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Investigating the Effect of Forward Guidance by the European Central Bank on consumer uncertainty

A time series analysis of consumer uncertainty levels in the Eurozone between 2010 and 2020.

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Abstract

Communication of monetary policy and its intentions has increasingly become a key element in central bank strategy to support policy transmission to the public. By informing economic agents of their future intentions, banks like the ECB hope that the effectiveness of present monetary stimuli increases as uncertainty about future monetary policy is reduced. This paper employs time series analysis and a country level panel data set of 16 Eurozone countries to study the effect of the ECB's acts of Forward Guidance at the lower bound of the policy interest rate between 2010 and 2020. The results find that, conditional on the model's control variables, the ECB's episodes of forward guidance concur with lower levels of consumer financial, macroeconomic and inflation expectation uncertainty in the Eurozone.

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0. Word of thanks

Despite the semester taking an unforeseen turn with the Corona pandemic, writing this paper has been a very interesting and informative experience. While there were challenges, resolved in full or in part, the creation of a quantitative research design and corresponding dataset has been a very enjoyable element of 'doing research'. For sure, I have acquired (some) statistical know-how and macroeconomic understanding that will be beneficial in the future. I would like to thank Leiden University for providing me with a broad and qualitatively high education since 2013. I would also like to thank my sister Liz and two friends, Chris and Midas, for proofreading (parts of) my thesis and helping me improve the paper's quality. I also want to express my gratitude to my supervisor Dr. Peter van Wijck, who has shown what I feel is a high level of interest in my paper and helped me navigate the maze of quantitative economic research when it was needed. Finally, I would also like to take this moment in time as an opportunity to offer many thanks and much love to my parents who, despite my academic undertakings having been quite long and not entirely straight, supported me and my choices and had unremitting faith in me over the years.

1. Introduction

Central banks like the European Central Bank (ECB), tasked with stabilizing price levels and managing foreign exchange and reserves, are institutions that play a unique role in our contemporary economy. This is not just because they can create more of their respective currencies but also because they can set some of the rules of the game of money through their monetary policy. By adjusting their policy interest rates for various money flows between the ECB and the Eurozone economy, or even actively pouring money into the latter through the purchase of assets, there is a hope and belief that they can manage to lead Eurozone economies to a healthy level of demand and inflation. Being such an important player in macroeconomic and financial matters, significant attention is paid by economic agents to what central banks and their officials do or say. Possessing information potentially superior to that of any other economic agent, their forecasts are considered valuable by financial players.

This economic effect of central bank policy and especially its communication have been instrumentalized by central banks in the form of Forward Guidance (FG). By providing 'guidance' on the central bank's likely future behavior (that is, the rules of the game mentioned earlier) to the public they seek to reduce uncertainty in economic agents caused by the factor that is the ECB's monetary policy. Be it firms, banks or consumers, all will be exposed in some way(s) to changes in monetary policy eventually, so the information provided by FG should be of at least some value to all of them as well. While it can be expected and it has been shown in previous research on FG that firms, banks and relevant markets are responsive to such information, what effect does it have on the level of uncertainty in the much more heterogeneous, and often less financially literate, consumers?

The topic of this paper is whether FG by the ECB succeeds in its goal and reduces the level of uncertainty in consumers in the Eurozone by providing information on their expected future policy developments. By providing FG, the ECB hopes to remove uncertainty about future monetary policy developments that might interfere with the response of consumers to monetary stimuli by the ECB in the present such as the policy rates and asset purchases. Employing a time-series analysis approach spanning 10 years with country-level panel data for the levels of consumer uncertainty in 16 Eurozone countries, the research goal of this paper is to observe the effect of FG by measuring the difference in levels of consumer uncertainty between periods in which the ECB practices FG and periods in which it does not. In doing this, the paper hopes to contribute to the evaluation of the ECB's FG as well as the study of the relationship between central bank policy and consumer uncertainty. Accordingly, the

research question is: what is the effect of Forward Guidance by the European Central Bank on the level of uncertainty of Eurozone consumers?

The paper is structured as follows: The first section provides the context and background on the ECB's contemporary monetary policy and its unconventional elements (including FG) to introduce the reader to the history and arguments that form the basis of the current monetary environment. The second section reviews the literature, research and academic theory on consumer uncertainty and FG, describes and explains the theoretical framework used in this paper and establishes the hypotheses for its research goal. In the third section the data used to observe FG and consumer uncertainty and the operationalization of these concepts is discussed and described to show to the reader how FG has been used by the ECB in reality and how the indicators of consumer uncertainty are created. The research design is elaborated upon and control variables are also discussed. Then, the fourth section shows and analyzes the empirical results of fixed-effect panel regressions between consumer uncertainty and episodes of FG and tests the hypotheses established in the second section. A fixed-effect panel regression is used between the ECB's FG and uncertainty indicators from countries in the Eurozone derived from survey data from the European Harmonized Consumer Survey series. The research finds that periods of FG, especially time-contingent and state-contingent FG, by the ECB have a significant negative relationship with levels of consumer uncertainty.

Finally, in the conclusion the paper and its findings are summarized. The interaction between the uncertainty indicators and control variables leads to a lot of questions making the valuation of the findings difficult but also providing interesting starting points for future research on the relationship between central bank policy and consumer uncertainty. The year 2020 is characterized by new highs in levels of uncertainty, unprecedented for most people that are alive today. As a consequence, clear and consistent forward guidance by the ECB may also become a policy tool more important than ever before if it can, as the findings in this paper suggest, reduce the level of uncertainty in not only banks and firms but consumers as well.

2. The ECB and post-crisis unconventional monetary policy

It is during times of deep economic crises that the role of the monetary policy as formed by central banks is increasingly a topic of interest for the public as well as politicians and economic officials. In the past ten years scholars in financial and economic (policy) fields have consistently referred to the 2008 Financial Crisis, and the Great Recession that followed, as a turning point after which governments and central banks would try with intensifying effort to boost the economy, stimulate demand and manage inflation. However, this post-Great Recession era seems to be coming to an end as the new and much more economically complex Coronacrisis has, in a process of viral shock and awe, made the 2008 Financial Crisis seem like a history long ago. In the fight against the virus, the treasury chests have been unlocked like never before and, as a financial disaster looms, all wait for what the central banks will pull out of the hat for the next great act.

2.1 The 2008 financial crisis, 2010 European debt crisis and their aftermath

The responsibilities of the ECB, being the central governing entity in the European System of Central Banks (ESCB), consist of managing foreign reserves and exchange on the one hand and creating monetary policy while providing stability (defined as a level of inflation “close but just under” two percent) and maintaining payment systems on the other (ECB, 2012). The meaning of the second set of tasks can be understood by observing what happened in 2008-2009: a liquidity crisis due to panic on financial markets, also known as a shortage in money flows. In short, even if the initial economic damage by the US subprime mortgage crisis might have been limited, the defaults of banks and firms lead to other banks and firms running into trouble because payments to them could not be made, and in turn they could not pay others (Ireland, 2010). On top of this, the sharp increase in the level of uncertainty in economic agents resulted in risk aversion and even less liquidity (access to money) in financial markets. This vicious circle crept all over the globe and did a great deal of perhaps preventable damage. The ECB and other central banks like the Bank of England and Bank of Japan have based their post-crisis monetary policy on preventing such problems by taking active control of the money supply as a policy instrument (Dell’Ariccia et al., 2018).

Since the 2008 global financial crisis and the 2010 European debt crisis the ECB has been struggling to reach its inflation targets, the most important of its active duties. In the central bank’s view, there is a lack in growth of aggregate demand relative to GDP growth (Altavilla et al., 2019, p. 7). With a lack in aggregate demand growth, there is also a lack in price raises and inflation levels fall short. Without higher prices, then, labor demand does not increase and consumer purchasing power stalls.

Additionally, where inflation normally functions as a 'capital loss function' for those who hold savings due to the decreased future value of the held currency unit, a lack of inflation or, God forbid, deflation can result in economic actors amassing capital by increasing savings (Krugman, 1999, p. 59). A high level of inflation increases the time preference of agents since choosing to consume later will be less rewarding, so a low level of inflation means it becomes more rewarding to save. This again decreases demand (as more saving means less consumption) and so a spiraling effect comes into force.

The 'conventional' policy option by a central bank to counter this lack of inflation would be to set the interest rate lower so that economic actors are less tempted to increase their savings, since it becomes less profitable. From here on unless specified otherwise, the interest rate refers to the ECB's deposit facility rate faced by banks in the Eurozone for storing their excess money at the ECB, which is obligatory. There are two other "key ECB rates": the marginal lending facility rate and the main refinancing operation rate. These rates are relevant for the loans that the ECB makes to individual countries or institutions through various schemes, but this paper focuses on the deposit facility rate since it's the most notorious and relevant rate for consumers. The lower this rate is, the less banks earn (or, more relevant today, the more they lose) on the capital they have deposited at the ECB and as such banks will look for different places to put their money. By lowering the interest rate, the ECB effectively increases the money supply because capital which could have been comfortably stuck at the account of the ECB now needs a different place to settle. This means money becomes less profitable, loans become cheaper and more broadly accessible (risk increases), and income from savings is threatened. Then, the argument goes, demand of non-financial products or assets must go up, and inflation can occur as more economic agents choose to invest or consume instead of keeping their money in a savings account (Campbell et al., 2012; Dell'Ariccia et al., 2018; Fratzscher et al., 2016; Moessner, 2015).

2.2 Unconventional monetary policy at the lower bound of the interest rate

Over the past decades however, a debate has been held by both policymakers and academics about the effectiveness of interest rate cuts in stimulating growth in demand when the rate is already very low. In the Eurozone, this has been a problem since the Great Recession where interest rates were cut dramatically but there was still a lack of demand at already historic low levels of the ECB's deposit rate. This (theoretic) liquidity problem, dubbed the effective Lower Bound (LB) or Zero Lower Bound (ZLB) of interest rate, originally stems from the fact that actors can still save money without being affected by low or negative interest rates by hoarding cash (Altavilla et al., 2019, p. 3; Jensen & Spange, 2015, p. 56-57; Krugman, 2000, p. 221). This argument has lost strength since the digitalization of

finance in which both business and consumers have a strong need for deposited savings. Second and more importantly, the public's belief and expectations about future monetary policy and economic conditions influence the present demand for non-cash assets (Campbell et al., 2012; Giannoni & Woodford, 2003; Krugman, 2000; Krugman et al., 1998).

More importantly, and of much more relevance to our approaching-cashless contemporary economy, is the fact that economic actors are forward-looking as mentioned above. Even if the interest rate is very low or negative, some or all may believe that in time the situation will change and the interest rate will go up again once a certain economic goal or inflation level is achieved, and they decide to wait it out. Additionally, or alternatively, actors may not be willing to face the financial risk of holding non-money assets and/or or increased consumption or they might increase precautionary savings for any of many possible personal or external reasons. The LB or ZLB supposes that this behavior makes interest rate cuts beyond a certain point ineffective and potentially backfiring as a method to stimulate demand (Altavilla et al., 2019; Del Negro et al., 2012; Filardo & Hofmann, 2014).

