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Measuring Household Inflation Perceptions and Expectations: The Effect of Guided vs Non-Guided Inflation Questions

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Abstract

An experiment using a representative survey of the German population shows that letting respondents report a number rather than asking them to choose from a list of predefined ranges lowers the response rate for both perceived past and expected inflation and decreases (increases) reported past (expected) inflation. Income, education, gender, objective and subjective knowledge about monetary policy, and political affiliation affect the effect's size but not its sign. East and West German respondents who were 15 or older when the Berlin Wall fell have reactions different from those who were younger at that time, which supports the 'impressionable years' hypothesis based on different inflation experiences.

JEL-Codes: E520, E580, Z100.

Keywords: inflation perception, inflation expectation, survey question design, Germany, household survey, impressionable years hypothesis.

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1. Introduction

The inflation perceptions and expectations of financial market participants, firms, and laypersons may have wide-ranging economic and political consequences and thus have been scrutinised extensively using survey data. Focusing on household surveys, reviews of the literature by Wärneryd (1986), Ranyard et al. (2008), and Bruine de Bruin et al. (2017) document the increasing depth and scope of research in this area. Households' reported perceptions and expectations of inflation have been found informative by social scientists in regard to aspects of household behaviour. For instance, perceptions and expectations have been used to test the rationality hypothesis (Jonung and Laidler, 1988, Iregui et al., 2021), appear to affect individual consumption decisions (Armentier et al., 2015, Armentier et al., 2021), and react to information on the policy instruments of the central bank (Brouwer and de Haan, 2022). They also correlate with the popularity of governments (Sanders, 2000) and personality traits (Abildgren and Kuchler, 2021). However, there is evidence that they are not well anchored to the central bank's long term inflation target (Dash et al., 2020).

In terms of economic policy, central bankers also recognise the importance of survey-based measures of inflation expectations (see, e.g., Bernanke, 2007). Many central banks, for instance, the Bank of England, the European Central Bank, the Bank of Australia, the Bank of Japan, the

Sveriges Riksbank, and the Reserve Bank of India, collect direct measures of expectations based on surveys asking respondents to report their expectations, (Armantier et al., 2015). Other institutions are interested in assessing expected and perceived inflation too, for example, the European commission in its 'Consumer Survey of the European Commission' (Arnold and Soederhuizen, 2016).

However, measuring inflation via surveys raises methodological problems and the reliability of the resulting estimates is questionable. There can be substantial differences between official inflation rates and perceived inflation rates, for example, after the introduction of the euro (Aucremanne et al., 2007; Brachinger, 2008). Differences have been reported in estimates of the perceived rate of inflation between surveys conducted in the same country at the same point in time (Bruine de Bruin et al., 2017).

Last, but not least, answers to questions about inflation, like those to any other survey question, may be subject to wording effects (Bruine de Bruin, 2011). Survey responses can be sensitive to question design. Armantier et al. (2013) and Bruine de Bruin et al. (2017) observe that responses can be markedly different depending on whether the question referred to 'prices in general', 'inflation', or 'prices you pay'.

The design of response options may also affect answers. As Bruine de Bruin et al. (2011) point out, the way response options are presented is part of the question and therefore may affect answers to it. Coibion et al. (2020) report that the number of intervals from which respondents can choose when stating their expected inflation affects the measured uncertainty of respondents. However, the question of how the type of response option affects reported perceived or expected inflation has received no specific attention.

Another blind spot in the literature on surveys of subjective inflation measurement is how questions affect non-responses. Laypersons' limited knowledge about monetary affairs (Hayo and Neuenkirch, 2018) can lead to a notable number of non-responses. Moreover, Coibion et al. (2020) observe that even among major economic players, for example, price-setters, over 60% of US firms selected the 'I don't know' option to a question asking them about the Federal Reserve's target inflation rate. Bruine de Bruin et al. (2017) report that the wording of the question about inflation affects the response rate and that respondents are more likely to respond to a question on 'inflation' than to one on 'prices in general'.

