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Domestic and cyclical inflation in the euro area

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Contents

Abstract

The ECB's inflation target is formulated in terms of headline inflation. However, domestically determined inflation features prominently in the monetary policy transmission mechanism and in gauging underlying inflation, making it important to assess it regularly. The ECB monitors various proxies for domestically determined inflation, including: (i) "domestic inflation", which aggregates inflation items with a low import share; and (ii) "Supercore" inflation, which aggregates inflation items found to be sensitive to the aggregate business cycle. This paper provides a detailed overview of the methodologies used to derive both these indicators and updates the relevant input data. It suggests refinements to the methodologies that would also make these measures more robust in future updates. In addition, it explains the changes in these indicators due to the introduction of a new classification of consumer goods and services (European Classification of Individual Consumption according to Purpose (ECOICOP) version 2) for the compilation of the Harmonised Index of Consumer Prices (HICP). First, on domestic inflation, the paper explains the new underlying data on the import share of inflation items made available since the publication of its methodology, and provides an update, combined with a few methodological changes (for example, moving to a constant composition of the included items). Second, with regard to Supercore inflation, the paper explains the challenges of identifying a cyclical inflation indicator for the euro area, especially in the light of the recent large shocks, and explores modelling approaches. It proposes some refinements to the previous methodology, while keeping a Phillips curve approach as a focal point in the analysis. For both indicators, the paper presents the updated indicators and some key properties.

Keywords: underlying inflation, domestic inflation, Supercore, monetary policy, business cycle, Phillips curves

JEL: E31, E32, E52

Non-technical summary

The ECB's inflation target is formulated in terms of headline inflation. However, more domestically determined inflation features prominently in the monetary policy transmission mechanism and in gauging underlying inflation: it is therefore important to assess it carefully.

The ECB relies on indicators that help policymakers to understand the inflationary pressures influenced by domestic and cyclical factors, rather than external shocks such as changes in import prices. Domestic inflation focuses on items with low import content; thus, it is a proxy for non-tradable inflation, which tends to be driven by factors such as cost pressures stemming from the domestic labour market. In contrast, Supercore inflation identifies items that are sensitive to the domestic business cycle. This paper explains the methodologies previously used to construct both indicators, clarifies recent updates to the input data and reviews their methodology with the purpose of making them more robust, for example, for future updates.

Domestic and Supercore inflation are both aggregations of selected items within the HICP basket. The selection is based on the available classification of consumer goods and services at the time of the analysis: the previous versions were based on "ECOICOP version 1". In 2026, the classification of HICP items changed, and is now based on the internationally redesigned Classification of Individual Consumption According to Purpose (COICOP) 2018 – "European COICOP version 2", while the previous classification was discontinued.[1] This meant that the selection of domestic/non-domestic and cyclical/non-cyclical inflation items had to be re-evaluated using the new classification, providing a good opportunity to review and refine the methodologies used to derive these indicators.

The domestic inflation indicator aggregates HICP items with a low import share. Thus, a key step in the construction of this indicator is deriving the import intensity of HICP items. This information is calculated using the "Full International and Global Accounts for Research in Input-Output Analysis" (FIGARO) input-output tables and linking them to HICP inflation items. We refer to the of the FIGARO database to derive the import intensity of HICP items, using ECOICOP version 2.[2] This makes it possible to extend the information on the import share to 2023, making it much more up to date than the previously used information from 2017 (Fröhling et al., 2022). The update has enabled us to investigate how the import intensity of HICP inflation developed during the pandemic and the inflation surge period. We have found a slight decline in the import share during the pandemic and an increase – partially driven by higher import prices – after it.

The previous domestic inflation indicator included HICP items with an import share below 18%. Using the updated and revised input data, we have reviewed this

1 See Eiglsperger et al (2026).

2 See FIGARO (2025 edition), Eurostat.

threshold and find that a lower threshold of 12% would provide a good forecasting performance for medium-term inflation, which is an important criterion for underlying inflation indicators. One important methodological refinement we suggest is using a constant composition of the index for all years, in contrast with the previous practice, which allowed for a change in the composition. The constant composition should be based on the average import share for the last five years for which data are available. Thus, further updates of the indicator may lead to changes in the composition, but these are likely to be small and should be applied over the entire history.

The ECB's Supercore inflation indicator aggregates the core inflation items found to be sensitive to the aggregate business cycle (Ehrmann et al. 2018). For the identification of cyclical items, a Phillips curve framework is used. The previous methodology assessed the relationship between inflation rates for products and the output gap as a proxy for the business cycle. This previous classification process relied on comparing the out-of-sample forecasting performance of the Phillips curve models with autoregressive benchmarks for each core inflation item, i.e. products in the HICP excluding food and energy. As this method led to the inclusion of some countercyclical items, we suggest an identification using the sign and significance of the estimated business cycle parameter, as well as reliance on the unemployment gap, rather than the output gap. While there are only small differences among the versions of cyclical inflation when using different proxies of the business cycle, using the unemployment gap results in a higher correlation between cyclical inflation and the business cycle than the indicators selected using other indicators, while also providing the lowest forecast error among the updated versions. This specification is also in line with some recent papers (for example, Mahedy and Shapiro, 2017, Zaman, 2019). The resulting Supercore index includes items that demonstrate a strong comovement with the business cycle, resulting in higher peaks in its inflation rate during economic growth than the inflation rate of the previous indicator. Although the higher peaks lead to a somewhat worse forecasting performance on the pre-pandemic sample, the stronger link to the business cycle is a desirable property. We also present alternative approaches to this benchmark approach to deriving the cyclical inflation indicator.

The refinement of these measures aims to strengthen the ability to gauge the domestic and cyclical components of inflation. This, in turn, helps policymakers better understand the drivers of inflationary pressures and make informed decisions about monetary policy. Regular updates to these indicators are essential to ensure that they remain robust and effective as economic conditions and data availability evolve.

1 Introduction

Developments in underlying inflation are a key input for the ECB's monetary policy assessment. Underlying inflation is a proxy for the persistent component of inflation, signalling where headline inflation will settle in the medium term after temporary factors have vanished. The transitory and volatile component of inflation is typically more sensitive to global factors than to fundamentals of domestic economic conditions, including monetary policy. While the ECB monitors a range of underlying inflation measures, this paper reviews two measures relating to domestic and cyclical inflation pressures.[3]

The domestic inflation indicator focuses on items with low import content, and is thus a proxy for non-tradable inflation, which tends to be driven by factors such as cost pressures stemming from the domestic labour market.[4] In contrast, Supercore inflation identifies items that are sensitive to the domestic business cycle. Thus, this indicator strips out those items that have historically been heavily influenced by external shocks or by idiosyncratic shocks unrelated to the domestic business cycle.[5] Both indicators rely on selecting a subset of consumption items, while optimising their forecasting performance for medium-term headline inflation, albeit using different methodologies.[6]

For both domestic and Supercore inflation, a thorough re-assessment and an update is needed. First, the selection of domestic/non-domestic and cyclical/non-cyclical inflation items has to be re-evaluated using the new ECOICOP version 2 classification. Second, additional information is available on the input data that is used to derive these indicators. Third, underlying inflation plays a central role in the conduct of the ECB's monetary policy, as reflected in underlying inflation becoming part of the ECB's reaction function.[7] The recent experience of using underlying inflation measures in these data dependent approaches provides new insights, enabling some fine-tuning of the methodologies used to estimate these measures. Fourth, such fine-tuning is also needed following a period of high turbulence, such as the pandemic and the period of high inflation. As the impact of the post-2020 shocks

3 See Banbura et al. (2023), "Underlying inflation measures: an analytical guide for the euro area", *Economic Bulletin*, Issue 5/2023, ECB.

4 See "A new indicator of domestic inflation for the euro area", *Economic Bulletin*, Issue 4/2022, ECB.

5 See Box 2 entitled "The Supercore measure of underlying inflation" in Ehrmann, M., Ferrucci, G., Lenza, M. and O'Brien, D. (2018), "Measures of underlying inflation for the euro area", *Economic Bulletin*, Issue 4/2018, ECB.

6 The GDP deflator can also be thought of as a proxy for domestic inflation, as it discounts for imported inflation. At the same time, it captures price developments beyond consumer prices, such as prices for investment goods or exports that may not be very closely linked to domestically driven consumer price inflation.

7 According to this approach, interest rate decisions are based on the ECB's assessment of the inflation outlook in light of incoming economic and financial data, the dynamics of underlying inflation and the strength of monetary policy transmission. See speech by Philip R. Lane, Member of the Executive Board of the ECB, entitled "Underlying inflation: an update" at the Inflation: Drivers and Dynamics Conference 2024 of the Federal Reserve Bank of Cleveland and the ECB, Cleveland, Ohio, October 24-25.

slowly dissipates, it is time to review the estimations based on longer time series, as far as the unusual shocks since 2020 will allow.[8]

[8] The cut-off date for the analysis was 10 June 2026.

2 Domestic inflation

Euro area domestic inflation captures price dynamics for consumption items that are determined by domestic economic conditions. The domestic inflation indicator at the ECB implements this in an indirect manner by proxying non-tradable inflation and thus monitors this in terms of an aggregation of HICP items with low import content.[9]

The concept of domestically versus externally determined inflation is related to tradability. Tradable goods and services can be consumed in a different location from where they were produced. As a result, their prices and the drivers of those prices are more similar across countries: for example, they are determined to a great extent by the conditions in the world markets. In contrast, the prices of non-tradable products are primarily influenced by developments in the domestic economy (for example, by the amount of spare capacity, including labour market conditions), and reflect relative demand and supply conditions within the country. Tradability is not a binary concept. It should rather be understood as a range. The influence of non-domestic factors on price setting may also change over time, reflecting factors such as globalisation and deglobalisation, the evolution of supply chains and relative cost pressures among countries.[10]

A domestic subindex of overall inflation, calculated based on import contents, is published by only a small number of central banks, probably reflecting data issues and methodological challenges related to the derivation of this indicator.[11] The ECB has been following domestic inflation since 2022 and the indicator has captured special attention in the aftermath of the high inflation period, as it reacted to the inflationary shock with some lag and has been persistent.[12]

2.1 A brief overview of the previous methodology

The previously used composition of the domestic inflation indicator was based on the import intensity of HICP items to 2017. The indicator was calculated in the following steps:

STEP 1 – Calculating the import intensity of HICP items. The calculations were based on World Input-Output Data (WIOD) for 2000 to 2009, and the 2021 vintage of

9 This is reflected in its less frequently used name, “Low IMport Intensity” (LIMI) inflation. See Fröhling, A., O’Brien, D. and Schaefer, S. (2022), “A new indicator of domestic inflation for the euro area”, *Economic Bulletin*, Issue 4/2022, ECB.

10 See S. Zeugner (2013), “Tradable vs. Non-tradable An Empirical Approach to the Classification of Sectors”, CompNet Workshop, ECB, Frankfurt, December.

11 See Jacobs, D. and Williams, T. (2014), “The Determinants of Non-tradables Inflation”, *RBA Bulletin*, September Quarter 2014, and Johnson, N.N. (2017), “Tradable and nontradable inflation indexes: replicating New Zealand’s tradable indexes with BLS CPI data”, *Monthly Labor Review*, Bureau of Labor Statistics, May.

12 See Bańbura, M., Bobeica, E., Bodnár, K., Fagandini, B, Healy, P., Holton, S. and Paredes, J. (2024), “Underlying inflation: Zooming in on goods versus services”, VoxEU, October.

the FIGARO database, for 2010 to 2017.[13] First, the total import content of consumption products was calculated by product.[14] The total import content comprises products' direct import content of private consumption (i.e. extra-euro area imports of goods that are directly consumed by households) and products' indirect import content of private consumption (i.e. extra-euro area imports of intermediate goods that are used in the euro area production of final consumption goods). Second, the consumption products were mapped to the 94 HICP items (according to the COICOP-4 classification in ECOICOP version 1).

STEP 2 – Setting a threshold in terms of import intensity for the inclusion of HICP items in the domestic indicator. The threshold was based on empirical criteria: values of domestic inflation calculated at different thresholds in a given month (month *t*) were compared with the average annual HICP growth rate over the subsequent two years (i.e. months *t+1* to *t+24*) and the bias and mean squared error were calculated. The threshold producing the lowest mean squared forecast error and a low bias over the post global financial crisis (GFC) period (September 2008 to December 2019) was chosen. Based on this sample and benchmark, the threshold was set at 18% for all years and has not been revised since 2022.

STEP 3 – Finally, selected HICP items with an import intensity below the threshold were aggregated using HICP weights in a chain-linked index.

In this approach, import contents changed in each year between 2000 and 2017. The decision was made to allow the composition of domestic inflation to change in each year with the respective import intensities of items in relation to the benchmark. However, the composition was unchanged for the years without up-to-date information: in all years between 2017 and 2025, the information for the year 2017 was used (with the actual annual HICP weights).

