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**Quantifying and Maintaining price Stability in Times of  
Crisis: The recent Experience of the European Central Bank**

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## Introduction

Since 1992, when the Maastricht Treaty was signed, lots of things has changed. The project at the time was to create a Union characterized by consistency and solidarity among Member states. To be possible, a central authority was needed, and on 1998 the European Central Bank was established with the duty to act in accordance with the power and the limits realised by the Treaty.

Every action of the ECB revolves around its main objective, Price Stability.

Being Art.105 of the Treaty not clear on the ways of reaching price stability, the Govern Council in 1998 decided to establish its first quantitative definition of price stability, aimed at reaching a level of inflation below 2%.

Price stability is the goal that must be reached by a final target. The inclusion of a nominal anchor, whose purpose is to anchor the overall price level and inflation expectations while reducing the space for discretion in the execution of monetary policy, is the main factor that supports this strategy.

The ECB staff on June 2021, after accurate studies, decided to change the asymmetric quantitative definition of price stability to a symmetric inflation target equal to 2%. This change raised some uncertainties about the effectiveness of this move. The aim of this paper is trying to understand if this change brought benefits to the economy or if it was better to stick with the original quantitative definition of price stability.

This paper focuses on the effectiveness of this recent change due to the importance of price stability for inflation expectations, since it acts as a baseline that central banks aims at achieving.

If price stability is well simple and solid, then can be used as an anchor for expectation. Inflation expectations are a crucial factor in influencing actual inflation rates. Individuals and corporations include their ideas about future pricing in their decision-making processes whenever they establish expectations about future prices. If individuals anticipate substantial inflation, they may demand higher pay or raise prices for products and services, creating a self-fulfilling prophesy. Central banks help define these expectations while encouraging economic players to take decisions on the basis of the assumption of stable prices by establishing and maintaining price stability. Price stability helps to maintain overall economic stability. When prices are steady, individuals and companies can manage their budgets more efficiently, making more confident long-term investments and consumption decisions. This stability improves economic efficiency, stimulates productive investment, and promotes economic

progress. Price stability objectives improve monetary policy authenticity and efficiency. Consumers and financial markets will gain trust if the central bank creates a track record for pursuing price stability. This credibility enables the central bank to better control inflation expectations and steer the economy toward price stability. When central banks make an explicit commitment to price stability, it tends to minimize the effect of economic shocks and increase monetary policy transmission.

Many central banks use inflation targeting frameworks, in which they set clear inflation objectives and announce them to the public. Price stability acts as a focal point for monetary policy actions in such systems. The central bank may express its objectives, monitor its achievements, and be considered responsible for reaching the targeted inflation level if it has a defined goal. This openness helps to match market expectations together with the central bank's policy goals.

Overall, the concept of price stability is critical for inflation expectations because it serves as an indicator for economic actors, promotes economic stability, increases policy credibility, and supports successful monetary policy execution. By pursuing price stability, central banks may contribute to the creation of an environment favourable to long-term economic growth and the financial health of individuals and enterprises.

The past few years has been characterized by two major crises, a war with an invisible enemy, Covid-19 and the war between Ukraine and Russia. This caused huge disruption in our economy, influencing our life. Not knowing if this was going to end soon or not, a close study to the reviews that the ECB implemented, in order to bring back price stability was necessary. As starting point of this paper, some information about the history of the ECB will be provided, such as its foundation, its main objective, and the Treaty of Union together with a more detailed explanation of the benefits of reaching it. It will be delineated the first quantitative definition of money designed and improved respectively on 1998 and 2003.

Since 2003, when a safety margin has been imposed as clarification of the 1998 strategy, ECB faced numerous crisis, which changed the economy of the Union. Information will be provided about all these crises starting from 2003 characterized by extraordinary economic expansion which made people and firms take risky decisions, continuing with 2008 when Europe entered the Great depression phase, followed by the sovereign crisis in 2010, arriving to 2019 when the idea of inflation coming to an end was spreading around. Highlighting all the characteristics of the first quantitative definition of money its clarification and the historical background, will give enough knowledge to the reader to understand the conventional and unconventional monetary policy strategy implemented by the ECB to bring back price stability. Following will

be shown the problematic and concerns regarding the 2003 inflation target and will be set the path of the ECB towards a new quantitative definition of money, which transformed the inflation target from asymmetric to symmetric.

This paper aims to analyse in detailed the economic situation before and after the change, to be able to answer all the uncertainties regarding the new 2% strategy and see if the recent crisis could have been managed better with the 2003 asymmetric inflation target or not. So, after the description and the monetary policy implementations that characterized the years from 2003 to 2019, in the second section, all the economic bulletin and press conferences made and published from the ECB, has been analysed and reported together with numerous studies of economists and ECB staff members. As well as all the monetary policy implemented by the ECB before and after the strategy review. In this way a comparison between the monetary policies conducted with an inflation target stating “below, but close 2%” and symmetric 2% can be made, which in accordance to the time period shows the effectiveness of them. A particular attention has to be brought on the time period, which as outlined in the paper has evolved substantially, introducing new macroeconomic trends such as globalization, digitalization and demographic changes.

In order to have a clear picture of the situation, numerous studies have been reported, in both the second chapter and in the annex, which outline the process that the ECB staff followed in constructing the strategy. To understand the reasons why has been chosen an inflation target of 2% rather than another, a detailed explanation of the macroeconomic model used for the conduction of monetary decision will be elucidated. Introducing the IS-MP-IA model (Romer 2000) which is a development of the neoclassical Keynesian model, with the idea of including Keynes' concepts right back inside the general economic equilibrium theory. A study about the effect of the new strategy announcement on public expectations has been reported to understand how households feel about the new strategy due to the close relation that there is with inflation expectations, and an additional research on how point targets are better than range targets since they dampen the growth in outlier estimates, helping to well-anchored expectations regardless of challenging times, has been provided.

# Chapter 1 The Evolution of the definition of price stability

## Section 1.1 ECB and Asymmetric Inflation Target

In order to fully understand the ECB's role and influence on Eurozone economy, we should first bring our attention to the origin of this institution.

Everything began with the Maastricht Treaty signed on 7 February 1992 and became effective on 1 November of 1993. It takes its name from the place in which it was signed and laid down the foundation for the European Union, indeed also known as the Treaty on European Union. Article A of the Treaty of Union contained in the Official Journal of the European Union, Page No C 191/4, dated on 29 July 1992, explains the result of the Treaty: “By this Treaty, the High Contracting Parties establish among themselves a European Union, hereinafter called 'the Union'. This Treaty marks a new stage in the process of creating an ever-closer union among the peoples of Europe, in which decisions are taken as closely as possible to the citizens. The Union shall be founded on the European Communities, supplemented by the policies and forms of cooperation established by this Treaty. Its task shall be to organize, in a manner demonstrating consistency and solidarity, relations between the Member States and between their peoples”.<sup>1</sup> It formally established three stages of action: Eliminate internal frontiers in order to have a free movement of capital between member states, implement a common foreign and security policy in order to have a possible common defence, and introduce a common currency. Following the historical project of the European Economic and Monetary union of having the twelve Member countries under the same currency, Article 4a of the Treaty introduces the forward establishment of a European System of Central Banks (ESCB) and a European Central Bank (ECB) which have to act in accordance with the power and limit attributed by the Treaty and the Statue.<sup>2</sup> On 1 June 1998, following the appointment of the President, the Vice-president and the four other members of the Executive Board by the Member States, the ECB was officially established, exercising its full power for the first time on 1 January 1999, following the announcement of the Euro as the official currency of the Euro

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<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:11992M/TXT&from=EN>

<sup>2</sup> The 12 countries which signed the Treaty were Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, United Kingdom together with Northern England.

Area.<sup>3</sup> The Euro has been launched as an invisible currency, that involved around 300 million people in European territory.<sup>4</sup>

The term invisible has been designed by the ECB in order to outline the fact that for the first three years, the euro was used only for accounting purposes, and so in electronic payments, while banknotes and coins has been introduced only later on 1 January 2002.

This background is useful in order to understand where and how the quantitative definition of money comes from. Indeed, Article 105 of the Treaty of the European Union, in the Official journal of the European Communities, page No C 191/14, outlines the main objective that the ECB has to achieve: “The primary objective of the ESCB shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Community with a view to contributing to the achievement of the objectives of the Community as laid down in Article 2”. As stated in the article the objective of reaching price stability is not precise but rather vague. Indeed on 13 October 1998, the Govern Council, in order to meet the ECB’s precursor and EMI desired of implement transparency and accountability using public announcements, released a quantitative definition of price stability to the public as the core of the ECB’s monetary policy, aimed at specify the objective in a more accurate way.<sup>5</sup> The price stability was designed as a “year-on-year increase in the Harmonized Index of Consumer Price (HICP) for the euro area of below 2%”.<sup>6</sup> It was also specified that this level of price stability had to be maintained over-the-medium term, which is an important feature that will be discussed later on. From this quantification of price stability it is clear that a maximum level of inflation was clearly stated while the minimum level that it could possibly reach was left free.<sup>7</sup> This lack of a “floor” was explained by the speech delivered by President Duisenberg in November 1998: “ We did not announce a floor for inflation, because we know that the price index may include a measurement bias, but we do not know the magnitude.”

Before moving on to explain how the Govern Council arrived at the estimation of an inflation target “below 2%” it is important to stop for a second and bring the attention to the reason why price stability is a major concern.

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<sup>3</sup> <https://corporatefinanceinstitute.com/resources/economics/what-is-european-central-bank-ecb/>

<sup>4</sup> <https://www.ecb.europa.eu/euro/intro/html/index.en.html> “Invisible currency” because for the first three years it was used only for accounting purposes, hence in electronic payments. Banknotes and Coins will be introduced later on 1 January 2002.

<sup>5</sup> [https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview\\_backgrounden.pdf](https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview_backgrounden.pdf)

<sup>6</sup> <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op269~3f2619ac7a.en.pdf>

<sup>7</sup> Negative values were not allowed.

As it is shown in the ECB website in the area dedicated to the advantages of price stability, Central Banks maintaining price stability provides a higher standard of living, and high and stable levels of economic activity and employment. It is closely related to inflation and deflation: the former is defined as a broadly-based increase in prices of goods and services over an extended period of time which induce the value of money to decline, hence having lower purchasing power, the latter is instead the opposite which brings the overall price level to decline in a long time period.<sup>8</sup> Having different purchasing power through years, changes the amount of goods and services that consumers can buy. Assuming a person owns a specific amount of money. In the presence of an increase in inflation and a decrease in the purchasing power, today he would be able to buy a higher amount of goods and services than tomorrow. In a situation of absolute price stability this would not occur and the amount of goods and services that you are going to be able to buy would be the same between the two different time periods. Price stability promotes greater quality of living by reducing uncertainty regarding price fluctuations; likewise, increasing transparency of comparable pricing allows consumers to come up with informed purchase and investment decisions.<sup>9</sup> In the same way if there is a reduction of inflation uncertainty, firms take informed decisions on employment, preventing the misallocation of resources, increasing the efficiency of the economy leading to a higher welfare for households. There is more, with stable prices and no inflation creditors would feel safe and would not ask for a risk premium in interest rate, which will lead to a better allocation of resources in the capital market, increasing as well the willingness of people to invest. In a situation with no inflation and no deflation consumers will not divert resources from production uses to hedging activities and the distortion effects of tax system and social security would be reduced. Inflation has already been defined, what is missing is that it can also be considered as a hidden tax on holding cash, which leads to another advantage of price stability which increases the benefits of holding cash. Right now, we account for numerous actions of price stability that have a positive effect on our economy, but there is still one: the contribution to financial stability due to the avoidance of shocks to the real value of nominal assets.

Moving back to how the quantitative definition of price stability has been determined, during the process of evaluation of price stability the Govern Council arrived at the conclusion that low inflation and zero deflation was desired. When they found themselves choosing the specific level of the quantitative objective they had to include credibility of the index as perceived in

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<sup>8</sup> <https://www.ecb.europa.eu/mopo/intro/benefits/html/index.en.html>

<sup>9</sup> <https://www.ecb.europa.eu/pub/pdf/other/whypricestabilityen.pdf>



the general public, a high level of reliability and the availability of the index. The Government Council and the ECB in 1998 decided to rely on the Eurostat's headline Harmonized Index of Consumer Prices (HICP), which is the consumer price index harmonized across the countries of the EU, that measures the change overtime in the prices of consumer goods and services purchased by euro area households.<sup>10</sup>

After the announcement on 13 October 1998 of the quantitative definition of price stability, some concerns raised about the possible inconsistency of the asymmetric 2% target with price stability. Those concerns have been driven by two problems: the effects of the monetary policies on eurozone and the level of inflation. Monetary policy is used as a tool of the ECB to bring back price stability aftershocks, indeed once applied has an effect on the euro area as a whole, which produced the problematic of not being able to target one specific country. As well, the idea spread among analysts and professions was that a level of inflation under 2% was risky due to the higher possibility of incurring in a deflationary period.<sup>11</sup> Being already inflation very low, having as target inflation "below 2%" was seen as a risk.

As a response, President Duisenberg, at the joint congress of federations EUROFINAS and LEASEUROPE, held in Paris on 11 October 1999, had to clarify the choice of such target claiming: "Some observers have criticised the strategy as "asymmetric". In other words, they argue that the Euro system is more concerned about inflation than it is about deflation. In their view, such asymmetry will impose a drag on the overall performance of the euro area economy as a whole because monetary policy will be overly restrictive on average, and risks triggering a damaging deflationary spiral in some circumstances. ... I reject this criticism. The use of the word "increases" in the definition imposes a floor of at least zero for the lower bound. ... Let me state categorically, as I have often done in the past, that neither prolonged inflation nor prolonged deflation in the euro area would be deemed by the Governing Council to be consistent with the maintenance of price stability."<sup>12</sup>

Now it is important to analyse one last aspect of the quantification of price stability, hence the medium-term orientation. When the Government Council made its announcement on 13 October 1998, he said that price stability had to be maintained over the medium-term. By doing this he made clear that monetary policy does not have an immediate impact on the economy but their effect on it and on inflation is revealed only after long- and variable-time lags.<sup>13</sup>

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<sup>10</sup> [https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview\\_backgrounden.pdf](https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview_backgrounden.pdf)

<sup>11</sup> <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2219.en.pdf?d75daefd4fe5f01fc66658005697c106>

<sup>12</sup> <https://www.ecb.europa.eu/press/key/date/1999/html/sp991011.en.html>

<sup>13</sup> <https://www.ecb.europa.eu/mopo/strategy/princ/html/orientation.en.html>

## Section 1.2 Evolution from Asymmetric or Symmetric Inflation Targeting

The quantitative definition of money announced in 1998 was evaluated incorporating best knowledge of the central bank and accurate economic research, however, as Otmar Issing, member of the Executive Board of the European Central Bank, at the European Central Bank Watchers Conference, in Frankfurt, 11 July 2003, stated the strategy was also made with an “Open Mind”.<sup>14</sup> By open mind he meant their good will to introduce changes to the quantitative definition of money due to the lack of the test of practical experience. This led to a review of the old quantitative definition of price aimed at promoting public understanding of the ECB’s policy goals, strategy and actions. Moreover it was necessary to provide a safety margin against deflation, but still maintain the frame of the old strategy in order to not create a loss in credibility towards the ECB, and this is the reason why has been introduced the “below but close to 2%”.<sup>15</sup> This monetary policy review is more a clarification of the old one, Otmar Issing in the press seminar on the evaluation of the ECB’s monetary policy strategy, on 8 May 2003, answering to a question for the public stated that “ this "close to 2%" is not a change, it is a clarification of what we have done so far, what we have achieved – namely inflation expectations remaining in a narrow range of between roughly 1.7% and 1.9% – and what we intend to do in our forward-looking monetary policy.”<sup>16</sup>

The main problem of the strategy designed in the 1998 was the lack of experience, for this reason in order to formulate the advanced one, the first thing that the staff of the ECB and of the National Central Banks did was to revisit all the technical issues. In the previous four years, from the end of 1998 to May of 2003, lots of research has been made and archived; a detailed analysis of them was made and a number of issues have been discovered. The main issues that came out were related to the transmission of monetary policy, the determinants of prices, the leading indicator properties of money, credit and other key indicators.<sup>17</sup> Consecutively, there has been a reflection regarding the contribution of the strategy in reaching the consensus among the decision-making bodies, with a focus of the Govern Council. The strategy is supposed to build a framework that provides a useful tool to design the right monetary policy, ensuring that the information is taken in account entirely and precisely and providing guidelines for the debates among the Govern Council members. Ultimately, the work force analysed the performance of the strategy in external communication and found out this is the area where the

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<sup>14</sup> <https://www.bis.org/review/r030721c.pdf>

<sup>15</sup> <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op269~3f2619ac7a.en.pdf>

<sup>16</sup> [https://www.ecb.europa.eu/press/pressconf/2003/html/is030508\\_1.en.html](https://www.ecb.europa.eu/press/pressconf/2003/html/is030508_1.en.html)

<sup>17</sup> <https://www.bis.org/review/r030721c.pdf>

strategy was less successful. As a result of this three-step analysis, the results showed that the quantitative definition of prices has been successful in anchoring market expectations, the measurements of expected inflation remained stable at the level of below 2%, but there was the need of the clarification of “close to 2%” which helped managing the concerns regarding the risk of deflationary periods.