To the best of our knowledge, how response options to questions about perceived and expected inflation affect the rate of non-responses has not been studied. Hence, we know neither whether

the design of answer categories influences the propensity to answer nor whether it has an impact on the distribution of reported inflation figures.

This issue matters. As Bruine de Bruin et al. (2017) point out, answers to questions about perceived and expected inflation could be subject to a social desirability bias. Respondents likely want to avoid reporting answers that the interviewer may consider foolish or unrealistic. Thus, providing them with a selection of intervals from which to choose instead of asking them to simply volunteer a number might increase the response rate. This raises the question of whether the additional responses prompted by suggesting intervals really add useful information to the sample. If respondents are more concerned about not being able to answer than about reporting their true attitudes, then these additional observations are noisy. In the extreme, if respondents randomly selected an interval, extra responses would result in pure noise. Put differently, the share of 'non-attitudes', as defined by Campbell et al. (1960), in overall answers is likely higher in the case of pre-formulated answer categories.

The design of answer categories may also bias the estimates of expected inflation. This could occur if providing answer intervals caused anchoring, as defined by Tversky and Kahneman (1974). Alternatively, respondents may pick the middle category if they are unsure about what answer they should give (see, e.g., Oppenheim, 1992). In either case, both the mean and the dispersion of answers would be affected by the way in which respondents are asked to formulate their answers.

The purpose of our research is to assess the impact of two different response options on the outcome of questions about perceived past inflation and expected future inflation in a representative population survey. In this paper, we use a randomised survey experiment to study how the way in which respondents can give responses to questions about their perception of past inflation and their expectations affects the distribution of answers. Using a representative survey of about 2,000 German residents, we contrast a question where respondents are asked to report a number, without further indication, with a question where respondents are provided with a list of intervals from which to choose. Half of the respondents were randomly assigned to the first type of question, the other half to the other. We investigate how the specification of the response options affects both the response rate to the question and the reported inflation rate. As the two groups were randomly selected, we can identify the causal effects of different response options.

Our results show that letting respondents choose a number without giving them any guidance decreases the response rate compared to asking them to choose from a predefined range of

answers. This finding holds for both perceived inflation and expected inflation. Moreover, we discover that the actual inflation rate stated by respondents differs significantly between the two response options. Letting respondents choose a number without giving them any guidance prompted them to report a relatively lower past inflation and a relatively higher expected inflation rate than did asking them to choose from a list of predefined intervals. Thus, not only does the choice of a specific response option affect reported past and future inflation rates, it also does so in opposite directions.

We condition the effect of the type of response option on income, education, gender, objective and subjective knowledge about monetary policy, and political affiliation. These variables moderate the size of the 'type-of-response' effects, but generally do not change their signs. However, we observe systematic differences in the type-of-response effect between East and West German respondents who were 15 or older when the Berlin Wall fell, but not for younger respondents. This finding is in line with the 'impressionable years' hypothesis and likely reflects different personal inflation experiences.

The rest of the paper is organised as follows. The next section describes the survey and the data. Section 3 reports our baseline results and Section 4 robustness and extensions. Section 5 concludes.

2. Survey and Data

The inflation questions were included on our behalf in an Omnibus survey conducted from 6 February to 2 March 2018 by Gesellschaft für Konsumforschung (GfK), a large private research company specialising in market research and public opinion surveys. The survey covers various topics and a broad range of socio-demographic and psychological indicators, many of which are not automatically collected by GfK.[1] The sample is based on face-to-face interviews conducted by professional interviewers equipped with pen-pads and is representative of the German population (for more details, see Hayo et al., 2018).

