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Should rising inflation expectations concern the ECB?

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

This paper discusses theory and evidence on inflation expectations. While near-term measures of expected inflation in the euro area have increased, forecasters and financial markets expect inflation to decline back to the ECB's target by later this year. The paper provides some sceptical arguments in relation to the prominence given to measure of inflation expectations in monetary policy circles.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 7 February 2022.

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CONTENTS

LIST OF ABBREVIATIONS

CPI	Consumer price index
ECB	European Central Bank
HICP	Harmonised index of consumer prices
ILS	Inflation-linked swap
SPF	Survey of professional forecasters

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EXECUTIVE SUMMARY

- **This paper discusses the theory of how inflation expectations influence the inflation process and presents evidence on the behaviour of inflation expectations in the euro area.**
- **Expectations have played a central role in the story of how modern macroeconomics has changed its thinking about inflation over the past 50 years.**
- **Modern macroeconomics assigns a lot of explanatory power to changes in inflation expectations.** The breakdown of the Phillips curve relationship in the 1970s, the decline in inflation rates in the early 1980s and the consistent low level of inflation over the past 20 years have all been explained by the changing behaviour of inflation expectations.
- **Central bankers regularly discuss the need to use their communications strategies to help keep inflation expectations "anchored" near their target.** In this sense, influencing inflation expectations has been increasingly viewed as an important tool of monetary policy.
- **The paper reviews four sources of information on inflation expectations.** Evidence is presented on measures of inflation expectations derived from consumer surveys, from business surveys, from the Survey of Professional Forecasters and from financial markets.
- **Near-term measures of expected inflation in the euro area have increased but this seems to mainly reflect the increase in inflation that has occurred over the last year.**
- **Forecasters and financial markets expect inflation to decline back to the ECB's target by later this year.** Measures of longer-term inflation expectations remain "anchored" near 2%.
- **The paper provides some sceptical arguments in relation to the prominence given to measure of inflation expectations in monetary policy circles.**
- **There is limited evidence of survey measures of inflation being useful for forecasting inflation.** The traditional wage-bargaining mechanism through which expected inflation should raise inflation is likely to be weak in a world with low levels of unionisation.
- **In the low inflation environment of recent years, inflation has perhaps not been "salient" for workers and thus has had limited influence on wage bargaining.** If the current period of higher inflation continues for longer, it may change this pattern and lead to the re-emergence of the kind of wage-price inflationary spiral seen in the 1970s.
- **Central bank efforts to influence the public's inflation expectations may be limited in usefulness.** Most people pay no attention to central banks and many have poorly informed opinions on inflation.
- **If inflation remains high over the next few months, measures of near-term and medium-term inflation expectations will likely move up.** There will also likely be an impact on wage inflation.
- **ECB communications assuring the public in an attempt to keep inflation expectations anchored are unlikely to help much in the coming months.**

1. INTRODUCTION

An important theme in modern macroeconomics is that the public's expectations play a key role in determining how the economy evolves. This is particularly true when considering inflation and much of the research on inflation over the past 50 years has focused on the role played by inflation expectations and how these expectations have interacted with the actions of central banks as well as their organisational design.

The breakdown of the famous "Phillips curve" correlation between inflation and unemployment and the worldwide disinflation of the early 1980s have generally been attributed to inflation expectations rising in the early 1970s and then falling again as the result of an increased commitment of central banks to low inflation. More recently, the long period of low and stable inflation that preceded the COVID-19 pandemic has often been attributed to an "anchoring" of the public's expectations due to the credibility of the commitments of central banks to maintaining low inflation.

Against this background, one of the concerns of central banks around the world is that the current increase in inflation, which they hope is just a temporary event, could raise the public's inflation expectations and fuel further increases in inflation, perhaps triggering a "wage-price spiral" of the kind people associate with the 1970s.

This paper reviews the theory on the role that expectations play in determining inflation, assesses the evidence on how inflation expectations have evolved in the euro area over the past year and discusses whether the European Central Bank (ECB) should be concerned yet about rising inflation expectations. The paper is structured as follows.

Section 2 discusses the evolution of thinking in macroeconomics on the role played by inflation expectations from the 1970s to the pre-COVID-19 period.

Section 3 evaluates the various pieces of evidence on inflation expectations in the euro area over the past year. It concludes that, while the ECB should be concerned about the sustained high rate of inflation, the evidence on inflation expectations provides no particular reason to be more concerned. There is little sign at this moment of the emergence of an expectations-fuelled wage-price spiral. Longer-term inflation expectations have increased but this can be viewed as a positive development because these expectations are now aligning with the ECB's target inflation rate of 2% whereas previously there was evidence of scepticism on the part of forecasters and financial markets about whether the ECB was going to achieve this target.

Section 4 puts forward some grounds for scepticism on the central role accorded to the public's inflation expectations in modern macroeconomics. It argues that there is limited room for central banks to influence inflation expectations, other than by maintaining low inflation. If a de-anchoring of inflation expectations occurs in the next few years in the euro area, this is likely to be a consequence of the ECB failing to meet its inflation target rather than an important independent cause of a higher inflation rate. Conversely, it would be unwise to think that ECB can use a communications strategy to keep expectations anchored in the face of a sustained higher rate of inflation.

Section 5 contains some concluding thoughts.

2. INFLATION EXPECTATIONS IN MACROECONOMICS

2.1. Expectations and the Phillips curve

Expectations have played a central role in the story of how modern macroeconomics has changed its thinking about inflation over the past 50 years. During the 1960s, the most influential theory of inflation was the Phillips curve, which suggested there was a trade-off between inflation and unemployment. Governments could use macroeconomic policies set a low unemployment rate but this would occur at the expense of a high (but fixed) rate of inflation.

During the 1970s, the predictions of the Phillips curve ceased to hold as the "stagflation" combination of high unemployment and high inflation occurred across most advanced economies. In seeking an explanation for the breakdown in what had previously appeared to be a reliable relationship, economists pointed to the behaviour of expectations about inflation as the likely culprit. Macroeconomists gradually accepted the critique of the original Phillips curve most associated with Milton Friedman (1968) that its neglect of how inflation expectations were determined represented a serious flaw. Friedman pointed out that if governments picked a particular point on the Phillips curve associated with a higher rate of inflation, then over time the public would become used to this higher level of inflation and seek higher rates of wage inflation to compensate. Effectively, this would mean an "upwards shift" in the Phillips curve so that each unemployment rate was now associated with a higher inflation rate than previously.