The strategy review made in 2003 has been effective until 2021. During those eighteen years, Eurozone faced numerous crises which put a strain on the ECB activities, which tries the best to bring back price stability. It is important to have a closer look to the events that characterized the years from 2003 to 2021 to demonstrate why the ECB felt obligated to modify its strategy. Since June 2003, European exports, domestic demand and investments increased speedily, leading to an economic expansion. As can be seen by Fig 1. this lasted till 2005, registering an inflation level above 2%, which increased the upside risk of price stability due to potential second-round effects in wage and price-setting that stemmed from higher oil prices.<sup>18</sup>

Fig.1 HICP inflation rate- Overall Index



Sources: ECB website, inflation dashboard

Following the strategy of having an inflation level of “below, but close to 2%”, the ECB decided to implement a restrictive monetary policy with the purpose of slowing down money supply’s growth in order to decelerate the economy, raising interest rates up to 200 basis points in December 2005, up to a level of 4% by the end of June 2007. Due to this period of expansion, households, firms and banks took enormous risks inside but also outside the financial sector, banks became dependent from the securitization process and from funding gathered from an unguaranteed money market. Moreover, in that period there was an imbalance in financial activities between countries in the world, countries like Japan or China were mainly saving

<sup>18</sup> <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2219.en.pdf?d75daefd4fe5f01fc66658005697c106>

money, while countries like the US and Spain were investing huge amounts of money. As it looked, this situation was not sustainable and crashed on 15 September 2008 with the Lehman Brothers' failure, which caused a collapse in international trade leading to a period of darkness for European countries known as the Great Depression. The Collapse of Lehman Brother did not have an immediate influence on inflation level which remained still above 2% but had a physiological effect on firms which started to realize that if a well consolidated company like Lehman Brother could fail then no one was "safe". This realization led to an inhibition of financial markets. The 2008 financial crisis indicated a breaking point of European growth. Between the first quarter of 1999 to the second quarter of 2008 the average quarterly growth lay at 2.27%, and dropped by 40% right after the crises, registering between the first quarter of 2010 and the fourth quarter of 2019 an average quarterly level of 1.39%. The decline was not gradual but precipitously. Considering the nominal GDP growth, between 1999 and 2008 the average nominal growth was registered at 4.37%, decreasing by 41% in the following period from 2010 to 2019. Same happened for the Real GDP growth which declined from 2.27% to 1.39% and according to the HICP measurement there was a decline of 32.8% in inflation too.<sup>19</sup> Even if 2008 is considered a turning point for the European economy, other crises subsequently appeared. In 2010 the sovereign crises entered into the European countries threatening mostly Spain, Cyprus, Portugal and Ireland. In particular the sovereign crises damaged banks, it was registered that within seven-euro banks out of nineteen-one Eu banks failed by July 2010, leading to a further decrease in confidence, due to the beliefs that ECB and governments were not able to solve the situation. Again in 2013 the level of inflation decreased all of a sudden over the course of the year from 2.2% in December 2012 to 0.8% in December 2013 and the average annual HICP inflation stood at 1.4% in 2013, reflecting the strong decline in energy and food inflation.<sup>20</sup> Even though the numerous intervention of the ECB, aimed at raising back the inflation level, it was not enough and in 2014 monetary growth still resulted low-key and credit continued to contract.<sup>21</sup> For this reason 2014 was a complex period characterized by the fear of not being able to bring the level of inflation up again.

As shown, the ECB during the years had to face numerous challenges that tested her capacity to handle them. Indeed, in order to pursue the primary objective of price stability, ECB had to rely not only on conventional monetary policy but had to introduce new "unconventional" monetary policy such as, Security Market Program (SMP), Long-Term Refinancing Operation

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<sup>19</sup> <https://www.robert-schuman.eu/en/doc/questions-d-europe/qe-597-en.pdf>

<sup>20</sup> <https://www.ecb.europa.eu/pub/pdf/annrep/ar2013en.pdf>

<sup>21</sup> <https://www.ecb.europa.eu/pub/pdf/annrep/ar2014en.pdf>

(LTROs), Covered Bond Purchase Programme (CBP2) and Very Long-Term Refinancing Operation (VLTROs).

In a speech held by Mario Draghi, President of the ECB, at the ceremony to mark 200th anniversary of the Oesterreich National Bank, Vienna, June 2, 2016, he explains the importance of unconventional monetary policy, which relies on the possibility for them to operate in a broader range of markets, implying that the risk of involuntary distortionary effects is larger than when using conventional tools, on the other side a complication arises concerning the public's knowledge about them.<sup>22</sup>In the same speech he started introducing the main idea that lies beyond the monetary strategy of 2021, explaining why in his opinions the target should have been symmetric, affirming that even if the mandate was symmetric and the commitment was symmetric, there was an asymmetry in the tools used to achieve it, which derives from the existence of a lower bound for interests rates. From this came out concerns about the asymmetry framework and the willingness of the Govern Council to anchor inflation at a low level.<sup>23</sup>

On November 2019 the level of inflation was up to 1.0%, which lead to the belief of a possible end of inflation.<sup>24</sup> This belief of end of inflation can be explained by the correlation that exist with the Philipps Curve. A flat Phillips curve minimizes the likelihood of a potential inflation outbreak.<sup>25</sup> Several financial market players, during that period, believe that the Phillips curve has died, and that high inflation was not anymore, an option. Events in the United States, Europe, and Japan seem to reinforce this viewpoint. Even when labour markets have become more restrictive, major central banks encounter difficulties to achieve inflation again close to or proceed towards their targets. Inflation expectations appeared to be trending lower, not higher, as predicted by the Phillips curve model.

Over the last decade, a great deal of empirical studies has been dedicated to these topics, such as Yellen (2015), Kiley (2015), Blanchard (2016), Nalewaik (2016), Powell (2018), and Hooper et al. (2019). Yet there seems to have been very minimal evidence of the sensitivity and nonlinearity of the reaction of inflation to labour market tightness since the late 1980s. Via national information, Phillips curve models has generally been unsuccessful in determining statistically noteworthy prices.

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<sup>22</sup> <https://www.ecb.europa.eu/press/key/date/2016/html/sp160602.en.html>

<sup>23</sup> <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op269~3f2619ac7a.en.pdf>

<sup>24</sup> <https://ec.europa.eu/eurostat/documents/2995521/10159211/2-17012020-AP-EN.pdf/12e497ea-cfce-c8ae-acf5-2b97b5076ba0>

<sup>25</sup> <https://cepr.org/voxeu/columns/phillips-curve-dead-or-alive>

In a recent work (Hooper et al. 2019), researchers argue that the empirical support for a dead Phillips curve is poor for three distinct reasons.

The first one focuses on expectations that are anchored. The recent achievement in keeping inflation under 2% has contributed to reducing the sensitivity of inflation to labour market developments.

Secondly, there is too little variability in the data. Since the late 1980s, there have been a handful of cases in macroeconomic time-series analysis when the rate of unemployment was higher and lower than one percent point than its natural level, rendering it impossible to forecast a substantial Phillips curve slope or nonlinearities.

Lastly, endogenous monetary policy that is generated within the economy. In the past few years, ECB and Fed has been concentrating on stabilizing inflation and keeping the national labour market from overheating. Fitzgerald and Nicolini (2014), as well as McLeay and Tenreyro (2018), noted that the ensuing endogeneity of monetary policy might mask the link between unemployment and inflation in macro time-series data. Whenever inflation experiences an upward shock, the central bank restricts monetary policy in order to maintain inflation under control, leading unemployment to increase. As a result, endogenous monetary policy generates a positive link among inflation with unemployment gap, biasing the Phillips curve slope coefficient toward zero. This implies that estimates of the Phillips slope since the late 1980s have underestimated the underlying connection.

### Section 1.3 The Adoption of Symmetric Inflation Target

On 30 September 2020, Cristhine Lagarde, President of the ECB, at the ECB and its Watcher XXI conference discussed the positive and negative aspects about the strategy implemented in 2003. During her speech delivered on 30 September 2020 where she confirmed the numerous difficulties they faced, she declared “The consensus that has governed monetary policy worldwide has been challenged on a numerous of fronts. Most importantly, the last decade has been defined by a persistent decline in inflation among advanced economies. In the euro area, annual inflation averaged 2.3% from 1999 to the eve of the great financial crisis in August 2008, but only 1.2% from then until the end of 2019.”<sup>26</sup> She believed that the formulation of “below, but close” was appropriate for the time when the ECB was trying to obtain credibility due to the high inflation. She also outlined that such a strategy did not fit in the economy

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<sup>26</sup> <https://www.robert-schuman.eu/en/european-issues/0597-the-european-central-bank-s-strategic-monetary-policy-review-the-key-to-a-return-to-sustainable>

anymore, since the current level of inflation was already low and raising the inflation level with a strategy that states “below but close” was not efficient. Another problem that she presented was about some aspects of the medium-term orientation of the target, which is a forward-looking orientation, necessary for the principles of prudent monetary policy but not enough; she believed that a backward-looking approach should be added too. Finally, she discussed the need to introduce in the Harmonized Index of Consumer Prices (HICP) a measurement of owner-occupied housing, in order to be more precise.<sup>27</sup> It is to remember that European countries also had to face COVID-19 crisis, and that Cristine Lagarde’s speech above has been influenced by it. Research provided by the ECB staff members show that in the first quarter of 2021 the euro area real GDP was 4.9% below the pre-pandemic level, having declined by 6.5% in 2020.<sup>28</sup> The recession produced by the pandemic drove private consumption to decrease drastically, due to the behaviour of households to precautionary save large amounts of money. The labour-market was indeed severely hit by the coronavirus pandemic, the level of employment was lower, it registered a fall of 3.2% of employed people in the second quarter of 2020, and the productivity per employee decreased by 12.1% in the second quarter of 2020.<sup>29</sup> Hence, lockdown had a substantial impact on the economy of the euro area.

In order to respond to this health crisis, the ECB had to perform an unusual monetary policy strategy which included the introduction of dual rates in the TLTROs, the introduction of the PEPP, and the first broad fiscal response at European Level, complementing the monetary policy.<sup>30</sup> Again the ECB was not able to rely only on changes in monetary policy interest rates but needed the help of additional unusual instruments. To make sure that the monetary policy was fit for the purpose, the Govern Council in June 2021 announced that price stability was better maintain with a goal of 2% inflation over the medium term, stating their commitment to a symmetric target.<sup>31</sup>

The prior quantitative definition of prices objective was seen as ambiguous due to its asymmetry, perhaps indicating that the 2% was a ceiling and not the target. This belief had to be erased due to its capacity of bringing inflation level too low. Reviewing the strategy the

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<sup>27</sup> <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200930~169abb1202.en.html>

<sup>28</sup> [https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202105\\_03~267ada0d38.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202105_03~267ada0d38.en.html)

<sup>29</sup> [https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202008\\_02~bc749d90e7.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202008_02~bc749d90e7.en.html)

<sup>30</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211001~ca589c6afc.en.html>

<sup>31</sup> [https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview\\_monopol\\_strategy\\_statement.en.html](https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monopol_strategy_statement.en.html)  
Symmetry means that both negative and positive deviations from this target are considered equally undesired.

Govern Council confirmed the medium-term orientation, and set the primary monetary policy instruments as the ECB policy rates, with the difference that this time in recognition of the lower bound will also be engaged asset purchases and long-term refinancing operations.<sup>32</sup> The medium-term orientation gives to the Govern Council the required flexibility to customize policy responses to the scale, persistence and nature of the shock.<sup>33</sup> Moreover, since financial stability and price stability are interdependent with a longer available time the ECB is able to take into account also financial stability. The ECB expanded its toolset in response to the introduction of the effective lower bound. Despite a continued absence of underlying inflationary pressure, the analysis finds that these extra policies have been helpful in driving GDP and inflation.

Interesting scientific proof show that longer-term refinancing operations, negative interest rates, forward guidance and asset purchases have made a difference, both individually and jointly, to alleviating the relevant financial conditions for companies and households, thereby easing the restrictions on monetary policy that are enforced by the lower bound on traditional interest rate policies. An additional improvement contained in the strategy is that the updated approach expressly acknowledges possible financial stability risks associated with policy initiatives, particularly a more robust or prolonged policy response towards the lower bound. In particular, as a supplement to the ECB economic examination, price stability measurement and proportional representation investigation will be modified to be based on an updated monetary and financial analysis that acknowledges that financial stability is a prerequisite for price stability and that macroprudential strategies are still not offering adequate protection. Before the change of the strategy, if we move our attention outside the European area, concentrating in the United States, on 27 August 2020, the Fed decided to abandon its flexible inflation targeting strategy and adopt a Flexible Average Inflation Targeting (FAIT) strategy.<sup>34</sup> By saying this it is clear how in some sense the ECB followed the lead of the US by introducing its new symmetric target.

Anchoring an inflation target is important, but why. If we compared target ranges to point targets, we see how the lack of a point target is less destructive than having realized inflation fall outside the range, in addition a focal point is easier to be communicated to the public and

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<sup>32</sup> ECB Policy Rates being the interest rate on the main refinancing operations (MRO), which provide the bulk of liquidity to the banking system, the rate on deposit facility, used for overnight deposits with the euro system and the rate on marginal lending facility which offer overnight credit to banks from the Euro system.

<sup>33</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210714~0d62f657bc.en.html>

<sup>34</sup> <https://www.robert-schuman.eu/en/doc/questions-d-europe/qe-597-en.pdf>



easier to remember, leading to an increase in transparency and lastly a point target gives a more precise view of the future path of inflation reducing uncertainty.<sup>35</sup>

So, in the end we have seen how the ECB had to face numerous and unpredictable challenges which were handled with continuous improvements of their strategies and instruments. In the following chapter we will analyse if the introduction of the new Strategy has been the right move, or not.

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<sup>35</sup> <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op269~3f2619ac7a.en.pdf>

## Chapter 2 The Effects of the strategy review on the economy

### Section 2.1 Economic trend after the strategy review

The years that go from 2019 have been affected by a major health crisis caused by Covid-19. The crisis forced the ECB to introduce new non-monetary policy tools as sustains of the monetary policy tool which were not able by themselves to restabilize the equilibrium into the economy. Having as its main objective price stability, mandates from the Treaty of State, the ECB, and the Govern Council decided that a new policy was necessary for a new era. With this idea in mind, the ECB staff started conducting numerous studies and research which could produce the best possible solution. In July 2021, Cristine Lagarde, President of the ECB announced the new symmetric 2% over the medium-term strategy review, which is still in use. Again, the main reason for this change was to have a strategy that could fit with the contemporary world economy, significantly different from the one of 20 years ago, when the strategy review was enacted. Those changes can be summaries into three main macroeconomic trends: globalization, digitalisation and demographic change.<sup>36</sup>

In an interview with the Financial Times, held on 11 July 2021, Cristine Lagarde defined the new strategy review as simple, solid and symmetric and not ambiguous as the previous one.<sup>37</sup> Simplicity was one of the attributes given to the new strategy because, contrary to the previous one it does not allow uncertainty on the value of the target, it is 2% no further discussion. While with the old strategy which stated, “below but close to 2%”, discrepancy between people arose, some believed that 1.9% was optimal, others believed 1.7% was optimal, and as we know consumer’s beliefs matters for price stability maintenance. Furthermore, it has been defined as solid because it gives to the ECB enough time to manoeuvre monetary policy, it is well-recognized as a price measurement of price stability around the world and gives a well-established constraint to the welfare cost of excessively high inflation. Last but not least, it is symmetric. As already explained, any variation from the target, below or above the two percent, is equally undesired and to be avoided. This characteristic emerged from the concerns that the

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<sup>36</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210714~0d62f657bc.en.html>

<sup>37</sup> <https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210713~ff13aa537f.en.html>

previous inflation aim could entrench expectations of low inflation.<sup>38</sup> Although it is allowed for inflation to oscillate around the target due to the precise definition of the target aiming at price stability over the medium-term, which suggests that the 2% is not a ceiling, but rather an average to be reached during the years.

As previously stated, what consumers believe is a relevant factor which helps the ECB to maintain price stability. Indeed, the ECB authorities decided to hold multiple events which could enable them to construct a stronger relation with the consumer with the objective of collecting their concerns and illustrate more accurately what the new monetary policy was doing in order to achieve price stability in the fields of investments, economy and employment. As a result of these meetings they discovered that The Harmonized Index of Consumer Prices (HICP), still considered a timely, respectable, comparable and credible inflation measure, has been criticized and for some people should have been improved, including housing costs. This change has been deeply discussed due to the diversified beliefs of the ECB staff. Some of them agree with the inclusion of the Owner-Occupied Households (OOH) because they consider that it can effectively take into account all the portions of consumer's spending.<sup>39</sup> On the other hand, there are technical issues which hold back people from implementing it into the HICP. One of these is explained by the frequency of estimation, we know that the HICP is measured regularly with a monthly frequency, while the Owner-Occupied Households cannot be accurately measured in all euro countries in such a short time. Moreover, there is no a stabilized scientific method to accurately measure the OOH which indeed creates confusion.

Certainly, going back to our main focus, it is possible to say that the strategy review had some implications also on the key interest rates of the ECB forward guidance, in order to accentuate their commitment to maintain a monetary policy which stands to meet the inflation target.<sup>40</sup> The decision made by the Govern Council was to maintain the key interest rates at their level or to lower them until the achievement of the 2% inflation target well ahead of the end of their projection horizon and to that to be durable. The definition just mentioned was provided by Cristine Lagarde, in the press conference held on 22 July 2021, where answering at some question she also provided an explanation of what she meant, illustrating that the projection horizon is a three year long projection: 2021, 2022 and 2023 and that during those years the overall fluctuation of inflation can not go below 2% target, hence it has to be durable. It is possible to see that every time the ECB survey of Professional Forecasters (SPF) provides the

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<sup>38</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210714~0d62f657bc.en.html>

<sup>39</sup> [https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695471/IPOL\\_IDA\(2021\)695471\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695471/IPOL_IDA(2021)695471_EN.pdf)

<sup>40</sup> <https://www.ecb.europa.eu/press/pressconf/2021/html/ecb.is210722~13e7f5e795.en.html>

projections for the HICP includes the three years above. For the third quarter of 2021, the one in which our analysis starts, the Harmonized Index of Consumer Price (HICP) inflation expectations, was revised upward, compared to the projections made in the second quarter, by 0.3 percentage points for 2021, 0.2 percentage points for 2022 and 0.05 percentage points for 2023 resulting at 1.9%, 1.5% and 1.5% respectively.<sup>41</sup> This increment in the expectation of inflation, revealed by the data, can be attributed to the increase of inflation itself. Nevertheless, it was not considered dangerous but rather temporal. The idea of high inflation being temporal was firstly mentioned by Cristine Lagarde at the press conference held in Frankfurt am Main, on 22 July 2021, and quickly became a sort of reassurance. She declared: “The current rise in inflation is expected to be largely temporary. Underlying price pressures will likely increase gradually, although leaving inflation over the medium term still below our target.”<sup>42</sup> As it could be guessed, being the GDP growth and inflation strictly related, the SPF results exhibited also an increase on the GDP growth expectations, revealing the projection of a surpass of the pre-pandemic level economic activity, with a long-term evaluation of 1.4%.