From a methodological perspective, face-to-face interviews are generally considered preferable to online surveys, particularly in situations where the topic is complex and an interviewer can help respondents understand what is asked of them and when assessing people's objective knowledge about the economy. Online surveys may encounter potential problems in this regard, as respondents could face difficulties in understanding the questions without the assistance of

[1] The questionnaire is reported in Online Appendix A.4.

an interviewer. Furthermore, the accessibility of the Internet enables respondents to easily search for answers, which can introduce an upward bias to the outcome of knowledge-related questions. However, online surveys may have their own advantages in specific situations, such as when responses are susceptible to social desirability bias. The reduced social interaction associated with online surveys may make them preferable for asking more sensitive questions. When collecting our dataset, GfK employed a survey approach that integrates face-to-face interviews with the use of pen-pads, which combines the advantages of both survey methods. Pen-pads allow respondents to input potentially sensitive information without disclosing it to the interviewer. In the current context, pen-pads were utilised to collect data on various sensitive topics, including income and political orientation. While it is not evident that the inflation questions should be subject to notable social desirability biases, even if they were, it remains unclear why these biases would result in asymmetric responses based on how the answer options are formulated. Regarding the way the data were collected, it is important to stress that both interviewer and interviewee watched a screen showing the questionnaire and the former input all answers provided by the latter. The exception to this procedure was the use of pen-pads for the sensitive questions noted above.

In our analysis, we initially focus on the specification of the response options for a question about the inflation rate that people perceived in the past year. The survey features two variants of the same question. Respondents were randomly divided into two groups. Half of the respondents were asked to state the past inflation rate without any further guidance in terms of answer options:

Q1a: 'Do you remember, roughly, what Germany's rate of inflation was in 2017? Please write the percentage here: …'

Respondents could either state a number or declare that they did not know the answer.

The other half of the respondents were asked a variant of the question that presented them with a series of intervals:

Q1b: 'Do you remember, roughly, what Germany's rate of inflation was in 2017? Which of the following options describes best how prices have changed? (a) Decreased; (b) Unchanged; (c) Increased by 1% or less; (d) Increased by more than 1% but not more than 2%; (e) Increased

by more than 2% but not more than 3%; (f) Increased by more than 3% but not more than 4%; (g) Increased by more than 4%; (h) Don't know.

We then investigate the influence of response options on results in a question asking respondents to state the inflation rate they expect for the following year. As for past inflation, the survey features two variants of the same question, randomly asked by the interviewer:

Question Q2a: 'What do you expect the inflation rate will be next year, i.e., 2018? Please write the percentage here: …'
Respondents could either state a number, declare that they had no opinion on the future inflation rate, or say that they did not know the answer.

In the other variant of the question, respondents were invited to choose from a series of intervals.

Question Q2b: 'What do you expect the inflation rate will be next year, i.e., 2018? Which of the following options describes best how prices will change? (a) Decrease; (b) No change; (c) Increase by 1% or less; (d) Increase by more than 1% but not more than 2%; (e) Increase by more than 2% but not more than 3%; (f) Increase by more than 3% but not more than 4% (g) Increase by more than 4%; (h) I do not form opinions about what might be the rate of inflation in the future; (i) Don't know.

Note that we allowed respondents to state that they have no opinion as to inflation expectations in addition to the 'don't know' option because there is a conceptual difference between a person who generally does not have inflation expectations and a person who cannot provide a specific number for a given period.
Overall, we could collect 2,015 usable questionnaires. Among those, 1,250 respondents answered Q1a and Q1b, the questions about past inflation, and 1,050 answered Q2a and Q2b, the questions about expected inflation.[2]

[2] Tables A3a and A3b compare the characteristics of respondents who answered each of the questions or replied 'I don't know'.

