemic trend.



Services inflation may stay elevated as the relative price of services adjusts towards its long-run trend

Our empirical estimates suggest that around half of the remaining relative-price gap will close within three and a half years, with most of the adjustment driven by services inflation. An exact return of the relative price of services to its long-run trend is not certain, however, as persistently higher energy costs or AI-driven productivity gains in services could alter the future trend.

The views expressed are those of the authors and do not necessarily reflect those of the Oesterreichische Nationalbank or the Eurosystem.

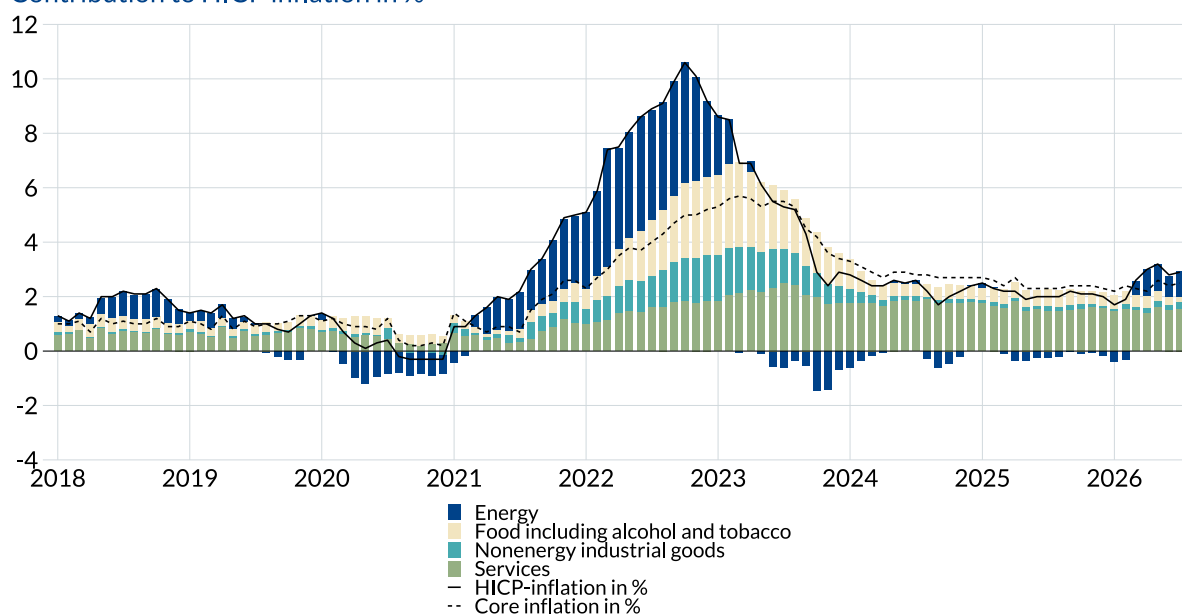
1 The changing composition of euro area inflation

The composition of euro area inflation illustrated in chart 1 has changed markedly since 2021. Until 2023, energy prices accounted for a large share of the surge in headline inflation. Rising energy and other input costs, together with global supply chain disruptions, subsequently spread to food and nonenergy industrial goods (NEIG). Following that, these contributions to headline inflation fell sharply as energy price inflation declined from its crisis peak and global supply constraints eased. Only since the beginning of 2026 has the contribution of energy turned significantly positive again. The contribution from services, by contrast, rose more gradually and has receded much more slowly since it reached its peak, whereas the contributions from energy and goods declined more sharply. As a result, most recently, services have become the main source of inflation persistence in the euro area.

Chart 1

HICP components

Contribution to HICP inflation in %



Note: Last observation: July 2026; country: euro area.

Source: Eurostat.

The different timing of the contributions to HICP inflation across components reflects the nature of their production costs and price-setting processes. Energy and globally traded goods respond relatively quickly to movements in commodity prices, import prices, transport costs and supply conditions. When these external pressures ease, goods inflation can also decline rapidly. Services are generally more labour intensive and therefore more closely linked to domestic wage developments. In the medium term, wage adjustments often compensate only gradually for the inflation-induced loss of real income, owing to staggered wage bargaining and their orientation towards past inflation. Changes in labour costs consequently reach services prices with longer and more variable lags than changes in many nonlabour input costs.

The delayed response of services inflation can thus be understood partly as an indirect consequence of the earlier energy and goods price shocks. Firms did not necessarily pass the increase in their production costs on to consumers immediately: Some initially absorbed them in profit margins, benefitted from

fixed-price contracts or adjusted their selling prices only periodically. As workers and firms subsequently responded to the accumulated loss of purchasing power, part of the earlier cost shock migrated into wages and the prices of labour-intensive services. High services inflation can therefore persist after the direct contribution of energy to annual inflation has largely disappeared.