Now, since inflation fluctuation and GDP growth are both influenced by numerous factors, let us analyse the economic, financial and monetary developments made in the third quarter of 2021, and try to understand the overall situation in the eurozone. In order to do that we will be referring to data provided by the Economic Bulletin issue 6, 2021 published on the 23 of September. While the global economic activity was still recovering from the Covid-19 crisis, the global economy’s growth outlook made in September 2021 by the ECB staff projection has been revised from the projection made in the second quarter, in particular for what concerns 2022. Excluding the Eurozone, the Global real GDP growth was expected to hit 6.3% in 2021, before dropping to 4.5% in 2022 and 3.7% in 2023.<sup>43</sup> As well, the foreign demand of the Eurozone has been adjusted from prior estimates and it is expected to grow by 9.2% in 2021, 5.5% in 2022 and 3.7% in 2023. Moreover, it has been observed that: the euro area economy bounced back by 2.2% in the second quarter of the year, consumer spending has increased as a consequence of the improvement of the labour market, and unemployment declined. The ECB staff expectation sees an annual real GDP growth of 5.0% in 2021, 4.6% in 2022 and 2.1% in 2023. As we said, inflation has been rising a lot while the economy was recovering,

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<sup>41</sup> The SPF is conducted on a quarterly basis and gathers expectations for the rates of inflation, real GDP Growth and unemployment in the euro area for several time horizons, together with a quantitative assessment of the uncertainty surrounding them the participants of the survey are experts affiliated with financial or non-financial institutions based within the European Union.

[https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210723\\_1~0f9c4982c7.en.html](https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210723_1~0f9c4982c7.en.html)

<sup>42</sup> <https://www.ecb.europa.eu/press/pressconf/2021/html/ecb.is210722~13e7f5e795.en.html>

<sup>43</sup> <https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202106.en.html#toc12>

registering in August a value of 3.0% and was expected to rise even more in autumn. Although, as already mentioned, this was not considered a problem for the ECB, since they expected a decline during the following year, justifying their belief saying that since the causes of the rise in inflation were not considered to last long, when those were going to disappear inflation would have been lowered. The resulting inflation was determined by an increase in oil prices and the non-permanent reduction of the VAT in Germany.

The horizon projection of the expected inflation together with the other macroeconomic components, has been in continuous revision, in September 2021, the ECB staff declared new results compared to the one previously mentioned value decided in June, expectations were registering an inflation level of 2.2%, 1.7% and 1.5% respectively in 2021, 2022 and 2023. While the core inflation was 1.3% in 2021, 1.4% in 2022 and 1.5% in 2023.<sup>44</sup> Of course, it is important to stress out that the recovery growth and inflation are strictly dependent on positive financial conditions for all the economic sectors. Indeed, even if the forward curve of the Euro Overnight Index Average (EONIA)<sup>45</sup> decreased across the medium term, in the short term it was unaffected, implying that policy rate changes were not taken in consideration, at least not imminently. Additionally, for what concerns the monetary policy, the Government Council in September, taking into account the economy and the pandemic measures, decided that a favourable financial condition could have been maintained lowering the pace of the net asset purchases, and confirmed that price stability would have been reached using the following tools: the ECB key interest rates, the purchases made under the asset purchase programme (APP)<sup>46</sup>, reinvestments policies and a long-term refinancing operation.

Important to analyse is also the foreign market. Following what the ECB released in the Bulletin, the euro area foreign demand was expected to increase by 9.2% by the end of 2021, and by 5.5% and 3.7% in 2022 and 2023, making a raise with respect to the previous projection of 0.6%, 0.3% and 0.3% respectively. Moreover, the euro depreciated in the trade-weighted

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<sup>44</sup> Core inflation is the change in cost of goods and services excluding from the calculation the costs deriving from food and energy, due to their high volatility. Usually it is calculated using the Consumer Price Index (CPI) which measures the cost of goods and services. Definition taken from <https://www.investopedia.com/terms/c/coreinflation.asp>

<sup>45</sup> EONIA is the average overnight reference rate for which European banks lend to one another in euros. Calculated by the European Central Bank (ECB) based on the loans made by 28 panel banks. Definition taken from <https://www.investopedia.com/terms/e/eonia.asp>

<sup>46</sup> The Asset Purchase Programme (APP) is a component of non-standard monetary policy measures, initiated in mid-2014 to support monetary policy transmission and ensure price stability. The ECB together with the National Central Banks bought a variety of assets such as government bonds, securities issued by European supranational institutions, corporate bonds, asset-backed securities and covered bonds. All together those purchases are able to influence financial conditions, economic growth and inflation. Definition taken from <https://www.ecb.europa.eu/ecb/educational/explainers/tell-me-more/html/app.en.html>

terms, registering a nominal effective exchange rate of the euro weakened by 1.1% with respect to the currency of 42-euro area countries, and depreciated by 2.9% against the US dollar. Furthermore, the domestic price inflation for sale of non-food consumer goods intensified by 1.9% in July and the corresponding annual rate of import price inflation reached 1.2%, higher than in May by 2.0 percentage points. Jointly, import price inflation increased to 13.8% in July from 10.6% in the second quarter.

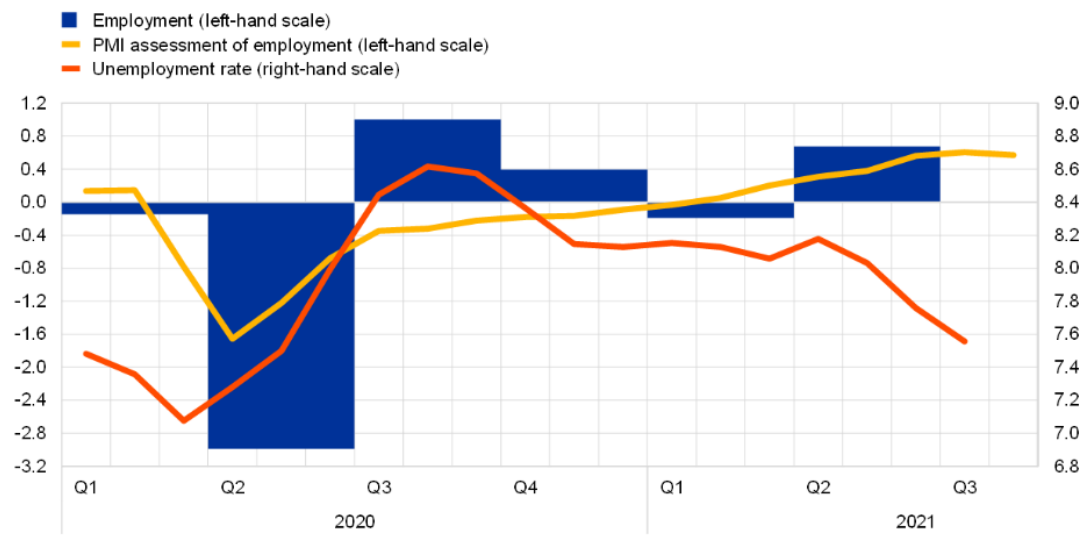
Now, recall that the labour market in the third quarter of 2021 registered an improvement with respect to the previous years. As shown in Fig.2 employment increased by 0.7% and total hours worked by 2.7% with respect to the first quarter of 2021. Consequently, the unemployment rate declined to 7.6% in July, and the number of workers in job retention schemes amounted to 2.7% against the previous average of 6.2%. Indeed, due to the increase of annual growth rate of hours worked per employee which increased to 12.4%, an increase also in the compensation per employee to 8.0%, against the 1.9% of the first quarter of 2021. All these factors gave consumers more available capital which allowed an increase in their savings, together with their consumption, reflected in the rebound that was registered in private consumption in the second quarter of 2021, which amounted to 3.7%, and was supposed to continue over the third quarter. Indeed, real house disposable income was predicted to improve. This fast wage growth, together with an increase in private consumption, increase in savings, decrease in unemployment and all the other changes described above had a strong influence on the inflation rate.<sup>47</sup> It has been proven by a study conducted by the ECB staff that there is a strong and consistent link between labour cost and price inflation across eurozone countries.<sup>48</sup> Thus, if we suppose that we will have an increase of labour market tightness, we will see how wage growth increases, resulting in a smooth outlook for labour productivity, leading to a higher unit of labour costs which should be passed on prices, pitting the basis for the projection of the inflation of the euro area.

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<sup>47</sup> <https://www.forbes.com/sites/forbesbusinesscouncil/2022/11/01/how-inflation-affects-the-labor-market/?sh=4181ffb85a8e>

<sup>48</sup> <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2235~69b97077ff.en.pdf>

Fig. 2: Euro area employment, the PMI assessment of employment and the unemployment rate (left-hand scale: quarter-on-quarter percentage changes; diffusion index; right-hand scale: percentages of the labour force).



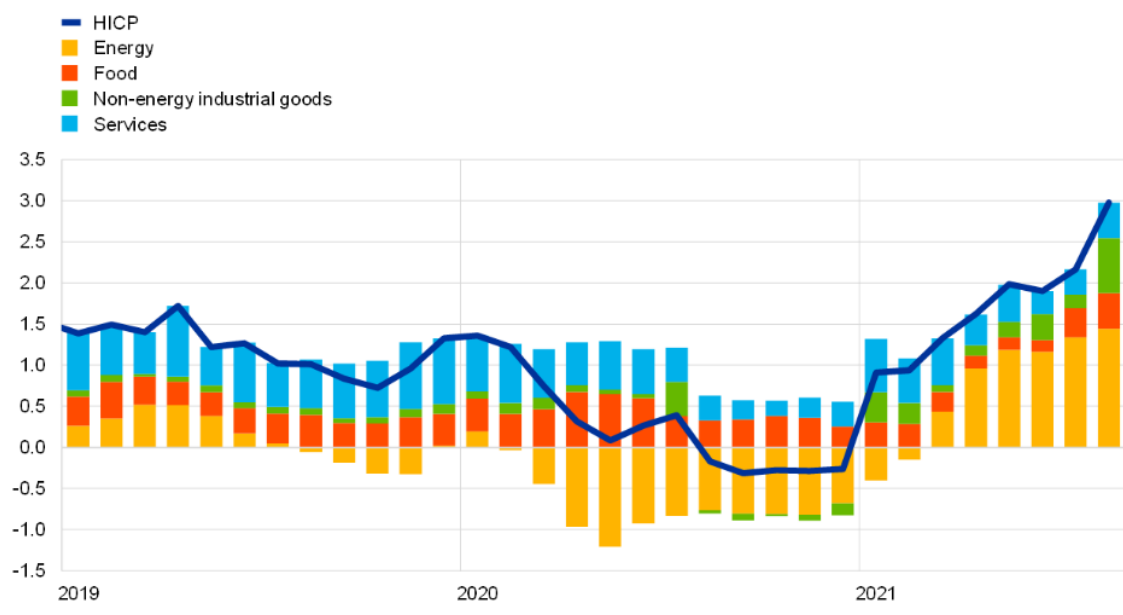
Sources: Eurostat, Markit and ECB calculations.

Notes: The PMI employment index and the unemployment rate are shown at a monthly frequency; employment is shown at a quarterly frequency. The PMI is expressed as a deviation from 50 divided by 10. The latest observations are for the second quarter of 2021 for employment, August 2021 for the PMI and July 2021 for the unemployment rate.

With this in mind, attention should be brought again to inflation expectations. As previously mentioned the ECB believed that the increment of inflation was only temporary. According to Eurostat's flash estimates, euro area annual HICP inflation increased further to 3.0% in August but was expected to decline since all the factors already listed were supposed to vanish in 2022. Although in the Economic Bulletin Issue 6, concerns started to arise around the possibility of having a higher level of inflation in the following months, considering an earlier and stronger monetary policy tightening, in order to not disrupt financial conditions and obstruct the economic recovery. The recent increase in inflation was associated with the increase in oil and non-oil commodity prices. Energy prices hiked due to positive base effects reaching an annual rate of change of 15.4% in August. As shown in Fig 3. also, food prices dynamics bolster, from 0.5% year on year in June to 1.6 % in July and 2.0% in August. In addition, not shown in the graph but still important to note, the HICPX which is the HICP excluding energy, also increased from 0.7% in July to 1.6% in August, which has been moved by the changes in non-energy industrial goods components which are instead illustrated.

Figure 3: Headline inflation and its components

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.

Notes: The latest observations are for August 2021 (flash estimate).

After the results provided by the Economic Bulletin on 23 September 2021. The ECB started to idealize a new monetary policy which could fit perfectly with the economic situation in the eurozone. Christine Lagarde at the ECB Forum on the Central Banking “Beyond the pandemic: the future of the monetary policy”, held in Frankfurt am Main on 28 September 2021, in order to explain how the study to achieve the right monetary policy should be conducted, outlined “We need to recognise where we have come from and where current trends suggest we are going”.<sup>49</sup> To emphasize the point, the ECB president referenced a famous quotation by John Maynard Keynes (1951, p.141) who once stated, in a conversation about Alfred Marshall, that the “master economist...must study the present in light of the past for the purposes of the future.”<sup>50</sup> Therefore, after an accurate analysis of past events she disclosed two events which have been responsible for the resulting high level of inflation. The former being the collapse of inflation during the lockdown periods, and the latter being the imbalance in some sectors

<sup>49</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210928~4cc57f558d.en.html>

<sup>50</sup> <https://www.cambridge.org/core/journals/journal-of-the-history-of-economic-thought/article/abs/analysis-and-vision-in-economic-discourse/D4F91CB22C36B27C2DD1EC90A4EDE155>



between demand and supply responsible for the boost in prices. Other findings revealed that goods inflation increased above its classical arrangement by 0.6% reaching a level of 2.6% by August, and the global supply chain had an acute recovery from durable demand's goods. In addition, services inflation, shipping costs and consumption of durable goods have increased by 1%, nine times the previous one and 1.1% respectively.

According to what she said, monetary policy that has to be designed in order to fit perfectly on the economic situation of the time, should look-through temporary supply-driven inflation as long as inflation is anchored. The expectations outlined in the press conference suggested that inflation should slowly converge to the 2% target, reaching a level of 1.5% in 2023. During the analysis of the past events aimed at making the right decision in the present for the future, it has been found that the pandemic gave birth to three trends which are able to influence the inflation outlook: a change in the demand side, a change in the supply side and the beginning of a green transition, which will be explained below in the respective order.

Traditionally, services inflation has been one of the main drivers of core inflation, supporting an increase of 1.1 percentage point over the long-term. The reason behind the strong correlation between core inflation and service inflation lies on the high weight that it has on consumption, about 61% of the core HICP basket, and on the fact that global forces of automation and competition held down goods inflation. So, the analyses should focus whether or not the progression out of the pandemic could bring the domestic demand up and therefore influence services inflation. The investigation may be separated among two different forces. The former, regards household's saving which increased drastically during the lockdown, due to the impossibility of spending. Research shows that consumer's consumption is influenced by past experience of recessions, however they expected that by 2022 consumption would increase by 3% respect to the level of the pre-pandemic situation.<sup>51</sup> If the ECB can support this positive outlook with the right policy mix, it might create a domino effect where people become more optimistic and start to spend even more than the savings that have been built, covering the output gap on the demand side and up warding pressures on wages.<sup>52</sup>

The latter force instead might slow down the take up from services inflation, due to the existence of a limit on the quantity of goods that can be consumed, limiting the high willingness of consumers to spend.

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<sup>51</sup> [https://www.nber.org/system/files/working\\_papers/w24696/w24696.pdf](https://www.nber.org/system/files/working_papers/w24696/w24696.pdf)

<sup>52</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210928~4cc57f558d.en.html>

The second trend is on the supply-side. Evidence shows that the pandemic has accelerated the digitalization trend, having a considerable shock on the supply chain and domestic labour market, which may produce a diminishing inflationary pressure. In addition, digitalization may generate a new rush of globalization based on virtual services, producing an increase in trend productivity, and a reduction in the unit labour cost growth even with higher wage growth. In the same way there might be a period in which companies start to diversify their supply chain, having an effect on prices that might be pushed up. However, this globalization might bring wages up creating a diversification in skills mismatches and scarcities.

