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Communication During Unconventional Times: The ECB's Approach

Policy Department for Economic, Scientific and Quality of Life Policies
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Abstract

During the past five years, communication of the ECB has changed drastically, not least with the introduction of forward guidance. Against this backdrop, this note assesses how successful the central bank has been in influencing financial markets and expectations and discusses the challenges for future ECB communication.

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LIST OF ABBREVIATIONS

APP	Asset Purchase Programmes
BIS	Bank for International Settlements
ECB	European Central Bank
EONIA	Euro Overnight Index Average
ETF	Exchange Traded Funds
FOMC	Federal Open Market Committee
GDP	Gross Domestic Product
IMF	International Monetary Fund
LTRO	Long-Term Refinancing Operations
NCB	National Central Bank
OECD	Organisation for Economic Co-operation and Development
OIS	Overnight Indexed Swap
OMT	Outright Monetary Transactions
QE	Quantitative Easing
SMP	Security Market Program

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EXECUTIVE SUMMARY

- **In terms of communication, the central bank must strike a delicate balance** between providing enough information to markets to remove some of the uncertainty regarding the policy effects, to guide the public through the operations that will be implemented, build time consistency, and attempt to boost confidence in its strategy such that expectations begin to align to the stated objective. However, the central bank also faces incentives to keep the information diffuse so to guard against the unintended effects of policies, avoid overstating their (final) success, keep some degree of discretion, and (re)-install authority on markets and project a sense of control.
- **Insights from financial markets over the past years have shown that markets have repeatedly questioned the operational success of the quantitative easing (QE) programmes**. Initially, they feared that the ECB would not be able to find sufficient bonds to fulfil its targets. When the extension of the initial program was announced in 2016, the fear was that the success of the unconventional measures would fail to materialise if businesses and consumers believed that the policy stance was ambiguous. Later the same year, serious concerns about the medium to long-term effects of QE were raised in relation to the market signalling by the ECB.
- **In September 2019, the ECB shifted its forward guidance on rates from a short-term calendar-based type to state contingency**. This was a welcomed strategy as it went beyond the usual date-based communication. The latter may generate ambiguity because people may speculate on the reason behind the choice of a specific date. Having said that, while forward guidance strongly indicates that more accommodation is on the way, it may also signal to the public that a long-term policy stance is in place to disguise a bad-shaped economy.
- **The literature sheds more light on the degree of success of the ECB's communication strategy during times of unconventional policy compared to the opinions and indirect signals from the financial market but leave a lot of questions unanswered**. In particular, it is not clear whether the existing communication approach reduces uncertainty or adds to the existing one, in particular in the medium-run spectrum of expectation anchoring.
- **Looking at the empirical evidence**, the ECB missed its target in no small degree, particularly over the period 2013-17. While the interaction between forward guidance and the purchase program seem to have had its grip over inflation expectations over the last couple of years, the association between inflation and inflation expectations remains weak. It is thus of paramount importance for the ECB to keep enhancing transparency and communication in order to avoid a setback.

1. CENTRAL BANK COMMUNICATION DURING UNCONVENTIONAL TIMES

Starting from May 2009, and in particular, March 2015, the European Central Bank (ECB) has engaged in several unconventional monetary operations that took monetary policy far away from the traditional interest rate territory. The central bank not only intervened in the interbank market; it has also significantly increased its balance sheet by purchasing assets in exchange for money from the financial sector. In this sense, the ECB engaged in price as well as quantity-based monetary policy. Such an approach pushed the euro area monetary policy into unchartered terrain, both strategically and in terms of communication. The number of operations that the ECB had to inform the public about slowly increased (at least in theory) and the effects of those had to be carefully transmitted.

On the one hand, ECB had all the incentives, so to say, to overplay these effects. On the other hand, however, the financial sector took the role of disciplining the central bank's actions, providing an effective pass-through to the new monetary policy impulses (i.e. financial institutions have a firm interest in the success of these policies since the ECB was relieving them of their balance sheet pressures and satisfying their demand for financing).

Another group that has actively monitored and evaluated the ECB's policies is academia, as testified by the sheer volume of papers on the ECB non-conventional policies. Using a variety of methods, both theoretical and empirical, the literature has attempted to pin down the partial and general equilibrium effects of these policies. One important reason why the effects are stated in relative terms is the quality and quantity of information coming from the ECB. The ECB has given access to its complete speech dataset, covering the period 1997-2019, only in October 2019, hoping 'to stimulate research on the impact of communication'. Thus, to date, the quality of the available results and conclusions is dependent on the previous communication path by the central bank. That is why communication is central not only for shaping expectations about the course of policy actions but equally for pinning down and measuring the effects of such implemented measures.

In the first part of this note, we summarise the views of the financial sector on the quality and quantity of information regarding the ECB's past measures. We then complement this information by reviewing the academic literature and examine how central bank communication has shaped their conclusions on the effects. In light of the above, the second part of the note assesses how successful the central bank has been in influencing financial markets and expectations and discusses what the challenges are for the future of ECB communication.

2. COMMUNICATION STRATEGY AND THE FINANCIAL MARKETS

Unlike monetary policy communication during conventional (pre-2008) times, the unconventional ECB approach presents several attributes.

- First, it was implemented during highly uncertain times and the succession of several adverse shocks; the policy effects of which are, therefore, uncertain, at least a priori.
- Second, there was a range of policies implemented at the same time, either as extensions of other policies, or focusing on entirely new instruments and markets' segments.
- Third, such policies were implemented at different points in time, making it challenging to disentangle short- and long-run effects of each policy.
- Fourth, while some of these unconventional policies were implemented in other countries, e.g. in the US and Japan, many of the ECB policies were implemented for the first time in modern monetary history, so there was not necessarily a past track record of effectiveness of some other policies explicitly designed to cope with the very Eurosystem structure (for instance, LTROs, OMTs).
- Fifth, the response of inflation expectations, which is commonly used as an indicator of the effectiveness of the monetary policy, have faltered during some periods because of the occurrence of other intervening factors (e.g. political risk, uncertainty).

All of these elements complicated the communication and evaluation of the policies implemented by the ECB.

In terms of communication, the central bank must strike a delicate balance between providing enough information – both quality and quantity – without limiting discretion. Providing a sufficient amount of information helps remove some of the uncertainty regarding the policy effects, guide the public through the measures implemented, build time consistency, and attempt to boost confidence. However, the central bank also faces incentives to keep the information diffuse so to guard against unintended effects of policies, avoid overstating their (final) success, keep some degree of discretion, and (re)-install authority on markets.

One can view the 2012 statement by the former ECB president Mario Draghi to 'do whatever it takes' as one such example, where he provided sufficient information about the direction of the forthcoming policy, without providing any details on the 'how', 'when' ('how long') and 'in what way' questions. Subsequent press conferences and releases provided gradual clarity on (some of) the strategy and operations, which formally marked the introduction of the Outright Monetary Transactions (OMTs). Very little (if no) display of the diversity of opinions within the ECB transpired and the case escalated to the European Court of Justice. This has also shaped the views of the financial industry regarding the central bank's monetary policy operations.

