

STUDY

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# Rising Inflation: Transitory or Cause for Concern?

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Policy Department for Economic, Scientific and Quality of Life Policies  
Directorate-General for Internal Policies  
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## **Abstract**

Consumer price inflation in the euro area has sharply risen to 3% in the course of 2021. This increase was mainly due to higher energy prices and other transitory factors. Recent macroeconomic forecasts generally expect inflation to return to below target values next year. However, there are several factors in place that could lead to more sustained upward pressure on prices, and materialisation of these upward risks could force the ECB to take difficult choices.

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## LIST OF ABBREVIATIONS

<b>Core inflation</b>	HICP excluding energy and unprocessed food
<b>ECB</b>	European Central Bank
<b>EP</b>	European Parliament
<b>EU</b>	European Union
<b>GDP</b>	Gross domestic product
<b>HICP</b>	Harmonised index of consumer prices
<b>NEIG</b>	Non-industry industrial goods
<b>NGEU</b>	Next Generation EU



## EXECUTIVE SUMMARY

- **Is inflation back?** After a long period of subdued inflation and strong downward pressure on prices in the beginning of the pandemic, inflation increased sharply to 3% in the course of 2021. The increase was driven to a large extent by base effects in energy prices and other transitory effects. However, there is a complex mixture of different factors in place that have the potential to put more sustained upward pressure on consumer prices.
- **Several demand and supply side factors could lead to further upward pressure on consumer prices.** Some of these factors have already led to increases of commodity prices, surging transportation costs or supply bottlenecks, but it is unclear how long they will prevail and to what extent they finally will pass-through to consumer prices. Other factors, such as the huge increase in purchasing power of private households due to the extra savings accumulated during the pandemic, as well as labour supply shortages, could further increase inflation during the ongoing recovery.
- **These factors have the potential to lead to more sustained price pressure in particular because they could reinforce each other.** If demand for consumer goods increases due to extra savings and, at the same time, production is limited due to supply bottlenecks this could result in higher price pressure. Firms that suffer from a deteriorated financial position due to the pandemic may pass-through rising costs, for example due to commodity price or wage increases, stronger to consumer prices than in the past. On top of this, an increase in inflation expectations can lead to persistently higher inflation via second-round effects.
- **Recent macroeconomic projections expect the recent hike in inflation to be transitory.** These forecasts rest on the assumption that above factors will fade out soon or that their impact will be small. Whether this assumption turns out to be correct, however, is uncertain. Inflation expectations or wages so far do not point to second-round effects. However, adjustment of expectations and second-round effects can follow with a lag.
- **Upwards risks for the inflation outlook dominate at the current juncture.** Inflation rates somewhat above target over the next years seems to be a reasonable alternative scenario to the baseline forecasts. On the contrary, a low-inflation scenario could materialise if commodity prices reverse and supply bottlenecks peak out soon. Such a scenario seems less likely for the near future as other factors would remain in place that bolster inflation.
- **While somewhat higher inflation would be welcomed by the European Central Bank (ECB), increases well above its inflation target would be challenging.** Within its new monetary policy strategy, the ECB can tolerate inflation rates somewhat above its target for some time. However, if inflation were to overshoot its target considerably, the ECB might face difficult trade-offs. On the one hand the ECB might be reluctant to substantially tighten its monetary policy stance if there is risk that this could cause stress in financial markets (especially on sovereign bond markets), to slow down the ongoing recovery from the pandemic, or to fall back into a low-inflation regime. On the other hand, if the ECB would react reluctantly to high inflation this could raise concerns about the credibility of the ECB to fulfil its primary objective – maintaining price stability – and lead to accelerating inflation due to rising inflationary expectations and second-round effects.

## 1. INTRODUCTION

**Is inflation back?** Harmonised index of consumer prices (HICP) inflation in the euro area has risen sharply up to 3% in recent months. This increase was preceded by a long period of subdued inflation and a marked decline with the beginning of the pandemic. The recent increase in inflation has been driven to a large extent by energy prices, which usually only have a temporary impact, and other transitory effects. Core inflation (HICP excluding energy and unprocessed food) is still below 2%. However, given that there are currently several factors in place with the potential to significantly impact inflation, the question arises whether the recent increase in inflation is only temporary or whether it marks the beginning of a period with persistently higher inflation.

**Several demand and supply side factors could lead to further upward pressure on consumer prices.** Some of these factors have already led to increases of commodity prices, surging transportation costs or price pressures due to supply bottlenecks, but it is unclear how long they will prevail and to what extent they will pass-through to consumer prices. Other factors, such as the huge increase in purchasing power of private households due to the extra savings accumulated during the pandemic, expansionary fiscal policy, or labour (supply) shortages could become more relevant for inflation dynamics during the ongoing recovery.

**While most of these factors can usually be expected to only have a temporary impact on inflation, they have the potential to lead to more sustained upward pressure on prices at the current juncture.** More sustained upward price pressure is more likely if these factors are propagated via higher inflation expectations so that second-round effects reinforce the initial increase in inflation. In the current economic environment, these factors could have higher effects on inflation than in normal times because the pandemic has weakened the financial position of firms in many industries. As a result, they may be more prone to pass-through higher input prices to consumer prices. Moreover, some of these factors could reinforce each other. Finally, the current rebound of activity falls into a period of very favourable financing conditions that could fuel additional upward pressure from the demand side.

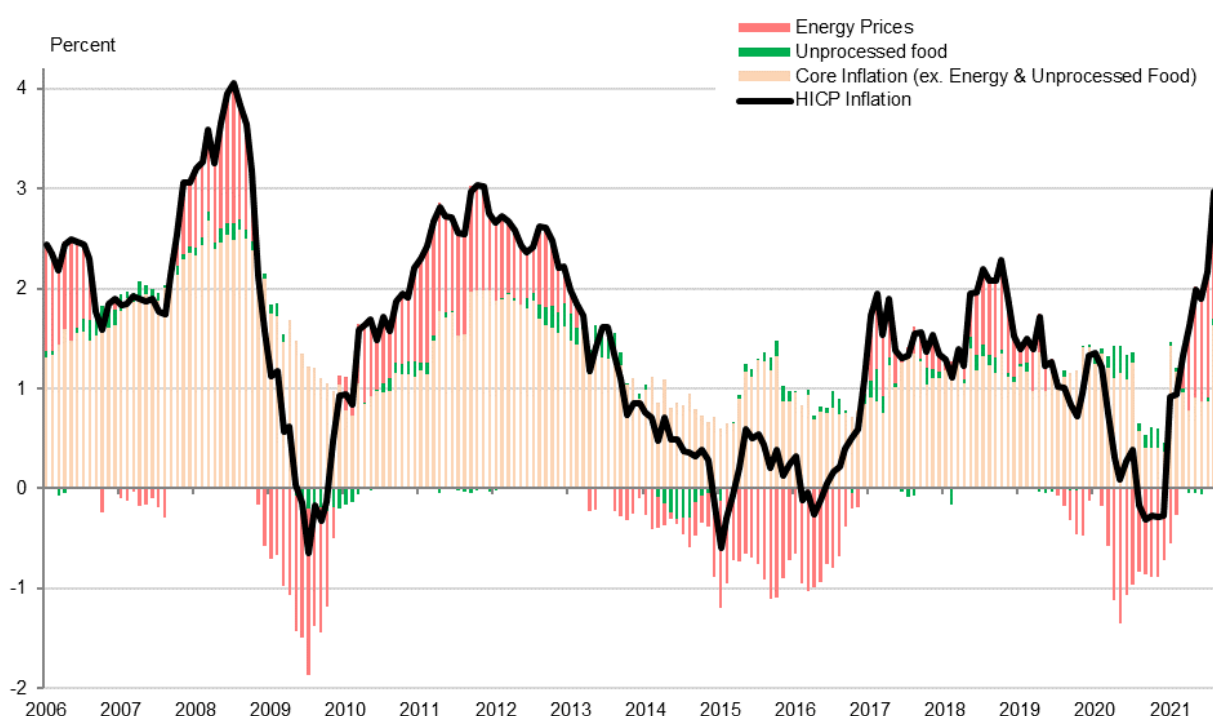
**To what extent higher inflation will materialise also depends the monetary policy reaction.** Central banks usually look through short-lived, reversible movements in inflation, but are more concerned about persistent increases in inflation, in particular, if they are fuelled by higher demand or second-round effects propagated via an increase in inflation expectations. The ECB signalled that it may be willing to tolerate inflation somewhat above its target for some time. However, if inflation increases well above target, the ECB may face a challenging trade-off as a substantial tightening could come with undesired side-effects.

**In this paper, we analyse the recent increase in inflation and discuss factors that could lead to more sustained upward pressures on prices.** We start with a comprehensive assessment of the recent increase in euro area inflation (Section 2). Next, we discuss several factors that have the potential to increase inflation on a sustained basis (Section 3). Building upon available projections, we then discuss the current inflation outlook as well as upward and downward risks (Section 4). We conclude with a brief discussion of implications for monetary policy (Section 5).

## 2. RECENT DEVELOPMENTS IN INFLATION DYNAMICS

**Consumer price inflation in the euro area has increased recently after several years of subdued price pressure.** Until 2008, the ECB was fairly successful in keeping consumer price inflation close to 2% (Figure 1). During the global financial crisis and in the following recovery, energy prices were particularly volatile, amplifying the cyclical shifts in core inflation at that time. Since 2012, at the peak of the sovereign debt crisis, core inflation went on a downward trend and headline inflation declined further, even into negative territory for some time, after the oil price dropped markedly in late 2014. Since then, the euro area experienced a period of subdued inflation, and the ECB struggled – with zero interest rates and various extraordinary monetary policy measures – to lead underlying inflation back to the target. Even from 2016 to 2019, when the euro area economy was expanding with rates in excess of potential growth and unemployment decreased steadily, core inflation was stuck at around 1%. With the COVID-19 crisis in 2020, consumer prices again fell below previous year's level. Main reasons were lower energy prices and a temporary value-added tax decrease in Germany in the second half of the year. Finally, in 2021, there was a steady increase in the annual rate of inflation on the back of several base effects. Core inflation, however, has not yet risen markedly beyond these base effects. Still, HICP inflation has risen sharply to 3% (year-over-year) in August, the highest rate since 2012, and the question arises whether the euro area is about to leave the low-inflation environment of the recent past.