2.2 Update of the import contents with FIGARO data

With the consecutive updates of the FIGARO database, it has become possible to update the input data on the import intensity of HICP items. We use the 2025 FIGARO vintage (containing data for all sectors from 2010 to 2023).

Using the 2025 FIGARO database, the import intensity of HICP items can be updated until 2023, i.e. for six additional years compared with when the methodology was developed. The average import share was revised downwards overall for the years 2010-2017, reflecting lower import shares from the FIGARO update, somewhat muted by the COICOP changeover and related changes in the

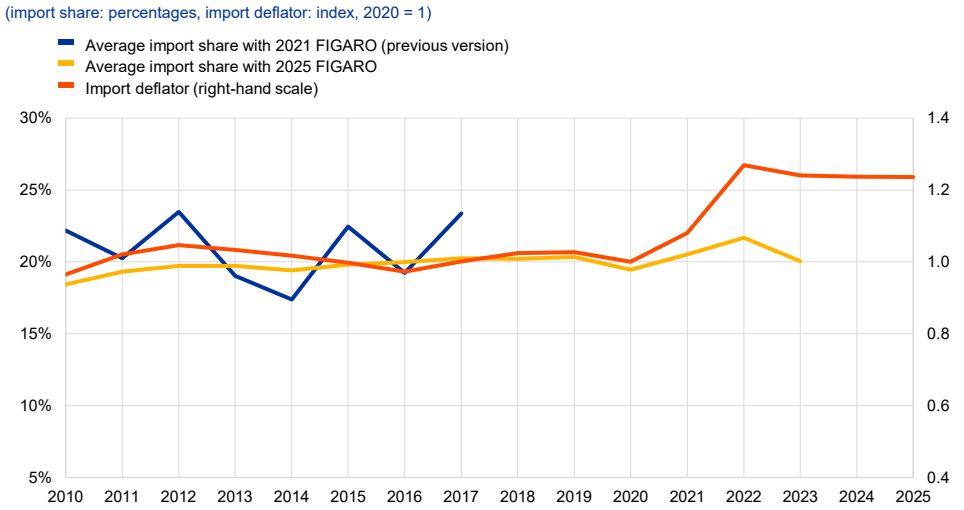
[13] FIGARO includes supply and use tables as well as input-output tables in nominal values at annual frequency, with a lag of two years. FIGARO stands for "Full International and Global Accounts for Research in Input-Output Analysis". The database contains information on input-output linkages from EU countries (including EA countries) to other EU countries, major trading partners (e.g. India, Canada and the United States) and the rest of the world. The import information in FIGARO is in line with trade statistics and national accounts. See Eurostat (2021), "FIGARO methodology", Luxembourg.

[14] FIGARO tables present transactions in nominal million euro, valued at basic prices (excluding taxes on products and including subsidies).

methodology, e.g. the update in the mapping of consumption products to HICP items. The updated average import share also displays smaller volatility over that period.

Chart 1

Average import share of HICP in the euro area and the import deflator



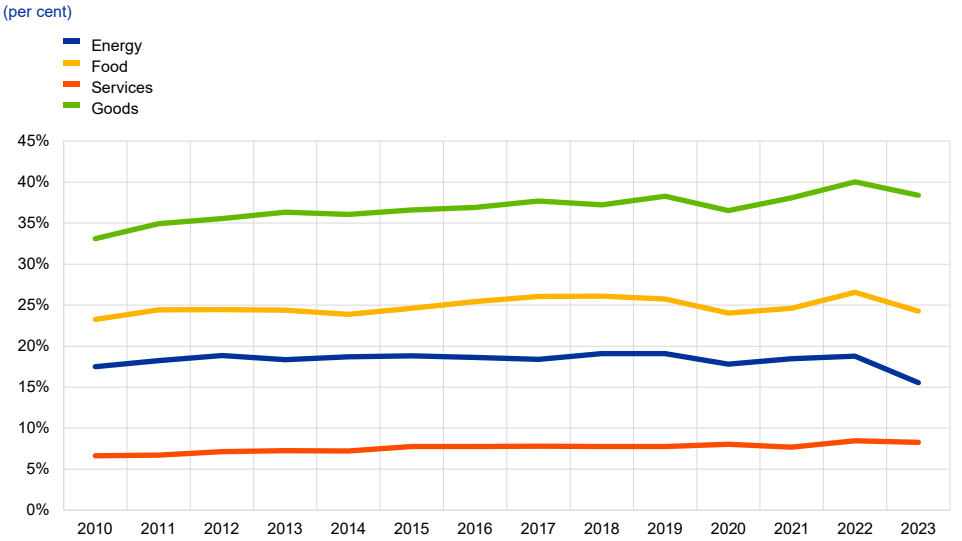
Sources: Eurostat, 2025 FIGARO, 2021 FIGARO and ECB calculations.
Notes: The average import share includes both direct and indirect imports. The latest observations are for 2023 on the average import share and 2025 on the import deflator.

Beyond 2017, there is a slight, temporary decline in the import intensity of HICP items during the COVID-19 pandemic, which is followed by a general increase in 2021 and 2022 and a decrease in 2023 (Chart 1). The slight decline observed in 2020 likely reflects the impact of supply bottlenecks and pandemic-related restrictions. In contrast, the increases in 2021 and 2022 can be attributed, at least in part, to rising import prices, as indicated by the upward movement in the import deflator index. The COICOP update and related changes in the methodology lead to an upward revision in the average import share over the period 2010-2021 but a less pronounced increase in 2022-2023.

Chart 2 shows the import share of HICP items by categories in the latest FIGARO vintage. There are a few observations to note. First, services items have the lowest import intensity on average, confirming some approaches that treat services as non-tradables. Second, there is a slight increase in the trend in import intensity for most categories. Between 2020 and 2023, the import shares by category, with the exception of services, mirror the trend in the average import share of HICP items. A slight temporary decline in 2020 is followed by a general increase in 2021 and 2022, and a stronger decrease in 2023.

Chart 2

Average import share in the euro area by main HICP categories

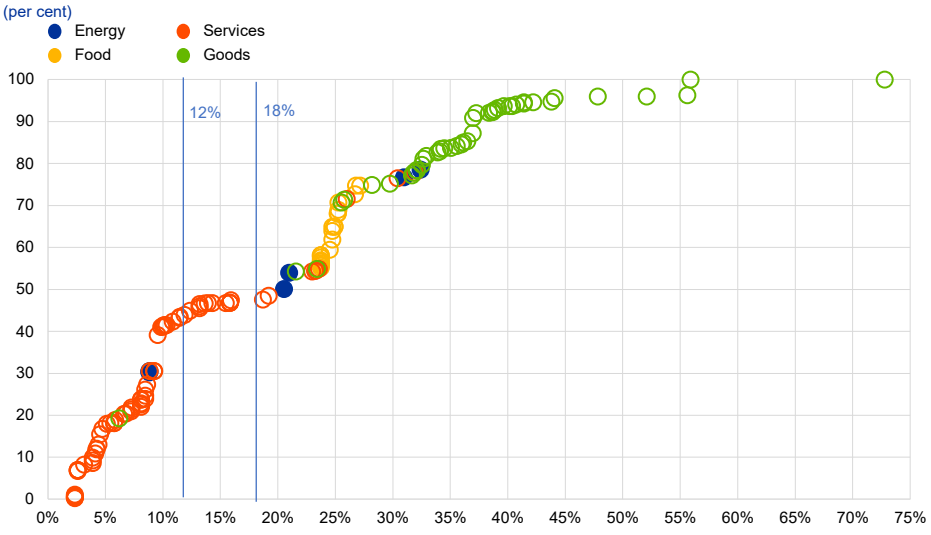


Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: The average import share includes both direct and indirect imports. Import shares are weighted by HICP weights. The latest observations are for 2023.

Beyond the average import content by HICP consumption categories, the distribution of import contents is also remarkably different within categories. Most services items have lower import content than the overall HICP basket average. This means that at a low import content threshold for items to be included in domestic inflation, domestic inflation will include a high share of services items, while other HICP categories will hardly be represented. All food items have a very similar import share of between 24% and 27% (yellow circles on Chart 3). Goods and energy items (green and blue circles on Chart 3), in contrast, show more dispersion in their import content, ranging from 6% to 73% and from 9% to 32% respectively.

Chart 3

Import share of HICP items and their cumulative weight



Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: The x axis shows the import share of items in per cent and the y axis the cumulative HICP weight as a percentage of total HICP weights. All HICP items are sorted by their import contents, using the average import share between 2019 and 2023, and weights are added up cumulatively. 2026 HICP weights are used for the calculations. The vertical lines show the previously used 18% threshold and the updated threshold of 12% for domestic inflation.

Import intensity at the item level tends to change from year to year, with changes sometimes being significant (up to 11 percentage points). This may reflect, to some degree, the volatility of individual import prices, as well as shifting consumption preferences or production patterns. In most cases there is no specific trend, but there are some items with an upward trend in import intensity. The changing degree of tradability of some items highlights the importance of regularly reassessing the composition of domestic inflation measures.

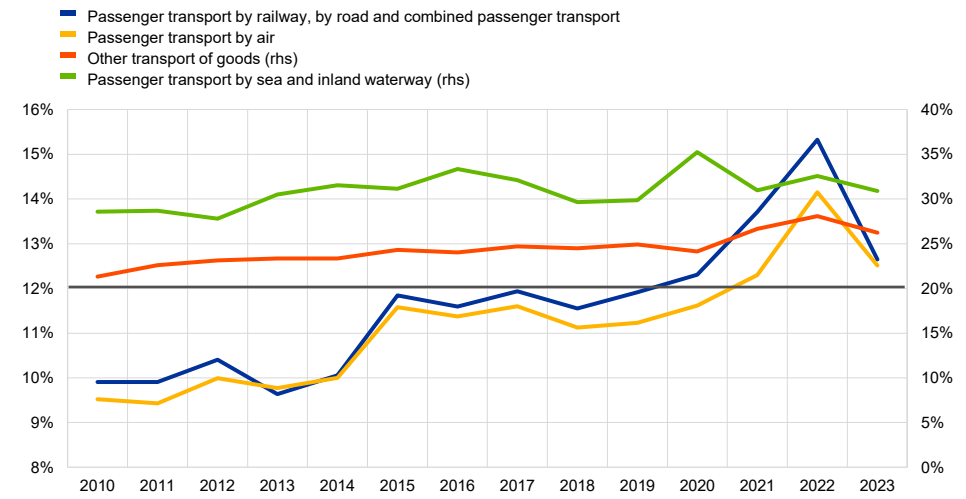
In general, there is an increasing international trade in some services, reflecting in part technological progress, which supports the consumption of services in locations other than their place of origin.[15] We use the input-output table data to illustrate the change in tradability of services and identify the services items in the euro area HICP basket with the largest changes in their import intensity. Among the consumer services, there was some upward movement in the tradability of passenger transports from the early 2010s, although these trends seem to have been partially reversed in 2023.[16] In the case of passenger transport by sea and inland waterway, the upward trend is less steep, but this item has the highest import share among all services items (Chart 4). Transport services are among the items with the highest import intensity within services, likely reflecting not only the high share of energy in their input structure, but also the growing global share of travel.

15 See the box entitled "Will trade in services continue to act as a buffer for euro area export growth?" in Fidora, M. and Gunnella, V., "Past and future challenges for the external competitiveness of the euro area", *Economic Bulletin*, 6/2024, ECB.

16 It should be noted that the HICP legal framework requires the recording of services in the HICP of the economic area where the service is consumed. Thus, services consumed by citizens of euro area countries outside the euro area are not covered in the HICP, while national accounts record them as imports of services to the euro area.

Chart 4

Import intensity of selected transport services items



Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: The average import share includes both direct and indirect imports. The latest observations are for 2023. The horizontal line shows the updated threshold at 12% for domestic inflation.

2.3 Update of identification of domestic items via import content thresholds

The updating of the import shares for domestic inflation is also a good opportunity to review certain modelling choices to derive the indicator and fine-tune the methodology for the import content threshold for inclusion of items. The previously used threshold for inclusion in the domestic inflation indicator had to be re-assessed, due to (i) revisions to import contents in past years, (ii) the ECOICOP update, (iii) additional information for more recent years, in the light of the recent large shocks and (iv) lessons learned about the behaviour of the input data on import shares since the introduction of the indicator. In addition, the methodology was refined in order to enhance its robustness for data updates and revisions, which are now better understood.