2.1. The experience of the past five years

In a previous note to the European Parliament, shortly after launching the first QE, we collected the first market reactions during the first three months of the programme (Gerba and Macchiarelli, 2015). Markets feared at that time that the ECB would not have been able to find sufficient bonds to fulfil its targets, which resulted in heightened volatility on the bond markets, and worries that suppliers of these bonds lacked the willingness to sell them. Although part of this fear was the result of the novelty of the operations and the general unsettling sentiment of underperformance of the euro area banking system (and the economy) at that time, an essential share of the story was the consequence of the limited early

communication of the program provided by the ECB. Although the ECB provided an overall overview of the asset purchase allocation across the different asset classes and national central banks (NCBs), details regarding the Eurosystem's expected balance sheet exposure, the state of bond supply in the wake of ECB demand (i.e. market willingness to sell bonds), and the specificities regarding the intended market effects were not clearly communicated. One year later, in Gerba and Macchiarelli (2016a), we again showed that, faced with the likelihood of an extension of the QE programme, the success of the unconventional measures was at risk if businesses and consumers were to believe that the policy stance was ambiguous. Later the same year, in Gerba and Macchiarelli (2016b), we again concluded that 'the medium to long-term effects of European QE depends on the quality of market signalling by the ECB and the extent to which markets will react to it going forward'. In other words, the success of the programme depended – and still depends – on how the ECB communicates and interacts with the market. From the start, several concerns have been raised about the limited information and the intensity of communication provided by the ECB to the markets and the public.

While forward guidance officially started in July 2013, only in September 2019 the ECB shifted its forward guidance on rates from a short-term calendar-based type to state contingency. The latter now rests on an inflation target that relates to the state of the economy rather than to a specific (short-term determined) date. Gaballo (2016, 2019) argues that this is a first positive move to reducing ambiguity surrounding policy signalling but is still far away from providing clarity of the long-term path of the economy. According to Coenen et al. (2017) and Andrade et al. (2019), the previous date-based communication could generate ambiguity because people speculate on the reason behind the choice of a specific date.

The question of whether the ECB is in charge of the economic performance, i.e. it steers markets, or *vice versa* follows markets (expectations) and sets its policies in reaction to it, is a difficult one. In reality, these two dimensions are so much intertwined so that the latter becomes a 'hen-egg' question. The aim of the communication should be to reduce uncertainties about the policy actions and intended effects in a varying and uncertain environment.

2.2. Insights from the recent academic literature

Amid these challenges, much of the recent literature has focused on examining the impact of policy communication on uncertainty. Along these lines, Ramos and Morron-Salmeroni (2019) developed an index to measure the sentiment of the ECB's statements. Their index shows a strong correlation with euro area economic activity indicators. Between late 2017 and 2019, it signalled a significant deterioration in the sentiment, mainly related to the worsening of the economic outlook. Precisely this outlook, the authors argue, is the reason for the U-turn in forthcoming policy, from a monetary policy adjustment to further stimulus. Hence, they perceive policy communication as highly responsive and adaptive to short-term economic performance indicators, which ultimately would make any long-term commitment difficult. Likewise, Pesci (2016) build an index of central bank communication about future interest rate policy using media coverage and the occurrences of predefined hawkish (more inflation-oriented), dovish (less inflation-oriented) and neutral expressions. He finds that this measure is correlated with future changes in the interest rates and filters out information conveyed by past interest rate decisions.

Nevertheless, the existing measures can at best provide information about the co-movement between the ECB communication and expectations but are not capable of pining down the causality or the channels through which communication shapes expectations. Neither of these measures can explain how sensible the ECB's communication approach can be for the longer-horizon when so many structural breaks in the ECB's strategy have taken place. It should be recalled that the ECB went from a

firm stance of no need for QE in 2010 to an urgent need for QE in late 2014, from a need to taper off in late 2017 to the second round of QE in mid-2019, coupled with state-contingent forward guidance. The question is perhaps whether such a discontinuous approach reduces uncertainty or adds to the existing one, in particular in the medium-run spectrum of expectation anchoring.

A promising strand of literature has capitalised on the recent advancements in large data processing through machine learning and linguistics to understand the impact of specific language constructions on expectations. Such a more direct (albeit narrow) way to evaluate central bank communication takes the discussion away from the subjective inference of information transmission from policy to outcomes and weighing of opinions. Ernst and Merola (2018), for instance, developed an automated text-mining algorithm using a Bank for International Settlements (BIS) collection of speeches given by central bank senior executives. They construct indicators to compare goals and strategies across several central banks: the Federal Reserve, the European Central Bank, the Bank of England and the Reserve Bank of Australia, from the late 1990s up to 2016. Their study suggests that communication can be complementary or a substitute for monetary policy. If communication is a more effective way to manage expectations, central banks might need to rely less on the conventional policy rate.

Along the same lines, Piceault and Reneault (2017) developed a field-specific dictionary instead of using ECB press conferences to measure the stance of the ECB monetary policy and the state of the euro area economy. Their approach helps explain future ECB monetary decisions when considering it in the context of an augmented Taylor rule. Schmeling and Wagner (2019) investigated whether the way in which the ECB communicates monetary policy actions is also reflected in asset prices such as stocks. They confirm that if the ECB's word choice tends to be 'positive', stock prices would tend to rise, while prices of derivatives used to hedge risks would fall. The authors were also able to show that a more optimistic tone can be an indicator of more favourable economic developments. This would imply that investment decisions are responsive to ECB's communication and not the other way around. Although this literature finds that asset prices react to central bank announcements in the desired direction, it is not explored whether the relation between investment decisions and ECB policy announcements is bidirectional or mutually reinforcing.

Ultimately these affirmative results rely on the assumption that ECB policy is *exogenous* to market perceptions and general market conditions, which is not necessarily apparent in the turbulent times of the past ten years.

3. THE POLITICAL ECONOMY OF CENTRAL BANK COMMUNICATION

During the crisis, central bank communication became more critical, particularly as the ECB intensified its efforts at transparency and coherence. At the time, the monetary policy stance had been determined by a combination of three types of interventions: negative interest rates, asset purchases and (targeted) longer-term refinancing operations. Since 2013, the ECB forward guidance has become an instrument of monetary policy itself (Table 1; Camba-Mendez and Mongelli, 2018), albeit – as reminded previously – the latter has been formally introduced as a 'flexible' and state-contingent instrument only in September 2019. One way through which programs such as the Asset Purchase Program (APP) affect financial markets is the *signaling* channel, which is: through bond purchases the ECB intends to convince markets that it has a commitment to a loose interest rate stance. However, it may not be enough to declare that the policy stays temporarely loose; in that sense 'forward guidance' and the APP have been mutually reinforcing each other (Lane, 2019; Macchiarelli et al., forthcoming).

However, 'communication is not precommitment' (Blinder et al., 2008), and there are many more dimensions to it, as we will discuss in the following section.

