THE IMPACT OF NEGATIVE INTEREST RATES: FOUR MAIN LESSONS LEARNED

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Abstract: *The European Central Bank's (ECB) adoption of a negative interest rate policy (NIRP) marked a pivotal moment in modern monetary policy. Implemented in June 2014 in response to the financial instability caused by the 2008 global financial crisis and the subsequent European sovereign debt crisis, NIRP aimed to stimulate credit supply and guide inflation back towards the ECB's medium-term target of "below, but close to 2%." Alongside extensive bond purchase programs and long-term refinancing operations, NIRP became a central part of the ECB's expansionary monetary policy strategy. However, the gradual exit from this unconventional policy has raised critical questions about the lessons learned from NIRP and its potential future use as a targeted monetary tool. This paper systematically reviews the effects of NIRP on banks, businesses, households, and capital markets, assessing whether the ECB's initial objectives were achieved. Additionally, it focuses on the unique institutional role of the ECB as the central bank of a currency union with 20 member states, each with diverse fiscal frameworks. The complexity of the Eurozone's monetary system introduces challenges that differentiate the ECB from other central banks, such as the Federal Reserve or the Bank of Japan, significantly affecting the efficacy of negative interest rates. The aim of this paper is to synthesize insights from the past decade of NIRP implementation and propose how this instrument could be deployed more effectively in future phases of expansive monetary policy. Emphasis is placed on minimizing potential adverse effects, such as financial instability and excessive strain on the banking sector, while enhancing the tool's effectiveness in achieving its goals.*

Key-words*: negative interest rate policy (NIRP), monetary policy, Eurozone.*
JEL Classification*: E43, E52, E58, E63.*

1. Introduction

The introduction of the negative interest rate policy by the European Central Bank (ECB) marked an unprecedented turning point in the history of modern monetary policy. In response to the ongoing economic turmoil triggered by the global financial crisis in 2008 and the subsequent European sovereign debt crisis, the ECB was forced to significantly expand its traditional monetary policy instruments. In addition to extensive bond purchase programs and long-term refinancing operations, the ECB introduced the deposit rate for commercial banks into negative territory for the first time in June 2014. This measure was intended to stimulate greater lending, bring inflation back towards the medium-term target of "below, but close to, 2%" and combat deflationary tendencies. The negative interest rate policy, which was expanded several times in the following years, was thus an essential part of the ECB's expansionary monetary policy strategy.

The ECB has now found a way out of this unconventional policy. Interest rates have been gradually raised from negative territory and the economic framework in the euro area has stabilized. This development provides cause for critical reflection: the question of what lessons can be learned from the period of negative interest rate policy is of great importance for the future design of monetary policy measures. In particular, the question arises as to what extent negative interest rates can be used as a targeted monetary policy instrument in the future and what conditions must be met in order to maximize their effectiveness.

This paper aims to systematically review the experiences with the ECB's negative interest rate policy and to draw conclusions for the future use of this instrument. It examines the effects that negative interest rates have had on banks, companies, households and the capital markets and the extent to which the ECB's original objectives have been achieved. In

addition, the focus is on the specific role of the ECB as the central bank of a currency area with 20 member states and different fiscal policy frameworks. This institutional peculiarity of the ECB leads to additional challenges compared to other central banks, such as the Federal Reserve or the Bank of Japan, and has a significant impact on the effectiveness of negative interest rates.

The aim of this work is to systematize the findings of recent years and to derive suggestions on how negative interest rates can be used more effectively in future phases of expansionary monetary policy. This could help to increase the effectiveness of this instrument while minimizing possible undesirable side effects, such as a threat to financial stability or an excessive burden on the banking sector.

Overview of monetary policy instruments of the European Central Bank

The European Central Bank (ECB) has a range of monetary policy instruments at its disposal to achieve its primary objectives, in particular to ensure price stability in the euro area. These instruments are divided into standard instruments and special or unconventional instruments. First, we will look at the standard instruments that are traditionally used to implement monetary policy and are aimed at controlling short-term interest rates, providing liquidity to the banking sector and controlling the money supply.

Standard monetary policy instruments

a. The three key interest rates of the ECB

The key monetary policy rates are the ECB's main tool for influencing conditions on the financial markets and thus ultimately economic growth and inflation. There are three main key interest rates:

i. Interest rate on main refinancing operations (MRO)

This interest rate is the ECB's main reference interest rate and determines the cost at which commercial banks can refinance themselves with the ECB for a period of one week. The main refinancing operations are the primary source of liquidity for commercial banks. Changes in the MRO rate have a direct impact on short-term interest rates in the euro area and thus indirectly influence lending and savings behaviour.

ii. Deposit facility rate

This rate indicates the interest rate at which commercial banks can park short-term excess liquidity overnight with the ECB. It represents the lower bound for short-term interest rates in the money markets, as banks would otherwise invest their excess reserves with other banks at a lower interest rate. By introducing a negative deposit rate in 2014, the ECB tried to encourage banks to pass on excess liquidity to the real economy in the form of loans instead of keeping it with the central bank.

iii. Marginal lending facility rate

This rate indicates the rate at which commercial banks can obtain liquidity from the ECB overnight if they experience unexpected liquidity shortages. The marginal lending facility rate is usually higher than the main refinancing rate and thus represents the upper limit for short-term money market rates.

b. Open market operations

Open market operations are an essential tool for managing liquidity in the banking system. The ECB conducts these operations mainly through reverse transactions (repos), in

which securities are exchanged for liquidity. These operations are carried out through weekly and monthly refinancing operations, with the main refinancing operations (MRO) and longer-term refinancing operations (LTRO) being the most important. By adjusting the size and terms of these operations, the ECB can influence the liquidity situation in the banking system and thus control short-term interest rates. In addition, the ECB also uses structural open market operations to adjust the longer-term liquidity situation and fine-tuning operations to balance out short-term liquidity fluctuations.

c. Standing facilities

The ECB's standing facilities include the deposit facility and the marginal lending facility (already described above). These instruments offer commercial banks the opportunity to obtain liquidity or invest excess liquidity at any time. They serve to limit short-term money market rates and provide banks with clear guidance on the maximum cost of short-term refinancing and the minimum return on excess liquidity.

d. Maintenance of minimum reserves

Another important standard instrument of the ECB is the minimum reserve requirement. Commercial banks in the euro area are required to deposit a certain percentage of their deposits as minimum reserves with their national central banks. These minimum reserves help to stabilize money market interest rates and provide the ECB with an instrument for managing liquidity in the banking system. By adjusting the minimum reserve ratio, the ECB can influence the available liquidity and thus also control lending and the money supply.