The following aspects were considered during the update and methodological refinement. First, the classification should reflect the latest available data, but it should also consider that data are subject to revisions and that there are temporary fluctuations that policymakers should look through. One example of this is the temporary increase in import shares observed in 2021 and 2022, and the subsequent decline in 2023, likely driven by price effects rather than changes in quantities, also reflected in the strong correlation of the average import share of HICP and the import deflator.[17] Second, import shares change between years. The indicator should follow such changes, but frequent changes in the classification of

[17] One example is garments, one of the biggest NEIG items with one of the highest import shares. Between 2020 and 2022, its import share rose by 5 percentage points, before falling by 4 percentage points from 2022 to 2023. This reflects very similar changes in producer prices in textile manufacturing.

items should be avoided. Otherwise, fluctuations in domestic inflation caused by compositional changes could complicate the interpretation of the indicator. Third, while a good performance of the indicator in terms of medium-term forecasting of inflation is desirable, it should not be the only guiding factor in determining a threshold and thus the selection of items: however, in the absence of other guideposts, some expert judgement is necessary.[18]

Against this background, the following refinements are made:

(1) The updated methodology extends the sample of the forecast evaluation, relevant for setting the threshold for inclusion of items in the indicator (Table 1). We make those adjustments to align the methodology with the assessment of underlying inflation indicators.[19] We also check both a pre-pandemic and a full sample in the forecast evaluation. The post-pandemic period of high inflation was an unusual episode, whose effect on underlying inflation indicators should be monitored. However, when deciding on the updated import threshold for inclusion, we focus on the pre-pandemic sample, because that may be more informative as the large shocks of 2020-22 dissipate.

Table 1

Comparison of previous and updated methodologies

	Previous methodology	Updated methodology
Sample for the evaluation	September 2008 to December 2019	Pre-pandemic: April 2001 to December 2019 Full: April 2001 to March 2026
Benchmark	Moving average of inflation covering two years of future data	Moving average of inflation covering two years of future data
Selection of items	All HICP items	Only items included in HICP excluding energy and food (HICPX)
Composition of domestic inflation	Changing every year to 2017, constant beyond that	Constant composition, based on the average import shares over the last five years for which data are available Update with every vintage of FIGARO

(2) Only items in the HICP excluding energy and food (HICPX) are considered to be included in the domestic indicator. [20] The threshold of inclusion of items in the domestic inflation indicator may depend on the list of items included a priori in the selection. Several exclusion-based indicators of underlying inflation exclude a priori the highly volatile energy and food items (for example, the Supercore indicator refers to the HICPX). The previous domestic inflation version included exclusively HICPX items from 2017, as all food and energy items have higher import intensity than the 18% threshold in the FIGARO 2021 data referring to the year 2017. Some

[18] It should also be kept in mind that tradability may differ from the degree of actual international trade for a product. In addition, the import intensity reflects the share of traded inputs, but not, for instance, to what degree the final products are also exported. See also Johnson N.N. (2017), "Tradable and non-tradable inflation indexes: replicating New Zealand's tradable indexes with BLS CPI data", *Monthly Labor Review*, Bureau of Labor Statistics, May.

[19] Bańbura, M., Bobeica, E., Bodnár, K., Fagandini, B., Healy, P. and Paredes, J. (2023), "Underlying inflation measures: an analytical guide for the euro area", *Economic Bulletin*, Issue 5/2023, ECB.

non-HICPX items with lower import content could be reclassified into the domestic basket, subject to data revisions and the threshold used. However, we suggest keeping the focus only on the HICPX when setting up domestic inflation and excluding these items as a rule of thumb. The prices of energy and food items are generally affected by commodity prices and therefore tend to be volatile. As a result, they tend to worsen the forecasting performance of the domestic inflation indicator when they are included.

(3) The updated methodology considers a constant composition of items, based on the average import share of items over the last five years. Import shares are annual data and can change from one year to the next, so they may move around the threshold. This could have caused a change in the composition according to the previous methodology in years for which the import intensity is available, but the composition was kept constant for the most recent years. A *constant composition* domestic inflation index is preferable to this approach. Using a constant composition helps to avoid compositional effects and also makes the indicator more robust and subject to smaller revisions when updating. Due to changes in the import contents from year to year, it is advisable to use an average value for the import intensity. We suggest using the average import contents for the last five years for which data are available to decide whether an item should be included or not for the entire history of domestic inflation. This approach will also smooth out changes in the indicator due to compositional changes in the upcoming updates, while still ensuring that the separation is based on the most recent information.

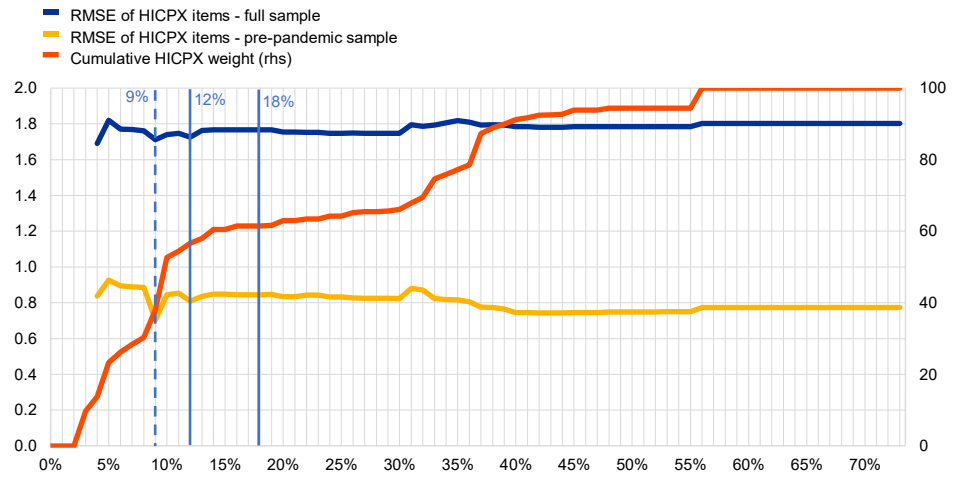
Against this backdrop, we calculated the root mean squared forecast error (RMSE) of different HICPX subsets for medium-term inflation, starting with items of low import intensity and adding ones with larger import intensity.[21] We find a good forecasting performance for the average HICP over the next two years at the threshold of 12% (Chart 5), below the current threshold of 18%. When setting the threshold of inclusion, we consider RMSE as well as HICPX coverage. In the pre-pandemic sample, the RMSE (yellow line) has a minimum of 9%, likely reflecting the role of items related to insurance. However, at this threshold level, less than 40% of the HICPX would be covered. We chose an optimal threshold for inclusion of 12%, balancing a low RMSE with a sufficient HICPX coverage. The RMSE is quite stable for threshold values higher than 12% and the improvement of the RMSE when increasing the threshold is small. The lowest RMSE above the chosen threshold would be at 44%, at which level the share of domestic items within the HICPX would be too high (around 93% of the HICPX basket). The annual growth rate of the aggregations of HICPX items of below 9% to below 12% is quite similar (Chart 6). At the same time, a 12% threshold would also bring satisfactory results over the full sample (Chart 5).

[21] RMSEs refer to the accuracy of the domestic inflation indicator to predict the persistent component of inflation. Since it is unobservable, we use a benchmark. The main benchmark in month t is defined as the annualised HICP growth rate over the subsequent two years, i.e. $1{,}200*(p_{t+h} - p_t)/h$, where p_t is the price level at time t and h is 24 months.

Chart 5

Accuracy of various inflation aggregations by import share

(RMSE: no unit, cumulative weight: percentage)

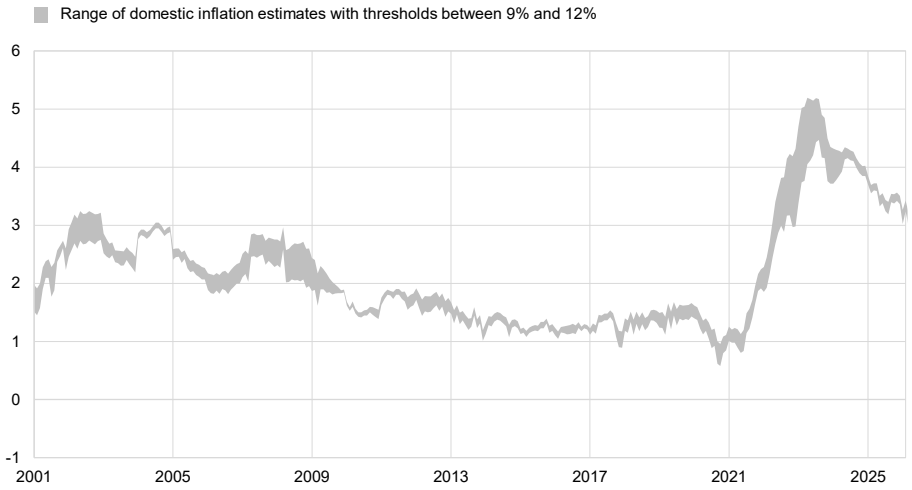


Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: The pre-pandemic sample is taken from April 2001 to December 2019 and the full sample from April 2001 to March 2026. The RMSEs refer to the average annualised HICP growth rate over the subsequent two years as a proxy of the persistent component of inflation.

Chart 6

Range of estimates for domestic inflation using different import content thresholds for inclusion of items in domestic inflation

(annual percentage change)



Sources: Eurostat, 2025 FIGARO and ECB calculations.
Note: The latest observations are for March 2026.

2.4 The updated domestic inflation indicator

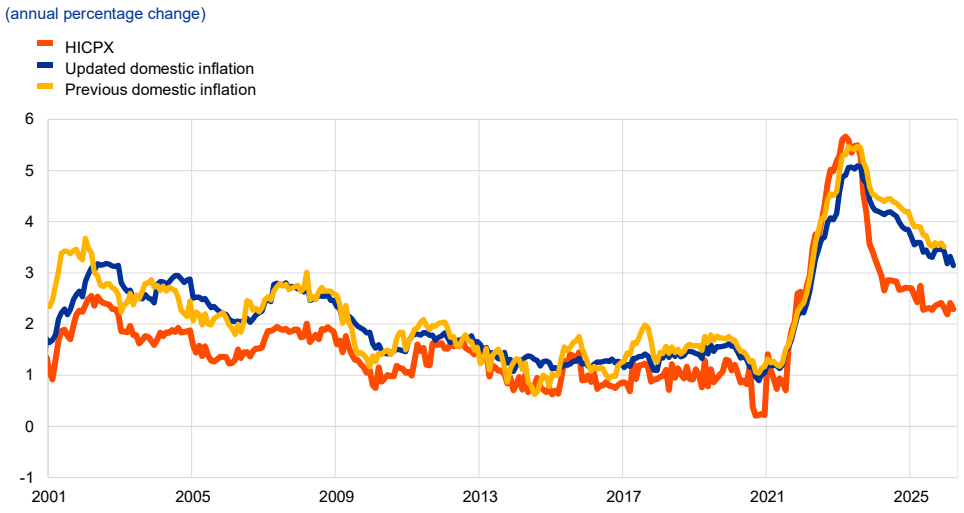
The updated domestic inflation indicator is broadly similar to the previous one (Chart 7). Past values have been revised, reflecting backward revisions of the import

contents, changes related to the new COICOP version, changes to the threshold and the shift from a changing composition to a constant composition. This final adjustment contributes to a smoother, updated version of the domestic indicator.

Like the previous domestic inflation, the updated indicator is also somewhat higher than HICPX inflation until 2020. Between 2020 and 2023, they are broadly similar to the HICPX, and both peak in July 2023. Focusing on the period of disinflation, both previous and updated domestic inflation show some persistence, but the updated version points to a slightly lower rate.

Chart 7

Previous and updated domestic inflation rates and HICPX inflation



Sources: Eurostat, 2025 FIGARO and ECB calculations.
Note: The latest observations are for December 2025 in the case of the previous domestic and for March 2026 for the rest.

The updated indicator covers a higher share of the HICPX, despite the lower threshold. The updated domestic inflation indicator includes 53 items, an increase from the 29 items included in the current version, also reflecting an increase in the total number of the considered items at four digit level from 94 to 118 due to the COICOP update.[22] In addition, the average import share for 2019-2023 of some items is lower than the 2017 import share from the previously used FIGARO vintage (with past data also getting revised down in several cases). The updated domestic inflation indicator covers a higher share of all services items, and a slightly lower share of goods, than the previous domestic inflation indicator (Table 2).

[22] ECOICOP version 1 includes 94 HICP items at 4 digit level. In contrast, the domestic update, which uses ECOICOP version 2, includes 118 HICPX items at 4 digit level.