Intimately connected to this discussion is the concept of 'accountability', particularly concerning the ECB's Monetary Dialogue with the European Parliament. While related, communication and accountability are clearly different concepts: accountability refers to the idea for an independent central bank to be accountable to democratic institutions and to the general public for its actions to retain legitimacy in the pursuit of its mandate. Communication, on the other hand, is a concept that is closely related to, yet distinct from, accountability. It can be defined as the extent to which central banks disclose information related to the policymakers, thus, becoming more transparent.

3.1. Communication as a way of enhancing central bank's transparency

Comparing the ECB with the US Federal Reserve, the latter is understood to be instrument and goal independent, with its independent revenue and a structure written by Congress, and subject to change at any time. The Fed has dramatically enhanced communication and increased its transparency in recent years. Following the Federal Open Market Committee (FOMC) meetings, the Chair of the Board of Governors holds a press conference to clarify monetary policy communications, with greater transparency being provided with the announcement of a specific numerical target for the inflation rate.

The ECB is patterned after the Federal Reserve, reflecting the federal nature of monetary policy in the Eurosystem (see Macchiarelli, et al., forthcoming). In this sense, the central banks from each country (National Central Banks, NCBs) play similar roles as Fed banks.[1] Differently from the Fed though, the NCBs control their budgets and the budget of the ECB; monetary policy is further centralised, but its operations are decentralised through the Eurosystem. In terms of independence, the ECB is among the most independent central banks in the world since the members of the Executive Board have long term mandates of eight years, and the ECB determines its own budget. The ECB is, however, less goal independent, because of its commitment to price stability in medium-term; its charter further cannot be changed by legislation, only by a revision of the 1992 Maastricht Treaty.

[1] The rate-setting of the ECB comprises the ECB's Executive Board, made of the President, Vice-President and four other members all having eight-year, nonrenewable terms, plus the Governing Council, reprenting the Executive Board, plus the nineteen Governors of the national central banks.

What about the ECB's Governing Council meetings? Those are monthly meetings in the presence of the nineteen NCBs representatives and six Executive Board members. The ECB announces the target levels and answers questions from the media after these sessions in which decisions are made by consensus. Since 2015, 'accounts' of these meetings have been released by the ECB. Those accounts identify the central bank general updates on financial and economic conditions in the euro area and provide a summary of the discussion, however, without attributing personal statements or voting with respect to individual members' (monetary policy) decisions.[2]

Differenlty from the ECB, the Federal Reserve also issues a press release following each FOMC meeting, but does not hold a news conference. The press release contains information about the announced change in the federal funds rate target, if any, and it provides an overview of the prevailing economic conditions. The FOMC members' votes have been included in the publication since March 2002. If a member dissents from the policy actions voted, the member shall be named and the policy measures he/she indicated shall be noted.

Eichengreen (2019) recently pointed out that the main issue today for the Eurosystem is how to handle disagreement within the ECB, particularly as the Fed, the Bank of England, the Bank of Japan and the Sveriges Riksbank, among others, already do release individual members' votes. While announcing individual Executive Board votes has the main advantage of signalling the future monetary policy stance, the peculiarity of the ECB's Governing Council, which is numerically dominated by nationally appointed central bank governors, weighs against increased transparency. This is a radicated discussion since the times of Duisenberg (2002) who argued that even anonymously mentioning dissenting opinions 'could lead to undue pressure on national central bank governors to deviate from a euro area perspective', particularly as the individual representative may be under pressure by their national governments.

Communication also extends to the outlook for the economy. The central bank's economic outlook provides a guiding principle for future policy moves. The ECB initially resisted publishing forecasts, but began including them in its Monthly Bulletin from December 2000, albeit individual independent forecasts for specific measures are not published, such as the euro area output gap. The Federal Reserve publishes instead two types of information about its economic outlook. In its report to Congress, it publishes the range and central tendency of the current and subsequent year's forecasts of Board members and district banks' presidents regarding output, inflation, and unemployment. The press release issued by the FOMC since February 2000 includes a risk balance statement that indicates how the Committee assesses the economic risks in the foreseeable future, be it increased inflationary pressures or economic weakness.

3.2. Communication as a policy option for unconventional monetary policies enhancement and tapering

The ECB has consistently expressed concerns over its medium-term inflation objective in recent years, explicitly illustrating how QE had the sole purpose of achieving the central bank's stated objective. This highlights the possibility of prolonged monetary easing whenever inflation remains subdued, as in the current environment (see also Gerba and Macchiarelli, 2016; Reza et al., 2015). It thus remains important to discuss or even define a lower limit on monetary policy, notably after former President Draghi

[2] The Governing Council is organized on a basis of rotation to remain at a manageable size as new countries join. The last country to access the euro area, Lithuania, has increased the number of countries to 19, and in 2015, this prompted a new voting system. Countries are divided into groups according to the size of their economies and their financial sectors: the country's governors ranked first to fifth share four votes; the other fourteen countries share eleven voting rights. The Governors' voting rights change based on a system of monthly rotation.

announced an open round of purchases in connection with the APP at the end of last October. The last decision to launch a fresh round of open-ended purchases remains however exceptional, albeit technical limits practically exist, particularly concerning the existing purchases, such as those made under the Security Market Program (SMP), thus restricting the scope for further ECB purchases for the future in some countries (Gerba and Macchiarelli, 2015; 2016).

There is no doubt that narrow inflation targeting failed to deliver stability of the economic and financial system as a whole. In a sluggish growth and negative interest rate environment such as the current, the recourse to more creative solutions in the use of monetary policy may be exacerbated, e.g. 'helicopter money', having the ECB buying equities/ETFs, or lifting the inflation target (see Macchiarelli et al., 2019). The key problem is the long-term consequences of allowing the ECB yet again to follow rather than steer the economy (see also Blinder, 2010); such as the loss of the independence of the central bank and its political implications. We have contended in the past that the risk of the ECB merely pouring liquidity into the system may be reduced. This would imply, in turn, a more flexible approach on the euro area fiscal rules. In fact, as governments' budget constraints are relaxed through the Eurosystem purchases, the use of the fiscal stimulus (coupled with reforms in the market segments that need them) should not be understated nor stigmatised (see also recently Blanchard, 2019).

Table 1: ECB monetary policy instruments used as non-standard measures

	Conventional Instruments 2/	Unconventional Instruments	
	"Credit easing"	*"Market support" 3/*	*"Quantitative easing" 4/*
A. Reverse lending operations ("Repos"): 1/			
Refinancing Operations			
MPOs (Aug 2007 onward)	X		
MROs at FRFA (Aug 2007 onward)	X		
LTROs (3 months) at FRFA (Aug 2007 onward)	X		
LTROs (6 months) at FRFA (March 2008 onward)	X		
Supplementary LTROs at 1-year	X		
Very-long LTROs at 3-years (Nov11&Dec12)	X		
TLTROs (June 2014 and max maturity Sep.2018)	X		
TLTRO II: Targeted LTROs (June 2016-March 2017)	X		
B. Ad-hoc non-standard operations:			
Forex Repos and Swaps (2008-9)	X		
Various ad-hoc fine-tunings as needed.	X		
C. Outright operations:			
Purchases of private sector securities			
CBPP1 (July 2009)		X	
CBPP2 (November 2011)		X	
CBPP3 (Sep. 2014)		X	
Selective purchases of public sector securities			
SMP (2010-12) 5/		X	
OMT ("contingent balance sheet policy")		X	
Large scale purchases of private sector securities			
ABSPP (June + Sep.2014)		X	X
CSPP (March 2016)		X	X
Large scale purchases of public sector securities			
APP/PSPP (January 2015)		X	X
Expanded APP (March 2016)		X	X
D. Enhanced communication: 6/			
Forward Guidance (July 2013)			
Commitment active use NSMs (April 2014)			
Signal of Balance Sheet expansion (Nov. 2014)			

Source: Camba-Mendez and Mongelli (2018).