The combination of these standard instruments enables the ECB to control short-term money market interest rates, regulate the liquidity situation in the financial system and thus indirectly influence inflation, economic growth and financial stability in the euro area.

Special monetary policy instruments

In addition to the standard instruments, the European Central Bank (ECB) has been using a number of unconventional instruments since the global financial crisis to ensure monetary policy transmission and stability in the euro area. These special instruments have been used in particular in phases of extreme economic instability and low interest rates to achieve the desired effects on inflation and economic growth.

a. Asset Purchase Programs (APP)

The ECB's asset purchase programs involve the purchase of various financial assets in order to increase liquidity in the banking system and lower long-term interest rates. These programs are part of the so-called quantitative easing (QE), which expands the money supply in an unconventional way when conventional interest rate policy reaches its limits. The main components of the APP are:

- Public Sector Purchase Program (PSPP): purchases of government bonds and other public debt securities.
- Corporate Sector Purchase Programme (CSPP): Purchases of corporate bonds to reduce the financing costs of the private sector.
- Covered Bond Purchase Programme (CBPP): Purchases of covered bonds from banks.
- Asset-Backed Securities Purchase Programme (ABSPP): Purchases of asset-backed securities.

The aim of these programmes is to reduce the interest rate level of long-term bonds, promote lending and thus stimulate economic activity and inflation in the euro area.

b. Unlimited Bond Purchases (Outright Monetary Transactions, OMT)

The Outright Monetary Transactions (OMT) are an instrument that the ECB introduced in 2012 to combat the fragmentation of the financial markets in the euro area and to ensure that monetary policy is uniformly effective in all member states. As part of the OMT programme, the ECB announced that it would purchase unlimited government bonds from member states on the secondary market under certain conditions.

OMT was developed specifically in response to the sovereign debt crisis to prevent individual member states from being excluded from the capital markets due to rising risk premiums on their bonds. The condition for the use of OMT is that the country in question accepts an EU stabilization program (e.g. the ESM) and commits to structural reforms.

c. Transmission Protection Instrument (TPI)

The Transmission Protection Instrument (TPI) is a new instrument introduced by the ECB in July 2022. It is intended to ensure that monetary policy transmission, i.e. the effectiveness of monetary policy measures, functions smoothly in all member states of the euro area. TPI allows the ECB to specifically purchase bonds from individual countries in order to prevent the rise in yields caused by market turbulence or speculation and not justified by fundamental economic factors.

The TPI is particularly important in a currency area such as the euro area, where member states have different fiscal frameworks and risk premiums. It is designed to prevent differences in financing costs between countries from undermining the effectiveness of the common monetary policy.

d. Indications of Future Interest Rate Policy (Forward Guidance)

Forward guidance is a monetary policy communication strategy in which the ECB provides indications of the future course of interest rate policy. This is usually done by making clear statements about the conditions under which key interest rates could be raised or lowered, as well as the expected duration of current interest rate levels.

Forward guidance has been increasingly used, particularly after the global financial crisis in 2008, to manage market participants' expectations and strengthen the impact of monetary policy even when key interest rates were already close to zero or negative. This strategy helps to reduce uncertainty in financial markets and allows the ECB to strengthen monetary policy transmission by building confidence in the stability of future interest rates.

e. Longer-Term Refinancing Operations (LTRO)

The Longer-Term Refinancing Operations (LTRO) are refinancing operations in which the ECB provides liquidity to commercial banks for a longer period than the weekly main refinancing operations. These instruments are used primarily in times of liquidity shortages to stabilize the banking sector and support lending to the real economy.
A special form of this instrument is the Targeted Longer-Term Refinancing Operations (TLTRO), which have been introduced since 2014 to specifically support lending to households and companies (with the exception of the real estate sector). Banks receive particularly favorable conditions in these programs if they achieve certain lending targets. The LTRO and TLTRO have strengthened lending in times of crisis and reduced banks' financing costs.

These unconventional monetary policy instruments significantly expand the ECB's arsenal and help to maintain the transmission of monetary policy even in extreme economic conditions. The targeted use of these instruments has helped to ensure the stability of the euro area and to support the economy through periods of low inflation and weak growth.

3. The effect of negative interest rates – Four Main Lessons Learned

The European Central Bank's (ECB) negative interest rate policy (NIRP) was one of the most unconventional monetary policy measures applied in modern economic history. It was designed to stimulate lending and bring inflation back to target levels in an economic environment characterized by low inflation, weak growth and the consequences of the global financial crisis. Despite some successes, important lessons have become clear in retrospect about the effectiveness and limitations of this policy. Four key lessons from the application of the negative interest rate policy are briefly summarized below.

1. Effectiveness of negative interest rates

Negative interest rates are effective as a monetary policy tool, but they mainly affect the short-term interest rate structure. The transmission to long-term interest rates is limited.

2. Need for yield curve steepening measures

To achieve a normal yield curve, measures at the long end, such as quantitative easing (QE), are needed. Negative interest rates alone are not sufficient for this.

3. Limited effectiveness of forward guidance

Forward guidance has not proven to be an effective tool. Markets often react only to a limited extent to communication announcements if these are not accompanied by further measures.

4. Fast exit from NIRP

The exit from a negative interest rate policy must be swift, especially when inflation is rising. A delayed exit increases the risk of a liquidity trap and uncontrolled inflation.

