

Central Bank Communication as Public Opinion? Experimental Evidence *

Nicole Baerg[†] Dominik Duell[‡] Will Lowe[§]

*All comments are welcome.
Please ask for the most recent version of this paper.
Please do not cite without permission.*

Word Count 7967

*We would like to thank Matthias Haber, Hendrik Halbe, Alyssa Taylor, and Eliza Wirsching for helpful research assistance. Funding for this paper comes from the C4 project of the SFB 884 Political Economy of Reforms, University of Mannheim. Pretests of the first wave were also conducted by GESIS and the authors also thank Natalja Menold and Timo Lenzner for helpful advice and assistance. This is a working draft. Please do not cite without permission.

[†]University of Essex. Corresponding author

[‡]University of Essex

[§]Hertie School

Abstract

A single supranational organization, the European Central Bank (ECB), has a particularly challenging job as it must communicate complex policy information to over 300 million citizens living across 19 member states in the Eurozone. Germany, one of the most powerful countries in the Eurozone, is also one of the ECB's strongest critics. Embedding a survey vignette experiment into two waves of a panel survey of German citizens, we examine ways in which communications by the ECB affect individuals' information uptake as well as their inflation expectations. We argue that public approval (or not) of the ECB's policies matters for respondents' uptake of information as well as its content. Our main empirical findings suggest that short and clear snippets of ECB information are most effective in shaping respondents' inflation expectations. We also find that respondents more skeptical of the ECB are less likely to incorporate ECB information and that policy congruence with the ECB's inflation target has little to no effect.

Introduction

A single supranational central bank, the European Central Bank (ECB), regularly communicates complex monetary policy information to Eurozone citizens. These citizens are distributed across 19 different countries, with nationally distinct economies and heterogeneous populations. Monetary policy – or actions taken by a monetary authority that determine the size and rate of growth of the money supply – is generally thought to be particularly difficult for citizens to understand. The complexity of monetary policy has been blamed for why we rarely see societal cleavages over monetary policy preferences as well as a lack of political mobilization of those interests (Bearce 2003). Yet, despite their lack of knowledge, citizens' expectations of the economy are crucial in determining economic outcomes (Bachmann, Berg, and Sims 2015; Bernanke 2007; Bodea and Hicks 2015). This leads to a conundrum such that on the one hand, successful monetary policy depends on the central bank's ability to inform the mass public and yet, on the other hand, the public shows limited confidence in their financial literacy and limited interest in understanding what central banks do or say.

One way that central banks can influence the public and increase financial literacy is through the supply of central bank communications, but what type of communication works best? Previous studies have shown that the clarity of central bank communications matters (Jansen 2011). Jansen (2011) finds that even if a central bank communicates regularly, if it does so opaquely, the impact of its communications is lesser than if it were to communicate more clearly. Thus communications that are clear and comprehensible are also those statements most likely to be effective.

In addition to the supply of information, however, recipients must also be receptive to the information sent by the central bank as well. That is, given a new piece of information, an individual must trust that the information is credible and be willing to incorporate the information into his or her beliefs (Ehrmann, Soudan, and Stracca 2013). There is a long literature suggesting that partisan attachments, or the attachments of individuals to particular political parties, provide a perceptual filter for information about politics (Campbell et al. 1980). Indeed, evidence abounds that partisanship structures agents' economic outlook (Anderson, Mendes, and Tverdova 2004; Conover and Feldman 1986; Gerber and Huber 2010; Wlezien, Franklin, and Twigg 1997). With a supranational organization like ECB, it is likely not partisanship per se but rather feelings of Euroskepticism that may matter. Still more interesting is that Euroskep-

ticism may apply heterogeneously across different European government institutions. Citizens may feel one way about the European Parliament another way about the European Commission and still another way about the European Central Bank. Thus, rather than general levels of Euroskepticism, support for the ECB itself may matter most in the uptake of central bank information. Consequently, political opinions that individuals have about the ECB may play an important role in mediating the effects of central bank communication and it is this hypothesis that we test in this paper.

Using survey vignette experiments, we find evidence that shorter and more precise central bank statements move respondents closer to the central bank's announced inflation target. We also find at the aggregate level that more (less) positive opinions of the ECB are associated with more (less) information updating, which is important as it suggests that economic expectations are entangled with public opinion. We also find that the more a respondent consumes business news, the more difficult it is to influence his or her inflation expectations. This is likely because they are more informed in the first place. Finally, we find little evidence showing that policy congruence matters for the susceptibility of ECB communications.

Our findings contribute a new understanding of the causal effects of central bank clarity and brevity as well as evidence on the role that political perceptions play in shaping information receptivity and inflation expectations. As mentioned above, our findings are important because how citizens learn about monetary policy has implications for the success of monetary policy. For example, if financial stability depends on everyday citizens making calculated market adjustments based on economic information and if only a sub-section of citizens up-take information from the central bank, financial recovery might be longer and more painful than the case when central bank information informs a broader spectrum of people. Interestingly we find that, as the public worsens their opinions of the central bank, the central bank's ability to use central bank communications to shape their expectations goes down. Methodologically, our paper contributes to the literature that examines the origins of households' inflation expectations using survey experiments (Armantier et al. 2016; Cavallo, Cruces, and Perez-Truglia 2017; Roos and Schmidt 2012), the literature on Euroskepticism and European politics (De Vries 2018), and the literature on political behavior and political economy (Tverdova 2012).

Theoretical Framework and Previous Research

Central Bank Communications

Financial knowledge – or the ability to understand how money works – is important for undertaking many daily activities, such as following news about the economy, managing debt, and buying a home. A basic understanding of financial concepts and the ability to apply numeracy skills can ensure that citizens manage their own financial affairs and react to news and events in ways that benefit households’ own financial well-being. Previous studies find that those with higher levels of financial knowledge make better investment and retirement decisions and are also less likely to accumulate debt (Clark, Lusardi, and Mitchell 2017; Hastings, Madrian, and Skimmyhorn 2013).

Central banks have recently tried to capitalize on links between central bank communications and financial literacy by paying closer attention to how they provide information to the mass public. In Woodford (2005) a willingness of the central bank to share its own assumptions about future policy increases the predictability of policy. The management of expectations is crucial because uncertainty –about the state of the economy, the economy’s structure, and the inferences that the public will draw from policy actions or economic developments– is a pervasive feature of monetary policy making. In a world of uncertainty, informing the public about the central bank’s objectives, plans, and outlook can affect behavior and macroeconomic outcomes (Bernanke, 2004, Orphanides and Williams, 2005). An increase in predictability, especially predictability about future monetary policy, is therefore associated with an increase in economic stability.¹ According to Cavallo, “All these efforts may help central banks increase the speed which which individuals react to monetary policy” (Cavallo, Cruces, and Perez-Truglia 2017, p.4). This is in direct opposition to older arguments that suggest in order to be effective, monetary policy must be surprising. Thus rather than be surprising, modern central banking aims to be predictable, informative, and clear.

The European Central Bank (ECB) itself also notes that “transparency means more than simply releasing information, as this does not by itself translate into a better understanding of monetary policy... [Clarity] becomes even more important when information is to be communicated to different audiences across different environments” (European Central Bank, 2002,

¹Economic theory predicts that inflation expectations influence both inflation dynamics and real activity. In particular, according to the New Keynesian Phillips curve, inflation π_t depends on labor market slack X_t , expected inflation $E_t(\pi_{t+1})$, and a supply shock ζ_t . For a given nominal interest rate, a rise in expected inflation implies a lower real interest rate, which should in turn imply higher consumption.

p. 60). Empirically, researchers have measured clarity by examining either the readability of central bank communications (Bulř, Āihák, and Jansen 2013; Jansen 2011; Montes et al. 2016) or the expressed level of uncertainty in central bank statements (Baerg 2020). When there is possibility of information overload or “cacophony,” central banks face a trade-off between revealing more information and ensuring common understanding (Eppler and Mengis 2004; Blinder, 2007; Chahrour, 2014).

Political Predispositions and Perceptions of the Economy

As far back as Campbell et al (1960), party identification (ID), or which party one identifies with, is argued to affect individuals’ political choice as well as their final vote. Partisan identification is characterized by stability and resistance to contrary influence and, according to the authors, is formed early in life. Just like party ID can link voters to opinions about policies, party ID can also influence voters perceptions of the future economy. Recent studies investigate not only how electoral expectations affect public economic forecasts but also how they effect actual consumption behavior (Ladner and Wlezien 2007; Enns and Anderson 2009; Gerber and Huber 2009, 2010). When partisans anticipate their party will win the next election, they form more optimistic perceptions of the future economy. Moreover, partisans adjust their economic decisions based on whether their preferred party holds power, which further establishes a powerful effect that political variables exert over economic perceptions and behavior. Finally, in one of the most convincing papers on the effects of partisanship on economic forecasts, Tverdova (2012) shows that party ID matters for economic forecasts even during regime transitions (Tverdova 2012). Indeed, she shows that economic perceptions are disconnected from the real economic situation and that citizens evaluate the future economy based on support (or not) for democratic transition.