Upon achieving the underlying objective, the ECB will be facing the usual problem of relaxing or extending the extraordinary measures. In Table 1 from Camba-Mendez and Mongelli (2019), the (non-)standard monetary policy operations between the period 2010-2017 are listed based on their stated purpose. Those are distinguished amongst:

- *Credit-easing* (A+B), which are largely bank-based measures; these were adopted since the early stage of the crisis because of the bank-centric structure of the euro area financial market. The measures are defined as 'standard' in that they explored the flexibility of the existing monetary policy framework.
- *Market support* and *quantitative easing* (C), which are largely market-based measures. The measures are defined as 'non-standard' in that they entail outright asset purchases through the Eurosystem, the asset-type or maturity of which (in the case of bonds) were not normally part of the standard open-market operationt.

From this list, it can be observed that all the crisis-based measures needed to be unwound at some point, which has led the ECB to take a number of other follow-up measures. It follows that the ECB's withdrawal strategy from an ultra-accommodative monetary policy stimulus becomes particularly relevant, through communication (this is the case unless some of the non-standard measures, particularly, bond purchases will be 'normalised' as part of the central bank's *new standard* operations). Communication, mainly through forward guidnance (D), thus became a monetary policy itself because of the necessity of unwounding – in particular – market-based operations.

In July 2013, the ECB began to use forward guidance when the ECB's Governing Council announced that the interest rates were expected to remain low over a long time period. Since then, the ECB has been adapting its forward guidance in several respects to articulate monetary policy and clarify the purpose of the Governing Council interventions with regard to the future planned course of the ECB's main interest rates and the scope of its asset purchase programme, so much so that forward guidance has become state-contingent since September 2019. This means that while forward guidance represents a valuable tool to ensure the consistency of monetary policy over the longer horizon in the euro area, it still does not limit discretion and thus central bank's independence, as the future path of policy rates remains conditional on fulfilling the ECB's medium-run inflation objective (see Macchiarelli et al., 2019). Forward guidance has thus become an important instrument for ensuring monetary policy consistency, particularly as purchasing assets sent out a strong signal that policy will remain accommodative for an extended period.

As discussed in the previous section, the empirical evidence supports the view that forward guidance can already help to influence long-term interest rates in standard times. For example, Woodford (2012) shows how using the language of 'extended period of time' in the statements by the Federal Reserve and the Bank of Canada on conditional forward guidance lowered expectations of future interest rates, as measured by the rates of the Overnight Index Swap (OIS). Equally, Campbell et al. (2012) looking at standard monetary policy episodes for the US, found that 90 per cent of the variance in the projected federal funding rate four quarters ahead could be attributed to factors not linked to surprises in the timing of policy target changes. Evidence exists that forward guidance is less successful if it does not indicate a deviation from the 'standard' stance of the central bank; see for instance Ugai (2007) and Ito and Mishkin (2006) for Japan. Ito and Mishkin argued, in particular, that the Bank of Japan managed market expectations quite poorly over the period 1998 to 2003, compromising any success prospects for QE or for raising the inflation target.

The risk of exiting unconventional monetary policy is another reason for correct communication, particularly as not signalling properly may risk undoing some of the benefits of the monetary policy

stimulus through increases in risk premia or flight-away 'to quality' (IMF, 2013). It is therefore vital that the central bank demonstrates credibility and communication skills to persuade investors that it is adhering to its objective(s) (Belke, 2017; Born, Ehrmann and Fratzscher, 2014).

The danger about the disruptive nature of exiting unconventional monetary policies may thus require additional communication efforts from the central bank. As a result, communication has *de facto* become an integral part of the monetary policy toolkit: particularly as the credibility of policy objectives requires transparency and intelligibility of monetary policy, and credibility itself rests on keeping inflation expectations anchored. Put it differently, a well established and recognised exit strategy strengthens monetary policy efficiency as it reassures markets about the future stance regarding the economy/financial stability and inflation (Belke, 2017). Hence, communication becomes necessary, albeit not sufficient alone.

4. THE IMPACT OF ECB MONETARY POLICY EVENTS ON FINANCIAL MARKETS

The ECB has followed its monetary policy decisions with a statement and press conference at each meeting since its creation in 1999. Since 2015, these meetings have reduced frequency, allowing more time to be spread between decisions and having ample flexibility for the monetary policy pass-through so as to achieve the ECB's medium-term goal (Carney, 2019; see Table 2).

In Figure 1 and 2 we look at the response of different asset classes, exchange rates, and stock prices, as the result of monetary events defined as the sum of press conferences and press releases, based on a novel Euro Area Monetary Policy Event-Study Database proposed by Altavilla et al. (2019). As underlined by the authors (ibid.), some of these events have already been analysed using the merged media communiqué and press conferences (for example, Andrade and Ferroni, 2016) and separate windows, but they do not include QE surprises in the study.[3]