The academic theory of the ZLB that supposes economic actors will hoard cash or increase precarious savings has been under pressure since certain central banks, notably the ECB and Bank of Japan since 2014 and 2016 respectively, have decreased their interest rate below zero (Altavilla et al., 2019, p. 7; Fratzscher et al., 2016). Negative interest rate policy (NIRP) is unprecedented and unconventional but does not seem to have resulted in the occurrence of extreme economic abnormalities thus far. This calls into question the existence of a 'zero' lower bound, as zero can be argued to simply be an impressive but ultimately artificial barrier. Yet the shock effect of this negative rate in the Eurozone economy cannot be expected to occur instantly, and it has only been in recent years that other economic agents increasingly feel the consequences of the policy. For example, banks have started enforcing negative saving rates on some of their wealthier clients. Yields on government bonds are at all time-lows, pension funds run into trouble due to decreased returns, charities are faced with new high costs as they need places to store their money (Gilbert, 2019; Nauta, 2020). For consumers and institutions alike, savings increasingly become a financial cost instead of income as the ECB floods the economy with money. While it might be below zero, even the monetary policy stance by the ECB admits there is 'a' lower bound of the interest rate (ECB, 2019).

To surpass this obstacle, an additional weapon has been drafted in the form of large purchases by the ECB and other central banks of government and corporate bonds and debt of who the recipients can in turn extend credit to other economic actors (Chebbi, 2019; Levin et al., 2010). Besides the

recipients receiving money, the yield for other economic actors on those financial assets the ECB invests in will go down as well. Where the interest rate might have some effective lower bound in sight, LSAP can, as the ECB puts it; *“further ease monetary and financial conditions, making access to finance cheaper for firms and households,”* (ECB, 2015).

2.3 Forward Guidance as a tool to aid policy transmission

LSAP and NIRP are impressive instruments whose use is unprecedented in the history of central banks, but their success in stimulating demand is contingent on economic agents acting according to the central bank's logic. When these agents face uncertainty about the duration or conditionality of these unconventional policies, let alone their consequences, it can backfire. It is in this tension that FG functions as a reducer of uncertainty by attempting to take away the uncertainty around future monetary policy. By announcing the continuance of NIRP or LSAP open-endedly, (at least) up to a certain period or for a while, or depending on the level of inflation, the ECB signals to economic agents that access to finance will remain easy in the future. With that worry gone, the logic goes, they can happily spend their money also knowing there is no foreseeable future where the interest rate for savings reaches an appreciable level. The need and use of FG are captured well in the following quote by Paul Krugman on stimulating demand with monetary policy:

In a liquidity trap monetary policy does not work because the markets expect the bank to revert as soon as possible to the normal practice of stabilizing prices; to make it effective, the central bank must credibly promise to be irresponsible, to maintain its expansion after the recession is past. Krugman (2000, p. 227).

In the part below, the logic and explanation for using these unconventional tools as outlined by the ECB itself is cited and considered.

2.4 Whatever it takes

[...] When people talk about the fragility of the euro and the increasing fragility of the euro, and perhaps the crisis of the euro, very often non-euro area member states or leaders, underestimate the amount of political capital that is being invested in the euro. And so we view this, and I do not think we are unbiased observers, we think the euro is irreversible. And it's not an empty word now, because I preceded saying exactly what actions have been made, are being made to make it irreversible.

But there is another message I want to tell you.

Within our mandate, the ECB is ready to do whatever it takes to preserve the euro.

And believe me, it will be enough. ECB president Draghi (2012).

After the Eurocrisis de-escalated in 2012, the then-president of the ECB Mario Draghi made history in July at the Global Investment Conference in London with a famously political speech for the top official of a central bank. While vague, informal and only implicit, the speech is a symbolic beginning to the ECB's use of FG for their policy intentions almost exactly a year later. While it's unknown what else is, the unconventional policies of NIRP, LSAP and FG in any case are some of the things Draghi hinted at as being "within the ECB's mandate".

On their website, the ECB explains their use with the following arguments:

Negative interest rate policy: A central bank's core business is making it more or less attractive for households and businesses to save or borrow, but this is not done in the spirit of punishment or reward. By reducing interest rates and thus making it less attractive for people to save and more attractive to borrow, the central bank encourages people to spend money or invest. (ECB, 2014b).

Large scale asset purchases: As a result of the global financial crisis, key interest rates have come close to their effective lower bound – the point at which lowering them further would have little to no effect. Therefore, the ECB turned to non-standard measures to address the risks of a period of low inflation lasting for too long, and to bring inflation back to levels below, but close to, 2% over the medium term, which is the Governing Council's definition of price stability. The asset purchase programme is one of the non-standard measures the ECB is using to achieve this. (ECB, 2019a).

Forward guidance: If inflation is excessively low, the ECB can decrease its interest rates to bring inflation back up. But if interest rates are already at very low levels, it is difficult for the central bank to reduce them any further and it still be meaningful, so other policy tools are needed. Forward guidance is one of those tools.

In such circumstances, clear communication about future monetary policy intentions helps banks, financial market participants, businesses and consumers have a better understanding of how borrowing costs are likely to develop in the future and helps to give the economy the kick-start it needs. (ECB, 2017).

Since normal monetary policy can be expected to be a factor of uncertainty to some degree, unconventional policy even more so as the ECB notes by saying “in such circumstances” at the effective lower bound of the interest rate and when using “other policy tools” like LSAP. The intent of FG is to inform the public about something which it does not know, thereby reducing uncertainty stemming from these issues, increasing understanding about future borrowing costs (and saving returns!). In the next section, academic literature and research on uncertainty and its measurement as well as on FG is reviewed and discussed. It finishes with a description of the theoretical framework used to investigate the research question posed for the post-crisis ECB case described in the section above.

3. Theory and literature on uncertainty and forward guidance

3.1 Uncertainty as an economic concept

In modern day economics, uncertainty is one of the core concepts used in explaining the behavior of economic agents, acting as the residual variable of what one doesn't know or understand when all information available to an agent is used (ECB, 2016). While uncertainty is a very common concept used in many sectors and spheres, as can now be readily observed watching daily news at the time of the corona crisis, it is also an inherently vague and unobservable phenomenon since research can't observe what is "unknown" for an economic agent let alone the effect of this lack of information (Baker et al., 2016; Christelis et al., 2020, p. 15; ECB, 2016). Uncertainty in an agent can have various causes like a lack of relevant available information (ontological uncertainty), an agent's lack of the capacity to obtain and/or utilize such information when available (epistemological uncertainty) or the topic of interest simply being unknowable (ECB, 2016). Socrates puts the latter into perspective well as he faces capital punishment:

To fear death, gentlemen, is no other than to think oneself wise when one is not, to think one knows what one does not know. No one knows whether death may not be the greatest of all blessings for a man, yet men fear it as if they knew that it is the greatest of evils. Socrates in Plato's Apology (West, 1979).

In this paper and in most of the economic literature the Knightian definition of uncertainty is used: a lack of quantifiable information used to predict the likelihood of certain developments (Knight, 1921). This is different from risk, where an agent does have quantifiable information and can make predictions on the likelihood of certain events occurring.

As an analogy, risk would be like guessing a card from a shuffled 52-card deck where uncertainty would be like guessing a card from a stack of 52 cards consisting of one random card from 52 separate decks. In the first case, you know that there is a one-in-52 chance of guessing the right card or in other words, you know the probability of a certain card appearing. But in the second case, you do not know what cards are in the stack (there can be 0 to 52 copies of any one card) and as such can not determine the probability of a certain card appearing. One can only hope to try and predict the probabilities of variations of stacks only to end up guessing there are 52 unique cards in the deck, but this is almost

statistically impossible¹. While in either case the best (and ultimately the only) strategy is just picking any card, the information problem is of a very different nature. This is also an important distinction because uncertainty is more heterogeneous and endogenous to economic agents than risk. It's about how an agent's own information and decision-making processes deal with the lack of information, leading to uncertainty, whereas risk is comprised of probabilities based on information exogenous to the agent (although the way this information is interpreted put to use might vary).

In economics, higher levels of uncertainty are generally associated with lower levels of demand and higher levels of savings as economic agents feel that the degree of unpredictability of future economic conditions warrants increased caution (Binder, 2015, pp. 2-3; Cuaresma et al., 2019). While there is no doubt among academics that consumer uncertainty about for instance future inflation levels influences their economic behavior, there is a lack of reliable methods to study this effect closely (Binder, 2015, p. 2; ECB, 2016). This is hard not least because indicators similar to those used in financial markets do not take into account the more extreme heterogeneity in the beliefs about monetary policy of consumer vis-à-vis financial market players (Andrade et al., 2019, p. 4).

3.2 Consumer uncertainty and ways to measure it

For consumers, just like all other agents, different variables weighing in would imply different spheres of (economic) uncertainty: about employment, level of income or price stability for instance. Because FG tries to reduce uncertainty about the central bank's future monetary policy, it can be argued that "monetary policy uncertainty" is what should be used in research on FG. However, for the average consumers, who are observed in this paper, assuming the existence of uncertainty about monetary policy distinct from financial, macroeconomic or inflation uncertainty is a long shot and would require very specific data to prove. As such, in this study financial, macroeconomic and inflation uncertainty in consumers are used as the outcome variables of interest, conceptualizing monetary policy uncertainty by proxy. It is defined as "a lack of quantifiable information on the probabilities of (a consumer's) future financial/macroeconomic/inflationary developments". The assumption here is that monetary policy of the ECB, along with other factors like GDP growth or changes in the labor market, plays a significant role in forming consumer expectations on their financial positions and macroeconomic or inflation

¹ Being intrigued myself, I calculated the chance of this happening $P(52/52) * P(51/52) \dots P(1/52) = 4.7257911e-22$ or 0.00000000000000000000004725 in 1.

expectations (Binder, 2015; Jensen & Spange, 2015; Mishra et al., 2012). Uncertainty on these issues, then, must also to some degree be rooted in what the ECB says it will do in the future.

The potential drivers and patterns of consumer uncertainty stemming from monetary policy are various: easy access to finance influences return on savings, mortgage conditions and changes in employment or entrepreneurial opportunities and risks to name a few. But it must also be noted that the amount of importance consumers, unlike financial market players, give to information about future monetary policy likely varies widely. Consumers can be assumed to not only be very heterogeneous in their beliefs about what the FG means but also heterogeneous in the degree that they pay attention to it at all (Christelis et al., 2020; De Bruin et al., 2011).

The existing literature on the effects of FG does not focus on consumer uncertainty but often looks at financial markets using for instance (volatility in) short-term future rates and long-term bond yields. A strong advantage of these kinds of indicators are that the data has very narrow time frames that allow for precise observation over time even when changes are small or short-lived. Furthermore, because monetary policy is so relevant and close to these asset markets, changes are easily associated with FG or other acts of central bank policy.

