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## Article

# Inflation in the euro area: Factors mostly have only a temporary effect, but risk of prolonged elevated inflation remains

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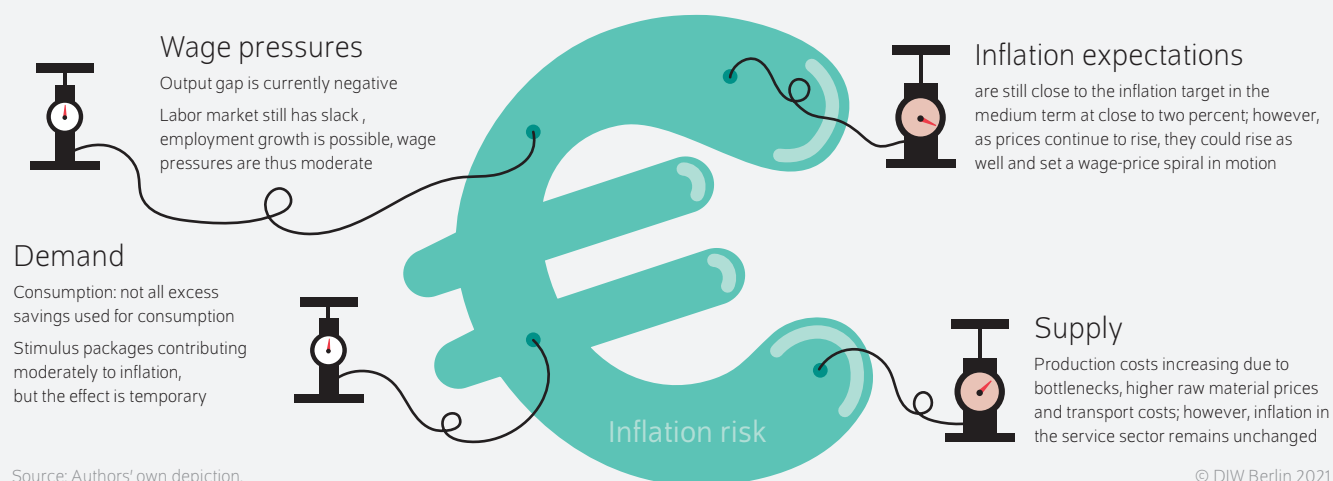
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## Inflation in the euro area: Factors mostly have only a temporary effect, but risk of prolonged elevated inflation remains

By Kerstin Bernoth and Gökhan Ider

- Headline inflation in the euro area increased to 3.4 percent in September 2021, now at its highest level in 13 years
- Study analyzes factors that could drive inflation in the short to medium term: wage pressure, fiscal policy, pent-up demand, production costs, and inflation expectations
- Inflation in the euro area is likely to remain elevated in the coming months; most factors will have a temporary effect
- Nevertheless, there is a risk that market inflation expectations will rise and thus drive up price developments
- Medium-term inflation expectations have so far been anchored at the ECB's inflation target; further developments should be monitored critically

### Inflation expectations and supply side posing greatest medium-term inflation risks



### FROM THE AUTHORS

*"If markets' inflation expectations rise as inflation continues, they could set a wage-price spiral in motion. The European Central Bank should prepare for this situation and, if necessary, adjust its communication and possibly its monetary policy as well."*

— Kerstin Bernoth —

### MEDIA



Audio Interview with K. Bernoth (in German)  
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# Inflation in the euro area: Factors mostly have only a temporary effect, but risk of prolonged elevated inflation remains

By Kerstin Bernoth and Gökhan Ider

## ABSTRACT

Headline inflation in the euro area jumped to more than three percent in the summer after years of relatively low inflation rates well below the target of close to but below two percent set by the ECB until July 2021. One of the main reasons for the rise in inflation is the increase in energy prices since the beginning of 2021. However, there are further indications that inflation in the euro area will remain elevated in the coming months. This report analyzes the factors that could have an impact on inflation. However, most of these factors, such as the fiscal stimulus and pent-up demand only have temporary effects. Others, such as the unemployment gap, weigh less severely than expected. A change in inflation expectations, which could trigger a wage-price spiral, poses the main risk for a prolonged period of elevated inflation. While these expectations are still in line with the inflation target, the ECB should keep a critical eye on their development and, if necessary, take decisive action to maintain its credibility.

While central banks and economic policymakers have been concerned over the past decade about inflation in the euro area being too low relative to the ECB's inflation target, this concern seems to have reversed since summer 2021. Annual inflation in the euro area has been rising since the beginning of 2021, reaching 3.4 percent in September, its highest level since September 2008. Quite a few are calling for an end to the very lax monetary policy in the euro area. Whether this is actually advisable, however, depends on whether the current rise in inflation is more temporary in nature or has actually marked a sustained trend reversal. Moreover, inflation developments diverge across the individual euro area economies, making it difficult to conduct an optimal single monetary policy. Although the standard deviation of inflation rates in the individual euro area economies is currently well below its peak reached during the global financial crisis, it is at a level last observed in December 2010 (Figure 1).<sup>1</sup>

A large part of the current increase in inflation can be attributed to one-off measures and events, such as the reversal of VAT reductions in Germany or the rebound in energy prices after their drop during the COVID-19 pandemic (Figure 2). It is difficult to predict how energy prices will develop. Looking at the corresponding futures traded on the stock exchange, which reflect expected price developments it can be assumed that prices for oil and gas will settle in the medium term at the high level now reached.<sup>2</sup> As soon as these effects subside, the inflationary pressure in the euro area is likely to lessen.