Table 2: Frequency of policy decisions and press conferences in the euro area

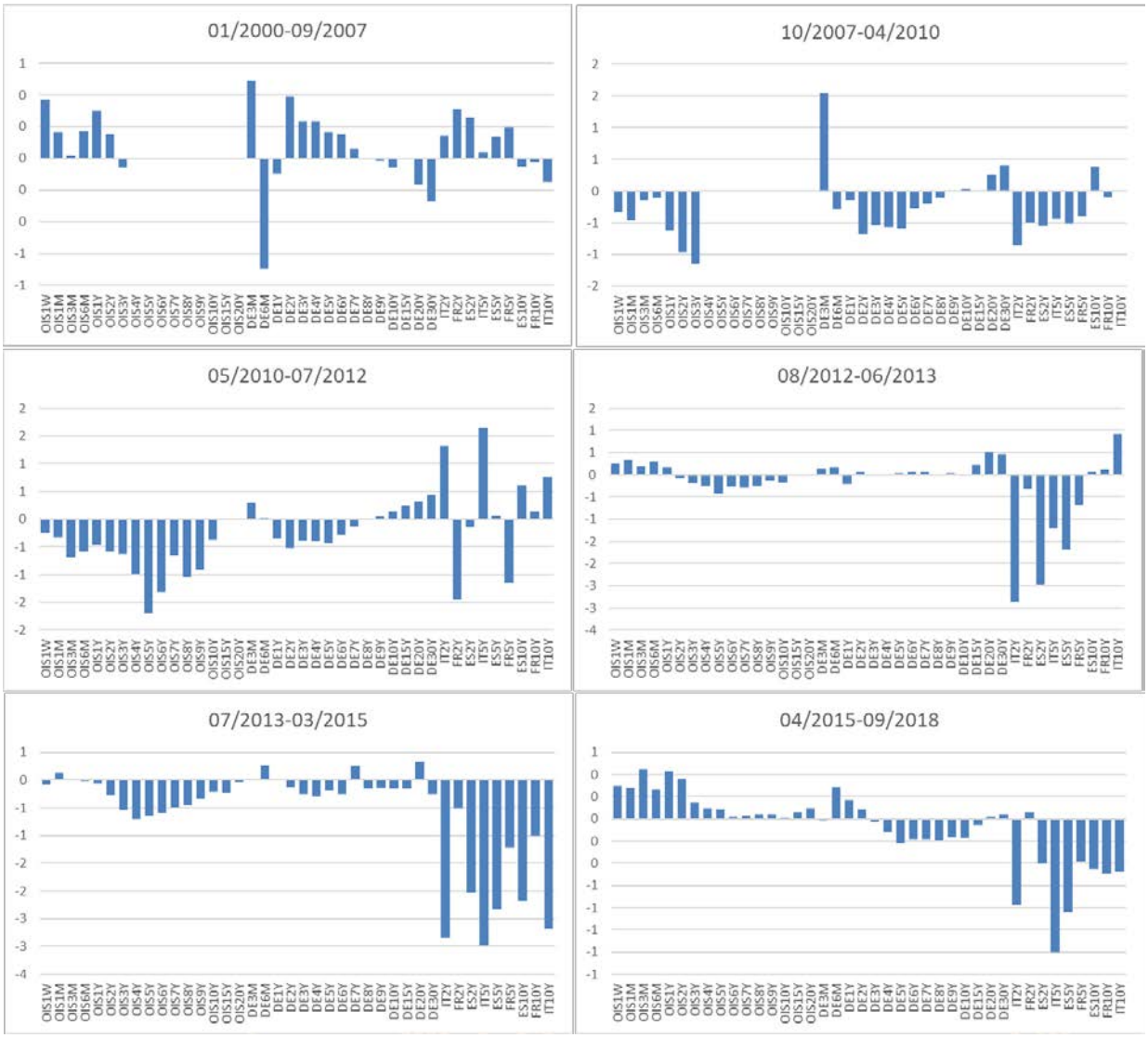
Year	No. of *Policy decisions* realeased at 13:45	No. of *Press Conferences* starting at 14:30	No. of *Rate Changes*
1999	23	9	2
2000	24	13	6
2001	24	11	4
2002	12	11	1
2003	12	11	2
2004	12	11	0
2005	12	11	1
2006	12	12	5
2007	12	11	2
2008	13	12	4
2009	12	12	4
2010	12	12	0
2011	12	12	4
2012	12	12	1
2013	12	12	2
2014	12	12	2
2015	8	8	0
2016	8	8	1
2017	8	8	0
2018	6	6	0

Source: Altavilla et al. 2019.

[3] As discussed previously, the literature assumes a lot about information processing and interpretation approaches used by financial markets following central bank announcements. Most of these assumptions are extrapolated from earlier insights on communication during normal times, or at times been based on information processing algorithms. But they do not take into account the recent economic changes such as expectations de-anchoring, high uncertainty regarding economic performance, ambiguity in policy stance. They are difficult circumstances to include in models and toolkits, but necessary in order to gain an accurate picture of the links in the complete chain: news about economic conditions – policy announcements – information processing – policy actions – reactions (in markets and economy) – economic adjustments in an environment of heightened uncertainty and for the longer horizon.

We split those available responses by subperiods, such as 01/2000-09/2007, 10/2007-04/2010, 05/2010-07/2012, 08/2012-06/2013, 07/2013-03/2015, 04/2015-09/2018, broadly corresponding to the period pre-crisis, the financial crisis, the sovereign debt crisis, the post-OMT-announcement, the introduction of forward guidance, and finally, the QE announcement and implementation.

Figure 1: Response of different asset classes to monetary policy events (1999-2018) divided by periods

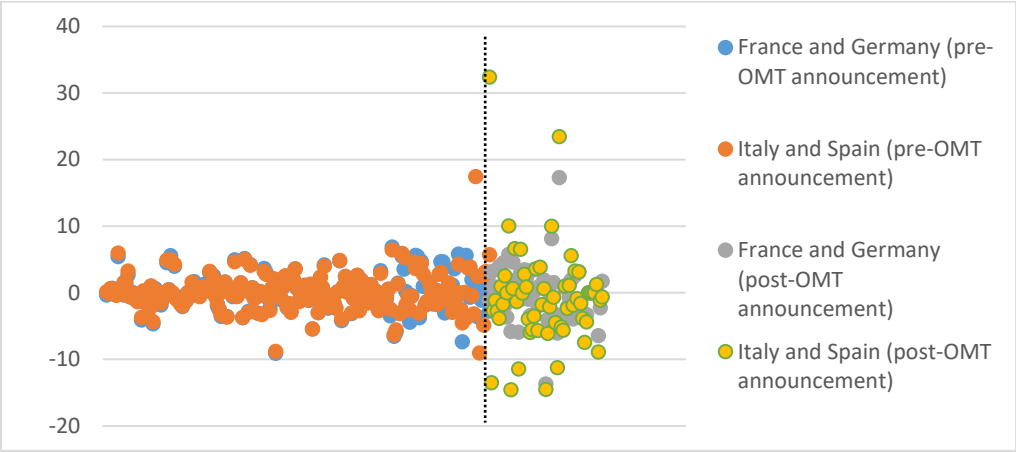


Source: Authors' calculations based on Altavilla et al. (2019) Euro Area Monetary Policy Event-Study. The asset classes considered are overnight index swaps (OIS) from maturity of 1 week (OIS1W) to 20 years (OIS20Y), the ECB reference yields, German bonds, from 3 months (DE3M) to 30-year maturity (DE30Y), Italian, French and Spanish bond at the 2, 4 and 10-year maturity.

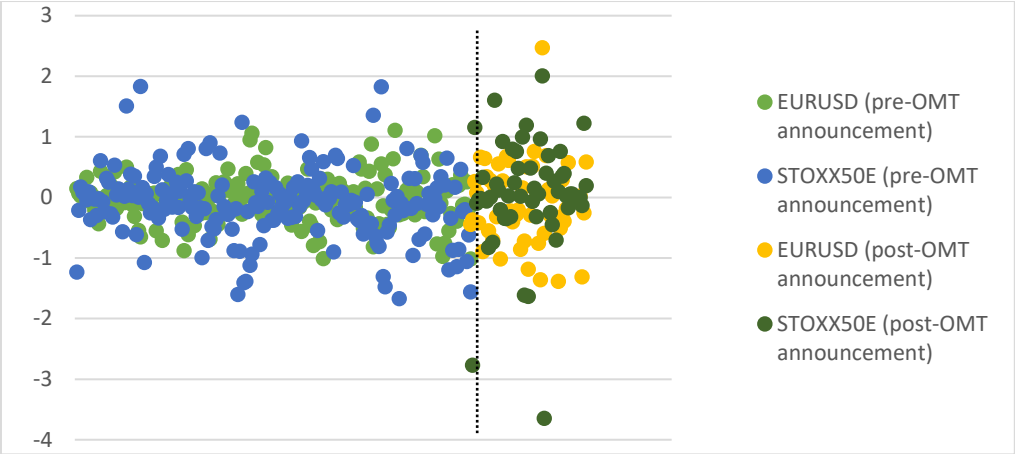
Figure 2 also looks at the response of the 10-year government spread of (the average of) Spain plus Italy and (the average of) Germany plus France countries to all monetary policy events; see Altavilla et al. (2019). From a visual inspection, it appears that financial market response has increased after the July-2012 OMT announcement, particularly in countries such as Italy and Spain, possibly meaning that financial markets have become more attentive to monetary policy communication.