For a supranational organization like the ECB, with a mandate that encompasses 19 member states, euroskepticism rather than partisan ID is more likely to matter. The term euroskepticism means criticism of the European Union (EU) and the European integration project. De Vries (2018) argues that euroskepticism is fundamentally about attributing success and blame to different levels of government relative to one’s own expectations. In her words, “When national conditions are good, in economic and political terms, or at least when people perceive them as such, euroskepticism is mostly likely to develop. When national conditions are bad, however, EU support is the most likely outcome with no viable alternative to membership is present”

(De Vries 2018, p.6). The combination of economic success and political power enables citizens and their leaders to engage in counterfactual reasoning. Equipped with these counterfactuals, citizens' can then assess whether or not they are better off inside or outside of the EU.

In addition to the EU more broadly, citizens also make opinion statements about specific EU institutions. The ECB is a particularly important institutions in the EU economic governance, and increasingly scholars have shown how the ECB operates in a politicized environment (Genovese, Schneider, and Wassmann 2016). The ECB became one of the key actors during the Eurozone crisis, however, its prominent role in helping to manage the crisis also resulted in controversies. On the one hand, the Eurozone was stabilised and no member state defaulted and no state left the Eurozone. On the other hand, the ECB had to stretch its mandate and adopt so-called “unconventional” monetary policies. These enlarged powers generated frustrations and were frequently criticized by other elites, especially in Germany.

Thus the ECB has a two-pronged problem when it comes to policy communications. On the one hand it must communicate its policy decisions clearly to citizens who really have limited interest and understanding of its policies. On the other hand, it must do so in an increasingly hostile environment when citizens vary their support for the institution as part of the EU project and know little about what it does. One recent study surveyed Dutch households about their degree of knowledge about the ECB. These authors find respondents incorrectly guessed more than half of the eleven questions on average (Cruijsen, Jansen, and De Haan 2015). These factors might make central bank communications particularly challenging for policymakers. Former ECB president Mario Draghi (2014) stated that “Building trust among the 335 million citizens of the euro area is a major communication challenge. We are communicating in [19] countries... We deal with this plurality by making use of the inherent advantage of having a Eurosystem of [19] national central banks—that is, having communications departments in each country that make our messages heard and understood in the local context. But this remains a continuous challenge.”

This review then leads us to a number of testable hypotheses about the relationship between central bank communications, clarity, and euroskepticism. In order to test whether or not central bank clarity matters we test the following predictions:

- H1 Central bank statements that are clear affect individuals' inflation expectations more than statements that are vague.

H2 Central bank statements that are short are more influencing than longer statements.

In addition to the supply side, individuals must also be willing to incorporate information into their beliefs. As outlined above, we expect that citizens incorporate economic information in ways that depend on political predispositions such as their policy preferences or evaluations that they make about institutions sending the information. Rather than be solely calculated inputs, inflation expectations likely depend on what citizens have heard or read and whether and to what extent they accept this information because it is consistent with their political predispositions. Inflation expectations, therefore, might reflect public opinion, making them more similar to other kinds of public opinion rather than or in addition to computed statistical quantities. Furthermore, inflation expectations may also depend on political support for policy decisions (Mondak 1993; Tverdova 2012) or on the level of congruence individuals have for the central bank's policy (Hayo and Neuenkirch 2014; Hobolt and Wrátil 2015). Finally, expectations may depend on perceptions of performance. Indeed, if the public does not think the central bank is doing a good job, individuals may discount any information sent to them by the institution. This would mean that inflation expectations co-vary with political beliefs rather than (or in addition to) economic fundamentals. Thus our other set of hypotheses are that:

H3 Central bank information is more likely to affect expectations for those individuals who hold favorable opinions of the central bank.

H4 Central Bank information is most effective for individuals with greater media exposure.

H5 Central bank information is more persuasive for those individuals with policy preferences closer to the central bank's target.

In the real world, citizens' inflation expectations are simultaneously determined by the information they receive as well as the particular model that they use to interpret that information. This means that what we observe in the real world is a combination of the supply side factors and individual level determinants. To get at the causal effects of changes in information clarity, we implement two waves of survey experiments and directly manipulate the communicated clarity by varying the use of numerical anchors and the length of the texts. These manipulations allow us to make causal claims about across-group average treatment effects. To test how expectations may also be determined by other, individual level characteristics, we also examine differences

based on support for the ECB, news consumption, and an individual's policy congruence with the ECB's target. The next section reports the results of our experiments.

Research design

Case selection

In order to evaluate the effect of central bank statements on inflation expectations formation, we conducted a 2-wave survey experiment on a panel of respondents in Germany in 2014 and 2015. Germany offers an interesting study environment to examine inflation expectations for two reasons. First, inflation rates during the experimental period were very low in Germany and below the ECB's target inflation rate of 2%. In low inflation environments, it is relatively cheap for citizens to pay scant attention to the economy, which might make respondents' priors more diffuse and diffuse priors might mean that citizens make *larger* updates to their inflation expectations when presented with new information. On the other hand, Germany's inflation is so low during the study period that the country is experiencing disinflation – or when inflation rates are slowing down, and even deflation – or where inflation rates are negative – for a couple of months. Disinflation generates significant uncertainties for consumers, especially if they think that prices will be substantially lower in the future. Deflation and disinflation can cause individuals to postpone consumption decisions, for example deciding to buy big purchase items like cars and household appliances in the future because they expect that future prices will be lower. Therefore, during this time period, it may also be costly for citizens to ignore important economic information from the central bank, thus making their priors harder to move and therefore *smaller* updates to their inflation expectations.

At first glance Germany also represents an unlikely case for political opposition to the ECB. Germany was traditionally attached to creating a highly independent ECB, has no history of opposition to the national central bank, and had until the emergence of the Alternative für Deutschland, no major Eurosceptic right-wing party. However, the ECB's policies have also become politicized and a subject of scrutiny and dissatisfaction, especially from Germany's political elites and also from the Bundesbank (German national central bank). Even more specifically, throughout the study period, the German and European news-media engaged in a lively and sometimes attacking debate about whether or not the ECB should engage in asset purchases of euro-area government bonds in order to help re-inflate struggling European economies (a debate

that continues through to 2019). Opinions in Germany on euro-bond purchases varied enormously, with some pundits arguing that by purchasing assets, the ECB was over-extending its legal reach, yet others arguing in support of more activist policies aimed at re-inflating Europe. Important for us, ECB and inflation-related news was noteworthy and contentious during this period, making it a good opportunity to ask survey respondents' about monetary policy, which as we mention in the introduction, is usually less politicized. We especially exploit the timing of this political debate in wave 2 of our study where we encourage citizens to think about the asset purchase program directly and link the ECB's policy to inflation outcomes.

Panel

In order to examine the effects of monetary policy communications on individual's inflation expectations, we ran experimental vignettes on German households participating in two waves of the German Internet Panel (GIP). GIP respondents are German residents in private households between 16 and 75 years of age. Sampling is based on multistage proportionate stratified random sampling, including equipping previously offline individuals and making them online. Our survey experiments were fielded in November 2014 (Wave 14) and November 2015 (Wave 20). In order to keep things simple, in this paper, we refer to these two runs as waves 1 and 2. During our waves, the total number of respondents for wave 1 was 3,575 and wave 2, 3,159. In wave 1, 948 respondents came from the first panel recruitment in 2012 and the remaining 2,627 respondents from the 2014 November recruitment, which is the start of our sample. In wave two, 859 respondents remained from the 2012 recruitment and 2,300 respondents from the November 2014 recruitment. Of the respondents in the sample, 96% were given our treatments in wave 1 and 97% in wave 2. Non-response answers for our questions was very low, ranging from 2 respondents to 70 respondents. The highest non-response rate in our set of questions appears on the question asking respondents to report their general news consumption levels (70 people, 2%). More details on general panel attrition and non-response are given in the appendix.

Experimental design

We incorporate two sets of information treatments, one in each wave, in order to identify the causal effects of central bank information on citizens' inflation expectations. In both waves, we implement two information manipulations that vary the level of clarity (wave 1 and wave 2) by including (or not) numerical anchors as well as varying the brevity of the statement given

to respondents (wave 2). In experimental designs, a control group is the “untreated” group with which an experimental group (or treatment group) is contrasted. In this study, we do not compare our information treatments to a control group that gets no information. This is because our research question asks whether or not respondents’ expectations change given changes in the content of text not whether or not information affects respondents’ expectations. There is a large and robust literature with findings that show that information matters for citizens’ economic beliefs (Boydston, Highton, and Linn 2018; Haller and Norpoth 1997; Shen, Ahern, and Baker 2014). New to this study is a focus on what kinds of information (in contrast to whether information) content matters for citizens’ inflation expectations.