This report provides a more detailed analysis of further key factors that can exert short to medium term upward pressure on headline inflation: the output gap, wage pressures, aggregate demand, the effects of the pandemic-related fiscal measures, producer prices, and inflation expectations.

<sup>1</sup> This Weekly Report is based on a study conducted by the authors upon request of the European Parliament's Committee on Economic and Monetary Affairs (ECON) in advance of the Monetary Dialogue with the ECB President on September 27, 2021: Kerstin Bernoth and Gökhan Ider, "Inflation on the upswing – Just a hiccup or a trend reversal after all? Publication for the committee on Economic and Monetary Affairs," *Monetary Dialogue Papers* (2021) (available online; accessed on September 28, 2021). This applies to all other online sources in this report unless stated otherwise.

<sup>2</sup> Marius Clemens, Simon Junker, and Laura Pagenhardt, "Deutsche Wirtschaft windet sich nur langsam aus der Pandemie. Grundlinien der Wirtschaftsentwicklung im Herbst," *DIW Wochenbericht* no. 37 (2021): 620 (in German; available online).

## Slack in production and the labor market

Inflationary pressures are significantly influenced by the cyclical stance of an economy, which is frequently measured by the output gap, the difference between actual and potential output. When actual production is larger than potential output (positive output gap), the upward pressure on factor costs, such as labor costs, increases, which ultimately leads to consumer price inflation.

Alternatively, economic activity is estimated by the slack in the labor market. This is estimated using the unemployment gap, which is the difference between the actual and the structural unemployment rate. The structural unemployment rate can be measured by the non-accelerating inflation rate of unemployment (NAIRU). A positive unemployment gap—when the actual unemployment rate is above the structural rate—indicates slack in the labor market: employment expansion is not expected to cause large price increases. In times of low slack or even a negative unemployment gap, employers compete over workers so that wages and, thus in addition, prices tend to rise.

## Output gap negative to date

The lockdown measures introduced with the initial outbreak of the COVID-19 pandemic led to a significant decline in production (Figure 3). As a result, the output gap in the euro area widened to a considerable level of -15 percent in the second quarter of 2020. Despite expansive fiscal and monetary policy interventions and a gradual withdrawal of containment measures, the production gap still has not closed. It is currently around minus six percent, although there are major discrepancies between the individual countries. From this perspective, no inflationary pressure is expected for the time being.

Current forecasts predict that the output gap in the economically largest four euro area countries will close by the end of 2022.<sup>3</sup> Predictions about the further development of the output gap and thus about inflationary or deflationary pressures are, however, only possible with high uncertainty. The impact of the COVID-19 crisis on production depends on the duration of the pandemic and restrictions. Furthermore, forecasts are always subject to great uncertainty, as future economic policy plays a major role. Moreover, if the economic crisis lasts longer than expected, potential output could decline in addition to actual production.

According to estimates from the International Monetary Fund (IMF) and the European Central Bank (ECB), the decline in potential output due to the pandemic could amount to around three percent in 2021, rendering an assessment of

<sup>3</sup> Europäische Zentralbank, *Eurosystem staff macroeconomic projections for the euro area* (June 2021); European Commission, *Summer 2021 Economic Forecast: Reopening fuels recovery* (2021); Claus Michelsen et al., "Weltwirtschaft: Fortgeschrittene Volkswirtschaften vor kräftiger Aufschwung: Grundlinien der Wirtschaftsentwicklung im Sommer 2021," *DIW Wochenbericht* no. 23/24, 388–398 (in German; available online).

Figure 1

### Inflation dispersion in the euro area

Average dispersion of inflation in euro area member countries in percent (unweighted standard deviation of the HICP, Harmonised Index of Consumer Prices)



Source: ECB

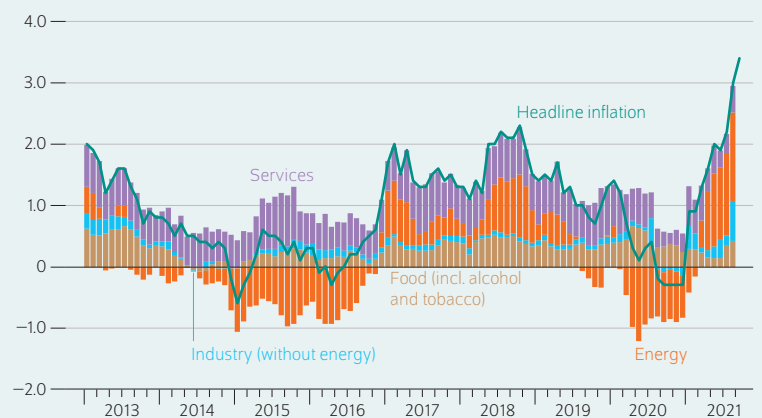
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Inflation in the individual euro area countries is diverging as sharply as it did at the end of 2010.