Concluding with the explanation of the three trends, Green transition is a deviation of the economy into a more sustainable economy, based on the reduction of carbon emissions. This transition can strongly influence inflation due to the introduction of carbon prices which will be covering a vast range of economic activities. It might influence the approach of the economy toward energy prices, which will encompass not only oil prices but also renewable sources. An increase has been registered of renewable energy in the euro area availability from 5% of 1990 to about 15% in 2021. In the same way also, natural gas increased from 17% to 24% while oil decreased from 43% to 38%.<sup>53</sup>

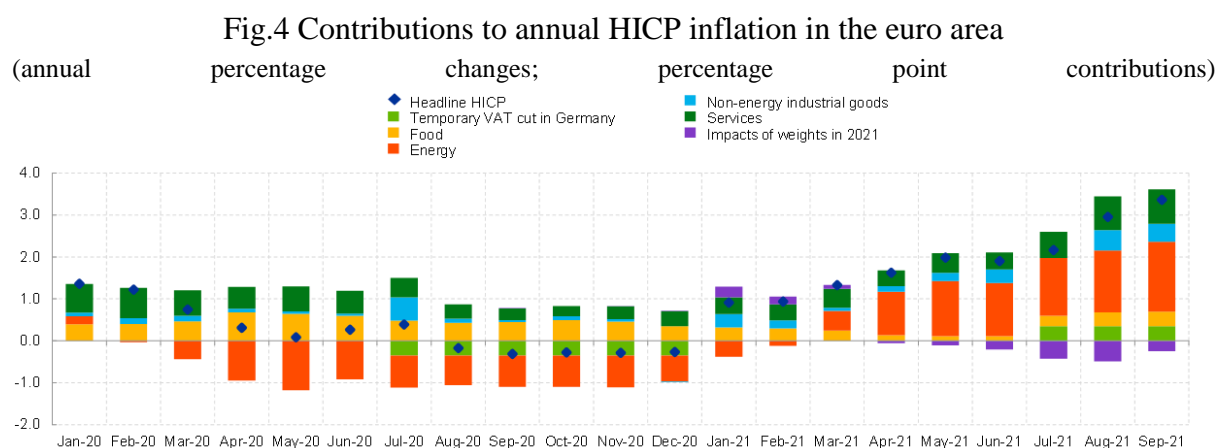
In such a manner, it is important to design a monetary policy which is not too aggressive against the supply shock and at the same time sustain the demand forces which may bring inflation back to its 2% target. As Cristine Lagarde said in the press conference, she and her staff believed that their forward guidance on the interest rates is able to manage the supply shock, providing a reaction only to changes in headline inflation, which for their fortune moves slightly above the target, giving them the possibility to be tolerant regarding the tightness of the monetary policy. The established forward guidance is already sustaining the demand, having the rate expectations matched with the inflation target, with the aim of helping the inflation expectations, lowering interest rates. However, monetary policy needs the help of fiscal policy to make a real change in the economy. The fiscal policy with the cyclically-adjusted primary balance is expected to be -4.1% in 2021, -1.6% and -1.5% respectively in 2022 and 2023, in order to support monetary policy in the best way. Fiscal policy has to be over the medium term, framework-based in order to maintain debt sustainability and macroeconomic stabilization, while monetary policy has to preserve financing conditions for all the sectors of the economy.

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<sup>53</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210928~4cc57f558d.en.html>

Right after this press conference on the monetary policy, data has been reviewed, revealing the Euro area headline inflation, has increased even more. Recalling the value measured in August which was 3.0%, in September it reached 3.4%, which was considered the highest annual rate in more than a decade.<sup>54</sup> This increase, even if it was somehow expected, raised some concerns about the future of prices, and outlined what in the previous decades seemed to make impossible for inflation to converge toward the inflation target. During the conference about inflation drivers and dynamics held by Isabel Shanabel, member of the Executive Board of the ECB, held in Frankfurt am Main, on 7 October 2021, she attributed to the pandemic, the blame of the high level of inflation, and so likely to diminish over the medium-term and then focus on the effect that may influence inflation over the medium term, with a particular emphasis on inflation expectations and behavioural changes.

Saying that the pandemic is the reason for the high inflation is not correct, since it is known that while the pandemic was in action, inflation had a strong decline. The reason for the association of the high level of inflation to the pandemic refers, instead, to the recovery period, responsible for the spike in inflation. The effects that made inflation rise have been already listed many times in the paper as well as the idea that being those factors temporary, the high level of inflation was not supposed to last forever, indeed metaphorically associated with a sneeze. Without the need of remarking the elements that affected inflation, Fig.4 shows the contribution of such elements on the change in inflation.



Source: Eurostat, Deutsche Bundesbank, September narrow inflation projection exercise (NIPE) and ECB calculations.

Latest observation: September 2021 (flash estimate).

<sup>54</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211007~ab617e7d60.en.html>

For instance, examining the chart, on September 2021 the element which contributed the most to the rise of inflation has been Energy, which had an influence of around 1.0 percentage points, the second of importance has been services, then non-energy industrial goods, temporary VAT cut in Germany, and lastly food, while impacts of weights in 2021 has been the only factor which influenced negatively.

In this conference, for the very first time, it has been talked about the possibility that the inflationary trends might be more persistent than expected. This is the product of two types of uncertainty, the first being the upward revision of expectation for what concerns nominal costs and inflation, and the second being changes on the microeconomic level such as wage and price dampness, which may cause a change in the slope of the Philipp's curve, produced by the pandemic. Beginning with the role of inflation expectations, it is important to remark that the standard prescription of the monetary policy is to observe the supply-side shock and take actions only if inflation expectations and wage change in a way that produces a second-round effect creating a threat to price stability. The difficulty here is that aggregate inflation expectations are not possible to be observed. An alternative method used is to observe the market-based method of inflation compensation, which suggest that an increase of it will mean that investors have become more confident about the eurozone inflation outlook without being scared of an incessant inflation overshoot. Knowing that from inflation expectations it is possible to determine real interest rates, higher inflation expectation would make the degree of policy accommodation in a low nominal yield environment, having a decisive influence on the convergence of inflation toward the 2%. This is not the only method, it is also possible to use the survey-based metrics method, where expectations are determined by the surveys of professional forecasts. The results of the conducted surveys do not reveal a convergence of inflation to the target neither in the medium nor in the long-term, inducing risks of price stability. Meanwhile, the results on the indicators reveal a reaction of investors and professional forecasters that would lead to a confluence to the target. Finally, it is not accurately determinable how long it will take to reach the 2% again. Until that moment the key target rates will not be raised back up.

Analysing the second factor, hence the behavioural changes, has been proved that due to the pandemic wage and price setting behaviour had profound implications for the transmission of

the monetary policy, and as already said, those changes influence the slope of the Phillips curve<sup>55</sup>.

Observing the change in the slope of the Phillips curve is crucial for the conduct of monetary policy. A flatter curve reveals the needs of a tighter monetary policy, aiming at bringing inflation to the target. Unfortunately, as well as for inflation expectation, the direct observation of the curve is not possible. Hence for the evaluation of the slope of the Phillips curve, another method, the rate related to the price changed by the firms can be used which has an effect on how prices respond to change in the economy.

The conclusion driven by the ECB was that during the pandemic the rate of change in prices has increased a lot, which brought out a major concern, consisting in understanding how much impact firm-level decisions have on macroeconomic outcomes. It has been found that the aggregate hinge in price level determines the entire distribution of price adjustments, thus when a firm is far from its optimum reset price will change prices.

So, at the conclusion of the conference Isabel Schnabel, reinforced the concept that high inflation caused by pandemic-related factors will fade and reactions to it would be too risky and damaging. She added that inflation is being accurately observed in order to avoid second-round effects and that structural factors are likely to affect price and their settings and consequently the transmission of the monetary policy. Earlier in the text, we mentioned both the first and second requirements of the forward guidance supplied by the Government Council, which specify that inflation must be achieved "well ahead" of the conclusion of the forecast and must be durable. There exists another condition that characterizes the forward guidance strategy which is declared by the Government Council and recalled at the ECB conference on the monetary policy, held in Frankfurt am Main, 11 October 2021, by Philip R.Lane, member of the executive board of the ECB, "judges that realized progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilizing at two per cent over the medium term."<sup>56</sup> The first and the second requirements of forward guidance ensure that interest rates do not alter due to inflationary shocks that are not projected to continue for an extended length of time.

Furthermore, helps to make a distinction between the volatile components of headline inflation and the dynamics of the underlying inflation. The involvement of the underlying inflation is

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<sup>55</sup> Phillips curve, graphic representation of the economic relationship between the rate of unemployment and the rate of change of money wages. Named for economist A. William Phillips, it indicates that wages tend to rise faster when unemployment is low. Definition taken from: <https://www.britannica.com/topic/Phillips-curve>

<sup>56</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211011~5a5d2e55f1.en.html>

essential in a situation in which structural changes are frequent. As an example, it is possible to see how wage dynamics plays a major role in the determination of underlying inflation, due to its composition. Being wages the principal component of price services and being services sector a large share of the overall price level, it is clear how the correlation is made.

Since the beginning of this journey, lots of changes in GDP and Inflation expectation has been made, however the same concept remained in mind of the ECB staff, hence the high level of inflation is temporary.

So, now the attention goes to the Results of the ECB survey of professional Forecasters for the fourth quarter of 2021, dated 29 October 2021. What came out of the research is a level of HICP inflation expectation at 2.4% for the rest of 2021, 1.9% for 2022, and 1.7% for 2023.<sup>57</sup> These values have been increased by 0.4 percentage point for 2021 and 2022 and by 0.2 percentage point for 2023, if you recall the projections for the fourth quarter were 1.9%, 1.5% and 1.5% for 2021, 2022, and 2023 respectively. For what concerns GDP growth, expectations remained mainly consistent with the previous ones, while expectations on the real GDP growth have been revised, slightly increasing to 1.5% from 1.4%.

A few days later 8 November of 2021 Philip. R. Lane held the ECB conference on Money market. The aim of the conference was to outline the importance of understanding the money market due to its strong correlation with the implementation of monetary policy.<sup>58</sup> Money markets are so important due to the central role that their rates have in the transmission of the monetary policy through their effect on financial conditions. In the previous years, money markets have been characterized by a high level of volatility, due to the attempt of traders to absorb the effects that the increase in interest rates have produced. The policy implemented by the ECB had as fundamental the idea that if the economy is close to the effective lower bound, persistent monetary policy action must be taken in order to escape the possibility of negative deviation from the inflation target becoming stable. Moreover, Lane brought out the fact that inflation dynamics over the medium term were still weak mainly because during the pre-pandemic period, the adverse demand shock and the supply developments had a substantial impact on prices, producing a decline in inflation rate by 0.3 percent. The reasons why the inflation is so high has been fully illustrated during the conference but will not be repeated, due to the exhaustive explanation of them made earlier in the text. However, what was added is how the ECB managed to bring inflation back to the target over the medium term. The main

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<sup>57</sup> <https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr211029~1f9c8acb86.en.html>

<sup>58</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211108~c915d47d4c.en.html>

idea behind is that when implementing a monetary policy, the effect will be shown on the inflation level only after unregular time lags. It is also explained that implementing a tight monetary policy does not directly affect inflation but will first slow down the rate at which the economy runs, will reduce employment, and so reduce the medium-term inflation pressure. For this reason, they concluded that a tight monetary policy was not necessarily due to their belief that inflation over the medium term was already below the target.

During the speech held by Isabel Schnabel, Member of the Executive Board of the ECB, a virtual event organized by Goldam Sanchs, on 17 November 2021, it has been discussed, a new fear, stagflation, and why in their opinions this would not be the case.

Stagflation is a persistent period of high inflation together with slow economic growth and unemployment.<sup>59</sup> In order to exclude such possibility Schnabel started her argument talking about the euro area growth outlook, providing data such as the eurozone real GDP and its unemployment rate during the second and the third quarter of 2021, showing that the recovery period was extremely fast.<sup>60</sup> However, with some data regarding a few weeks before the speech, the economic growth seemed to have slowed its pace, as expected. This, for some people, was the main reason for the rise of the fear of stagnation, revealing that this slowdown of the economy would have become even slower and persistent. As a consequence, Schnabel took care of an exhaustive explanation of why this fear should not exist. She started analysing the manufacturing sector.

For what concerns supply delivery time the registered value is close to the highest record in October, consistently, together with supply constraint expected to last for more than a year for 30% of the companies. This supply chain disruption made the market fall in inventories and production to slow down. However, this did not weaken growth potential, due to the fact that at some point in time supply will match the demand. Due to the pandemic, households had the possibility to save more than ever, reaching a level of € 800 billion of saving in excess, so it can be said that the eurozone was facing a deficit in supply rather than in demand. Overall, it can be claimed that the changes in consumer preferences and improvements in energy efficiency together with the green transition will make the rise in oil less harmful. In addition, governments are imposing tax cuts, price caps or rebates to shield the vulnerable household, with the attempt to limit the effect of price shocks.

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<sup>59</sup> <https://www.businessinsider.com/personal-finance/stagflation?r=US&IR=T>

<sup>60</sup> <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211117~78f0a1f435.en.html>

Furthermore, there are two other reasons for the belief of a positive future growth expectation, the first is fiscal policy and the second is about the service sector. The former concerns the sustain the fiscal policy has given and will continue to provide to economic growth. The latter, concentrates on the contact-intensive services which have rebounded sharply. It is important for present reforms to study the past, indeed from the first oil crises in 1972 and observing the following one, the conduct of the monetary policy has been drastically changed, laying on two pillars. The first being the no-stable, long run trade off that the monetary policy can exploit from unemployment and high inflation. The second being the central bank independence as safeguard for their main objective, price stability. So, at the last government council they came to the conclusion that, despite uncertainty, it is still important to believe that the euro area inflation will noticeably decline in the following years and converge to the 2% target. Implying that prerequisites for raising the interest rates as outlined in the forward guidance is not going to happen. For financial market participants, inflation will decline in 2022. Although the idea that the euro area will go back to a slow growth and low inflation trap, as the pre-pandemic one, is being questioned by investors.

Therefore, it should not be unexpected that investors' expectations regarding the future direction of short-term interest rates have grown more unclear recently. Despite undermining the validity of the ECB forward guidance, such an increase in uncertainty and risk premia is to be predicted when the market believes it is becoming more likely that inflation will fulfil the requirements for lift-off. The fact that risk premiums are increasing suggests that the level of uncertainty around the inflation forecast is extraordinarily high. As has been anticipated, increased inflation will last longer than originally believed. However, there are advantages to using what Alan Greenspan referred to as a "risk-management approach" to monetary policy when uncertainty is especially high, as it is at the moment.

This strategy is based primarily on the idea that central banks should take into account not just the economy's most likely future course but also the whole distribution of risks around that course in order to maintain adequate discretion to deal with all inflationary scenarios. The market is presently placing the smallest weight on inflation being below 1% throughout the following five years and the biggest weight in over a decade - above 50% - on inflation reaching over 2%, according to option-implied probabilities. The forward guidance establishes straightforward standards that avoid an early tightening, protecting against the dangers of overly low inflation.



In order to maintain inflation expectations solidly anchored at the desired level, a thorough risk-management strategy guarantees that policy stays adequately aggressive even when the risk allocation becomes more biased in the other way.

So in conclusion, without any uncertainty, the global and euro area economies are more strategically positioned now to avoid a repeat of the negative effects of the oil price shocks of the decade that followed.

The medium-term growth projections of the euro area economy stay solid and favourable thanks to powerful household financial positions and favourable fiscal policies, even though more persistent supply-chain obstacles suggest that some of the rise in production as well as demand that was anticipated for the current year and afterwards may only materialize later on. It is going to require longer than anticipated for inflation to decline. It will decrease by the end of the year that follows, but uncertainty has grown regarding the speed and scope of the downward trend. Both critically depend on the effects of the green transition on energy prices as well as the ability of supply to keep up with the accelerating pace of demand normalization. To be able to carry out their objectives in times of high uncertainty, monetary authorities must concentrate on the full spectrum of potential outcomes. On the one hand, this calls for reducing the error of hastily tightening monetary policy in reaction to an erratic and potentially brief increase in inflation. On the other hand, it requires keeping careful attention on the inflation risks to the upside that the financial markets currently expect and maintaining the flexibility to act if necessary in order to sustain confidence in the commitment to protecting price stability in a symmetrical manner and avoid a de-anchoring of inflation expectations in both directions.

## Section 2.2 More than temporary, permanent

As stated in the previous chapter the level of inflation due to the pandemic recovery had a significant increase. Such an increase was believed to last for a short period of time and so defined by the ECB as temporary.

In this chapter, we will prove that this high level of inflation was not temporary at all. The analysis will be conducted using the economic bulletin provided by the ECB periodically, which will allow us to outline the economic trend of the eurozone. We will also look at the inflation and GDP growth expectation made by the SPF on a regular basis and what has been the monetary policy introduced by the ECB in order to be able to manage the situation.

Beginning from the Economic Bulletin Issue 1, dated 17 February 2022, it reveals that the eurozone economy was continuing to recover as in the previous period, alongside the labour

market seemed, as well, to be strengthening.<sup>61</sup> However, growth was expected to remain slow-moving in the first quarter of 2022, as the pandemic outbreak was continuing to put pressure on economic activity. Resources, machinery, and shortages of workforce persisted and stymied productivity in many different sectors. High energy prices were reducing eurozone family income and corporate profitability, and were expected, as a consequence, to restrict consumption.

It can be said that the economy was being harmed at a decreasing rate by each wave of the crisis, and the forces limiting production and consumption were expected to progressively decrease, enabling the economy to start picking up pace once again throughout the entire duration of the incoming year.

In the eurozone, inflation rose to 5.1% in January 2022, compared to 5.0% in December 2021 and was expected to continue at this level in the short term. Energy prices remained the primary cause of the high pace of inflation, their direct influence contributed to more than half of headline inflation in January and were also pushing up prices in several other sectors. Food prices have risen as well due to seasonal considerations, higher transportation expenses, and greater fertilizer expenditures.

As you can see most of the indicators of underlying inflation have grown in those months, however the significance of temporary pandemic variables makes the sustainability of these gains dubious. Market-based signs point to a slowing of energy price dynamics in 2022, as well as a reduction in price pressures caused by global supply constraints. Although wage growth remained subdued, labour market conditions were improving, and over time, the economy's restoration to full capacity would have contributed to stronger wage increases.