More formally, Friedman's expectations-augmented formulation of the Phillips curve can be written as

$$\pi_t = E_t \pi_t + \gamma(u_t - u^*)$$

Where π_t represents inflation, $E_t \pi_t$ represents the public's expected value of inflation entering the period, u_t represents the unemployment rate, u^* represents the so-called "natural rate of unemployment" and γ is a measure of the sensitivity of inflation to deviations in the unemployment rate from this natural rate.

This expectations-augmented formulation of the Phillips curve meant that policy makers did not face a simple trade-off between inflation and unemployment. Indeed, rather than being able to pick a specific inflation rate associated with a specific unemployment rate, a given unemployment rate could be associated with any value of inflation. If the public expect 2% inflation, then the economy could have a steady unemployment equal to its natural rate and the inflation rate would be 2%. But if the public expected 10% inflation, then the same economy could have the same unemployment rate and instead inflation would equal 10%. And since low inflation is preferable to high inflation, the first outcome is clearly better than the second one.

Over the course of the 1970s and 1980s, the expectations-augmented Phillips curve became part of standard thinking in macroeconomics, being taught in textbooks and incorporated into policy advice. Economists recommended that central banks should operate in a way that credibly convinces the public that they are fully committed to maintaining low inflation. If this commitment is believed, the theory suggests that it can "anchor" inflation expectations at a desired low level, contributing to low inflation and macroeconomic stability.

Academic advice on how to structure central banks in a way that would contribute to low inflation expectations included recommendations that central banks operate independently of governments and that they be given explicit mandates to maintain price stability. These recommendations have had a huge influence on the design of central bank institutions over the past 30 years, with central banks becoming increasingly independent from political control and given more explicit inflation mandates.

The structure of the ECB—with a high level of independence and price stability as its primary objective—reflects these recommendations, which were highly influential at the time the Maastricht Treaty was agreed.

2.2. The behaviour of inflation expectations

On its own, the expectations-augmented Phillips curve is not a useful theory for predicting how inflation will behave. Without adding a theory of what determines the public's inflation expectations, the model cannot be used to explain or predict outcomes for inflation.

Friedman (1968) did not present a formal model of inflation expectations but he believed the public's anticipated inflation rates moved relatively slowly and were based on recent inflation rates. One simple formulation of this idea is the famous "accelerationist" Phillips curve in which expected inflation is determined by the previous period's observed inflation rate.

$$\pi_t = \pi_{t-1} + \gamma(u_t - u^*)$$

In this formulation, increases in inflation trigger higher inflation expectations and thus inflation can only be reduced by a period of unemployment above its natural rate. This version of the model implies an innate "persistence" in inflation. Once it has been low for a while, it will tend to stay low and vice versa for high inflation.

This version of the Phillips curve also implies a strong empirical prediction: Low unemployment rates should be associated with rising inflation and high unemployment rates should be associated with falling inflation. For many years, this prediction matched the data for inflation and unemployment in many countries and more complex empirically calibrated versions of the equation above were used by central banks to model and forecast inflation[1].

Over the past decade, however, the evidence suggests this correlation has not held up. Stock and Watson (2021) document a weakening in this correlation over time for the United States and similar results have been found for other countries[2]. More generally, the persistence of inflation appears to have fallen over the past few decades. Technically, the accelerationist formulation of the Phillips curve imposes a coefficient of one on past values of inflation, meaning there is a full pass-through of past movements in inflation to today's value. However, various studies have shown that when this coefficient is estimated using statistical methods, it appears to have fallen well below one for many countries over the past 20 years[3].

Macroeconomists have argued that the most likely explanation for these changes is that the process determining inflation expectations had changed. Whereas in the past, the public may have had a "what have you done for us lately?" attitude when estimating future values for inflation, the impact of a long period of low inflation and the establishment of independent central banks with explicit inflation targets have combined to "anchor" inflation expectations at a low level. Under this interpretation, the public trusts the central bank's commitment to meeting its inflation target, so even if actual inflation overshoots or undershoots this target for a while, the public still assumes that inflation will get back to the central bank's target soon.

Recent research has also highlighted a potentially greater role for inflation expectations in past macroeconomic cycles than was understood at the time. Hazell et al. (2020) addressed the question of why US inflation had been so low in recent years despite a prolonged period of extremely low

[1] See O'Reilly and Whelan (2005) for evidence on inflation persistence in the euro area from the 1970s to the early 2000s.

[2] Whelan (2021) provides graphs illustrating the falling correlation over time for the US case.

[3] See, for example, Blanchard (2016) for a discussion.

unemployment. Using cross-sectional data from US states, they argued that the explanation for this outcome is that the sensitivity of inflation to unemployment (the γ coefficient in our formulation) has always been small. Unlike the traditional story in which a major part of the US disinflation of the early 1980s was ascribed to the impact of high unemployment rates, Hazell et al. argue that disinflation was largely achieved by directly reducing inflation expectations.

The prominence given to the benefits of anchoring inflation expectations means it is hardly surprising that many in the central banking community are now concerned that the current higher rates of inflation prevailing in many countries are going to lead to a "de-anchoring" of inflation expectations that could lead to a wage-price spiral which may require central banks to cool economies to lower inflation, potentially putting them back into recession.

3. RECENT DATA ON INFLATION EXPECTATIONS

This section surveys the evidence on euro area inflation expectations, covering in turn households, businesses, professional forecasters and financial markets.

3.1. Households

When thinking about the possibility of a wage-price inflationary spiral, the most obviously important type of inflation expectations are the expectations of the general public. However, while it is easy to construct theories that assign a central role to inflation expectations, actually obtaining useful empirical measures of the public's expectations turns out to be quite tricky. Some people pay close attention to inflation developments but many do not. Indeed, some members of the public are unclear what is meant by inflation. To give an example, in its recent Survey of Consumer Expectations, the ECB (2021b) found the following: "*when asked how they conceptualise the term 'inflation', approximately 30% of respondents failed to recognise that it represents an increase in the general level of prices of goods and services*."