In wave 1, we first elicit respondents’ prior inflation expectations. Respondents are asked to give an estimate of expected price changes over the next 12 months, which we denote as $\pi_{i,t}^0$. Rather than being asked directly about the annual rate of inflation, respondents are given a hypothetical scenario in which a person is said to have spent 1500 Euros per month on typical purchases for food, goods, and services such as groceries, clothes and a hair-cut. Respondents are then asked by how much they think the same person would spend on the same items 12 months from now. As response options, respondents are given a list of different Euro amounts ranging from “less than 1500 Euros” to “1650 Euros or more.” Each response option is measured in increments of 1 percent annual inflation, forcing respondents to consider the same scale, but respondents are not told the interval lengths at the time of answering.

On the next screen, respondents are then asked to consider inflation in Germany in general. Respondents are given a short explanation about inflation, including a definition, and about the role of the ECB in managing inflation in the Eurozone. Then, respondents receive either a vignette with a text snippet that gives clear information about inflation and also the ECB’s policy goals (*Precise Information*) or a similar text that uses vaguer language (*Vague Information*). The (English translation) of the vignettes read as follows:

Precise Information: The European Central Bank expects the important interest rates to remain at the current level or below for a longer period of time. This assessment rests on the general expectation of low inflation of 1 percent per year. The expected inflation for the Eurozone is in line with the objective of the Central Bank to keep inflation at 2 percent.

Vague Information: The European Central Bank expects the important interest rates to

remain at the current level or below for a longer period of time. This assessment rests on the general expectation of low inflation. The expected inflation for the Eurozone is in line with the objective of the Central Bank to keep inflation at an appropriate level.

Respondents are then asked a number of questions, including a manipulation check, to make sure that they understood the question. Importantly, respondents are also asked to give their evaluation of how well the ECB is doing in terms of delivering on its mandate. In order to proxy an individual's assessment of the central bank, we give respondents a 5 point scale ranging from "very good" to "not good" for their assessment.

Finally, before measuring our main outcome variable, respondents are shown their answer to the initial inflation question and told how their initial response translates into an annual inflation rate. This computation makes their initial beliefs directly comparable to the annual inflation rate information presented in the treatment text. We then measure the main outcome variable, 12-month ahead inflation expectations, to assess the effect of the information treatment on respondents' expected inflation. In order to cue the respondents to think about their priors explicitly when answering the question, we add the text, "considering these expectations by the ECB [...]". We denote respondent's answers to this question as, $\pi_{i,1}^1$, and we call this measure their posterior inflation expectations.

Wave 2 occurs exactly 12 months later and, because it is a panel, has the same respondents, with the exception of a loss of some respondents discussed above. We again use a similar treatment, but now vary the information on two dimensions, the use of a numerical anchor or not, as before, and the length of the text, short and long. As mentioned above, we also tap into the controversy of the ECB asset purchase program, which was highly salient in the German media during this time period. German politicians and right-wing figures legally challenged the ECB's emergency bond-buying scheme in a number of prominent court-cases. While Germany's constitutional court ruled that the bond-program was legal, Jens Weidmann, the president of Germany's central bank, frequently criticized the program publicly.

The four (English translations) of the treatment conditions read as follows:

Precise, long text: The ECB extends its purchase of bonds to those issued by Eurozone governments, issuers with development objects, and issued by European institutions. Overall, monthly purchases of a total value of 60 million Euros are planned. These purchases will continue until September 2016 at a minimum. The program serves to fulfill the ECB

mandate to ensure price stability and reach a medium-term inflation rate close to 2%.

Vague, long text: The ECB extends its purchase of bonds to those issued by Eurozone governments, issuers with development objects, and issued by European institutions. Overall, monthly purchases of high total value are planned. These purchases will continue until the middle of next year at a minimum. The program serves to fulfill the ECB mandate to ensure price stability and reach a medium-term inflation rate close to an appropriate level.

Precise, short text: The ECB extends its purchase of bonds. Purchases of a total value of 60 million Euros will continue until September 2016 and serve to fulfill the ECB mandate to ensure price stability and reach a medium-term inflation rate close to 2%.

Vague, short text: The ECB extends its purchase of bonds. Purchases of high total value will continue until the middle of next year and serve to fulfill the ECB mandate to ensure price stability and reach a medium-term inflation rate close to an appropriate level.

As in wave 1, we again ask respondents for their posterior inflation expectations using the same text as we used in wave 1, and we denote wave 2, one-year ahead posterior expectations as $\pi_{i,2}^1$. Questionnaire items are given verbatim (in German) in the appendix.

Measures

The main variables that we are interested in include the respondent's prior beliefs about the rate of annual inflation over the next 12 months, $\pi_{i,1}^0$, as well as their posterior (after treatment) elicited beliefs $\pi_{i,1}^1, \pi_{i,2}^1$.² Additionally, we are also interested in the respondent's opinion of the ECB, *ECB skepticism*, as well as their policy congruence with the ECBs target which we discuss more below.

We also ask respondents a number of other questions and we use answers to these questions in our analyses as well. In wave 1, in addition to measuring the 12-month ahead inflation expectations, we also ask respondents for their 5-year and 10-year ahead inflation expectations, $\pi_{i,1}^5, \pi_{i,1}^{10}$. Finally, we ask respondents to self report how much general news consumption (*News consumption*) and business/financial news consumption (*Business news consumption*) they watch, listen

²We use posterior to mean after receiving data loosely and do not mean after agents update their expectations using Bayes' rule.

to, or read. We use these measures as proxies for financial sophistication and business news exposure.

As mentioned above, in wave 2, we ask respondents about the preferred inflation rate so as to measure policy congruence with the ECB's target rate. We elicit respondents' preferred inflation rate by deploying a number of techniques. Rather than consider only their self-reported preferences when asked directly, respondents also indicate their inflation preferences by completing a number of small interactive tasks. In all of these tasks, we also include an additional comprehension checks.

- A. Respondents decide between either an economic scenario of high unemployment and low inflation in Germany and the Eurozone with an additional comprehension questions. A scenario where both indicators are stable is not given as an option.
- B. Respondents move interconnected sliders for interest rate, inflation, unemployment rate, and growth rate (order of sliders is randomized), for Germany, the Eurozone, or for their individual situation. These sliders cue respondents that these indicators involve trade-offs. For example, when inflation rates increase, so do interest rates. Respondents are then asked to choose their preferred outcome.
- C. Respondents report their preferred weighting that the ECB (or the German federal government) should apply to lowering inflation vs reducing unemployment on a scale of 0 to 10.

Using the outputs from these interactive tasks, we then measure *Policy Congruence* as the (quadratic) distance between the respondent's preferred inflation rate and the ECB's announced 2% target rate. In the main results, the policy rate we use comes from the task where respondents use sliders to specify their preferred inflation rate, however, we also run the results using the alternative measures and present them in the appendix. Interestingly, we find little individual-level variation across the number of ways we try to get at preferred policy rates and find that an individual holds similar preferences regardless of whether they are considering the Eurozone, Germany, or their own personal situation. Alternatively, however, we do observe significant across-respondent variation. For example, while two-thirds of the respondents prefer the low inflation, high-unemployment scenario, a remaining one-third of respondents prefer the converse.

Table 1 summarizes the treatment and outcome measures. The time-line indicates in which of the two waves of the survey and at which point within the wave an outcome was measured

as well as when the treatment intervention happened. While the survey experiment was not pre-registered, an earlier pre-test survey was fielded between July and August 2014, using a quota-sample of German households. All questions used in the analysis are also contained in the pre-test.³

Table 1: Time-line of treatments and outcome measures within and across the two waves of the German Internet Panel (GIP)

		→ Time →			
		Wave 1, November 2014		Wave 2, November 2015	
Treatments		$\pi_{i,1}^T$		$\pi_{i,2}^T$	
Outcome measures	$\pi_{i,1}^0$			$\pi_{i,2}^1$	
Manipulation checks			✓	$\pi_{i,1}^1, \pi_{i,1}^5, \pi_{i,1}^{10}$	
Additional measures			ECB approval, News consumption, Business News consumption		Policy Congruence

As shown in 1, because the ECB approval, news consumption, and business news consumption questions are asked after treatment but before the outcome measures, these variables operate as possible mechanisms. Alternatively, in wave 2, the policy congruence question is asked after the outcome measure. Because of this sequencing, we refer to this variable as a possible moderator.