Table 2

Comparison of previous and updated versions of domestic inflation

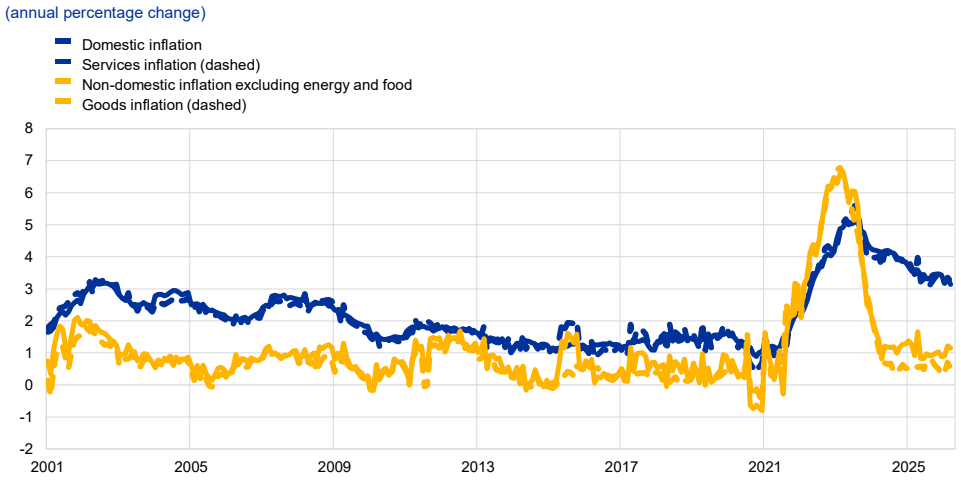
	Previous domestic inflation	Updated domestic inflation
Pre-pandemic RMSE	0.84	0.81
Number of items	29 (of 94)	53 (of 118)
Weight in HICPX	51.1%	56.5%
Weight of services items within domestic	97.4%	98.9%
Weight of goods items within domestic	2.6%	1.1%
Weight of domestic items in total services	77.8%	86.8%
Weight of domestic items in total goods	3.7%	1.8%

Sources: Eurostat and authors' calculations.
Note: 2025 weights are used for the calculation of shares.

The inflation rates of items identified as domestic and non-domestic (also excluding food and energy) differ markedly (Chart 8). In the period from 1999 to 2019, the average rate of domestic inflation was higher than that of non-domestic inflation, resulting in a rise in the relative price of domestic items and likely reflecting the relative unit labour cost pressures between the two.[23] This changed during the inflation surge, which led to stronger inflation of tradable prices, which was, however, less persistent than that of the domestic basket. The inflation rates of domestic and non-domestic HICPX items closely follow those of HICP services and goods, respectively.

Chart 8

Domestic and non-domestic inflation rates compared with HICP services and goods inflation



Sources: Eurostat, 2025 FIGARO and ECB calculations.
Note: The latest data points are for March 2026.

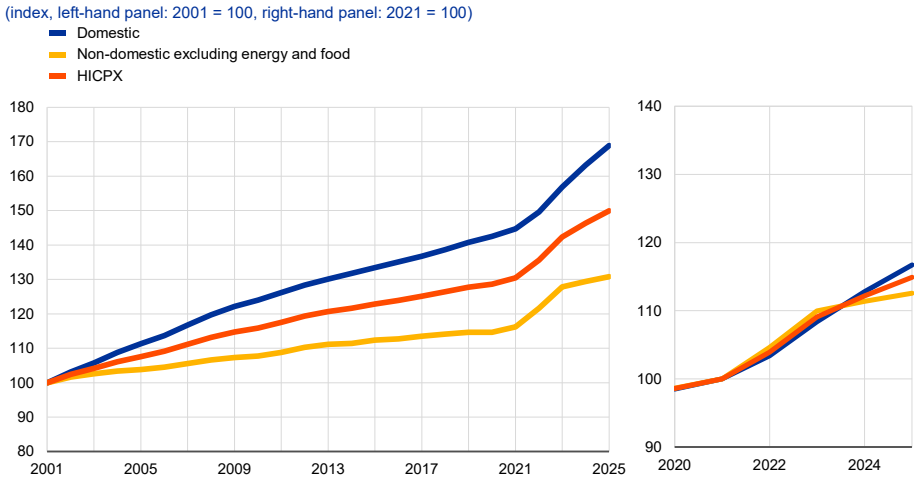
Reflecting the differences in inflation rates, a gap emerged between domestic and non-domestic price levels before the pandemic, temporarily diminishing during the

[23] See Ferrara, L. (2019), "What is behind the change in the gap between services price inflation and goods price inflation?", *Economic Bulletin*, Issue 5/2019, ECB.

inflation surge (Chart 9, left-hand panel). In terms of cumulative growth between 1999 and 2019, domestic prices increased by about 30 percentage points more than non-domestic ones. This gap closed slightly during the inflation surge, but in cumulative terms still the non-tradable HICPX prices rose somewhat more (Chart 9, right-hand panel).

Chart 9

Domestic and non-domestic HICPX price index in the euro area



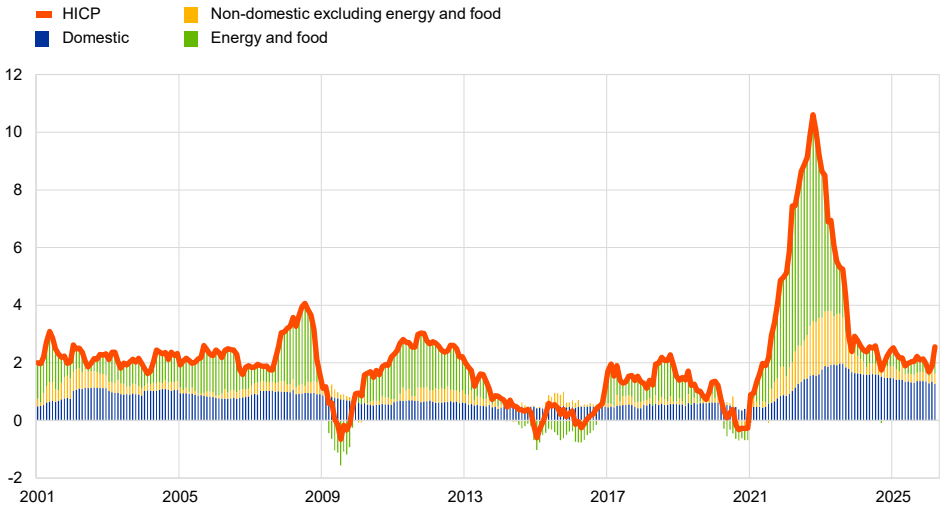
Sources: Eurostat and ECB calculations.
Notes: Annual values, aggregated from monthly frequency. The latest data points are for 2025.

Domestic items had a declining contribution to HICP inflation before the COVID-19 pandemic (Chart 10). The contribution of more tradable, high import content items was somewhat volatile over that period, becoming the main driver in some periods. In recent years, it has primarily been domestic inflation that has made a stronger contribution to HICP inflation than historically.

Chart 10

Decomposition of HICP inflation by tradability

(annual percentage change and percentage point contributions)



Sources: Eurostat, 2025 FIGARO and ECB calculations.
Note: The latest data points are for March 2026.

3 Supercore inflation

The measure commonly used to proxy cyclical inflation for the euro area is the so-called Supercore indicator. This aims to capture the cyclical component of HICP inflation excluding energy and food (HICPX); thus, it abstracts from volatile external and idiosyncratic movements not influenced by monetary policy. In the previous methodology, it focused on items sensitive to the business cycle, as measured by the output gap, i.e. the gap between actual euro area output and potential output. The methodology was published in 2018, in a box entitled "The Supercore measure of underlying inflation".[24] The measure has been published by the ECB and is one of the underlying inflation measures regularly monitored by policymakers.

The relationship between (core) inflation and the business cycle is frequently captured by means of price Phillips curves, which also control for other factors, such as import prices and inflation expectations.[25] While the price Phillips curve framework usually aims to explain developments in overall inflation, there are also approaches using disaggregated information on prices, separating inflation items that tend to comove more strongly with general domestic economic conditions from those that are unrelated. The latter tend to be influenced by international factors or industry-specific factors, or reflect staggered price setting, for example due to government decisions (e.g. administered prices). A notable example for a disaggregated approach is the paper by Stock and Watson (2021), which finds, in the case of the United States, that some inflation components have strong and stable correlations with the cyclical component of real activity, while other components, typically those that are poorly measured or internationally determined, have weak and/or unstable correlations with cyclical activity.[26]

Cyclical inflation is monitored by a few regional Federal Reserve Banks and some Eurosystem central banks. The Atlanta, Cleveland and San Francisco Feds monitor cyclical and acyclical core Personal Consumption Expenditures Price Index developments, i.e. PCE inflation. The Atlanta Fed methodology follows the approach of Stock and Watson (2021), which reweights core inflation items to maximise the correlation with the business cycle, proxied by a combination of various indicators. The Cleveland and San Francisco Feds instead rely on Phillips curve estimations on an item level, using the unemployment gap as a business cycle measure.[27] In a

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24 See Box 2 entitled "The Supercore measure of underlying inflation" in Ehrmann, M., Ferrucci, G., Lenza, M. and O'Brien, D. (2018), "Measures of underlying inflation for the euro area", *Economic Bulletin*, Issue 4/2018, ECB.

25 See Bobeica, E. and Sokol, A. (2019), "Drivers of underlying inflation in the euro area over time: a Phillips curve perspective", *Economic Bulletin*, Issue 4/2019, ECB.

26 See Stock, J.H. and Watson, M.W. (2020), Slack and Cyclically Sensitive Inflation, *Journal of Money, Credit and Banking*, Volume 52, Issue S2, December. For the analysis of US inflation, the Personal Consumption Expenditures (PCE) price index is often used, including to derive cyclical inflation. This has a higher coverage than the alternative inflation indicator based on the Consumer Price Index (CPI), but in terms of methodology, the latter is closer to euro area HICP.

27 Federal Reserve Bank of Atlanta Underlying Inflation Dashboard; Zaman, S. (2019), "Cyclical versus Acyclical Inflation: A Deeper Dive", Economic Commentary 2019-13, Federal Reserve Bank of Cleveland; Shapiro, A. (2025), "Cyclical and Acyclical Core PCE Inflation", Federal Reserve Bank of San Francisco; Mahedy, T. and Shapiro, A. (2017), "What's Down with Inflation?", *FRBSF Economic Letter 2017-35*, Federal Reserve Bank of San Francisco, 17 November.

different approach, Lian and Freitag (2022) use correlations between the unemployment gap and inflation items to separate cyclical core and acyclical core inflation for a range of countries. Deutsche Bundesbank also monitors Supercore, based on a methodology similar to that of the ECB.[28]

3.1 A brief overview of the previous methodology

Separating out the cyclically sensitive part of inflation is not straightforward. First, the measurement of the business cycle is surrounded by uncertainty. Separating cycle from trend, in real time, is subject to considerable uncertainty. Indicators on cyclicality may deviate to a non-negligible degree and are frequently revised backwards.[29] Such uncertainty has been particularly evident in recent years.[30] Second, methodologies to identify items that are sensitive to a given indicator of the business cycle are subject to design choices. For example, the results depend on the business cycle proxy used, the sample and the exact specification of the Phillips curve estimation. Two benchmarks may be used to assess these choices: first, to maximise the comovement with the business cycle; and second, to maximise the forecasting performance of the resulting cyclical inflation series. Like setting the threshold for domestic inflation, selecting cyclical items is preferably based on objective criteria, which are both robust and flexible. However, some uncertainty and judgement cannot be avoided.

In the approach previously followed by the ECB, the HICPX was decomposed into a cyclical part and a non-cyclical part using a Phillips curve (PC) framework. PCs were estimated for each of the 72 HICPX COICOP items at a four-digit level of breakdown in the ECOICOP version 1 classification. Estimations were based on quarterly data (i.e. seasonally adjusted monthly price data aggregated to quarterly frequency) and the dependent variable was the quarter-on-quarter change in the prices at the item level. Each specification included an autoregressive element and the output gap as a proxy of the business cycle.[31] Three specifications were used, in which the output gap was lagged by one quarter, two quarters and both, respectively. The selection of items was based on a forecasting exercise. First, for each item, out-of-sample conditional forecasts were generated for one quarter to four quarters ahead using the PC models. Their performance was evaluated by computing the RMSE across 30 extending samples (always starting in 2016, and with the last sample ending with the last available quarter). Similarly, the forecasts were prepared using a benchmark autoregressive – AR(1) – model and the RMSE was calculated for the same sample.

28 See "Recent developments in underlying inflation in Germany", *Monthly Report – May 2025*, Bundesbank publications.

29 See for example: Barkema et al. (2020), "What Do We Talk About When We Talk About Output Gaps?", *IMF Working Paper*, WP/20/259, November and Barbarino et al. (2020), "Which Output Gap Estimates Are Stable in Real Time and Why?", *Finance and Economics Discussion Series*, Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington, D.C.