The public's inflation expectations can be evaluated by collecting answers from surveys. However, it is unclear what to do with the responses. Should central banks focus on the average anticipated value for inflation or should they focus on the median? These surveys tend to have a high fraction of respondents who report that they expect double-digit inflation even during times of low inflation. For this reason, presentations of data from household surveys tend to focus on the median value of expected inflation, because these values are less influenced by extreme outliers. I will follow that convention in my presentation here but it isn't obvious that the opinions of poorly informed people about inflation should be completely discounted. They could still matter when determining overall inflationary pressures.

Another issue with measuring the public's inflation expectations is that it appears that answers to questions about anticipated inflation can be sensitive to the design of the survey questionnaire. In the euro area, the most comprehensive measure of the public's inflation expectations comes from the European Commission's monthly consumer surveys. This survey asks consumers what they believe the inflation rate has been over the past year and what they expect it to be over the next year. Figure 1 shows the actual inflation rate, as measured by the year over year percentage change in the Harmonised Index of Consumer Prices (HICP), the median perceived inflation rate for the previous year from the Commission survey and the median expected inflation rate for the following year.

The evidence in Figure 1 suggests the Commission's survey data on inflation expectations should be interpreted very carefully. The survey's measure of the median perceived inflation rate over the previous year has been systematically greater than the actual inflation rate. Even more strangely, the perceived inflation rate over the previous year has always been higher than the expected inflation rate over the following year. Taken literally, it means the survey participants have expected a falling inflation rate in every survey since 2004, when the survey began asking respondents for a specific point estimate of inflation.

The median expected inflation from the Commission's survey has also been systematically higher than the actual values recorded for HICP inflation. The biases for respondents in their estimates of both perceived and expected inflation have specific patterns with smaller upward biases evident for respondents with higher income and education.

How unusual is the behaviour of expected inflation in the Commission's survey? The size and consistency of the over-estimation of likely inflation seems to be a greater problem with this survey

than with comparable surveys reported elsewhere. Figures 2 and 3 show median survey estimates of expected inflation over the following year for the US and the UK. Figure 2 shows US Consumer Price Index (CPI) inflation and the median value of expected inflation from the University of Michigan consumer survey. Figure 3 shows UK CPI inflation and the median value of expected inflation from the Bank of England's Inflation Attitudes Survey.

Over their histories, both of these surveys have had extended periods when median expected inflation exceeded actual inflation but they have also had periods when the two series were close and the average gap between expected and actual inflation has been much smaller. The average gap between expected and actual inflation has been 0.5% for the Michigan survey since 1990 and 0.8% for the Bank of England survey since 1999. For the European Commission survey, this gap has been 2.25% since 2004.

Is there something about the design of the survey that leads it to induce high estimates of inflation from the respondents? One potential issue is that, prior to being asked to provide a specific point estimate, the survey design provides three different possible opinions about possible positive inflation (prices can "increase more rapidly", "increase at the same rate", "increase at a slower rate") but only one option for prices falling. ECB (2021b) argues that "*This lack of symmetry may bias responses towards price increases*."

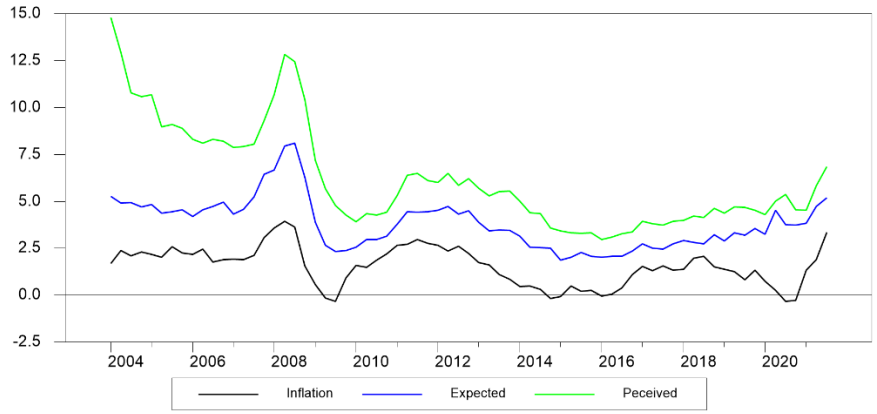
The weakness in the Commission survey's measures of expected inflation and the limited information about other aspects of the respondents' economic situation mean there is a need for a better source of information on this topic. The ECB is planning to fill this gap with a new Consumer Expectations Survey. In its report providing an evaluation of the new survey, ECB (2021b) noted that the new survey, which has a more precise and symmetric wording of the relevant question, had median values of expected short-term and medium-term inflation of about 2% during 2020, suggesting this survey may produce more realistic figures. At present, however, the ECB is not publishing regular monthly data from this survey.

In relation to developments over the past year, the Commission's survey shows an uptick in expected inflation but this increase has been a bit smaller than the increase in actual inflation that has taken place. Median expected inflation over the following year was 3.6% at the end of 2019. At the end of September 2022, it was 5.2%. This contrasts with actual year-over-year HICP inflation, which was only 1.3% at the end of 2019 but had risen to 3.4% by September 2022. The Commission's website that makes these data available only publishes the quantitative estimates of inflation on a quarterly basis and have yet to publish a fourth quarter figure[4]. Since actual year-over-year inflation has accelerated to 5% by December, it seems likely that we will see further increases in the consumer expectations series.

Should the ECB be concerned about the increase in household inflation expectations? On balance, I would say no. The increase to this point seems to be a consequence of the rise in inflation, rather than something that is fuelling inflation itself. And the recent readings for median expected inflation are similar to the values seen during the years prior to the global financial crisis, when inflation remained moderate. At least as of yet, these indicators are not consistent with an expectations-driven wage-price spiral.

[4] The data in Figure 1 were obtained from https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/business-and-consumer-surveys/download-business-and-consumer-survey-data/time-series_en

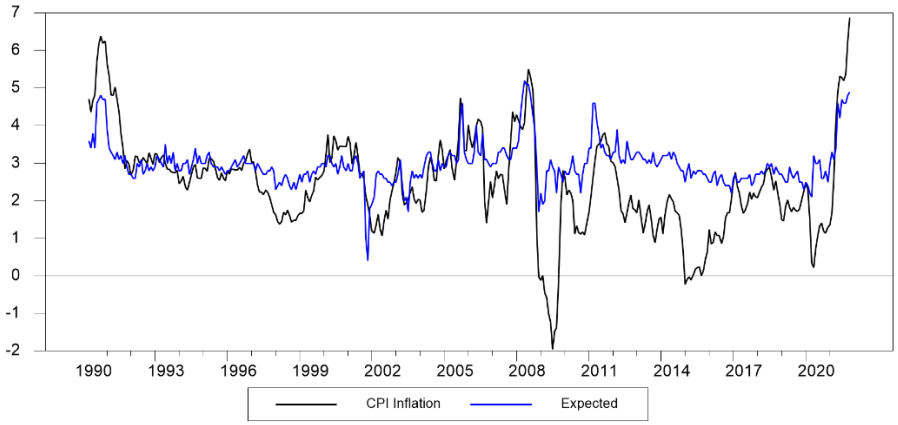
Figure 1: HICP inflation and median values for perceived and expected euro area inflation from European Commission consumer survey



Source: Author's calculations based on data from Eurostat and the European Commission.