For consumers, accurate and responsive indicators of uncertainty like bond yields are not available and different roads have to be taken to measure the level of uncertainty. Other methods that study uncertainty use disagreement among professional forecasters, the frequency of google searches for terms related to policy uncertainty or the frequency of those terms in major news media (Ambrocio, 2019; Baker et al., 2016; ECB, 2016; Pesaran, 2014).

The tool used most often to study the level of uncertainty (and other types of economic sentiment) in consumers are consistent time series of consumer surveys (Ambrocio, 2019; ECB, 2016). Direct micro (if there is micro-level data) and macro indicators of uncertainty can be derived from survey data in various ways, most obviously direct questions on it but also by observing the diffusion of positive and negative answers among respondents or the frequency of 'don't know' responses to relevant questions (Ambrocio, 2019). A downside is that survey data tends to be monthly at best, leading to a much larger time frame between datapoints than with data from financial markets which means policy shocks and their temporal effects are harder to observe. Despite this shortcoming, it seems the most fitting and useful weapon in the armament of studying consumer uncertainty in a representative and consistent manner.

3.3 The history of and research on forward guidance

FG, unlike NIRP and LSAP programs, is not a new phenomenon for central banks. From the 1990s on some central banks used “conventional” interest rate forecasts as part of their inflation targeting policies. In 1999 the Bank of Japan started to use FG at the end of the Lost Decade to² support its zero interest rate strategy with success, stabilizing market expectations of the future interest rate path (Okina & Shiratsuka, 2004). In 2003 the US Federal Reserve used it to signal future monetary accommodation (Filardo and Hofmann, 2014). There are many more examples for various central banks around the world, for a full list up to 2017 Moessner et al. (2017) can be consulted. For the ECB, however, it is a relatively new tool only used explicitly since 2013.

Communication by central banks has been studied for a while as part of a central bank’s inflation targeting approach, but not in the way FG is; as a separate, necessary tool. Works like those of Krugman on the role of central banks in depression economics (1998), then aimed at the economic crash in Japan in the 90’s, or Woodford and Giannoni (2003) and Woodford and Eggertson (2003) on the forward-looking aspect of monetary policy form the beginning of serious academic attention to communication to the public about future policy. More attention has been paid, and the term FG has become more popular, in the years after the Great Recession and the embracing of FG as a policy tool by various central banks. The work of Campbell et al., on the macroeconomic effects of the US Federal Reserve’s FG (2012) has formed the basis and starting point for more research on the effectiveness of FG using various (international) markets and indicators (De La Barrera et al, 2017; Filardo & Hofmann, 2014; McKay et al., 2016; Moessner, 2015; Moessner et al., 2017).

The results of this research tend to affirm to the effectiveness of Forward Guidance in bringing market expectations in line with the ECB’s and reducing volatility and uncertainty. The ECB itself finds that its FG in 2013 has succeeded in reducing market uncertainty (ECB, 2014a). De La Barrera et al. found that the ECB’s FG reduced uncertainty about inflation expectations as indicated by the nominal 2-year ECB bond yield (2017). Swanson studies the Federal Reserve FG and found that it was significantly effective in moving the short-term Treasury bond yield (Swanson, 2017). These studies all use complex econometric DSGE models³ to distill the effect of FG on financial markets, making them ineffective methods when measuring the effect on consumers or other smaller economic agents not active on

² The Lost Decade concerns the period between 1991 and 2001 in which Japan faced economic stagnation after asset markets crashed in 1991.

³ Dynamic Stochastic General Equilibrium; a macroeconomic model that attempts to explain changes in economic trends or phenomena.

these markets. There have been problems with these models too, as FG was from early on associated with strong effects that are thought to be an overestimation. This problem, has been dubbed the “forward guidance puzzle” and said to lie in the way FG is coded into DSGE models (Del Negro et al, 2012). These two issues are something this paper hopes to avoid, first by looking at data specific to consumers instead of financial markets and secondly by employing a model very different to DSGE models (discussed in the next section).

3.4 The forms of forward guidance

There are various different approaches conceivable with which a central bank can practice FG to inform the public of its future policy rates. The literature on FG has conceptualized the communication on two sets of possible conditions: the nature of the message and the conditions of the policy announcement.

The nature of the message has been subsequently categorized as Delphic or Odyssean in nature, with a recent addition by Moessner et al. that is Aesopian FG. The nature of the messages concerns the question whether the central bank intends to keep their promises or not. Delphic FG implies that, like the oracle of Delphi Pythia, central banks make economic forecasts and likely policy behavior based on their “potentially superior” information on the economy (Campbell et al., 2012). Whereas Delphic FG does not make an explicit promise on certain future policy, Odyssean FG, referencing to Odysseus who tied himself to the mast so he would stay on the ship and not be tricked by the false call of the Sirens, has a central bank publicly commit to a future policy course (Campbell et al., 2012). While this form of FG and its possible effects has received a lot of academic attention, it has not been practiced by any central bank (Moessner et al., 2017, p.680).

The third distinction, Aesopian FG, is defined as a different category of Delphic FG being “forecasts provided without commitment of likely future monetary policy action and macroeconomic performance episodically under unusual circumstances, such as at the effective lower bound” (Moessner et al). The reference here is that Aesop, a teller of stories with morals, will, like the ECB, tell the story that is needed to reach a certain goal in a certain situation. Moessner et al. classify the ECB’s FG as such, opposed to “regular and consistent” Delphic forecasts on the interest rate. This paper also considers the ECB’s FG as Aesopian, since the ECB itself also notes (as shown in the citation in the first section of this paper) that FG is a tool to be used when the conventional interest rate cuts no longer work. Additionally, it is not Odyssean because the wording used by the ECB does not reflect an explicit commitment, only

the likely path (the wording used by Draghi in 2012 on the other hand looks at lot more like commitment).

The conditions of the policy forecasts can further be divided in three forms: open-ended, time-contingent or state-contingent forecasts. Open-ended or qualitative FG provides no quantitative details such as time or economic target for its future policy; time-contingent specifies a time horizon, and state-contingent specifies an economic target threshold for future policy. The choice for a certain form is a difficult one as a “careful and uncertain” statement might not be effective enough to provide the needed boost, and an explicit statement that the bank may have to divert from might impact its credibility and with it the effectiveness of future FG (Moessner et al., 2017). Studying the ECB’s FG demands making a distinction between these forms as they use all of them. A recent ECB working paper using a cross-country (and cross-currency) dataset shows that the different forms may have different effects; long time-contingent FG (over 15 months) mutes the market responsiveness to economic news whereas open-ended does not; long time-contingent and state-contingent FG are effective reducers of uncertainty as observed in the level disagreement among forecasters while open-ended and short time-contingent FG do not have such an effect (Ehrmann et al., 2019).

3.5 Theoretical framework and hypotheses

In this section literature and research on consumer uncertainty and FG have been discussed in order to show to the reader the academic fields surrounding this paper’s topic. Observing the effects of the ECB’s FG on household financial uncertainty requires clear conceptualizations of what Forward Guidance and household uncertainty is and what their relationship is with ECB’s other policy (goals). The part below summarizes the relationship between different concepts as supposed by this paper:

The 2008 and 2011 crises and their aftermath have led to increased levels of uncertainty and a lack of growth in demand that reinforce each other, inhibiting economic growth. As a response, the ECB and other central banks have employed unconventional policy tools such as negative interest rates and large-scale asset purchases. (Aesopian) Forward Guidance is a tool of policy communication intended to reduce uncertainty in economic agents as caused by the ECB’s (unconventional) monetary policy. In reducing uncertainty by providing information on future policy, the ECB hopes to make the other tools (NIRP and LSAP) more effective as stimulants of aggregate demand in the present. This paper investigates the link between the ECB’s FG and consumer uncertainty as encircled in the graphic by observing differences in levels of uncertainty during periods with, without and with different kinds of FG. What is the effect of Forward Guidance by the European Central Bank on the level of uncertainty of

Eurozone consumers? Filling the lack of research concerning FG's effect on consumer is the main contribution of this paper, but it also seeks to shed light on the relationship between the ECB's monetary policy and the economic uncertainty and behavior of consumers.

Based on the results of previous research on FG cited in this section as well as the policy's intention as noted by the ECB itself the following hypotheses are established for this paper:

H₀: There is no relationship between the ECB's acts of forward guidance and the level of uncertainty indicators in consumers.

H₁: There is a negative relationship between the ECB's acts of forward guidance and the level of uncertainty indicators in consumers.

These being the official hypotheses, there are also some expectations which will be observed but not formally through the establishing of hypotheses. The most important expectation is that there is a difference between the three types, open-ended, state-contingent and time-contingent, of forward guidance by the ECB in their effect on the level of consumer uncertainty. The difference in frequency of the types of report makes statistically testing differences difficult and so this will be done "manually" by observing the coefficients and levels of significance.

Finally, it should be noted that recessionary or subdued growth periods can affect consumer uncertainty in an unexpected manner. While it might be more reasonably expected to increase as economic conditions worsen, it would also be logical that this data proves the opposite as consumers become increasingly confident about pessimistic views. Call it "certain doom", if you will. While not a formal hypothesis and not part of the research goal of this paper, it is an important side note regarding the relationship between consumer uncertainty and other economic sentiments.

In the next section the data and research design used to study the effect of the ECB's FG on consumer uncertainty are introduced, described and discussed.

4. Data and research design

4.1 Research population and period

To study the effect of the ECB's FG the paper uses country-level panel data consisting of the aggregate survey results for 16 Eurozone countries between January 1, 2010 and January 1, 2020. This includes over three years before the ECB started using FG in 2013, so that plenty of observations with no FG are also included in the data. Data shares from the surveys are used that indicate what percentage of respondents for each country answered a certain option for a certain question. The surveys used are the Joint Harmonized EU Programme of Business and Consumer Surveys (European Commission, 2020a). This is a survey series managed by the European Commission seeking to inform national and EU policymaking and economic research. The survey program started in 1961 as a business survey initially and consumers were added in 1972, retail in 1984, services in 1996 and financial services in 2007 (European Commission, 2020).