Since the last monetary policy meeting in December, market-based measures of longer-term inflation expectations have remained generally constant at rates slightly around 2%. These variables had an influence on underlying inflation, assisting headline inflation to remain stable at the ECB's 2% objective.

Analysing the economic activity, it is possible to see that following the second and the third quarters of 2021 of rapid growth, eurozone real GDP growth decreased in the fourth quarter of 2021 in which economic activity expanded by 0.3%, indicating a marked decline.

This leads to a slowdown and prospects of ongoing reduced growth in the first quarter of 2022. Such a slowdown is the result of a lot of factors like the services sector that has been hit the worst. Activity in manufacturing and construction has been hampered by a lack of equipment,

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<sup>61</sup> <https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202201.en.html>

supplies, and labour and furthermore, rising energy costs were reducing household purchasing power and creating further obstacles for private consumption and economic activity.

Focusing on prices and cost, based on Eurostat's flash estimate, eurozone HICP inflation rose to 5.1% in January 2022, up from 5.0% in December and 4.9% in November 2021.

In January, HICP inflation excluding food and energy (HICPX) fell to 2.3% from 2.6% in December. This was due to a decrease in the annual rate of change in non-energy industrial goods prices to 2.3% in January from 2.9% in December, while the annual rate of rise in services prices remained steady at 2.4%.

The HICP inflation trends were driven by the two most volatile components, energy and food. Following, a period of stabilization in December, energy inflation rose in January to a new record high of 28.6%. While food inflation increased to 3.6% in January from 3.2% in December 2021, representing an increase in the rate of change in the consumer price index.

Looking at those results, HICP inflation expectations for 2022, 2023, and 2024 have been adjusted up by 1.1 percentage points for 2022 and 0.1 percentage points for 2023 in the ECB Survey of Professional Forecasters (SPF) for the first quarter of 2022, while forecasts for 2024 were not included in the previous edition of the SPF.<sup>62</sup> The results were 3.0% for 2022, 1.8% for 2023 and 1.9% for 2023. For what concerns GDP growth, SPF respondents' forecasts remained mainly unaffected, with opposing changes: downwards for 2022 and upwards 2023. Respondents however anticipated GDP to expand faster than projected prior to the outbreak in 2023. Expectations for the unemployment rate have been reduced from 0.2 to 0.3 percentage points across all time periods and according to SPF respondents, the unemployment rate will fall from 7.2% in 2022 to 6.7% by 2026.

It is known that the eurozone unemployment rate started to decrease by 0.1 percentage point in December compared to the November rate, owing to ongoing support from job retention initiatives.

A few days after the issue of this economic bulletin by the ECB, an additional unpredictable event challenged the European area. On February 24, 2022 Ukraine was invaded by Russia, bringing to the world a new situation of turmoil and uncertainty.

Analysing the Economic Bulletin Issue 3, 2022 it is possible to see how only in two months the war affected the economy and inflation level.<sup>63</sup>

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<sup>62</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220204~3fdfe7eb0.en.html>

<sup>63</sup> <https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202203.en.html#toc10>

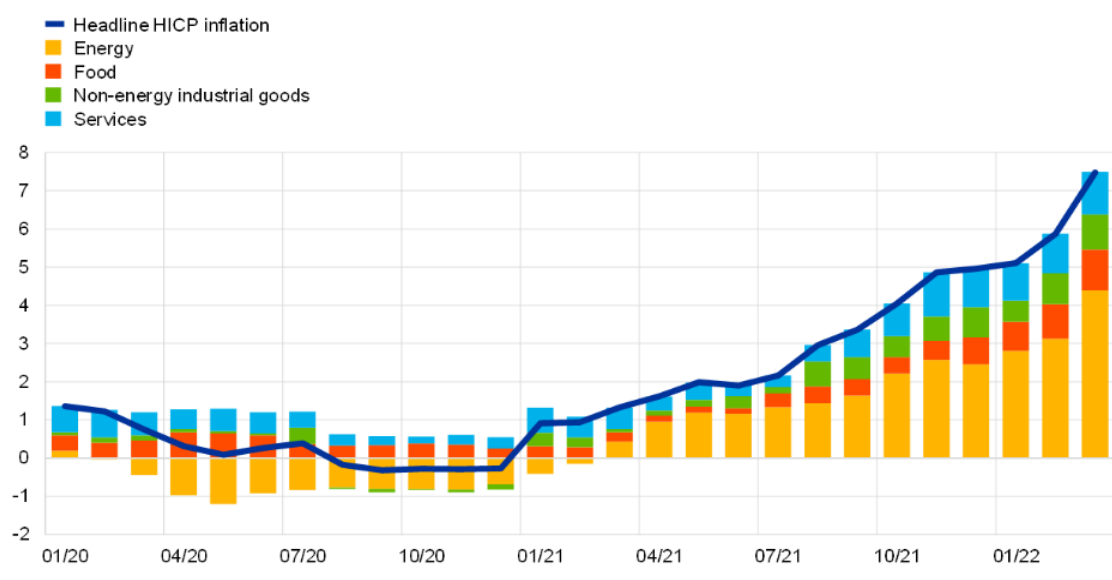
The conflict was harming companies and consumer confidence, partially as a result of the lack of certainty it brought. With rising energy and commodity prices, people were suffering higher living expenditures, while businesses were facing greater costs of production. In the same way, some industries were having increasing difficulty acquiring inputs, which was causing production to be disrupted.

As can be seen in Fig. 5 and according to Eurostat's flash estimate, HICP inflation rose to 7.5% in March 2022, a 1.6 percentage point lift over February that highlighted the repercussions of the Ukrainian war. In this regard, the rise in headline inflation was mostly driven by higher energy costs, together with food inflation and HICP inflation minus energy and food (HICPX) which also increased in March, of 3.0%, exhibiting the fluctuation of both service and non-energy industrial products prices.

In March, energy inflation hit a new peak of 44.7%, compared to 32.0% in the month before, and data shows that since September 2021, the year-on-year changes in energy costs have been all the highest seen since the establishment of the Monetary Union.

According to data through February, gas and electricity tariffs were the primary drivers of greater energy price inflation in early 2022, with electricity rates partly mirroring price rises in other energy commodities, in the same way private transportation fuel prices, as well as higher refining and distribution margins, are also likely to have played a greater role in March.

Fig. 5 Headline inflation and its main components  
(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.

Note: The latest observations are for March 2022.

Of course, the causes behind the recent surge in energy prices include the Russian invasion of Ukraine and concomitant fears about potential energy supply shortages. In addition, given that energy is an input for both production and distribution, the sharp rise in energy costs is likely to have generated an upward trend in additional areas of the HICP, such as food inflation and non-energy industrial goods inflation, which stood at 5.0% and 3.4%, respectively, in March. The Ukraine conflict was also placing upward pressure on food prices, since both Russia and Ukraine are major exporters of grains and minerals required in fertilizer manufacture.

Naturally, the situation was unsustainable, and the ECB had to face the umpteenth ordeal, and had to make whatever was possible to create a better situation, using monetary policies.

The Economic Bulletin Issue 3 was released on 28 April 2022, fourteenth day after the press conference about monetary policy implementation, held on 14 April 2022.

In the press conference it has been outlined by the Governing Council that, thanks to the data received which confirmed their estimates, net asset acquisitions under the APP were going to be completed in the third quarter, and it planned to keep investing in fully the principal payments that result from maturing securities bought through the APP for a considerable amount of time after the date on which it begins raising key ECB interest rates and, for the duration needed to preserve advantageous liquidity conditions and an adequate level of monetary accommodation.<sup>64</sup>

The interest rates on the primary refinancing operations, as well as the marginal lending and deposit facilities, were going to stay constant at 0.00%, 0.25%, and -0.50%, respectively.

The course of key ECB interest rates was going to be influenced by the Governing Council's forward guidance along with its strategic goal to maintain inflation at 2% over the medium term, and was not going to be changed, at least, until the net asset purchases of the Government council of the APP is over. As a result, the Governing Council believed key ECB interest rates to hold steady at current levels until inflation reaches 2% well ahead of the end of its projection horizon and sustainably for the remainder of the projection horizon, and it considered that acknowledged progress in underlying inflation was sufficiently strong to be in alignment with inflation fixing at 2% over the medium term.

Besides, the Governing Council aimed to reinvest principal payments from maturing securities bought as part of the PEPP up to no later than 2024, and for what concerns refinancing operations it was going to keep monitoring bank funding circumstances in order to guarantee

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<sup>64</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220414~d1b76520c6.en.html>

that the maturation of activities under the third round of targeted longer-term refinancing operations (TLTRO III) was not hindering the smoothly transmission of monetary policy. In addition, it was going to review whether targeted lending operations contributed towards its monetary policy stance on a regular basis and take into account the proper adjustment of its two-tier structure for reserve remuneration to ensure that the negative interest rate policy was not going to impede banks' intermediation capabilities in a climate of abundant surplus liquidity.

From that time on, other six press conferences have been made for explaining the monetary policy decisions that the Governing council took in order to maintain price stability.

In the press conference held on 5 May 2022, we saw how the Govern Council made real provisions in order to decrease the abnormal situation of the level of inflation. In the Economic Bulletin Issue 5, has been provided in detail the increment of the level of inflation that the euro area was experiencing. Has been recorded that in June, HICP inflation reached a new peak of 8.6% compared to the already high level of 8.1% registered in May.<sup>65</sup> Such a rise has been caused mostly by rising food inflation. The annual rate of rise in consumer energy costs increased just slightly, but at more than 40%, hence it remained extraordinarily high and accounted as usual for about half of overall inflation. Large wholesale gas, oil, and power costs, combined with large refining and distribution margins for transportation fuels, especially diesel oil, led to significant energy inflation. Food inflation increased significantly for both processed and unprocessed foods, driven by rising global food commodity costs and increasing eurozone farm gate prices. In June, underlying inflation was more than 3.5% on a variety of indicators. Some exclusionary measures were reduced, while others increased. HICPX inflation remained elevated in June, although fell slightly to 3.7% from 3.8% in May. HICPXX inflation also fell slightly, at 3.4%. At the same time, the Super core index increased from 3.9% in May to 4.5% in June while the model-based Persistent and Common Component of Inflation (PCCI) fell to 5.5% in June. Finally, the domestic inflation measure, which shows price changes in products with lesser import components, has topped 3%.

Due to the results listed above, in order to maintain the commitment of price stability, the government was forced to take action, and on 21 July 2022 decided to raise the three key ECB interest rates by 50 basis points and the Transmission Protection Instrument (TPI) was authorized.<sup>66</sup> The future policy rate trend was not going to end here but was supposed to be

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<sup>65</sup> <https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202205.en.html#toc11>

<sup>66</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220721~53e5bdd317.en.html>

data-dependent and to make a contribution to the medium-term inflation objective of 2%. The Governing Council will consider measures for rewarding excess liquidity holdings as part of its policy normalization. The interest rate on the main refinancing operations increased to 0.50%, the interest rates on the marginal lending facility to 0.75% and the deposit facility to 0.00%, taking effect from 27 July 2022.

Being this provision not enough, the Govern Council decided to make further improvement on the monetary policy and announced on 8 September 2022 the decision to increase the three major European Central Bank interest rates by 75 basis points.<sup>67</sup>

Accordingly, the interest rate on the main refinancing operations increased to 1.25%, the interest rates on the marginal lending facility to 1.50% and the deposit facility to 0.75%, with effect from 14 September 2022. The Governing Council additionally planned to increase interest rates further to weaken demand and protect against the possibility of a sustained upward shift in inflation expectations. This provision was necessary due to the prolonged high level of inflation that the euro area experienced. However, it was not enough.

From the Economic Bulletin Issue 6, 2022, based on Eurostat's August flash estimate, it is registered that HICP inflation increased to 9.1% from 8.9% in July.<sup>68</sup> The August increase was, again, largely caused by higher HICP food inflation and HICPX inflation, which reached a level of 4.3% in August. The yearly percent change in HICP energy inflation fell somewhat but stayed extremely elevated at 38.3%. This basket component, as always, kept going to be responsible for more than fifty percent of overall inflation. Food inflation increased significantly in August, from 9.8% in July to 10.6%, indicating high global food commodity costs and eurozone farm gate prices.

Projections about inflation trend, GDP growth and Unemployment rate have been revised and published for the fourth quarter of 2022 by the SPF on 28 October 2022.<sup>69</sup> The adjustment has been again upward for what concerns inflation, registering an increase of 1.0 percentage points for the rest of 2022, 1.2 for 2022 and 0.3 for 2023. The level of inflation expectation achieves the value of 8.3% for 2022, 5.8% for 2023 and 2.4% for 2024. On the other hand, GDP growth expectations have been adjusted following the opposite direction, exhibiting a negative growth

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The TPI consists in Purchases of security in the secondary market of jurisdiction facing worsening of the financing circumstances that is not justified by country-specific fundamentals, to the extent necessary, to mitigate transmission mechanism concerns.

Definition taken from: <https://www.europarl.europa.eu/cmsdata/253891/QA-07-22-986-EN-N.pdf>

<sup>67</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220908~c1b6839378.en.html>

<sup>68</sup> <https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202206.en.html#toc5>

<sup>69</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr221028~8ba2374005.en.html>

for 2022 and 0.1% of growth for 2023, with an overall decrease of 0.7%. Unemployment rate, as well as inflation expectations has been revised upwards by 0.1 and 0.4 percentage points, achieving a rate of 7.1% in 2023.

Due to the non-positive projection provided by the SPF on 27 October 2022 the Governing Council decided to make its third monetary policy provision in a row.<sup>70</sup> Due to the level of inflation which keeps being really high, the Governing Council aimed at reducing demand support while avoiding the danger of a prolonged upward trend in inflation expectations. The decision was to increase furthermore the three key interest rates up to 75 basis point. Achieving 2.00% for interest rate on main refinancing operations, 2.25% for marginal lending facility and 1.50% for deposit facility. Moreover, it decided to alter the conditions and terms of the third series of targeted longer-term refinancing operations, whose require being reconfigured in light of an unforeseen and exceptional rise in inflation in order to guarantee consistency with the broader monetary policy normalization procedure and to strengthen the transmission of policy rate increases to bank lending conditions. As a result, it resolved to alter the interest rates that applied to TLTRO III beginning on November 23, 2022, and to provide banks extra optional early payback periods.

Lastly, the Governing Council agreed to fix the compensation of minimum reserves kept by credit institutions with the Euro system at the ECB's deposit facility rate with the aim to better match the corresponding money market circumstances.

As everyone wished that after this provision the economy and inflation would have started to converge to a normalized situation, unfortunately, the Economic Bulletin Issue 7 revealed that this monetary policy still did not make the inflation level decrease enough, which in October reached 10.6%.<sup>71</sup> For this reason the Govern Council decided to make our last monetary policy of this journey, on 15 December 2022. This implied an additional increase of 50 basis points in the three key interest rates, arriving to a level of 2.50% for the main refinancing operation rates, 2.75% for marginal lending facility and 2.00% for deposit facility rates. This continuous increase in the three key interest rates was based on the belief that maintaining low interest rates would have been useful to cut inflation gradually by damping demand, while also protecting from the likelihood of a prolonged upward change in inflation expectations. Moreover, they decided that the asset purchase programme (APP) portfolio would have fallen at a defined and regular rate commencing in March 2023, since the Euro system was not going

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<sup>70</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp221027~df1d778b84.en.html>

<sup>71</sup> <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp221215~f3461d7b6e.en.html>



to reinvest all principal payments from maturing asset, with a monthly average reduction of €15 billion until the end of the second quarter of 2023, with the subsequent rate decided over time. The Governing Council additionally decided to assess its operational framework for directing short-term interest rates by the end of 2023, which would offer information on the final stage of the balance sheet normalization procedure.

To conclude, after the monetary policy, expectations conducted by the SPF respondents revised their inflation predictions for 2023 and 2024 in the European Central Bank's (ECB) Survey of Professional Forecasters (SPF) for the first quarter of 2023.<sup>72</sup> These are currently 5.9% and 2.7%, respectively, up 0.1 and 0.3 percentage points from the previous poll round. These changes are mostly the result of a mix of recent data outturns, continued greater and broader than expected indirect effects of energy price developments, and higher predicted wage increases. In the same way also GDP growth has been revised, although not registering big differences from the previous outcomes, remaining with a forecast of 1.4% for long-term expectations. Instead GDP growth forecasts were broadly unchanged, with positive "carry-over" from stronger-than-expected economic activity in the second half of 2022 benefiting 2023 but offset by somewhat lower forecasts for 2024 than previously reported. Long-term GDP growth forecasts have stayed constant at 1.4%.

Another parameter contained in the SPF was expectations for the unemployment rate which has been reduced by 0.1 to 0.2 percentage points across all time periods. Following a projected increase to 7.0% in 2023, compared to 6.5% registered in November 2022, the unemployment rate is forecast to steadily fall to 6.4% by 2027.

So, after this analysis it is possible to assert that the high inflation level was more permanent rather than temporal. However, the ECB, once again, had succeeded with its monetary policies to make inflation gradually decrease.

What is now the question that will be answer in the next section is whether or not the new policy strategy conducted by the ECB on 2021, which changed the inflation target to a symmetric 2% over the medium-term, was effective or not in handling post-pandemic high level of inflation and the crisis caused by the war.

### Section 2.3 Has the change been effective?

It is not possible to express an absolute opinion whether the new quantitative definition of price stability reviewed in 2021 is better than the one established in 2003. However, it is proven that

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<sup>72</sup> <https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230203~db79d102a5.en.html>

some of the characteristics of the new strategy are useful for the ECB for the conduction of monetary policies. Moreover, it is possible to compare the two strategies and see the differences among them.

First, as previously stated in this paper, the initial structure of the inflation target was criticized for being vague, asymmetric, and almost certainly unattainable as stated.