30 See Bodnár, K., Le Roux, J., Lopez-Garcia, P. and Szörfi, B. (2020), "The impact of COVID-19 on potential output in the euro area", Economic Bulletin, Issue 7/2020, ECB and González-Torres, G., Gumiel, J.E. and Szörfi, B. (2023), "Potential output in times of temporary supply shocks", Economic Bulletin, Issue 8/2023, ECB.

31 The output gap estimates are taken from the Eurosystem/ECB macroeconomic projections for the euro area. The output gap is calculated as the deviation of the euro area output from potential output, where the latter is aggregated from potential output estimates for individual euro area countries.

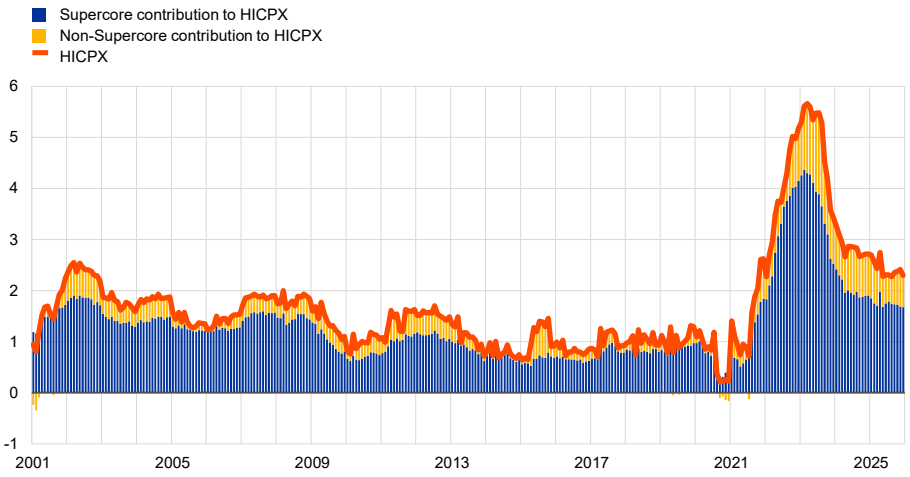
If any of the PC specifications outperformed the AR(1) model in terms of average RMSE over the 30 periods, the corresponding item was classified as cyclical and included in the Supercore index.

Using this methodology and estimations with data from 1996 to 2018, 47 HICPX items were identified as cyclical. Cyclical items were aggregated through chain-linking to provide the Supercore measure. In terms of weights, cyclical items included in the previous Supercore indicator covered 70% of the HICPX and explained most of the developments in HICPX inflation (Chart 11).

Chart 11

Decomposition of HICPX to Supercore and non-Supercore items – previous methodology

(annual percentage change, percentage point contribution)



Sources: Eurostat and ECB calculations.
Notes: Based on the methodology published in 2018. The latest data points are for December 2025.

3.2 An updated Supercore indicator for the euro area

As with domestic inflation, the input data used to estimate cyclical inflation can be updated. First, there is a need to switch to ECOICOP version 2 items, while keeping the focus on the four-digit-level breakdown (which have long time series to cover some business cycles). The switch to the new classification means that some services components are better identified, the number of items is much higher and in some cases there are somewhat longer time series. Due to the separation of certain items or reclassification of subcomponents, some series have changed considerably. Second, the time series for estimating the business cycle have become longer and estimates for past periods have been revised since the introduction of the Supercore indicator.

However, updates of the Supercore indicator have been significantly challenged since the COVID-19 pandemic. The output gap and price developments decoupled as output gap estimates plummeted in 2020, while prices remained relatively stable. Subsequently, the euro area economy was hit by additional supply shocks, further

disrupting the historical correlation between the output gap and inflation. Certain items, mainly goods, were strongly affected by the negative supply shocks, while some others, mainly services, may have been influenced by a combination of positive demand and negative supply shocks. The situation is further complicated by the unavailability of certain prices (for example for travel and personal services) during the COVID-19 pandemic, for which imputation was used.[32] This has made it challenging to separate the impact of the business cycle on prices from other factors in the years since 2020. Our approach is thus still based on a pre-pandemic sample, as including the post-2020 data points in the estimation significantly decreases the number of items that are found to be cyclical.

Recent papers on this topic (for example, Zaman, 2019 and Stock and Watson, 2020) have also provided inspiration for the fine-tuning of the previous methodology. First, while the PC framework remains a benchmark for this exercise, the information on the sign and significance of the estimated parameters should be used, to ensure that only items whose prices rise during periods of economic tightness are considered cyclical. In the previous methodology, the selection of Supercore components did not account for the sign of the estimated coefficients (when the indicator, was introduced, accounting for the sign was found to be less preferable, see footnote 19 in Ehrmann et al., 2018). This led to the inclusion of five items whose prices actually had a negative relationship with the business cycle between 1999 and 2019.[33] Second, the selection could be made based on the in-sample properties of the PC, rather than a forecasting exercise, as the results of the latter may in part be influenced by the accuracy of output gap projections. Finally, the sensitivity of the method to samples and business cycle proxies (and their revisions) should be checked. Our fine-tuning suggestions address these points.

3.2.1 A refined approach to deriving euro area cyclical inflation

As in the previous methodology, a PC framework is central to our refined approach. However, rather than a forecasting test, we use the sign and significance of the coefficient on our chosen cyclical measure in the PC to determine whether the item is deemed cyclical and subsequently included in the updated Supercore index.

The methodology is implemented in the following steps:

First, we estimate the PC with a business cycle measure for each of the 72 HICPX items over the sample period Q1 1996 to Q4 2019, thus excluding the pandemic and the high inflation period.[34] The Phillips curve specification is estimated using the following reduced-form equation:

$$y_{i.t} = \alpha + \rho * y_{i,t-1} + \beta_i * cyclical\,measure_{t-1} + \varepsilon_t$$

[32] See Eurostat (2020).

[33] Namely: Refuse collection, Postal services, Information processing equipment, Maintenance and repair of other major durables for recreation and culture and Insurance connected with the dwelling.

[34] The estimations were carried out using the time series available by the end of April 2026.

where $y_{i,t}$ is the annualised seasonally adjusted quarter-on-quarter growth rate of the price of item i.[35]

On the selection of the business cycle proxy, we take inspiration from Stock and Watson (2020). who use a range of business cycle proxies for the United States to create a composite indicator. Their composite indicator is based on combining proxies of the general business cycle (gross domestic output and capacity utilisation ratio) with labour market indicators (establishment employment, unemployment rate, short-term (below six months) unemployment rate, employment-population ratio and employment-population ratio for ages 25–54). All indicators are band-pass filtered and standardised before their common component is taken. We use a somewhat different set of quarterly indicators of the business and labour market cycle, in part related to data availability.

We use four business cycle measures: (i) the euro area output gap (i.e. the gap between actual euro area output and its potential level); (ii) the unemployment rate; (iii) the unemployment gap (i.e. the gap between the actual euro area unemployment rate and its estimated trend); and (iv) a composite indicator of various business cycle proxies. Our composite indicator is constructed using the output gap, an alternative output gap that is estimated using a Christiano-Fitzgerald band-pass filter, a survey-based output gap, the unemployment gap and the (back-casted) vacancy-to-unemployment ratio.[36] Thus, it also combines various indicators from the general economy and the labour market. The unemployment gap and unemployment rate are transformed so that they have the same sign as the output gap and the first principal component.

Our analysis uses the most recent estimates of the business cycle indicators, although it focuses on the pre-pandemic (1999-2019) sample.

The business cycle indicators display a clear comovement, at least before the pandemic (Chart 12). The inverted unemployment rate and the first principal component follow broadly similar dynamics, capturing key turning points in the labour market and wider economic activity. While the first principal component tends to display slightly more pronounced fluctuations, especially during downturns, it still tracks with the other measures, suggesting that the underlying cyclical signals are consistent across different indicators. However, over the past two years, some divergence has emerged. While the inverted unemployment rate has remained relatively stable and elevated, the first principal component has shown a modest decline.

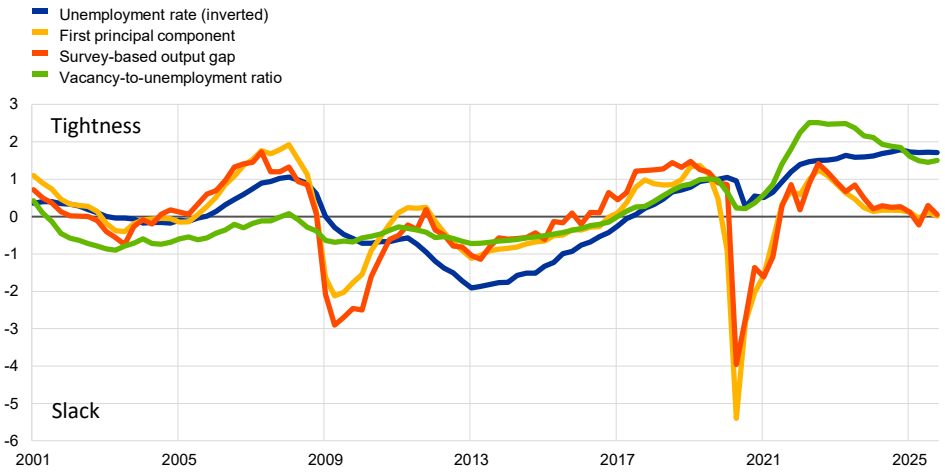
[35] To account for the uncertainty of the seasonal adjustment, we apply two adjustments: first, we seasonally adjust the monthly series and aggregate this to a quarterly frequency; second, we first aggregate to a quarterly frequency and then do the seasonal adjustment. If an item is found to be cyclical in any of these approaches, we consider it to be cyclical.

[36] The survey-based output gap is based on Szörfi (2015). On the band-pass filter, see Christiano and Fitzgerald (1999).

Chart 12

Different indicators of the business cycle

(percentage of labour force; percentage point difference from trend; no unit, per cent)



Sources: Eurostat and ECB calculations.
Notes: Series are normalised and the unemployment rate is inverted. The vacancy per unemployment ratio was backcasted using the European Commission's business survey indicator on the availability of labour limiting production. The latest observations are for the fourth quarter of 2025.

We also test the usefulness of adding import prices to the equation as an additional variable, to control for external shocks. This can improve the fit for some items.

Second, we identify those items which have a positive and statistically significant coefficient at the 10% level, β_i, and select those to be included in the Supercore aggregation. Those with insignificant and/or negative coefficients are taken to be non-cyclical. In some cases, unusual changes in the price level of certain items can influence the size of the estimated parameter and its significance. We apply a correction for such outliers by adding dummy variables to the equations. The dummies are generated using the entire distribution of the annualised quarter-on-quarter rates of all items in the estimation period.

Finally, the items identified as cyclical are aggregated using the HICP chain-linking formula. The various versions of the indicator (i.e. based on different cyclical measures and with and without import prices) are compared in terms of their correlation with the business cycle measure and their forecasting properties. When calculating the correlation of the series with the business cycle, we always use the same business cycle indicator to calculate the correlation, as in the estimation.

Additionally, a three-month moving average of year-on-year growth was suggested earlier for the Supercore indicator. We suggest dropping this version of the indicator because, as for other underlying inflation indicators, the focus should be on the year-on-year growth rate (i.e. the same transformation as used for HICP inflation).

3.2.2 The updated Supercore indicator

Among the several changes that affected the re-estimation of the Supercore indicator, the change of selection method had the biggest impact. The change in the classification of items also explains a sizeable part of the revision, while the choice of the business cycle measure had a small impact (i.e. the indicators are similar to each other when only the business cycle measure is changed). When applying the new selection methodology on the HICPX items, fewer items get selected, both in the ECOICOP version 1 classification and in the ECOICOP version 2 classification.

Among all the versions considered, the specification with the unemployment gap has the highest correlation with the business cycle (the correlation coefficient – with the unemployment gap – is 0.76, higher than the correlation of the previous Supercore with the output gap at 0.61), while the RMSE for the medium-term horizon is smaller than when using the output gap, the Principle Component Analysis (PCA) or the unemployment rate. Using the unemployment gap as a business cycle proxy is also in line with the recent literature.[37] We also find a slight advantage in including import prices in the equation. Thus, our preferred specification for the in-sample method is the one with the unemployment gap and import prices.

The refined methodology identifies 29 cyclical items out of 118 HICPX items in ECOICOP version 2. Of the HICPX items, ten are automatically assigned to non-cyclical inflation, because they are too short (for example, only starting in 2026), or have gaps, or are missing entirely for the euro area. The 29 cyclical items constitute a lower share of the HICPX than the 47 cyclical items identified according to the previous, forecast-based method (see Table 3). The change is partly due to the change in ECOICOP classification: many COICOP items were separated into more than one new item, and not all of them were found to be cyclical. But the impact of the change in selection methodology is more significant, and increases the cyclicality of the updated indicator.