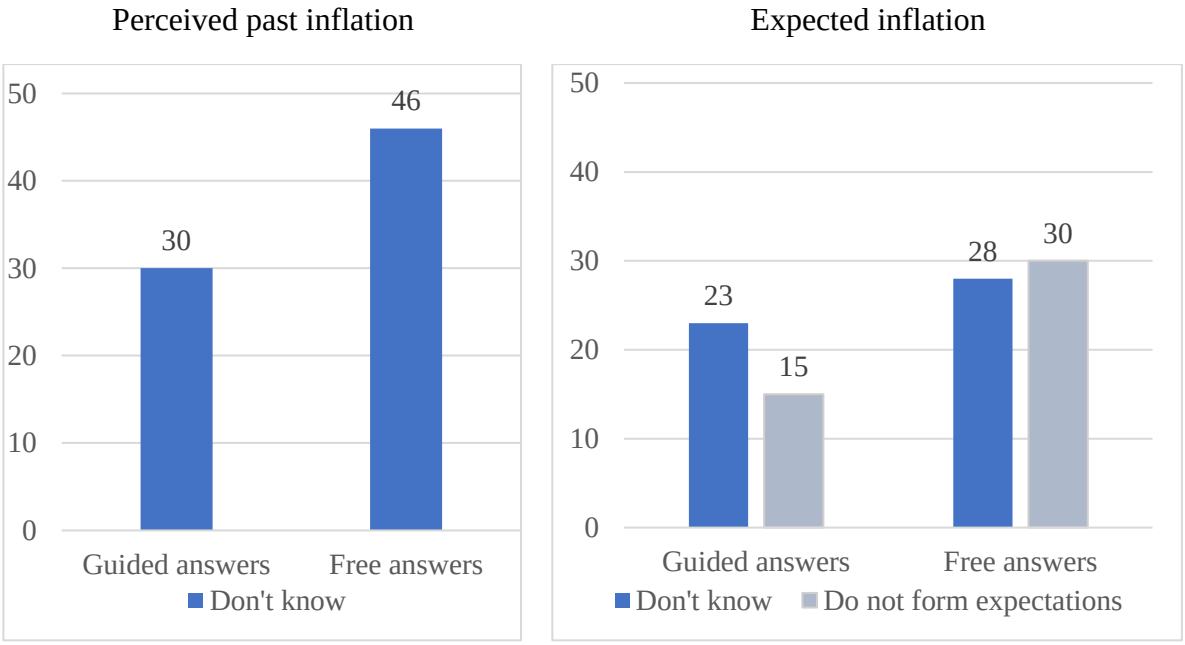
To determine whether and, if so, how the two response options affect people's stated perceived and expected inflation rates, we need to make answers comparable. First, for a sense of the way the design of response options affects mean answers, we need to translate the intervals of the guided answers into numerical values. We thus take the midpoint of the interval for the middle categories and –0.5 and +4.5 as lower and upper bounds, respectively. As those bounds are arbitrary, we also look at other codings in the analyses referring to means. Specifically, we consider a lower bound of –1 and an upper bound of +10, a range that is derived from computing the average of the non-guided answers over the range of inflation values greater than 4%. Second, we assign non-guided answers to the intervals provided in guided answers.

Figure 1 reports the distribution of missing answers for the two versions of the inflation questions.[3] In both treatments, we find a substantial share of people who do not answer. The left panel of Figure 1 compares the shares of missing values for perceived past inflation. The share of 'don't know' answers is substantially higher in the non-guided version (46%) than in the guided version (30%). The right panel of the figure displays the respective shares of missing answers to the expected inflation rate questions. While the difference is not as big as in the case of perceived inflation (non-guided form: 28%, guided form: 23%), the qualitative result is the same. Given our random treatment, we conclude that providing multiple-choice answer categories induces some respondents to report an inflation value when they would not have done so if faced non-guided answers.

It is not obvious whether this phenomenon is an advantage or a disadvantage. The advantage of reducing the number of 'don't know' answers is a larger sample size with which to work. The disadvantage is that by making it easier to answer the question, some respondents who have no clear attitude towards the issue will provide an answer. Put differently, we may add noise in the form of 'non-attitudes' to our dataset rather than informative answers (see Campbell et al., 1960; Zaller, 1992).

[3] Note that due to the high quality of the survey, there are no missing answers other than those specified here.