Results

In this section, we present the results from our experiments starting with descriptive information. For valid claims based on our experimental manipulations, we need to ensure balance across our treatment groups in relevant observables. In particular, we must ensure that there are no significant differences in respondents' reported prior inflation expectations across the groups. Figure 1 shows little evidence that respondents allocated into the different groups start off with any significant variation in their prior expectations of future inflation. Second, we also examine the posterior inflation expectations across treatment groups in wave 1, measured after respondents receive the information manipulation. Recall the two different messages: half of our respondents receive numerical information about both the value of inflation and the ECB's target whereas the other half of our respondents receive no-numerical targets and less clear information about the ECB's policy objective. Figure 2 describes the effect of the different

³Author

information treatment conditions on posterior expectations graphically. As is apparent from the figure, more precise information substantially reduces respondents' average posterior inflation expectations as well as lowers the variance. It is important to note, however, that the variance decreases in both groups, suggesting that both groups of respondents lowered their expectations likely as a consequence of calculated inconsistencies between the euro amount selected when eliciting their priors and the computed annual inflation rate given post treatment. As group members are randomly assigned into groups, however, any additional updating in the precise information group is indication of changes that result from variation in the *content* of central bank communications.

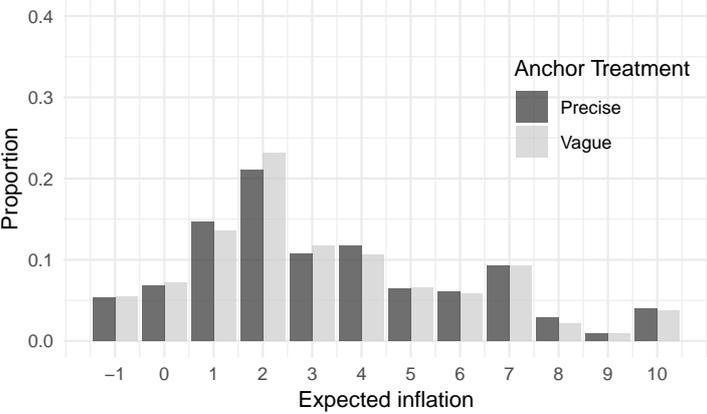


Figure 1: Respondents' Prior Inflation Expectations

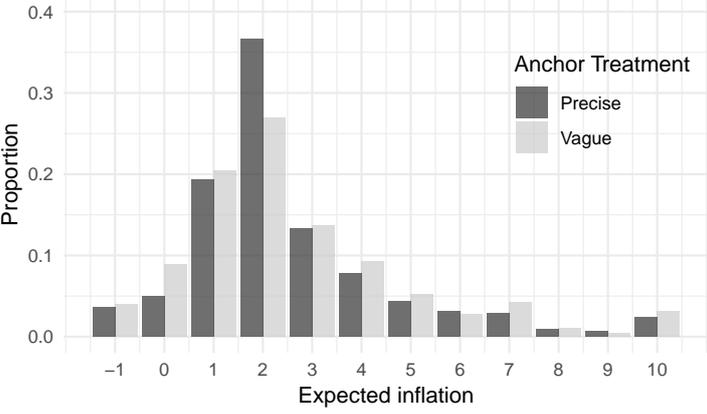


Figure 2: Respondents' Posterior Inflation Expectations

Figure 3 illustrates the relationship between respondents' prior (to treatment) and posterior (to treatment) one-year ahead inflation expectations, grouped by the information treatment that they are allocated to. We find a clear distinction between those respondents who are given more clear information compared to those who are given vague information. Those respondents in the clear treatment group are more likely to tighten around the ECB's numerical inflation target

than those respondents given less clear information and they are more likely to do so to a greater degree than those in the vague group and this difference is statistically significant.

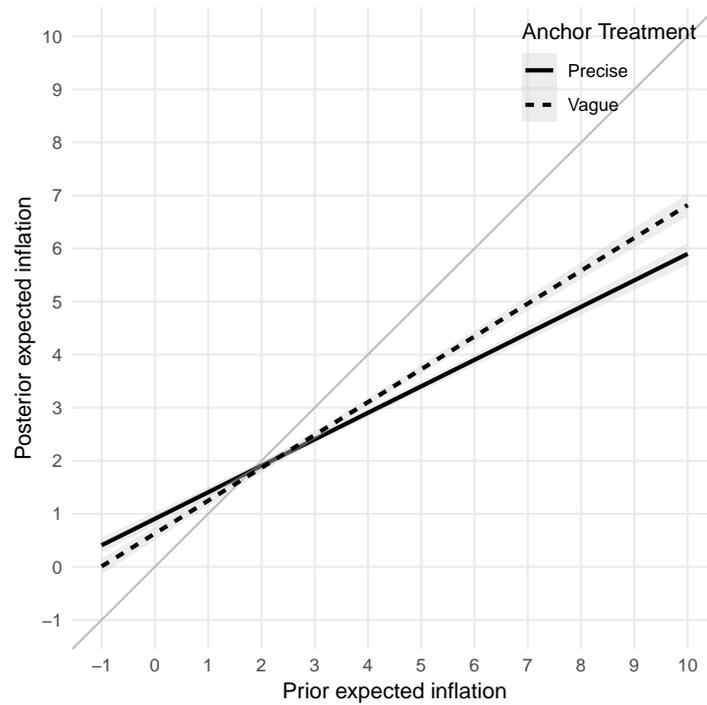


Figure 3

To better understand aggregate differences across the groups, we examine how much the marginal effect of prior inflation expectation (as elicited in wave 1) on posterior inflation expectation differs by treatment condition. The marginal effects are estimated from a linear regression of posterior inflation expectation on prior inflation expectation, including a dummy variables for the different treatment condition (vague or precise information in wave 1; vague/short, vague/long, precise/short, or precise/long information in wave 2), as well as individual-level controls (See Table 2). These marginal effects are presented in Figure 4 and speak directly to our first and second hypotheses (H1,H2). On average, those respondents that receive the precise information treatment place a significantly lower weight on their priors (and therefore a higher weight on ECB information) than those respondents that receive vague information. These results are consistent with the idea that clearer texts are more effective in shaping expectations than information which is more vague.

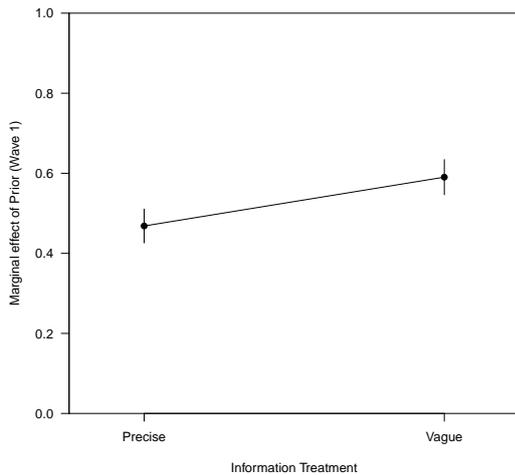


Figure 4: Marginal Effect of Vague (0) and Precise (1) Information on Priors (Wave 1)

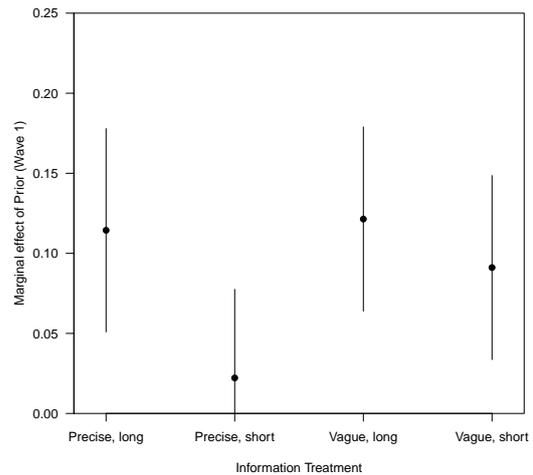


Figure 5: Marginal Effect of Information (Wave 2) on Priors (Wave 1) by Content and Length

We also want to investigate the marginal effect of wave 1-priors on wave 2-posterior beliefs. Recall, the information treatment in wave 2 varies both the length of the statement given to respondents in addition to its level of clarity. Because we have already elicited prior expectations one-year earlier, and we assume that priors are relatively sticky, we also include respondents' prior expectations into the analysis. As before, figure 5 shows the interaction of clear and brevity matters most for expectations. Information that is both precise and short shows the weakest association between a respondent's prior and posterior inflation expectations when compared to either longer, clear information or vague information, and even when we account for individuals' fundamental beliefs about the economy.

A range of important conclusions can be drawn from the results of our experiments. First, we find evidence that when the monetary authority communicates in a more clear manner, on average, individuals' inflation expectation will adjust to the ECB's target rate. Second, we also find that the length of the statement also matters, and this is true even if we account for pre-treatment characteristics, such as an individual's prior beliefs asked in the previous year (wave 1). Thus, our findings confirm observational studies that show that central banks can alter agents' expectations and in ways that they intend (Ehrmann and Fratzscher 2009). It is important to note, however, that the substantive effect of the information on respondents' prior beliefs is relatively small. For example, going from a clear long piece of information to a clear short text lowers the estimated weight of the prior on posterior inflation expectation by

$\approx 0.10(.05, 0.15)$.