Pandemic-related developments reinforced this process. During the COVID-19 pandemic, fiscal stimulus helped sustain household demand, which shifted from contact-intensive services towards goods, while global production and transport networks were constrained. During the reopening around 2021, demand shifted back towards services, particularly travel, hospitality and recreation services. Service providers had to meet this renewed demand while facing accumulated cost increases and labour shortages. The combination of reopening effects, delayed wage adjustment and weak productivity growth contributed to the later peak of services inflation in 2023 and its more gradual decline from then on. This interpretation is consistent with recent ECB analyses (ECB, 2025; Martínez Hernández et al., 2025), which find that the post-pandemic divergence between goods and services inflation largely reflected differences in sectoral exposure to supply shocks, reopening effects and the delayed transmission of higher labour costs to services prices.

At the same time, the tendency of services prices to rise faster than goods prices predates both the pandemic and the energy crises. The difference between services and goods inflation is therefore not solely a feature of the recent inflation episode. It also reflects longer-term developments in productivity, production costs and household demand. To distinguish these structural forces from the temporary effects of recent shocks, it is useful to examine the price of services relative to goods over a longer horizon.

2 A relative-price perspective

The difference between services and goods inflation can be summarised by the evolution of the price of services relative to goods. The change in this relative price is approximately equal to the difference in the inflation rates of services and goods. Whenever services inflation exceeds goods inflation, services become more expensive relative to goods and the relative price of services rises. Conversely, when goods inflation exceeds services inflation, the relative price falls. This relationship provides a useful framework for assessing whether the current persistence of services inflation partly reflects a gradual restoration of relative prices following the unusually large sectoral shocks of recent years.

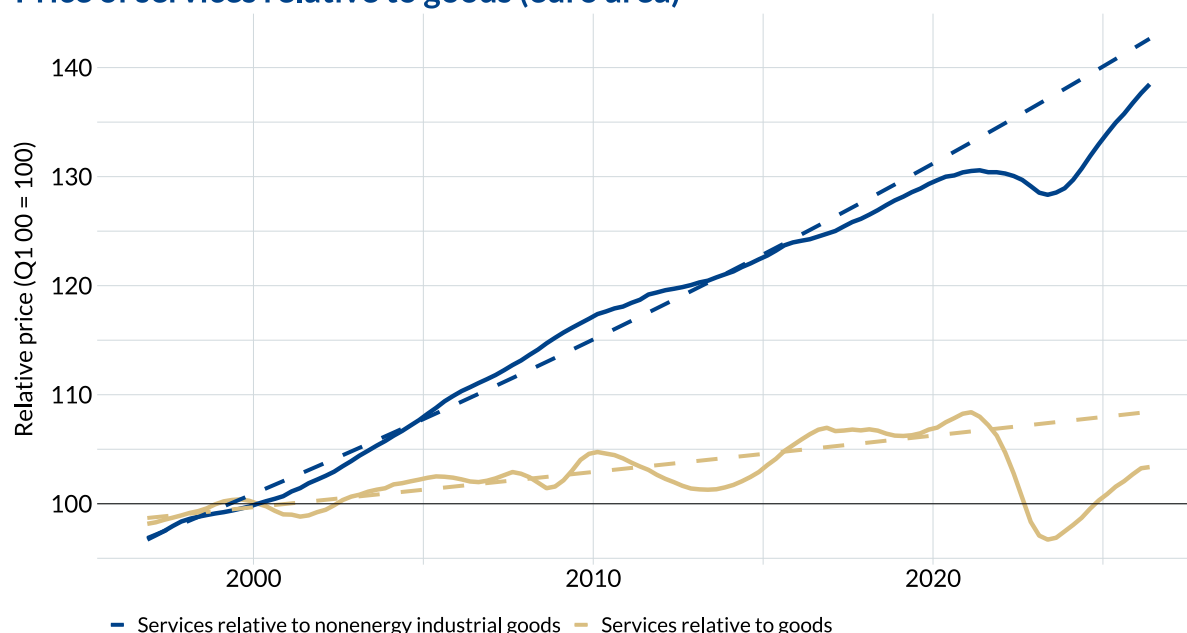
2.1 The price of goods relative to services in the euro area

Chart 2 shows that the price of services relative to both overall goods and NEIG followed a relatively stable upward trend before the pandemic. This was the consequence of services inflation being persistently higher than goods inflation. Notwithstanding temporary fluctuations around their respective trends, services prices therefore increased faster than the prices of both overall goods and NEIG, and at a broadly stable average rate.