Figure 2

### Contributions of the main sectors to headline inflation in the euro area

In percent



Source: Eurostat.

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The increase in headline inflation in 2021 can be primarily attributed to the rebound in energy prices.

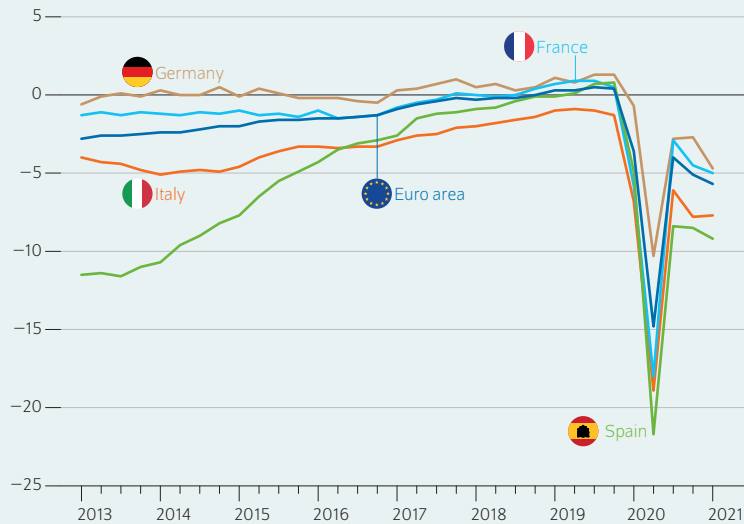
inflationary pressures even more difficult and uncertain.<sup>4</sup> Depending on whether potential output falls more than actual output, this could even shift the output gap into

<sup>4</sup> European Central Bank, "The impact of COVID-19 on potential output in the euro area," *Economic Bulletin* 7 (2020): 42–61.

Figure 3

**Euro area output gap**

In percent (quarterly estimates)



Note: The output gap is calculated as actual GDP minus potential GDP divided by potential GDP. When the output gap is negative, production is underutilized and no inflationary pressures are expected.

Source: Bloomberg Economics.

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The slump in production caused by the lockdown measures has not yet been recovered.

positive territory and trigger inflationary rather than deflationary pressures.

### Tight labor market causing less wage pressure than expected

The unemployment gap in the euro area has almost closed and is at a similarly low level as before the pandemic (Figure 4). This can be attributed primarily to the job retention schemes introduced by the euro area countries.

Thus, it is to be expected that as lockdown restrictions are further eased, labor demand will increase, and wages and prices will tend to rise. However, it should be noted that the labor market in the euro area is not currently as tight as the comparably low unemployment rate of 7.5 percent suggests. A substantial number of people who had previously been active in the labor market apparently stopped searching for employment during the pandemic: The euro area labor force declined between the fourth quarter of 2019 and the second quarter of 2020 by nearly 5.5 million people, or 3.3 percent. In subsequent quarters, labor force participation recovered somewhat from the initial shock, but did not return to pre-pandemic levels. Had the labor force not shrunk to this extent due to the pandemic, the unemployment rate in July 2021 would have been about 1.9 percent higher than the reported unemployment rate. This results in an adjusted unemployment gap of around two percent.

Nevertheless, wages are expected to rise in the second half of 2021 as labor demand increases due to the further lifting of pandemic-related restrictions and supply remains subdued for the time being. However, this effect is likely to weaken again. As soon as job-supporting measures, such as the short-time working allowance in Germany and the pandemic-related transfers come to an end, labor force participation should increase again. Although the labor market is expected to exert temporary upward pressure on the price level, this is likely to be milder than many expect.

### Increasing overall demand may impact inflation noticeably

Domestic demand in the euro area is likely to be the main driver of recovery following the pandemic and therefore will also drive inflation in the short to medium term. This will be boosted by both the expected pent-up consumption and the massive public stimulus packages.

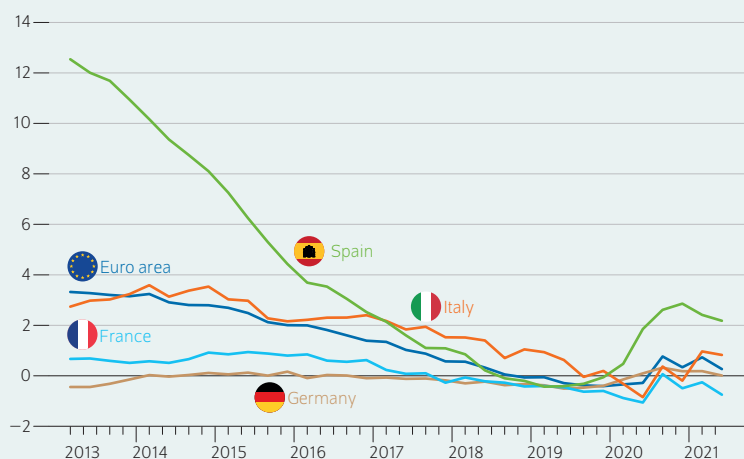
### Not all excess savings are subsequently consumed

The saving rate in the euro area increased strongly in the first quarter of 2020, primarily with the first lockdown in mid-March, and reached a new record high rate of 25 percent in spring as the first pandemic-related restrictions came into effect. This increase was primarily triggered by the slump in consumption rather than fluctuations in disposable income (Figure 5). Although the saving rate has slightly declined since then, it is still at an extremely high level.

