



EUROPA.S.

PROMOTING EXCELLENCE, POLITICAL INNOVATION AND
LEADERSHIP IN EUROPE

Study Guide

European Central Bank

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1. Greetings of the Board

Distinguished Governors of the Eurosystem Central Banks,

It is our honor and pleasure to welcome you all to EUropa.S. 2024, a conference that promises to deliver to all of your expectations and even exceed them. We hope that you share the same excitement as we do to participate and simulate such an important institution as the European Central Bank, that has been one of the cornerstones of European integration and has had an immense imprint in our economies in the short span of its 25 years of history.

EUropa.S. is a conference that is renowned for its academic excellence and the devotion of its members to making a once in a lifetime experience for every single participant. Undoubtedly, it is our great responsibility as the board to ensure the best experience for our participants along with providing academic quality to the works of the committee. As this institution is a brand-new addition to the conference, a great deal of our effort has been the complete and thorough analysis and elaboration of the institution itself and our topic.

The topic that we are going to discuss and debate upon during the conference “**The Future of the Eurozone: Stabilizing the Volatile Price Fluctuation and Transitioning towards a Digital Euro**” is a contemporary subject that is being discussed right now not only by the ECB but also by every central bank and private stakeholder with respect to their own interests. The Euro is the second most used currency internationally and the impact of the decisions of the ECB is felt all around the world although not immediately. That’s why we call upon you to become a part of this institution and play a crucial role in the decision-making process in order to address the issues that agonize the society.

The power rests in your hands and in conjunction with the study guide that follows and your own research, the outcome will certainly be commendable. We are looking forward to meeting you and seeing your debating skills on the committee floor.

Best regards,

The board of the European Central Bank

Alexandros Papadatis (President)

Alexandros Mouratidis (Vice-President)

2. Introduction to the Eurozone (EZ)

The Eurozone or the euro economic area was conceptualized following the collapse of the Exchange Rate Mechanism (ERM) and was put into force in 1992 with the signing of the Maastricht Treaty, where the member states of the European Union established the European Monetary Union (EMU). The EMU encompassed the creation of the European Central Bank, the creation of the European System of Central Banks and the creation of the ERM II among others.¹

The EMU was set to be implemented in three stages;

1. The first one starting in 1990 included closer collaboration of the member states' central banks, alignment of fiscal policies as a prerequisite for economic convergence, the establishment of the single market and the accounting use of European Currency Unit (ECU),
2. The second one starting 1994 called for further convergence of fiscal and monetary policies among the member states, the establishment of the European Monetary Institute (EMI), resolving legal issues concerning the independence of national central banks along with not granting central bank credit and preparatory work for the next stage,
3. And the last one starting in 1999 and still in force with the establishment of the ECB, the physical introduction of the common currency, the entry into force of the Stability and Growth Pact (SGP) and the beginning of the intra-EU exchange rate mechanism (ERM II).²

All the member states of the European Union are part of the European Monetary Union and are obliged to adopt the Euro whenever they meet specific criteria laid out by the Treaty on the Functioning of the European Union with the exception of Denmark that has an opt-out clause excluding it from adopting the Euro. At the moment, there are 20 countries that have adopted the Euro and are part of the Eurozone.

The Eurozone is comprised of the member states that have adopted the Euro and also the states that have specific monetary agreements with the EU, but only the member states of the EU hold decision making power.³

¹ KATSIMI, M. (2016) *Macroeconomic Policies of the EU*. Athens, Greece: AUEB, p.45

² CINI, M., BORRAGÁN, P.-S.N. (2016) *European Union politics*. 5TH Ed. Oxford, United Kingdom: Oxford University Press.

³ European Commission. (no date) *What is the Euro Area?*, [Online] Available from: https://economy-finance.ec.europa.eu/euro/what-euro-area_en

3. Introduction to the European Central Bank

The monetary policy of the European Union is defined by the European System of Central Bank (ESCB), which consists of the European Central Bank and the national central banks of the member states.

National banks of member states that are in the euro area together with the European Central Bank form the Eurosystem. A body that is responsible for the implementation of the monetary policy within the euro area, performing the necessary tasks instructed by the Statue of the ESCB and the ECB in order to achieve price stability and maintain inflation rates close to 2%.

The European Central Bank was established in 1998 as an independent institution to exercise monetary policy in the countries that would adopt the common currency. It has its headquarters in Frankfurt and is one of the biggest financial institutions in the world. The mandate of the ECB as defined in the Statue of the ESCB and the ECB is as follows;

- a) defining and implementing monetary policy
- b) conducting foreign exchange operations
- c) holding and managing the euro area's foreign currency reserves
- d) promoting the smooth operation of payment systems
- e) banking supervision
- f) issuing of banknotes
- g) collection of statistical information
- h) macroprudential policy and financial stability
- i) international and European cooperation

The primary objectives of the ECB remain the retainment of inflation rates around 2% and the ensuring of price stability in the eurozone.⁴ The relevant decisions are made by the Governing Council, which consists of the members of the Executive Council and the governors of the Central Banks of eurozone member states.

The Governing Council is responsible for formulating the monetary policy for the euro area, adopting guidelines for the implementation of said policy (interest rates, supply reserves etc.) and take decisions necessary for the fulfillment of the obligations of the ECB. Moreover, concerning the banking supervision, the Governing Council can adopt

⁴ European Central Bank (2022) *Tasks*. [Online] Available from: <https://www.ecb.europa.eu/ecb/tasks/html/index.en.html>

decisions relating to the general framework under which supervisory decisions are taken and to adopt the complete draft decisions proposed by the Supervisory Board under the non-objection procedure.⁵

The main tools the Governing Council use to combat inflation are the setting of interest rates and the supply of money in the market. The decision on how these tools are going to be used is based on two factors.

The first one refers to the findings of economic analysis that focuses on the causes of inflation. Mainly, the imbalances in the supply-demand function and the medium-term economic risks that may affect price stability. The second one refers to the monetary analysis that shows the risks of macroeconomic instability in prices. The analysis focuses on the money supply, because there is a close correlation between the money supply and inflation at a macroeconomic level.⁶

For the 13th edition of EUropa.S. the institution will be simulated through the Governing Council of the European Central Bank and participants will therefore be referred to as governors.

4. Introduction to the Topic

The European Union has been faced with many external challenges in recent years. The Covid-19 pandemic, followed by the war in Ukraine have led the way for an economic crisis like no other. The economic and financial problems created by the pandemic in the global supply chain were exaggerated by the rise in energy prices following the war in Ukraine, thus creating an environment, where the Union had to face multiple obstacles. High inflation and digital transition have been in the forefront for EU's policy and decision makers, with various initiatives implemented in order to achieve the goals of the Union.

Combating inflation is on the top of the agenda for the ECB, while other goals like economic growth or decreasing unemployment come to fruition only when the primary goal has been achieved. Even though the priority of the ECB is price stability, the ever-changing environment and technological advancements cannot be disregarded. In this context, the ECB has launched its own investigation in order to determine whether a digital euro should come into existence since electronic ways of payment have become increasingly prevalent in the eurozone and this will ensure the role of public money, maintain the trust in the common currency and safeguard the privacy of digital

⁵ European Central Bank (2023) *Governing Council*. [Online] Available from: <https://www.ecb.europa.eu/ecb/orga/decisions/govc/html/index.en.html>

⁶ KATSIMI, M. (2016) *Macroeconomic Policies of the EU*. Athens, Greece: AUEB, p.128-129

payments. While the findings were clear that there is indeed a need for a digital central bank currency, there are further steps to be taken to actualize it.

4.1. Stabilizing the Volatile Price Fluctuation

To further understand the complexity of inflation and how it has impacted the Eurozone and the world, we need to delve deeper into its root causes.