The two measures offer complementary perspectives. The services-to-overall-goods ratio captures the relative price faced by households across the full consumption basket and makes the impact of the recent energy and food price shocks directly visible. The services-to-NEIG ratio provides a cleaner and less volatile benchmark that is not mechanically dominated by energy and food prices.

Chart 2

Price of services relative to goods (euro area)



Note: Quarterly frequency with a four-quarter moving average. Dashed line shows the extrapolated log-linear trend for 1996–2019.

Source: Eurostat (dataset code: prc_hicp_minr), euro area (changing composition), covering January 1996 to June 2026, accessed on 10 August 2026.

The upward trends in both measures were interrupted during the recent inflation episode. The effect was strongest for the ratio based on overall goods because it includes the direct increase in energy and food prices. NEIG inflation also rose above services inflation in 2022, however, causing the price of services relative to NEIG to fall further below its pre-pandemic trend.

These movements began to reverse as energy price inflation declined from its crisis peak, supply constraints eased and goods inflation normalised. Services inflation remained elevated, while the effects of energy and supply chain shocks on NEIG inflation largely faded. The inflation differential consequently turned positive again, initiating a recovery in the relative price of services.

Nevertheless, chart 2 indicates that the gaps relative to the pre-pandemic trends have not yet fully closed. The price of services relative to NEIG is still 3.5% lower than if the pre-pandemic trend had continued. The euro area data series only covers the period since 1996. We therefore use a longer US data series that provides a useful benchmark for assessing whether such relative-price trends are robust to major economic disturbances and whether we can expect the relative price of services to return to its previous trend.

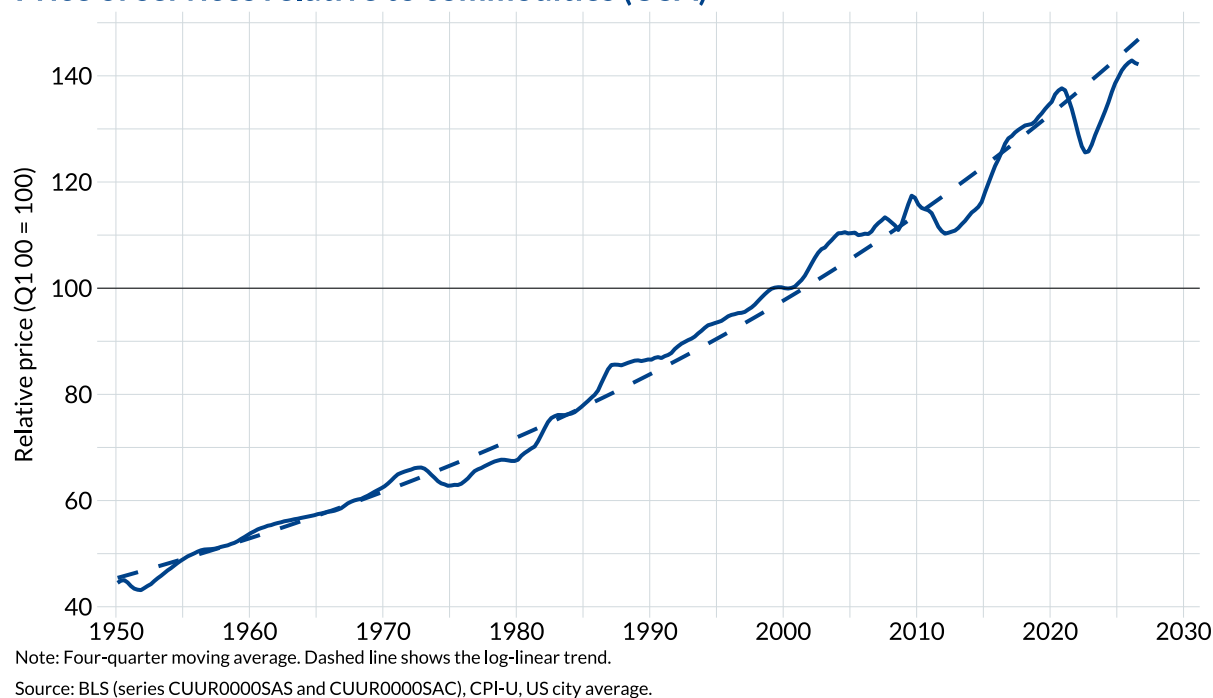
2.2 A longer-term perspective from the United States

Post-World War II US data provide a useful longer-term perspective (see chart 3). Despite repeated commodity-price shocks, recessions and structural changes over the past 70 years, the price of services relative to goods has remained close to a remarkably stable log-linear upward trend. In contrast to relative services prices in the euro area, those in the USA have already returned close to their trend

following the post-pandemic inflation surge.¹ This historical regularity suggests that large shocks may create temporary deviations without necessarily overturning the long-run relationship of services prices to goods prices. Whether this interpretation is plausible depends on the structural forces that have historically driven relative-price growth.