The survey data from the consumer sector has a sample size of about 32,420 for the entirety of the EU. While the data is monthly it should be noted that the fieldwork is done in the first two to three weeks of the month and as such is a better reflection of the earlier than of the latter half (European Commission, 2020, p. 6). This paper will not use all EU countries and all years, however, and will focus on those EU member states which have been in the Eurozone since January 1, 2013 (when the ECB first used FG) up to January 1, 2020 (last datapoint for this paper)⁴. This is because it can be expected that countries that do not have the Euro as their main currency are unaffected or affected differently by the ECB's policy than are Eurozone countries. Ireland is also excluded because the survey data only starts in 2016. These countries are Austria (AT, 1500), Belgium (BE, 1850), Cyprus (CY, 600), Estonia (EE, 800), Finland (FI, 1000), France (FR, 1700), Germany (DE, 2000), Greece (EL, 1500), Italy (IT, 2000), Luxembourg (LU, 500), Malta (MT, 1000), the Netherlands (NL, 1050), Portugal (PT, 900), Slovakia (SK, 1200), Slovenia (SI, 1100) and Spain (ES, 2000). 16 countries in total (as well as a Eurozone average), this cuts the usable sample size down to 21,700 respondents per survey. While the research population is at the country level so different population sizes are not a problem per se, some countries are flagged as special cases due to their size or financial history that might distort the regression between FG and uncertainty. While they are included in the panel data for now, they are marked and removed from the

⁴ I fear here that the coronacrisis, while very interesting and relevant to uncertainty and monetary policy, will impact the data in ways that will obscure the effect of any announcements by the ECB. As such I have decided to make the cut-off at the end of 2019 and not include the data from the past quarter.

group statistics as a robustness check. These countries are: Cyprus, Malta and Luxembourg. This means that the other group of “regular” countries number 13.

The survey is held on a monthly basis which means there have been 120 editions between January 1st, 2010 and January 1st, 2020. By using country-specific results as panel data, this corresponds to 1920 (16*120) usable observations balanced over time and countries. The data used is **not** seasonally adjusted for two reasons: the ECB’s FG policy and its intention could be based on seasonal differences and more importantly seasonally adjusted data that includes the shares of answers for each question is not available.

4.2 Indicators of uncertainty: ‘don’t know’ frequency and answer diffusion

Two separate sets of indicators of uncertainty are constructed using the same survey data described above. The first one, and the central indicators used in this paper, is the approach recommended by Ambrocia et al. that observes the frequency of ‘don’t know’ responses. This approach adheres closely to the definition of Knightian uncertainty where an agent admits they do not possess the quantifiable information needed to answer the question. In this sense it also fits the description of uncertainty that FG aims to reduce by providing new, previously unavailable information on future policy. The higher the number, the more individuals feel that the future is too uncertain to give an answer. The value is the percent share of don’t know responses for a question, ranging from 0 (total certainty) to 100 (total uncertainty). See equation 1 below where p is the percentage of respondents picking a certain answer i ($i = 6$ is “don’t know”) for question j at survey date t .

$$\text{Equation 1} \quad QA_{jt} = \sum_j p i_{j,t}$$

$$\text{Equation 2} \quad QB_{jt} = \sigma p i_{j,t}$$

The second, additional set of Indicators is one, also noted in the ECB working paper on uncertainty, that suggests observing the diffusion of shares between answers among possible options as an indicator of *aggregate* uncertainty or group uncertainty (ECB, 2016). It is shown in equation 2, where QB equals the standard deviation between the percentage shares p for answers i (1-5) for question j at survey date t . The logic is that a more balanced ratio between positive and negative answers on forward-looking questions that are exogenous to the consumer indicate disagreement in predictions that, similar to the professional forecaster disagreement method mentioned earlier, reflect uncertainty on the aggregate level. The interpretation of this indicator is quite different from the first as it creates an indication of uncertainty based not on classical Knightian sense but rather a deductive logic: since only

one of the answers on exogenous questions can be right (even if we currently do not know which), the large amount of consumers voting for other options indicates uncertainty at the population level. Furthermore, the indicator exists 'alongside' the first one, as it uses data from the same population but represent different answers to the same questions. The first indicator uses option 6, while the second one uses option 1 to 5 of a question. The indicator is created by taking the diffusion of answers as represented by the standard deviation derived from the shares for answers 1 to 5. This is a number between 0 (when all options have exactly the same share, indicating total uncertainty) and 40 (when 1 option has 100%, and the rest 0, indicating total certainty). If the diffusion is (1: 4.8% 2: 28.5% 3: 30.2% 4: 17.3%, 5: 8.5%) the corresponding standard deviation is 10 and uncertainty is high, in this case the A indicator gives 11.7 (as a statistical relationship it is $100 - \text{total shares of answers 1-5}$). If the diffusion is (1: 6.5% 2: 53.3% 3: 17.2% 4: 10.8% 5: 4.5%) the standard deviation is about 18 and uncertainty is lower. In this case the A indicator gives 7.7.

The monthly consumer questionnaire consists of 15 questions related to financial and economic behavior as well as unemployment and inflation expectations⁵. The indicators of uncertainty represent three questions in this survey. These are the three questions (Q2, Q4, Q6 in the survey) which will henceforth be referred to as (Q)1, 2 and 3 and are about financial uncertainty, macroeconomic uncertainty and inflation uncertainty respectively. They are treated as separate indicators, meaning there are a total of 6 different measurements (Q1A, Q2A, and Q3A using 'don't know' frequency and Q1B, Q2B and Q3B using the diffusion of shares between answers 1 to 5).

Q1. How do you expect the financial position of your household to change over the next 12 months?

Q2. How do you expect the general economic situation in this country to develop over the next 12 months?

Q3. By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months

4.3 Consumer uncertainty indicators described

The average, standard deviation as well as minimum and maximum values for the constructed indicators deviate strongly for different countries, implying that strong country-specific fixed effects are present. The mean for each indicator and every country is displayed in table 2. A simple regression

⁵ For an overview of all questions and possible answers, see the appendix

shown in table 1 finds that the two sets of indicators are correlated in the expected manner: An increase in the standard deviation-based diffusion indicator (B) implies that the shares of each option are less balanced (less diffused); more people voted for the same options. This corresponds with a decrease in the respective ‘don’t know’ option-based uncertainty indicator (A). This in any case suggests that the relation between these indicators is such that they can both be used as an indicator of consumer uncertainty alongside each other. Table 1 shows that if the standard deviation among answers for questions 1, 2 and 3 goes up by 1, the number of respondents in % answering ‘don’t know’ goes down by 0.245, 0.359 and 0.396 respectively. According to this relationship, if uncertainty as recorded by one indicator is (for instance, a low standard deviation / B indicator), the other indicator should also reflect a high level of uncertainty (a high level of “don’t know” answers). Visa versa, when the ‘don’t know’ indicator for, for example, macroeconomic uncertainty (Q2A) goes up by one point, the corresponding change in the diffusion indicator (Q2B) is a standard deviation that is 0.214 lower.

Variable	QA	QB
Q1A		-0.324
Q1B	-0.245	
Q2A		-0.214
Q2B	-0.359	
Q3A		-0.271
Q3B	-0.396	

Table 1 Regression coefficients between pairs of ‘don’t know’ and diffusion indicators

Country	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
EU	3.311	5.542	6.868	24.978	14.638	14.429
Eurozone	4.515	6.318	7.125	22.832	16.286	15.519
Austria	1.245	1.59	1.347	23.876	16.496	19.133
Belgium	2.115	4.834	3.683	27.386	14.195	13.235
Cyprus	6.289	5.418	7.938	19.894	15.393	14.301
Estonia	8.902	12.723	8.552	20.177	16.076	14.895
Finland	0.788	1.242	0.878	23.654	18.889	18.368
France	3.1	5.898	5.288	23.431	14.494	18.686
Germany	3.055	6.52	10.097	32.101	20.433	16.119
Greece	6.978	6.691	12.655	18.897	21.465	12.889
Italy	2.282	3.861	5.894	29.481	15.27	17.546
Luxembourg	3.895	6.522	6.193	26.344	16.695	15.045
Malta	18.656	24.781	25.984	18.078	14.863	14.294
Netherlands	2.59	3.07	3.893	19.351	15.827	15.023
Portugal	1.124	1.62	1.969	22.191	17.517	15.686
Slovakia	5.908	9.954	9.603	21.055	14.962	13.892

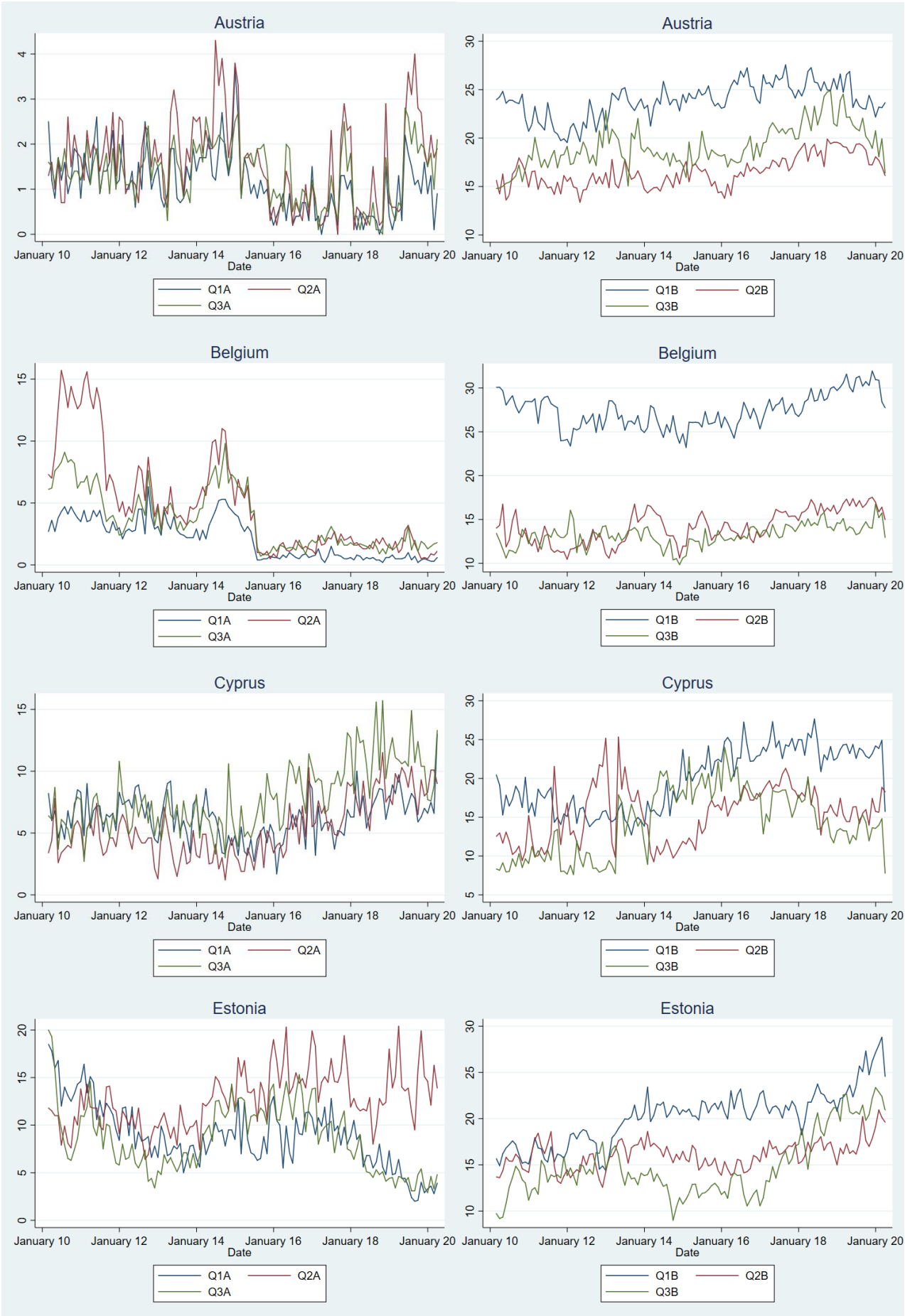
Country	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
Slovenia	1.071	1.405	2.281	18.418	14.039	16.792
Spain	4.275	4.952	7.754	20.985	13.967	12.401

Table 2 Average values by country and indicator. Set A in % answering “don’t know”. Set B in standard deviation among shares of options 1 to 5.