At first, due to a sharp decrease in demand and production, prices around global markets decreased and rapid economic decline ensued. Countries adopted countercyclical economic policies in order to boost economic activity and return to pre-pandemic levels of output. Those policies created a demand-based growth that businesses could not meet, therefore leading to shortage of products and services and a steady increase in prices and inflation. Central banks so as to boost consumption and investments during the pandemic, followed an expansionary monetary policy that for the first time in history led to negative interest rates.⁷

As the world was returning to its usual state of affair, with a steady increase in inflation, interest rates above or equal to 0% and economic activity close to pre-pandemic levels, the international and even more the European status quo was unsettled by the sudden invasion of Ukraine by Russia that further destabilized the fragile economic recovery of the European Union.⁸ As a result the EU imposed sanctions on Russian oil and natural gas and opted for finding new strategic suppliers and introduced a new policy called “Strategic Autonomy”.⁹ Shortages in supply of natural gas especially during the winter soared energy prices and as energy is a vital component of economic activity, the increase in its price led to an overall increase in cost that migrated towards the consumers instead of companies absorbing it, thus cutting down purchasing power and increasing profits in an inflationary way.¹⁰ Hence, Europe and the world as a whole have

⁷ European Central Bank (2021) *Why is inflation currently so high?*, [Online] Available from: https://www.ecb.europa.eu/ecb/educational/explainers/tell-me-more/html/high_inflation.en.html

⁸ KOUTSOKOSTA, E, (2022) Why is inflation so high in Europe & what can be done to slow it down?. *Euronews*. [Online] 11th February, Available from: <https://www.euronews.com/my-europe/2022/02/11/why-is-inflation-so-high-in-europe-what-can-be-done-to-slow-it-down>

⁹ European parliament (2022) *EU Strategic Autonomy 2013-2023: From concept to capacity*. [Online] Available from: [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2022\)733589](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)733589)

¹⁰ HANSEN, N.-J., TOSCANI, F. and ZHOU, J. (2023) *Europe's inflation outlook depends on how corporate profits absorb wage gains*. [Online] Available from: <https://www.imf.org/en/Blogs/Articles/2023/06/26/europes-inflation-outlook-depends-on-how-corporate-profits-absorb-wage-gains>

entered a period of high inflation. In Europe this is accompanied by stagnant economic growth in most of its member states, which further perpetuates the recession cycle.¹¹

4.2. Transitioning Towards a Digital Euro

In the modern age, technology evolves at an unprecedented rate, integrating itself more and more in even the most fundamental aspects of our lives. For this reason, the European Union has launched various initiatives to achieve what is commonly called “Digital Transformation”. In this purview and as a response to a constantly expanding digital economy, the European Central Bank started contemplating the possibility of creating its own centralized and regulated digital currency, the Digital Euro.

What is a digital currency? It is a purely electronic means of payment that doesn’t exist as a tangible asset. This means that contrary to money that is stored in online bank accounts, digital money cannot be withdrawn in cash, but it can be used in the same way. Unlike cryptocurrencies such as Bitcoin, the Digital Euro will be a Central Bank Digital Currency (CBDC), which means it will be backed by the authority and credit of the European Central Bank, ensuring the maintenance of its value.¹² According to the ECB, the Digital Euro is not an initiative that aims to replace, but complement the existing payment methods like bank deposits and cash. Its intention is to satisfy the need for the creation of a secure, efficient digital payment system.¹³

The process of developing and transitioning towards a Digital Euro is not simple. It is time-consuming and it has too many parameters that need to be examined, such as its impact on the European Economy and how usable it is from the public before the Governing Council decides the implementation and launch of the digital currency. In July 2021, the Governing Council decided to launch an “Investigation Phase” that lasted two years and reached fruitful conclusions regarding the implementation of the project and conducted various exercises to further assist the project.¹⁴ In October 2023, the ECB decided to launch a “Preparation Phase” that is expected to also last two years. But

¹¹ GENTILONI, P. (2023) *Autumn 2023 economic forecast: A modest recovery ahead after a challenging year*. [Online] Available from: https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/autumn-2023-economic-forecast-modest-recovery-ahead-after-challenging-year_en

¹² GRANT, M. (2022) *Digital Money: What it is, how it works, types, and examples*. [Online] Available from: <https://www.investopedia.com/terms/d/digital-money.asp>

¹³ European Central Bank (2023) *Digital euro*. [Online] Available from: https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html

¹⁴ Central Bank of Ireland (no date) *Payments and Securities Settlements*. [Online] Available from: <https://www.centralbank.ie/financial-system/payments-and-securities-settlements>

despite the preparation, it has been clearly stated that the Council has not yet decided on the issuance of the CBDC.¹⁵

5. Key Terms and Definitions

Countercyclical economic policy: is policy measures that are taken in order to counteract the effects of the economic cycle ex. When the economy is in decline, governments increase spending.

Expansionary monetary policy: is the increase of the supply of money and credit to generate economic growth

Contractionary monetary policy: is the reduction of the supply of money in order to control inflation

Externalities: are indirect costs or benefits to an uninvolved third party that arise as effect of another party's activity

Government debt: is the financial liabilities of the government sector, accumulated over a period of time as a result of running budget deficits

Government deficit/surplus: is the difference in the general government's budget balance, that is the difference between revenues and expenditure

Net trade: is the balance between the value of exports and the value of imports of a country during a specific time period

Supply reserves: are cash minimums that financial institutions must have on hand in order to meet central bank requirements

Public money: is money belonging, received, collected or held by, for or on behalf of the government

Private money: refers to money borrowed by a company or an individual from a private individual or an organization ex. Private banks

Collateral: is an item of value pledged to secure a loan

Bonds: are a fixed-income instrument that represents a loan made by an investor to a borrower

¹⁵ European Central Bank (2023) *Eurosystem proceeds to next phase of Digital Euro Project*. [Online] Available from: <https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr231018~111a014ae7.en.html>

Fiscal policy: is the use of government spending and tax policies to influence economic conditions, especially macroeconomic conditions

HICP inflation: is the Harmonized Index of Consumer Price that measures price inflation based on spending patterns of consumers in each EU country, weighted according to that country's share of aggregate consumer spending

Commodities: also called primary products or goods, are goods sold for production or consumption just as it was found in nature, ex. crude oil, coal, copper etc.

Central Bank Digital Currency (CBDC): a digital form of currency issued by a country's central bank. They have many similarities to cryptocurrencies, with the difference that their value is regulated by a central bank and it is the same with the country's fiat currency.

Digital Euro: the project of the European Central Bank towards introducing a CBDC in the Eurozone.

TARGET Services: a number of services developed and operated by the Eurosystem which ensure the free flow of cash, securities and collateral across Europe.

7. Legal Framework

Each institution of the European Union draws legitimacy from its fundamental laws. The establishment of the European Central Bank was provisioned in the Maastricht Treaty and later was incorporated into the Treaty on the Functioning of the European Union, and was brought into effect with the signing of the Statute of the ESCB and the ECB.

The Treaty on the European Union is one of the fundamental treaties of the European Union, where the general principles and competences of the EU are set out, the governance of its institutions, the rules that govern its external affairs along with security and it forms the basis for the EU law.

The Treaty on the Functioning of the European Union along with the Treaty on the European Union form the fundamental basis for the governance of the Union and its legal basis. The Treaty on the Functioning of the European Union lays out the clear responsibilities of each European Institution along with the proper operational framework needed for their functioning.

In accordance with article 127 of the TFEU:

“The primary objective of the European System of Central Banks shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the

general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the Treaty on European Union. The ESCB shall act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources, and in compliance with the principles set out in Article 119.”

To further clarify the role of the ECB in the ESCB, article 8 of the Statute states that:

“The ESCB shall be governed by the decision-making bodies of the ECB.”