Figure 4

**Euro area unemployment gap**

In percent (quarterly estimates)



Note: The unemployment gap is calculated as the difference between the actual unemployment rate and the structural unemployment rate (NAIRU). When the unemployment gap is positive, the labor market is considered to have slack. When it is negative, the labor market is considered to be tight.

Sources: Bloomberg Economics; OECD (euro area); authors' own calculations.

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As long as the unemployment gap is positive, an expansion of employment is not likely to not cause large wage pressures.

Excess savings, defined as savings in excess of what would have been saved in normal times, are estimated to have reached nearly 650 billion euros by the second quarter of 2021, almost equal to the current output gap. It is to be expected that consumption will increase as soon as pandemic-related restrictions are further lifted. However, the extent to which pent-up demand will affect inflation depends strongly on how quickly and how much of these excess savings will be spent in the coming quarters.

Several factors indicate that households will not completely release their savings in the form of additional consumption once pandemic-related restrictions are further lifted. On the one hand, a non-negligible share of the excess savings is invested in illiquid investments; on the other hand, these savings are concentrated at high-income households.<sup>5</sup> These households consume a smaller share of their income and thus of their excess savings than middle- and low-income households. The impact on headline inflation is therefore likely to be contained.<sup>6</sup> A not insignificant portion of excess savings, on the other hand, is likely to drive asset price inflation further.

### Stimulus packages will contribute to economic recovery and put pressure on prices

Euro area countries have implemented substantial stimulus packages to combat the adverse effects of the COVID-19 pandemic on their economies. The budgetary measures in these packages amount to around 1.3 trillion euros (about 11 percent of euro area GDP) (Table 1). Furthermore, extensive liquidity support measures were taken to keep small and medium-sized firms afloat and thus maintain employment.<sup>7</sup>

In addition to the individual countries' fiscal programs, the European Union (EU) announced its Recovery and Resilience Facility (RRF) as a component of the Next Generation EU (NGEU) program, which provides Member States with grants in the amount of 338 billion euros and loans in the amount of 390 billion euros at current prices.<sup>8</sup> So far, euro area Member States have requested around 400 billion in grants and loans from this facility, with spending to be spread over six years. Thus, the euro area's fiscal policy response to the crisis is on a scale far exceeding that to the 2008/09 financial crisis.

The expected impact of national budgetary fiscal measures on inflation can be estimated using previously estimated fiscal multipliers. These multipliers measure the effect of

<sup>5</sup> European Central Bank, "COVID-19 and the increase in household savings: an update," *Economic Bulletin* 5 (2021); European Commission, "European Business Cycle Indicators. Special Topic: Will consumers save the EU recovery?" *Technical Papers* no. 047 (April 2021).

<sup>6</sup> Katharina Drescher, Pirmin Fessler, and Peter Lindner, "Helicopter money in Europe: New evidence on the marginal propensity to consume across European households," *Economic Letters* 195, C (2020); Jonathan D. Fisher et al., "Estimating the marginal propensity to consume using the distributions of income, consumption, and wealth," *Journal of Macroeconomics* 65 (2020).

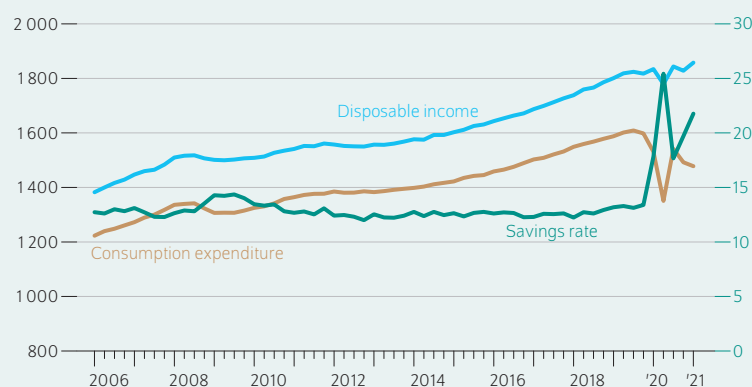
<sup>7</sup> Over 90 percent of these liquidity support measures took the form of loan guarantees so that the majority of this fiscal support is ultimately not reflected in public budgets.

<sup>8</sup> Zsolt Darvas et al., *European Union countries' recovery and resilience plans. Bruegel Datasets* (2021) (available online; accessed on August 10, 2021).

Figure 5

### Development of disposable income and savings

Income and expenditure in billions of euros (left axis), savings rate in percent (right axis)



Sources: ECB Statistical Data Warehouse, authors' own calculations.