Comparing the values in table 2 of countries like Malta and Finland or Slovakia and Slovenia shows that difference can for some country-endogenous reason(s) be large in both indicators, and the relation between the average of both indicators seems to be inconsistent as well. Additionally, it should be noted that the use of the diffusion indicator for Q1 is probably not very accurate as a measurement of uncertainty, as it inquires to the personal situation of the consumer and diffusion in answers might be a sign of inequality instead of uncertainty. The following three pages consist of the over-time graphs of each indicator for each of the 16 Eurozone countries between 2010 and 2020. Note that for the A indicators, the Y-axis range can vary strongly depending on that country’s maxima and minima.

Investigating the effect of forward guidance by the European Central Bank on consumer uncertainty

Figure 1 Consumer uncertainty indicators over time, by country



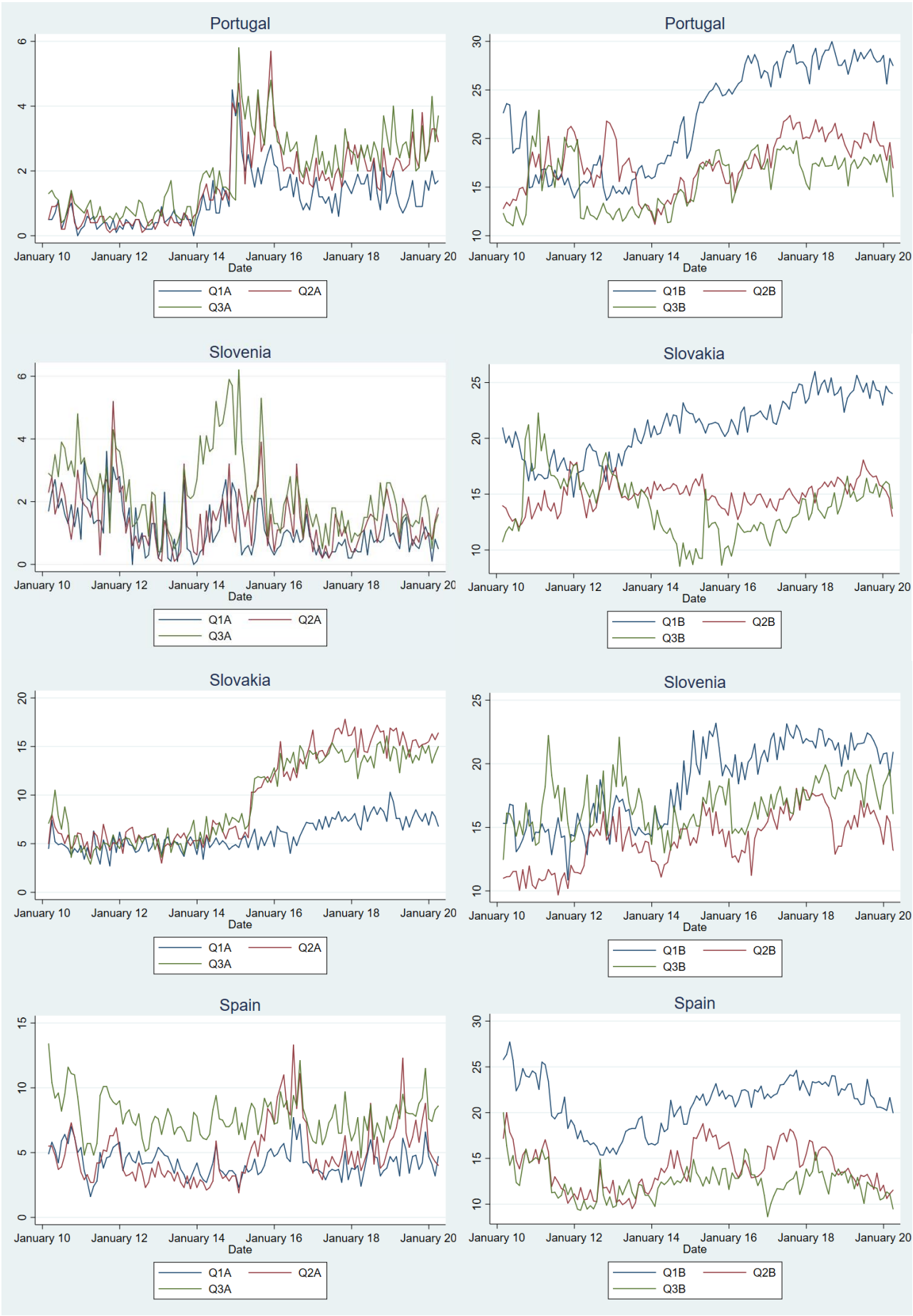
Investigating the effect of forward guidance by the European Central Bank on consumer uncertainty



Investigating the effect of forward guidance by the European Central Bank on consumer uncertainty



Investigating the effect of forward guidance by the European Central Bank on consumer uncertainty



4.4 Operationalization and description of the ECB's Forward Guidance

To measure the treatment effect from acts of FG, the ECB's monetary policy decision meetings by the Governing Council (typically at least once every six weeks but sometimes more) are observed. These meetings and their monetary decision report (henceforth referred to as reports) are used to inform the public of and explain to them policy decisions taken by the central bank and are followed by a press conference. The reports of these meetings are where the ECB formally provides FG and so each report is an observation of the independent variable. FG can take one of three forms; open-ended, state-contingent (inflation level target) and time-contingent. These three forms are operationalized through dummy variables of which only one (or none if the report does not have FG) can be on at a time. A fourth variable indicates the type of FG (0 for none, 1 for open-ended, 2 for state-contingent and 3 for time-contingent) that takes a value depending on which of the three dummies is 1.

While there is a separate trend in providing FG for LSAP, the research in this paper, due to its limited scope and the decreased relevance to and understanding of LSAP by consumers, only records FG concerning the ECB's deposit facility interest rate. Below are four examples, one report without FG and one with open-ended, state-contingent and time-contingent FG respectively. They were retrieved from the ECB's online archive (ECB, 2019b).

June 6, 2013: No Forward Guidance (= 0), type of FG is also 0.

"[...]. Against this overall background, our monetary policy stance will remain accommodative for as long as necessary. In the period ahead, we will monitor very closely all incoming information on economic and monetary developments and assess any impact on the outlook for price stability."

July 4, 2013: Open-ended FG (= 1), type of FG is also 1.

"Looking ahead, our monetary policy stance will remain accommodative for as long as necessary. **The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time.** This expectation is based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics. In the period ahead, we will monitor all incoming information on economic and monetary developments and assess any impact on the outlook for price stability."

September 12, 2019: State-contingent FG (= 1), type of FG is 2.

"**The Governing Council now expects the key ECB interest rates to remain at their present or lower levels until it has seen the inflation outlook robustly converge to a level sufficiently close to, but below, 2% within its projection horizon,** and such convergence has been consistently reflected in underlying inflation dynamics."

June 14, 2018: Time-contingent FG (= 1), type of FG is 3.

“[...] the Governing Council decided that the interest rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility will remain unchanged at 0.00%, 0.25% and -0.40% respectively. **The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019** and in any case for as long as necessary to ensure that the evolution of inflation remains aligned with the current expectations of a sustained adjustment path.”

Between January 1 2010 and January 1 2020 there have been a total of 99 reports, summarized in the table below:

Category	Frequency	Date
Open-ended Forward Guidance	32	07-13 to 09-14, 01-16 to 06-18
State-contingent Forward Guidance	3	09-19 up to present
Time-contingent Forward Guidance	10	07-18 to 08-19
No Forward Guidance	54	01-10 to 06-13, 10-14 to 01-16
Total	99	01-10 to 12-19
NIRP .00 > -.10 > -.20 > -.30 > -.40 > -.50	5	06-14, 09-14, 12-15, 03-16, 09-19

Table 3 Category, frequency and periods of FG by the ECB

The changes in the ECB's FG policy over time are also displayed graphically below. It's important to note that the pattern consists of periods where the ECB, for some time, does or does not provide certain types of FG. This is in contrast to what could be an “on and off” pattern where a central bank might more often switch between FG and no FG.



Figure 2 ECB's FG policy between 2010 and 2020

4.5 Deducing the impact of FG with time series analysis

The paper employs a fixed effect panel regression with 16 countries between the indicators of consumer uncertainty and a (1 month) lagged variable to indicate FG and its type. While the panel data for individual countries in the dataset is described to a degree in the results section, the regressions that the hypotheses will be accepted and reject on are done on the Eurozone scale and individual countries are not considered in detail due to the limited scope of this thesis. A fixed effect panel regression was chosen due to the, at times extreme, variance in indicators between the countries in the dataset. By using fixed effects, the research design can account to some extent for the corresponding difference in

how FG affects those indicators. The lag used for FG is one month and it is done because, as mentioned earlier, the monthly data used to construct the indicators is a better reflection of the first half of the month. As such, it is probably a better reflection of the FG practiced (or not) a month earlier than that same month (where the report is regularly released in the second half of the month).

Three control variables are included in the data to check the robustness of the model. These are a (2 month) lagged monthly Consumer Confidence Indicator (CCI) for each country retrieved from Eurostat (European Commission, 2020b) as well as an indicator of employment uncertainty created from the same data set as the other uncertainty indicators. CCI is also based on the same surveys of which the data is used in this paper, using questions on saving and spending and is a number below or above 0 indicating no confidence and confidence, respectively. A lagged version is used so that there is less room for CCI to be influenced by FG as it's the CCI for the month before the observation's FG. CCI was chosen due to its potential to function as a broad economic sentiment indicator. The logic of using it is that it includes into the model a factor of economic recession and growth as experienced through consumers and their "confidence". The literature notes that uncertainty indicators should be negatively correlated with macroeconomic indicators like the CCI and should in that case function as a strong control if the level of uncertainty is strongly related to optimism and pessimism (Binder, 2015; ECB, 2016).

Regarding the employment uncertainty indicator, for the A indicators this means it's the amount of 'don't know' answers to Question 7 in the survey, a forward-looking question on employment expectations (see the appendix). For the B indicator, it's the diffusion among answer 1 to 5 for the same question. Worries about future employment are another issue that is a cause for consumer uncertainty in the short term while likely being more distantly related to the ECB's monetary policy than macroeconomic or inflation expectations. A simple third control variable for the month (1-12) of the observation is added to verify that monthly and seasonal differences in levels of uncertainty are not distorting the results is also added. Finally, the results that are used to confirm or reject the hypotheses are all made using robust estimates for levels of significance.