Moreover, among the key enabling acts of the Statute are article 9 and 16. Article 9 details the legal personality of the Bank, along with the responsibilities that are drawn from the treaties.

Article 9 of the Statute of the ESCB and the ECB:

“9.1. The ECB which, in accordance with Article 282(3) of the Treaty on the Functioning of the European Union, shall have legal personality, shall enjoy in each of the Member States the most extensive legal capacity accorded to legal persons under its law; it may, in particular, acquire or dispose of movable and immovable property and may be a party to legal proceedings.

9.2. The ECB shall ensure that the tasks conferred upon the ESCB under Article 127(2), (3) and (5) of the Treaty on the Functioning of the European Union are implemented either by its own activities pursuant to this Statute or through the national central banks pursuant to Articles 12.1 and 14.

9.3. In accordance with Article 129(1) of the Treaty on the Functioning of the European Union, the decision making bodies of the ECB shall be the Governing Council and the Executive Board.”

This definition is made, because the governors of the central banks of member states are members of the Governing Council of the ECB along with the executive board of the bank, thus the ECB is granted legal personality and can make binding decisions for the ESCB. Additionally, article 16 and 22 of the Statute grant the ECB the right to issue currency and clearing of payments, two competences that are necessary for the creation of the Euro and the future digital transformation.

Article 16 of Statute of the ESCB and the ECB:

“In accordance with Article 128(1) of the Treaty on the Functioning of the European Union, the Governing Council shall have the exclusive right to authorise the issue of euro banknotes within the Union. The ECB and the national central banks may issue such notes.

The banknotes issued by the ECB and the national central banks shall be the only such notes to have the status of legal tender within the Union.”¹⁶

Article 22 of Statute of the ESCB and the ECB:

“The ECB and national central banks may provide facilities, and the ECB may make regulations, to ensure efficient and sound clearing and payment systems within the Union and with other countries.”

7. Discussion

7.1. Stabilizing the Volatile Price Fluctuation

The European Central Bank’s primary goal is to achieve price stability and maintain an inflation level of 2%. In order to fulfill its obligations, the Governing Council has certain tools and instruments at its disposal. The decisions the Governing Council adopts concern key interest rates and the operational framework for the implementation of the single monetary policy.

The Governing Council decides whether to increase, decrease and to maintain the key interest rates that the ECB lends and pays on deposits. There are three key interest rates:

- a) “The interest rate on the main refinancing operations: it is the interest rate that commercial banks pay when they borrow funds from the Eurosystem for one week. In exchange, banks must provide adequate collateral, for instance government bonds, to guarantee that funds will be paid back;
- b) The interest rate on the deposit facility: it defines the interest that commercial banks receive to make overnight deposits with the central bank;
- c) The interest rate on the marginal lending facility: it is the interest rate that banks pay when they borrow from the Eurosystem overnight. In this case as well, banks must provide collateral to guarantee that funds will be paid back.”¹⁷

Each interest rate affects private banks, thus indirectly stipulating lending interest rates and deposit interest rates and simultaneously controlling money liquidity in the

¹⁶ Official Journal of the European Union (1992) PROTOCOL (No 4)

On the statute of the European System of Central Banks and of the European Central Bank.[Online] Available from: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A12016M%2FPRO%2F04>

¹⁷ Bank of Greece (no date) *Monetary policy decisions and operational framework for monetary policy implementation*. [Online] Available from: <https://www.bankofgreece.gr/en/main-tasks/monetary-policy/decisions-and-operational-framework>

economy. The ECB while taking decisions takes into consideration the monetary aggregates.

Monetary aggregates consist of three core components, the currency in circulation and overnight deposits (M1), the sum of M1 and deposits with an agreed maturity of up to two years and deposits redeemable at notice of up to three months (M2) and (M3) where repurchase agreements, money market fund shares, debt securities with a maturity of up to two years are summed with M2. M3 is mostly used when taking decisions since is the aggregate of all the abovementioned and clearly shows market liquidity at a certain moment.¹⁸

Along with the monetary decisions, the Governing Council can ensure the implementation of the single monetary policy by enabling certain instruments in its arsenal. Namely conducting open market operations to provide liquidity to counterparties, offering standing facilities which are aimed at providing or absorbing overnight liquidity and requiring credit institutions to hold minimum reserves on accounts with national central banks.¹⁹

Setting minimum reserves for the private banks to hold, the ECB can not only ensure stable money market interest rates but also control transient liquidity fluctuations. Thus, transmitting the effects of monetary policy in a more rapid way.²⁰

Furthermore since 2008, ECB has established and adopted some so-called non-standard monetary policy measures for stabilizing the bond markets when in turmoil and providing the necessary liquidity that governments need in order to exercise sound fiscal policies in compliance with the European Commission's directions. In response to the crises that the Eurozone has faced over the previous years, standard instruments were found inadequate to properly face the asymmetries presented, so the Governing Council created new instruments that could respond effectively.²¹

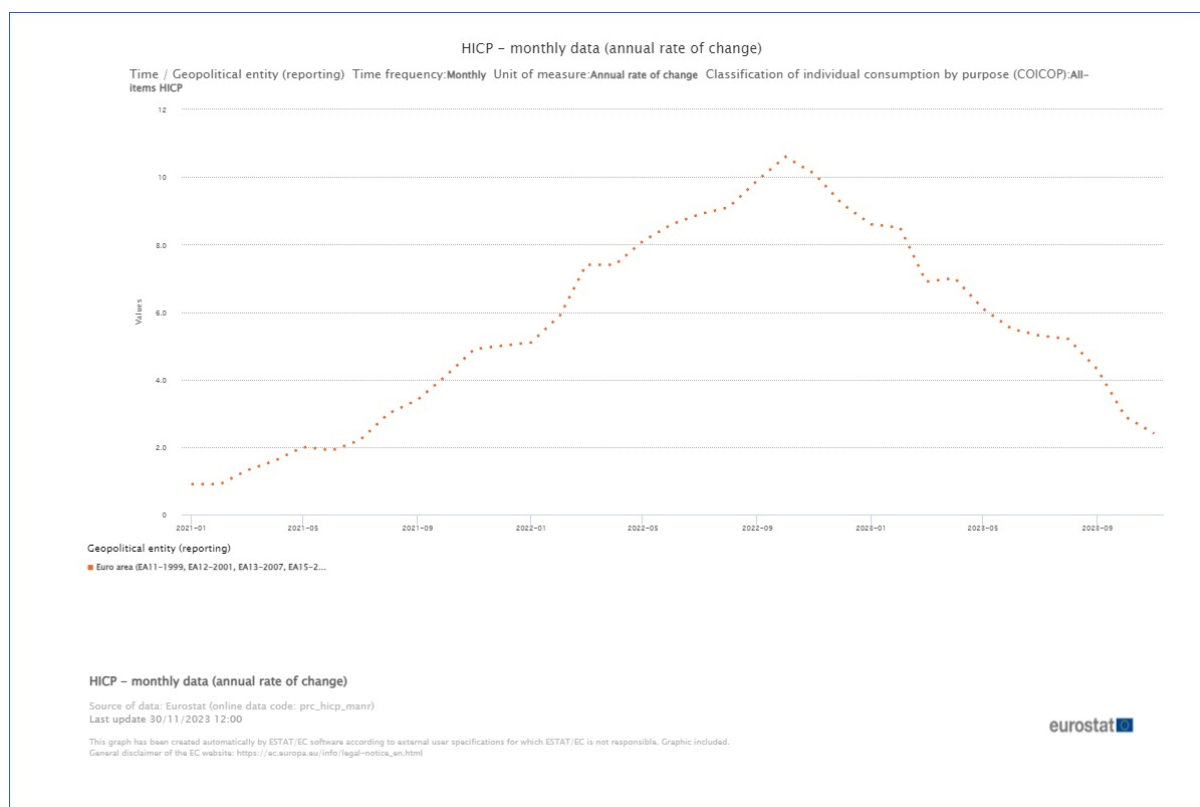
¹⁸ European Central Bank (2023) *Monetary aggregates*. [Online] Available from: https://www.ecb.europa.eu/stats/money_credit_banking/monetary_aggregates/html/index.en.html