1st Lesson Learned: Effectiveness of negative interest rates

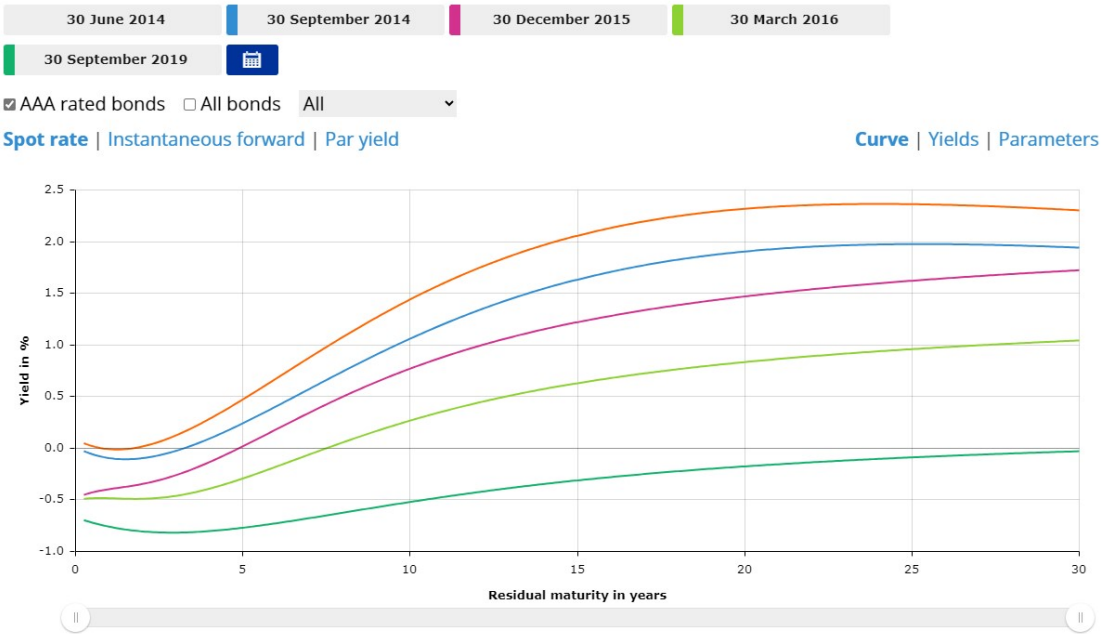
The introduction of negative interest rates as a monetary policy tool by central banks, in particular by the European Central Bank (ECB), was implemented in response to the challenges of the financial crisis and the subsequent economic stagnation. The basic assumption behind the negative interest rate policy is that it should encourage banks to lend more and save less money in order to stimulate economic activity. However, the analysis of the existing literature shows that this policy mainly affects the short-term interest rate structure, while its effect on long-term interest rates and general lending is limited.

Effect on short-term interest rates

Eggertsson et al.'s (2020) research argues that negative interest rates initially effectively penetrate short-term interest rates, but quickly lose effectiveness once deposit rates hit a lower bound (DLB). This DLB arises because banks are under pressure to pass negative rates on to their customers, but often do not do so in order not to lose the customer base. Once rates fall close to or below zero, many banks are unable to continue to lower their deposit rates as this could cause customers to withdraw their money. This results in the transmission of negative rates to bank deposits and thus to lending rates being greatly dampened.

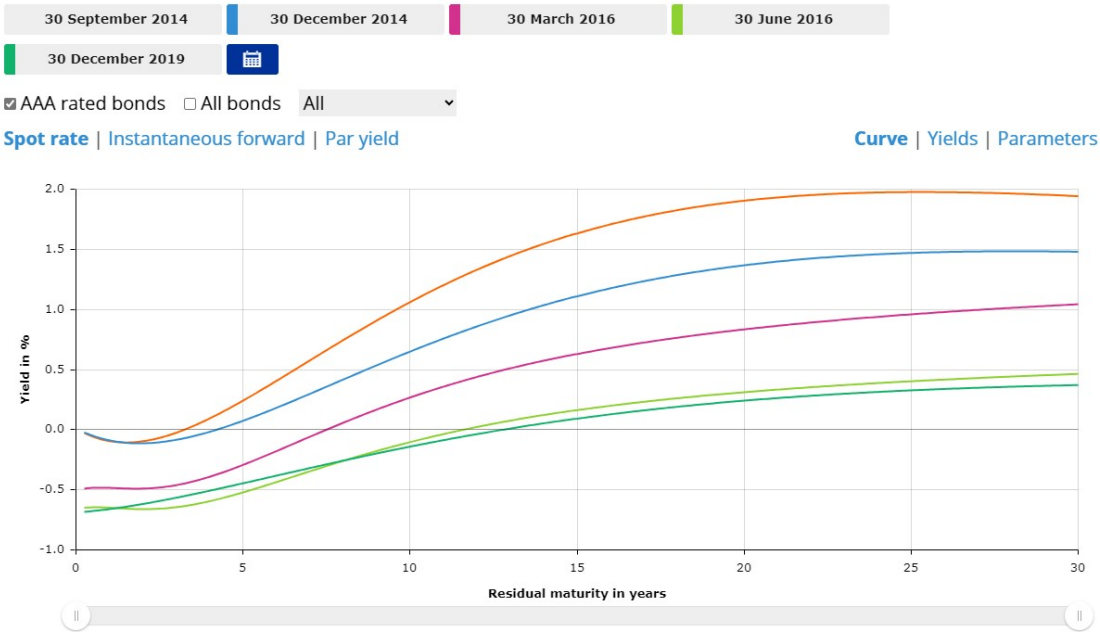
The Boucinha and Burlon (2020) study underscores these points by showing that banks that rely heavily on deposits show a weaker response to rate cuts. This dependence not only affects banks' ability to lend but also their overall profitability, which in turn can lead to more restrictive lending policies. In addition, it is found that communication and expectations about future monetary policy also play a crucial role in transmitting interest rate changes.