5. Results and analysis

This section presents and discusses the results of the fixed-effect country-level panel regressions between the six consumer uncertainty indicators (Q1 for financial uncertainty, Q2 for macroeconomic uncertainty, Q3 for inflation uncertainty and the A set based on frequency of ‘don’t know’ answers while the B set is based on the diffusion among answers) and the periods of Forward Guidance. Table 4 consists of the first set of regressions between the six indicators and a simple FG dummy (that is 1 for all three variations and 0 for no FG). The Eurozone row is a fixed effect panel regression, while the other statistics are simple regressions with individual country data, levels of significance are created using normal and not robust estimates.

5.1 Simple FG regression

The results are very mixed although mostly highly significant using this simple dummy and normal estimates; for some countries like Belgium or Slovenia the results consistently show less uncertainty and would confirm FG effectiveness as its coefficient decreases with the set A and increases with the B set indicators. Other countries like Spain and France have much less significant results suggesting that the level of consumer uncertainty in those countries is less responsive to FG than in other countries. There are also countries, such as the Netherlands, where FG is related with increased uncertainty in the A indicator, but decreased uncertainty in the B indicator. To better observe these findings, table 5 shows the fixed effect panel regression using three dummies, one for each form of FG to calculate the effect for different types of FG conditions.

Country	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
EU	-0.267***	0.179	0.394**	0.630***	2.037***	0.716***
Eurozone 16	-0.824***	-0.074	0.161	1.694***	1.044***	0.811***
Austria	-0.422***	-0.157	-2.90**	1.928***	1.579***	2.426***
Belgium	-1.741***	-4.04***	-2.180***	1.172***	2.435***	1.013***
Cyprus	0.311	2.231***	2.764***	4.414***	1.640***	3.521***
Estonia	-3.246***	2.168***	-1.272**	3.993***	1.270***	2.748***
Finland	-0.030	0.068	0.262***	-0.450***	1.692***	-0.564
France	-0.118	0.340	0.213	-2.018***	0.140	0.069
Germany	0.221**	1.336***	2.426***	-1.396***	1.139***	0.657***
Greece	-1.717***	-1.322**	0.018	-3.053***	-6.270***	2.240***
Italy	-0.846***	-2.528***	-2.716***	2.071***	2.599***	3.455***
Luxembourg	-1.095***	0.693*	-1.547***	1.690***	1.862***	0.349
Malta	-6.558***	-9.062***	-1.981	2.602***	2.122***	-4.528***
Netherlands	0.345***	1.643***	1.685***	1.348***	2.304***	1.126***

Country	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
Portugal	0.213	0.617***	0.749***	6.860***	1.260**	1.486***
Slovakia	1.805***	6.193***	5.330***	3.912***	0.675***	-1.237**
Slovenia	-0.528***	-0.358**	-0.398*	3.301***	1.960***	0.450
Spain	-0.340*	0.750*	-0.470*	1.010**	0.306	-0.236

Table 4 Simple regressions between FG and consumer uncertainty indicators. *** = $P < 0.01$; ** = $P < 0.05$; * = $P < 0.1$.

Country	FG TYPE	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
EU	Open-ended	-0.171**	0.296*	0.777***	0.803***	1.963***	0.513***
	State-contingent	-0.432***	0.118	0.661	0.835**	2.217***	0.919***
	Time-contingent	-0.596***	-0.667*	-1.659***	-1.162*	1.459**	1.818***
Eurozone 16	Open-ended	-0.562***	0.015	0.518***	1.435***	1.099***	0.314***
	State-contingent	-1.653***	-0.487*	-0.691***	2.394***	1.021***	1.844***
	Time-contingent	-1.146***	0.255	0.560	1.915***	0.534	2.399***
Austria	Open-ended	-0.423***	-0.292	-0.330**	2.087***	0.885***	1.554***
	State-contingent	-0.497***	-0.050	-0.345*	2.011***	3.326***	4.512***
	Time-contingent	-0.169	0.360	0.302	0.469	1.860***	1.388
Belgium	Open-ended	-1.488***	-3.591***	-1.863***	0.103	1.866***	0.693***
	State-contingent	-2.514***	-5.166***	-3.263***	3.358***	3.591***	1.619***
	Time-contingent	-2.647***	-6.348***	-3.263***	4.218***	3.984***	2.302***
Cyprus	Open-ended	-0.274	0.915**	1.516***	3.445***	2.127***	4.859***
	State-contingent	1.597***	4.562***	5.214***	5.415***	0.953	0.100
	Time-contingent	0.681	4.547***	2.352**	5.653***	1.231	0.885
Estonia	Open-ended	-1.807***	2.073***	0.375	2.853***	0.720**	0.444
	State-contingent	-5.660***	1.751**	-4.868***	4.810***	1.468***	6.946***
	Time-contingent	-7.030***	3.789**	-5.081***	8.217***	3.186***	8.617***
Finland	Open-ended	0.034	-0.076	0.168**	-0.405**	1.318***	-1.598***
	State-contingent	-0.105	0.461***	0.446***	-0.755***	2.295***	0.997
	Time-contingent	-0.298**	0.013	0.659***	-0.784*	1.644	3.501**
France	Open-ended	-0.035	0.601	0.454*	-2.147***	0.094	-0.533
	State-contingent	-0.358	-0.309	-0.313	-1.904***	0.158	0.665
	Time-contingent	-0.174	-0.304	-0.116	-1.234	0.519	3.166***
Germany	Open-ended	0.277**	1.629***	2.940***	0.757	1.995***	0.064
	State-contingent	0.381**	1.432***	3.277***	-3.589***	-0.745	1.076***
	Time-contingent	-0.525*	-1.252**	-4.144***	11.260***	-2.935	4.444***
Greece	Open-ended	-2.150***	-2.306***	-0.609	-1.841**	-2.882**	2.152***
	State-contingent	-1.112	0.084	0.972	-5.515***	12.263***	2.287***

Country	FG TYPE	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
Italy	Time-contingent	-1.903	-0.272	2.450	-2.858	-9.422***	2.700**
	Open-ended	-0.287	-1.887***	-1.508***	0.754	1.906***	2.776***
	State-contingent	-2.023***	-3.893***	-5.196***	5.164***	3.546***	5.125***
Luxembourg	Time-contingent	-2.310***	-4.053***	-5.456***	4.946***	5.027***	3.914***
	Open-ended	-1.166***	0.446	-1.368***	1.737***	2.046***	0.243
	State-contingent	-1.274***	0.792	-2.288***	2.204***	1.904***	0.831
Malta	Time-contingent	0.039	2.725**	-0.638	0.554	-0.658	0.983
	Open-ended	-1.718	-3.533**	2.774*	1.533***	0.803	-5.174***
	State-contingent	-	-	-	-	-	-
Netherlands	Time-contingent	17.347***	22.244***	13.518***	5.227***	5.370***	-3.044**
	Open-ended	-9.520**	-10.381**	-7.103*	2.039	0.998	-2.562
	State-contingent	0.338***	1.203***	1.672***	1.270***	2.892***	0.367
Portugal	Time-contingent	0.116	2.359***	1.269***	1.340***	0.939	2.696***
	Open-ended	1.133	2.821***	2.963***	1.152	-0.243	3.105***
	State-contingent	0.140	0.377*	0.464**	5.322***	0.372	0.851
Slovakia	Time-contingent	0.261	0.841**	1.212***	9.577***	3.056***	2.367***
	Open-ended	0.475	1.670***	1.548***	8.693***	2.076	2.051
	State-contingent	1.228***	4.916***	4.343***	3.134***	0.257	-2.012***
Slovenia	Time-contingent	3.050***	9.092***	7.378***	5.185***	1.650***	0.266
	Open-ended	2.647***	8.800***	7.569***	4.930***	1.203**	1.088
	State-contingent	-0.553***	-0.504***	-0.434*	2.556***	1.674***	-0.270
Spain	Time-contingent	-0.498**	-0.289	-0.846**	4.744***	2.275***	1.915***
	Open-ended	-0.576	-0.617	-0.948	3.921***	1.970*	1.131
	State-contingent	-0.389*	0.534	-0.584*	0.725	0.745	-0.195
	Time-contingent	-0.985	1.812***	-0.320	1.914**	-0.458	-0.110
	Open-ended	0.488	2.082*	0.952	-0.016	-1.937	-1.485
	State-contingent						

Table 5 Regressions between types of FG and uncertainty. *** = $P < 0.01$; ** = $P < 0.05$; * = $P < 0.1$.

The strong variation in coefficients suggests that there are other important factors that have changed over time and affected levels of uncertainty and/or that countries react extremely heterogeneously to FG. For the A indicators, the financial uncertainty indicator has the strongest treatment effect from FG. The B indicator also has the largest difference in the financial indicator. Regarding the type of FG, the most recently used type state-contingent FG generally has the highest coefficient in the aggregate population but this also varies by country and indicator. Before the results are further discussed and interpreted, it is warranted that control variables are added to the regression to see if the model becomes more uniform and accurate.

5.2 Controls and robust estimates: CCI, employment uncertainty and month of the year

In table 6, three monthly variables were added one by one to the model; the Consumer Confidence Indicator, an indicator of unemployment uncertainty from the survey data and a variable to control for differences in each month of the year. Luxembourg, Cyprus and Malta are also removed from the population for reasons mentioned in the previous section. Finally, all estimates for coefficient significance are now calculated using a robust regression model, whereas regressions up to this point did not. We check how these changes to the model affect the coefficient of FG, and its level of significance, for consumer uncertainty on the Eurozone level. Changes in coefficients are displayed in the tables on the next page.

The control variable indicating the month of the year does not seem to have a significant effect in determining the levels of uncertainty even though the data is not seasonally adjusted. There are only two significant results: inflation uncertainty is seen to be slightly higher in April in the A indicator, and macroeconomic uncertainty is seen to be slightly higher in October in the B indicator. Employment uncertainty is significantly correlated with the macroeconomic and inflation uncertainty indicators and increases FG coefficient size. In either set of indicators this type of uncertainty seems to be most important for determining macroeconomic uncertainty and plays a smaller role in financial and inflation uncertainty. However, in the B indicators, employment uncertainty is not significant.