¹⁹ Bank of Greece (no date) *Monetary policy decisions and operational framework for monetary policy implementation*. [Online] Available from: <https://www.bankofgreece.gr/en/main-tasks/monetary-policy/decisions-and-operational-framework>

²⁰ Bank of Greece (no date) *The operational framework for the monetary policy*. [Online] Available from: <https://www.bankofgreece.gr/en/main-tasks/monetary-policy/monetary-policy-instruments>

²¹ Bank of Greece (no date) *Non-standard monetary policy measures*. [Online] Available from: <https://www.bankofgreece.gr/en/main-tasks/monetary-policy/non-standard-measures>

7.1.1. Recent Inflation Review



Source: Eurostat. (no date) *HICP - monthly data (annual rate of change)*. [Online] Available from: https://ec.europa.eu/eurostat/databrowser/view/prc_hicp_manr_custom_8999626/default/line?lang=en

According to the latest Eurosystem staff macroeconomic projections HICP inflation is on a declining path, from an average of 5.4% in 2023, to 2,7% in 2024, 2,1% in 2025 and stabilizing at 1,9% in 2026. Eurostat reported HICP inflation for November stands at 2,4%, a figure that is projected to increase in the coming months, underpinned by an increase in energy prices that is expected to occur along with the withdrawal of some fiscal measures adopted by member states to control prices.

Moreover, food inflation is expected to decline rapidly in 2024 and continue to gradually decrease from 6,9% in November 2023 to 2,6% by the last quarter of 2024. Energy inflation follows a somewhat similar path, although it is projected that an increase will occur temporarily, energy inflation is to come close to zero in 2025 and 2026. The Harmonized Index for Consumer Prices excluding food and energy (HICPX) is projected to decrease gradually. Pressure from higher labor costs drives inflation down at a slower pace, while pandemic-related problems, such as logistical bottlenecks and demand side problems are normalizing bringing down costs and inflation as a result.²²

²² European Central Bank (2023) *Eurosystem staff macroeconomic projections for the euro*. [Online] Available from:

Such volatility in prices in the midterm may cause further disturbances down the line, resulting in inflation getting out of the 2% trajectory. The ECB has to take all the necessary measures to reassure not only the markets but also its Member States that the problem we face will be addressed accordingly and swiftly.

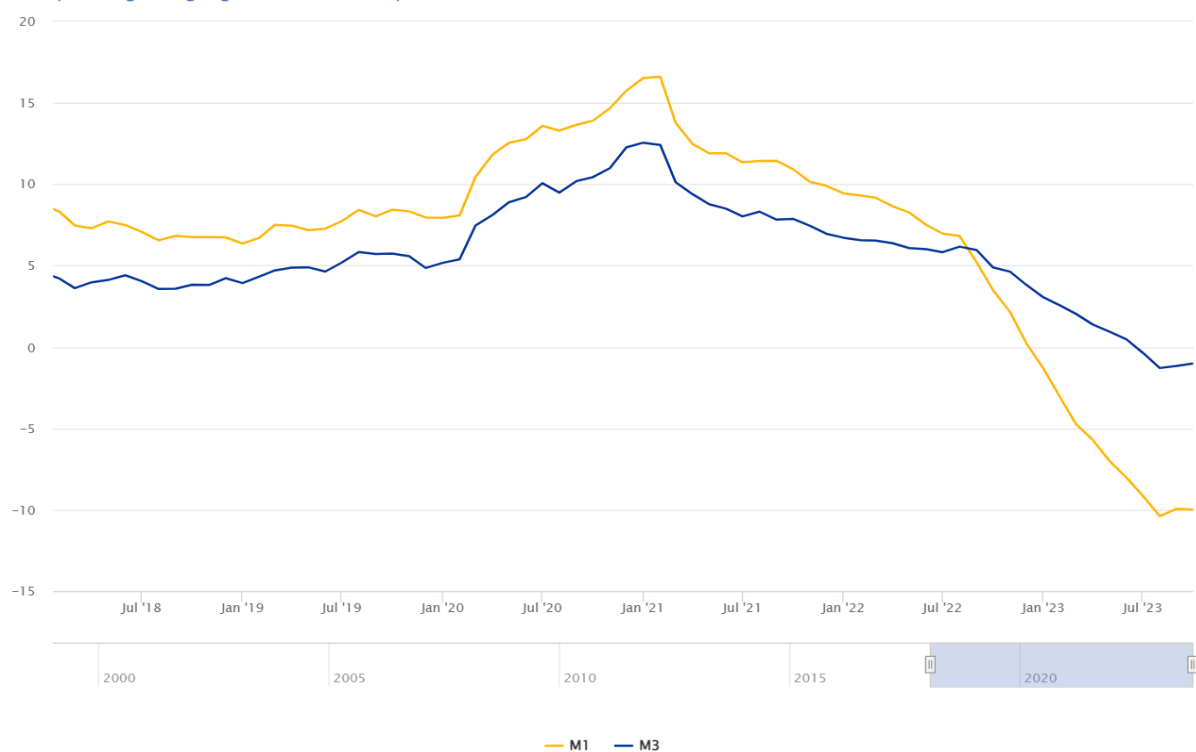
7.1.2. ECB Policy regarding the inflation so far

The ECB after the pandemic kept the three main interest rates at an all-time low so as to facilitate further money supply, inexpensive lending, and overall economic growth.

Last updated: 01/12/2023 13:18

Monetary aggregates, components and counterparts¹⁾

annual percentage changes; growth rates at end of period



Source: ECB. Note: Data refer to the changing composition of the euro area.

1) The presented information is based on consolidated balance sheet statistics reported by monetary financial institutions (MFIs). These include the Eurosystem, credit institutions and money market funds located in the euro area.

Source: European Central Bank. (no date) *Monetary aggregates, components and counterparts*. [Online] Available from: <https://data.ecb.europa.eu/publications/money-credit-and-banking/3031796>

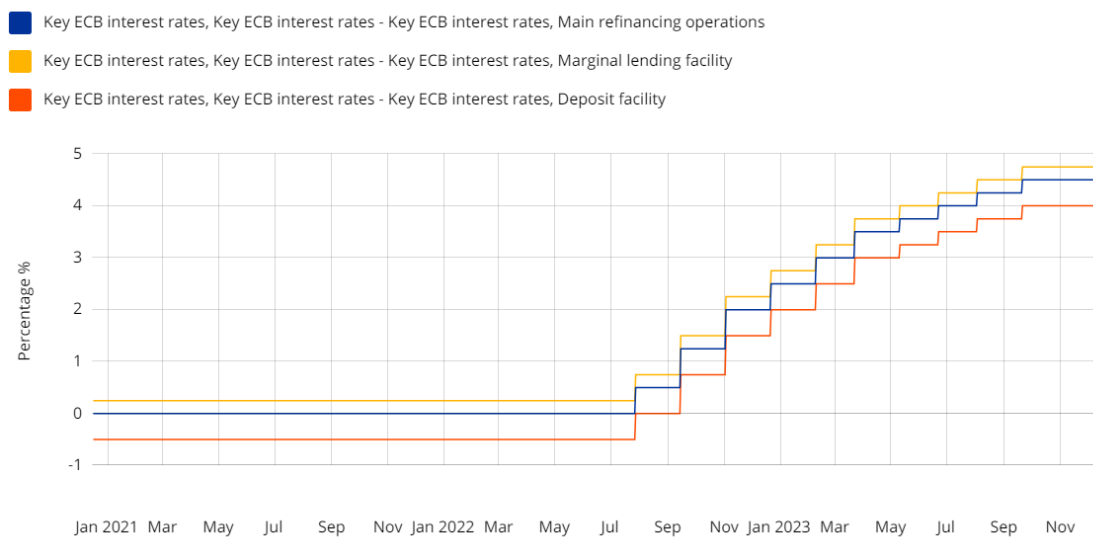
As the chart shows, M3 (monetary aggregates) has maintained a steady growth from 2018 to 2020. After the pandemic monetary policy became more expansionary, further