Figure 1: HICP inflation in the euro area, 2006-2021



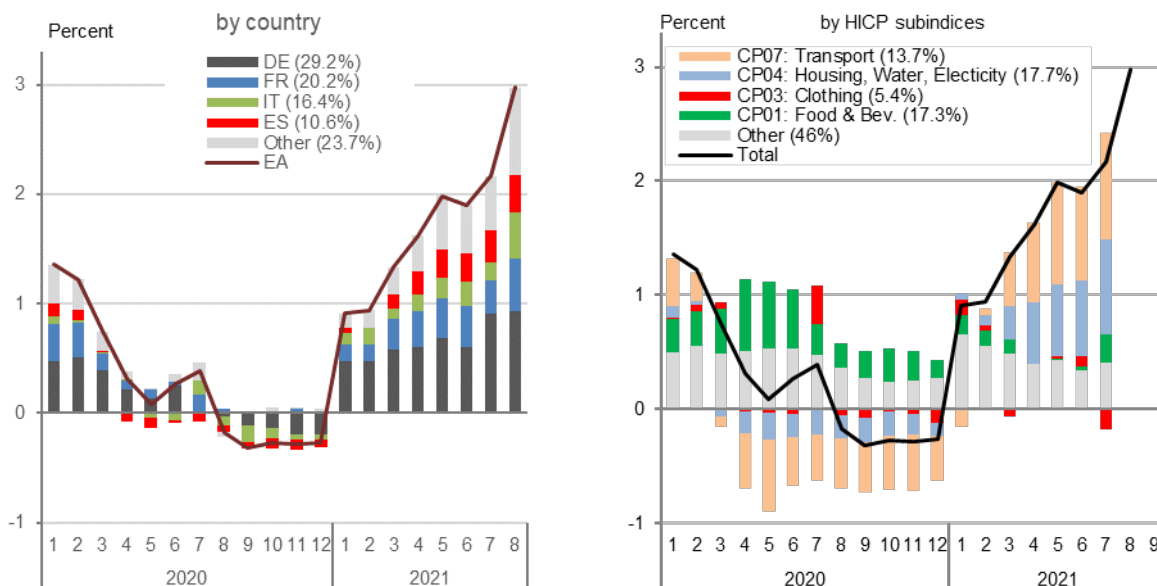
Source: ECB.

Notes: Monthly data, seasonally adjusted, change over previous year.

**The sharp increase in consumer price inflation in the course of 2021 is due to several special factors and base effects that are transient in nature.** Most relevant is the collapse of energy prices in early 2020, which despite their recovery in the second half of the year, considerably affects the year-over-year comparison throughout 2021. This base effect from energy prices contributes about 1.3

percentage points to headline inflation in mid-2021. Another base effect relates to the temporary value-added taxcut in Germany, which reduced euro area inflation by about 0.3 percentage points in the second half of 2020 and in turn adds the same percentage points to the (headline and core) inflation rate in the second half of 2021 (Figure 2a). Moreover, a newly introduced carbon tax in Germany adds about one tenth of a percentage point to euro area inflation throughout 2021. Also, there is a seasonal pattern in the price level of many countries with higher prices in the tourism season. In 2020, restrictions in the tourism sector as well as lower transport costs led to a deviation from this pattern with striking drops in inflation in countries like Spain or Greece. As a result, it is quite possible that in the course of a recovery of tourism activity, disproportionate price increases in related services will drive up inflation in 2021 and 2022. Finally, monthly fluctuations are partly due to shifts in the timing of summer sales in 2020 for clothing and footwear prices (in particular, in France, Italy and Belgium).

Figure 2: Decomposition of HICP inflation (a) by country and (b) products, 2020-2021



Source: Eurostat.

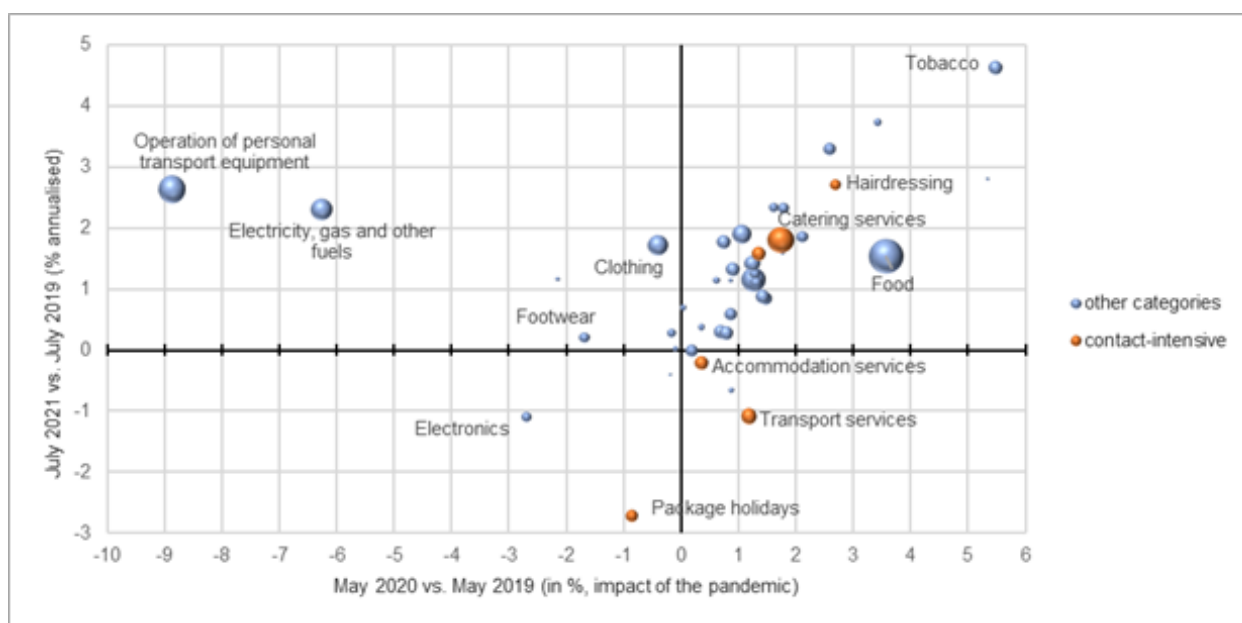
Notes: Contributions to overall HICP inflation rate (year-over-year) in the euro area. 2021 weights for countries and HICP sub-indices in brackets.

**With respect to product groups, the rise in inflation so far can almost entirely be attributed to 2 out of 12 subcategories of the HICP index that are susceptible to changes in energy cost.** These are "Housing, Water, Gas & Electricity" (CP04) and "Transport" (CP07), both of which were also major drivers of low inflation in 2020 (Figure 2b). On the contrary, food and non-alcoholic beverages (CP01) stabilised inflation in 2020 but did not contribute considerably to inflation in 2021. The other product groups have not yet shown a significant upward trend until recently.

**Prices in some contact-intensive industries have not fully recovered from the pandemic.** Economic activity in contact-intensive industries such as hairdressers, package holidays and services in catering, accommodation, recreation and culture as well as transport was hit hard by lockdown measures to curtail the spread of the virus. Prices in these industries make up around 18% of the HICP consumer basket. Both the immediate response to the pandemic as well as the subsequent recovery reveal some heterogeneity in terms of inflationary pressures within the group of contact-intensive sectors (Figure 3). Compared to a year earlier, package holidays were 0.9% cheaper in May 2020, but prices for accommodation services were up by 0.4%. As noted above, the biggest price falls came in energy-related categories of the HICP like personal transport equipment (incl. gasoline) and electricity,

gas and other fuels which fell by more than 5%. In line with the rebound in global energy prices, prices in these categories have increased markedly in July 2021 growing at an average annual rate of around 2.5% compared to July 2019. By the same measure, prices of package holidays as well as transport and accommodation services have not fully recovered with the average annual growth rate still below zero. Catering, recreational and cultural services were up by close to 2%, in line with the initial price response; at almost 3%, prices at hairdressing salons were also close to the year-on-year inflation rate seen in May 2020.

Figure 3: The impact of COVID-19 on contact-intensive and other HICP subcategories



Source: Eurostat; own calculations.

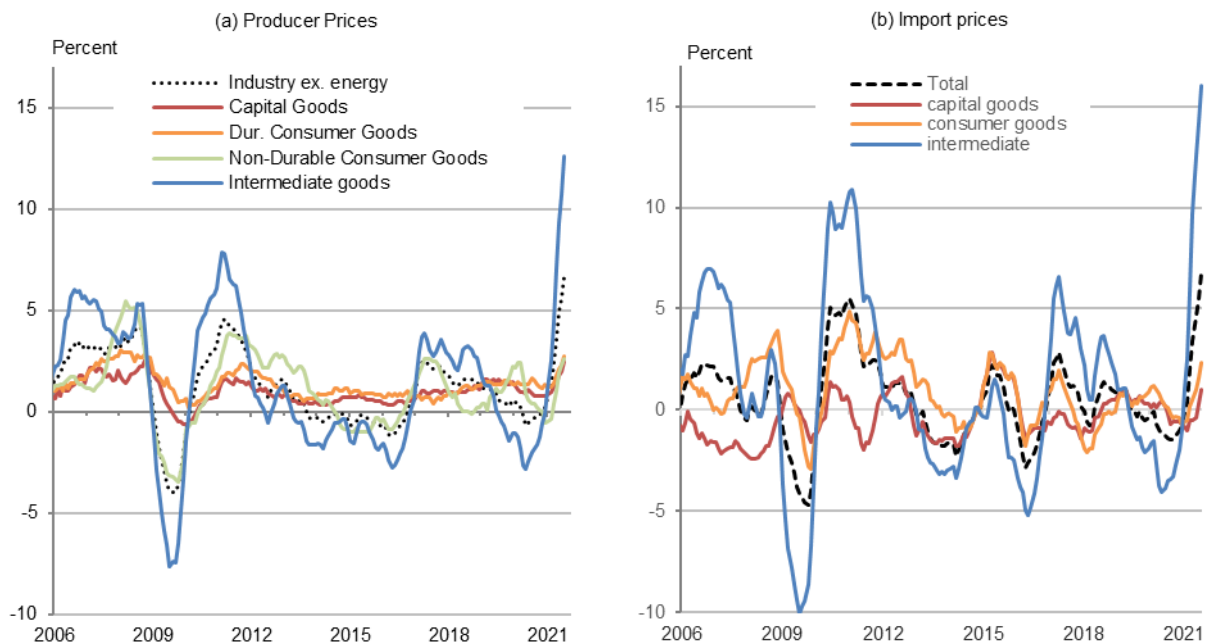
Notes: Price developments for 44 subcategories of HICP inflation rate during the pandemic. Bubbles sizes represent weights in the consumption basket. Contact-intensive categories include: hairdressing salons and personal grooming establishments, package holidays as well as accommodation, transport, catering, recreational and cultural services. Price changes between 2019 and 2021 are reported at an annualised basis. For example, an annualised increase by 1% indicates a price increase of 2% between 2019 and 2021.