Table 2: Regression Results

	<i>Dependent variable: Posterior wave 1</i>				
	(1)	(2)	(3)	(4)	(5)
Prior	0.499*** (0.457,0.542)	0.414*** (0.329,0.499)	0.525*** (0.400,0.651)	0.261*** (0.142,0.381)	0.263*** (0.087,0.438)
Precise information treatment	-0.278*** (-0.443,-0.113)	-0.295*** (-0.460,-0.130)	-0.278*** (-0.443,-0.112)	-0.272*** (-0.436,-0.109)	-0.292*** (-0.457,-0.127)
Business news consumption		-0.059** (-0.106,-0.013)			-0.074** (-0.138,-0.011)
News consumption			-0.001 (-0.065,0.063)		0.049 (-0.042,0.141)
ECB approval				0.064 (-0.043,0.170)	0.070 (-0.037,0.177)
Prior \times Precise information treatment	0.120*** (0.060,0.180)	0.128*** (0.068,0.188)	0.119*** (0.059,0.179)	0.113*** (0.054,0.172)	0.122*** (0.063,0.181)
Prior \times Business news consumption		0.017** (0.0004,0.033)			0.019* (-0.002,0.041)
Prior \times News consumption			-0.004 (-0.025,0.016)		-0.014 (-0.042,0.014)
Prior \times ECB Approval				0.074*** (0.036,0.111)	0.068*** (0.031,0.105)
Constant	0.906*** (0.792,1.020)	1.207*** (0.950,1.464)	0.912*** (0.511,1.313)	0.774*** (0.462,1.086)	0.836*** (0.328,1.344)
Observations	3,464	3,438	3,457	3,457	3,432
R ²	0.457	0.457	0.460	0.474	0.472
Adjusted R ²	0.457	0.456	0.459	0.473	0.470

Note: Linear Regression * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Political Predispositions

In this section, we examine the influence of individual's perceptions of the ECB and media consumption by treatment group, conditional on respondents' prior inflation expectations. We further consider respondents' self-reported consumption of news and business news media as well as respondents' policy congruence with the ECB's target rate.

The regression reported in Table 2 (Model 4) tests for a relationship between respondent's inflation expectation and respondent's attitudes towards the ECB speaking to our hypothesis 3. As mentioned, respondents' opinions of the ECB are measured on a Likert-type scale, where 1 is very good and 5 not very good. The middle category is neither good nor bad. If opinions

about the ECB have an effect on the receptivity of central bank communications, then we should expect that respondents with more favorable opinions of the ECB (lower values) should also be more likely to up-weight information given by the ECB and down-weight their prior inflation expectations in forming posterior inflation expectations. Furthermore, we might expect that the information treatment works stronger for supporters the clearer the information. In order to test this, we first examine the marginal effect of prior expectations on posterior inflation expectation at each realization of the Likert-scale of attitudes towards the ECB by treatment condition. Our results are shown in Figure 6. Indeed, we find evidence that respondents who view the ECB favorably are also more likely to down-weight their priors and conversely, those less likely to view the ECB favourably are less affected. Going from a rating of the ECB is doing a good job to the ECB is doing a bad (from interval 2 to 4 on the scale) reduces the weight of the prior around 0.15. Interestingly, the substantive effect that we find is similar in magnitude to manipulation of the short text to the long text. This may imply that one way that the central bank can compensate for negative public approval is by increasing the clarity and reducing the length of its communications. Secondly, we also see that this effect is magnified for the precise treatment group, with statistically significant differences across groups of respondents for those that answered between 2 and 4 on the scale.

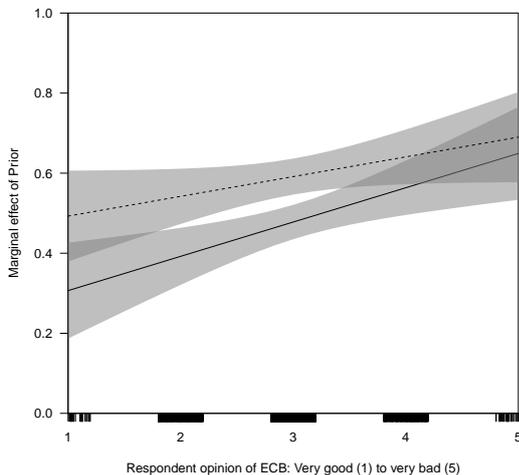


Figure 6: Marginal Effect of Prior on Posterior Inflation Expectation by Attitudes towards the ECB (Vague – dashed line, Precise – solid line)

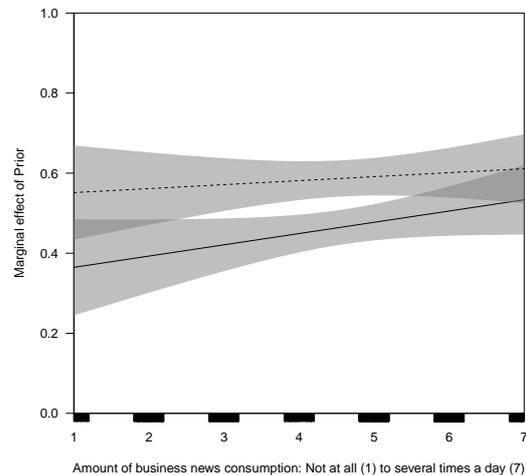


Figure 7: Marginal Effect of Priors on Posterior Inflation Expectation by Business News Consumption (Vague – dashed line, Precise – solid line)

In addition to opinions about the ECB, we also want to test whether financial sophistication matters for information uptake. We proxy financial sophistication by asking respondents to self-

report their media consumption, asking for both general as well as business news consumption. As shown in Table 2 (Model 3), the general consumption of news media does not matter for respondents' posterior inflation expectations and does not interact with prior inflation expectation in determining the posterior. Respondents who self-report consuming more business news, however, hold lower posterior inflation expectations than those who do not consume business news as much. Business news consumption also interacts significantly with prior inflation expectation. In particular, as shown in Figure 7, the weight on prior inflation expectation increases with business news consumption. Further, respondents who report to consume more business news are also more likely to have inflation priors closer to the ECB target, which implies that they are learning about the economy from private sector sources and have a more sophisticated understanding of the economy. Interestingly and unlike in models where individuals with political sophistication are more likely to take up elite cues, in the case of central bank news, we see that people more exposed to business news have stickier priors than those with less exposure, which is consistent with models of Bayesian learning.

Our final consideration is whether deviations in individuals' policy preferences from the ECB's monetary target may also condition the influence of monetary information. As mentioned above, we try to elicit respondents policy preferences in a number of ways. We first ask them directly, both for their own personal inflation preferences, their preferences for the Eurozone as a whole, and their preferences for Germany. On average, respondents do not vary much in their answers despite these different hypothetical scenarios, with a median response that is very stable across the three types of questions (2.8, 2.8, 2.7). For inducing respondents to consider monetary policy as if it involves trade-offs, we show sliders on respondents' screen and ask them to select their preferred inflation rate, while they can see the effect of their preferred rate on other variables of interest (interest rate, unemployment rate, and growth rate). Respondents' preferred inflation rate emerges at a very similar 2.5 percent. Unlike the above, we find little evidence of a relationship between policy distance from the ECB's inflation target and the marginal effect of the prior. The fact that individual's preferences matter little makes our findings that public opinions about the ECB do matter even more interesting. It seems that information is conditioned by whether or not someone positively (or negatively) evaluates the ECB and is irrespective of their own preferred policy.

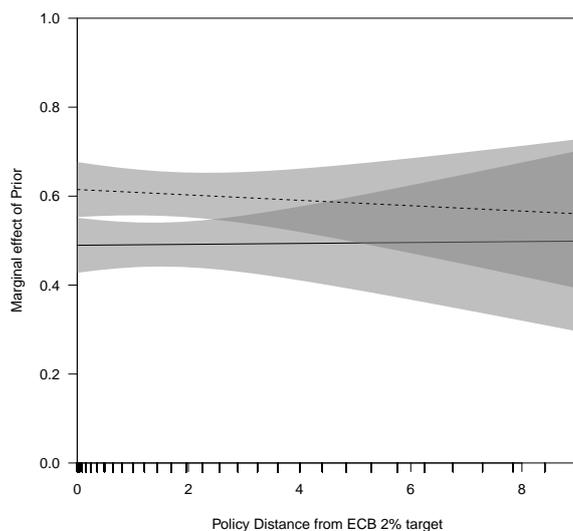


Figure 8: Marginal Effect of Priors on Posterior Inflation Expectation by Policy Convergence (Vague – dashed line, Precise – solid line)

1 Conclusion

In this paper, we provide some evidence that citizens are sensitive to (short) textual information communicated by the European Central Bank. Furthermore, we find that this is true even during a time period where current inflation is low, less than two-percent, and the ECB’s policy is hotly contested in the media.