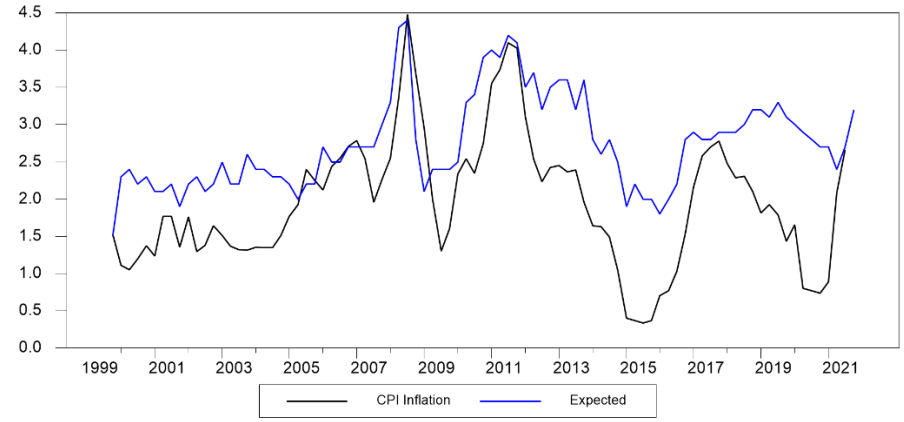
Notes: The perceived inflation series reports the median value in the survey in response to a question about the behaviour of prices over the past 12 months. The expected inflation series reports the median value in the survey in response to question about behaviour of prices over the next 12 months.

Figure 2: US CPI inflation and median expected Inflation over the following year from the Michigan Survey of Consumers



Source: Author's calculations based on data from Federal Reserve Bank of St. Louis and University of Michigan.

Figure 3: UK CPI inflation and median expected inflation over the following year from the Bank of England Inflation Attitudes Survey



Source: Author's calculations based on data from Federal Reserve Bank of St. Louis and the Bank of England.

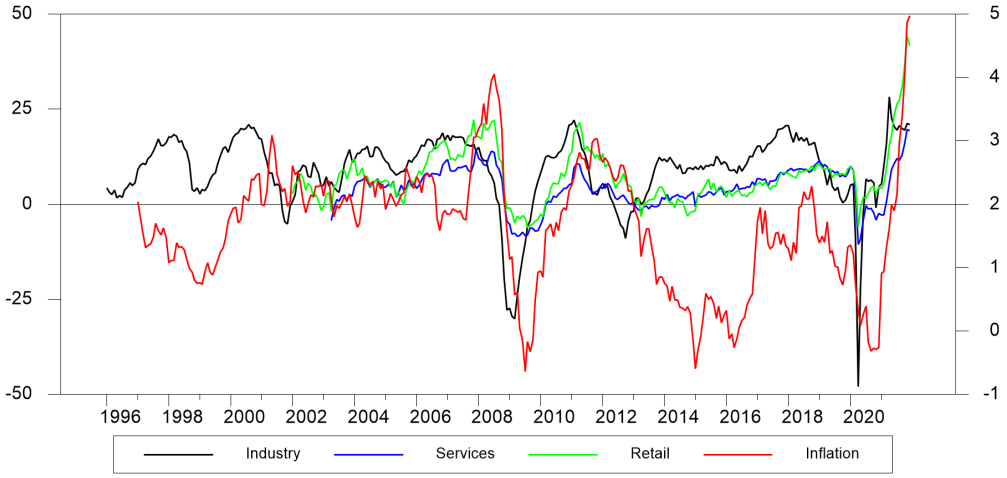
3.2. Businesses

Since prices are set by firms rather than consumers, another way to assess inflation expectations is to ask firms what they think is going to happen with prices. The European Commission also runs monthly business surveys that ask firms about pricing. The questions ask firms about how they expect their own selling prices to change over the next three months. It does not ask for a specific number but instead simply whether they expect their prices to increase, decrease or stay the same. From this, the Commission produce a diffusion index which subtracts the fraction of firms expecting a decrease from those expecting an increase. This approach differs from asking about the general rate of inflation but it may still provide some indication on the build-up of inflationary pressures.

The Commission undertakes a number of separate sectoral surveys. Figure 4 shows diffusion indices for the pricing question for the retail, services and industry surveys. In general, these surveys have shown a limited correlation with actual inflation, though there is some evidence that the surveys helped to predict the fall and subsequent rise in inflation during the global financial crisis.

Unsurprisingly, the business survey indices have increased over the past year and are at or close to the highest levels seen for these series. However, these developments are not that surprising given the current high levels of year-over-year inflation and given the weak correlation between these series and actual inflation, they are of limited value when projecting the possibility of a further rise in inflation in the coming months.

Figure 4: HICP inflation (right scale) and European Commission business survey diffusion indices of expected price changes over the next 3 months (left scale)



Source: Author's calculations based on data from Eurostat and the European Commission.

3.3. Professional forecasters

If central banks are concerned about a wage-price spiral, then surveying the opinions of households or businessmen may not necessarily produce the most useful estimates. As discussed above, many of the respondents to consumer surveys believe the economy is experiencing double-digit rates of inflation even when inflation is actually close to zero. It is unlikely that these people will be able to convince their employers to give them double digit wage increases based on their incorrect beliefs about inflation. By contrast, when trade unions are bargaining or when employers are considering the need to keep offering competitive pay rates that keep up with the cost of living, they are more likely to consider a well-informed forecast of inflation.