**An inclusion of owner-occupied housing costs in the consumption basket would make the HICP more sensitive to housing market developments.** Privately owned residential property is both a store of value, i.e. an asset, as well as a consumption good since it provides a flow of housing services. The latter is currently not included in measures of consumer price inflation in the euro area, as the HICP only captures the cost of housing via rents and minor repairs. As a result of its recent strategic review, the ECB's Governing Council recognised that including owner-occupied housing costs in the consumption basket of the HICP would "better represent the inflation relevant to households"<sup>1</sup>. Such a modification of the HICP, however, would be a multi-year process. For almost all individual Member States, Eurostat already publishes indices of owner-occupied housing costs, which track residential property prices quite closely in some Member States like Spain, the Netherlands and France. This is in contrast to the United States where housing costs measured by rents and owners' equivalent rents are much less volatile than residential property prices. Due to the large co-movement between residential property prices and owner-occupied housing costs in some Member States (where owner-occupied housing is included in the consumption basket), measured inflation would rise more in periods of

<sup>1</sup> See <https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708~dc78cc4b0d.en.html>.

substantial house price inflation if owner-occupied housing costs would be included in the HICP, even though the impact would have been moderate in the past<sup>2</sup>.

Figure 4: (a) Producer prices and (b) import prices, 2006-2021



Source: ECB.

Notes: Monthly data, seasonally adjusted, change over previous year.

**Soaring prices in early stages of the production chain suggest that more inflation is in the pipeline.** Consumer price inflation has increased in 2021, but up to this point not in excess of what could be expected from the numerous transitory effects. Soaring prices for raw materials, transport costs, producer prices and import prices, however, suggest that there is additional price pressure in the pipeline that could materialise in the near future in rising consumer prices (Figure 4). In particular, prices of intermediate goods, which are a major component of non-energy producer prices and of import prices, have increased by double-digit rates and in excess of what has been observed over the past 15 years. Lately, the other components of producer prices and import prices – consumer goods and capital goods – have also picked up.

**A rise in producer prices could materialise – with some delay – in higher consumer prices, though there is considerable uncertainty with respect to the pass-through.** It is unclear to what extent price increases in early stages of the production process can be expected to translate into rising consumer price inflation, in particular to non-energy industrial goods inflation (NEIG inflation), which has a weight of about one quarter in the HICP basket. Empirical studies are scarce, but available evidence indicates that the pass-through of intermediate goods PPI to non-food consumer goods (first stage) has a pass-through of about one quarter and takes half a year, and that the further pass-through to NEIG inflation (second stage) takes at least another year (Koester et al., 2021). That said, there is considerable uncertainty whether firms along the production and distribution chain vary their pricing

<sup>2</sup> Gros and Shamsfakhr (2021) calculate that quarterly core inflation would have been around 30 to 40 basis points higher between 2017 and 2020 if the HICP included owner-occupied housing costs; from 2012 to 2013, however, when residential property prices were falling, core inflation including the cost of owner-occupied housing would have been lower than the official measure. Similarly, in an earlier assessment by the ECB, the inclusion of owner-occupied housing costs in the (overall) HICP was found to have an effect of up to 20 basis points in any individual quarter but no differences in average inflation over the period 2011 to 2016 (ECB, 2016).

behaviour overtime depending on several factors like "capital utilisation, the stock of inventories, profit absorption and the competitive environment". The pass-through may also be dependent on whether producer prices remain on higher levels for an extended period of time or start to reverse soon.

**The recent surge in consumer price inflation is a global phenomenon.** On the back of rising energy prices and economic recovery, global inflation - defined as the median consumer price inflation among 81 countries - has increased and risen above pre-pandemic levels by the spring of 2021 (Ha et al., 2021). In the United States inflation has accelerated markedly with year-on-year inflation reaching 5%. Price increases, however, have been concentrated in a few categories where prices surged. One of the main drivers were prices of used cars and trucks which have increased by over 40% since February 2020, amid a rise in demand for private mobility and supply chain disruptions that hampered production of new vehicles. In addition, prices for services like hotel accommodation and air travel that dropped during the onset of the pandemic recovered to pre-crisis levels as the US economy reopened. Market-based inflation expectations for the coming five years, as measured by the difference between inflation-protected and nominal government bonds, have risen to their highest levels since 2008 but at 2.5% percent remain much lower than the current increases in the consumer price index.



### 3. FACTORS THAT CAN LEAD TO A SUSTAINED RISE IN MEDIUM-TERM INFLATION

**The current economic environment seems to be conducive to higher inflation.** The pandemic has led to a historical slump in economic activity but is very different from other economic crises and can be hardly classified into a demand and supply scheme that is frequently used in economic analysis. One important difference to other crises, such as banking crises, is that the economic slump is not the result of the build-up of imbalances before but that economic activity was interrupted due to the private or public containment measures. As a consequence, economic activity is rebounding as soon as containment measures are faded out and the economic recovery exhibits a much faster pace compared to other crises. In this regard, the impact of the COVID-19 crisis across industries was also very heterogeneous as some contact-intensive service industries were hit particularly hard. Moreover, despite the comprehensive fiscal support packages the financial health of many firms deteriorated since the beginning of the pandemic (Demmou et al., 2021). Therefore, these firms may be forced to pass-through higher input costs and increase output prices to a larger extent than in normal times. Finally, financial conditions have been and are very favourable for an extended period of time. While the impact of monetary policy, which is behind these favourable conditions, on inflation seems to have been rather weak in the euro area since the global financial crisis, the impact may increase if other factors trigger higher inflation and in particular increase medium- to long run inflation expectations.

**At the current juncture, there are several factors that could lead to a more sustained rise in inflation over the next years.** Many of these factors are interdependent and could reinforce each other. However, to organise thoughts we start by discussing the factors separately. One important factor behind inflation dynamics are fluctuations in raw material prices. While increases or decreases in raw material prices usually only lead to short-lived, reversible movements in inflation, recently a discussion has intensified whether a commodities supercycle is underway leading to more persistent upward pressure on prices (Section 3.2). Moreover, the pandemic came along with unprecedented supply bottlenecks that have led to strong price increases for specific goods and which could last for an extended period of time (Section 3.3). The pandemic has led also to a huge increase in the savings ratio of private households due to restricted consumption possibilities. If a significant amount of the resulting extra savings would be used for consumption this could boost economic activity and prices (Section 3.4). The large fiscal stimulus packages that are underway will add to demand and could increase upward pressure on prices (Section 3.5). Furthermore, tight labour markets may lead to stronger increases in wages that could translate into higher inflation (Section 3.6). Most of these factors are temporary in their nature, even though they have the potential to lead to a more sustained upward pressure on prices than in the past decade. However, the upward pressure on prices may continue beyond these temporary periods if these factors trigger a sustained increase in inflation expectations. Due to the prominent role of inflation expectations for inflation dynamics, we start by discussing different measures of expectations and their recent developments (Section 3.1).

#### 3.1. Inflation expectations

**Inflation expectations play a dual role for monetary policy by affecting price and wage setting and reflecting the credibility to achieve its policy target.** Inflation expectations are an important intermediate target for policymakers and a key indicator for the propagation of monetary policy shocks and have become even more important in times of unconventional monetary policy (Sousa and Yetmann, 2017). Central banks try to affect expectations by informing the public about the future stance of monetary policy (signalling channel), and one aim of asset purchases by the ECB has been to stabilise inflation expectations.



**There is rich evidence that expectations affect behaviour of firms and households, implying that monetary policy can influence economic activity by managing expectations.** Inflation expectations can have direct impact on the price-setting of firms, long-term interest rates and other financial market variables. Higher inflation expectations also lead to a higher probability that consumers purchase goods (Duca et al., 2018). In turn, inflation expectations can also be driven by a wide range of factors, such as wages, the expected path of the real economy, or financial variables. However, experimental and empirical evidence has so far struggled to provide clear evidence on how expectations are formed and can be directly influenced by monetary policy. Inflation expectations of households and firms do for example not systematically respond to all monetary policy announcements (Coibion et al., 2020; Lamla and Vinogradov, 2019). Short-run and long-run expectations are driven by different factors. The former predominantly reflects recent – including transitory – factors affecting inflation while the latter more reflects the credibility of the central bank to achieve its inflation target in the long-run. As a result, long-run inflation expectations are often anchored in the sense that short-run macroeconomic news are considered neutral by market participants (Nautz et al., 2019).

**There are several measures available for inflation expectations.** They can be distinguished into survey-based and market-based measures. Survey-based measures reflect the expectations (or forecasts) of either consumers or professionals while market-based measures are based on realised prices on financial markets<sup>3</sup>. In surveys, the mean across respondents is usually adopted as a measure of expectation given the existing evidence that the combination of forecasts reduces the resulting forecast error. Market-based measures can be derived based on a comparison of derivatives, such as inflation-linked swaps, with and without inflation adjustment.