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The increase in the saving rate was mainly caused by the slump in consumption, and not by fluctuations in disposable income.

fiscal policy measures on economic growth.<sup>9</sup> However, multipliers differ for government spending, tax cuts, subsidies, and transfers. In addition, they vary greatly over time and depend on the state of the economy, the amount of government debt, and macroeconomic uncertainty; therefore, a completely accurate statement cannot be made.<sup>10</sup> Moreover, the size of the fiscal multiplier during the COVID-19 crisis may differ from multipliers in previous recessions and crises simply because of the unprecedented nature of the crisis.

The impact of fiscal stimulus on economic growth is calculated by multiplying the fiscal multiplier by the sum of program spending of euro area countries through June 2021 (Table 2).<sup>11</sup> The effect of lockdown restrictions during the pandemic is expected to have attenuated the fiscal multiplier, and hence this multiplier can be taken to be between the lowest value of 0.5 and the medium value of 1.5. For simplicity, it is assumed that the national fiscal measures were largely implemented at the beginning of the pandemic. Output would then increase between around 670 billion and 2,000 billion euros over the next two years, which corresponds to around six and 18 percent of potential euro area GDP, respectively. Assuming that production increases linearly over the

<sup>9</sup> To assess the impact of the liquidity-protecting measures on the economy and thus on inflation, a counterfactual analysis would be needed in which it is examined how many firms would have exited the market without these measures. Such an analysis is beyond the scope of this report.

<sup>10</sup> Olivier Blanchard, Christopher J. Erceg, and Jesper Linde, "Jump Starting the Euro Area Recovery: Would a Rise in Core Fiscal Spending Help the Periphery?" *NBER Macroeconomics Annual* 31, no. 1 (2015): 103–182; Evi Pappa, "Fiscal Rules, Policy and Macroeconomic Stabilization in the Euro Area," *European Central Bank Forum academic paper series* (2020).

<sup>11</sup> The cumulative multiplier is defined as the cumulative change in GDP divided by the cumulative change in government consumption (in percent of GDP). A value of 1.5, for example, would mean that after two years the increase in output in euros is one and a half times the increase in government consumption.

Table 1

**Size of fiscal stimulus packages in euro area countries**  
In percent of 2020 GDP

	Fiscal measures				Liquidity assistance			
	Additional expenditure or lost revenue			Anticipated expenditure/ deferred revenue	Total	"Below the line" measures: Equity increases, loans, asset purchases, dept assumption	Contingent liabilities	
	Total	Health sector	Non-health sector				Guarantees	Quasi-fiscal activities
Germany		1.8	11.8		27.8	3.0	24.8	
France	9.6	1.4	8.2	3.0	15.2	0.7	14.5	
Italy	10.9	1.2	9.7	0.4	35.3	0.2	35.1	
Spain	7.6	1.3	6.3		14.4	0.1	13.4	0.9
Netherlands	10.3	2.1	8.2	1.6	8.1		8.1	
Belgium	8.2	2.0	6.2	2.9	11.9	0.4	11.5	
Austria	11.7	0.7	11.1		2.4		2.4	
Portugal	5.6	0.9	4.7	0.5	5.7		5.7	
Greece	21.1	0.6	20.5	1.0	7.0	3.5	3.5	
Finland	4.3	1.5	2.8	0.9	7.5	0.7	5.1	1.7
Ireland	10.3	1.2	9.1	0.7	3.3	1.9	1.4	
Euro area	10.8	1.5	9.3	1.0	19.6	1.2	18.2	0.1

Note: As of June 2021. The countries listed in the table amount to 97 percent of euro area GDP.

Source: IMF Database of Fiscal Policy Responses to COVID-19.

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Table 2

**Cumulative impact of countries' budgetary fiscal measures on euro area output over the next two years**

In billions of euros and percent (potential GDP)

Program expenditure estimate	1337.2 B euro		
	Low (multiplier: 0.5)	Moderate (multiplier: 1.5)	High (multiplier: 2.5)
Expected impact on production	668.6 B euro	2005.8 B euro	3343.0 B euro
	5.9 percent	17.7 percent	29.6 percent

Note: The estimated program spending includes all budgetary fiscal stimulus measures announced by the euro area countries as of June 2021.

Sources: IMF Database of Fiscal Policy Responses to COVID-19; AMECO; authors' own calculations.

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eight quarters, this means that the currently negative output gap narrows by an average of around 0.74 and 2.21 percentage points per quarter, respectively.

This would have an impact on inflation. According to the Phillips curve estimates for the euro area,<sup>12</sup> this would lead to an increase in annual core inflation by around 0.6 and 1.7 percentage points in scenarios with low and medium multipliers, respectively. However, this should be understood as an upper limit, as the fiscal measures are not bundled at the same time but spread over several years. Accordingly, their effect on inflation is spread over a longer period of time.

Moreover, as these fiscal policy measures are limited in time, their effect on inflation is temporary.

**Obstacles in global production chains driving up production costs**

Producer prices in the euro area have increased considerably since the beginning of 2021 (Figure 6). This can be attributed to rising energy prices, raw material and intermediate product supply bottlenecks, and a sharp increase in raw material prices and transport costs. The speed and extent of a pass-through of production costs to consumer prices depend on multiple factors, such as the duration of such pressures and firms' willingness to absorb the increase in input costs by suppressing profit margins. Profit margins have proven relatively resilient during the pandemic, largely due to public policies to preserve jobs.