Figure 1: Yield curves at the moment ECB lowers deposit facility rate



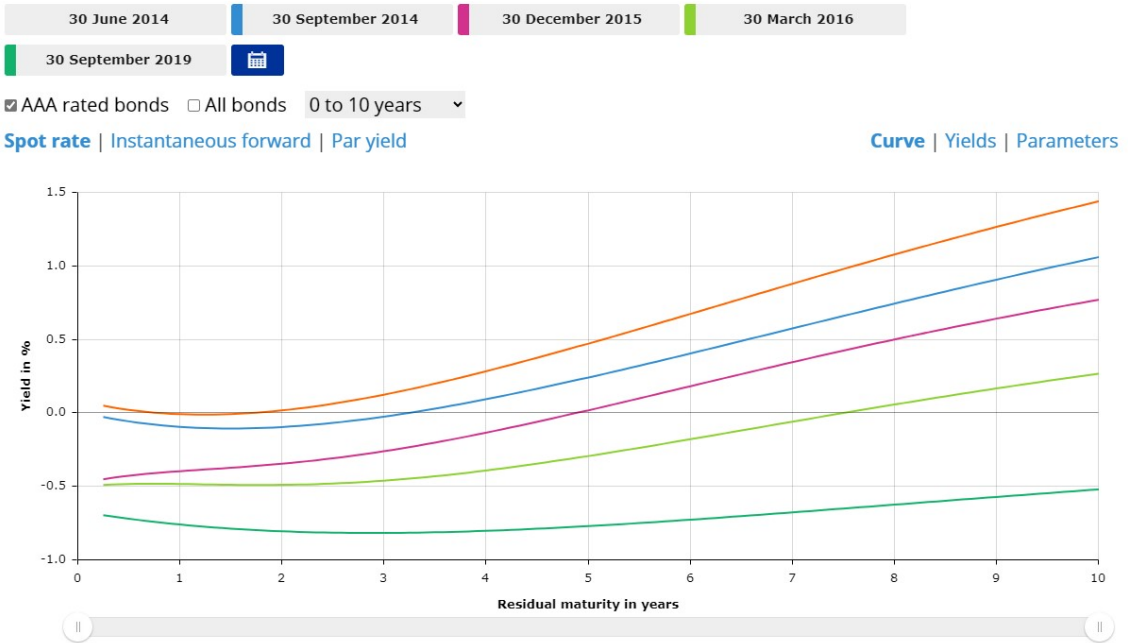
Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Figure 2: Yield curves 3 months after ECB lowers deposit facility rate



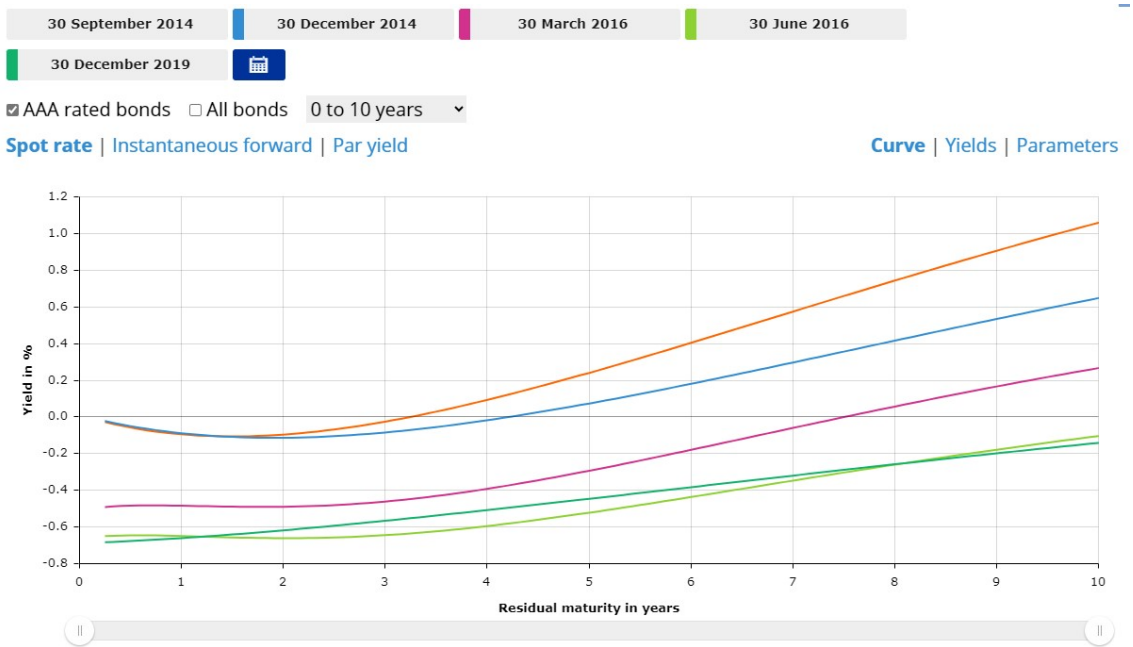
Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Figure 3: Yield curves at the moment ECB lowers deposit facility rate; Focus on short and medium term interest rates



Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Figure 4: Yield curves 3 months after ECB lowers deposit facility rate; Focus on short and medium term interst rates



Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Long-term impacts and the need for additional measures

In order to achieve a normal yield curve and effectively stimulate the economy, it is necessary to actively influence the long end of the interest rate structure as well. This is often achieved through quantitative easing (QE) measures. In recent years, the ECB has introduced several QE programs to lower long-term interest rates and support the economy. The literature suggests that such measures can have significant effects on the steepness of the yield curve.

The research of Bernanke (2020) provides valuable insights into the effectiveness of QE programs. He argues that QE not only lowers long-term interest rates directly, but also influences market participants' expectations via signals. If investors expect the central bank to keep interest rates low while QE programs are running, they are more willing to invest in riskier assets, which in turn stimulates economic activity.

In a detailed analysis, Vayanos and Vila (2021) show that the effectiveness of QE depends primarily on how bond purchases are structured. If purchases are concentrated on long-term bonds, they can influence long-term yields much more effectively than if purchases are evenly spread across different maturities. This targeted strategy helps not only to steepen the yield curve but also to stabilize it, which is crucial for long-term planning of companies and investors.

In summary, the literature shows that while negative interest rates as a monetary policy tool effectively influence short-term interest rates, the transmission to long-term interest rates and lending is severely limited. The dampening of the effect of negative interest rates is caused by the DLB and the structure of bank financing. To steepen the yield curve and achieve more comprehensive economic stimulation, additional measures such as quantitative easing and a clear communication strategy from central banks are needed. These measures are crucial to influence long-term interest rates and create an environment that promotes sustainable economic recovery.