Table 3

Comparison of previous and updated versions of the Supercore indicator

	Previous Supercore	Updated Supercore
Pre-pandemic RMSE	0.77	0.90
Number of items	47 of 72	29 of 108 (118)
Weight in HICPX	69.6%	37.5%
Weight of services items within Supercore	70%	65.6%
Weight of goods items within Supercore	30%	34.4%
Weight of Supercore items in total services	76.1%	38.4%
Weight of Supercore items in total goods	58%	36.3%
Correlation with the cyclical measure	0.61	0.76

Sources: Eurostat and authors' calculations.

[37] See the Cleveland and San Francisco Fed approaches cited in footnote 25.

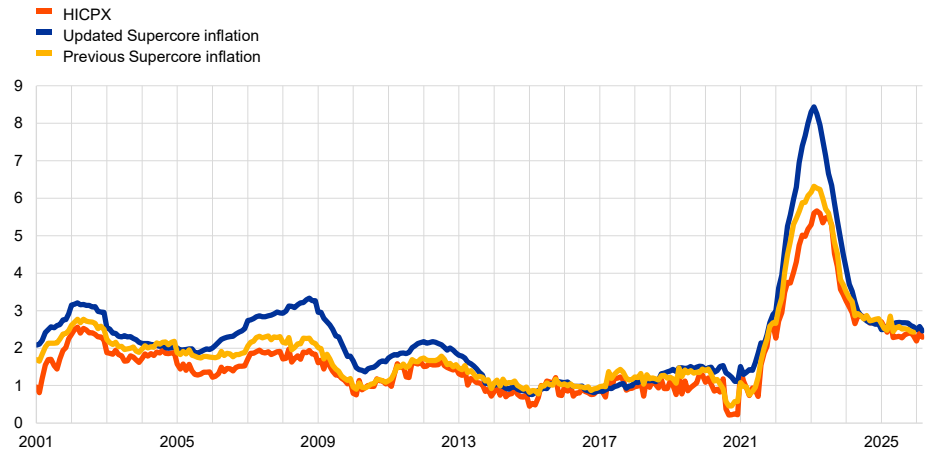
Notes: 2025 weights are used. There are 118 HICPX items at the COICOP four-digit level, but ten were excluded from the estimations due to missing data, short series or gaps. The RMSE is for the period January 2002 to December 2017. The correlation with the output gap is for the period Q1 2001 to Q4 2019, where the cyclical measure is lagged by one quarter. The correlation for the updated Supercore is calculated with the inverse of the unemployment gap.

In terms of forecasting medium-term inflation, the updated Supercore is somewhat worse than the previous version. When using the in-sample method to select the cyclical items, the resulting RMSE of the indicators is always higher than that of the previous one, including the specification with the unemployment gap. Although the year-on-year growth of the updated index broadly comoves with the existing indicator, there are some differences. Notably, the updated indicator's growth rate has a higher peak in periods with tightness or overheating of economic developments, primarily before the GFC (Chart 13). This is a preferable result, and reflects in part that the method selects cyclical items more accurately. However, the higher peak before the GFC causes a higher RMSE in that period, as it was followed by low inflation rates. In the remaining periods, the two indicators tend to have a similar forecasting performance (Chart 14).

Chart 13

Previous and updated Supercore inflation rates and HICPX inflation

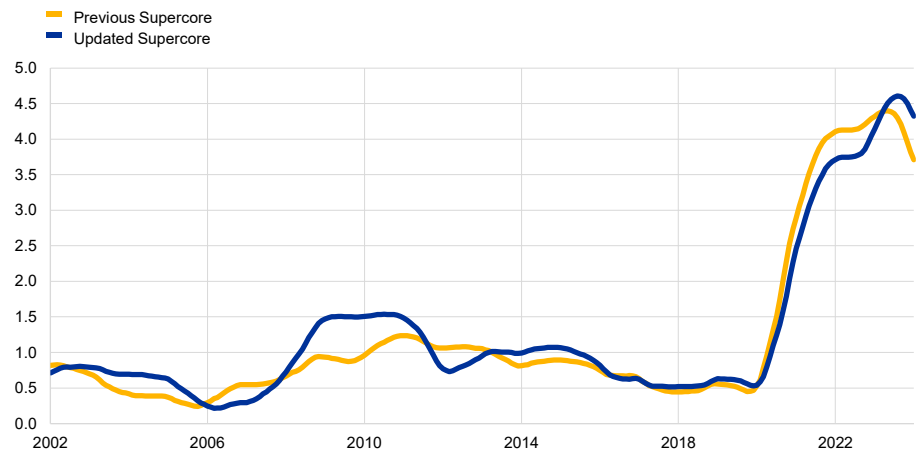
(annual percentage change)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for December 2025 in the case of the previous Supercore and for March 2026 for the rest.

Chart 14

Rolling RMSE of previous and updated Supercore inflation rates for medium-term inflation



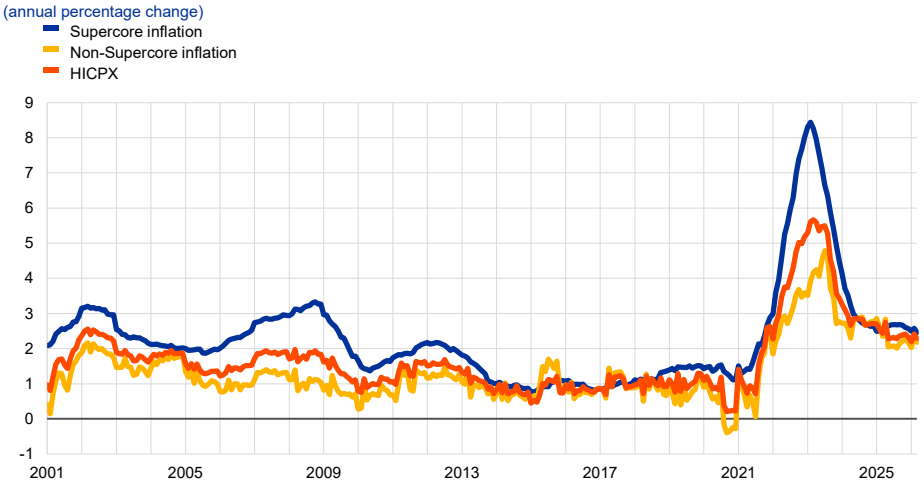
Sources: Eurostat and ECB calculations.
Notes: The RMSEs refer to the average annualised HICP growth rate over the subsequent two years as a proxy of the persistent component of inflation. Rolling RMSEs are calculated over three-year periods: the y axis refers to the end of that period. The latest observations are for March 2024 (with an RMSE for March 2026).

Comparing the behaviour of cyclical items with an index comprising those HICPX items that do not appear in the Supercore can also be instructive (Chart 15). The Supercore inflation rate has usually been higher than the non-Supercore rate since 1999. They were closest to each other for most of the low inflation period, with the difference being less than 1 percentage point between 2010 and 2020. Supercore inflation was notably higher at times when economic growth was greater than potential growth (2007 and part of 2008), and even more so during the inflation surge in 2022-23. This may suggest that cyclical items also react to supply shocks more strongly than other items. The inflation rate of non-cyclical items shows more volatility. In addition, items not found to be cyclical on average react to changes in demand and supply conditions either with a lag or not at all. This staggered reaction is partially explained by the overlap between non-cyclical items with administered price items. In 2024 and early 2025, the non-Supercore inflation rate was slightly above cyclical inflation, also underpinning the impact of staggered prices.[38]

[38] On administered price items and staggered repricing in general, see also Bodnár, K., Fabbri, A., Rubene, I. and Zekaite, Z. (2025), "Where do we stand with inflationary pressures arising from price resetting?", *Economic Bulletin*, Issue 4, ECB.

Chart 15

HICPX, Supercore and non-Supercore inflation rates

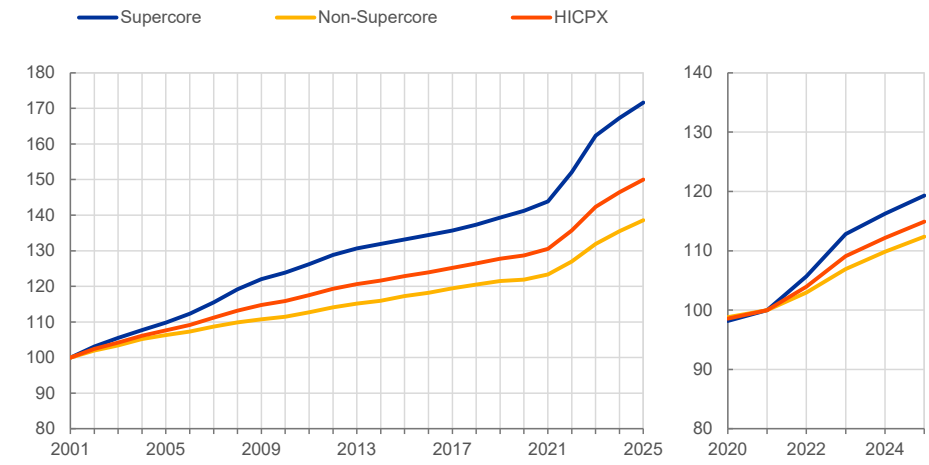


Sources: Eurostat and ECB calculations.
Note: The latest observations are for March 2026.

Since cyclical inflation was above that of the non-Supercore aggregation in most periods, a persistent gap emerged between the two indices, opening slightly more in recent years (Chart 16, left-hand panel). In terms of cumulative growth between 2001 and 2025, the Supercore price index increased by about 33 percentage points more than non-cyclical prices. Since the start of the inflation surge, Supercore has risen more than non-Supercore overall, with a difference in cumulative growth of about 8 percentage points (Chart 16, right-hand panel).

Chart 16

Cumulative growth for Supercore and non-Supercore prices

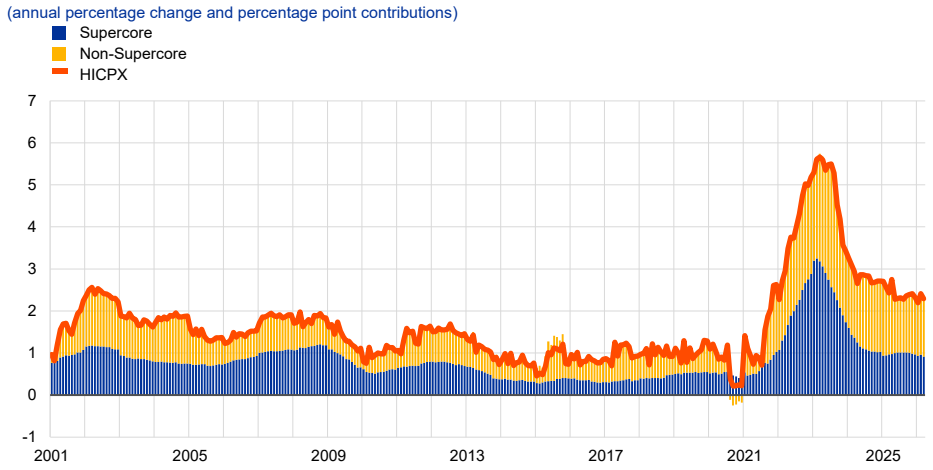


Sources: Eurostat and ECB calculations.
Notes: Annual values, aggregated from monthly frequency. The latest observations are for 2025.

The updated cyclical inflation indicator allocates a somewhat larger part of the changes in the HICPX to the non-cyclical part (Chart 17). The contribution of non-cyclical items is more volatile than that of cyclical items. More recently, cyclical and non-cyclical items have contributed similarly to HICPX inflation.

Chart 17

Decomposition of HICPX inflation by cyclicality



Sources: Eurostat and ECB calculations
Note: The latest data points are for March 2026.

Box 1

Alternative ways to estimate euro area cyclical inflation

This box looks at two alternative ways to estimate euro area cyclical inflation. First, we run various PC specifications with different business cycle proxies and all possible specifications, and consider the share of specifications with positive and significant business cycle parameter estimates. Second, we consider a reweighting, similar to Stock and Watson (2021).