Although the pandemic-related restrictions have been gradually lifted since May 2021, the production bottlenecks are not resolving as quickly as previously expected. Data from the Purchasing Managers' Index for the manufacturing industry by IHS Markit from July 2021 show that producers in the euro area and their suppliers are still experiencing difficulties expanding their production capacities quickly enough to satisfy demand. New orders are exceeding manufacturing output at a rate that is unprecedented in the history of this survey. The respondents indicated delivery delays and material shortages as the main reasons for euro area manufacturers being unable to further increase their production capacities.<sup>13</sup>

<sup>12</sup> Laurence Ball and Sandeep Mazumder, "A Phillips curve for the euro area," *ECB Working Paper* no. 2354 (2020) (available online).

<sup>13</sup> IHS Markit, *Eurozone manufacturing growth hit by supply shortage, and prices rise ever higher* (2021) (available online).

Both the supplier delivery time index and the PMI input price index for the euro area are at record highs, although their rates of increase showed signs of slowing in July 2021. While this could indicate a positive development for the production capacity in the euro area, the Delta variant exacerbated containment measures in many countries and led to significant declines in the manufacturing sector in July 2021, especially in the Asia-Pacific region. This production shortfall in key Asian countries is likely to hit euro area manufacturers again and could lead to higher input prices.<sup>14</sup>

There is still a great deal of uncertainty as to how the obstacles in global production chains will affect euro area inflation. According to the ECB, the impact is likely to be limited, as inflation in the service sector remains the predominant underlying dynamic for core inflation (with a weight of about two-thirds in the core HICP).<sup>15</sup> In the services sector, inflation is below one percent and has barely moved for years, even now with the pandemic subsiding (Figure 1). However, global supply-side developments should be closely monitored.

**Inflation expectations still firmly anchored**

Especially in times of increasing inflation, as it is currently the case, inflation expectations need to be carefully monitored. The development of inflation expectations and their anchoring are of great importance for the further development of actual inflation, as the expected inflation rate feeds into firms’ wage and price decisions as well as households’ consumption and investment decisions.

Temporary deviations of the actual inflation rate are acceptable as long as the average expected inflation rate is consistent with the objective of price stability. Until July 2021, the inflation target in the euro area was defined as close but below two percent in the medium term. Since then, the ECB has been aiming for a symmetrical medium-term inflation target of two percent, which means that negative and positive deviations of inflation from this target are now equally undesirable.

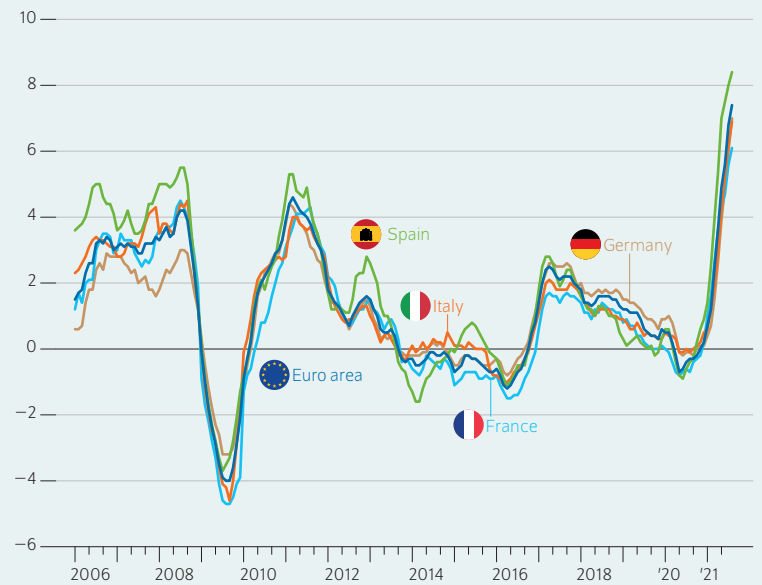
The trend in inflation expectations is reflected in detail in the Survey of Professional Forecasters (SPF). Since 1999, the ECB has been surveying around 60 experts who work at financial or other institutions (such as economic research institutes) to obtain their assessment of inflation developments over the next one to five years. Participants are asked for their point forecast—their inflation expectation expressed as a single number—as well as for the probabilities with which inflation lies within certain predefined intervals. Three different measures of forecast uncertainty can be derived from the individual survey respondent density forecasts that can be calculated from this data (Box). This analysis focuses

<sup>14</sup> IHS Markit, *Global manufacturing supply constraints continue to develop at record rate* (2021) (available online).

<sup>15</sup> European Central Bank, "Recent developments in pipeline pressures for non-energy industrial goods inflation in the euro area," *Economic Bulletin* 5 (2021): 63–67.