2nd Lesson Learned: Need for yield curve steepening

The steepness of the yield curve plays a crucial role in monetary policy as it reflects market expectations regarding future interest rates and economic activity. A flat or inverted curve can indicate economic weakness, while a steeper curve indicates a healthy expansion of the economy. Steeperating the yield curve and thus achieving a normalized yield curve requires targeted action at the long end of the yield curve. A significant tool used by central banks, including the European Central Bank (ECB), is quantitative easing (QE). These central bank purchases of long-term bonds have proven to be effective in influencing the yield curve.

Quantitative easing as a tool to influence long-term interest rates

The ECB's introduction of QE was part of a broader program to lower long-term interest rates while supporting economic growth. The measures were aimed at increasing liquidity in the banking sector and stimulating lending. A study by Altavilla, Carboni and Motto (2015) shows that the ECB's bond purchases had a significant and sustained effect on asset prices, in particular by reducing long-term interest rates, which led to a flattening of short-term and an increase in long-term interest rates. This reduction in long-term interest rates was crucial for reducing borrowing costs and promoting investment in the Eurozone (Altavilla, Carboni and Motto, 2015).

In addition to the direct effects on interest rates, the QE policy also influenced the expectations of market participants. This reinforced the effect of the policy by making participants expect the ECB to maintain low interest rates in the long term. In this context, Ihrig et al. (2018) describes that the ECB's purchases caused a significant decline in long-term

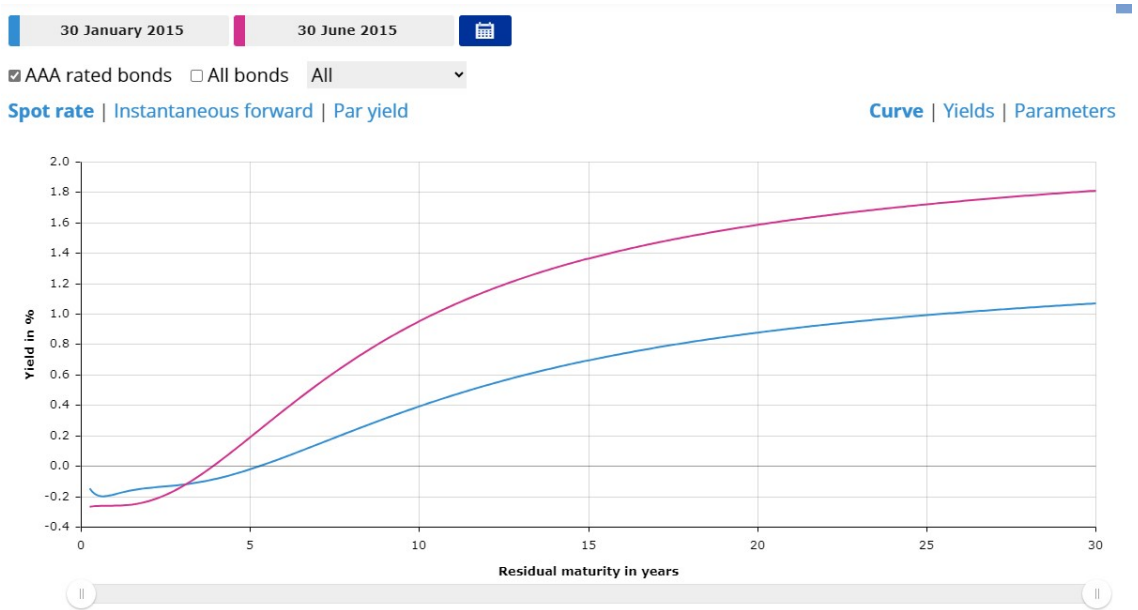
yields while stabilizing short-term interest rates. This led to a steepening of the yield curve and a normalization of the term structure (Ihrig et al., 2018).

Impact on the yield curve of long-term bond purchases

The ECB's targeted purchases of government bonds and other securities contributed significantly to the steepening of the yield curve. Bernanke (2020) highlights that these measures have a similar effect on the market environment as traditional interest rate cuts, but with the added benefit of stabilizing long-term asset prices. This stabilization is crucial because it provides investors with more security and thus generates greater demand for long-term assets. At the same time, the reduction in short-term interest rates allows for a higher spread between short- and long-term interest rates, resulting in a steeper yield curve (Bernanke, 2020).

The study by Eser et al. (2019) also shows that the ECB's various quantitative easing programs, in particular the purchase of long-term bonds, have significantly reduced long-term interest rates. These measures helped to provide investors with incentives to make long-term investments because expected future interest rates were more stable and lower. Through these effects, the ECB was able to successfully steepen the yield curve, which in turn boosted confidence in the economic recovery (Eser et al., 2019).

Figure 5: Yield curves, Focus on the period Jan 2015 – Dec 2016, when the largest volumes of OMT and APP were subscribed



Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Figure 6: Yield curves, 6 months later: Prove that the impact of OMT and APP Programs have worked