**Survey-based and market-based expectations are both subject to forecast errors.** Market-based measures also contain risk premia which implies the need to disentangle the expectation and the risk component, while survey-based measures are often based on small samples with, for example, nationally representative surveys of firms missing (Coibion et al., 2020). Theoretical models have demonstrated that different kinds of information rigidities help to explain forecast errors. Sticky information models argue that forecasters partly are inattentive to shocks while noisy information models are based on the idea that market participants only receive noisy signals about the underlying shocks, which drive inflation (Coibion and Gorodnichenko, 2012). Nevertheless, both kind of measures contain useful information about future inflation (Meyler and Grothe, 2015).

**Survey forecasts also provide information regarding uncertainty about future inflation.** This is important given that central banks seek to reduce uncertainty about the future economic outlook. The standard deviation across individual forecasts provides additional information about the distribution of forecasts. Consensus Economics provides forecasts of professional forecasters for consumer price inflation for a broad range of countries and time horizons. Participants include both private banks and research institutes. Names of forecasters are published which increases the credibility of forecasts due to reputation effects (Beckmann and Czudaj, 2018). Consensus Economics also has a good track record compared to forecasts of the International Monetary Fund (An et al., 2018)<sup>4</sup>.

**Euro area inflation forecasts of professionals have shifted upwards but do not exceed 2% in the next years.** Consensus inflation forecasts have increased in particular for 2021. Since the beginning of

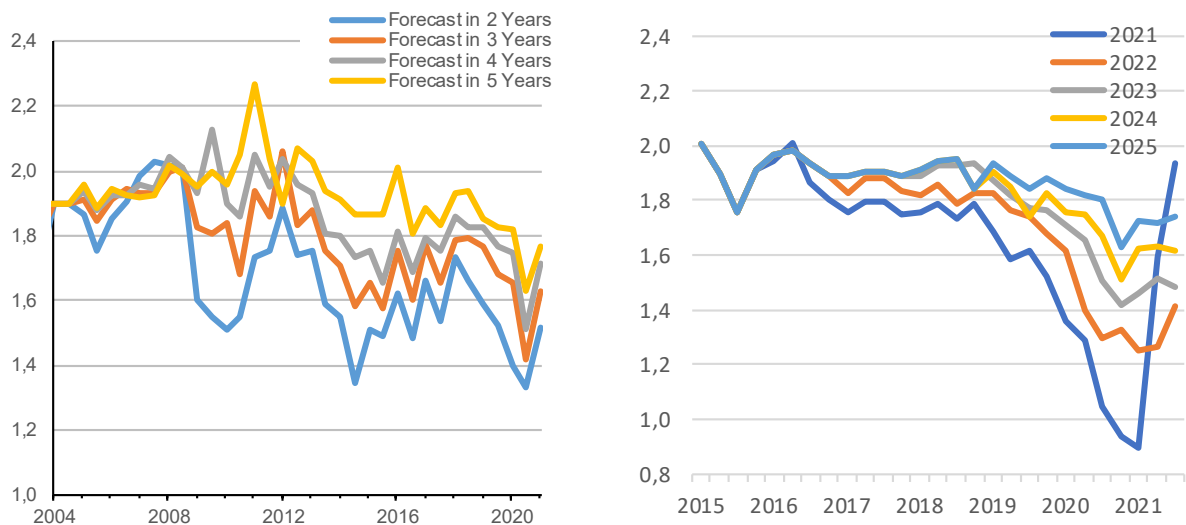
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<sup>3</sup> Professional inflation expectations also have the potential to affect household expectations (Carroll, 2003).

<sup>4</sup> Consensus Economics provides forecasts for a given year at each month or quarter the survey is conducted (fixed event forecasts). Forecasts for the current and the next year are published monthly while long-term forecasts are published quarterly.

this year, forecasts were revised upwards from below 1% to about 2% (Figure 5b)<sup>5</sup>. While the long-run forecasts, e.g. for 2025, declined somewhat at the beginning of pandemic, possibly reflecting fears of a negative long-run impact on the economy, they increased again in the second half of 2020 and are now approaching the previous range of 1.8% to 2%, which was consistent with the inflation target of the ECB (Figure 5a). However, the 5-year forecasts (last value from July 2021) do not reflect the adjusted inflation target of the ECB, yet. These forecasts align with the most recent ECB survey of professional forecasters and market-based indicators (Figure 6a)<sup>6</sup>. Long-run market inflation expectations (10y/10y) declined already in 2019 and dipped at the beginning of the pandemic. Since then, long-run expectations recovered and are now in line with the new inflation target of the ECB. Consensus forecasts for core inflation in 2021 and 2022 are at 1.3% percent, respectively, indicating that professional forecasters think that the increase in inflation is largely due to transitory factors<sup>7</sup>. Overall, survey expectations over the next 5 years hardly exceed 2%. For example, the highest single forecast for inflation in 2026 across all participants of the Consensus Economics survey in July 2021 is 2.6%. Disagreement among forecasters – a measure of forecast uncertainty – is at moderate levels in historical comparison.

Figure 5: (a) Medium-run forecasts for the euro area, Consensus Economics, 2004-2021 and (b) Forecasts for 2021-2025 for the euro area, Consensus Economics



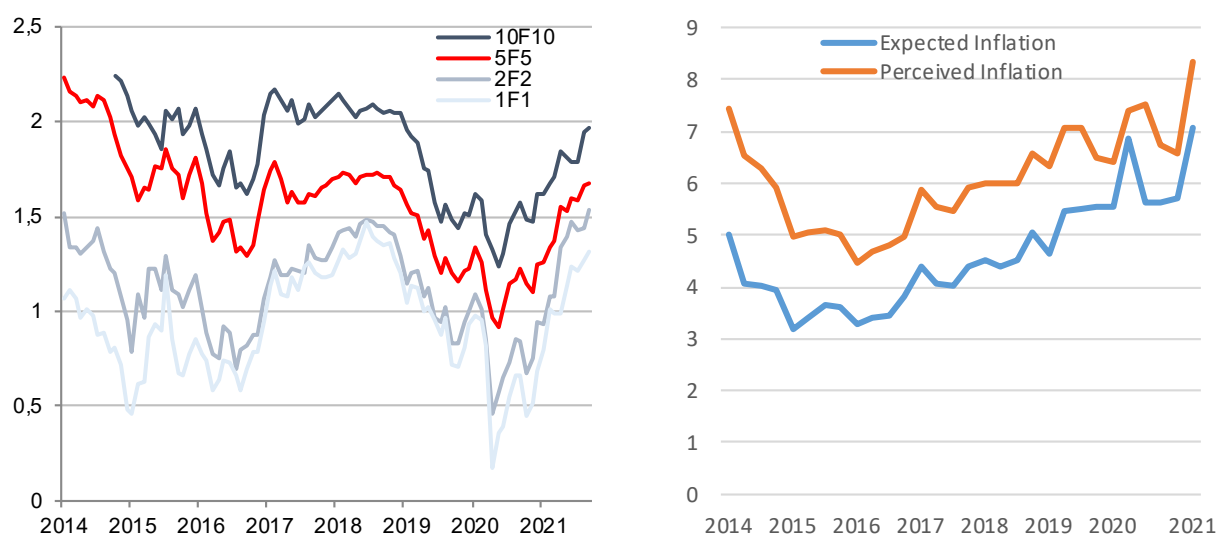
Source: Own illustration based on quarterly mean long-run forecasts from Consensus Economics. Figure a) provides fixed-horizon forecasts for the next 2-5 years while Figure b) shows fixed event-forecasts for 2021-2025.

<sup>5</sup> Figure 5b shows quarterly consensus forecasts because they provide consistent short- and long-run forecasts. Forecasts for the near term are updated on a monthly basis. The most recent mean forecast from August for inflation in the euro area in 2021 increased to 2.1% with a mean forecast for 2022 of 1,5%.

<sup>6</sup> Fluctuations in market-based measures compared to professional forecasts often reflect correlation with risk premia rather than changes in inflation expectations (Lane, 2021). However, the recent increase coincides with the changes of survey forecasts.

<sup>7</sup> Inflation forecasts among professionals also do not differ across the Member States over the medium run. There is a significant wedge between Germany and Greece for 2021 but forecasts across countries for the next years hardly differ more than 0.5 percent over the medium run. Inflation forecasts have recently strongly revised upwards for some countries, for example Germany, while forecasts for other countries clearly remain below 2 percent. This is also mostly true for the highest inflation forecasts across the different member states. The disagreement among professionals is at normal levels, despite for Greece.

Figure 6: (a) Market-based inflation expectations for the euro area and (b) Consumer inflation expectations



Source: Own illustration based on data from Datastream and the European Commission. Figure a) display market-based expectations based on forward inflation-linked swaps. Figure b) includes perceived price trends over the last 12 months ("Perceived Inflation") and expected price trends over next 12 months ("Expected Inflation") among consumers for the euro area.

**Inflation expectations of consumers are significantly higher compared to professional and market-based forecasts.** Consumer forecasts tend to be less accurate compared to professional forecasts and disagree more about the path of inflation (Coibion et al., 2020). However, even though consumer forecasts in the euro area systematically exceed actual inflation, a strong correlation between both can be observed (Arioli et al., 2017). According to the recent Consumer Survey of the European Commission both perceived over the last and expected inflation over the next 12 months have sharply increased from April to July 2021 (Figure 6b). The Figure also shows that perceived inflation exceeds the expected inflation rates throughout the sample.

**Forecasters adjust their expectations according to incoming information and may do account for shifts in trend inflation with some delay.** Forecasts can be revised quickly with incoming data when forecasters account for recent price developments and revise their expectations for the next months. This pattern emerged, for example, in inflation expectations in this year. However, both survey- and market-based measures are subject to substantial forecast errors and tend to miss shifts in trend inflation. For example, forecast errors were particularly large during the global financial crisis and there are some periods where errors exhibit some persistence, including the period between 2011 and 2014 when inflation was much lower than predicted for an extended period. Inflation has been both under- and overestimated in the recent past with absolute forecast errors of around 1 percent. Therefore, it is quite possible that forecasts systematically underestimate an upward trend in inflation and are unable to anticipate turning points in inflation dynamics. Overall, the path of different expectation measures should be closely monitored to account for heterogeneity across different measures and the gradual adjustment in expectations (Lane, 2021).