For this reason, central banks pay close attention to the inflation forecasts produced by independent professional forecasters. Both the Federal Reserve and the ECB publish a quarterly Survey of Professional Forecasters (SPF). The ECB has also recently begun publishing forecasts of monetary policy variables and inflation from a survey of monetary analysts, i.e. financial market experts that follow the ECB closely.

Figures 5 illustrates how the euro area SPF's HICP average inflation forecasts for various calendar years have evolved over time since 2013. Over this period, the tendency was for the forecasters to set their initial forecasts equal to 2% but then gradually reduce them over time as inflation continued to undershoot the ECB's inflation target. With the onset of the pandemic in early 2020, the forecasters reduced their projections for inflation for 2020 and subsequent years. However, from spring of last year onwards, the average forecast of inflation for 2021 and subsequent years began to rise as the pace of inflation picked up.

The most recent SPF was conducted in early October and published on 29 October. The results provided some comfort for central bankers worried about a de-anchoring of inflation expectations. The forecasters will have had access to the September HICP release which showed year-over-year HICP inflation increasing to 3.4% but they did not anticipate this pattern continuing into 2022 and subsequent years. The average forecasts for HICP inflation in 2022 was 1.9% and the average forecast for 2023 was 1.7%. The average forecasts provided for HICP inflation excluding energy, food, alcohol and tobacco were only marginally lower, suggesting the forecasters saw the impact of the surge in energy prices waning from this year onwards. Similar forecasts for HICP inflation were provided by the Survey of Monetary Analysts in their most recent survey, also conducted in October.

It is worth noting, however, that the medium-term forecast outcome is more uncertain than usual. In particular, the variance of the October SPF forecasts for HICP in 2023 is high relative to historical standards (see Figure 6).

Also comforting to central bankers will be the fact that the SPF average forecast for the longer-term HICP inflation rate was 1.9% in October which aligns almost perfectly with the ECB's new precise target of 2% (see Figure 7). The SPF's average forecast for longer-term inflation had dropped below 2% in the years prior to the pandemic and then dropped further to about 1.65% in the early stages of the pandemic. The higher inflation of recent months has led the forecasters to reverse these declines. Similarly, the median longer-term inflation forecast from the Survey of Monetary Analysts is also 1.9%. Rather than being concerned about rising inflation expectations being a sign of reduced credibility for the ECB, the Governing Council should be happy that, for now at least, long-term expectations are well aligned with its inflation target.

Again, however, it is worth noting that there is less certainty about the longer-term forecast than usual. Figure 8 shows that the variance for these forecasts is far larger than normal. Only the 2009:Q2 survey,

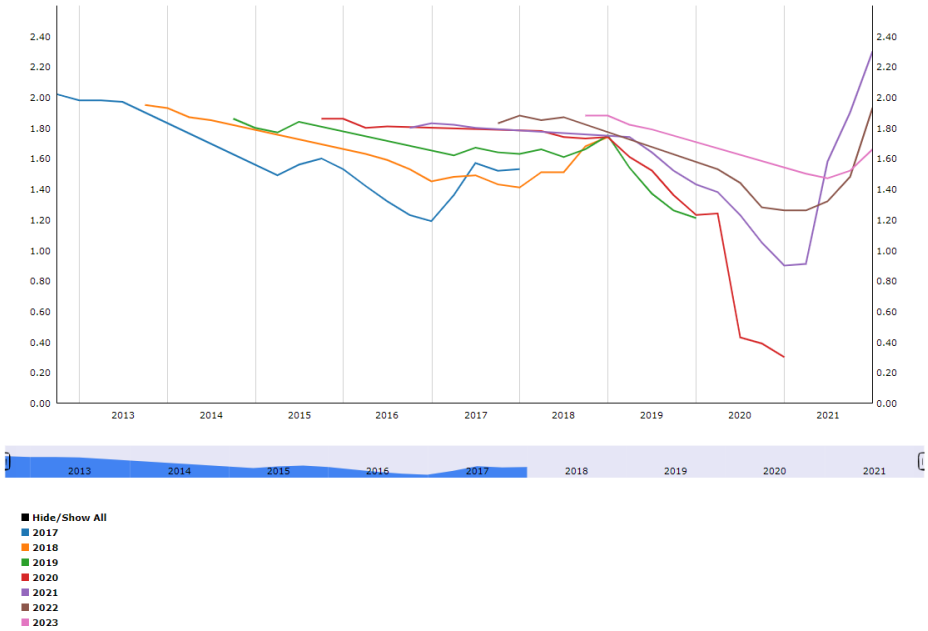
as the world economy began to emerge from recession, had these forecasts previously shown such a high variance.

While these results will have been comforting to the ECB, they are also somewhat out of date. Since October, HICP inflation has continued to increase and the anticipated easing of energy price inflation has not occurred. Year-over-year HICP inflation increased from 3.4% in September to 5% in December. Year-over-year energy price inflation increased from 17.4% in September to 26% in December.

The impact of recent data releases and the ongoing rise in energy prices has led to the ECB's staff substantially increasing their forecasts for inflation in 2022. Their December projections show HICP inflation at 3.2% for 2022 as a whole, up from 1.7% in their September projections. The ECB staff still project inflation to fall back to 1.8% in 2023 and 2024.

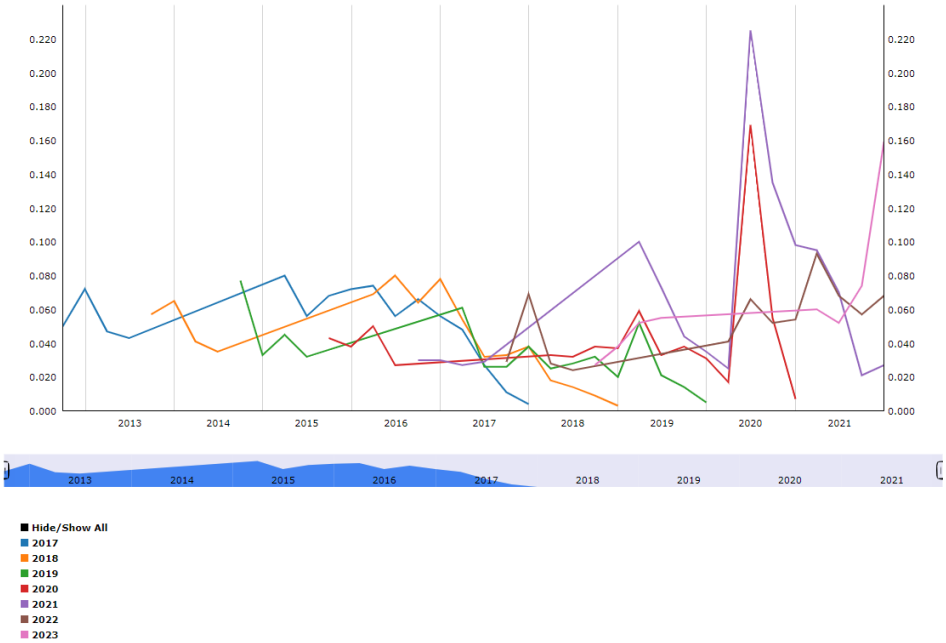
The next SPF will be published in early February. It can be expected that the average forecast for HICP inflation this year will be marked upwards. The ECB will hope the forecasters agree with its prognosis that this jump in inflation will be temporary and "normal service will be restored" by next year.