Eurozone							
16	Variable	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
FG	Open-ended	-0.562*	0.015	0.518	1.435**	1.099**	0.314
	State-contingent	-1.653	-0.487	-0.691	2.394**	1.021	1.844***
	Time-contingent	-1.146	0.255	0.560	1.915	0.534	2.399***
Eurozone							
13	Variable	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
FG	Open-ended	-0.353	0.233	0.457	1.315*	0.924*	0.345
	State-contingent	-0.721	0.677	-0.027	2.063	0.634	0.232***
	Time-contingent	-0.879	0.358	-0.291	1.824	0.44	3.006***
Eurozone							
13	Variable	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
FG	Open-ended	-0.574*	-0.400	-0.061	0.466	1.183***	0.242
	State-contingent	-1.069*	-0.378	-0.854***	0.715	1.042*	2.108***
	Time-contingent	-1.210	-0.641	-1.076***	0.544	0.830	2.806***
Control	CCI	0.029**	0.096***	0.070**	0.114	-0.034	0.025
Eurozone							
13	Variable	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B

FG	Open-ended	-0.569*	-0.378	-0.045	0.451	1.161***	0.238
	State-contingent	-1.196**	-0.933*	-1.256*	0.394	0.575**	2.016***
	Time-contingent	-1.407*	-1.506**	-1.705**	0.212	0.347	2.711***
Control	CCI	0.017	0.044***	0.032*	0.176	0.057	0.043
	Emp. Uncertainty	0.199	0.870***	0.632**	0.382	0.556	0.109
Eurozone 13							
	Variable	Q1A	Q2A	Q3A	Q1B	Q2B	Q3B
FG	Open-ended	-0.566*	-0.373	-0.034	0.454	1.160***	0.239
	State-contingent	-1.188**	-0.909*	-1.225**	0.419	0.584**	2.019***
	Time-contingent	-1.413**	-1.509**	-1.696**	0.331	0.417	2.715***
Control	CCI	0.017	0.044***	0.032*	0.175	0.057	0.043
	Emp. Uncertainty	0.197	0.869***	0.631**	0.382	0.556	0.108
	Month						
	April			0.241*			
	October					-0.045*	

Table 6 Regressions between types of FG, uncertainty and control variables. *** = $P < 0.01$; ** = $P < 0.05$; * = $P < 0.1$

Interestingly, the Consumer Confidence Indicator variable turns out to be positively correlated with all three types of uncertainty as measured in set A, while the diffusion indicator has no statistically significant relationship with the lagged confidence indicator. After adding employment uncertainty as a control variable, CCI loses its significant relationship with financial uncertainty. While also decreasing coefficient strength for macroeconomic and inflation uncertainty, those relationships remains statistically significant. This means that in the “don’t know” indicators, a higher level of consumer confidence is associated with a higher level of uncertainty as more respondents answer ‘don’t know’ to the financial, macroeconomic and inflation expectation questions. On the other hand, looking at the B indicators, although none of the findings are significant, it is also associated with a less balanced diffusion among answers: less uncertainty. These results seem to confirm that two different types of uncertainty (or economic sentiments) are being measured with set A and B. Putting aside this interesting finding for now and assuming the relationship between the unemployment and CCI controls and the uncertainty indicators are legitimate, the results are reviewed.

In the ‘don’t know’ indicators, all forms of FG have negative coefficients for all three questions. Financial uncertainty is significantly lower for all three types of FG, while macroeconomic and inflation uncertainty only becomes significantly lower during time-contingent and state-contingent FG. Especially in these latter two, the interaction between the indicators and the control variables implies that the significance and coefficient strength of the findings are strongly dependent on the parameters used in

the model. Changing the population only by a little bit already has a sizeable effect on the estimated coefficients.

In the diffusion indicators, all forms of FG have a positive relationship with all three types of uncertainty but the significance of this relation depends on the type of uncertainty and on the form of FG. Especially inflation uncertainty (Q3B) is reduced by time-contingent and state-contingent FG, with very high levels of significance. Financial uncertainty (Q1B) seems to be different than the other five measures as expected, with less significant relationships between it and other variables in the model. This could confirm that it is indeed an inaccurate indicator for uncertainty because of its relation to inequality and the question not having one correct answer.

5.3 Analysis

The large variance between countries, across indicators, FG types and among variables make for a seemingly chaotic result to test the hypotheses with. However, when looking at the results of the most complex model that uses robust estimates and interpreting them in a broad manner there seems to be a clear pattern. All of the uncertainty indicators except for financial uncertainty in set B (Q1B) have a significant negative relationship with two or more types of FG. The A set indicators are all negative and time-contingent and state-contingent FG is statistically significant for all three forms of uncertainty. The diffusion indicators are all seen to increase, suggesting a decrease in uncertainty, at high levels of significance for inflation uncertainty, lower levels of significance for macroeconomic uncertainty and with no significance for financial uncertainty. If there is one finding across these results it is that episodes of FG are associated with lower levels of financial, macroeconomic and inflation uncertainty using both types of uncertainty indicators.

This means the null hypotheses is rejected. Hypotheses one is accepted on the basis that, when controlling for consumer confidence and employment uncertainty, the results show a generally strong and significant negative correlation between episodes FG and levels of consumer uncertainty even when using robust estimates for the level of significance. As such, the findings attest to the effectiveness of the ECB's FG in reducing the level of uncertainty.

It can also be observed that there seems to be a difference between the forms of FG: time-contingent FG and state-contingent FG being more effective than open-ended FG as a general rule. Macroeconomic uncertainty (Q2B) is the only exception to this rule where it seems to be the other way around. This difference between forms is only negligible for Q1B, again suggesting that it is not a

measure of uncertainty like the other five indicators are. This finding should be taken with a grain of salt, however, as the frequency of open-ended FG reports (32) is a lot higher than it is for time-contingent (10) and state-contingent (3) FG which makes an effective statistical comparison difficult. This will probably be a smaller problem in the future as the ECB continues employing time-contingent and state-contingent FG in the present.

Generally nodding towards confirming the effectiveness of FG, many caveats have sprung up with these results. Adding a control variable for consumer confidence led to the surprising result that levels of uncertainty as measured by the A indicators become higher as confidence rises, contradicting the literature. This, as well as the relation of these indicators with employment expectations serves to increase the explanatory value and significance of FG in the statistical model. The obscure and infinitely complex interrelation between levels of financial, macroeconomic and inflation uncertainty on the one hand and consumer confidence and unemployment uncertainty on the other (and, in the bigger picture, their relation to a central bank's monetary policy) can have had a distorting effect. This brings us back to the inherently unobservable characteristic of uncertainty that ultimately leads us to never know exactly what we're measuring or how it is being affected by countless of other economic sentiments. Taking into account these difficulties but considering the significant results of especially the A indicators using robust estimates, this research suggests that the observed levels of consumer uncertainty are generally lower across the Eurozone when the ECB practices FG than when it does not.

The positive correlation between consumer confidence and uncertainty as measured in the A indicators that is in contradiction with the theory's expectation (that uncertainty is negatively correlated with macroeconomic indicators) calls for some consideration. It might be possible that people are more often uncertain about the future in affluent times. What I dubbed "certain doom" earlier might play a strong role in this statistical relationship: in times of downturn and low consumer confidence it can be expected that more people hold a stronger expectation that future financial, macroeconomic and inflation matters will turn out for the worse. As a consequence, less people choose the don't know option. The other side of the coin would be that in times of strong economic growth and opportunities the future development of the economy might become an increasingly complex puzzle for some. However, this logic should also hold for the diffusion indicators: if a certain doom effect exists, it would indicate less uncertainty as the shares are less diffused and balanced towards a more negative opinion. But, albeit on an insignificant level, the correlation seems opposite: less diffusion as consumers grow more confident.

6. Conclusion

Concluding, the paper finds that there is some evidence to confirm FG's effectiveness in reducing levels of consumer uncertainty. Post-crisis unconventional monetary policy such as negative interest rates, large scale asset purchases and forward guidance by the ECB and other central banks has led to a lot of academic, economic and political questions as economic agents were exposed to unprecedented monetary conditions. This paper used a time-series analysis approach to study the effect of one of these unconventional policies, forward guidance, by the ECB on the levels of consumer uncertainty in the Eurozone. The ECB's aim using this Aesopian FG is to improve the response of economic agent's vis-à-vis monetary stimuli in the present, at the effective lower bound of the interest rate, by reducing their uncertainty and increasing their understanding. Using two sets of indicators for consumer uncertainty derived from survey data from the EU Harmonized Survey Programme and FG data from the ECB's monetary policy decision meetings, the research attempted to observe whether FG had its intended effect: a reduction of uncertainty. Due to strong interaction with control variables, the findings on its effectiveness vary strongly with variations of the model. Adding control variables for consumer confidence indicators and employment expectation uncertainty resulted in higher coefficient values for FG on levels of consumer uncertainty. Furthermore, the indicators and their path between 2010 and 2020 are very different between countries suggesting strong country-specific fixed effects. These effects might be numerous in cause.

While the findings of this paper are mixed and heavily influenced by tweaks in the model, they do generally affirm that periods of FG by the ECB concur with lower levels of consumer uncertainty, using robust estimates. Consumers seem to have some better understanding and pick the "don't know" option less and also as a population vote somewhat more uniformly on questions of future macroeconomic and inflation expectations. Regarding the type, time-contingent and state-contingent FG seem to be a stronger tool than open-ended FG. So, as an instrument to reduce uncertainty there is some plain evidence that forward guidance is effective, to some degree dependent on its form. Yet as has been noted before, this could be a consequence of the relatively high frequency of open-ended reports compared to the other two forms. Furthermore, whether FG succeeds, through reducing uncertainty, as an aid in policy transmission, meaning consumers better respond to monetary stimuli (spend more, save less!), remains to be studied extensively.

Forward guidance by the ECB seems to work, and this paper suggests that the ECB keeps using it, especially in times where the levels of consumer uncertainty are high and access to finance is

important. Never has there been a more important period in history than now, under the Coronacrisis, to provide clarity about future monetary policy to markets and consumers. Levels of consumer uncertainty are at unprecedented highs, dwarfing the highs during the Great Recession, and ease of access to finance for governments, firms and consumers has also become more important than ever. If the ECB would stop providing information about their future intentions through FG, this uncertainty would probably increase and further damage economic sentiment across the Eurozone.

Difficulties like the lack of data with smaller time frames and the large amount of possible obfuscating variables in consumer uncertainty indicators also prove a fruitful ground for future research on the relationship between central bank policy and consumer uncertainty and other sentiments. The validity and reliability of time series analysis using country-level panel survey data could be improved by exploring what are important determinants (besides monetary policy) of consumer uncertainty and other sentiments using more country-specific control data. Development of new, more accurate indicators of consumer uncertainty about future monetary policy, either from surveys or other types of data, would also be a rewarding endeavor as they can be used to better expose the role of monetary policy in shaping financial, macroeconomic and inflation uncertainty and other economic sentiments held by consumers. Finally, as the communication by the ECB contained more FG than just on the key interest rates, a step to improve the model would be to also include a distinct FG pattern regarding LSAP programs.

This paper hopes to have contributed to the lack of research on the relationship between central bank policy, particularly FG, and consumer uncertainty. Ultimately, individual people form the basis of any economy, driving aggregate demand as consumers, and deserve attention from academic and official monetary experts if central bank policy is to succeed in the long run.