### 3.2. Prices of raw materials – a new supercycle?

**The diagnosis of a new commodity supercycle is premature.** Over the past twelve months, commodity prices have risen sharply across the board. This has fuelled the idea of a new "supercycle", i.e., a long-lasting and broad-based rise in commodity prices at rates well above the long-term trend

(Goldman Sachs, 2020). In that case, upward pressure on consumer prices emanating from raw materials would persist over a longer period of time and could not be regarded as transitory. However, the rise in commodity prices since last spring is so far partly only a rebound from extremely depressed levels and to a large extent the reflection of the rapid recovery of the global economy, especially in industry. It is also important to note that the market situation as well as the price level in historical comparison varies greatly for the individual raw materials.

**Oil prices are not high by historical standards and a substantial further increase seems unlikely.**

In energy commodities, which account for around two thirds of the commodity market, demand has still some way to go to fully recover from the consequences of the pandemic. Oil consumption is expected to be 3.5% lower in 2021 than in 2019. The peak prices of more than USD 100 per barrel recorded around ten years ago are still a long way off. That the price of crude oil has returned to its pre-crisis level is mainly because production has been restricted by Organization of the Petroleum Exporting Countries (OPEC) in conjunction with Russia, although output has been reduced also elsewhere, including in the US. The policy of production restraint has been successful in bringing down inventories, which initially rose sharply during the crisis. Inventories are now below pre-pandemic levels, a situation that could lead to price spikes in case of unexpectedly strong demand or downward surprises in supply. There is, however, still a lot of spare production capacities, and OPEC has indicated that it is willing to meet rising global demand and has started to ease its production restrictions. In addition, fracking activity in the US is picking up again at the current price level. Supply from other countries is also expected to rise as there is every incentive to bring available resources to the market before global oil demand peaks amid progress in decarbonisation of the world economy later in this decade. All this makes a sustained further rise in the oil price in the coming years unlikely.

**Metal prices are pushed up by supply constraints and strong demand partly related to stimulus programs and investments to accelerate the energy transition, which could lead to sustained price pressure.**

The situation is different for iron and steel and for nonferrous metals. Here, pre-crisis price levels have been significantly exceeded and prices remain historically high despite some moderation in recent weeks. A strong increase in demand met with temporarily reduced supply due to the negative impact of the pandemic on production. In the longer term, supply is limited by the fact that investment in production facilities has been cut back in the face of depressed price levels in recent years, and any expansion of capacity will take substantial time to materialise. Partly the increase in demand for metals is a result of economic stimulus programmes to boost the economy, which are expected to increase investment over several years. For the United States, there is already talk of a supercycle in the construction industry, which accounts for more than 40% of US steel consumption and thus also a significant share of global demand for iron ore and steel refiners (Morgan Stanley, 2021). The NextGenerationEU (NGEU) programme in the European Union, which runs until 2025, will also stimulate the construction industry. Demand for a number of nonferrous metals in particular (lithium, copper, aluminium, cobalt) is also expected to experience a strong structural increase in the coming years as a consequence of the expansion of renewable energies, the switch to electromobility and additional efforts to expand IT infrastructure, which are gathering momentum in many countries. Against this backdrop, there is a fundamental basis to the expectation of a sustained price increase in this raw material segment.

**Food prices could contribute to higher inflation in the future.** The prices of many agricultural raw materials have also risen significantly recently. For many products, such as cotton and rubber, they are, however, still within the fluctuation ranges seen in recent years. The drastic rise of lumber prices in Europe and North America until spring seems to have reversed and thus appears to have been a temporary phenomenon. However, important food quotations on the world market have risen close to

their historic highs, and in the case of corn and soybeans even significantly above them. This is mainly due to weather-related weak harvest prospects in important producer countries, with speculative market participants anticipating the resulting future supply bottlenecks and thus pricing them in at an early stage. In the past, price spikes on the food markets have regularly reversed when, in years with good harvests, production exceeded consumption again and stocks could be replenished. There is, however, a risk that unfavourable weather becomes the norm rather than the exception as a result of global warming, reducing productivity of staple food crops over the coming years on a global scale and driving up prices persistently.

### 3.3. Supply bottlenecks and transport costs

**Persistent supply bottlenecks hamper production in manufacturing.** A first wave of supply bottlenecks occurred in the beginning of the pandemic in spring 2020 mainly related to supply chain disruptions due to pandemic-related restrictions. While these problems largely faded out in summer 2020, supply bottlenecks intensified again at the beginning of the year and reached unprecedented levels according to different indicators. For example, the share of manufacturing firms reporting that a "shortage of material and/or equipment" is limiting their production reached a historical peak in the third quarter 2021 at roughly 40%. The problems become also visible in the recent disconnect between new orders and production in the manufacturing sector. As a consequence, survey indicators reflecting the backlog of orders and delivery times reached record-levels as well, recently.

**There are several reasons behind the supply bottlenecks.** Some of these reasons are directly related to the pandemic. In particular, the pandemic-related restrictions have led to a shift in consumption of private households from services – which have been less available (and less attractive) for consumers during the pandemic – towards durable consumption goods. As a consequence, demand for raw materials and intermediates, such as wood, metals, chemicals or semiconductors, has increased and as producers of these goods were not able to meet this demand immediately, so delivery times increased considerably. These shortages intensified also because many firms did not expect the strong rebound of economic activity after the economic slump at the beginning of the pandemic as recoveries following other economic crises used to be rather sluggish. For example, many car producers cut their orders for semiconductors at the beginning of the pandemic in the expectation that they would need to reduce production and as consequence were not able to respond when demand picked up. Finally, supply was restrained due to transportation bottlenecks. The regional heterogeneity in economic recovery triggered logistical problems in maritime transportation that were intensified by additional disturbances, such as the shut-down of significant port capacity in China due to COVID-19 outbreaks and a temporary blocking of the Suez Canal.

**The complexity of the supply bottlenecks makes it unlikely that they disappear soon.** Given that some of the supply bottlenecks are already in place since last year – and have intensified in the meantime – and that several factors contribute to the bottlenecks, it is likely that they will stay in place for some time. Following the global financial crisis when supply bottlenecks were a problem for the manufacturing industry as well – albeit at a much smaller scale compared to today – it took about one year after their peak to fade out according to survey data. However, while it is uncertain when they will disappear there are several reasons that they could ease in the near future. First of all, firms will adjust to the supply bottlenecks by increasing their production of intermediates and by adjusting their production chains. Second, to the extent that the impact of COVID-19 on the economy will ease, private consumption will readjust from durable goods back to services, lowering the demand for scarce intermediates. Third, to the extent that supply bottlenecks lead to price increases, demand for the affected consumer goods could be dampened and in turn demand for scarce intermediates would also



decrease.

**The impact of supply bottlenecks on consumer price inflation is difficult to gauge.** To what extent supply bottlenecks have contributed to the increase in inflation is difficult to entangle as their impact overlaps with other factors, such as surging raw material prices or COVID-related price increases. Moreover, the extent to which cost pressures of producers are passed-through to consumer prices can vary over time and may have weakened in the past decade (del Negro et al., 2020). Finally, price pressures from producer prices still in the pipeline may need some time to be passed-through to consumer prices (Koester et al., 2021). Many of the goods in short supply only account for a relatively small share in production costs, such as semiconductors in car production or transportation costs for most manufactured goods, but they can have a notable impact on consumer prices if they lead to a limited supply on a broader scale or if their prices are sky-rocketing (e.g., some container freight rates have risen by a factor of 10). The impact of supply bottlenecks will mainly show-up in non-energy consumer good inflation within the HICP. In August, inflation in this category increased to 2.7% from 0.7% in July, the largest increase since the introduction of the euro<sup>8</sup>. Given the share of non-energy consumer goods in the HICP of 27% in 2021, fluctuations in this category can have a significant impact on headline inflation. However, price fluctuations of non-energy consumer goods could reflect also other factors, such as the increase in raw material prices. If the supply bottlenecks remain significant for some time to come, the impact on prices could intensify in the near future, in particular as pass-through to consumer prices usually takes some time. However, once supply bottlenecks have peaked out, easing market tensions begin to put downward pressure on prices.

### 3.4. Extra savings

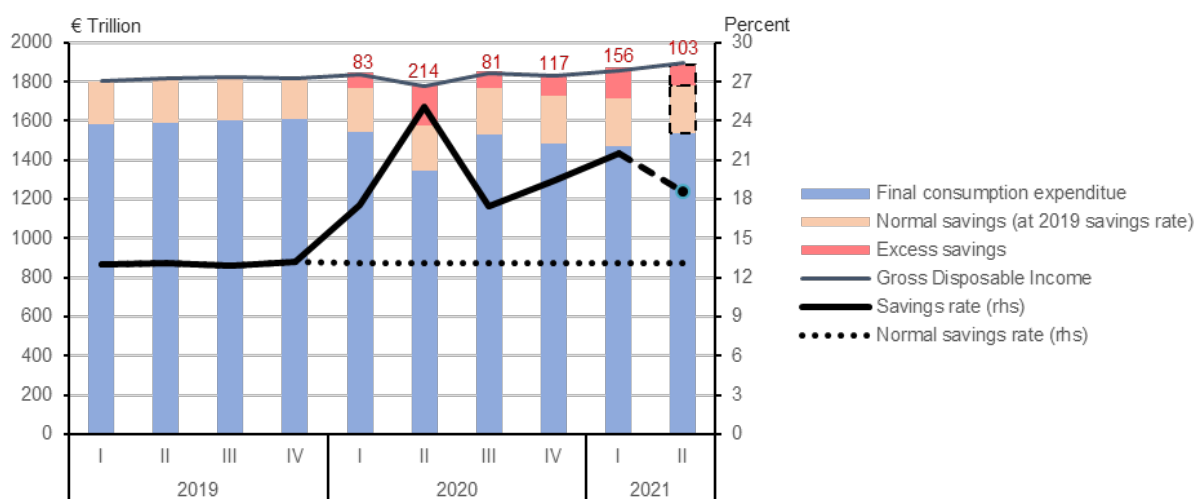
**The COVID-19 crisis has led to an unprecedented increase in the savings ratio of private households.** The pandemic triggered a slump in private consumption – due to either public containment measures or private self-restraint – while disposable income has been less affected not least due to fiscal transfers. As a consequence, the savings ratio of private households jumped from its pre-crisis level of about 13% to 25% in the second quarter 2020 (Figure 7). With the easing of the pandemic-related restrictions, private consumption started to recover and the savings ratio declined. However, in the early 2021 savings were still far above their pre-crisis level. In this period, private household accumulated excess savings (compared to savings that would have prevailed at pre-crisis savings rate) of about EUR 750 billion or more than 10% relative to disposable income in 2019.