Figure 5: Evolution of average SPF forecasts for HICP inflation for different years



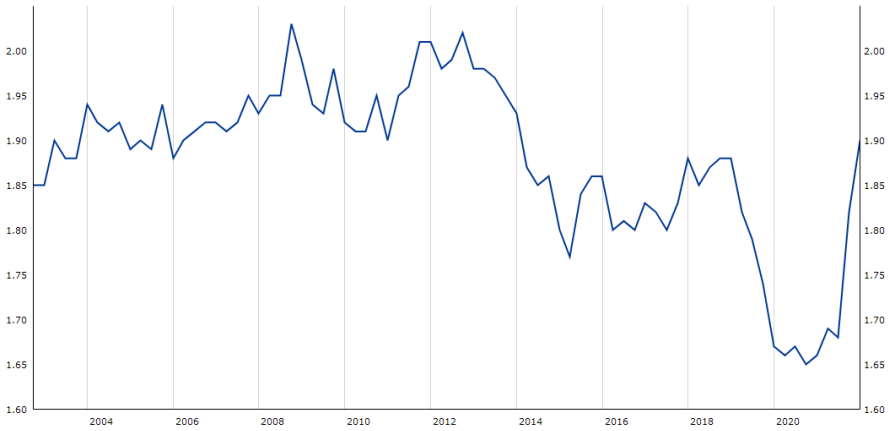
Source: ECB Statistical Data Warehouse.

Figure 6: Variance of SPF forecasts for HICP inflation for different years



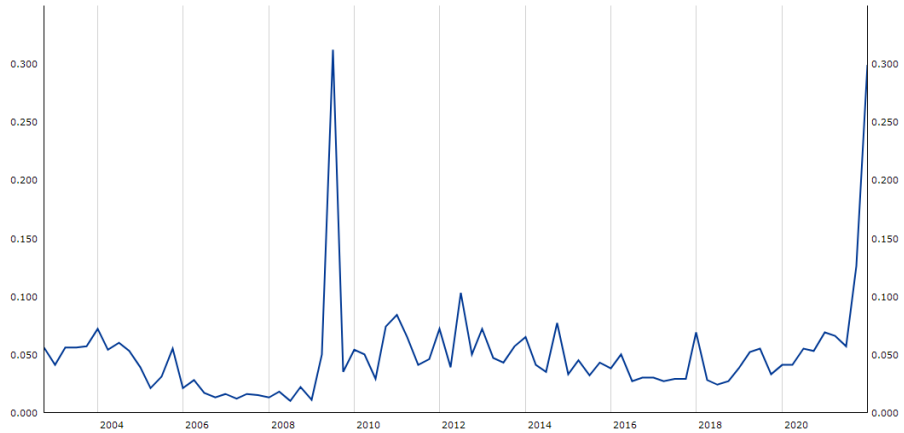
Source: ECB Statistical Data Warehouse.

Figure 7: SPF forecasts for longer-term HICP inflation



Source: ECB Statistical Data Warehouse.

Figure 8: Variance of SPF forecasts for longer-term HICP inflation



Source: ECB Statistical Data Warehouse.

3.4. Financial markets

A final source of inflation expectations stems from financial market data. Inflation can affect the outcome of various investment strategies so we can expect those involved in investing in these strategies to be paying careful attention to inflationary developments and base their investment on a careful assessment of the future path of inflation.

Movements in long-term bond yields can provide some information about the market's expectations of inflation, though it can difficult to disentangle this from the market's thinking about future short-term interest rates and longer-run real interest rates. Two other types of financial instruments, however, provide more precise estimates of the inflation expectations of financial markets.

Inflation-Indexed Bonds: A number of euro area Member States, including France and Germany, have issued inflation-indexed bonds. These bonds pay an agreed real rate plus a guaranteed additional compensation that depends on the inflation rate over the term of the bond. Comparing yields on normal government bonds with the yields on inflation-indexed bonds of the same maturity provides an estimate of the "breakeven inflation rate", i.e. the level of inflation compensation provided by the bonds. While these breakeven inflation rates can be influenced by other factors such as market liquidity and the risk premia associated with uncertainty about inflation, they are regularly used to describe what the market's view of future inflation is.

Evidence on breakeven rates for longer-term bonds suggest that market expectations of medium-term inflation fell sharply during the early stages of the pandemic but have now recovered to be better aligned with the ECB's inflation target. For example, the French debt management agency reports that the breakeven rate calculated from comparing an inflation-indexed French government bond maturing in 2029 with a non-indexed bond of similar maturity fell from about 1.2% in early 2020 to as low as 0.4% in late spring 2020 but has recovered to be about 1.8% by the end of December [5].

Inflation-Linked Swaps (ILS): These are instruments in which two parties agree to swap cash flows with one party receiving a fixed payment and the other receiving payments that are linked to the inflation rate. The terms of the contracts provide an estimate of the market's expected inflation rate over the relevant horizon. In the euro area, the relevant index used to calculate the inflation-linked payments is the HICP excluding tobacco.