Figure 2: Response of long term government bonds, STOXX50E and EUR/USD to monetary policy events (1999-2018) over time

a) 10-year government yields for selected euro area countries



b) STOXX50E and Euro/USD Spot Exchange Rate



Source: Authors' calculations based on Altavilla et al. (2019) Euro Area Monetary Policy Event-Study Database.

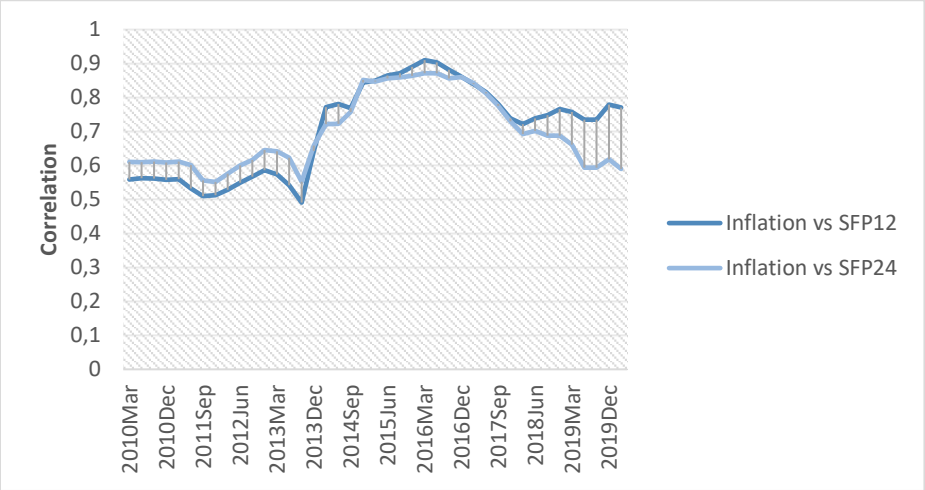
We visually analyse the response to monetary policy events over time and across different asset classes, in particular, overnight index swaps (OIS) starting from 1-week maturity (OIS1W) to 20 years (OIS20Y), the ECB reference yields from 3 months (DE3M) to 30-year maturity (DE30Y), Italian, French and Spanish bond at the 2-, 4- and 10-year maturity. Crucially when looking at measures such as OMT, forward guidance and QE one should be mindful that the financial market response likely prices-in any previous announcement, so much so that the ECB's forward guidance incorporates the effect of the OMT announcement and so on. In this sense, the figure above is only descriptive. While the effect is sizeable if one cuts these responses post-OMT-announcement, forward guidance and QE for the OIS for several countries at different maturities (Figure 1) the response seems sizeable for government bonds at long maturities across the board. This increased sensitivity of financial markets to monetary policy events may be the effect of increased transparency over time; see Altavilla et al. (2019).

4.1. Inflation expectations as a measure of long-term predictability of monetary policy?

Looking at inflationary ECB estimates, the ECB has repeatedly predicted a faster – somehow more positive – return of inflation to close to 2% (Macchiarelli et al., 2019). The evidence suggests that the association between (core) inflation and longer-term expectations, based on the Survey of Professional Forecasters, has weakened, possibly signifying that participants have not been necessarily 'extrapolative' when forming their inflation expectations (Lane, 2019; Figure 3). This calls for a reflection on the real-side effectiveness of the measures adopted by the ECB to date.

Research from Lane (2019) and Hubert and Labondance (2018) suggests the overall effectiveness of the ECB's forward guidance since 2013. Nevertheless, the ECB still faces challenges regarding whether its non-conventional policies have been successful in managing expectations. Inflation, for now, remained stubbornly below the ECB's goals despite its staff projections. This was primarily the result of several economic factors, including political risk and uncertainty, that resulted in lower than expected inflation expectations at the three-year horizon. It also reflected, to some extent, the way the ECB's inflation target can be kept 'credible' as such (De Grauwe and Ji, 2019).

Figure 3: Time-varying correlation between headline inflation and Survey of Professional Forecasters at the 12-month (12-month lag) and 24-month horizon (24-month lag)



Source: Authors' calculations based on data from the ECB Statistical Data Warehouse.

In the following, we use a straightforward heuristics model to giver indication about the state of inflation expectations. Following De Grauwe (2011), we assume the economy uses simple rules (heuristics) to forecast future inflation. Within this framework, we specify a learning mechanism in which the economy continuously tries to correct for their forecasting mistakes by switching from one rule to the other. The market forecast for inflation is obtained as a weighted average of two forecasts (see Annex), namely

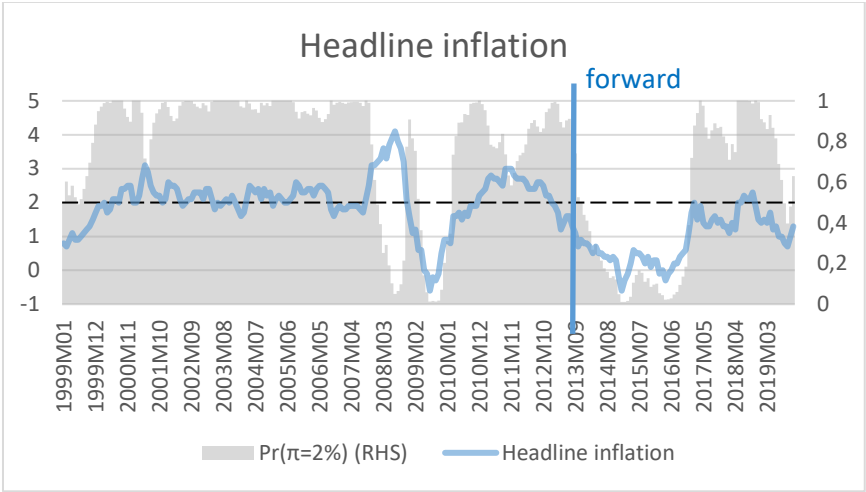
- The central bank's announced inflation objective $\tilde{E}^{f}{}_{t+1} = \pi^{*}$, which is here assumed to be fully credible;
- An extrapolative rule, which assumes the most straightforward possible rule of thumb, by extrapolating the inflation's last available observation into the future, i.e. $\tilde{E}^{e}{}_{t+1} = \pi_{t-1}$.