We have used different proxies of the business cycle, choosing one of those specifications, but the information content from all specifications could also be utilised differently. We consider the same business cycle proxies as in the baseline specification: the output gap, the unemployment rate, the unemployment gap and a first principal component of various indicators. We use one lag or two lags of the business cycle indicators in the equations. We also use two alternative forms of seasonal adjustment for the price indicators: seasonal adjustment of the monthly series, then aggregation to a quarterly frequency; and seasonal adjustment after the aggregation of the monthly data to a quarterly frequency. In addition, we ran all Phillips curves with and without outlier correction and with and without import prices. Thus, we use the estimated coefficients from 64 equations in total. We classify each item based on the sign and significance of these coefficients. An item is considered highly cyclical if the coefficient of the business cycle variable has the right sign and is statistically significant at the 10% level in more than 60% of the specifications. We notice that there are several HICPX items that are not found to be cyclical in any of our specifications. Items for which the business cycle coefficient is never significant in any specification

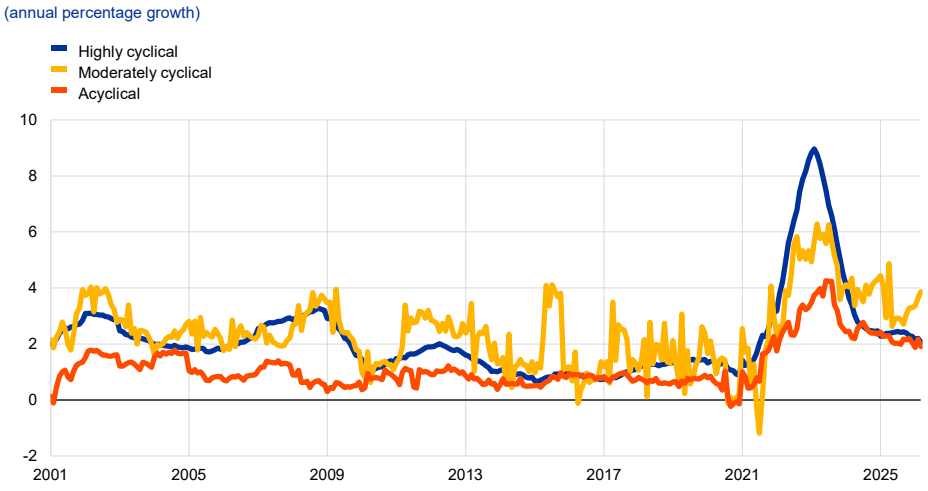
are classified as acyclical. Those that are cyclical in 0% to 60% of the specifications fall into the moderately cyclical category.

With this approach, we find that out of the 118 HICPX items, 25 are highly cyclical, 19 are moderately cyclical, and 74 (including ten for which the estimations could not be carried out) are acyclical. Thus, most items are not cyclical in any of the specifications. Both the highly and the moderately cyclical categories include relatively more service items (in terms of weight) than the acyclical category. The year-on-year growth rate of highly cyclical items tends to be higher during periods of heightened inflationary pressures, such as before the GFC and the recent inflation surge (Chart A). The highly cyclical category also plays a key role in driving overall HICPX inflation (Chart B). Overall, it is broadly similar to the updated Supercore indicator. At the same time, the inflation rate of the moderately cyclical items is broadly similar to that of the highly cyclical items, but shows significantly higher volatility, explaining why these items are found to be cyclical only in a subset of the specifications. The year-on-year growth rate of acyclical does not seem to react to inflationary pressures stemming from the domestic economy.

Another alternative approach to deriving cyclical inflation is similar to that of Stock and Watson (2021), who calculate the weights that would maximise the correlation with the business cycle. They apply a non-linear least squares estimation method, which, however, gives unsatisfactory results for the euro area, providing weights of zero for the vast majority of HICPX items. As an alternative method, we used the PC parameter estimate for the unemployment gap to generate weights, such that a more strongly correlated HICPX item receives a higher weight than a less strongly correlated item, while we gave weight of zero to all items with a negative or positive, but insignificant parameter estimate.[39] In terms of the annual growth rate, the resulting series is broadly similar to the updated Supercore index presented in Section 3.2 (Chart C).

Chart A

Inflation rate of highly cyclical, moderately cyclical and acyclical inflation



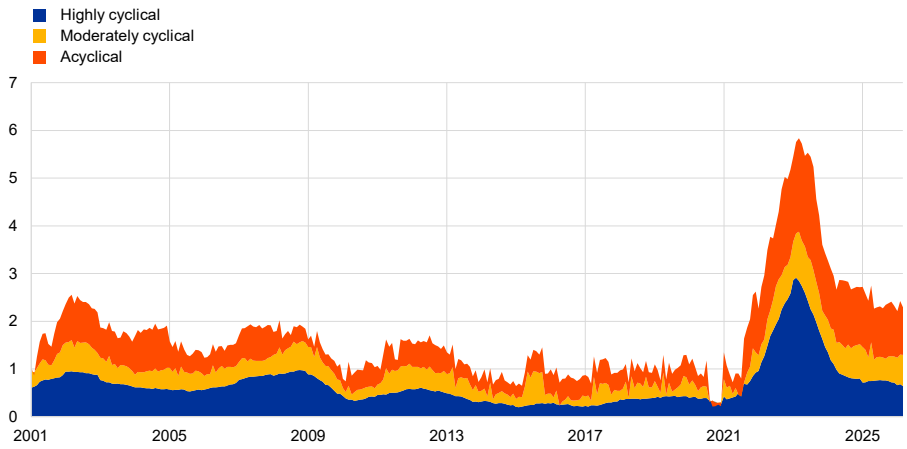
Sources: Eurostat and authors' calculations.
Note: The latest observations are for March 2026.

[39] We applied some outlier adjustment for some items by introducing dummy variables for very high and very low quarter-on-quarter growth rates of prices.

Chart B

Decomposition of euro area HICPX inflation by cyclicality

(annual percentage growth and percentage point contribution)

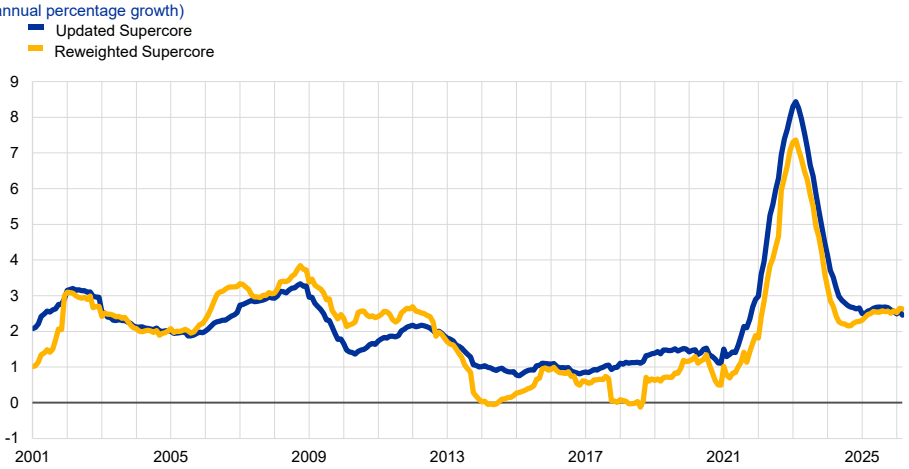


Sources: Eurostat and authors' calculations.
Note: The latest observations are for March 2026.

Chart C

Updated Supercore inflation and an alternative cyclical inflation estimate based on reweighting

(annual percentage growth)



Sources; Eurostat and authors' calculations.
Note: The latest observations are for March 2026.

4 Conclusions

Underlying inflation measures aim to capture the more permanent factors driving inflation. For monetary policy, the part of inflation affected by domestic factors is of key importance, and domestic and Supercore inflation feature prominently from this point of view. By carefully monitoring and refining these measures, the ECB is enhancing its ability to gauge the domestic and cyclical components of inflation. This, in turn, helps policymakers better understand the drivers of inflationary pressures and make informed decisions about monetary policy. Regular updates to these indicators are essential to ensure that they remain robust and effective as economic conditions and data availability evolve. This includes future developments when new components are added to the HICP basket, for example if owner-occupied housing is included in the indicator.

5 Bibliography

Altieri, C., Furbach, N. and Schuler, T. (2024), "Box 1 Will trade in services continue to act as a buffer for euro area export growth", "Past and future challenges for the external competitiveness of the euro area", *Economic Bulletin*, Issue 6/2024, ECB.

Bańbura, M., Bobeica, E., Bodnár, K., Fagandini, B., Healy, P. and Paredes, J. (2023), "Underlying inflation measures: an analytical guide for the euro area", *Economic Bulletin*, Issue 5/2023, ECB.

Bańbura, M., Bobeica, E., Bodnár, K., Fagandini, B, Healy, P., Holton, S. and Paredes, J. (2024), "Underlying inflation: Zooming in on goods versus services", VoxEU, 5 October.

Barbarino A., Berge, T.J., Chen, H. and Stella, A. (2020), "Which Output Gap Estimates Are Stable in Real Time and Why?", *Finance and Economics Discussion Series 2020-102*, Washington: Board of Governors of the Federal Reserve System.

Barkema, J., Gudmundsson, T. and Mrkaic, M. (2020), "What Do We Talk About When We Talk About Output Gaps?", *IMF Working Papers*, (WP/20/259), November.

Bobeica, E. and Sokol, A. (2019), "Drivers of underlying inflation in the euro area over time: a Phillips curve perspective", *Economic Bulletin*, Issue 4/2019, ECB.

Bodnár, K., Fabbri, A., Rubene, I. and Zekaite, Z. (2025), "Where do we stand with inflationary pressures arising from price resetting?", *Economic Bulletin*, Issue 4/2025, ECB.

Bodnár, K., Le Roux, J., Lopez-Garcia, P. and Szörfi, B. (2020), "The impact of COVID-19 on potential output in the euro area", *Economic Bulletin*, Issue 7/2020, ECB.

Bundesbank (2025), "Recent developments in underlying inflation in Germany", *Monthly Report*, May.

Christiano, L. and Fitzgerald, T. J. (1999), "The Band Pass Filter", *Working Paper*, Federal Reserve Bank of Cleveland.

Eiglsperger, M., Wieland, E., Bodnár, K., Bouhaouita Haddad, R., and Rubene, I. (2026), "What's new in the HICP basket? The 2026 classification update and its implications for inflation analysis", *Economic Bulletin*, Issue 3/2026, ECB.

Ehrmann, M., Ferrucci, G., Lenza, M. and O'Brien, D. (2018), "Measures of underlying inflation for the euro area", *Economic Bulletin*, Issue 4/2018, ECB.

European Central Bank (2015), "A survey-based measure of slack for the euro area", *Economic Bulletin*, Issue 6/2015.

Eurostat (2020), "Guidance on the compilation of the HICP in the context of the COVID-19 crisis", Methodological note.

Ferrara, L. (2019), "What is behind the change in the gap between services price inflation and goods price inflation?", *Economic Bulletin*, Issue 5/2019, ECB.

Fröhling, A., O'Brien, D. and Schaefer, S. (2022), "A new indicator of domestic inflation for the euro area", *Economic Bulletin*, Issue 4/2022, ECB.

González-Torres, G., Gumiel, J. E. and Szörfi, B. (2023), "Potential output in times of temporary supply shocks", *Economic Bulletin*, Issue 8/2023, ECB.

Jacobs, D. and Williams, T. (2014), "The Determinants of Non-tradables Inflation", *RBA Bulletin*, September Quarter 2014.

Johnson N.N. (2017), "Tradable and non-tradable inflation indexes: replicating New Zealand's tradable indexes with BLS CPI data", *Monthly Labor Review*, Bureau of Labor Statistics, May.

Lane, P.R., (2024), "Underlying inflation: an update", speech at the Inflation: Drivers and Dynamics Conference 2024, organised by the Federal Reserve Bank of Cleveland and the ECB.

Lian, W. and Freitag, A. (2022), "Inflation Dynamics in Advanced Economies: A Decomposition into Cyclical and Non-Cyclical Factors", *IMF Working Papers*, WP/22/91.

Mahedy, T. and Shapiro, A. (2017), "What's Down with Inflation?", *FRBSF Economic Letter 2017-35*, Federal Reserve Bank of San Francisco, 17 November.

Shapiro, A. (2025), "Cyclical and Acyclical Core PCE Inflation", Federal Reserve Bank of San Francisco.

Stock, J.H. and Watson, M.W. (2020), "Slack and Cyclically Sensitive Inflation", *Journal of Money, Credit and Banking*, Vol. 52, Issue S2, December.

Zaman, S. (2019), "Cyclical versus Acyclical Inflation: A Deeper Dive", *Economic Commentary 2019-13*, Federal Reserve Bank of Cleveland.

Zeugner, S. (2013), "Tradable vs. Non-tradable An Empirical Approach to the Classification of Sectors", Compnet, European Commission, 13 December.