7. Bibliography

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8. Appendix

8.1 Consumer Survey Questionnaire

(European Commission, 2020), https://ec.europa.eu/info/files/user-guide-joint-harmonised-eu-programme-business-and-consumer-surveys_en

Q1 How has the financial situation of your household changed over the last 12 months? It has...

++ got a lot better + got a little better = stayed the same – got a little worse – – got a lot worse N don't know.

Q2 How do you expect the financial position of your household to change over the next 12 months? It will...

++ get a lot better + get a little better = stay the same – get a little worse – – get a lot worse N don't know.

Q3 How do you think the general economic situation in the country has changed over the past 12 months? It has...

++ got a lot better + got a little better = stayed the same – got a little worse – – got a lot worse N don't know.

Q4 How do you expect the general economic situation in this country to develop over the next 12 months? It will...

++ get a lot better + get a little better = stay the same – get a little worse – – get a lot worse N don't know.

Q5 How do you think that consumer prices have developed over the last 12 months? They have...

++ risen a lot + risen moderately = risen slightly – stayed about the same – – fallen N don't know.

Q6 By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will...

++ increase more rapidly + increase at the same rate = increase at a slower rate – stay about the same – – fall N don't know.

Q7 How do you expect the number of people unemployed in this country to change over the next 12 months? The number will...

++ increase sharply + increase slightly = remain the same – fall slightly – – fall sharply N don't know.

Q8 In view of the general economic situation, do you think that now it is the right moment for people to make major purchases such as furniture, electrical/electronic devices, etc.?

++ yes, it is the right moment now = it is neither the right moment nor the wrong moment – – no, it is not the right moment now N don't know.

Q9 Compared to the past 12 months, do you expect to spend more or less money on major purchases (furniture, electrical/electronic devices, etc.) over the next 12 months? I will spend...

+ + much more + a little more = about the same – a little less – – much less N don't know.

Q10 In view of the general economic situation, do you think that now is...?

+ + a very good moment to save + a fairly good moment to save – not a good moment to save – – a very bad moment to save N don't know.

Q11 Over the next 12 months, how likely is it that you save any money?

+ + very likely + fairly likely – not likely – – not at all likely N don't know.

Q12 Which of these statements best describes the current financial situation of your household?

+ + we are saving a lot + we are saving a little = we are just managing to make ends meet on our income – we are having to draw on our savings – – we are running into debt N don't know.

Quarterly questions (January, April, July and October)

Q13 How likely are you to buy a car over the next 12 months?

+ + very likely + fairly likely – not likely – – not at all likely N don't know.

Q14 Are you planning to buy or build a home over the next 12 months (to live in yourself, for a member of your family, as a holiday home, to let etc.)?

+ + yes, definitely + possibly – probably not – – no N don't know.

Q15 How likely are you to spend any large sums of money on home improvements or renovations over the next 12 months?

+ + very likely + fairly likely – not likely – – not at all likely N don't know.

8.2 Forward guidance in ECB Monetary Policy Decision meetings

Category	Frequency	Date
Open-ended Forward Guidance	32	07-13 to 09-14, 01-16 to 06-18
State-contingent Forward Guidance	3	09-19 up to present
Time-contingent Forward Guidance	10	07-18 to 08-19
No Forward Guidance	54	01-10 to 06-13, 10-14 to 01-16
Total	99	01-10 to 12-19
NIRP (.00 > -.10 > -.20 > -.30 > -.40 > -.50	5	06-14, 09-14, 12-15, 03-16, 09-19

Retrieved from archive: <https://www.ecb.europa.eu/press/govcdec/mopo/html/index.en.html>

Meetings below (chronologically descending order) are up to June 2013, because all meetings before that point do not contain forward guidance. 1 = open-ended, 2 = state-contingent, 3 = time-contingent

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp191212~06d84240ae.en.html>

Date: 12 December 2019

FG = 1

FGTYPE = 2

The Governing Council expects the key ECB interest rates to remain at their present or lower levels until it has seen the inflation outlook robustly converge to a level sufficiently close to, but below, 2% within its projection horizon, and such convergence has been consistently reflected in underlying inflation dynamics.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp191024~438769bd4f.en.html>

Date: 24 October 2019

FG = 1

FGTYPE = 2

The Governing Council expects the key ECB interest rates to remain at their present or lower levels until it has seen the inflation outlook robustly converge to a level sufficiently close to, but below, 2% within its projection horizon, and such convergence has been consistently reflected in underlying inflation dynamics.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190912~08de50b4d2.en.html>

Date: 12 September 2019

FG = 1

FGTYPE = 2

The Governing Council now expects the key ECB interest rates to remain at their present or lower levels until it has seen the inflation outlook robustly converge to a level sufficiently close to, but below, 2% within its projection horizon, and such convergence has been consistently reflected in underlying inflation dynamics.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190725~52d3766c9e.en.html>

Date: 25 July 2019

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present or lower levels at least through the first half of 2020, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to its aim over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190606~1876cad9a5.en.html>

Date: 6 June 2019

FG = 1

FGTYPE = 3

The Governing Council now expects the key ECB interest rates to remain at their present levels at least through the first half of 2020, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190410~3df2ed8a4c.en.html>

Date: 10 April 2019

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the end of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190307~7d8a9d2665.en.html>

Date: 7 March 2019

FG = 1

FGTYPE = 3

The Governing Council now expects the key ECB interest rates to remain at their present levels at least through the end of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190124~5c00d09d5d.en.html>

Date: 24 January 2019

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp181213.en.html>

Date: 13 December 2018

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp181025.en.html>

Date: 25 October 2018

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp180913.en.html>

Date: 13 September 2018

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp180726.en.html>

Date: 26 July 2018

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp180614.en.html>

Date: 14 June 2018

FG = 1

FGTYPE = 3

The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019 and in any case for as long as necessary to ensure that the evolution of inflation remains aligned with the current expectations of a sustained adjustment path.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp180426.en.html>

Date: 26 April 2018

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp180308.en.html>

Date: 8 March 2018

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.mp180125.en.html>

Date: 25 January 2018

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp171214.en.html>

Date: 14 December 2017

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp171026.en.html>

Date: 26 October 2017

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp170907.en.html>

Date: 7 September 2017

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp170720.en.html>

Date: 20 July 2017

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp170608.en.html>

Date: 8 June 2017

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at their present levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp170427.en.html>

Date: 27 April 2017

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/pr170309.en.html>

Date: 9 March 2017

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2017/html/pr170119.en.html>

Date: 19 January 2017

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr161208.en.html>

Date: December 8 2016

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr161020.en.html>

Date: 20 October 2016

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr160908.en.html>

Date: 8 September 2016

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr160721.en.html>

Date: 21 July 2016

FG = 1

FGTYPE = 1

The Governing Council continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr160602.en.html>

Date: 2 June 2016

FG = 1

FGTYPE = 1

Based on our regular economic and monetary analyses, we decided to keep the key ECB interest rates unchanged. We continue to expect them to remain at present or lower levels for an extended period of time, and well past the horizon of our net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr160421.en.html>

Date: 21 April 2016

FG = 1

FGTYPE = 1

Based on our regular economic and monetary analyses, we decided to keep the **key ECB interest rates** unchanged. We continue to expect them to remain at present or lower levels for an extended period of time, and well past the horizon of our net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr160310.en.html>

Date: 10 March 2016

FG = 1

FGTYPE = 1

Finally, looking ahead, taking into account the current outlook for price stability, the Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of our net asset purchases.

Link: <https://www.ecb.europa.eu/press/pr/date/2016/html/pr160310.en.html>

Date: 21 January 2016

FG = 1

FGTYPE = 1

Based on our regular economic and monetary analyses, and after the recalibration of our monetary policy measures last month, we decided to keep the **key ECB interest rates** unchanged and we expect them to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr151203.en.html>

Date: 3 December 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr151022.en.html>

Date: 22 October 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150903.en.html>

Date: 3 September 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150716.en.html>

Date: 16 July 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150603.en.html>

Date: 3 June 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150415.en.html>

Date: 15 April 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150305.en.html>

Date: 5 March 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150122.en.html>

Date: 22 January 2015

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr141204.en.html>

Date: 4 December 2014

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr141106.en.html>

Date: 6 November 2014

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr141002.en.html>

Date: 2 October 2014

FG = 0

FGTYPE = 0

-

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140904.en.html>

Date: 4 September 2014

FG = 1

FGTYPE = 1

Concerning our forward guidance, the key ECB interest rates will remain at present levels for an extended period of time in view of the current outlook for inflation.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140807.en.html>

Date: 7 August 2014

FG = 1

FGTYPE = 1

Concerning our forward guidance, the key ECB interest rates will remain at present levels for an extended period of time in view of the current outlook for inflation.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140703.en.html>

Date: 3 July 2014

FG = 1

FGTYPE = 1

Concerning our forward guidance, the key ECB interest rates will remain at present levels for an extended period of time in view of the current outlook for inflation.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140605.en.html>

Date: 5 June 2014

FG = 1

FGTYPE = 1

Concerning our forward guidance, the key ECB interest rates will remain at present levels for an extended period of time in view of the current outlook for inflation.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140508.en.html>

Date: 8 May 2014

FG = 1

FGTYPE = 1

We firmly reiterate that we continue to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140403.en.html>

Date: 3 April 2014

FG = 1

FGTYPE = 1

We do not exclude further monetary policy easing and we firmly reiterate that we continue to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140306.en.html>

Date: 6 March 2014

FG = 1

FGTYPE = 1

We firmly reiterate our forward guidance. We continue to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140206.en.html>

Date: 6 February 2014

FG = 1

FGTYPE = 1

We firmly reiterate our forward guidance. We continue to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: https://www.ecb.europa.eu/press/pr/date/2014/html/pr140109_2.en.html

Date: 9 January 2014

FG = 1

FGTYPE = 1

We firmly reiterate our forward guidance that we continue to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr131205.en.html>

Date: 5 December 2013

FG = 1

FGTYPE = 1

[...] the Governing Council confirmed its forward guidance that it continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr131107.en.html>

Date: 7 November 2013

FG = 1

FGTYPE = 1

[...] the Governing Council reviewed the forward guidance provided in July and confirmed that it continues to expect the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr131002.en.html>

Date: 2 October 2013

FG = 1

FGTYPE = 1

Looking ahead, our monetary policy stance will remain accommodative for as long as necessary, in line with the forward guidance provided in July. The Governing Council confirms that it expects the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr130905.en.html>

Date: 5 September 2013

FG = 1

FGTYPE = 1

The Governing Council confirms that it expects the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr130801.en.html>

Date: 1 August 2013

FG = 1

FGTYPE = 1

The Governing Council confirms that it expects the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr130704.en.html>

Date: 4 July 2013

FG = 1

FGTYPE = 1

The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time.

Link: <https://www.ecb.europa.eu/press/pr/date/2013/html/pr130606.en.html>

Date: 6 June 2013

FG = 0

FGTYPE = 0

-