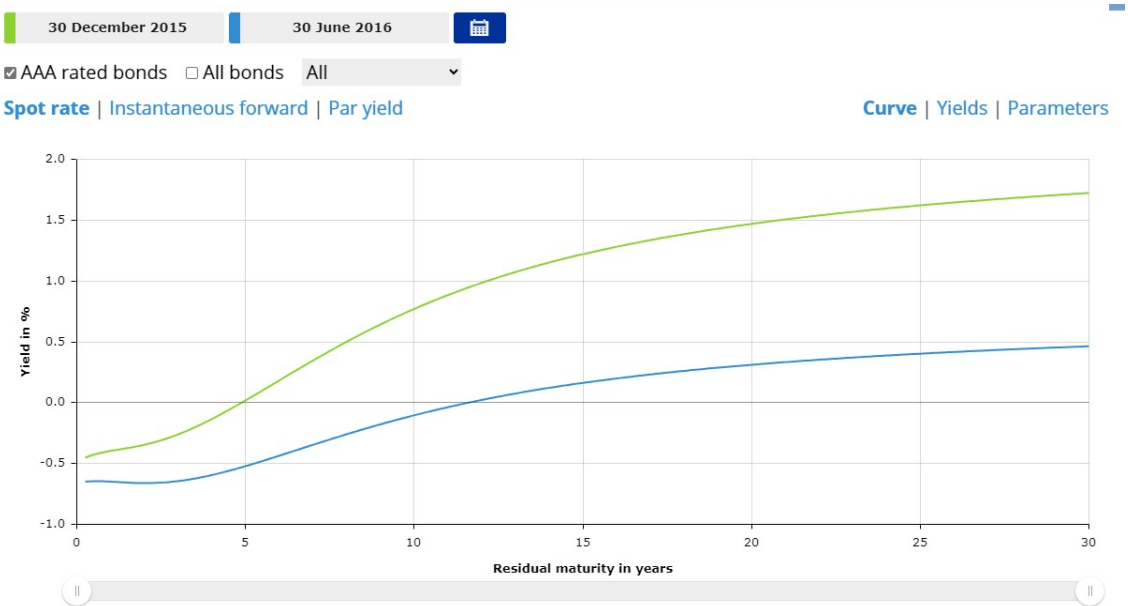
Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Yield Curve Control (YCC) and other instruments

In addition to quantitative easing, the ECB has also explored strategies to directly control the yield curve (Yield Curve Control, YCC). This strategy, first introduced by the Bank of Japan, involves the targeted purchase of long-term bonds to achieve certain yield levels. Ihrig et al. (2018) argue that this method affects the entire interest rate structure, especially in a low interest rate environment where traditional monetary policy measures are less effective. The YCC policy has shown in Japan to provide an effective way to control long-term interest rates and thus boost confidence in future economic developments (Ihrig et al., 2018).

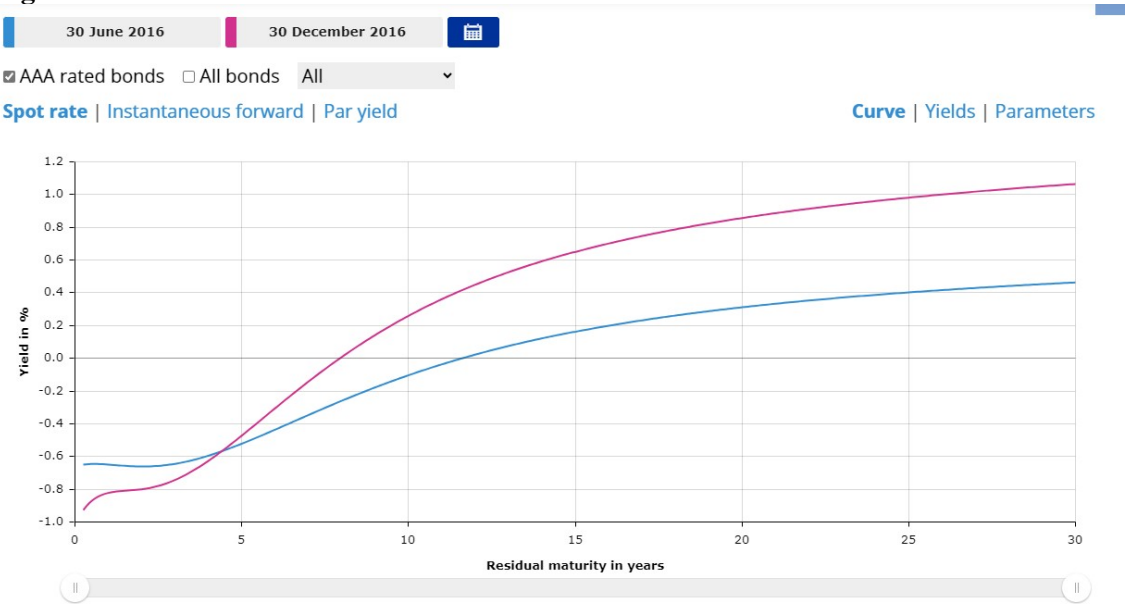
In summary, the ECB's quantitative easing measures and similar instruments, such as yield curve control, have a significant impact on the steepness of the yield curve. The ECB's targeted purchases of long-term bonds lowered long-term interest rates, which in turn led to a steepening of the curve. These measures have proven effective in stabilising the economy and bolstering investor confidence in the long-term outlook. Without these measures, the eurozone would have faced a persistently flat or inverted euro area economy.

Figure 7: Times of extreme flattening of yield curve: DFR lowered and APP + OMT are restricted as well



Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Figure 8: Point of Time of countermeasures



Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

Figure 9: Result: Yield curve becomes steeper again

Dashed lines indicate the spot rate based on all government bonds; solid lines on AAA-rated bonds only.

The ECB's Outright Monetary Transactions (OMT) and Asset Purchase Programme (APP) measures have proven effective in influencing the yield curve in the euro area. Both programmes aim to lower long-term interest rates and thus ease credit conditions. The charts clearly demonstrate this. OMT works primarily by announcing unlimited bond purchases, which signals to market participants that the ECB is determined to stabilise bond yields in crisis-hit countries. This reduces risk and flattens the curve, especially for longer-term bonds. APP focuses on large-scale bond purchases that increase demand for government and corporate bonds and thereby lower long-term interest rates. This has a direct effect on the steepness of the yield curve, especially in the longer-term area, by pushing down bond yields. Both programmes therefore contribute to flattening the yield curve, especially in the longer-term maturities.

3rd Lesson Learned: Limited effectiveness of forward guidance

Forward guidance, i.e. the communication of future monetary policy intentions by central banks, is often seen as a tool to manage the expectations of markets and economic participants. This policy aims to reduce uncertainty and provide monetary stimulus by influencing long-term interest rates without having to immediately change short-term policy rates. However, there is growing evidence to suggest that the effectiveness of forward guidance cannot be clearly demonstrated, especially in the context of the European Central Bank (ECB).