https://www.ecb.europa.eu/pub/projections/html/ecb.projections202312_eurosystemstaff~9a39ab5088.en.html#toc7

expanding the circulation of currency and assets at the time. This was necessary to combat the recession that ensued the pandemic. As economic recovery was still fragile, the war between Russia and Ukraine and the following sanctions on Russian fossil fuels derailed development and led to an unseen-before energy prices. Energy, as it is a basic commodity for the production of goods and services alike, constitutes a great amount of production costs. The transmission of this price spike led to high levels of inflation and fluctuation of prices in general.²³

The response from the ECB was swift, with the Governing Council increasing the Key interest rates as soon as data was suggesting that the problem was continual.²⁴

ECB Data Portal, 14 December 2023, 13:2 CET



Source: FINANCIAL PROVIDERS

EUROPEAN CENTRAL BANK | EUROSISTEM

<https://data.ecb.europa.eu>

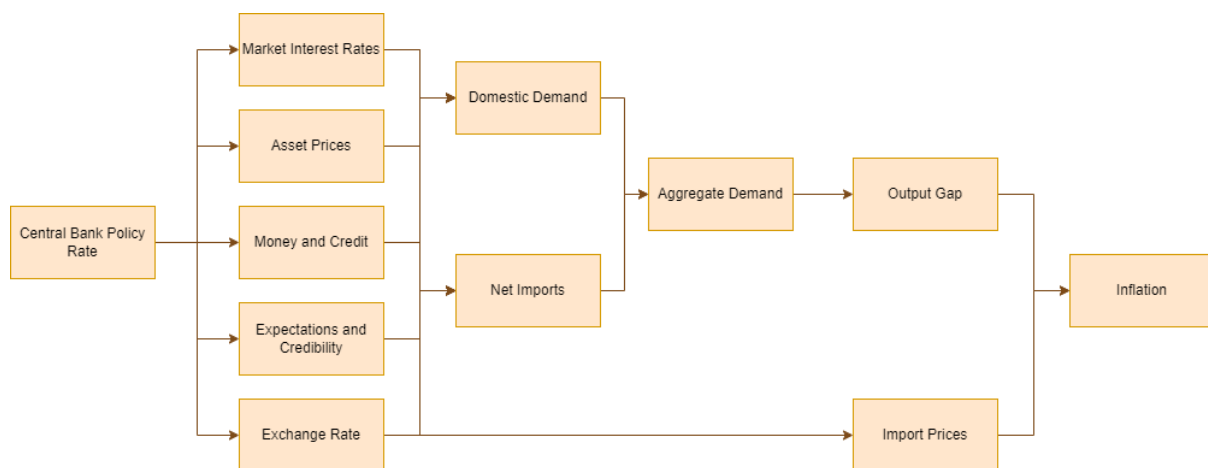
Source: European Central Bank. (no date) *Key ECB interest rates*. [Online] Available from: https://www.ecb.europa.eu/pub/projections/html/ecb.projections202312_eurosystemstaff~9a39ab5088.en.html#toc7

As of October 2023, the ECB has raised 10 succeeding times the interest rates and according to the last decision of the Governing Council the interest rates are to remain at the same level, meaning that the interest rate on the main refinancing operations stays at 4.5%, the interest rate on the deposit facility stays at 4% and the interest rate on the marginal lending facility at 4.75%, as the chart on the left suggests.

²³ EMTER, L., GUNNELLA, V. and SCHULER, T. (2023) *The energy shock, price competitiveness and euro area export performance*. [Online] Available from: https://www.ecb.europa.eu/pub/economic-bulletin/focus/2023/html/ecb.ebbox202303_03~23c48fe595.en.htm

²⁴ European Central Bank (2022) *Monetary policy decisions*. [Online] Available from: <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220908~c1b6839378.en.html>

The ECB by setting the interest rates puts in motion the Monetary Policy Transmission Mechanism (MPTM). This mechanism affects different aspects of the private economy and depending on the structure of each economy and its financial institutions, the effects of interest rates change will face various degrees of lagging throughout the process. As the table below shows even though it is clear how interest rates correlate with inflation, the complexity of the mechanism demonstrates all the channels that contribute to the effectiveness of monetary policy.²⁵



Source: Central Bank of Iceland (no date) *Monetary Policy Transmission*. [Online] Available from: <https://cb.is/monetary-policy/inflation-target/monetary-policy-transmission/>

For the time being the interest rates of the ECB have been effective in subduing inflation according to the Harmonized Index for Consumer Prices (HICP), whilst sustaining high interest rates in the long-term may cause asymmetries in member states' economies. It is of high importance to take immediate action in order to prevent such situation from ever evolving and further bring down the economic prosperity of the Member States.

7.1.3. Macroeconomic projections for economic growth

The European economy experienced a rapid acceleration in economic growth in the years following the pandemic. This trend has retroceded in 2023, mainly due to lack of a robust economic driver in all the member states. However, the European economy will avoid an economic recession and will continue to grow gradually, and the growth of the euro area's GDP is expected to reach 1,2% in 2024 and 1,6% in 2025. Although these figures are not optimal, the European economy is set to a growth path, despite externalities such as weak exports, and the global state of affairs that contribute to the general trend of loss of confidence, leading to less consumption and investments.

Concerning economic growth, data suggest that the economy remains resilient but aggregate factors have a downward effect on the economy. As governments retract

²⁵ LAURENS, B. (2005) *Monetary policy implementation at different stages of Market Development*. Washington, DC, United States: International Monetary Fund. p.85

fiscal measures in place to boost consumption and hold back price fluctuations, private consumption is decreasing, this is further exacerbated by lower than inflation increases in nominal wages. Conversely, spending on services remained at high levels as a consequence of quick recovery of tourist arrivals, and in spite of a fall in exports overall net trade contributed positively to expansion primarily due to a sharper decline in imports.

Continuing investments in the EU both public and private have increased slightly in the first semester of 2023, however the situation varies across member states. The situation becomes apparent when accounting for weak demand, high energy costs, high financing costs and labor shortages. Additionally, bank lending has become stricter for all stakeholders. Higher interest rates and tighter conditions set by the banks and regulators for enterprises and households lower demand for new loans, thus limiting investments, property prices and transactions.

Nevertheless, total investment spending is expected to grow consistently. Corporations guided by the need of energy savings and transition to a low-emission production are projected to increase investments to comply with the demanding environment. Furthermore, government investment in infrastructure will be impacted positively by the Recovery and Resilience Facility (RRF) and cohesion policy funds. Total investment growth in the EU is expected to slow to 1,2% in 2023 and to pick up to 1,5% in 2024 and 2,3% in 2025.

Saving rates are to remain stable after increasing this year. Higher saving rates cut a considerable amount of consumption thus hindering further development. In addition, high interest rates incentivize consumers to keep further savings, however as wages increase and purchasing power returns to previous levels in 2024 and 2025 it will boost consumption.