Figure 6

**Producer price inflation (excluding construction and energy)**  
In percent



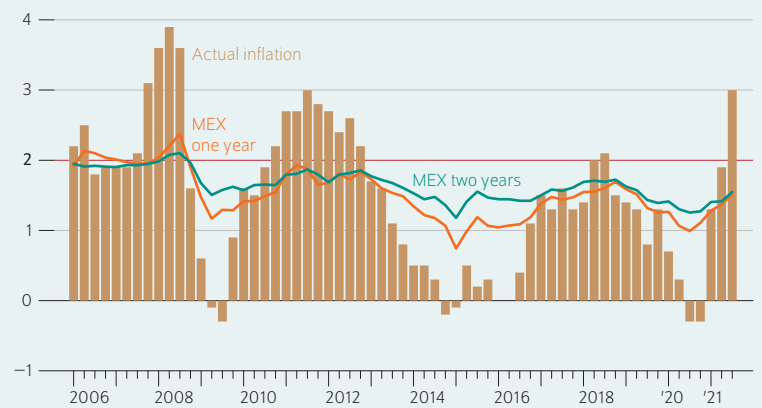
Source: Eurostat.

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Supply bottlenecks and sharp rises in raw material prices and transportation costs led to sharp increases in core producer prices in the euro area.

Figure 7

**Inflation forecast and actual inflation**  
In percent



Note: MEX denotes the average inflation forecast calculated from the probability distributions of the individual experts.

Sources: Survey of Professional Forecasters (ECB); authors' own calculations.

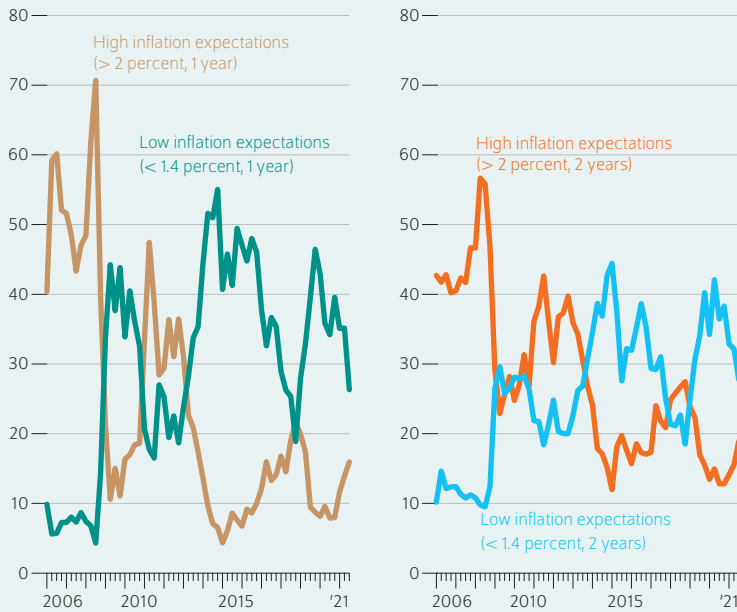
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Despite an ultra-loose monetary policy since 2015, one- and two-year ahead inflation expectations are below the targeted close to two percent inflation.



Figure 8

**Probability of high and low inflation**  
In percent (as of 3<sup>rd</sup> quarter of 2021)



Note: With the change of the inflation target in July 2021 to a symmetric target of two percent, a price increase of slightly above two percent can no longer be interpreted as a positive deviation from the inflation target. For the sake of simplicity, however, the definition of "high inflation" is not adjusted for the last observed survey in the third quarter of 2021. Sources: Survey of Professional Forecasters (EZB); authors' own calculations.

Sources: Survey of Professional Forecasters (ECB); authors' own calculations.

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The experts surveyed expect only a 20 percent probability that inflation will be too high in one or two years.

primarily on inflation expectations with a forecast horizon of one and two years, which corresponds to the definition of the short and medium term.

The mean inflation forecast calculated from the individual experts' probability distributions (MEX) deviates only slightly from the average point inflation estimate across all experts (Figure 7). One-year-ahead inflation expectations exhibit somewhat higher volatility than two-year-ahead inflation forecasts. Since the outbreak of the global financial crisis in the fourth quarter of 2008, survey expectations for inflation in both time horizons under review have consistently been below the ECB's target range, with few exceptions, despite ultra-loose monetary policy. Since the end of 2013, with few exceptions, experts have, on average, indicated a higher probability that inflation will be below the inflation target rather than above it (Figure 8). Despite increasing headline inflation since the beginning of 2021, this has not changed so far.

Looking at the evolution of the three measures of inflation uncertainty over time, it is noticeable that uncertainty in all three dimensions is more volatile at a one-year forecast horizon than at a two-year forecast horizon. This suggests that inflation expectations are more strongly anchored in the medium term than in the short term, reflecting a high degree of ECB credibility.