We motivated our experiment as a way to uncover how citizens update their beliefs given variations in information content. Our main finding is that citizens who hold more negative assessments of the ECB and those with greater exposure to financial news are also those less likely to uptake ECB communications. We also find that holding personal preferences close to the ECB target rate is not associated with more up-take of the information. We also find that when interacting the message clarity and message length, texts that are both short and clear are most influencing. We think that these results are interesting especially because survey evidence suggests that respondents are uninterested in monetary policy in general.

Interestingly, the German public, and its monetary elites, have become even more critical of the ECB since our study was fielded.⁴ According to our results, elite signals in the German media toting the ineffectiveness of ECB policy may indeed undermine the communication tools the ECB has in its arsenal for stabilizing inflation. Such a finding is therefore analogous to

⁴German scepticism of the ECB reveals a eurozone paradox

claims that increases in Euroskepticism can reduce the legitimacy of European institutions and also their effectiveness (Baerg and Hallerberg 2016).

In addition to these empirical contributions, our findings provide a number of new findings for the literature on public opinion. While previous studies suggest that political sophisticates may be more likely to adopt political information by their favored elites, in our experiment, we find little evidence that public information crowds out private sector information for those well informed. We also find surprising stability in households' personal preferences over inflation and we find that households are likely to report consistent preferences and make little distinction between personal inflation preferences, Eurozone inflation, and German inflation. Furthermore, while many studies have examined how non-elected political elites change citizens' opinion (Broockman and Butler 2017; Iyengar and Kinder 1987), new to this study is testing whether or not central banks can change citizens' understanding of the economy, and how, which also has important knock-on effects of models of politics, for example, models of economic voting.

References

- Anderson, Christopher J, Silvia M Mendes, and Yuliya V Tverdova (2004). “Endogenous economic voting: evidence from the 1997 British election”. In: *Electoral Studies* 23.4, pp. 683–708.
- Armantier, Olivier et al. (2016). “The price is right: Updating inflation expectations in a randomized price information experiment”. In: *Review of Economics and Statistics* 98.3, pp. 503–523.
- Bachmann, Rüdiger, Tim O Berg, and Eric R Sims (2015). “Inflation expectations and readiness to spend: Cross-sectional evidence”. In: *American Economic Journal: Economic Policy* 7.1, pp. 1–35.
- Baerg, Nicole (2020). *Crafting Consensus: Why Central Bankers change their Speech and How Speech changes the Economy*. Oxford University Press.
- Baerg, Nicole Rae and Mark Hallerberg (2016). “Explaining instability in the stability and growth pact: The contribution of member state power and euroskepticism to the euro crisis”. In: *Comparative Political Studies* 49.7, pp. 968–1009.
- Bearce, David H (2003). “Societal preferences, partisan agents, and monetary policy outcomes”. In: *International Organization* 57.2, pp. 373–410.
- Bernanke, Ben (2007). *Inflation expectations and inflation forecasting*. Tech. rep. Board of Governors of the Federal Reserve System (US).
- Bodea, Cristina and Raymond Hicks (2015). “Price stability and central bank independence: Discipline, credibility, and democratic institutions”. In: *International Organization* 69.1, pp. 35–61.
- Boydston, Amber E, Benjamin Highton, and Suzanna Linn (2018). “Assessing the relationship between economic news coverage and mass economic attitudes”. In: *Political Research Quarterly* 71.4, pp. 989–1000.
- Broockman, David E and Daniel M Butler (2017). “The Causal Effects of Elite Position-Taking on Voter Attitudes: Field Experiments with Elite Communication”. In: *American Journal of Political Science* 61.1, pp. 208–221.
- Bulíř, Aleš, Martin Čihák, and David-Jan Jansen (2013). “What drives clarity of central bank communication about inflation?” In: *Open Economies Review* 24.1, pp. 125–145.
- Campbell, Angus et al. (1980). *The american voter*. University of Chicago Press.
- Cavallo, Alberto, Guillermo Cruces, and Ricardo Perez-Truglia (2017). “Inflation expectations, learning, and supermarket prices: Evidence from survey experiments”. In: *American Economic Journal: Macroeconomics* 9.3, pp. 1–35.
- Clark, Robert, Annamaria Lusardi, and Olivia S Mitchell (2017). “Financial knowledge and 401 (k) investment performance: a case study”. In: *Journal of Pension Economics & Finance* 16.3, pp. 324–347.
- Conover, Pamela and Stanley Feldman (1986). “The Role of Inference in the Perception of Political Candidates”. In: *Political Cognition*. Ed. by R. Lau and D. Sears. Hillsdale: Lawrence Erlbaum, pp. 79–102.
- Crujisen, Carin Van der, David-Jan Jansen, Jakob De Haan, et al. (2015). “How much does the public know about the ECB’s monetary policy? Evidence from a survey of Dutch households”. In: *International Journal of Central Banking* 11.4, pp. 169–218.
- De Vries, Catherine E (2018). *Euroscepticism and the future of European integration*. Oxford University Press.
- Ehrmann, Michael and Marcel Fratzscher (2009). “Explaining Monetary Policy in Press Conferences”. In: *International Journal of Central Banking* 5.2, pp. 42–84.
- Ehrmann, Michael, Michel Soudan, and Livio Stracca (2013). “Explaining European Union citizens’ trust in the European Central Bank in normal and crisis times”. In: *The Scandinavian Journal of Economics* 115.3, pp. 781–807.

- Genovese, Federica, Gerald Schneider, and Pia Wassmann (2016). “The Eurotower strikes back: Crises, adjustments, and Europe’s austerity protests”. In: *Comparative Political Studies* 49.7, pp. 939–967.
- Gerber, Alan S and Gregory A Huber (2010). “Partisanship, political control, and economic assessments”. In: *American Journal of Political Science* 54.1, pp. 153–173.
- Haller, H Brandon and Helmut Norpoth (1997). “Reality bites: News exposure and economic opinion”. In: *Public Opinion Quarterly*, pp. 555–575.
- Hastings, Justine S, Brigitte C Madrian, and William L Skimmyhorn (2013). “Financial literacy, financial education, and economic outcomes”. In: *Annu. Rev. Econ.* 5.1, pp. 347–373.
- Hayo, Bernd and Edith Neuenkirch (2014). “The German public and its trust in the ECB: The role of knowledge and information search”. In: *Journal of International Money and Finance* 47, pp. 286–303.
- Hobolt, Sara B and Christopher Wratil (2015). “Public opinion and the crisis: the dynamics of support for the euro”. In: *Journal of European Public Policy* 22.2, pp. 238–256.
- Iyengar, S. and Donald Kinder (1987). *News that Matters: Television and American Opinion*. Chicago: Chicago University Press.
- Jansen, David-Jan (2011). “Does the Clarity of Central Bank Communication Affect Volatility in Financial Markets? Evidence from Humphrey-Hawkins Testimonies”. In: *Contemporary Economic Policy* 29.4, pp. 494–509.
- Mondak, Jeffery J (1993). “Source cues and policy approval: The cognitive dynamics of public support for the Reagan agenda”. In: *American Journal of Political Science*, pp. 186–212.
- Montes, GC et al. (2016). “Effects of transparency, monetary policy signalling and clarity of central bank communication on disagreement about inflation expectations”. In: *Applied Economics* 48.7, pp. 590–607.
- Roos, Michael WM and Ulrich Schmidt (2012). “The Importance of Time-Series Extrapolation for Macroeconomic Expectations”. In: *German Economic Review* 13.2, pp. 196–210.
- Shen, Fuyuan, Lee Ahern, and Michelle Baker (2014). “Stories that count: Influence of news narratives on issue attitudes”. In: *Journalism & Mass Communication Quarterly* 91.1, pp. 98–117.
- Tverdova, Yuliya V (2012). “The formation of economic perceptions in post-communist countries of east central Europe”. In: *Political Behavior* 34.1, pp. 137–158.
- Wlezien, Christopher, Mark Franklin, and Daniel Twiggs (1997). “Economic perceptions and vote choice: Disentangling the endogeneity”. In: *Political Behavior* 19.1, pp. 7–17.