6 Appendix

Table 4

Items included in the updated version of the domestic and Supercore indicators[40]

Item	Code	Aggregate	Updated domestic	Updated Supercore	Weight in HICPX	Import share
Services for processing primary goods for food and non-alcoholic beverages	013000	Services	1	0	0.0%	9.2%
Alcohol production services	022000	Services	1	0	0.0%	9.2%
Clothing materials	031100	NEIG	0	0	0.0%	72.8%
Garments	031200	NEIG	0	0	5.1%	55.9%
Other articles of clothing and clothing accessories	031300	NEIG	0	0	0.2%	43.8%
Cleaning, repair, tailoring and hire of clothing	031400	Services	1	1	0.1%	5.4%
Shoes and other footwear	032100	NEIG	0	0	1.2%	44.1%
Cleaning, repair and hire of footwear	032200	Services	1	1	0.0%	5.8%
Actual rental payments made by tenants for main residence	041100	Services	1	0	7.8%	2.6%
Other actual rental payments	041200	Services	1	0	0.4%	2.6%
Imputed rental payments of owner-occupiers for their main residence	042100	Services	1	0	0.0%	2.6%
Other imputed rentals	042200	Services	1	0	0.0%	2.6%
Security equipment and materials for dwelling maintenance and repair	043100	NEIG	0	1	0.6%	36.1%
Services for the maintenance, repair and security of the dwelling	043200	Services	1	1	1.2%	10.9%
Water supply	044100	NEIG	1	0	0.6%	6.2%
Refuse collection	044200	Services	1	0	0.6%	7.3%
Sewage collection	044300	Services	1	0	0.6%	7.3%
Other services related to the dwelling	044400	Services	1	0	1.4%	4.4%
Furniture, furnishings and loose carpets	051100	NEIG	0	1	2.6%	37.0%
Repair, installation and hire of furniture, furnishings and loose carpets	051200	Services	1	1	0.1%	6.8%
Household textiles	052100	NEIG	0	0	0.5%	36.0%
Repair, hire and sewing services of household textiles	052200	Services	1	0	0.0%	5.8%
Major electric and other household appliances	053100	NEIG	0	1	0.9%	32.9%
Small household appliances	053200	NEIG	0	1	0.4%	38.7%

Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: NEIG stands for non-energy industrial goods. The import share represents the average from 2019 to 2023, calculated using the 2025 FIGARO. The weights in HICPX reflect the 2026 figures.

[40] Of the 118 HICPX items considered in the analysis, 6 do not have corresponding price indices available. Services for processing primary goods for food and non-alcoholic beverages (ECOICOP code: 013000), repair, hire and sewing services of household textiles (052200) and animal-drawn vehicles (071400) are included in the HICP classification but are currently not covered by any published price index for the euro area. Therefore, no price observations or index series are available for these categories. Imputed rental payments of owner-occupiers for their main residence (042100), other imputed rentals (042200) and financial intermediation services indirectly measured (122100) are outside the HICP's product coverage according to HICP legislation.

Table 4 continued

Items included in the updated version of the domestic and Supercore indicators

Item	Code	Aggregate	Updated domestic	Updated Supercore	Weight in HICPX	Import share
Repair, installation and hire of household appliances	053300	Services	1	0	0.1%	10.3%
Glassware, tableware and household utensils	054000	NEIG	0	1	0.6%	31.7%
Motorized tools and equipment	055100	NEIG	0	0	0.2%	34.5%
Non-motorized tools and miscellaneous accessories	055200	NEIG	0	1	0.4%	38.9%
Repair and hire of motorized and non-motorized tools and equipment	055300	Services	1	0	0.0%	10.0%
Non-durable household goods	056100	NEIG	0	1	1.2%	33.9%
Domestic services and household services	056200	Services	1	1	1.1%	5.8%
Medicines	061100	NEIG	0	0	1.5%	32.5%
Medical products	061200	NEIG	0	0	0.5%	29.8%
Assistive products	061300	NEIG	0	0	0.9%	25.8%
Repair, rental and maintenance of medical and assistive products	061400	Services	1	0	0.0%	10.1%
Preventive care services	062100	Services	1	0	0.5%	3.9%
Outpatient dental services	062200	Services	1	0	1.4%	4.2%
Other outpatient care services	062300	Services	1	0	1.4%	4.1%
Inpatient curative and rehabilitative services	063100	Services	1	0	0.9%	3.9%
Inpatient long-term care services	063200	Services	1	0	0.9%	3.9%
Diagnostic imaging services and medical laboratory services	064100	Services	1	0	0.2%	4.2%
Patient emergency transportation and emergency rescue services	064200	Services	1	0	0.0%	8.8%
Motor cars	071100	NEIG	0	0	5.1%	37.0%
Motorcycles	071200	NEIG	0	0	0.3%	41.4%
Bicycles	071300	NEIG	0	0	0.4%	41.4%
Animal-drawn vehicles	071400	NEIG	0	0	0.0%	40.4%
Parts and accessories for personal transport equipment	072100	NEIG	0	1	1.6%	37.3%
Maintenance and repair of personal transport equipment	072300	Services	1	1	2.7%	9.9%
Other services related to personal transport equipment	072400	Services	1	1	1.7%	5.1%
Passenger transport by railway	073100	Services	0	0	0.8%	13.2%
Passenger transport by road	073200	Services	0	0	0.7%	13.2%
Passenger transport by air	073300	Services	0	0	1.3%	12.4%
Passenger transport by sea and inland waterway	073400	Services	0	0	0.1%	31.9%
Combined passenger transport	073500	Services	0	0	0.7%	13.2%
Other passenger transport services	073600	Services	0	0	0.0%	14.3%
Postal and courier services	074100	Services	0	0	0.2%	23.2%
Other transport of goods	074900	Services	0	1	0.3%	26.0%
Fixed telephone equipment	081100	NEIG	0	0	0.0%	52.1%
Mobile telephone equipment	081200	NEIG	0	0	0.5%	55.6%
Information processing equipment	081300	NEIG	0	0	0.7%	39.2%
Equipment for the reception, recording and reproduction of sound and vision	081400	NEIG	0	0	0.5%	47.8%
Unrecorded recording media	081500	NEIG	0	0	0.0%	40.2%

Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: NEIG stands for non-energy industrial goods. The import share represents the average from 2019 to 2023, calculated using the 2025 FIGARO. The weights in HICPX reflect the 2026 figures.

Table 4 continued

Items included in the updated version of the domestic and Supercore indicators

Item	Code	Aggregate	Updated domestic	Updated Supercore	Weight in HICPX	Import share
Other information and communication equipment and accessories	081900	NEIG	0	0	0.2%	38.4%
Software, excluding games	082000	Services	0	0	0.1%	15.5%
Fixed communication services	083100	Services	1	0	0.1%	8.5%
Mobile communication services	083200	Services	1	0	1.0%	8.5%
Internet access provision services and online storage services	083300	Services	1	0	0.4%	11.5%
Bundled telecommunication services	083400	Services	1	0	1.2%	11.4%
Repair and rental of information and communication equipment	083500	Services	0	0	0.0%	15.8%
Other information and communication services	083900	Services	1	0	0.6%	11.9%
Photographic and cinematographic equipment and optical instruments	091100	NEIG	0	0	0.2%	38.7%
Major recreational durables	091200	NEIG	0	0	0.4%	36.5%
Games, toys and hobby-related articles	092100	NEIG	0	0	0.7%	32.1%
Sporting, camping and open-air recreation equipment	092200	NEIG	0	0	0.5%	40.7%
Garden products, plants and flowers	093100	NEIG	0	0	0.8%	31.8%
Pets and pet products	093200	NEIG	0	1	0.9%	34.2%
Hire and repair of photographic and cinematographic equipment and optical instruments	094100	Services	0	0	0.0%	15.8%
Hire, maintenance and repair of major recreational durables	094200	Services	1	0	0.1%	10.1%
Hire and repair of games, toys and hobby-related articles	094300	Services	0	0	0.0%	23.0%
Hire and repair of sporting, camping and open-air recreational equipment	094400	Services	0	0	0.1%	15.8%
Veterinary and other services for pets	094500	Services	1	1	0.4%	10.1%
Recreational and sporting services	094600	Services	1	1	1.7%	8.6%
Games of chance	094700	Services	1	0	1.4%	6.6%
Musical instruments	095100	NEIG	0	0	0.1%	42.2%
Audiovisual media	095200	NEIG	0	0	0.1%	25.6%
Services provided by cinemas, theatres and concert venues	096100	Services	0	0	0.8%	15.9%
Services provided by museums, libraries and cultural sites	096200	Services	0	0	0.2%	18.7%
Photographic services	096300	Services	0	0	0.1%	23.3%
Other cultural services	096900	Services	0	0	0.2%	13.6%
Books	097100	NEIG	0	0	0.5%	23.4%
Newspapers and periodicals	097200	NEIG	0	0	0.5%	21.6%
Miscellaneous printed matter	097300	NEIG	0	0	0.2%	28.2%
Stationery and drawing materials	097400	NEIG	0	1	0.3%	34.1%
Package holidays	098000	Services	0	0	1.8%	30.4%
Early childhood and primary education	101000	Services	1	0	0.4%	2.3%
Secondary education	102000	Services	1	1	0.2%	2.3%
Post-secondary non-tertiary education	103000	Services	1	1	0.0%	2.3%
Tertiary education	104000	Services	1	1	0.5%	2.3%

Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: NEIG stands for non-energy industrial goods. The import share represents the average from 2019 to 2023, calculated using the 2025 FIGARO. The weights in HICPX reflect the 2026 figures.

Table 4 continued

Items included in the updated version of the domestic and Supercore indicators

Item	Code	Aggregate	Updated domestic	Updated Supercore	Weight in HICPX	Import share
Education not defined by level	105000	Services	1	0	0.4%	2.3%
Restaurants, cafés and the like	111100	Services	1	1	11.9%	9.6%
Canteens, cafeterias and refectories	111200	Services	1	1	0.8%	7.2%
Accommodation services	112000	Services	1	0	3.4%	4.5%
Life and accident insurance	121100	Services	1	0	0.2%	8.1%
Insurance connected with health	121200	Services	1	0	0.8%	8.1%
Insurance connected with dwellings	121300	Services	1	0	0.4%	8.1%
Insurance connected with transport	121400	Services	1	0	1.1%	8.1%
Other insurance	121900	Services	1	0	0.3%	8.1%
Financial intermediation services indirectly measured	122100	Services	0	0	0.0%	23.6%
Explicit charges by deposit-taking corporations	122200	Services	0	0	1.3%	19.2%
Other financial services	122900	Services	0	0	0.1%	13.9%
Electric appliances for personal care	131100	NEIG	0	0	0.1%	35.1%
Other appliances, articles and products for personal care	131200	NEIG	0	1	2.1%	32.7%
Hairdressing salons and personal grooming establishments	131300	Services	1	1	1.8%	4.7%
Jewellery and watches	132100	NEIG	0	1	0.7%	35.5%
Devotional articles and articles for religious and ritual celebrations	132200	NEIG	0	0	0.0%	32.1%
Other personal effects n.e.c.	132900	NEIG	0	1	0.6%	39.6%
Social protection	133000	Services	1	0	1.7%	3.2%
Other services	139000	Services	1	0	2.1%	8.5%

Sources: Eurostat, 2025 FIGARO and ECB calculations.
Notes: NEIG stands for non-energy industrial goods. The import share represents the average from 2019 to 2023, calculated using the 2025 FIGARO. The weights in HICPX reflect the 2026 figures.

Abbreviations

Countries

BE	Belgium	**HR**	Croatia	**PL**	Poland
BG	Bulgaria	**IT**	Italy	**PT**	Portugal
CZ	Czech Republic	**CY**	Cyprus	**RO**	Romania
DK	Denmark	**LV**	Latvia	**SI**	Slovenia
DE	Germany	**LT**	Lithuania	**SK**	Slovakia
EE	Estonia	**LU**	Luxembourg	**FI**	Finland
IE	Ireland	**HU**	Hungary	**SE**	Sweden
GR	Greece	**MT**	Malta	**UK**	United Kingdom
ES	Spain	**NL**	Netherlands	**US**	United States
FR	France	**AT**	Austria		

In accordance with EU practice, the EU Member States are listed in this report using the alphabetical order of the country names in the national languages.

Others

BIS	Bank for International Settlements
CPI	Consumer Price Index
DG ECFIN	Directorate General for Economic and Financial Affairs, European Commission
ECB	European Central Bank
EDP	excessive deficit procedure
EER	effective exchange rate
EMI	European Monetary Institute
EMU	Economic and Monetary Union
ERM	exchange rate mechanism
ESA 95	European System of Accounts 1995
ESCB	European System of Central Banks
ESRB	European Systemic Risk Board
EU	European Union
EUR	euro
GDP	gross domestic product
HICP	Harmonised Index of Consumer Prices
HICPX	Harmonised Index of Consumer Prices, excluding energy and food
i.i.p.	international investment position
ILO	International Labour Organization
IMF	International Monetary Fund
MFI	monetary financial institution
MIP	macroeconomic imbalance procedure
NCB	national central bank
OECD	Organisation for Economic Co-operation and Development
SSM	Single Supervisory Mechanism
TSCG	Treaty on Stability, Coordination and Governance in the Economic and Monetary Union

Conventions used in the tables

“-” data do not exist/data are not applicable
“.” data are not yet available

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