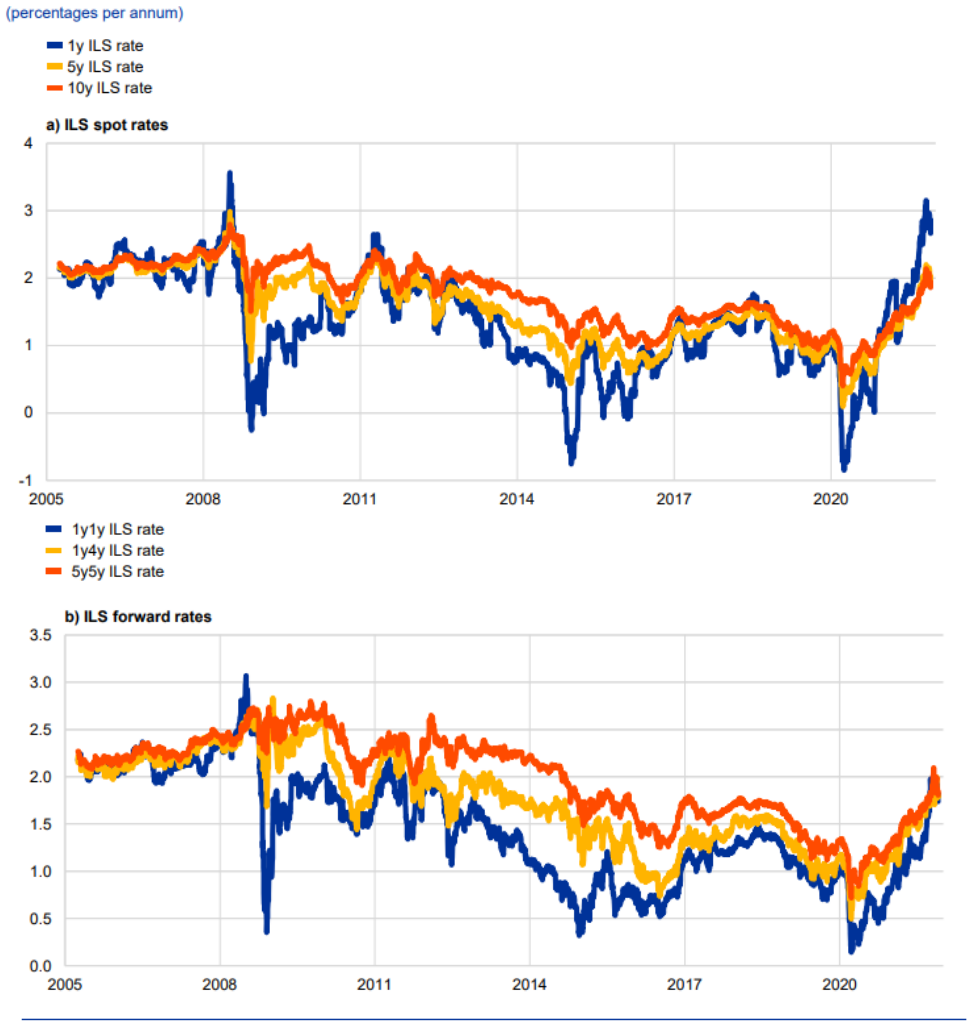
This ILS contract is considered superior to breakeven inflation rates from inflation-indexed bonds as a measure of euro area inflation expectations because the inflation contract in the inflation-indexed bonds refers to a national price index rather than the euro area HICP and because there are fewer problems with liquidity effects [6]. However, the ILS rate is still likely to be affected by time-varying risk premia associated with changing market perceptions of the extent of inflation risk.

Figure 9 reproduces a chart on ILS rates from Burban et al. (2021). It shows some volatility in ILS spot rates over the past year but the longer-term rates have returned to close to 2% in recent months. The one-year forward rate has also converged on 2%, suggesting the market still agrees with the ECB assessment that inflation will return to target in 2023. Burban et al. (2021) argue that much of the fluctuations in ILS rates over the past year was accounted for by changes in the inflation risk premium but subtracting off their estimates of the impact of this premium, their calculations still suggest that the inflation expectations component of the ILS contracts remains well aligned with the ECB's 2% target over the medium and long-term.

[5] These data can be found at https://www.aft.gouv.fr/en/oatis-key-figures

[6] See Böninghausen, Kidd and de Vincent-Humphreys (2018) for a more detailed discussion.

Figure 9: Euro area inflation-linked swap rates



Sources: Refinitiv and ECB calculations.
Notes: The "1y4y ILS rate" is the one-year forward ILS rate in four years' ahead, and similarly for the "1y1y ILS rate" and "5y5y ILS rate". The latest observation is for 26 November 2021.

Source: Burban et al. (2021).

3.5. Summary

To summarise, a wide range of measures of inflation expectations have, unsurprisingly, risen over the past year but, as of yet, these measures should probably not trigger a lot of concern for the ECB. Consumer and business surveys indicate the public is expecting a higher rate of inflation over the next year but these series seem to have largely responded to the rise in actual inflation. Expected inflation in the Commission's consumer survey is still only at a level that has prevailed in the past when inflation rates were relatively low.

The ECB itself is expecting inflation to be above target this year. The staff's December projections showed an inflation rate in 2022 of 3.2% and worsening conditions in energy markets may see this forecast marked up again in March. The more important issue for the ECB is what happens in future years. The ECB is forecasting a return to inflation rates close to its 2% target from next year onwards. They will be relieved that, for now at least, the forecasts provided by professional forecasters and by financial markets are in agreement. In addition, provided long-term expectations don't increase further, the recent move of longer-term expectations towards 2% can be viewed as a positive endorsement of the credibility of the ECB's commitment to meeting its target rate.

4. SOME SCEPTICISM ON THE ROLE OF EXPECTATIONS

As discussed above, it has become conventional wisdom in macroeconomics that inflation expectations are a crucial determinant of inflation and that central bank communications aimed at anchoring the public's expected inflation rate are an important part of monetary policy. Here, I will briefly present some reasons for scepticism about these ideas. In particular, I will cite some of the arguments in two recent papers and then raise a couple of other points.

4.1. Rudd (2021)

A recent paper by Federal Reserve economist Jeremy Rudd (2021) has the blunt title "Why Do We Think That Inflation Expectations Matter for Inflation? (And Should We?)". Rudd provides a number of sceptical arguments against the usual formulation of the expectations-augmented Phillips curve.

First, Rudd points out that unionisation rates are low in modern economies so there is less room for the kind of formal wage bargaining envisaged in Friedman's formulation of the Phillips curve in which employees put forward their expected rate of inflation as a baseline for negotiations on wage increases. Firms may feel the need to pay workers more money to keep up with the cost of living so they can hire new workers and prevent quits but this may simply take the form of a backward-looking adjustment based on recent changes in the cost of living rather than an annual negotiation in which expected future inflation plays an important role.