Appendix

A Statistical appendix

A.1 Attrition details

	2012 sample	2014 sample	Completion rate	Cumulative response
Wave 14 (November 2014)	948	2627	72.4%	14.8%
Wave 20 (November 2015)	859	2300	63.8%	13.0%

Table A.1: Attrition statistics for the German Internet Panel

A.2 Wave and treatment statistics

	Frequency	Proportion
Wave 1		
Precise information	1729	.499
Vague information	1735	.501
	3464	
Wave 2		
Precise information	short	.25
	long	.25
Vague information	short	.25
	long	.25
	3072	

Table A.2: Wave and treatment statistics

B Experimental design

B.1 Questionnaire items

B.1.1 Wave 1 (November 2014)

1. Assessing inflation

(a) German original:

Bei den folgenden Fragen besteht Ihre Aufgabe darin, Preisentwicklungen einzuschätzen. Eine Person gibt aktuell 1500 Euro für Lebensmittel und Kleidung sowie für Friseurbesuche pro Monat aus. Wie werden sich diese Ausgaben in 12 Monaten verändern? Geben Sie bitte an, wie viel diese Person für Lebensmittel und Kleidung sowie für Friseurbesuche in 12 Monaten ausgeben wird. Gehen Sie bitte davon aus, dass sich weder die Lebensumstände noch das Konsumverhalten der Person verändern wird, d.h. sie wird in 12 Monaten ähnliche Produkte und Dienstleistungen im gleichen Umfang wie derzeit nutzen. Bei dieser Frage können Sie nur eine Antwort geben.

Ausgaben in 12 Monaten [Answer key:] weniger als 1500 EUR, 1500 EUR, 1515 EUR, 1530 EUR, 1545 EUR, 1560 EUR, 1575 EUR, 1590 EUR, 1605 EUR, 1620 EUR, 1635 EUR, 1650 EUR oder mehr.

2. Inflation expectation, vague/ precise treatment condition

(a) German original:

Bei den folgenden Fragen besteht Ihre Aufgabe darin, Preisentwicklungen einzuschätzen. Eine Person gibt aktuell 1500 Euro für Lebensmittel und Kleidung sowie für Friseurbesuche pro Monat aus. Wie werden sich diese Ausgaben in 12 Monaten verändern? Geben Sie bitte an, wie viel diese Person für Lebensmittel und Kleidung sowie für Friseurbesuche in 12 Monaten ausgeben wird. [Anchoring treatment 1 (AT1):]

AT1.1 Vague information:

Die europäische Zentralbank erwartet, dass die wichtigen Zinssätze für eine längere Zeit auf dem gegenwärtigen Level oder darunter liegen werden. Diese Einschätzung beruht auf den insgesamt gedämpften Inflationsaussichten. Die Inflationserwartung für die Eurozone deckt sich mit dem Ziel der Zentralbank die Preissteigerung auf angemessenem Niveau zu halten.

AT1.2 Precise information:

Die europäische Zentralbank erwartet, dass die wichtigen Zinssätze in den nächsten 6 bis 12 Monaten auf dem gegenwärtigen Level oder darunter liegen werden. Diese Einschätzung beruht auf den insgesamt gedämpften Inflationsaussichten von derzeit 1 Prozent pro Jahr. Die Inflationserwartung für die Eurozone deckt sich mit dem Ziel der Zentralbank die Preissteigerung nahe 2 Prozent zu halten.

Bei der vorherigen Frage haben Sie angegeben, dass eine Person im [Date, year from now][Answer from question 1] für Lebensmittel und Kleidung ausgeben wird. Dieser Betrag entspricht einer jährlichen Inflationsrate von [Answer from question 1 expressed as inflation rate]. Wenn Sie nun die Erwartungen der EZB berücksichtigen, was schätzen Sie: Wie viel Euro wird diese Person für die gleichen Lebensmittel und die gleiche Kleidung im [Date, year from now] bezahlen? Gehen Sie bitte davon aus, dass sich weder die Lebensumstände noch das Konsumverhalten der Person verändern wird, d.h. sie wird in 12 Monaten ähnliche Produkte und Dienstleistungen im gleichen Umfang wie derzeit nutzen. Bei dieser Frage können Sie nur eine Antwort geben.

Ausgaben in 12 Monaten [Answer key:] weniger als 1500 EUR, 1500 EUR, 1515 EUR, 1530 EUR, 1545 EUR, 1560 EUR, 1575 EUR, 1590 EUR, 1605 EUR, 1620 EUR, 1635 EUR, 1650 EUR oder mehr.

3. Medium-term inflation expectation

(a) German original:

Mit welcher jährlichen Inflationsrate rechnen Sie in 5 Jahren? Bei dieser Frage können Sie nur eine Antwort geben. [Answer key:] -1,0,1,2,3,4,5,6,7,8,9,10 %

4. Long-term inflation expectation

(a) German original:

Mit welcher jährlichen Inflationsrate rechnen Sie in 10 Jahren? Bei dieser Frage können Sie nur eine Antwort geben. [Answer key:] -1,0,1,2,3,4,5,6,7,8,9,10 %

5. Manipulation check

(a) German original:

Vague information treatment condition:

In einer der vorherigen Fragen haben Sie folgende Informationen gelesen: Die Inflationserwartung für die Eurozone deckt sich mit dem Ziel der Europäischen Zentralbank, die Preissteigerung auf angemessenem Niveau zu halten.

Precise information treatment:

In einer der vorherigen Fragen haben Sie folgende Informationen gelesen: Die Inflationserwartung für die Eurozone deckt sich mit dem Ziel der Europäischen Zentralbank, die Preissteigerung nahe 2% zu halten.

Für wie detailliert halten Sie diese Information?

Answer key: *überhaupt nicht detailliert, wenig detailliert, mäßig detaillier, ziemlich detaillier, sehr detailliert*

6. Approval of ECB

(a) German original:

Die Hauptaufgabe der Europäischen Zentralbank (EZB) ist es, dafür zu sorgen, dass die Preise in der gesamten Eurozone stabil bleiben. Das bedeutet, dass die EZB dafür verantwortlich ist, dass sich die Preise über die Zeit nur wenig verändern. Wie erfüllt die EZB Ihrer Meinung nach die Aufgabe, die Preise stabil zu halten?

Answer key: *sehr gut, gut, weder gut noch schlecht, schlecht, sehr schlecht*

7. News consumption

(a) German original:

Wie oft schauen oder lesen Sie Nachrichten?

Answer key: *gar nicht, seltener als einmal pro Woche, einmal pro Woche, alle 4-6 Tage, alle 2-3 Tage, einmal am Tag, mehrmals am Tag*

8. Business news consumption

(a) German original:

Wie oft schauen oder lesen Sie Nachrichten zu wirtschaftlichen Themen?

Answer key: *gar nicht, seltener als einmal pro Woche, einmal pro Woche, alle 4-6 Tage, alle 2-3 Tage, einmal am Tag, mehrmals am Tag*

B.1.2 Wave 2 (November 2015)

1. Preference inflation vs unemployment Germany (*CD20100 pref_inflation_unemployment_de*)

(a) German original:

Bei den folgenden Fragen geht es um Inflation. Wenn alles teurer wird spricht man von Inflation und meint damit, dass Sie sich für denselben Geldbetrag weniger kaufen können. Die Stärke der Inflation wird als Inflationsrate bezeichnet. Die Inflation wirkt sich auf die Arbeitslosenrate aus. Üblicherweise sind entweder die Inflationsrate oder die Arbeitslosenrate niedrig, nicht aber beide zum selben Zeitpunkt. Stellen Sie sich vor, dass Sie für Deutschland zwischen zwei extremen Szenarien wählen müssten. Für welches dieser beiden Szenarien würden Sie sich entscheiden? [Answer key:] Deutschland hätte in den nächsten 2 Jahren eine Inflationsrate von nur 2% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von 15%. Deutschland hätte in den nächsten 2 Jahren eine Inflationsrate von 15% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von nur 2%.