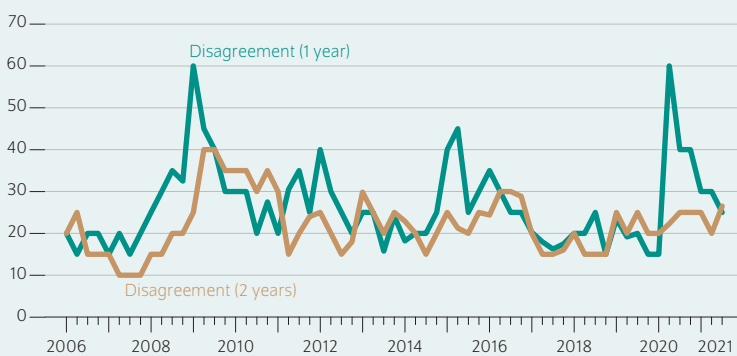
Similar to the situation during the global financial crisis of 2008/09, respondents' assessments of inflation development in a year diverged substantially in the first wave of the pandemic (Figure 9). A high degree of disagreement suggests that the decisions of individual economic actors on prices, wages, and consumption can significantly deviate from each other. These divergent inflation forecasts could also reflect regional differences, which make it difficult for the ECB to conduct a single optimal monetary policy for the entire euro area.

In contrast, the dispersion of experts' two-year inflation forecasts did not increase significantly during the COVID-19 crisis. Apparently, they have expected the pandemic to affect the economy mainly in the short term. The pandemic does not appear to have had a significant impact on the uncertainty of the individual inflation forecasts (static uncertainty). In contrast, the magnitude of revisions to individual experts' inflation expectations over a two-year time window (dynamic uncertainty) has tended to decline since its peak during the global financial crisis. This means that the experts revise their inflation expectations more rarely over time. This development reflects the success of a forward guidance-oriented communication strategy that the ECB has pursued since July 2013. This measure of uncertainty has also not increased noticeably during the COVID-19 pandemic.

In summary, the increase in inflation currently observed in the euro area has not yet had any impact on medium-term inflation expectations and has not emanated any significant inflationary pressure so far. Only with regard to the development of inflation in the short term has the disagreement

Figure 9

**Disagreement on inflation expectations**  
Standard deviation of inflation expectations



Note: The disagreement includes the standard deviation in the average inflation forecast of all experts interviewed.

Sources: Survey of Professional Forecasters (ECB); authors' own calculations.

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Experts disagree more about 2022 than about 2023.

## Box

**Indicators for inflation uncertainty**

Statistical uncertainty measures can be calculated using the results of the Survey of Professional Forecasters (SPF), a quarterly survey of around 60 participants conducted by the European Central Bank since 1999.  $n$  stands for the number of experts interviewed. An expert  $i$  indicates the probability with which they expect inflation at time  $t$  to lie in interval  $k$ .

**Static uncertainty:**

The static uncertainty is equal to the square root of the average variance of individual probability distributions at a given point in time:

$$\theta_t = \sqrt{\frac{1}{n} \sum_{i=1}^n \sigma_{it}^2}, \quad t = 1, \dots, T.$$

When the individual probability distribution is broadly spread on average, the overall uncertainty about the expected level of inflation is high.

**Dynamic uncertainty:**

The dynamic uncertainty measures the average standard deviation of the experts' point estimates over a time window of two years:

$$g_t = \frac{1}{n} \sum_{i=1}^n \left( \frac{1}{8} \sum_{\tau=t-4}^t (\hat{\pi}_{i+\tau} - \bar{\pi}_t)^2 \right), \quad t=1, \dots, T$$

where denotes the mean point estimate of an expert  $i$ . This indicator shows how much the experts' point estimates vary over a two-year horizon. When the indicator is low, individual inflation expectations are relatively stable over time.

**Disagreement:**

Disagreement measures the average standard deviation of the experts' point estimates at a given point in time:

$$\rho_t = \sqrt{\frac{1}{n} \sum_{i=1}^n (\hat{\pi}_{it} - \bar{\pi}_{it})^2}, \quad t = 1, \dots, T$$

where is the mean of the aggregated probability distribution and thus indicates the average inflation forecast across all experts. The further apart the inflation forecasts, the greater the divergence and the larger the indicator.

among experts increased, which is likely to be due more to the high level of uncertainty surrounding the course of the pandemic than to the credibility of the ECB.

**Conclusion: keeping an eye on inflation expectations**

There are several factors that will keep headline inflation in the euro area elevated in the months ahead, especially as they are all acting simultaneously: In addition to rising energy prices—which are expected, however, to settle at the higher level now reached—these are also wage pressures, the effects of fiscal policy measures, pent-up demand, and increasing production costs. These factors will most likely only temporarily affect inflation or, like wage pressures, not be as significant as feared. However, there is the risk that markets' inflation expectations will change the longer inflation remains

at an elevated level and that they themselves will become a driver of inflation by setting a price-wage spiral in motion. In this case, the temporary price pressure could intensify.

An analysis of ECB survey data shows, however, that the currently observed increase in inflation has not yet had any impact on the medium-term inflation expectations. Thus, the ECB is enjoying a high level of credibility that it can keep inflation under control. Nevertheless, the ECB must continue to critically monitor the development of inflation expectations and, if necessary, rein in its loose monetary policy by reducing its asset purchases or even raising interest rates. Until then, however, not only central banks but also policymakers and academics should provide the public with fact-based information on the causes of current inflation in order to keep inflation expectations at a reasonable level for as long as possible.

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