Chart 3

Price of services relative to commodities (USA)



2.3 Why do services become relatively more expensive?

The historic long-run increase in the relative price of services can be explained by a combination of supply- and demand-side forces. On the supply side, productivity tends to grow more rapidly in goods production than in services. On the demand side, rising incomes tend to shift household expenditure towards services. Differences in capital intensity and tradability reinforce these mechanisms.

Differential productivity growth

The main supply-side explanation is that technological progress is uneven across sectors. Goods production generally offers greater scope for automation, standardisation, economies of scale and capital deepening. Productivity can therefore rise rapidly while the amount of labour required to produce a given quantity of goods declines. While some nontraditional services, such as transport, communication and financial services, may benefit from productivity gains similar to those achieved in goods production, most services belong to more traditional, labour-intensive activities that require direct interaction with consumers (Duarte and Restuccia, 2020). The time needed to provide care, education, hospitality or many personal services cannot always be reduced without affecting the nature or quality of the service.

¹ It should be noted that the euro area and US data series are not directly comparable because they rely on different classifications of services and goods, with US data rather referring to commodities than the euro area goods aggregate.

At the same time, wages in services cannot permanently diverge from wages elsewhere in the economy. Workers compare employment opportunities across sectors, and service-sector employers must offer competitive wages even when their productivity grows more slowly. Consequently, for service provision to remain economically viable, services prices must increase relative to goods prices.

This mechanism is commonly associated with Baumol's (1967) cost disease. When sectoral productivity grows at different rates and goods and services are imperfect substitutes, relative prices change and labour gradually moves towards sectors with lower productivity growth. Ngai and Pissarides (2007) formalise this mechanism in a multisector growth model and show that structural change at the sectoral level can coexist with balanced growth in the aggregate economy. This is consistent with observed patterns of economic development.

Differences in the use of capital can reinforce this pattern. Goods-producing sectors are often better able to benefit from capital deepening than labour-intensive services. Acemoglu and Guerrieri (2008) show that capital deepening increases the relative output of more capital-intensive sectors, leading to a reallocation of labour and capital across sectors. This can generate faster labour productivity growth in more capital-intensive sectors and rising employment shares in less capital-intensive sectors, thereby contributing to the decline in the relative price of goods.

Rising incomes and strong demand for services

Supply-side differences alone do not fully explain why expenditure and employment continue to shift towards services even as their relative price rises. The demand side is equally important. Strong demand for services can further increase its price, while weak demand would lower it. As household incomes increase, spending does not rise proportionately across all categories. Demand for many goods like groceries and energy eventually becomes saturated, while households devote a growing share of their income to services such as travel, recreation, hospitality, education, healthcare and personal care.

This income effect counteracts the substitution effect arising from higher relative service prices. On its own, the increase in the relative price of services would give households an incentive to shift their expenses away from services and towards goods. Rising real incomes, however, increase households' demand for services relative to goods. Hochmuth, Pettersson and Weissert (2025) show that services typically have a higher income elasticity than goods, and thus their expenditure share can continue to rise although their relative price is increasing.

Boppart (2014) combines these two mechanisms in a model of structural change. Faster productivity growth in goods production lowers the price of goods relative to services, creating a substitution effect towards goods. At the same time, rising incomes shift demand towards services. His estimates for the United States suggest that the income and substitution effects are of broadly comparable importance. The income effect dominates sufficiently for the share of goods in total expenditure to decline even as goods become cheaper relative to services.

Tradability and international competition

Differences in tradability provide a further explanation. Manufactured goods can generally be transported, stored and traded across borders more easily than services. Their prices are therefore exposed to international competition, global value chains and production in lower-cost locations. These forces can restrain the growth of goods prices and magnify the effects of productivity improvements.

In contrast, many services must be produced locally and consumed at the place and time of production. Although digitalisation has increased the tradability of some services, activities such as housing, hospitality, care and many personal services remain largely domestic. Their prices are therefore more closely linked to local wages, real estate costs and productivity than to global production costs.