Following unemployment in the EU has dropped to a record low in 2023, suggesting a strong performance despite economic slowdown. Meanwhile, high employment and a plethora of vacancies and shortages has been observed in the labour market and points to structural problems in the labour market. Shortages are prevalent in certain sectors and occupations such as healthcare, hospitality, ICT, etc. Forecasts show that the labour market remains resilient and as economic growth picks up so will employment. Employment is set to increase by 1,0% in 2023 and then by 0,4% in 2024 and 2025.

As far as public debt is concerned, the overall negative economic and geopolitical environment in combination with high interest rates create a straining fiscal situation for governments. Member States have announced the termination of energy-related measures, and it is expected to have a positive impact on deficit, further improving deficit projections. Nonetheless, higher interest rates create an unfavorable environment for governments to borrow from the market and make a negative impact on government budgets since they increase the cost of servicing public debt. Fiscal

policies adopted by Member States are not expected to set out of trajectory inflation or debt-to-GDP ratio. The EU debt-to-GDP ratio is set to continue to decline to 83% in 2023 due to inflation, as measured by the GDP deflator. In 2024 and 2025, the debt ratio is projected to broadly stabilise, remaining above the 2019 level of around 79%.²⁶

As macroeconomic projections are not optimistic enough, a level of uncertainty rules over the expectations of both enterprises and households, hindering economic growth and further destabilizing public finances. Monetary policy needs to respond effectively to those posing threats, as it can help regulate the overall situation.

7.2. Transitioning towards a Digital Euro

7.2.1. History of the Digital Euro

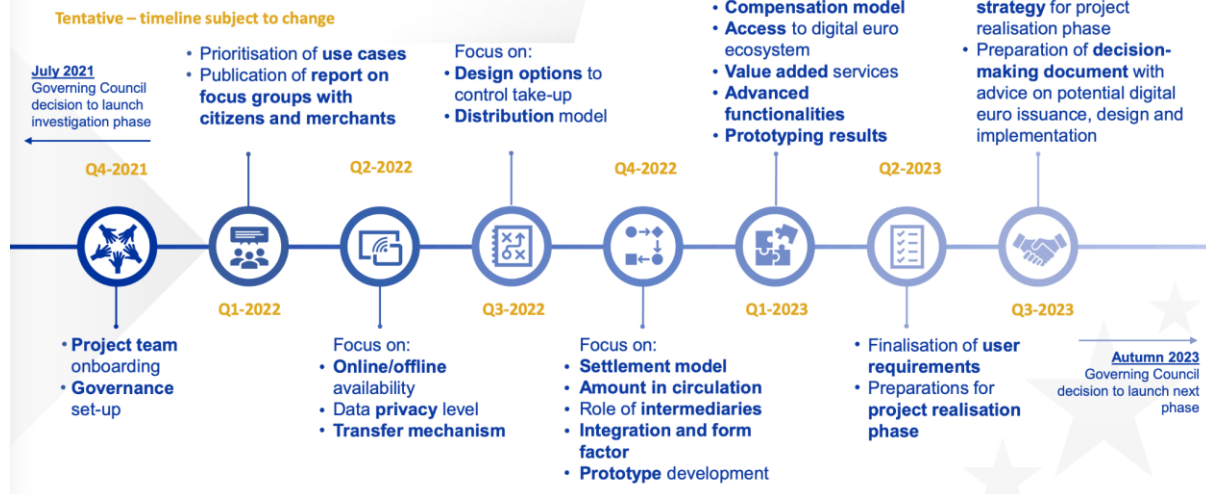
On the 5th of December 2019, the European Commission and the European Council stated that the European Central Bank should research the potential launch of a public digital currency in order to tackle the negative effects the private stablecoins posed in the economy. From that point on, it became obvious that the ECB was slowly preparing to introduce and launch investigations on the potential use of a Digital Euro. In October 2020, the Eurosystem High-Level Task Force released the "Report on a Digital Euro" outlining the prerequisites, driving factors and potential design elements for the Digital Euro.²⁷

The project of the Digital Euro was first launched in July 2021, when the Governing Council of the European Central Bank decided to initiate an "Investigation Phase", which lasted two years. The main task during those two years was to research and come up with possible policy and technical options to form the basis of the design of the digital currency, as well as the impact it might have on individuals, businesses and the European Society overall.

²⁶ GENTILONI, P. (2023) *Autumn 2023 economic forecast: A modest recovery ahead after a challenging year*. [Online] Available from: https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/autumn-2023-economic-forecast-modest-recovery-ahead-after-challenging-year_en

²⁷ European Central Bank (2020) *Report on a Digital Euro*. [Online] Available from: https://www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro~4d7268b458.en.pdf

Where do we stand?



Source: European Central Bank

To reach that goal, the Eurosystem conducted exercises, such as a prototyping exercise and a market research exercise, in order to test the reliability of the digital euro, simulate the payment system of the Digital Euro, test the development of user interfaces and much more.

The results showed that the Digital Euro could be very easily integrated to the already existent payment system of the European Union and that the designed model still has a plethora of options regarding the implementation of more innovative features and technology. Also, it was realized that by the use of independent designs, the Digital Euro could in theory be used as much online, as it could offline. This in itself increases the effectiveness and usefulness of the proposed digital currency.

As part of the Investigation Phase, market research on the digital euro began in January 2023. Its aim was to indicate the technical components that would be needed to support the initiative. Totally, twelve components were recognized that would work on supporting the issuance and initiation of the digital euro, the way the transactions will be processed and settled, the management and protection of user data and all fundamental user-interface components, all of whom could be developed by either central banks within the eurozone or by market actors.²⁸

²⁸ European Central Bank (2023) *Progress on the Digital Euro Investigation Phase*. [Online] Available from: <https://www.ecb.europa.eu/paym/intro/news/html/ecb.mipnews230714.en.html>

The recognized technical components according to the “Market Research on Possible Technical Solutions for a Digital Euro” were the following:²⁹

- a) The Settlement component, which is responsible for providing 24/7 instant gross settlement functionality. In this category, settlement equals the completion of transactions with the aim of irrevocable and unconditional discharging of payment obligations through transfer of money, and it is responsible for the settlement of all digital euro transactions and the reporting on those settlements in a way that protects the privacy of the users. This component also records digital euro holdings while processing said transactions.
- b) The DCA (Dedicated Cash Accounts) Management component, which is responsible for providing intermediaries that are in possession of their own DCAs with liquidity management functionalities to allow transfers of liquidity between the digital euro service platform and TARGET Services, and the funding and defunding of users’ digital euro holdings.
- c) The Data Warehouse component, which is a database regarding the activity of intermediaries in the Eurosystem, with the purpose of achieving legally relevant data for regulatory purposes and providing data and tools for historical, statistical and regulatory reporting, as well as advanced analytics while maintaining the general privacy requirements of the digital euro components.
- d) The Offline Solution Component, which refers to the ability of users to make and receive offline payments. The required verification and recording process of the transaction would rely completely on the two end users’ devices that are executing the transaction.
- e) The Access Gateway component, which is the component that enables network connectivity and communication interfaces between external actors and the digital euro components, acting as a single-entry point and providing a unified interface to all of the components, while at the same time providing additional technical services that are fundamental for security and reliability.
- f) The Digital Euro App component, which is an option that might not be included in the final version of the project, but would provide a strong visibility for the digital euro and promote a standard user experience, connecting users to intermediaries and providing the market with the minimum required development, ensuring that all intermediaries can maintain their roles in digital euro distribution.
- g) The Integrated Banking App Software Development Kit (SDK) component constitutes yet another component where uncertainty exists around whether it

²⁹ European Central Bank (2023) *Market research on possible technical solutions for a digital euro*. [Online] Available from: <https://www.ecb.europa.eu/paym/intro/news/html/ecb.mipnews230113.en.html>

will be included in the final scope of the project. It exists as an addition to the Digital Euro App, and its purpose is to give users the option to gain access to digital euro services through the existing banking apps distributed by intermediary financial institutions and integrate such services into them.