Indeed, the ECB updated the definition of price stability established in 2003 for a greater level of accuracy, greater flexibility, responsible for financial stability. However, at the same the 2021 strategy lead to uncertainty since tying financial stability to the price stability goal gives neither clarification nor flexibility.<sup>73</sup>

The ECB is well aware that having a good monetary policy strategy is important due to its two main features. First, it offers policymakers with a consistent analytical framework for translating current or anticipated economic changes into policy choices; and secondly, it acts as a medium to engage within the public.<sup>74</sup>

So, it has been found out that keeping the ECB's fundamental goal of price stability can be most effectively achieved by attempting for a clear quantitative target, and therefore a numerical formulation that will direct monetary policy. At this point, the Governing Council believed that striving for a 2% inflation target over the medium term was the most effective approach to ensure price stability.

The idea of a point target, basis of the strategy review of 2021, is simple and it can be explained by the negative effect that a new taxonomy revealed, on the interpretation that could be given to target ranges.<sup>75</sup> For starters, specific ranges can represent short-run uncertainty and weak control over inflation outcomes, then, a range might imply a central bank's apathy for inflation outcomes and lastly, operational ranges might show the extent to which a central bank wants to go to pursue additional goals in the case of an inflation trade-off. Moreover, ranges tend to communicate short-run uncertainty regarding inflation.

For these reasons inflation targets appear to be more secure in unpredictable conditions. According to studies, conducted by ECB analysts like the one provided below, inflation targeting appears to be more effective than alternatives monetary policy strategies in anchoring public inflation expectations in countries with emerging markets. It seeks to secure

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<sup>73</sup> [https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695473/IPOL\\_IDA\(2021\)695473\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695473/IPOL_IDA(2021)695473_EN.pdf)

<sup>74</sup> <https://www.bancaditalia.it/compiti/polmon-garanzie/esito-riesame-strategia-polmon/sintesi/index.html?com.dotmarketing.htmlpage.language=1&dotcache=refresh>

<sup>75</sup> <https://blocnotesdeleco.banque-france.fr/en/blog-entry/advantages-point-targets-and-drawbacks-target-ranges>

expectations of inflation at an ideal level by disclosing policy objectives, which in theory, it is unclear if ranges are useful for this.

A recent study conducted by the ECB experts exploits the effects on short- and medium-term inflation expectation of the new strategy.

The investigation employed household and company surveys to acquire important information regarding treatments on economic actors' inflation expectations.<sup>76</sup> Analysts looked at the way distinct communication treatment arms affect anchored twelve-month and three-year forward inflation forecasts near the new 2% inflation goal, as well as interviewees' confidence in their medium-term point projection.

Deriving:

$$A_i^{post} = \alpha_c + \alpha_0 A_i^{pre} + \alpha_1 D_{1,i} + \alpha_2 D_{2,i} + \alpha_3 D_{3,i} + \alpha_4 D_{4,i} + \alpha_x X_i + \varepsilon_i \quad (1)$$

Where  $A_i^{post}$  is a binary indicator which takes value according to post treatment inflation expectation. It equals 1 when the post-treatment inflation expectations are between 1% and 3%.  $A_i^{pre}$  is as well as binary indicator with the difference that refers to the pre-treatment inflation expectation and associated with  $x_i$  reduces the estimated noise.  $\alpha_j$  instead is the measure of the estimates of interest rates and indicate the de-anchoring impact of every piece of information treatment in inflation expectations. T1 (symmetric target), T2 (Symmetric + Explanation), T3 (Symmetric + Climate) and T4 (Symmetric + Housing), are the information treatment groups. Tables 1 and 2 demonstrate the outcomes based on the treatments affecting the probabilities of anchoring short- and medium-term inflation expectations among several survey rounds derived from these linear regression models. Information under T2, which explains how monetary policy works under the newly established inflation goal, improves the chance of anchoring twelve-month and three-year forward inflation expectations by 2.6 and 3.5 percent points, accordingly. These consequences are also economically significant, with 17% and 22% of those expecting 1% to 3% inflation in the near and medium term, correspondingly. Similar anchoring effects are implied by T4, which relates to proposals to incorporate housing in official inflation numbers. On the other hand, researchers fail to estimate any anchoring effects on short- or medium-term inflation estimates for any of the remainder of the treatments. Furthermore, the anchoring implications of T2 and T4 across inflation and deflation horizons fade quickly and cease to be scientifically or economically relevant three or six months after the results of the experiment. This backs up a lot of other evidence. Earlier research that solely

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<sup>76</sup> <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2785~0243b480bf.en.pdf>

estimated the short-term impact of inflation-related information interventions on inflation expectations.

Table 1: Treatment effects on anchoring of 12-month ahead inflation expectations

	Likelihood that twelve-month ahead inflation expectations are between 1 and 3%		
	September 2021 (post treatment)	December 2021 (3-months post-treatment)	March 2022 (6-months post-treatment)
	(1)	(2)	(3)
Symmetric Target	0.009 (0.011)	0.017 (0.013)	0.006 (0.011)
Symmetric + Explanation	0.026** (0.011)	-0.018 (0.013)	0.014 (0.011)
Symmetric + Climate	0.014 (0.011)	-0.007 (0.013)	-0.002 (0.011)
Symmetric + Housing	0.023** (0.011)	0.004 (0.013)	-0.002 (0.011)
Pre-treatment inflation expectations $\epsilon$ (1,3)	0.243*** (0.010)	0.255*** (0.011)	0.089*** (0.009)
Education: secondary	0.019* (0.011)	0.019* (0.011)	-0.003 (0.012)
Education: tertiary	0.019* (0.011)	0.019* (0.011)	-0.015 (0.012)
Age	0.001*** (0.000)	0.000 (0.000)	-0.001*** (0.000)
Household size	-0.003 (0.003)	-0.001 (0.004)	-0.005* (0.003)
log(household income)	0.006 (0.007)	0.026*** (0.008)	-0.007 (0.007)
Liquidity	0.041*** (0.008)	0.014 (0.010)	0.003 (0.009)
Constant	-0.069 (0.068)	-0.165** (0.077)	0.206*** (0.068)
Observations	10,177	9,001	6,792
R-squared	0.095	0.098	0.029

Source: ECB Working Paper Series No 2785 / February 2023

Table 2: Treatment effects on anchoring of 3-year ahead inflation expectations

Likelihood that three-year ahead inflation expectations are between 1 and 3%			
	September 2021 (post treatment)	December 2021 (3-months post- treatment)	March 2022 (6- months post- treatment)
	(1)	(2)	(3)
Symmetric Target	0.012 (0.012)	-0.008 (0.013)	-0.003 (0.014)
Symmetric + Explanation	0.035*** (0.012)	-0.023* (0.013)	0.011 (0.014)
Symmetric + Climate	0.017 (0.012)	-0.012 (0.013)	-0.005 (0.014)
Symmetric + Housing	0.030** (0.012)	-0.008 (0.013)	0.009 (0.014)
Pre-treatment inflation expectations $\epsilon$ (1,3)	0.282*** (0.011)	0.316*** (0.011)	0.189*** (0.012)
Education: secondary	0.011 (0.012)	0.011 (0.012)	0.031** (0.014)
Education: tertiary	0.010 (0.012)	0.010 (0.012)	0.023* (0.014)
Age	0.000 (0.000)	0.001*** (0.000)	0.000 (0.000)
Household size	-0.004 (0.003)	-0.012*** (0.004)	-0.014*** (0.004)
log(household income)	0.028*** (0.007)	0.045*** (0.008)	0.036*** (0.009)
Liquidity	0.029*** (0.009)	0.036*** (0.010)	0.022** (0.010)
Constant	-0.204*** (0.071)	-0.377*** (0.080)	-0.243*** (0.085)
Observations	10,176	9,001	6,792
R-squared	0.111	0.148	0.088

ECB Working Paper Series No 2785 / February 2023

Researchers also look at the consequences of information treatments in relation to another metric, respondents' confidence in their medium-term prognosis. Following the deployment of the RCT, respondents are requested to describe their medium-term inflation forecasts as well as their level of trust in their overall projection on a scale of 1 ('not at all') to 5 ('extremely sure'). Using this data, they created a binary confidence index that returns 1 if respondents are confident in their medium-term inflation projection and 0 otherwise.

Approximately 17% of respondents are confident.

Central bank could improve confidence by clearly acknowledging the short-run uncertainty of inflation, on the other hand, specific bands may be misinterpreted as actual neutral, regardless of how the policymakers' aim is to convey that fine-tuning inflation in the short run is difficult. In this instance, long-run inflation forecasts may float within the boundaries of the range, resulting in weaker well-anchored expectations.

Grosse-Steffen (2021) discovered, after an accurate analysing of some documentation regarding a complementary empirical investigation that compared to target ranges, point targets and hybrid targets are linked to a substantially greater likelihood of experts to projects inflation expectations extremely close to the inflation target.

Furthermore, there are additionally fewer serious or outlier projections through periods of prolonged departures of actual inflation from target. Point targets dampen the growth in outlier estimates, helping to well-anchored expectations regardless of challenging times. The research results correspond with forecasters perceiving ranges indicating areas in which monetary policy becomes less engaged, possibly because of apathy regarding inflation outcomes inside the range or because subordinate aims are accorded more relative priority.

Whenever inflation falls within a certain range surrounding the target, it has been proven that the central bank responds less aggressively compared to it outside that region. Furthermore, the degree of asymmetry regarding how the central bank reacts towards the inflation differential inside and outside the target can be varied.

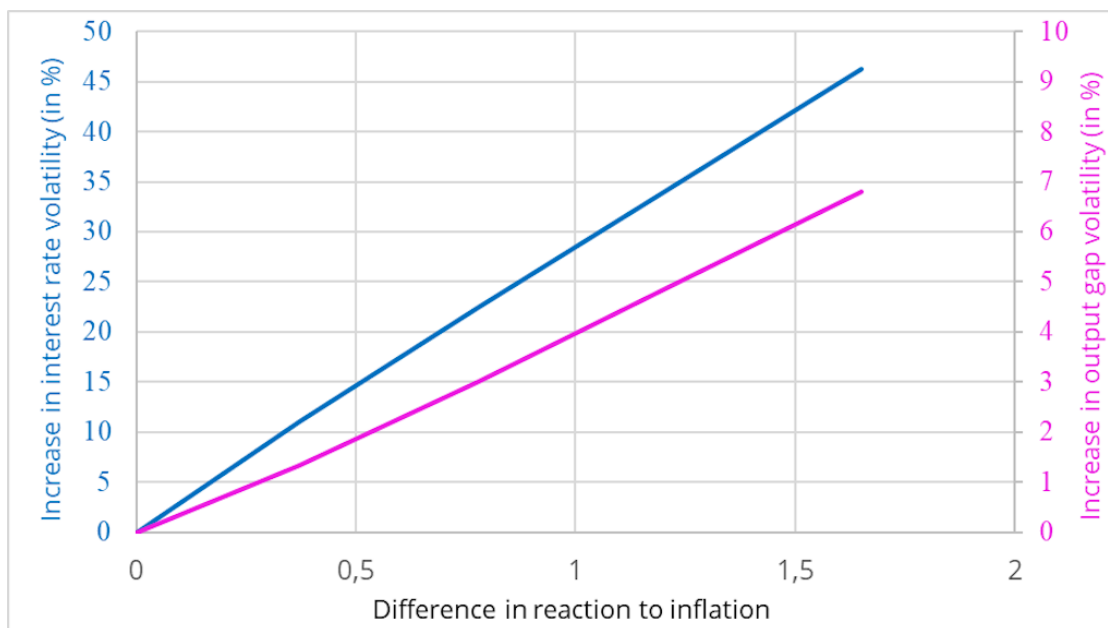
The simulation of the research, then informs us about the way in which this affects macroeconomic stability. Overall, Le Bihan et al. (2021) demonstrated that inactivity levels, an abnormally low level of reactivity to the inflation discrepancy within a range, can be destabilizing, since they can cause further macroeconomic oscillations unrelated to fundamentals.

They suggested an unfavourable trade-off among activity inside and outside the range: the response to inflation outside the range must be quite powerful to compensate for simply a little decline in the reactivity inside the band.

Fig. 6 depicts the repercussions of this discovery. The x-axis illustrates the difference in activity both outside and within a band:  $x=0$  (bottom left corner) indicates an imaginary goal, while a rise in  $x$  reflects a higher degree of engagement outside the band compared inside. When we alter the asymmetry of response between the outside and inside of the range, the blue line illustrates the needed degree of interest rate volatility to achieve a particular level of inflation volatility which leads to an undesirable outcome and the output gap volatility (in magenta)

increases unnecessarily. In result, inflation ranges are unfavourable for macroeconomic stability.

Fig. 6 Volatilities of macro variables w/r to a difference in reaction.



Source: Le Bihan et al. (authors' computations)

Note: Relative increase in interest rate volatility (% , LHS) and output gap volatility (% , RHS) that ensures a given level of inflation volatility.

The elaboration of the price stability objective as a result of a specific quantitative target substitutes the original double-key formulation, that included a definition of price stability in terms of inflation throughout a range of zero to two percent and an inflation target of less than but close to two percent within this definition.<sup>77</sup>

The new objective is straightforward, obvious, and simple to explain, and it is likely to help contribute towards a more robust anchoring of longer-term inflation expectations.

A 2% inflation target underscores the ECB's commitment to maintaining an appropriate safety buffer to defend against the danger of deflation and safeguard monetary policy's effectiveness in reacting to disinflationary shocks. This danger has been exacerbated by a rise in the occurrence and duration of lower bound events compared to 2003, owing principally to the decline in the level of equilibrium interest rate in real terms. The feasible space for policy as a function of nominal interest rates is determined by the degree of the real interest rate at equilibrium and the value of the inflation objective. A decrease in the equilibrium real interest rate, everything else being equal, lowers the available policy space. The strategy review follows

<sup>77</sup> <https://www.bancaditalia.it/compiti/polmon-garanzie/esito-riesame-strategia-polmon/sintesi/index.html?com.dotmarketing.htmlpage.language=1&dotcache=refresh>

the ECB's mission. The actual lower bound on nominal rates of interest limits standard interest rate policy's capacity to mitigate disinflationary events. While central banks may increase nominal interest rates indefinitely, there is only a small amount of room to lower rates toward negative territory due to the lower bound on cash and the possibility of a state-contingent reversal rate in which interest rate cuts lose efficiency. Should this restricted capacity to cut rates be not addressed, it will end up resulting in persistently smaller inflation variations from the goal, especially when the economy is frequently impacted by disinflationary events.

This might lead to inflation expectations falling below the central bank's goal rate, which is particularly dangerous in the event the inflation target is viewed as a ceiling. Forward guidance, longer-term refinancing operations, negative interest rates, and asset purchases have all contributed to alleviate some of the limitations imposed by the lower bound and will be employed as needed in the future. In achievement of its inflation objective, the Governing Council will keep trying to respond flexibly to emerging difficulties when they come up and will explore additional policy tools if proportional and as warranted.

To prevent negative movements from the inflation target becoming ingrained, adherence to a symmetric inflation target necessitates unusually vigorous or prolonged monetary policy action whenever the economy is near to the effective lower bound. The requirement to ensure the anchoring of longer-term inflation expectations at 2%, which helps to preserve price stability over the medium term, necessitates an exceptionally aggressive or prolonged reaction to negative departures. This indicates that in the case of major adverse shocks, the ECB's policy reaction will involve an exceptionally vigorous deployment of its monetary policy tools, where necessary and founded on a rigorous fairness assessment. Furthermore, nearer to the effective lower bound, it might require a more consistent employment of these instruments.

In order to change the policy and adopt inflation targeting the Govern Council had to satisfy two main requirements. The primary is a central bank that can manage monetary policy independently, although no central bank can be completely free of government authority, but it has to have the ability to select the tools that will accomplish the inflation rate that the government thinks suitable, and monetary policy cannot be dictated by fiscal policy factors. The subsequent need is that the monetary authorities are prepared and willing to refrain from targeting other measures like wages, employment, or the currency rate.

Authorities might additionally implement the following early stages such as: set clear quantitative inflation objectives for a particular amount of periods forward, make it evident to the public that meeting the target for inflation bears priority beyond any other monetary policy goals, create an inflation forecasting framework or approach that employs a variety of



indicators holding knowledge regarding future inflation and develop a forward-looking operational mechanism for adjusting monetary policy tools (in accordance with forecasted future inflation) to achieve the desired aim.<sup>78</sup>

In the end the revised definition of price stability is a start in an appropriate direction, which will be especially useful as the central bank deals with fresh challenges. Periodical review cycle will be executed to make sure that the definition fits for the purpose. Moreover, households' belief that ECB with the new strategy has greater possibility to maintain price stability, since it avoids any potential uncertainty and clearly states that 2% is not a ceiling. However, the definition fails to address concerns such as large and growing public indebtedness, financial stability, and the effects of climate change, hence will require additional changes.

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<sup>78</sup> what is required <https://www.imf.org/external/pubs/ft/fandd/basics/72-inflation-targeting.htm>

## Conclusion

The job of the ECB equipment has been very challenging since day one. Starting with the establishment of the institution, lots of responsibilities have been put on the shoulders of the ECB professions, to address their main objective: price stability.

We have seen how they had to fight against long periods of deflation, as well as the current period of high inflation.

They had to engaged in new non-standard monetary policy and even establish a new monetary strategy, changing from the historical “below but close” to a 2% target.

A target easy to communicate, solid and widely accepted in the worldwide economic community.

This brought the adopting of a new approach from asymmetric to symmetric, where every deviation from target was undesired.