Temporal analysis of ECB communication

Eisenschmidt and Smets (2018) emphasize that the ECB has regularly used forward guidance to influence the expectations of market participants since the financial crisis. However, they show that the effects of this communication are difficult to measure because forward guidance was often used in conjunction with other monetary policy measures such as bond purchases or

interest rate cuts. It is therefore difficult to isolate what contribution forward guidance actually makes to monetary easing (Eisenschmidt and Smets, 2018).

De Fiore and Tristani (2018) also examine the combination of forward guidance and unconventional measures such as asset purchases and conclude that the ECB's forward guidance did not have the expected effects in some phases. They argue that market participants did not always fully trust the ECB's announcements and forward guidance is often only perceived as credible when it is supported by tangible measures such as interest rate cuts or quantitative easing programs (De Fiore and Tristani, 2018).

Limitations and challenges of forward guidance

Johnson et al. (2020) of the Bank of Canada show in their comprehensive analysis that forward guidance is less effective in small open economies such as Canada and the Eurozone when markets are already heavily focused on interest rate cuts and other monetary measures. In a low interest rate environment, forward guidance is often unable to provide additional stimulus, as market participants already expect interest rates to remain low for a longer period of time (Johnson et al., 2020).

In addition, the literature by Eggertsson et al. (2019) and Williams (2011) raises the question of whether forward guidance can still play a relevant role in an environment where interest rates are already very low or the effective zero lower bound has been reached. They note that forward guidance is often fraught with uncertainty, as central banks find it difficult to predict future economic developments. In the euro area in particular, where several countries are facing different economic conditions, the effectiveness of forward guidance may be limited (Eggertsson et al., 2019; Williams, 2011).

Empirical evidence

An empirical study of the effects of forward guidance shows that markets reacted only marginally to certain ECB announcements. Leong and Howlett (2021) argue that many economic policy decisions, including forward guidance, are strongly influenced by political and institutional factors. They point out that the credibility and effectiveness of forward guidance often depends on the political stability and macroeconomic conditions in the respective countries (Leong and Howlett, 2021).

The effectiveness of the Forward Guidance (FG) instrument of the European Central Bank (ECB) has been analyzed from different perspectives in various studies. Based on the documents searched, the following conclusions can be drawn:

A key prerequisite for the effectiveness of forward guidance is the credibility of the central bank. If the public considers the central bank's announcements about the future interest rate to be credible, these statements can effectively influence market participants' expectations regarding inflation and interest rate developments. The analysis by Stephen Cole et al. (2023) shows that the credibility of the central bank plays a crucial role. If credibility is lacking, the effectiveness of forward guidance decreases significantly and the hoped-for control of expectations and macroeconomic variables remains largely ineffective. The credibility of many central banks, including the ECB, was a challenge, especially in the aftermath of the global financial crisis and during the COVID-19 crisis.

Tanja Linta (2024) highlights that internal disagreements within the ECB Governing Council can further weaken the credibility of forward guidance. Markets interpret such disagreements as a sign of a possible change in the direction of monetary policy, even if the ECB communicates the opposite. This leads to the hoped-for effects of forward guidance being reduced, especially during expansionary monetary policy phases. Unanimity in the

Council, on the other hand, does not significantly increase credibility, but disagreement has been shown to reduce it.

The work of Massimo Rostagno et al. (2021) shows that the effectiveness of forward guidance in combination with other unconventional measures such as the negative interest rate and the ECB's bond purchases (QE) is more difficult to assess. While forward guidance had some impact on the yield curve, the impact was more muted compared to the other tools (especially QE). Forward guidance mainly affected the medium-term part of the yield curve, whereas long-term interest rates were more strongly influenced by the bond purchases.

According to an analysis of the ECB report on monetary communication (2021), there is a close link between the clarity and consistency of communication and the effectiveness of forward guidance. It shows that clear communication that precisely manages market participants' expectations is crucial for the successful implementation of forward guidance. If the ECB's message is unclear or contradictory, this can affect the intended impact on market participants' inflation expectations and interest rate decisions.

Forward guidance can be an effective monetary policy tool to manage market and household expectations. However, its effectiveness depends heavily on the credibility of the central bank and the clarity of its communication. In combination with other unconventional measures, forward guidance can influence medium-term interest rates in particular. The actual effect has been weakened by internal disagreements in the ECB Governing Council, so the instrument has so far been ineffective.

In summary, forward guidance in the eurozone has not yet been proven to be a clearly effective instrument for influencing the interest rate structure and managing economic expectations. This is partly due to the complex economic situation in the eurozone and the frequent combinations with other monetary policy measures, which make it difficult to assess forward guidance in isolation. The analyses by Eisenschmidt and Smets (2018) and De Fiore and Tristani (2018) show that forward guidance without accompanying measures has often not achieved the expected effects.

4th Lesson Learned: Fast exit from NIRP

The experience with negative interest rate policies (NIRP) shows that the exit from such a monetary policy measure must be rapid to avoid the risk of a liquidity trap. A liquidity trap occurs when, despite extremely low or negative interest rates, aggregate demand is not stimulated because firms and consumers either stop borrowing or stop investing. Such a scenario can push the economy into long-term stagnation, as was the case in Japan for several decades. Japan has been in a low interest rate environment since the 1990s and has failed to achieve sustainable economic growth and stable inflation despite extensive monetary easing measures, including negative interest rates. This situation, also known as "Japanization," offers important lessons for the European Central Bank (ECB) and other central banks facing a similar monetary policy environment (Eggertsson et al., 2019).

The role of inflation in the euro area before the Russia-Ukraine crisis

Clear inflationary tendencies were already evident in the euro area before the Russia-Ukraine crisis. Inflation in the euro area rose to 5% as early as early 2022, due to structural problems and the influence of external factors such as the COVID-19 pandemic. Supply chain disruptions and an imbalance between supply and demand led to significant price pressures. This development clearly demonstrated that the ECB was operating in an inflationary environment before geopolitical tensions further fueled inflation (ECB Monetary Policy, 2023). The price shocks caused by rising energy and commodity prices exacerbated already

existing inflation and made it clear that the NIRP policy had reached its limits under these conditions. In such an environment, the continuation of NIRP poses a significant risk, as the low interest rate policy was intended to generate additional demand, but this is counterproductive in an environment of already rising prices.