- h) The Proxy Lookup component is another component that may not be included in the finalized version of the initiative. It would consist of a shared repository that allows intermediary institutions to pair mobile phone numbers with the corresponding account/wallet details of end users. The repository can be queried to retrieve relevant details that are required for a digital euro transaction, provided to the requestor via a lookup response.
- i) The Onboarding Repository component, similarly, uncertain with the previous components, is a database needed to uniquely identify all the different digital euro end users across the digital euro environment, based on an identifier which is created by hashing a unique national personal identifier (such as a taxpayer ID).
- j) The Dispute Management component, which will be responsible for clarifying issues that occur during the transactions.
- k) The Fraud and Risk Management component, which will be responsible for carrying out risk management and fraud prevention and detection measures in order to monitor digital euro activities within the designated area of responsibility, along with the similar systems of intermediary institutions.

Overall, the Investigation Phase was a success and gave fruitful results. Having ended in October 2023, it paved the way for further implementation of the project. The next phase of the actualization of the Digital Euro, the “Preparation Phase”, was launched in November 2023. Its aim is to prepare for a potential issuance of the currency, taking action such as finalizing the Digital Euro Rulebook, developing a digital euro platform and experimenting towards meeting the needs of both the users and the Eurosystem. Despite all the progress, the decision on whether the digital euro will be issued or not will only be reached only after the Union considers adopting the legislative framework for the European Union at a European level.³⁰

7.2.2. Aims of the Digital Euro

The main goal of the Digital Euro is to tackle the risk that is caused by the rise of digital money in recent years. Particularly, the trust of the Euro could be damaged as people’s reliance on private money heightens, undermining the international role of the Euro, especially in the case that other large economies introduce transnational central bank

³⁰ European Central Bank (2023) *Progress on the Digital Euro Investigation Phase*. [Online] Available from: <https://www.ecb.europa.eu/paym/intro/news/html/ecb.mipnews230714.en.html>

digital currencies. Furthermore, riskless digital payments cannot be ensured from private sector banks that do not possess a strong monetary anchor like a central bank does. In the current state of things, private banks might fail to guarantee stable convertibility rates with central bank money, since they do not have assets to back their value.

Those are the problems that pushed the European Central Bank to launch the project of the Digital Euro, a currency that would not replace cash but exist alongside it, allowing it the Euro to be used in digital form, ensuring the stability of the currency even in digital payments and moreover protecting the strategic autonomy and the monetary sovereignty of the EU.

Regarding the development of the Digital Euro, the ECB aims to make the currency low-cost, high-speed, easy to use and secure for both individuals and businesses. It also aims to the inclusivity of people that have limited access to digital payments and promote their financial inclusion. The ECB has also stated that the digital euro is not intended to be a form of investment but strictly a means of payment, so as to ensure that private banks continue on their role of being lenders and not cause tensions between banking institutions.³¹

7.2.3. Advantages

As talks around the subject of the issuance of a Digital Euro from the European Central Bank begin to enter more and more into the sphere of public interest, more and more specialists speculate and comment around the advantages and the disadvantages of the digital currency. As with every endeavor, this one is very beneficial for the Union, but it doesn't come without cost or complications.

Compared to the highly fluctuating cryptocurrencies, the Digital Euro has an assured stability of its value through its connection and issuance from the European Central Bank. This means that it can be used as a reliable means of digital payment in European transactions, as it goes on par with the global phenomenon of the digitalization of the economy. Furthermore, the Digital Euro will render such transactions secure, fast, cost-efficient and inexpensive, as it will be used free of charge inside the Eurozone.³²

The Digital Euro also differs from other forms of digital payment because of the fact that not only can it be used even without a bank account or the need of an internet

³¹ European Central Bank (2022) *Key objectives of the digital euro*, European Central Bank. [Online] Available from:

<https://www.ecb.europa.eu/press/blog/date/2022/html/ecb.blog220713~34e21c3240.en.html>

³² European Central Bank (2023) *FAQ on a digital euro*, European Central Bank. [Online] Available from: https://www.ecb.europa.eu/paym/digital_euro/faqs/html/ecb.faq_digital_euro.en.html

connection, but it also ensures privacy for the users, the same privacy one would have when using cash.

The initiative also reinforces the EU's strategic autonomy as it reduces dependence on non-European payment providers and simultaneously acts as competition towards their overall dominance in the market. Moreover, with the implementation of the Digital Euro, the EU becomes a pioneer in the field of digital finance and CBDCs and makes payments within the Eurozone more competitive and innovative.³³

7.2.4. Obstacles/Disadvantages

The Digital Euro does not come without its own share of problems regarding its application to the European economy. The challenges are many and range from the applicability of the currency to non-Euro member states, to the involvement of commercial banks and much more.

First and foremost, a review made by the Economic Governance and EMU Scrutiny Unit of the European Parliament stated that the Digital Euro might face great challenges in member states outside the Eurozone. As stated in the report, "Any arrangement between the ECB and a non-euro area national central bank would have to be preceded by an international agreement between the European Union and the third country". The most fundamental agreements that need to be reached will be data sharing agreements between the EU and such countries. The reason this is the most rudimentary agreement is that Central Bank Digital Currencies are on their root closed loop data cycles.³⁴

Furthermore, issues arise with the distribution of the Digital Euro to retail banks. It is the European Central Bank's purpose to outsource the deployment of the currency to the financial institutions of the European Union, so as to broaden the CBDC's scope and make it more competent. However, this plan raises conflicts of interests between the ECB and the retail banks, due to the fact that the banks' profits would fall significantly, as the digital euro makes payment services obsolete. To change this, the ECB would have to allow the banks to charge for digital-euro related services, to make it a profitable endeavor for such institutions.³⁵

³³ European Central Bank (2023) *FAQ on a digital euro*, European Central Bank. [Online] Available from: https://www.ecb.europa.eu/paym/digital_euro/faqs/html/ecb.faq_digital_euro.en.html

³⁴ HAQSHANAS, R., (2023) *Legal and technical hurdles await EU's Digital Euro in Non-Euro States*. *Cryptonews*. [Online] 5th September, Available from: <https://cryptonews.com/news/legal-and-technical-hurdles-await-eus-digital-euro-in-non-euro-states.htm>

³⁵ European Commission (2023) *A well-designed Digital Euro would avoid risks for financial stability and Banks' profitability*. [Online] Available from: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/well-designed-digital-euro-would-avoid-risks-financial-stability-and-banks-profitability-2023-06-28_en

Another obstacle that arises is whether there will be demand for the issuance and use of a digital euro. Analysts indicate that the Digital Euro will likely be considered a “below average” payment method in comparison to the privacy and convenience the other existing payment methods offer, such as cash and card payments. There is extensive need for many adjustments in order to make the Digital Euro an attractive choice for broad public use, which is hard because the ECB has the objective of protecting the business models of the banks in the Eurozone.³⁶

Another point that stands as an area for debate around the issue of the digital euro is whether the European Central Bank has the jurisdiction to issue a digital currency. It is unclear whether or not the bylaws of the ECB give it the competence to issue a CBDC. In general, states could recognize the legal tender of any sort of currency, but such an act upon a digital currency raises issues that have to do with the design features of CBDCs. The legal tender status should generally be given to means of payments that are accessible by the majority of the population, and that is the reason why cash is recognized as legal tender, due to its accessibility and inclusivity on even socially vulnerable groups and it is automatically connected with exercising rights such as the right to freedom of action and the right to property. So, the question at hand is whether this implies that every citizen of the EU should have the technical means to use the digital currency (which is implied in practice) and at a second level, whether central banks need authorization from their states to issue them. Another issue that arises with the legal tender status has to do with the fact that banknotes are reliable and available as currency even in periods of crisis. It is deemed necessary that if the Digital Euro becomes legal tender and widely used, the protection of networks and technical specifications around the use of the digital euro should be amplified in a significant manner, even adopting laws that protect its value and integrity against cyber-attacks.³⁷

The European Central Bank has also made statements that bind it towards reducing its environmental impact, as a part of the larger bindings made by the European Union towards achieving carbon neutrality. Although it is imperative that the institution continues on this road, the Digital Euro might jeopardize this goal, due to the fact that depending on the operating design of the digital currency, energy consumption might be more than significant.