Taken together, these mechanisms explain why the relative price of services can follow a persistent upward trend. Faster productivity growth and greater capital intensity lower the relative cost of producing goods, while rising incomes sustain demand for services although their prices increase. Differences in tradability further limit the extent to which international competition restrains service prices. The resulting upward trend in the relative price of services therefore reflects structural changes in technology, production and household demand rather than persistently excessive aggregate inflation. This interpretation is consistent with an earlier ECB analysis (Ferrara, 2019) of the gap between services and goods inflation, which highlighted the contribution of differences in productivity growth, labour costs and demand conditions across sectors.

3 Relative-price adjustment in the coming years

The recent deviation of the relative price of services is likely to be temporary. First, the long-run evidence points to a persistent upward trend. This trend is visible in the euro area in the period before the pandemic and, even more clearly, over roughly seven decades of US data. It has persisted through recessions, commodity price shocks and major changes in the structure of production. The historical evidence therefore suggests that large shocks can temporarily displace the relative price of services without necessarily bringing its long-run increase to an end.

Second, part of the recent deviation already appears to be correcting. The exceptional rise in goods inflation was closely associated with the pandemic-related shift in demand, supply-chain disruptions and the energy shock. As these pressures subsided, goods inflation fell rapidly, while services inflation remained higher. The resulting positive inflation differential has already started to move the relative price of services back towards its pre-pandemic path. A recent Bank for International Settlements (BIS) analysis (Amatyakul el al., 2024) similarly argues that the final stage of disinflation is increasingly being shaped by sectoral price dynamics, with the restoration of the relative-price relationship potentially slowing the final stage of disinflation. In section 3.1, we use the historical relationship between services and goods prices to estimate the likely speed of this adjustment and the extent to which it occurs through higher services or goods inflation.

Third, the economic mechanisms underlying the long-run trend in the relative price of services appear to remain largely intact. Productivity growth continues to be more difficult to achieve in many labour-intensive services than in goods production, while wages cannot diverge permanently across sectors. Rising incomes also tend to increase demand for services. Differences in capital intensity and tradability reinforce these effects. At the same time, as discussed in section 3.2, persistently higher energy costs could lower the level of the relative-price path, while artificial intelligence (AI)-driven productivity gains in services could flatten its slope. Unless these countervailing forces become sufficiently strong, services prices are likely to continue to rise faster than goods prices on average.

3.1 Quantifying the speed of relative-price adjustment

The relative-price perspective suggests that some further catch-up remains likely, but the adjustment of the relative price of services towards its long-term trend is expected to be gradual. In our analysis, which

is described in more detail in annex A, we quantify how fast the long-run relationship of services and NEIG prices is restored when the relative price deviates from its historic trend. To this end, we use a vector error correction model with euro area price data on goods and services.

Our estimates indicate that gaps of the relative price of services to NEIG from its historical trend close only slowly, with an estimated half-life of around 14 to 15 quarters. In other words, only about half of the initial gap is expected to disappear within three and a half years. Importantly, most of the adjustment occurs through higher services inflation. When services prices are unusually low relative to NEIG prices, services inflation tends to rise in subsequent quarters, helping to restore their long-run relationship. NEIG inflation, however, also tends to increase and therefore offsets part of this relative-price adjustment, slowing convergence towards the historical trend.

By contrast, in the specification using overall goods prices, both services inflation and goods inflation contribute to closing the relative-price gap, resulting in a considerably lower half-life of around five quarters. Taken together, these results suggest that the remaining catch-up in the relative price of services may continue to support a positive differential between services and goods inflation for some time.

3.2 Could the long-run path have changed?

A full return of the relative price to its historic trend is subject to some uncertainty, however. Major structural changes can shift the level of the relative-price path or alter its slope. The energy shock and the diffusion of AI illustrate these two possibilities.

Higher energy costs could drive the level of relative services prices down

The European energy shock may have lowered the level of the relative-price path. Although wholesale energy prices have fallen substantially from their 2022 peaks, Europe continues to face a more expensive and more volatile energy supply environment. The loss of much of Europe's relatively inexpensive Russian pipeline gas, greater reliance on liquefied natural gas and the destruction of energy infrastructure in the Middle East suggest that the energy shock may have a persistent component.

Because goods production is generally more energy intensive than services production, persistently higher energy costs may have raised the equilibrium price of goods relative to services. This could imply a downward shift in the path of the price of services relative to goods, particularly when overall goods include energy and food. Such a shift would reduce the amount of catch-up required, but it would not necessarily change the underlying upward trend. The productivity and demand forces discussed in section 2 could continue to raise the relative price of services from a lower starting point.