**Pent-up demand could lead to sustained upward pressure on inflation.** If extra savings are spent to a large extent for consumption, this can put significant upward pressure on consumer prices due to the large size of these savings. To what extent pent-up demand will result in an increase of volumes or prices is unclear. However, extra savings may increase the willingness to pay of private households, particularly against the backdrop of forgone consumption since the beginning of the pandemic, so that the impact on prices might be higher than in normal times. Scenario analyses on the potential impact of pent-up demand are scarce. One analysis for key advanced economies (United States, United Kingdom, and Japan) suggests that if 70% of the extra savings will be spent until the end of 2023 this would increase inflation in these economies by roughly 0.5 percentage points in each year (Attinasi et al., 2021). An analysis for Germany suggests that in a scenario, in which 45% of extra savings will be spent within 2 years (starting at the beginning of 2022) the HICP inflation rate would be 0.1 percentage point higher in 2023 compared to a scenario, in which 35% will be spent within 3 years (Deutsche

<sup>8</sup> The increase is not result of a base effect as the inflation rate in July 2020 was 0.3%; on average the inflation rate between 1999 and 2019 was 0.6%.

Bundesbank, 2021). Relatively small effects of pent-up demand on inflation are in line with Phillips curve estimates that suggest a relatively small impact of the output gap on consumer prices (Annex A). However, to the extent that very large increases in demand have more than proportional effects on consumer prices (e.g. if supply cannot meet additional demand in the short-run) and that an increase in the output gap due to private consumption has more than proportional effects on consumer prices, analyses based on historical data may underestimate the potential impact of pent-up demand on inflation.

Figure 7: Excess household savings in the euro area, 2019-2021



Source: Eurostat; own calculations and representation. 2021 Q2 savings rate: Own estimate.

**Macroeconomic forecasts usually assume that only a moderate share of extra savings will be spent for consumption.** The additional savings increased the wealth of private households beyond what would have been expected before the crisis. Wealth effects on private consumption are estimated to be relatively low compared to income effects and vary across countries (de Bondt, 2019). However, the additional savings were accumulated to a large extent involuntarily (Dossche et al., 2021). Therefore, it is not obvious whether wealth effects estimated with historical data provide a good guidance for the impact of extra savings on consumption. When private households were to use these savings to the same share as they would use additional income the impact on private consumption would be large. While some surveys indicate that private households indeed plan to spend some of the extra savings for consumption (Deutsche Bundesbank, 2021), it is difficult to quantify the exact amount. In most macroeconomic projections, including the one of the ECB (2021), it is assumed that only smaller parts of these savings will be spent for consumption. One argument in favour of this assumption is that additional savings were accumulated to large extents by wealthier and older households who have typically a lower propensity to consume (Friz and Morice, 2021). Moreover, the decline in consumption was mainly driven by a decline in services consumption while consumption of durables rebounded already in the second half of 2020. Pent-up demand for services is less likely than for other goods because many services need time to consume so that the scope is smaller to make up for forgone consumption. Pent-up demand can also be limited if some of the accumulated savings are used for housing investment or because self-employed and micro-enterprises, whose savings have been eroded during the pandemic, will increase their savings when their income increases again. However, to what extent accumulated savings will finally lead to additional private consumption is an open question.

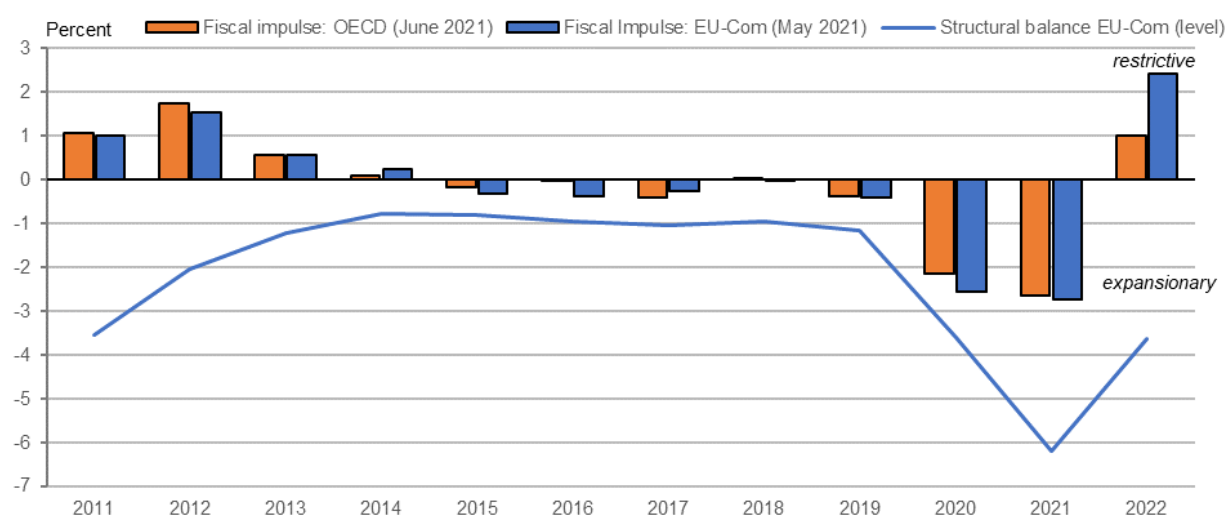
### 3.5. Fiscal policy

**Fiscal policy in the euro area is even more expansionary in 2021 than in 2020.** Estimates of the output gap and fiscal variables by the European Commission (2021) and the OECD (2021) allow an assessment of the fiscal policy stance in the euro area. Of particular interest is the structural primary balance, i.e. the government budget balance, adjusted for cyclical effects, one-offs and changes in interest expenditure. The yearly change of this balance can be interpreted as the fiscal policy stance, as it is supposed to capture discretionary fiscal policy decisions. An increase in the primary structural balance indicates restrictive fiscal policy, a decline implies expansionary policies, and stability in the balance implies a neutral stance. Based on these numbers, the fiscal impulse in 2021 is expected to be even more expansionary than in 2020 as the primary structural balance declines by almost three percentage points (Figure 8). This appears excessive, given that economic activity has largely bounced back after the vaccination campaign in Europe gained grip and most restrictions were withdrawn. In this situation, when there is no lack of disposable income (but large amounts of extra savings), combined with a widespread desire to resume pre-crisis consumption patterns once the restrictions are gone, substantial fiscal stimulus is – arguably – not required to support the recovery. Moreover, governments are currently unrestricted by European fiscal rules, which have been deactivated under the general escape clause for 2021 and also 2022, so decision makers in some countries might be tempted to take more action than required. Against this background, euro area fiscal policy in 2021 may constitute another factor with the potential to contribute to inflationary pressures. For 2022, the fiscal plans indicate a consolidation, but there is high uncertainty what governments will actually do, and the expected level of the structural balance in 2022 (blue line) would still be far away from its pre-crisis level and from its medium-term objective (MTO). According to current fiscal rules, the MTO for the structural deficit is 0.5% for most countries.

**The political debate points to a reform of the fiscal framework that allows for additional fiscal spending in the years ahead, adding another factor with the potential to contribute to inflationary pressures.** There appears to be a widespread desire to reform the fiscal framework, and in particular to loosen and simplify the current set of fiscal rules (Ilzetzki, 2021). As the General escape clause is currently in place, there is an opportunity to reform the European fiscal framework off-duty before the rules laid down in the fiscal compact are applied again after the crisis (Gern et al., 2020). Under the impression of low inflation and interest rates over the past years, many governments will tend to loosen restrictions, allow for higher debt and for additional investment in the years ahead, for example to support digitalisation and decarbonisation. An instrument that is already put in place is the NGEU programme that was designed in 2020 to provide a joint fiscal crisis response. A major element is the Recovery and Resilience Facility, which distributes on average funds worth about 2.5% of GDP over the years 2021-2026 as grants to EU countries. However, the additional EU debt, which will require debt service from within EU countries one way or the other, will not be accounted for in national debt figures. Similarly, EU grants to national budgets allow for additional spending, by which fiscal rules are effectively loosened until 2026 (Darvas and Wolff, 2021). The NGEU programme can be interpreted as a major first step towards joint debt, less fiscal restrictions and additional expenditures – and it is conceivable that further steps will follow. A less restricted, more active role of fiscal policy and additional expenditures on a permanent basis would – *ceteris paribus* – contribute to inflationary pressure.



Figure 8: Fiscal impulse: change in the euro area structural primary balance, 2011-2022



Source: European Commission; OECD; own Calculations.