This change is the key that conducted our analyses, trying to understand in the aftermath if it has been the right choice or not. Investigating among the economic bulletin of the ECB, the press conferences held and numerous studies they published, of the periods before and after the change, many evidences came out. It is noticeable that the new strategy was necessary for an economy that changed profoundly since 1992, when the Treaty of Union has been signed. An economy which modified according to globalization, digitalization and demographic changes, and that has been forced to face a global health crisis, Covid-19, and the war between Russia and Ukraine. Hence, it is clear that a strategy conducted in a period which totally differs from the one we are living now was foolish, which lead us to the assumption that this strategy will not last forever but will be adjusted, following the economic future trends.

## Appendix 1

In this section a detailed explanation of the macroeconomic model used for the conduction of monetary decision will be explained. The IS-MP-IA model (Romer 2000) is a development of the neoclassical Keynesian model, with the idea of including Keynes' concepts right back inside the general economic equilibrium theory. The fundamentals of this model are that takes in consideration inflation and inflation expectation, moreover assumes that aggregate output tend towards full employment. It also includes the direct participation of central banks which implement monetary policy adjusting interest rates rather than money supply. The model consists of three equations:

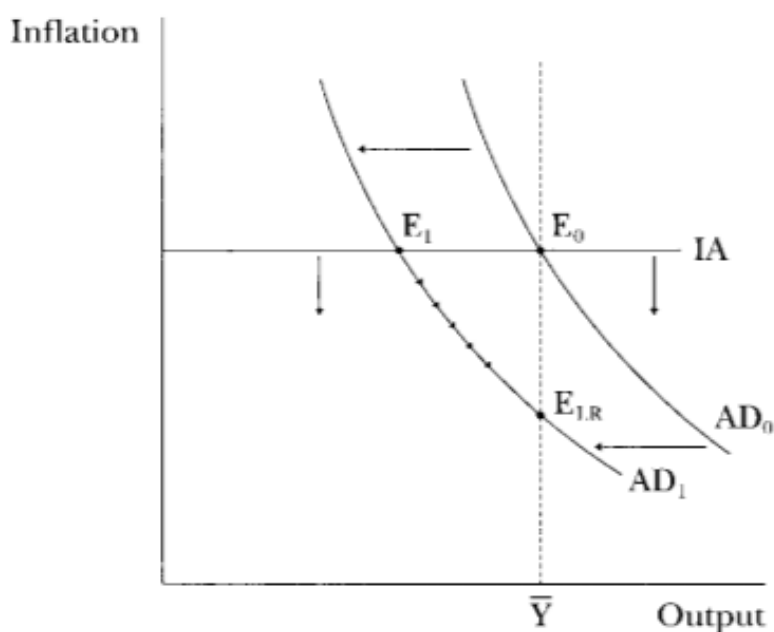
$$\text{IS: } y_t = y_N - \phi_N (i_t - \pi_t - r^*) + \varepsilon_{y,t} \quad \phi_N > 0 \quad (2)$$

$$\text{MP: } i_t = i^* + \phi_\pi (\pi_t - \pi^*) \quad \phi_\pi > 1 \quad (3)$$

$$\text{IA: } \pi_{t+1} = \pi_t + \phi_p (y_t - y_N) + \varepsilon_{\pi,t} \quad \phi_p > 0 \quad (4)$$

The IS curve shows the combination between real interest rates and the real output gap which bring the economy in equilibrium providing the equality between aggregate supply and aggregate demand. The MP curve illustrates the interest rate rule used by a central bank while conducting monetary policy with the goal of achieving a specific inflation target. The IA curve depicts inflation's dynamic reaction to inflation expectations and fluctuations in the output gap ( $y_t - y_N$ ). This is useful to understand the connection between monetary policy decisions and consumer confidence. Graph. 1 shows the impact of a fall in consumer confidence to inflation.

Graph 1. Impact of a fall in consumer confidence to inflation



Source: Money and Banking by Paolo Paesani

In the graph the AD curve comprises the two equation IS and MP, which clearly provides a negative relation between inflation and real GDP at time  $t$ . Consumer pessimism may cause a negative shift of the AD curve (to the left), leading to a domino effect, making also investment to decrease, due to corporate pessimism. If the intersection between  $AD_1$  and  $E_1$  leads to a negative output gap,  $Y_t < Y_n$ , then via IA curve inflation falls. The Central bank will apply an expansionary monetary policy by lowering interest rates. By doing this the aggregate demand will be stimulated and will help the economy to converge from  $Y_t$  to  $Y_n$ . All this happen because the long-run equilibrium in the model implies that there is full employment ( $Y_t = Y_n$ ), price stability targeted by the ECB  $\pi_{LP} = \pi^*$  and the target set by the ECB  $i_{LP} = r^* + \pi^*$ .

Another study which show how the model is applied, has been provided by Olivier Coibion, Yuriy Gorodnichenko and Johannes Wieland, in 2011, which because of economic crisis decided to investigate the impact of positive steady-state inflation in New Keynesian models with a zero constraint on inflation.<sup>79</sup> They developed a utility-based welfare loss function in the model while accounting for the consequences of positive steady-state inflation and accounting for the optimal amount of inflation. Even after accounting for plenty of variations such as model uncertainty, optimal stabilization policy, endogenous and state-dependent price

<sup>79</sup> <https://www.jstor.org/stable/23355075>

stickiness, downward nominal wage rigidities, capital formation, and price indexation, the ideal inflation rate was normally 2% for reasonable measurements with pricey but rare incidents at the zero-lower bound. On the normative side, price-level targeting generates significant welfare increases while maintaining a very low ideal inflation rate in line with price stabilization. The results show that boosting the inflation target is an ineffective tool for reducing the severe consequences of zero-lower bound occurrences. The basic assumption underlying the low optimum inflation rate is that the unconditional ZLB is tiny, even though every individual ZLB episode is highly expensive. The key points highlighted in this work have been how the New Keynesian framework illustrates that the most suitable weightance of the output gap in the welfare loss function was tiny, whereas raising the output gap to over ten times the annualized value will nevertheless maintain the ideal inflation rate at 2.5. To examine the accuracy of this conclusion, they enhance the initial setup by including additional processes that could enhance the optimum rate of inflation. First, policymakers set the inflation rate as being a buffer towards the potential of an expensive occurrence of the zero-bound implied by the actual variables. After obtaining a rough estimate of the utility function, they proceed to find the best inflation rate. Table 3 depicts the starting point parameter settings. They set for the utility function the Frisch labour supply equal to one. Considering the assumption of establishing the steady-state growth rate of real GDP per capita to 1.5% per year, the steady-state discount factor  $\beta$  has been set at 0.998 to correspond to the real rate of 2.3% per year on 6-month commercial paper or assets with similar short-term maturities. They adjusted the elasticity of substitution among intermediary commodities from  $\theta$  to 7, resulting in steady-state mark-ups of 17%. The resulting mark-up magnitude is comparable with estimates provided by Burnside (1996) and Basu and Fernald (1997).  $\alpha$ , which is the price stickiness, is equal to 0.55, implying that enterprises reset prices after 7 months. It falls halfway among the micro estimates of Bils and Klenow (2004), who find that enterprises alter prices each 4-5 months, and the macro estimations of Nakamura and Steinsson (2008), which indicate companies alter prices around 9-11 months. The suggested sensitivity of inflation to marginal costs is 0.11, which is comparable with Altig et al. (2010) predictions.

Table 3: Baseline parameter values

<i>Parameters of utility function</i>		<i>Steady-state values</i>	
$\eta$ : Frisch labour elasticity	1.00	$\bar{g}_y$ : Growth rate of RGDP/cap	1.5%p.a.
$\beta$ : Discount factor	0.998	$\bar{c}_y$ : Consumption share of GDP	0.80
$h$ : Habit in consumption	0.7	$\bar{g}_y$ : Government share of GDP	0.20
<i>Pricing parameters</i>		<i>Shock persistence</i>	
$\theta$ : Elasticity of substitution	7	$\rho_g$ : Government spending shocks	0.97
$\lambda$ : Degree of price stickiness	0.55	$\rho_m$ : Cost-push shocks	0.90
$\omega$ : Price indexation	0.00	$\rho_q$ : Risk premium shocks	0.947
<i>Taylor rule parameters</i>		<i>Shock volatility</i>	
$\phi_\pi$ : Long-run response to inflation	2.50	$\sigma_g$ : Government spending shocks	0.0052
$\phi_{gy}$ : Long-run response to output growth	1.50	$\sigma_m$ : Cost-push shocks	0.0014
$\phi_y$ : Long-run response to output gap	0.11	$\sigma_q$ : Risk premium shocks	0.0024
$\rho_1$ : Interest smoothing	1.05	$\sigma_a$ : Technology shocks	0.0090
$\rho_2$ : Interest smoothing	-0.13	$\sigma_r$ : Monetary policy shocks	0.0024

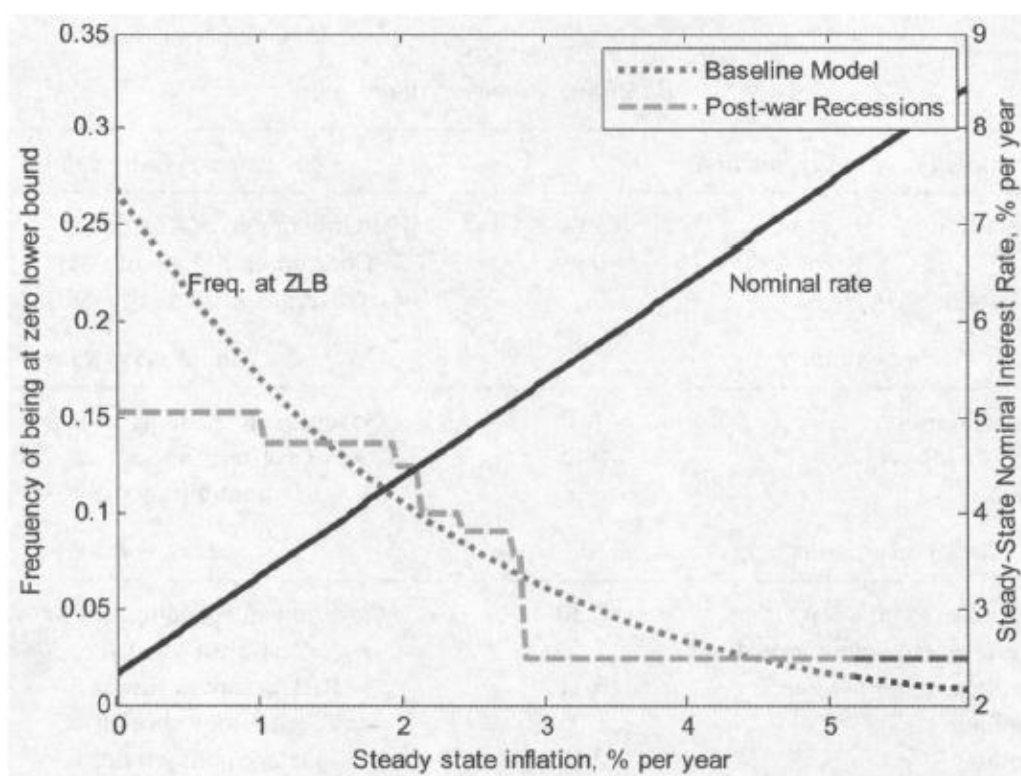
Source; The Review of Economic Studies, October 2012, Vol. 79, No. 4 (October 2012), pp. 1371-1406

In the initial stage, the level of price indexation is considered to be 0 for the following reasons. For starters, the core of the New Keynesian model is solely dependent on price stickiness, which makes it the most appropriate benchmark. Second, any form of price indexation means that enterprises' prices are always fluctuating. Third, while indexation is frequently included in empirical estimates of the New Keynesian Phillips Curve, Cogley and Sbordone (2008) show that once steady-state inflation is controlled for, estimates of the NKPC dismiss the involvement of indexation in price-setting decisions. Findings indicate that the central bank has significant long-run reactions to inflation and production expansion (2.5 and 1.5, correspondingly) but a relatively modest reaction to the output gap, 0.43.

Positive trend inflation is problematic according to this basic model since it contributes to increased dispersion of prices and hence lower-performing distributions, more variable inflation, and a higher welfare cost for an established degree of inflation volatility. On the other hand, allows policymakers greater flexibility in avoiding the ZLB on interest rates.

As a result, a crucial determinate trade-off among the two, relates to how often the ZLB becomes legally binding for distinct trend inflation. Figure 7 depicts the proportion of time spent at the ZLB from modelling the scenario with various steady-state values for the inflation rate to demonstrate the consequences concerning the parameter measurement for how frequently the ZLB is visited.

Fig: 7 Frequency of being in the ZLB and steady-state nominal



Source: The Review of Economic Studies, October 2012, Vol. 79, No. 4 (October 2012), pp. 1371-1406

According to the method, the average interest rate with 3.5% steady-state inflation is about 6%, therefore the ZLB would not be used during the average recession, which is in line with the past experience.

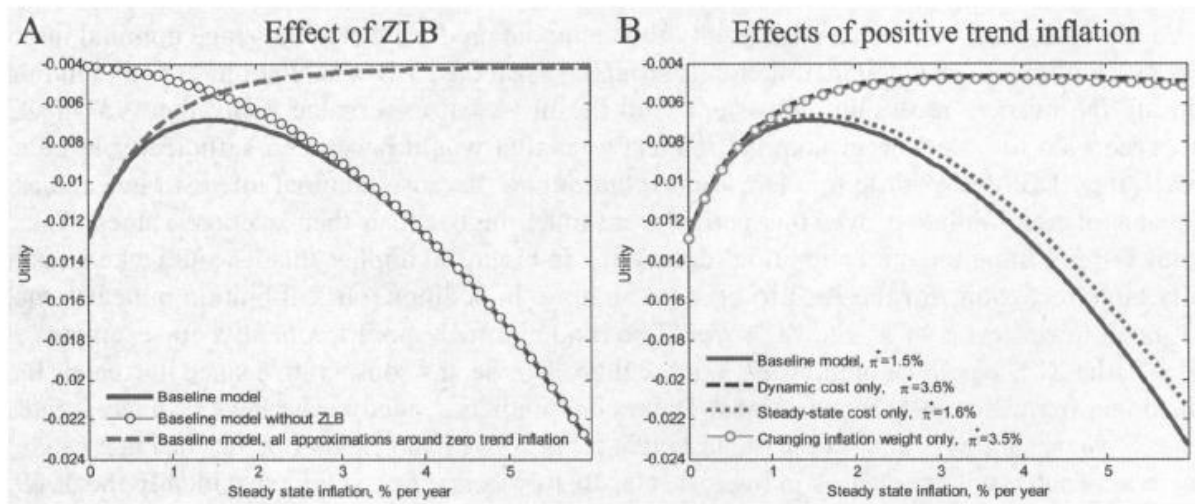
With typical inflation of 3-3.5%, the analysis shows that particularly big recessions might be required for the ZLB to turn binding. Furthermore, at even lower values of  $\pi$  would result in the ZLB binding significantly more frequently: at  $\pi = 0$ , the ZLB would bind 27% of the time. When  $\pi = 0$ , the model forecasts a steady-state level of 2.5%.

Panel A of Figure 8 shows the findings with and without the ZLB. When the ZLB is not taken into consideration, the ideal rate of inflation equals zero since inflation has only expenses and no benefits to offer. Figure 8 depicts what happens when we incorporate the ZLB but fails to account for the impact of positive steady-inflation on the loss function or the changing dynamics of the framework. In this situation, there are no swings, therefore utility increases as steady-state inflation increases and the frequency decreases.

As a consequence of the ZLB limitation, because of the ZLB restriction, scientists demonstrate that utility increases at incredibly low inflation, implying that zero inflation is not ideal whenever the ZLB limitation is applied. Second, the degree of usefulness is attained when the

yearly inflation rate is 1.5%. This size is near the bottom margin of the majority of central banks' goal ranges, which are typically between 1% and 3%. As an outcome, the initial findings suggest that adopting the zero constraint on rates boosts the ideal degree of inflation.

Fig. 8 Utility different levels of steady state inflation Panel A: Effect on inflation Panel B: Effects of positive trend inflation.



Source: The Review of Economic Studies, October 2012, Vol. 79, No. 4 (October 2012), pp. 1371-1406

Notes: The figures plot the approximation to the utility function in Proposition 1 from simulating the model for levels of steady-state inflation. Panel A includes results for the baseline model, the baseline model without as well as the model with the ZLB but omitting the three cost channels of inflation: steady-state effects, the coefficient on inflation variance in utility, and the dynamic effects. Panel B reproduces our baseline with presents results when we restrict the model to include only one cost of inflation and the ZLB. "Dynamic includes only the dynamic effects of positive inflation and keeps the rest of the model being approximated trend inflation," "Steady-state cost only" includes only the steady-state cost of inflation and keeps the rest being approximated around zero trend inflation, while "Changing inflation weight only" includes only the coefficients on inflation variance in the loss function and keeps the rest of the model being approximated trend inflation

The size of the costs of inflation vary depending on adjustment and price-setting beliefs, but the optimum of inflation is astonishingly immune to these.