Artificial intelligence could flatten the slope of the relative-price trend

AI could alter the slope of the trend in the price of services relative to goods if it raised productivity in the services sector disproportionately. Whether it does so importantly depends on which parts of the services sector are affected. Duarte and Restuccia (2020) distinguish between nontraditional services, such as communication, transportation and finance, which have experienced stronger productivity growth, and traditional services, such as health, housing and other human-centred activities. Importantly, traditional services, in which the scope for AI-driven efficiency gains may be more limited, account for roughly three-quarters of total services expenditure in their analysis on the USA. The direct effects of AI may thus remain concentrated in a relatively small part of the services sector.

Aghion et al. (2019) show theoretically that greater automation can make nonautomatable activities increasingly important as bottlenecks for aggregate growth. Applied to services, productivity gains in digital and information-intensive activities need not prevent prices from continuing to rise in services that remain difficult to automate. AI may also accelerate innovation in goods production, making its net effect on the price of services relative to goods ambiguous.

Moreover, the translation of AI into aggregate productivity gains is likely to take time. It requires complementary investment, organisational change, worker training and the redesign of production processes. Aldasoro et al. (2024) find that AI can indeed raise productivity and output, but that the effects of AI use differ across sectors and propagate unevenly through the wider economy. There is therefore little evidence that over the next few years AI-driven gains will become sufficiently broad to offset weak productivity growth in traditional services. The current relative-price adjustment is likely to proceed before any material change in the longer-term trend becomes visible.

4 Conclusions and monetary policy implications

The persistence of services inflation can be understood as both the delayed consequence of the shocks observed in recent years and part of a longer-run relative-price adjustment. Energy and supply-chain shocks initially raised goods prices rapidly, while their indirect effects passed more slowly through to wages and services sector prices. At the same time, the tendency of services prices to rise faster than goods prices long predates the recent inflation episode.

Long-run evidence and these structural mechanisms support the expectation that the relative price of services will resume its upward trend. Empirical estimates suggest, however, that the adjustment is likely to be gradual. In the benchmark specification based on NEIG, around half of the initial relative-price gap is expected to close within three and a half years, with the correction occurring primarily through higher services inflation.

A return of the price of services relative to goods to its pre-pandemic trend is nevertheless uncertain. Persistently higher European energy costs may have lowered the level of the relative-price path, particularly in relation to overall goods. AI could eventually flatten its slope if it generates broad productivity gains across services, although such effects are likely to emerge gradually and may remain concentrated in activities that can more readily adopt automation and digital technologies. These considerations may change the extent and speed of the catch-up process, but they do not overturn the continued relative-price growth.

The relative-price perspective helps distinguish between two different sources of persistence in aggregate inflation. One is the adjustment of services prices relative to goods prices, reflecting productivity differentials, changes in demand, tradability and the uneven transmission of supply shocks. The other is a generalised increase in prices that is sustained by excess demand, wage-price feedback or a rise in inflation expectations. This distinction matters because, to fulfil its mandate, monetary policy should respond to the implications of relative-price adjustment for aggregate inflation rather than to the relative-price movement itself, an issue that is also highlighted in the ECB's 2025 Strategy Review (ECB, 2025).

The price of services relative to goods is primarily determined by real economic forces. Although monetary policy may influence this relative price temporarily through its uneven effects across sectors, it cannot determine its long-run path. It should therefore not seek to return the services-to-goods price

ratio to a particular statistical trend. The estimated trend is rather a useful benchmark for interpreting sectoral inflation developments.

Headline inflation of 2% does not require every component of the consumption basket to increase at the same rate. If the relative price of services continues to rise, services inflation will exceed goods inflation on average. This is particularly relevant in the current environment. Services inflation can continue to moderate while remaining above 2%, and goods inflation can remain below 2%, allowing for both a further adjustment of relative prices and a headline inflation rate close to the target. The remaining catch-up in the price of services relative to goods therefore need not conflict with price stability. It may, however, make the decline in services inflation more gradual and contribute to a slower final stage of disinflation for services prices.

Although the relative-price adjustment is primarily driven by real economic forces, policymakers need to assess whether this process remains consistent with medium-term price stability or contributes to more persistent aggregate inflation. The distinction between the two is not directly observable in real time. Elevated services inflation may reflect delayed wage- and cost pass-through, but it may also signal stronger and more generalised domestic price pressures. The relative-price adjustment is more likely to remain consistent with price stability if services inflation continues to moderate, goods inflation remains low, wage growth gradually declines and inflation expectations remain anchored. In this case, services inflation above 2% can be understood partly as the counterpart to low goods inflation and the gradual restoration of relative prices.