Second, Rudd argues that the low rate of inflation in recent years may have reduced the "salience" of cost of living increases as a factor in wage formation:

> *"the current period represents one in which inflation isn't on workers' "radar screens" anymore (or is at least is only a very tiny blip), which in turn yields an outcome where current price inflation does not respond (much) to past inflation (because inflation is not a major factor in wage determination)".*

And Rudd notes that this is linked to a previous Fed Chairman's definition of price stability:

> *"If this situation sounds like former Fed chair Alan Greenspan's (2002) definition of price stability as "... an environment in which inflation is so low and stable over time that it does not materially enter into the decisions of households and firms," that's because it basically is."*

Rudd warns about the dangers of the so-called Average Inflation Targeting strategy recently adopted by the Fed. This approach seeks to offset shortfalls relative to a 2% inflation target by signalling to the public that they should allow inflation above 2% for a period. He notes that this could shift inflation dynamics into a new and more problematic situation:

> *"a policy of engineering a rate of price inflation that is high relative to recent experience in order to effect an increase in trend inflation would seem to run the risk of being both dangerous and counterproductive inasmuch as it might increase the probability that people would start to pay more attention to inflation and—if successful—would lead to a period where trend inflation once again began to respond to changes in economic conditions."*

In the context of the euro area, the concern would be that the current unintended jump in inflation makes inflation salient again and re-establishes the previous expectations-augmented Phillips curve relationships seen in previous decades.

4.2. Coibion et al. (2020)

Another important contribution in this area is Coibion et al. (2020). This paper reviews the question of whether monetary policy should attempt to influence the public's inflation expectations as part of its monetary policy strategy and discusses a number of challenges to adopting this approach. Their paper makes many relevant points but I will highlight just two.

First, Coibion et al. highlight that the evidence suggests that many people pay little attention to inflation, apart from at particular times. For example, they illustrate that perceived inflation rates in consumer surveys are highly correlated with the price of petrol. This links again with the concept of salience. Many people fill their car with petrol on a regular basis so this is a large regular expenditure and a price that people know. Large changes in this price are salient and may affect expectations disproportionately.

Second, Coibion et al. discuss how most people pay very little attention to monetary policy. They describe a series of major policy changes introduced by various central banks that had essentially no impact on measures of the public's inflation expectations. So central banks can work hard on their communications strategies but it's not clear the general public are listening.

4.3. Some other grounds for scepticism

I would add some other sceptical points on the role of inflation expectations.

First, despite the considerable attention paid to survey measures of inflation expectations, they are not particularly useful in forecasting what is going to happen with inflation. ECB (2021a) conducts a thorough investigation of the forecasting properties of survey measures of inflation expectations and concludes "*informing time-series models with survey expectations as regressors provides some – albeit not major – forecast gains.*" There are few good reasons to assume a high value of expected inflation in a survey will translate into a high subsequent value of inflation.

Second, conversely, there is plenty of evidence that survey measures of inflation expectations are influenced by current and recent inflation rates. The current rise in survey measures of expected inflation may simply reflect the incoming data rather than providing any additional independent information about inflationary pressures.

Third, there is perhaps an excessive focus on the importance of long-term inflation expectations for monetary policy. Keeping long-term inflation expectations anchored is helpful in stabilising long-term interest rates but these expectations do not play an important role in determining inflation over the short- or medium-term. Workers who see inflation running at 5% for a year are likely to want a compensating wage increase even if they believe inflation will end up averaging 2% over the longer-term. The ECB can view long-term inflation expectations at 2% as a positive sign of its credibility but if those expectations move upwards significantly, it will be because inflation has consistently been above the ECB's target. The "anchoring" seen in surveys and financial markets is arguably just a *consequence* of policy success rather than something that *contributes* directly to this success.

Fourth, it may be worth considering macroeconomic theories that place less reliance on unobservable movements in inflation expectations to explain events. So, for example, Hazell et al. (2020) interpret the Volcker disinflation as largely occurring because the monetary policy regime change gradually brought inflation expectations down. But an alternative interpretation could be that the Fed's restrictive and volatile monetary policy of this period had a much larger negative effect on aggregate demand than could be summarised via the unemployment rate.

Perhaps rather than being the result of anchored inflation expectations, the pre-pandemic weakness of inflation across the advanced global economies had a different common cause: Weak global aggregate demand relative to global supply, perhaps due to the various factors that Summers (2014) referred to in his "secular stagnation" diagnosis.

And perhaps the current period of rising inflation reflects global demand outstripping global supply, particularly in countries that have perhaps applied excessive fiscal stimulus such as the United States. Rather than worrying too much about anchoring inflation expectations, the solution to keeping inflation on target may be better management of aggregate demand via monetary and fiscal policy.

5. CONCLUSIONS

The current period of rising inflation clearly presents a serious challenge for the ECB. The ECB Governing Council has been clear that it views this as a temporary phenomenon but the length of this "temporary" spell is increasing with every passing month. The ongoing surge in energy prices has meant that HICP inflation, having averaged 2.6% in 2021, will likely be over target by a greater amount in 2022. Given this, the ECB can be relieved that, by and large, their belief that inflation will return to normal rates in 2023 is shared by professional forecasters and investors. Longer-term inflation expectations remain anchored around its target rate of 2% and there is also limited evidence as of yet of a worker-led wage-price spiral underway.

The comfort taken from all of this should probably be limited. Inflation expectations tend to follow the behaviour of inflation itself. If the ECB cannot contain inflation in the coming months, we are likely to see increases both survey-based and markets-based measures of expected inflation in 2023 and perhaps a de-anchoring of longer-term inflation expectations.

More seriously, a run of many months in a row of HICP inflation over 5% is likely to make inflation a more salient issue with workers, particularly in the environment of an economic recovery with a strengthening labour market. And a strategy of ECB Governing Council members using "open mouth operations" to reassure the public about inflation is unlikely to be particularly successful in curbing inflation in the coming months. There may be time for inflation to cool off and the re-emergence of a wage-price spiral to be avoided but there may not be that much time.

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This paper discusses theory and evidence on inflation expectations. While near-term measures of expected inflation in the euro area have increased, forecasters and financial markets expect inflation to decline back to the ECB's target by later this year. The paper provides some sceptical arguments in relation to the prominence given to measure of inflation expectations in monetary policy circles.

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