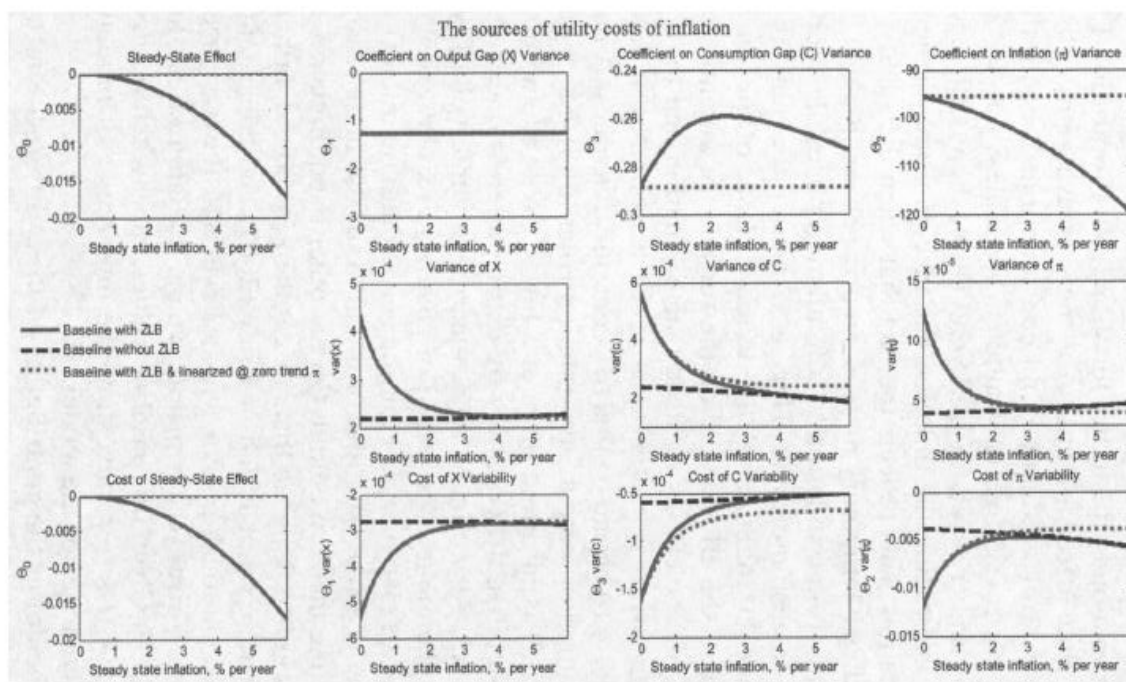
The B panel of Fig. 8 evaluates the significance for each of the three inflation costs: steady-state effect, increasing cost of inflation volatility, and positive level and volatility of inflation, by establishing the most effective inflation rate exposed to the ZLB whenever only one of these costs is encompassed. As a result, each of the three different inflation expenses included in the model is significant enough to avoid the ZLB from driving the optimum inflation rate considerably over the present desired ranges of the majority of central banks. Second, the



steady-state cost is the highest of the three inflation costs, reducing the ideal inflation rate to 1.6% alone. Assuming that we exclude steady-state expenses and simply consider the other two channels, the ideal inflation rate appears 3%.

The first row of Figure 9 depicts the parameter values of the second-order approximation to the utility function from Proposition 1 to gain a feel of which components drive these conclusions. First, greater  $\pi$  has significant negative steady-state impacts on utility, as rising price dispersion reduces the steady-state level of output and consumption improperly. Second, at modest rates of inflation, the coefficient on the variation of purchase becomes somewhat reduced in absolute terms, and then grows substantially at greater rates of inflation. Third, the value of the coefficient on inflation deviation reduces in  $\pi$ ; that is, greater  $\pi$  increases the utility cost of the inflation variance while maintaining the inflation variance steady. The result illustrates the reality that in cases where the steady-state level of price dispersion already appears elevated, a short-term increase in price dispersion caused by an inflation shock is significantly more expensive. When  $\pi$  grows, policymakers need to put a greater emphasis on the variance of inflation against the variation of the production gap. The impacts of  $\pi$  upon the variance of inflation, consumption, and the output gap, are plotted in the central row of Figure 8. Whenever the ZLB is in place, the graph shows how quickly consumption, output, and inflation volatility grow when  $\pi$  declines. Naturally, the ZLB suffers damage more frequently when  $\pi$  is low. With the nominal rate set exactly 0. The central bank is unable to maintain the economy by further reducing interest rates, and consequently macroeconomic instability rises. As we raise  $\pi$ , macroeconomic volatility decreases. At a low rate of inflation, boosting  $\pi$  decreases inflation volatility for the exact same logic that it decreases output volatility: a lower frequency of striking the zero bound. More elevated  $\pi$ , helps to make decisions regarding prices more forward-looking, such that, in the absence of the zero bound, inflation volatility rises in lockstep with  $\pi$ . The bottom row of Figure 8 involves  $\pi$ 's steady-state impacts along with the combination of  $\pi$ 's implications for the utility function estimation coefficients and the economy's oscillations. The biggest, noteworthy discovery is that the welfare costs and benefits of positive  $\pi$  are influenced primarily by two factors: the steady-state effect and the contribution of inflation variation to utility. The U-shape structure that accounts for the inflation variance is particularly important in providing an upward trend of the optimal inflation rate, whereas the implications of the ZLB upon the effect of the output gap and consumption variability are orders of magnitude less significant and therefore have an insignificant part when establishing the optimal inflation rate.

Fig.9: The sources of utility cost of inflation.



Source: The Review of Economic Studies, October 2012, Vol. 79, No. 4 (October 2012), pp. 1371-1406

In conclusion, considering that the majority of central bank's target inflation rates around 1% and 3%, what comes out may be read as maintaining the present regimes while offering little justification for boosting these objectives to provide further protection from the zero-bound on interest rates. In addition, our findings contribute to addressing the noticeable disparity among observed inflation objectives and prescribed from classic monetary models.

## Bibliography

- Anderton Robert, Botelho Vasco, Consolo Agostino, Dias de Silva Antonio, Mohr Matthias and Vision Lara (2021, January 7). *The impact of the COVID-19 pandemic on the euro area labour market*. ECB Economic Bulletin, Issue 8/2020.  
[https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202008\\_02~bc749d90e7.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202008_02~bc749d90e7.en.html)
- Benigno Pierpaolo, Canofari Paolo, Dibartolomeo Giovanni and Messori Marcello (2021, November). *The ECB's Revised Inflation Target*. European Parliament  
[https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview\\_background\\_n.pdf](https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview_background_n.pdf)
- Bernoth Kerstin, Dietz Sara, Ider Gökhan, Lastra Rosa, (2022, September). *The ECB's Transmission Protection Instrument: a legal & economic analysis*. European Parliament. <https://www.europarl.europa.eu/cmsdata/253891/QA-07-22-986-EN-N.pdf>
- Bobeica Elena, Ciccarelli Matteo, Vansteenkiste Isabel (2019, February). *The link between labor cost and price inflation in the euro area*. European Central Bank Working Paper Series  
No.2235. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2235~69b97077ff.en.pdf>
- Boettke, P. J. (1992). Analysis and Vision in Economic Discourse. *Journal of the History of Economic Thought*, 14(1), 84–95. <https://doi.org/10.1017/s1053837200004417>
- Bonatti Luigi, Fracasso Andrea (2021, November). *Including Owner-Occupied Housing Costs in the HICP: Some Technical and Policy Remarks*. European Parliament.  
[https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695471/IPOL\\_IDA\(2021\)695471\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695471/IPOL_IDA(2021)695471_EN.pdf)
- Coibon Olivier, Gorodnichenko Yuriy, Wieland Johannes (2012. March 7). *The Optimal*

*Inflation Rate in the New Keynesian Models: Should Central Banks Raise Their Inflation Target in the Light of the Zero Lower Bound?*. Oxford University.

<https://www.jstor.org/stable/23355075>

Corporate Finance Institute. (2023). European Central Bank (ECB). *Corporate Finance Institute*. <https://corporatefinanceinstitute.com/resources/economics/what-is-european-central-bank-ecb/>

Dieter Gerdemesier (2009). *Price stability: why is it important for you?* European Central Bank. <https://www.ecb.europa.eu/pub/pdf/other/whypricestabilityen.pdf>

D'Italia, B. (n.d.-b). *Bank of Italy - An overview of the ECB's monetary policy strategy*. (C) Banca D'Italia. <https://www.bancaditalia.it/compiti/polmon-garanzie/esito-riesame-strategia-polmon/sintesi/index.html?com.dotmarketing.htmlpage.language=1&dotcache=refresh>

Ehrmann Michael, Georgarakos Dimitris, Kenny Geoff (2023, February). *Credibility gains from communicating with the public: evidence from the ECB's new monetary policy strategy*. European Central Bank Working Paper Series No 2785. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2785~0243b480bf.en.pdf>

European Central Bank. (2022, December 12). *Our money*. <https://www.ecb.europa.eu/euro/intro/html/index.en.html>

European Central Bank. (2021, November 10). *Benefits of price stability*. <https://www.ecb.europa.eu/mopo/intro/benefits/html/index.en.html>

European Central Bank. (1999, October 11). *The Eurosystem's monetary policy strategy: The first years' experience*. <https://www.ecb.europa.eu/press/key/date/1999/html/sp991011.en.html>

European Central Bank. (2021b, November 10). *Medium-term orientation*. <https://www.ecb.europa.eu/mopo/strategy/princ/html/orientation.en.html>

European Central Bank. (2003, May 8). *Press seminar on the evaluation of the ECB's monetary policy strategy.*

[https://www.ecb.europa.eu/press/pressconf/2003/html/is030508\\_1.en.html](https://www.ecb.europa.eu/press/pressconf/2003/html/is030508_1.en.html)

European Central Bank. (2016, June 2). *Delivering a symmetric mandate with asymmetric tools: monetary policy in a context of low interest rates.*

<https://www.ecb.europa.eu/press/key/date/2016/html/sp160602.en.html>

European Central Bank. (2020, September 30). *The monetary policy strategy review: some preliminary considerations.*

<https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200930~169abb1202.en.html>

European Central Bank. (2021a, October 1). *Lessons from an unusual crisis.*

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211001~ca589c6afc.en.html>

European Central Bank. (2021a, July 8). *The ECB's monetary policy strategy statement.*

[https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview\\_monpol\\_strategy\\_statement.en.html](https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_statement.en.html)

European Central Bank. (2021b, July 14). *A new strategy for a changing world.*

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210714~0d62f657bc.en.html>

European Central Bank. (2021b, July 13). *Interview with Financial Times.*

<https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210713~ff13aa537f.en.html>

European Central Bank. (2021d, July 14). *A new strategy for a changing world.*

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210714~0d62f657bc.en.html>

European Central Bank. (2021e, July 22). *Monetary policy statement (with Q&A)*.

<https://www.ecb.europa.eu/press/pressconf/2021/html/ecb.is210722~13e7f5e795.en.html>

European Central Bank. (2021f, July 23). *Results of the ECB Survey of Professional Forecasters in the third quarter of 2021*.

[https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210723\\_1~0f9c4982c7.en.html](https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210723_1~0f9c4982c7.en.html)

European Central Bank. (2021f, July 22). *Monetary policy statement (with Q&A)*.

<https://www.ecb.europa.eu/press/pressconf/2021/html/ecb.is210722~13e7f5e795.en.html>

European Central Bank. (2021h, September 23). *Economic Bulletin Issue 6, 2021*.

<https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202106.en.html#toc12>

European Central Bank. (2016a, January 22). *How does the ECB's asset purchase*

*programme work?* <https://www.ecb.europa.eu/ecb/educational/explainers/tell-me-more/html/app.en.html>

European Central Bank. (2021i, September 28). *Monetary policy during an atypical recovery*.

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210928~4cc57f558d.en.html>

European Central Bank. (2021j, September 28). *Monetary policy during an atypical recovery*.

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210928~4cc57f558d.en.html>

European Central Bank. (2021l, October 7). *Prospects for inflation: sneezes and breezes*.

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211007~ab617e7d60.en.html>

European Central Bank. (2021m, October 11). *The monetary policy toolbox and the effective lower bound.*

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211011~5a5d2e55f1.en.html>

European Central Bank. (2021n, October 29). *Results of the ECB Survey of Professional Forecasters for the fourth quarter of 2021.*

<https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr211029~1f9c8acb86.en.html>

European Central Bank. (2021o, November 8). *Inflation in the short term and in the medium term.*

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211108~c915d47d4c.en.html>

European Central Bank. (2021s, November 17). *Reflation, not stagflation.*

<https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211117~78f0a1f435.en.html>

European Central Bank. (2022a, February 17). *Economic Bulletin Issue 1, 2022.*

<https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202201.en.html>

European Central Bank. (2022a, February 4). *Results of the ECB Survey of Professional Forecasters for the first quarter of 2022.*

<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220204~3fdfbe7eb0.en.html>

European Central Bank. (2022c, April 28). *Economic Bulletin Issue 3, 2022.*

<https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202203.en.html#toc10>

European Central Bank. (2022c, April 14). *Monetary policy decisions*.

<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220414~d1b76520c6.en.html>

European Central Bank. (2022e, August 4). *Economic Bulletin Issue 5, 2022*.

<https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202205.en.html#toc11>

European Central Bank. (2022e, July 21). *Monetary policy decisions*.

<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220721~53e5bdd317.en.html>

European Central Bank. (2022g, September 22). *Economic Bulletin Issue 6, 2022*.

<https://www.ecb.europa.eu/pub/economic-bulletin/html/eb202206.en.html#toc5>

European Central Bank. (2022h, October 28). *Results of the ECB Survey of Professional Forecasters for the fourth quarter of 2022*.

<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr221028~8ba2374005.en.html>

European Central Bank. (2022h, October 27). *Monetary policy decisions*.

<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp221027~df1d778b84.en.html>

European Central Bank. (2022k, December 15). *Monetary policy decisions*.

<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp221215~f3461d7b6e.en.html>

European Central Bank. (2023, February 3). *Results of the ECB Survey of Professional Forecasters for the first quarter of 2023*.

<https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230203~db79d102a5.en.html>

European Central Bank (September 2021). *The ECB's price stability framework: past*



*experience, and current and future challenges.* ECB Occasional Paper Series No 269

<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op269~3f2619ac7a.en.pdf>

European Central Bank (2014). Annual report 2013

<https://www.ecb.europa.eu/pub/pdf/annrep/ar2013en.pdf>

European Central Bank (2015). Annual Report 2014

<https://www.ecb.europa.eu/pub/pdf/annrep/ar2014en.pdf>

Folger, J. (2022). What is stagflation? Understanding the economic phenomenon that stifled growth through the 1970s. *Business Insider*.

<https://www.businessinsider.com/personal-finance/stagflation?r=US&IR=T>

Grosse Steffen Christoph and Marx Magali (2022, March 15). *Advantages of point targets and drawbacks of target ranges.* Banque De France. [https://blocnotesdeleco.banque-](https://blocnotesdeleco.banque-france.fr/en/blog-entry/advantages-point-targets-and-drawbacks-target-ranges)

[france.fr/en/blog-entry/advantages-point-targets-and-drawbacks-target-ranges](https://blocnotesdeleco.banque-france.fr/en/blog-entry/advantages-point-targets-and-drawbacks-target-ranges)

Hartmann Philipp, Smets Frank (2018, December). *The first twenty years of the European Central Bank: monetary policy.* European Central Bank. No 2219

<https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2219.en.pdf?d75daefd4fe5f01fc66658005697c106>

Issing Otmar. (2003, July 11). *Evaluation of the ECB's monetary policy strategy.* European Central Bank. BIS Review 33/2003. <https://www.bis.org/review/r030721c.pdf>

Issing Omar (2003, November) *Background Studies for the ECB's Evaluation of its Monetary Policy Strategy.* European Central Bank.

[https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview\\_backgrounden.pdf](https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview_backgrounden.pdf)

Jahan Sarwat. (2018, June 1). *Inflation Targeting: Holding the Line.*

<https://www.imf.org/external/pubs/ft/fandd/basics/72-inflation-targeting.htm>

Kenton, W. (2022). Core Inflation. *Investopedia*.

<https://www.investopedia.com/terms/c/coreinflation.asp>

Kenton, W. (2022b). Euro Overnight Index Average (EONIA): Definition, Switch to ESTER.

*Investopedia*. <https://www.investopedia.com/terms/e/eonia.asp>

Malmendier Ulrike, Sheng Shen Leslie (2018, June). *Scarred Consumption*. National Bureau of Economic research, Working Paper 24696.

[https://www.nber.org/system/files/working\\_papers/w24696/w24696.pdf](https://www.nber.org/system/files/working_papers/w24696/w24696.pdf)

Mishkin Frederic, Sufi Amir, Hooper Peeter, (2019, October 23). *The Phillips curve: Dead or alive..* CEPR. <https://cepr.org/voxeu/columns/phillips-curve-dead-or-alive>

Muggenthaler, P. (2021, August 5). *The heterogeneous economic impact of the pandemic across euro area countries*. European Central Bank.

[https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202105\\_03~267ada0d38.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202105_03~267ada0d38.en.html)

Muggenthaler, P. (2021, August 5). *The heterogeneous economic impact of the pandemic across euro area countries*. European Central Bank.

[https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202105\\_03~267ada0d38.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202105_03~267ada0d38.en.html)

Official Journal of the European Communities, 29/07/1992, TREATY ON EUROPEAN UNION (92/C191/01 ) No C 191 /1

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:11992M/TXT&from=EN>

Robert Schuman Foundation (2021, May 25) *The European Central Bank's Strategic*

*Monetary Policy Review: the key to a return to sustainable growth in Europe*. (n.d.).

<https://www.robert-schuman.eu/en/european-issues/0597-the-european-central-bank-s->

The Editors of Encyclopaedia Britannica. (2023, March 24). *Phillips curve / Definition, Graph, & Facts*. Encyclopaedia Britannica.

<https://www.britannica.com/topic/Phillips-curve>

Winans, L. (2022, November 1). How Inflation Affects the Labor Market. *Forbes*.

<https://www.forbes.com/sites/forbesbusinesscouncil/2022/11/01/how-inflation-affects-the-labor-market/?sh=4181ffb85a8e>

Wyplosz Charles, (2021 November). *The ECB's New Definition of Price Stability: Better but Short of Specifics*. European Parliament.

[https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695473/IPOL\\_IDA\(2021\)695473\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/695473/IPOL_IDA(2021)695473_EN.pdf)