The relative-price perspective therefore does not weaken the case for monitoring services inflation closely. Rather, it clarifies how services inflation could be interpreted. The key policy question is not whether services inflation is above 2% in isolation, but whether its persistence is being offset by lower inflation elsewhere and remains compatible with headline inflation at target. By assessing services inflation in the context of developments in other inflation components, monetary policy can accommodate necessary changes in relative prices while ensuring that their second-round effects do not destabilise the aggregate price level.

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Annex A: What closes the relative-price gap between services and NEIG?

We investigate how the long-run relationship of services and NEIG prices is restored when the relative price deviates from its historic trend. To do so, we rely on a parsimonious vector error correction model (VECM; Engle and Granger, 1987), which allows us to link the long-run relative-price gap to subsequent movements in both services and NEIG inflation. The exercise enables us to quantify the speed with which deviations are corrected and identify which price component drives the adjustment and explain how this adjustment is shaped by short-term inflation dynamics.

We start by setting up the long-run relationship between services and NEIG price levels, which we assume to be given by

$$\beta' y_t = \mu + \delta t + z_t. \quad (1)$$

The vector $y_t = (s_t, n_t)'$ contains quarterly euro area services and NEIG price indices expressed as $100\log(P_t^s)$ and $100\log(P_t^n)$, respectively.² Consequently, $s_t - n_t = 100\log(P_t^s/P_t^n)$ denotes the services-to-NEIG log relative price. We restrict the cointegration vector $\beta = (1, -1)'$, such that $\beta' y_t = s_t - n_t$ measures the log price of services relative to NEIG. The intercept μ and the trend coefficient δ determine the long-run path of this relative price. Note that the linear trend allows the two price indices to grow at different rates over the long run. Finally, z_t is assumed to be stationary and measures temporary deviations from the long-run relative price path.

In the first stage, we estimate equation (1) and obtain the residual, which is then the estimate of the relative price gap, $\hat{z}_t$. A positive value of $\hat{z}_t$ indicates that the price of services relative to NEIG is above its estimated long-run trend, while a negative value indicates that it is below trend. In the second stage, we use the estimated relative price gap as the error correction term in the following VECM specification:

$$\Delta y_t = \kappa + \alpha \hat{z}_{t-1} + \Gamma \Delta y_{t-1} + \varepsilon_t, \quad \varepsilon_t \sim \mathcal{N}(\mathbf{0}, \Sigma). \quad (2)$$

The vector $\Delta y_t = (\Delta s_t, \Delta n_t)'$ contains quarterly services and NEIG inflation, $\kappa = (\kappa_s, \kappa_n)'$ contains equation-specific intercept terms, and $\alpha = (\alpha_s, \alpha_n)'$ contains the error-correction coefficients. The matrix Γ contains the coefficients on one lag of quarterly services and NEIG inflation, capturing short-run persistence and spillovers, and ε_t contains normally distributed innovations with zero mean and variance-covariance matrix Σ . We estimate the VECM using Bayesian techniques and place independent standard-normal priors on the coefficients in κ , α , and Γ combined with an inverse-Wishart prior for the residual variance-covariance matrix $\Sigma \sim \mathcal{IW}(4, 0.01I)$.

To isolate the adjustment triggered by an initial gap, we simulate the system in deviations from its no-gap baseline. The intercepts and future innovations therefore drop out. Starting from $z_0 \neq 0$ and $\Delta y_0 = \mathbf{0}$, the model is iterated according to

$$\begin{aligned} \Delta y_h &= \alpha z_{h-1} + \Gamma \Delta y_{h-1}, \quad h = 1, \dots, H, \\ z_h &= z_{h-1} + \beta' \Delta y_h = z_{h-1} + \Delta s_h - \Delta n_h. \end{aligned} \quad (3)$$

² We use monthly HICP indices for services and nonenergy industrial goods (NEIG) for the euro area (changing composition) from Eurostat (dataset code: prc_hicp_minr), covering the period from January 1996 to June 2026 and accessed on 10 August 2026. The data series are seasonally adjusted using X-13ARIMA-SEATS, as implemented in the R package *seasonal* (Sax and Eddelbuettel 2018) and subsequently aggregated to quarterly frequency by averaging the monthly observations in each quarter.

The preceding quarter's gap generates the direct error correction response through α . The matrix Γ then propagates the previous inflation response, capturing persistence and spillovers between the components. The resulting inflation differential updates the gap.