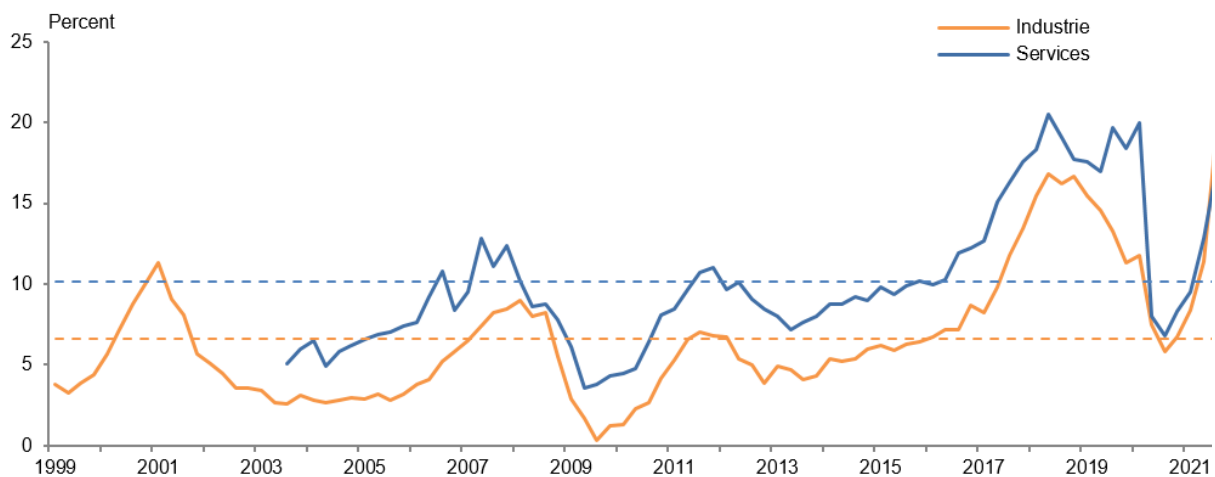
Notes: Yearly data, in relation to potential GDP. Bars: Change of the structural primary balance in percentage points.

**The impact of fiscal policy on consumer prices also depends on the structure of revenues and expenditures.** Expansionary fiscal policy can impact consumer prices by stimulating economic activity. The relationship between the output gap and inflation is on average, however, relatively loose so that only large swings in fiscal policy will have considerable effects on inflation. The impact also depends on the structure of fiscal policy. The short-run impact of an increase in public construction investment on inflation might be smaller than additional transfers that stimulate demand for consumer goods, for example. Against this backdrop, expansionary fiscal policy creates a supportive environment for increases in the price level, but does not seem to be a major driving force of inflation, in particular as current fiscal plans foresee a tightening in 2022.

### 3.6. Wages: tight labour markets and demographics

**The labour market in the euro area has become tighter.** Unemployment in the euro area has declined to a historical low in early 2020 with a rate of 7.3% (International Labour Organization, ILO definition). Only in early 2008, the unemployment rate reached a similarly low level, and it was considerably higher in the meantime, in particular in the years after the Euro debt crisis. During the COVID-19 crisis of 2020, short-time work schemes prevented massive job losses and a substantial increase in unemployment, and up to July 2021 the unemployment rate went down again to 7.6%, not far from previous historic lows. Correspondingly, the share of firms that report labour shortages to be a major factor hampering their production has returned to high levels for both industry and services lately (Figure 9).

Figure 9: Limits to production: labour, 1999-2021



Source: European Commission, Industry Survey and Services Survey.

Notes: Quarterly data, seasonally adjusted. Share of firms reporting labour shortages as a factor limiting their production. Dashed lines: Mean values since 1999.

**Labour shortages will eventually translate to rising wages and prices.** Tight labour markets tend to boost the bargaining power of workers and unions and increase the probability of substantial wage increases, which may in turn pass-through to consumer prices, depending on the market power and the price-setting behaviour of firms. Up until the second quarter of 2021, negotiated wages in the euro area (total economy) increased only moderately by 1.9% (year-over-year) and indicate no substantial upward trend. However, given that consumer prices are about to increase sharply in 2021, we can expect some degree of compensation for the loss of purchasing power in the wage negotiations in the months and quarters ahead. Moreover, once firms and workers generally perceive this crisis to be actually over, which may not have been the case by the second quarter of this year, and once the labour shortages become more pressing and permanent, we can expect even more dynamic increases of average wages, which then would feed into services inflation and, more generally, into consumer price inflation. Eventually, the labour shortages that are already visible will sooner or later translate into rising wages and prices. Looking forward, demographics in aging Europe point to an intensification of labour shortages in the medium and long run.

**The relationship between wages and consumer prices varies over time.** Empirical evidence suggests that the relationship between wages and inflation has weakened over the past decades (Bobeica et al., 2021; del Negro, 2020), even though it seems to be stronger for large euro area countries than for the US (Bobeica et al., 2019). Reasons behind this could be that prices react less sensitive to cost pressure (del Negro, 2020) and more generally better anchored inflation expectations and an increase in trade integration (Bobeica et al., 2021). The relationship between wages and consumer prices is shock-dependent and varies with the general macroeconomic environment. If wages increase due to a labour supply shock, the impact on consumer prices is relatively strong and takes place relatively early (Bobeica et al., 2019). Moreover, the pass-through from wages to inflation is systematically lower in periods of low inflation compared to high inflation (Bobeica et al., 2019).

## 4. INFLATION OUTLOOK AND KEY FACTORS

**In recent macroeconomic projections moderate inflation rates in the euro area are the baseline scenario.** In the macroeconomic projection of September 2021, the ECB forecasts an increase of HICP inflation to 2.2% this year from 0.3% in 2020 (ECB, 2021a). The lower forecast of 1.2% for the HICP excluding energy, food and changes in indirect taxes indicates that the ECB assesses underlying inflation to be hardly affected. Headline inflation declines to 1.7% in 2022 and 1.5% in 2023, according to the ECB forecast, while HICP inflation excluding energy, food and changes in indirect taxes is expected to increase somewhat to 1.6% in 2023 due to the ongoing recovery from the pandemic. Earlier forecasts did not anticipate the acceleration of inflation in the course of this year but the forecasts were revised upwards with stronger than expected incoming data. The ECB forecast is broadly in line with other recent forecasts of international institutions or professional forecasters expecting an inflation rate of about 2% for this year, declining to about 1.5% in 2023 (Table 1). Therefore, the baseline scenario in these forecasts is that the increase in inflation in this year is mainly due to transitory factors that will fade out in the subsequent years.

Table 1: Recent forecasts for euro area HICP inflation

	Date of release	2020	2021	2022	2023
ECB staff projections	09/2021	0.3	2.2	1.7	1.5
Consensus Economics	08/2021		2.1	1.5	1.5
IMF	07/2021	-	1.8	1.3	1.4
Survey of Professional Forecasters	07/2021	-	1.9	1.5	1.5
European Commission	07/2021	0.3	1.9	1.4	-
OECD	05/2021	0.3	1.8	1.3	-

Source: ECB (2021a).

**Macroeconomic projections rest on the assumption that the price-driving factors will fade out soon.** The future path of commodity prices, supply bottlenecks or extra savings as well as the occurrence of future economic shocks is difficult to foresee. Therefore, in forecasts it is usually assumed that the impact of observed shocks is fading out and that other shocks will not take place in the forecasting period. For example, it is a standard assumption that commodity prices will roughly remain on their current level in the forecasting period. As a consequence, the impact of these factors on inflation fades out soon and inflation forecasts for one or more years ahead are approaching levels that the forecaster expects to be the underlying inflation trend. Given that the impact of economic slack or fluctuations in wages in the past was on average relatively small, this underlying inflation trend often approaches soon long-run inflation expectations that are close to the inflation target if the credibility of the central bank to reach its target is high. In this regard, the ECB as well as many other forecasters assume for their forecasts that the impact of supply bottlenecks will fade out in the next year and that only a moderate share of extra savings will be spent for consumption. Even though it is reasonable to make these assumptions for a forecast, given the high degree of uncertainty, it does not imply that such a scenario is much more likely than other scenarios.

**Price-driving factors are temporary in principle, but can reinforce each other and can now have a larger impact on inflation than in normal times.** Many of the factors that have the potential to further drive up inflation are temporary in principle so that their impact on inflation rate is typically

only short-lived. At the current juncture, these factors could, however, lead to more sustained price pressure than in the past because they could stay in place relatively long. For example, supply bottlenecks in maritime transport have begun already in 2020 and it is uncertain whether they will be largely resolved in the near term. It is also uncertain how long bottlenecks in other areas will persist. The size of extra savings is sufficiently large to fuel a consumption boom and thereby prices for some years if large parts of them will be spent for consumption. Moreover, the impact on inflation of these factors could reinforce each other. If supply chain disruptions and transportation bottlenecks limit the supply for consumer goods, pent-up demand could lead to stronger price increases. At the same time, firms may not hesitate to pass-through higher input prices because they expect that consumers have a higher willingness to pay due to extra savings and the forgone consumption since the beginning of the pandemic. Similarly, firms that suffer from a deteriorated financial position due to the pandemic may pass-through increasing costs, for example due to commodity price or wage increases, stronger to consumer prices than in the past.

**Second-round effects can lead to more sustained upward pressure on inflation.** While the direct impact of the factors described above at some point will eventually fade out, their impact will be prolonged if they trigger second-round effects via an increase in inflation expectations and wages. Second-round effects via wage increases could be supported by increasing labour shortages and a higher willingness of firms to pass-through cost pressures to consumer prices. An increase in inflation expectations could be supported by the new symmetric inflation target of the ECB and by the communication of the ECB that it may tolerate an inflation rate somewhat above its target for some time. Higher long-run inflation expectations would not only impact price and wage setting behaviour but can in turn also lead to an additional impulse by lowering the real interest rate so that monetary policy could become more stimulating without any additional measures of the ECB.

**Upwards risks for the inflation outlook dominate at the current juncture but a rapid easing of supply bottlenecks or a reversal in commodity prices would lead to downward pressure on consumer prices.** Given that in recent forecasts it is assumed that the impact of the price-driving factors on future inflation is small and that second-round effects on inflation will be limited, the upward risks for these forecasts dominate at the current juncture. Against this backdrop, inflation rates somewhat above the inflation target of the ECB in the next years seems to be a reasonable alternative scenario to the baseline forecasts. The more inflation would rise above the inflation target and the more this would be fuelled by second-round effects, the more likely it would become that the ECB would tighten its policy markedly to dampen inflation. Changes in the monetary policy stance on prices usually take some time to unfold, their impact takes place with some delay so that the impact on inflation in the short-run would be limited. Downward pressure on prices will emerge after supply bottlenecks have peaked or if commodity prices would reverse and, at the same time, the impact of other factors would prove to be limited. A return to a low-inflation environment is less likely in the near-term also because there would be still other factors in place that could stimulate inflation.