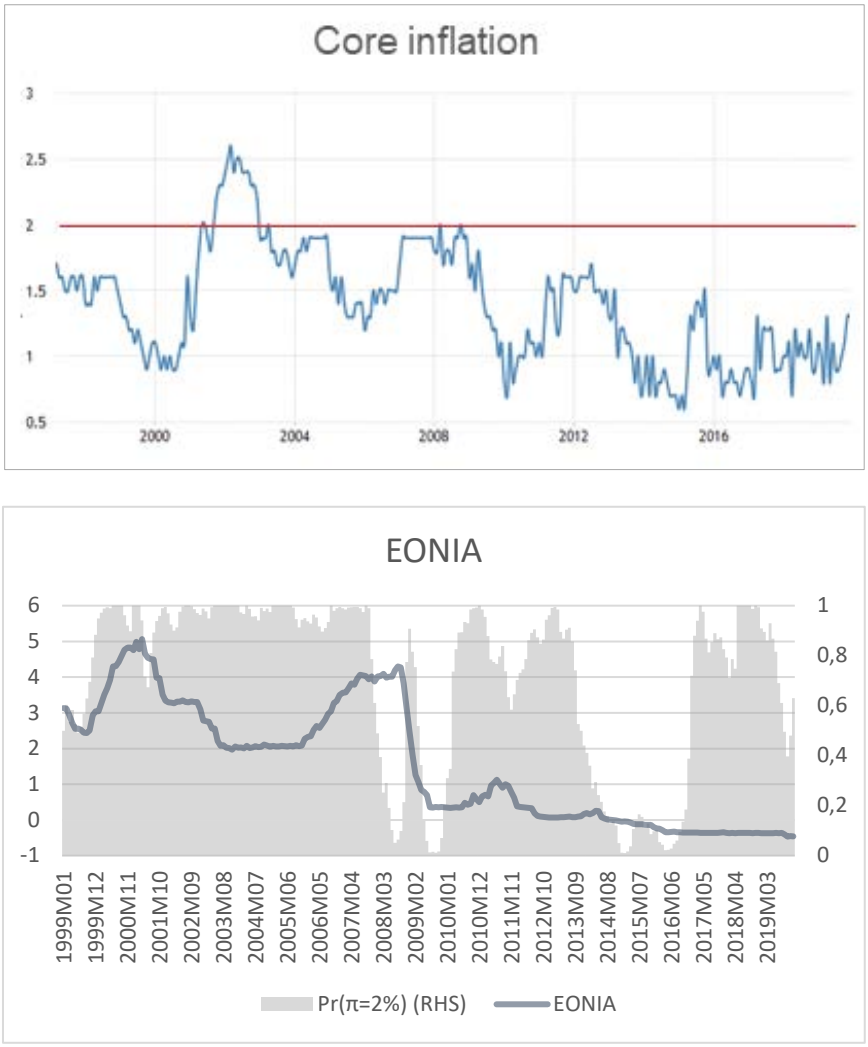
The real-time historical probability to use one rule or the other is calculated based on the mean squared forecasting error of each rule, based on discrete choice theory. While this exercise says nothing about the probability of future inflation, it indicates the *ex-post* inflation forecast and how it significantly deviates from 2%, based on historical headline inflation figures.

We display the probability of using the ECB stated 2% objective as one of the forecasting rules, against a simple rule-of-thumb which extrapolates inflation's last available observation. We plot this result against the path of the EONIA and inflation (Figure 4), both available at the monthly frequency, the euro area output gap (Figure 5), which is available at an annual frequency, and the Survey of Professional Forecasters inflation, at quarterly frequencies. The output gap is displayed in the form of a swathe chart, capturing the uncertainty of the output gap estimates across the OECD and the IMF. From Figure 4, the risk of inflation undershooting seemed to be particularly high between 2013-2017. While inflation is currently still below 2 per cent, there are signs that the Euro Area might be set for a gradual recovery.

Looking at the history of 2% inflation, however, the ECB missed its target in no small degree because of the developments in the output gap (which in turn may be capturing inflation expectations). While the interaction between forward guidance and the purchase program seem to have had its grip over inflation expectations over the last couple of years, the association between inflation and inflation expectations remains weak. It is thus of paramount importance for the ECB to keep enhancing transparency and communication in order to avoid a setback. While the prolonged monetary policy accommodation is necessary to revive demand and help financial markets normalise, it also sends the signal that a long-term policy stance is in place to disguise a bad-shaped economy. Thus, a policy designed to foster optimism may risk producing excessive pessimism. This is why communication and more transparency remain more crucial than ever.

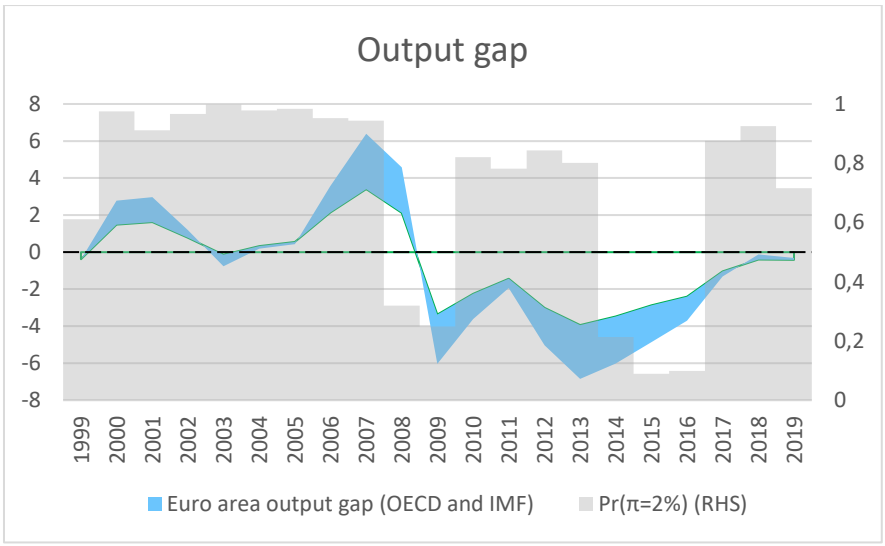
Figure 4: Inflation, core-inflation and the EONIA in the euro area

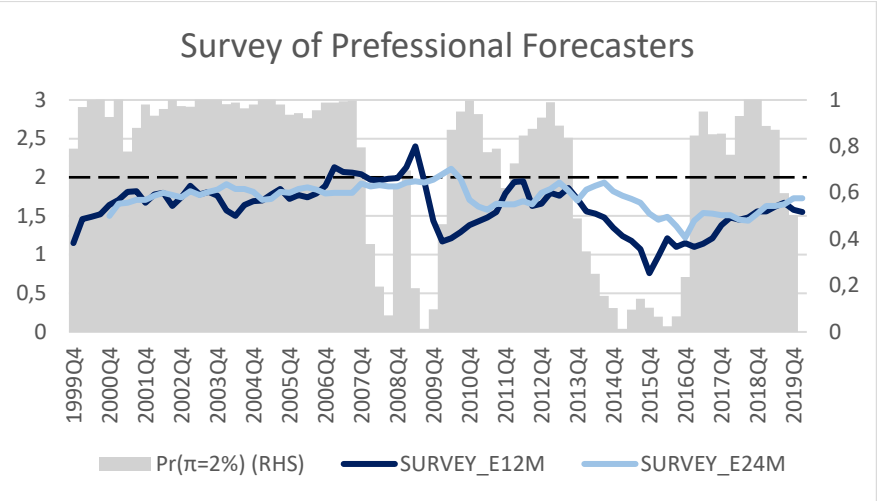




Source: Authors' calculations based on data from the ECB Statistical Data Warehouse, and Eurostat.