Decomposing the gap correction

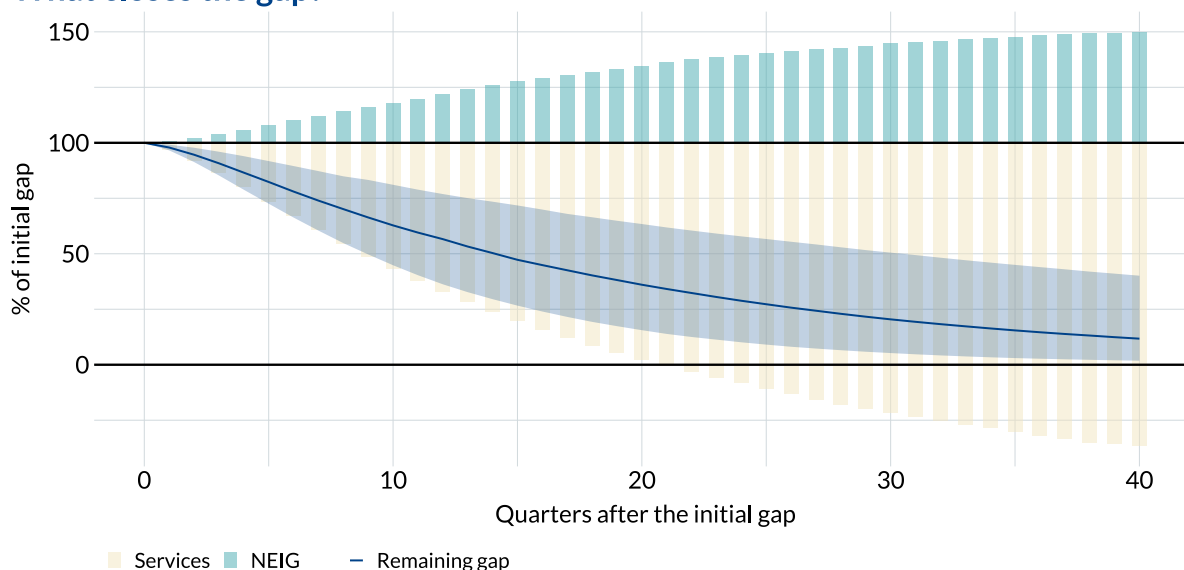
For each posterior draw, we decompose the joint correction path into contributions associated with the two price components. We set the initial gap $z_0 = -1$, implying that the price of services relative to NEIG is approximately 1% below its estimated long-run trend. Let $C_{s,h}$ and $C_{n,h}$ denote cumulative services and NEIG contributions by horizon h , measured in percentage points of the initial gap:

$$C_{s,h} = 100 \sum_{j=1}^h \Delta s_j, \quad C_{n,h} = -100 \sum_{j=1}^h \Delta n_j. \quad (4)$$

Here, Δs_j and Δn_j denote the gap-induced responses of services and NEIG inflation in quarter j , measured relative to the no-gap baseline. Consequently, the percentage of the initial gap closed by horizon h is then simply given by $C_{s,h} + C_{n,h}$. Higher services inflation closes the negative gap, whereas higher NEIG inflation widens it.

Chart 4

What closes the gap?



Note: This chart shows the remaining gap and cumulative contributions of services and NEIG inflation to the joint gap correction. The solid line corresponds to the posterior median estimate; the shaded area corresponds to the 68% credible interval. Contributions of services and NEIG inflation are based on the posterior median estimates.

Source: Author's calculations.

Chart 4 summarizes the simulation for the adjustment of the relative price towards its historic trend over a ten-year horizon. According to the posterior median estimate, half of the initial gap is closed between quarters 14 and 15, corresponding to approximately three and a half years. By this point, cumulative services contribution amounts to roughly 76 percentage points of the initial gap. The NEIG contribution is approximately -26 percentage points. The estimates therefore attribute the correction primarily to services inflation, while the jointly determined NEIG path partly offsets this adjustment. This gradual

correction likely reflects the lower volatility of NEIG prices relative to overall goods prices and the fact that the estimated NEIG response offsets rather than reinforces the services-side price adjustment.

As an additional exercise, we re-estimate the model using the overall goods price index instead of the NEIG price index. The estimated adjustment is substantially faster: Half of the initial gap of prices of services relative to goods closes after approximately five quarters. Around this horizon, services account for roughly 15 percentage points of the initial gap closure, while goods account for approximately 38 percentage points. Unlike in the baseline NEIG specification, both components therefore contribute to closing the gap, with the larger contribution coming from goods. The faster adjustment likely reflects the greater volatility of the overall goods index resulting from the inclusion of energy and food prices.

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