**Some of the factors could stimulate the housing market and in turn lead to an increase of costs for owner-occupied housing.** Large extra savings as well as expansionary fiscal and monetary policy could also stimulate the housing market. The direct impact on the HICP would be rather small as costs of owner-occupied housing do not yet enter the HICP and rents react only very sluggishly to developments at the housing market. However, given that the ECB has recommended to account for costs of owner-occupied housing in the HICP, the relevance of housing market developments for the conduct of monetary policy will increase.

## 5. IMPLICATIONS FOR MONETARY POLICY

**Higher price pressure coincides with challenging times for the ECB.** The impact on prices of the COVID-19 crisis as well as of the different supply- and demand-side factors currently in place is difficult to disentangle and to forecast. Moreover, the recovery from the pandemic is not complete yet and the risk remains that COVID-19 will dampen activity once again in the coming months. Difficult trade-offs for monetary policy could arise if a weak economic performance would be accompanied by strong increases in inflation. Finally, it will be closely monitored by market participants how the ECB will implement its new monetary strategy, in particular after it did not reach its inflation target for an extended period of time in the past.

**The driving factors of inflation are of different relevance for monetary policy.** If commodity price increases lead to higher inflation this would be less of a concern for the ECB – even if they would bring inflation above the inflation target for a longer period of time – as their direct impact would fade out at some point. Moreover, there is little that monetary policy could do to directly alleviate cost pressures related to supply side disturbances. If inflationary pressure instead related to higher demand, e.g. due to the release of pent-up demand or expansionary fiscal policy, higher inflation would become more of a concern for the ECB. Also, second-round effects due to increases in inflation expectations and wages would increase the likelihood of an intervention by the ECB to avoid accelerating inflation dynamics.

**After the long period of subdued inflation, moderately higher inflation rates would be welcomed by the ECB.** In the past decade, inflation on average was persistently below the inflation target of the ECB. Therefore, moderately higher inflation rates and somewhat higher inflation expectations would be not a major concern the ECB. Actually, one aim of the new monetary strategy of the ECB with its symmetric inflation target is to anchor inflation expectations at a somewhat higher level to create more room for expansionary monetary policy with regard to the zero lower bound. To this end, the ECB signalled that it may tolerate inflation rates somewhat above its inflation target for some time (ECB, 2021b).

**Theoretically, it is easier for monetary policy to dampen than to stimulate inflation.** Experience after the global financial crisis showed that it can be very difficult for central banks to stimulate inflation and exit a low inflation environment. There can be different economic reasons behind that can be summarised as a decline in the natural interest rate that makes it more difficult for monetary policy to stimulate the economic activity, in particular when it approaches the zero lower bound with its interest rate policies (Fiedler et al. 2018)<sup>9</sup>. In contrast, central banks are less restricted in tightening monetary policy by interest rate increases. Against this backdrop, the ECB might be somewhat more reluctant to tighten monetary policy at the current juncture, to avoid falling back into a low inflation environment.

**In practice, inflation rates well above the inflation target would be challenging for the ECB as a tightening of monetary policy can have undesired side-effects.** Even if sustained price pressure leads to inflation considerably above target, the ECB might be reluctant to substantially tighten its monetary policy. First of all, a tightening of monetary policy could cause stress on financial markets, on sovereign bond markets in particular as the sustainability of public debt could be in doubt if the cost of debt was to rise significantly after the long period of very favourable financing conditions (Fiedler et al., 2020). Some of the measures implemented by the ECB aimed directly at pushing down interest rates

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<sup>9</sup> There is also more general evidence that expansionary monetary policy has smaller effects than contractionary monetary policy. However, this effect seems to be stronger for economic activity than for prices (Angrist et al., 2016; Tenreyro and Thwaites, 2016; Debortoli et al., 2020).

for sovereign bonds and to reduce stress at financial markets. Second, the ECB may want to avoid to slow down the ongoing recovery from the pandemic. Third, it is difficult to disentangle the transitory and more persistent drivers of inflation in real time and the ECB does not want to fall back into a low inflation regime. However, if the ECB would react to high inflation reluctantly this could raise concerns about the credibility of the ECB to fulfil its primary objective of maintaining price stability. In such a scenario, inflation expectations could increase and reinforce inflation, which would make even stronger monetary tightening necessary at a later stage. All in all, the ECB may face difficult trade-offs if inflation increases considerably above its target.

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## ANNEX: THE PHILLIPS CURVE AS A TOOL TO ANALYSE INFLATION

**Inflation is driven by multiple factors.** A standard framework to analyse inflation dynamics is the Phillips curve. The Phillips curve links inflation  $\pi_t$  in time  $t$  to inflation expectations and a measure of slack in the economy  $g_t$ . All other factors can be summarised in the residual  $\varepsilon_t$ :

$$\pi_t = \alpha \cdot \pi_t^e + \beta \cdot g_t + \varepsilon_t$$

Other factors comprise import prices, desired mark-ups of firms or changes in taxes, for example. Many specifications include the core inflation rate instead of the headline inflation rate on the left-hand side, abstracting from energy and food prices. Energy and food prices are very volatile, influence the inflation rate usually only on a temporary basis, and are determined to larger extent abroad so that monetary policy usually does not react to fluctuations in these prices as the core inflation rate is a better measure of the underlying inflation trend (Ehrmann et al., 2018).

**The Phillips curve framework can be used to identify the most important structural determinants of inflation or to forecast inflation.** Both is relevant for monetary policy so that this framework is frequently applied at central banks. One important transmission mechanism of monetary policy to impact inflation is to influence slack in the economy. Therefore, it is important to assess the strength of the relationship between slack and inflation for the conduct monetary policy. Moreover, monetary policy can stabilise inflation at its target by anchoring long-run inflation expectations. The better inflation expectations are anchored at the target, the less inflation may react to shocks lowering the need for monetary policy interventions of central banks.

**There is no single specification of the Phillips curve reflecting the variety of available measures for expectations, slack or other factors.** Inflation expectations can be measured with different indicators, such as consumer or firm surveys, expectations implicit in prices of financial assets or surveys of long-run expectations of professional forecasters or market participants. Long-run inflation expectations can reflect the credibility of the central bank to achieve its inflation target over the medium term; other factors then can drive inflation below or above the inflation target for some time. If the Phillips curve is used for short-run forecasting, however, other measures of expectations reflecting short-run dynamics can be more useful. Economic slack can also be measured with different variables. One of the most common measures for economic slack is the output gap, i.e. the difference between actual gross domestic product (GDP) and potential output (the long-run sustainable level of GDP). Potential output, and therefore the output gap, cannot be observed but needs to be estimated. Estimates are provided, for example, by the European Commission, the OECD, or the IMF, but can vary considerably. Moreover, output gaps estimated in real-time are usually revised considerably when additional information becomes available. An alternative measure for economic slack is the unemployment gap, the difference between actual unemployment and the natural rate of unemployment, which has a more direct link to labour market developments. However, the natural rate of unemployment is not observable as well. Sometimes, slack is measured in terms of firm survey data. Using survey data avoids estimation uncertainty but it is questionable whether they provide accurate measures of slack for the whole economy, for example because capacity utilisation in some service industries is difficult to assess. Finally, Phillips curve specifications differ in whether and to what extent other factors are explicitly included, such as external factors. One approach to deal with the estimation uncertainty stemming from the large number of reasonable specifications is to use thick modelling approaches (Granger and Jeon, 2004) that estimate many alternative specifications and evaluate the central trends of the results (Eser et al., 2020).

**The impact of slack in the economy on inflation has weakened in the last decades.** Estimates of the Phillips curve usually find that economic slack has a significant impact on inflation (Eser et al., 2020).

However, the effect of slack on inflation has diminished over the past decades (BIS, 2017; Blanchard et al., 2015; IMF, 2013; Lodge and Mikolajun, 2016). One reason for this flattening of the Phillip curve could be an increasing impact of external factors. While the evidence whether global slack has a direct impact on domestic inflation is mixed, external factors can have an impact on domestic inflation via various channels, including increased competition on product and labour markets due to increased globalisation, the impact of external demand on domestic slack, or global factors, such as oil prices (Forbes, 2019). Another reason behind a lower responsiveness of inflation to slack in recent times could be that monetary policy was successful in anchoring inflation expectations (Bernanke, 2007) or offsetting the impact of demand shocks (Mcleay and Tenreyo, 2019). In this regard, it is important to note that estimates of the reduced form Phillips curves in the spirit of equation (1) can give only limited information about causal relationships. In fact, there are several factors (or economic shocks) that influence economic slack and inflation at the same time but in different ways and thereby weaken the measurable relationship in reduced-form specifications (Eser et al., 2020). The shock-dependency of the relationship between variables is well-established with regard to the economic impact of oil prices (Kilian 2009) and exchange rates (Forbes et al., 2019), for example, and has recently become more prominent in the discussion about the flattening of the Phillips curve. Studies that seek to identify causal relationship between slack and inflation usually find a more stable and a somewhat stronger impact of slack on inflation (Eser et al., 2020; Mcleay and Tenreyo, 2019). However, also in these estimates the impact of slack on inflation tends to be small, implying that monetary policy has to engineer large fluctuations in economic activity to cause small movements in inflation. In line with the multiple possibilities to specify Phillips curves and the challenges to identify the causal relationships the evidence on forecasting power of the Phillips curve is mixed, pointing to a moderate ability to forecast inflation (Banbura and Bobeica, 2020; Dotsey et al., 2018; ECB, 2014).

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Consumer price inflation in the euro area has sharply risen to 3% in the course of 2021. This increase was mainly due to higher energy prices and other transitory factors. Recent macroeconomic forecasts generally expect inflation to return to below target values next year. However, there are several factors in place that could lead to more sustained upward pressure on prices, and materialisation of these upward risks could force the ECB to take difficult choices.

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