Figure 5: Output gap and inflation expectations in the euro area





Source: Authors' calculations based on data from the ECB Statistical Data Warehouse and the IMF World Economic Outlook.

5. CONCLUSIONS

The ECB's unconventional policy has substantially differed from the conventional pre-2008 framework in several ways: first, it was implemented during highly uncertain times and the succession of several adverse shocks; second, a range of simultaneous or successive policies have been implemented in a relatively short time; third, some of these policies were utterly novel to modern monetary history, and being specific to the euro area; fourth, the response of inflation expectations, which is commonly the indicator of the effectiveness of the monetary policy, has weakened over time.

As a result, understanding the context in which central bank communication has been conducted during these unconventional times is crucial, as any attempt to evaluate the communication strategy needs to be viewed in light of this. This note attempts to do exactly this through the lens of financial markets, academic research, as well as considering the governance, political and legitimacy aspects involved therein.

While the determination contained in 'whatever it takes' was a definite success, both in terms of calming the markets and (re-)installing authority over auro area interest rates and bond yields, significant shortcomings have persisted in how the ECB has communicated the details of the announced policy measures. In particular, the ECB has avoided providing answers to '*how*', '*when*' ('*how long*') and '*in what way*' questions in order to avoid dynamic commitment. Moreover, the central bank has been reluctant in generating public debate and allow a diversity of opinions regarding the effects of the measures it has implemented and its' communication strategy. Also, the quantity of releases and press conferences has declined over time.

The introduction of forward guidance has been the ultimate test. Our analysis shows that during the early years, the strategy did not at all manage to align expectations with the target. The two were diverging up until 2017. Only recently, in September 2019 did the ECB shift its forward guidance to state contingency.

In times of high uncertainty, it is not evident what the *optimal* balance is in the supply of information, both in terms of frequency and quality. One would expect that sufficient information should be provided such that inflation expectations are (re)anchored and volatility in inflation reduced. To achieve that, the central bank needs to be transparent and allow an open debate about the undertaken measures. However, central banks may dislike such debates because it may signal a potential for loss of authority and leadership. Then again, transparency and openness signal self-confidence and maturity. For a central bank as young as the ECB, this is not easy. The safest strategy may be to 'walk in the middle' between the two extremes. However, the issue remains if this is close enough to the *optimal* and convincing enough to align expectations and generate the economic boost that is long craved for in the euro area.

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ANNEX

For the sake of the exercise in Figure 4, the forecasts for inflation $\widetilde{E}_t\pi_{t+1}$ are governed by a fitness learning selection mechanism.[4] In this setup, we forecast inflation using two alternative forecasting rules. In particular, the steady-state value of the output gap (fundamentalist rule) against extrapolation of inflation's past trend (extrapolative rule).

As explained in De Grauwe (2011), in an environment where the central bank explicitly announces its inflation target, inflation fundamentalists are assumed to base their expectations on the central bank's target, π^*. Instead, inflation extrapolators behave exactly as output extrapolators do: by extrapolating inflation past trend into the future.

The forecast thus share features of a 'boundedly' rational model, in the sense that the economy learns from its mistakes. Market forecasts of inflation are obtained as a weighted average of each respective forecasting rules, as:

$$\widetilde{E}_t\pi_{t+1} = \alpha_{f,t}\widetilde{E}^f_t\pi_{t+1} + \alpha_{e,t}\widetilde{E}^e_t\pi_{t+1},$$

where the fundamentalist rule is generally defined as

$$\widetilde{E}^f_t\pi_{t+1} = \pi^*,$$

and the extrapolative rule follows

$$\widetilde{E}^e_t\pi_{t+1} = \pi_{t-1}.$$

We base our forecasting rule mechanism on a dynamic predictor selection, in line with discrete choice theory. This mechanism allows switching between the two forecasting rules by computing the mean square forecasting error (MSFE) or utility of the two rules and increase (decrease) the relative weight of one rule against the other in each period. Under the formalisation that the utilities of the two alternative rules have a deterministic and a random component - assuming the latter to be logistically distributed (see Anderson, De Palma, and Thisse, 1992) – weights can be defined based on each period utility ($U_{.,t}$, see also De Grauwe, 2011) as:

$$\alpha^{\pi}_{f,t} = \frac{\exp(\gamma U^{\pi}_{f,t})}{\exp(\gamma U^{\pi}_{f,t})+\exp(\gamma U^{\pi}_{e,t})}$$

and

$$1 - \alpha^{\pi}_{f,t} = \frac{\exp(\gamma U^{\pi}_{e,t})}{\exp(\gamma U^{\pi}_{f,t})+\exp(\gamma U^{\pi}_{e,t})},$$

where γ represents the "intensity of choice". The utility attached to each rule's performance is calculated as

$$U^{\pi}_{f,t} = -\sum_{k=0}^{\infty} w_k\left[\pi_{t-k-1} - \widetilde{E}^f_{t-k-2}\pi_{t-k-1}\right]^2,$$

and

$$U^{\pi}_{e,t} = -\sum_{k=0}^{\infty} w_k\left[\pi_{t-k-1} - \widetilde{E}^e_{t-k-2}\pi_{t-k-1}\right]^2$$

where w_k are geometrically declining weights, allowing to take into account the degree of forgetfulness in the model (see De Grauwe, 2011).

[4] For sake of brevity, we refrain to report the whole details, which are, anyway, provided in De Grauwe (2011).

While quite simple, this model may give an indication of the ex post probability of hitting the 2% target, under the assumption of full central bank's credibility.

In the Table below we further report the results for different parameters of the 'intensity of choice', γ, which determines the pace at which the economy is able to switch among forecasting rules. We do so against the first and second moment of the Survey of Professional Forecasters expectations at the 12- and 24-month horizon.

	Model-consistent expectations				Survey of Professional Forecasters	
	Inflation expectations (γ =.25)	Inflation expectations (γ =.5)	Inflation expectations (γ =.75)	Inflation expectations (γ =1)	SPF 12-month	SPF 24-month
Mean	1.9	1.8	1.8	1.7	1.6	1.7
Median	2.0	2.0	2.0	2.0	1.6	1.8
Max	2.8	3.3	3.6	3.8	2.4	2.1
Min	0.7	0.0	-0.3	-0.3	0.8	1.2
Std. Dev.	0.3	0.5	0.7	0.7	0.3	0.2

During the past five years, communication of the ECB has changed drastically, not least with the introduction of forward guidance. Against this backdrop, this note assesses how successful the central bank has been in influencing financial markets and expectations and discusses the challenges for future ECB communication.

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