External shocks and their amplifying effect

The Russia-Ukraine crisis further accelerated inflation in the euro area, in particular through sharp increases in energy prices. These shocks reinforced the structural inflationary tendencies that were already visible before the crisis. The ECB was faced with a new situation in which inflationary pressures were not only driven by demand stimulation, but also by supply-side shocks that are harder to control. Eisenschmidt and Smets (2018) argue that such shocks can further fuel inflation if the central bank does not act in time. In the euro area, rising energy costs led to an amplification of inflation, which was already above 5% (Eisenschmidt & Smets, 2018). In this situation, it is important that the ECB react quickly to the inflationary factors and end negative interest rates to prevent the economy from overheating.

The danger of a liquidity trap in the event of persistent inflation

The main danger of continuing NIRP in an inflationary environment is the risk of worsening inflation, which can lead to a liquidity trap. A liquidity trap occurs when interest rates are so low that they do not provide further incentives for investment or consumption because market participants have no expectations of a future rate hike and prefer to save instead. This was the case in Japan, where long-term low interest rates and deflation expectations meant that the central bank's monetary policy impulses were ineffective. Although the Bank of Japan had introduced extensive quantitative easing programs and negative interest rates, it failed to stimulate growth in a sustainable manner (Eggertsson et al., 2019).

In the euro area, the risk is that a persistent NIRP in an environment of inflation above 3% for a period of six months or more could threaten economic stability. The scenario in which inflation and negative interest rates coexist could further depress real interest rates and push inflation expectations up uncontrollably. This would not only reduce consumer purchasing power but also devalue savings, which could lead to a further decline in confidence in the ECB's monetary policy management (De Fiore & Tristani, 2018). In addition, there is a risk that the eurozone could fall into a liquidity trap like Japan, where low interest rates and high inflation coexist and the central bank's monetary policy tools are no longer effective in controlling inflation.

Rapid exit from NIRP as a preventive measure

Given the significant risks associated with a sustained NIRP policy in an inflationary environment, the exit from negative interest rates must be rapid. The rise in inflation in the Eurozone before the Russia-Ukraine crisis and the amplification by external shocks show that central bank hesitation could cause inflation to spiral out of control and put the central bank in a situation similar to Japan. Johnson et al. (2020) argue that a rapid exit from negative interest rates in an inflationary environment is necessary to maintain the credibility of monetary policy and achieve long-term inflation objectives (Johnson et al., 2020).

The lessons from the Japanese experience and current developments in the Eurozone show that a rapid exit from NIRP is essential in an environment of rising inflation. The rise in inflation before and after the Russia-Ukraine crisis and the risk of amplifying inflation from external shocks highlight the need to end negative interest rates quickly. Otherwise, there is a

risk of a liquidity trap that could further hamper economic growth and allow inflation to rise uncontrollably.

4. Summary and Conclusion

The European Central Bank's (ECB) negative interest rate policy (NIRP), introduced in 2014 as a response to the financial crisis and subsequent eurozone stagnation, was a highly unconventional monetary tool aimed at stimulating lending and returning inflation to target levels. Although the policy provided some initial benefits, several lessons have emerged that are crucial for future monetary policymaking. This summary highlights four key lessons learned from the ECB's experience with NIRP.

1. Effectiveness of Negative Interest Rates

Negative interest rates proved to be an effective tool, but primarily in influencing short-term interest rates. As shown in various studies, including Eggertsson et al. (2020), NIRP effectively reduced short-term rates and spurred lending. However, its impact on long-term interest rates was limited. The transmission of negative rates to long-term markets faced constraints due to the deposit rate lower bound (DLB), beyond which banks were unable to further reduce deposit rates without losing customer deposits. This limited the broader effectiveness of NIRP in stimulating the economy over longer horizons (Eggertsson et al., 2020).

2. Need for Yield Curve Steepening Measures

A key lesson is that negative interest rates alone are insufficient to normalize the yield curve. To achieve a steeper yield curve, central banks need to implement additional measures targeting the long end of the interest rate structure. Quantitative easing (QE) programs were critical in influencing long-term rates by increasing liquidity and reducing borrowing costs across the eurozone. Studies, such as those by Altavilla et al. (2015) and Bernanke (2020), emphasize that QE significantly lowered long-term rates, helping to steepen the yield curve and improve market stability. This highlights the necessity of combining NIRP with asset purchase programs to achieve broader monetary objectives (Bernanke, 2020).

3. Limited Effectiveness of Forward Guidance

Forward guidance, intended to manage market expectations about future monetary policy, did not deliver the desired effects in the context of NIRP. Research by Eisenschmidt and Smets (2018) and De Fiore and Tristani (2018) showed that markets often reacted weakly to communication alone unless it was supported by concrete measures like QE or rate cuts. Forward guidance, without accompanying action, lacked credibility, especially when economic conditions in different eurozone countries varied significantly. This limited its ability to influence long-term interest rates and guide market expectations effectively (Eisenschmidt & Smets, 2018).

4. Urgency of a Fast Exit from NIRP

A rapid exit from NIRP is essential, particularly when inflation begins to rise. Delaying the exit risks trapping the economy in a liquidity trap, where low interest rates fail to stimulate demand and instead lead to stagnation. Japan’s experience with prolonged negative rates serves as a cautionary example of the dangers of a liquidity trap. The eurozone’s inflation, which had reached 5% even before the Russia-Ukraine crisis, demonstrated that negative rates became increasingly risky as inflationary pressures built up. Studies by Johnson et al. (2020) and Eggertsson et al. (2019) underscore the importance of

quickly normalizing rates to prevent uncontrolled inflation and maintain monetary policy effectiveness (Johnson et al., 2020).

The ECB's experience with NIRP offers valuable lessons for the future use of negative interest rates in monetary policy. While effective in influencing short-term rates, NIRP must be paired with long-term measures like QE to achieve broader economic stability. Additionally, forward guidance alone has limited power without supporting actions, and a timely exit from NIRP is crucial in preventing the economy from falling into a liquidity trap, especially in the context of rising inflation. These lessons should inform the ECB and other central banks when considering future applications of negative interest rate policies.

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