Analysts indicate that there are two types of operating designs that can be used; a centralized ledger system and a decentralized blockchain system. The blockchain system has tremendous energy needs. Calculations predict that the annual energy consumption of a blockchain operating design for the digital euro could potentially surpass the annual energy consumption of Hungary (39.7TW). A centralized ledger

³⁶ MONNET, C. and NIEPLET, D. (2023) Will the Digital Euro be dead on arrival?, *The Banker* [Online] Available from: <https://www.thebanker.com/Will-the-digital-euro-be-dead-on-arrival-1695281622>

³⁷ MAZZETTI, F. (2022) ‘The legal obstacles on the road to Central Bank Digital Currency (CBDC): The Digital Euro Project’, *SSRN Electronic Journal* [Online] Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4176167

system is significantly less energy-intensive, needing just $\frac{1}{8}$ of the energy a decentralized blockchain system would use.³⁸

It is not yet decided whether the European Central Bank will choose a centralized or decentralized operating design. Despite that, it is imperative for the institution to uphold its binding to reduce its carbon footprint, while at the same time exploring and pursuing the goal of developing a robust, efficient and innovative CBDC.

7.2.5. Impact on the Economy of the European Union

The biggest concern with the implementation of the digital euro is its impact on the economy of the European Union. While the prognosis is positive and ideally there will be a lot of positive effects on the economy, analysts indicate that the project also implicates risks on the stability of the European economy that stem from the design of the currency.

Analysts indicate that if the individual holding limit is set at 3,000D€, the outflow from bank deposits could be up to 739bn€, which is equivalent to a 10% loss of total household deposits and 3% of all bank liabilities. With lower holding limits, this number is limited and subsequently the damage caused from the deposit loss is smaller.³⁹

The threat is not as big for large retail banks as it is for smaller ones, as their most stable source of funding is deposits, and they could face large decreases in profitability should the demand for the digital currency increase exponentially. In this scenario, the small financial institutions' return on equity could decrease on average from 3.7% to 2.4%.⁴⁰

On the other side, as the ECB is incapable of managing direct interaction with potentially hundreds of millions of Digital Euro holders, financial institutions will be necessary to intermediate in all front-end user needs, as they do with cash today. Those financial intermediaries are also sure to offer additional services to users, an action which would certainly compensate for the loss of holding caused by the individual holding limit of the digital euro.⁴¹

³⁸ MOOJI, A.A.M. (2022) 'The Digital Euro and energy considerations: Can the ECB introduce the digital euro considering the potential energy requirements?', *German Law Journal*, 23(9), pp. 1246–1265

³⁹ European Commission (2023) *A well-designed Digital Euro would avoid risks for financial stability and Banks' profitability*. [Online] Available from: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/well-designed-digital-euro-would-avoid-risks-financial-stability-and-banks-profitability-2023-06-28_en

⁴⁰ ASSI, F., KATZ, E., HELM S. and RICE, B (2023) *Implications of the digital euro*. *The Banker*. [Online] 18th October, Available from: <https://www.thebanker.com/Implications-of-the-digital-euro-1697614388>

⁴¹ European Commission (2023) *A well-designed Digital Euro would avoid risks for financial stability and Banks' profitability*. [Online] Available from: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/well-designed-digital-euro-would-avoid-risks-financial-stability-and-banks-profitability-2023-06-28_en

While a digital euro could provide citizens easy access to a secure digital asset unlike physical cash, its design requires careful consideration to avoid potential issues. If not planned carefully, a digital euro may present itself as an appealing alternative to bank holdings in both times of normalcy and times of financial distress. Specifically, during a crisis, savers could potentially transfer large sums from commercial banks into digital euro accounts with the central bank, heightening uncertainty and taking away from commercial banks deposits that are of utmost importance.

Furthermore, the promise of holding large amounts of a risk-free digital currency outside of traditional banks could act as an incentive for deposit-holders to transfer their money away from private institutions and into digital euro holdings even during times of financial stability. This gradual digital migration would weaken banks' balance sheets and amplify fluctuations in broader economic conditions. A well-defined structure and clear guidelines are essential for the introduction of any central bank digital currency, ensuring the preservation of financial stability while providing convenient services for the public.⁴²

8. Conclusion

In conclusion, the economic situation caused by the rising inflation, the fluctuating energy prices, and the uncertainty in global markets has been a result of the issues faced by the European Union, from the effects of the Covid-19 pandemic to the war in Ukraine and more. In order to address these issues, the European Central Bank has been involved in using a plethora of traditional and unconventional monetary policy tools. The European Central Bank is determined to achieve price stability, and this is demonstrated by the quantity of interest rate changes and creative policies designed to control price fluctuations and ensure economic recovery and stability.

The European Central Bank must remain alert as the Eurozone still hasn't escaped the aftermath of the crises that have arisen in recent years, given the interdependence of variables including unemployment, inflation, and economic growth. So as to make sure that the recovery is inclusive and long-lasting, the ECB will need to continue to try and ensure a careful balance between battling inflation and promoting economic growth. To guarantee the stability and prosperity of the European Union in the face of uncertainty, it will be of utmost importance to prioritize measures such as managing supply chain disruptions, promoting confidence in the common currency, and taking proactive measures in response to geopolitical problems.

[updates/well-designed-digital-euro-would-avoid-risks-financial-stability-and-banks-profitability-2023-06-28_en](#)

⁴² ASSI, F., KATZ, E., HELM S. and RICE, B (2023) *Implications of the digital euro*. *The Banker*. [Online] 18th October, Available from: <https://www.thebanker.com/Implications-of-the-digital-euro-1697614388>

The European Central Bank's pursuit of a digital euro demonstrates its ability to adjust to the changing financial environment and recognizes the importance of the increasing use of electronic payment systems, as well as its need to make adjustments in order to ensure an effective transition into the digital era and further bolster its strategic autonomy. But there are still many problems and uncertainties that need to be tackled before the European Union is convinced that such an initiative would be beneficial for the prosperity and the development of the European economy.

Questions Raised

As outlined in the Rules of Procedure of the European Central Bank, in Europa.S. 2024 the European Central Bank will not have any Questions Raised. It will have Agenda Points that will be Discussed, Presented, and Adopted by the Governors and the Presidency during the first session of the European Central Bank.

Further reading

1. <https://www.ecb.europa.eu/mopo/intro/transmission/html/index.en.html>
2. <https://www.bankofgreece.gr/en/main-tasks/monetary-policy/non-standard-measures>
3. https://www.ecb.europa.eu/ecb/educational/explainers/tell-me-more/html/what_is_inflation.en.html
4. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4176167
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7. https://www.ecb.europa.eu/paym/digital_euro/investigation/profuse/shared/files/dedocs/ecb.dedocs230113_Annex_1_Digital_euro_market_research.en.pdf?8f308548cc80b5f187a5560bd50e72ce
8. https://www.cambridge.org/core/services/aop-cambridge-core/content/view/23A3E0D00334B06E557C137CEFA3598D/S2071832222000785a.pdf/digital_euro_and_energy_considerations_can_the_ecb_introduce_the_digital_euro_considering_the_potential_energy_requirements.pdf

Useful Links

1. https://european-union.europa.eu/index_el
2. <https://www.ecb.europa.eu/home/html/index.en.html>
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