2. Comprehension inflation vs unemployment trade-off Germany (*CD20101 pref_inflation_unemployment_de_* or *CD20102 pref_inflation_unemployment_de_s3*)

(a) German original:

Sie haben sich bei der vorherigen Frage für das [erste/zweite] Szenario entschieden: Deutschland hätte in den nächsten 2 Jahren eine Inflationsrate von nur [2/15]% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von [15/2]%. Das [zweite/erste]

- Szenario lautete: Deutschland hätte in den nächsten 2 Jahren eine Inflationsrate von [15/2]% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von nur [2/15]%. Wie hoch müsste die prozentuale Arbeitslosenrate im ersten Szenario mindestens sein, damit Sie sich für das zweite Szenario entscheiden würden? Bitte tragen Sie eine Zahl [zwischen 16 und 100/größer als 15] ein. [Answer key:] Integer [16-100/>15]*
3. Preference inflation vs unemployment Eurozone (*CD20103 pref_inflation_unemployment_eu*)
- (a) German original:
Stellen Sie sich vor, dass Sie für den Euroraum zwischen zwei extremen Szenarien wählen müssten. Für welches dieser beiden Szenarien würden Sie sich entscheiden ? [Answer key:] Der Euroraum hätte in den nächsten 2 Jahren eine Inflationsrate von nur 2% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von 15%. Der Euro-raum hätte in den nächsten 2 Jahren eine Inflationsrate von 15% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von nur 2%.
4. Comprehension inflation vs unemployment trade-off Eurozone
 (*CD20104 pref_inflation_unemployment_de_s2* or *CD20105 pref_inflation_unemployment_de_s1*)
- (a) German original:
Sie haben sich bei der vorherigen Frage für das [erste/zweite] Szenario entschieden: Der Euroraum hätte in den nächsten 2 Jahren eine Inflationsrate von nur [2/15]% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von [15/2]%. Das [zweite/erste] Szenario lautete: Der Euroraum hätte in den nächsten 2 Jahren eine Inflationsrate von [15/2]% pro Jahr, bei einer gleichzeitigen Arbeitslosenrate von nur [2/15]%. Wie hoch müsste die prozentuale Arbeitslosenrate im ersten Szenario mindestens sein, damit Sie sich für das zweite Szenario entscheiden würden? Bitte tragen Sie eine Zahl [zwischen 16 und 100/größer als 15] ein. [Answer key:] Integer [16-100/>15]
5. Inflation/interest rate/unemployment rate/growth rate preference Eurozone/Germany
 (*CD20106 pref_inflation_eu* or *CD20107 pref_inflation_de*)
- (a) German original:
Die Europäische Zentralbank (EZB) und die Euroländer, wie beispielsweise die Deutsche Bundesbank, legen die wichtigsten Zinssätze für den Euroraum fest. Dieser Zins wird als Leitzins bezeichnet, da er die gesamte Volkswirtschaft beeinflusst. Durch die Erhöhung des Leitzinses macht die Zentralbank das Geld "teurer," das heißt Bürger und Unternehmen nehmen weniger Kredite auf. Damit ist das Geld der Banken weniger gefragt und die Inflation sinkt. In den folgenden zwei Fragen werden Sie gebeten, einmal die Rolle der EZB einzunehmen und den Leitzins für den Euro-raum festzulegen und einmal die Rolle der deutschen Bundesbank einzunehmen und entsprechend den Leitzins für Deutschland festzulegen. In der dritten Frage bittet man Sie, einen Leitzins festzulegen, der für Ihre eigene finanzielle Situation am besten ist. Der Leitzins hat einen Einfluss auf die Höhe der Inflation, der Arbeitslosigkeit und des Wirtschaftswachstums im Euroraum und auch in Deutschland. Stellen Sie sich vor, dass Sie die Rolle der [EZB/Bundesbank] übernehmen und den Leitzins für [den Euroraum/Deutschland] festlegen. Der Leitzins hat einen Einfluss auf die Höhe der Inflation, der Arbeitslosigkeit und des Wirtschaftswachstums im Euro-raum. Die vier unten stehenden Linien sind so miteinander verbunden, dass ein höherer Zinssatz zu einer niedrigeren Inflation, einer höheren Arbeitslosenrate und einem niedrigeren Wirtschaftswachstum führt. Ein niedrigerer Zinssatz hat die gegenteiligen Auswirkungen. Bitte klicken Sie auf die [erste/zweite/dritte/vierte] Linie, um Ihren

bevorzugten Zinssatz auszuwählen. Anschließend können Sie die Werte verändern, indem Sie eines der Vierecke verschieben [order of sliders is randomized]. [Answer key:]

The screenshot shows a survey interface with four sliders, each representing an economic indicator. The sliders are arranged vertically and are interconnected. The current values are as follows:

Indicator	Minimum Value	Maximum Value	Current Value
Zinssatz (Interest Rate)	-0,5%	4,5%	~1,5%
Inflation	0,0%	5,0%	~2,5%
Arbeitslosenrate (Unemployment Rate)	4,5%	9,5%	~7,0%
Wirtschaftswachstum (Economic Growth)	-1,0%	4,0%	~1,5%

Figure B.1: Example of screen as displayed to respondents to answer question item *CD20106* and *CD20107*

6. Preferences personal inflation (*CD20108 pref_inflation_personal*)

(a) German original:

Stellen Sie sich vor, dass man Sie persönlich beauftragt hat, einen Leitzins festzulegen, der für ihre eigene finanzielle Situation am besten ist. Der Leitzins hat einen Einfluss auf die Höhe der Inflation, der Arbeitslosigkeit und des Wirtschaftswachstums in Deutschland. Die vier unten stehenden Linien sind so miteinander verbunden, dass ein höherer Zinssatz zu einer niedrigeren Inflation, einer höheren Arbeitslosenrate und einem niedrigeren Wirtschaftswachstum führt. Ein niedrigerer Zinssatz hat die gegenteiligen Auswirkungen. Bitte klicken Sie auf die [erste/zweite/dritte/vierte] Linie, um Ihren bevorzugten Zinssatz auszuwählen. Anschließend können Sie die Werte verändern, indem Sie eines der Vierecke verschieben [order of sliders is randomized]. [Answer key:] See previous question item.

7. Weighting inflation/unemployment rate (*CD20109 weight_unemployment_EZB*, *CD20110 weight_inflation_EZB*, *CD201011 weight_unemployment_EZB*, and *CD201102 weight_inflation_EZB*)

(a) German original:

Die Politik der [EZB/deutschen Bundesregierung] beeinflusst die Inflation und die Arbeitslosenrate. Auf einer Skala von 0 bis 10: Wie stark sollte Ihrer Meinung nach die Verringerung der Inflation und wie stark die Reduzierung der Arbeitslosenrate gewichtet werden? Die Summe der Antworten muss 10 ergeben. [Answer key:]

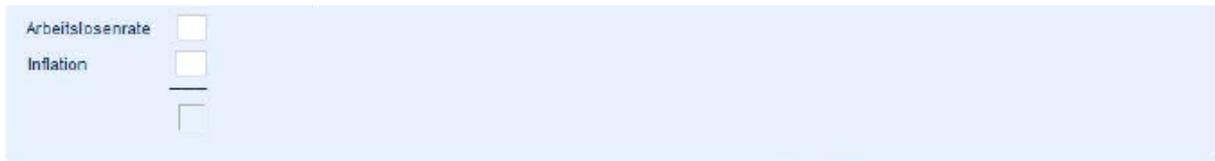


Figure B.2: Example of screen as displayed to respondents to answer question item *CD20106* and *CD20107*

8. Inflation expectation (next 12 month, (*CD20113 change_inflation_ecb*))

(a) German original:

Der folgende Bericht beschreibt und erklärt die Handlungen der EZB für die Öffentlichkeit. Bitte beachten Sie diese Informationen bei der Beantwortung der anschließenden Frage. [Anchoring treatment 2 (AT2):]

AT2.1 Precise information, long:

Die EZB dehnt ihre Ankäufe auf Anleihen aus, die von im Euroraum ansässigen Zentralstaaten, Emittenten mit Förderauftrag und europäischen Institutionen begeben werden. Insgesamt sind monatliche Ankäufe von Vermögenswerten in Höhe von 60 Milliarden Euro geplant. Die Ankäufe sollen mindestens bis September 2016 erfolgen. Das Programm dient der Erfüllung des Mandats der EZB, die Preisstabilität zu gewährleisten und mittelfristige Inflationsraten nahe 2% zu erreichen.

AT2.2 Vague information, long:

Die EZB dehnt ihre Ankäufe auf Anleihen aus, die von im Euroraum ansässigen Zentralstaaten und anderen Emittenten und Institutionen begeben werden. Insgesamt sind monatliche Ankäufe von Vermögenswerten in großer Höhe geplant. Die Ankäufe sollen mindestens bis Mitte nächsten Jahres erfolgen. Das Programm dient der Erfüllung des Mandats der EZB, die Preisstabilität zu gewährleisten und mittelfristige Inflationsraten nahe einem angemessenen Level zu erreichen.

AT2.3 Precise information, short:

Die EZB dehnt ihre Ankäufe auf Anleihen aus. Die Ankäufe in Höhe von 60 Milliarden Euro sollen bis September 2016 erfolgen und dienen der Erfüllung des Mandats der EZB zur Gewährleistung von Preisstabilität und einer Inflationsrate nahe 2%.

AT2.4 Vague information, short:

Die EZB dehnt ihre Ankäufe auf Anleihen aus. Die Ankäufe in großer Höhe sollen bis Mitte nächsten Jahres erfolgen und dienen der Erfüllung des Mandats der EZB zur Gewährleistung von Preisstabilität und einer angemessenen Inflationsrate.

Wie sehr wird Ihrer Meinung nach die Inflationsrate in den nächsten 12 Monaten steigen oder sinken (in Prozent)? [Answer key]: -1 oder mehr sinken, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10% oder mehr steigen.