Figure 1: Distribution of missing values for perceived and expected inflation by type of question (in %)



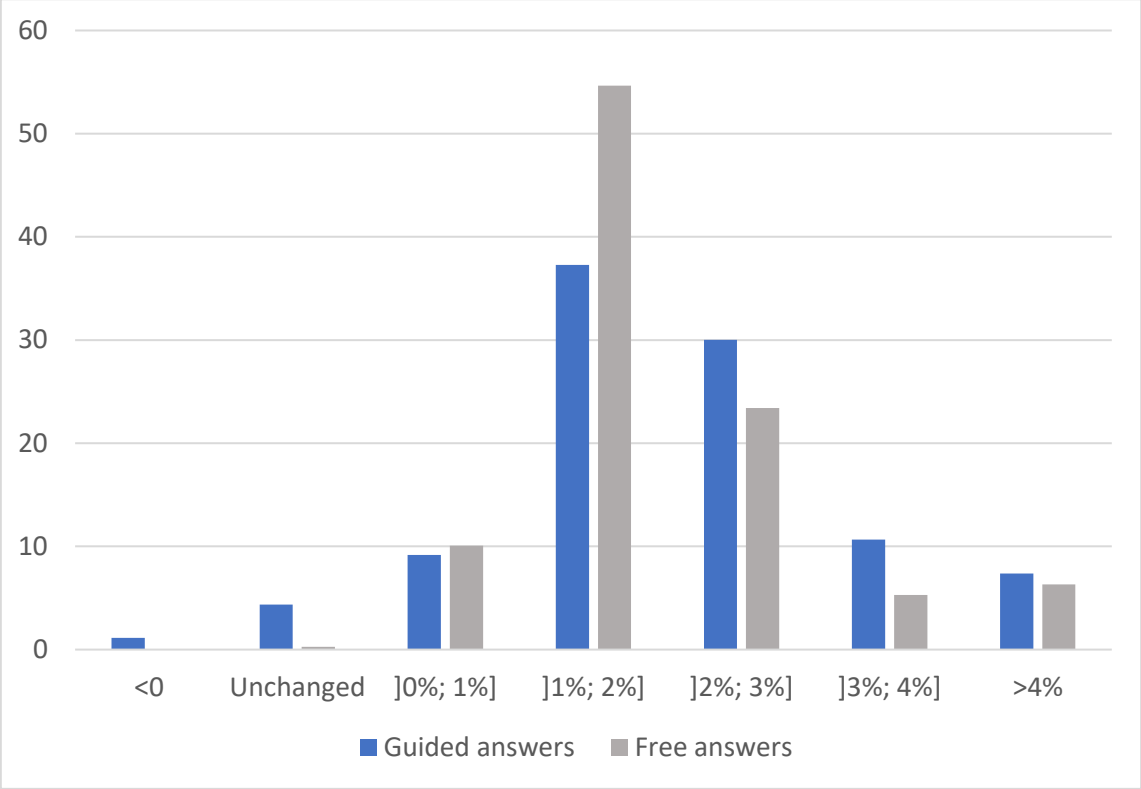
One way of addressing that question is to determine whether people responding ‘don’t know’ to the perceived past inflation question also do so in the case of the one on expected inflation and whether their share depends on the type of response option provided. Analysing the non-guided answers, 41% of those who chose ‘don’t know’ in the past inflation question made the same choice in the case of expected inflation. Turning to the guided format, we find that only 25% behaved similarly. Thus, the linkage between answering ‘don’t know’ across the two formats is much stronger in the case of the non-guided format. We interpret this finding as an indication that the non-guided version of the question is relatively superior with regard to identifying those respondents whose answers are based on ‘non-attitudes’.

Consistent with this interpretation are the findings for those who state that they do not form inflation expectations. We discover that the share of people stating no expectation formation is twice as high in the case of the non-guided version (non-guided: 30%; guided: 15%). Relying on questions with guided response options may lead to an impression of a much higher degree of perception and expectation formation than is warranted. Put differently, while studies using guided questions likely have lower shares of both ‘don’t know’ answers and ‘do not form expectation’ statements, they may just be including more respondents with non-attitudes in the dataset, that is, more noise.

In the next step, we analyse the differences our treatment makes with regard to the distribution of inflation rate answers. Figure 2a compares the difference between the two response option

treatments in shares of answers about perceived past inflation. Note that the]1%;2%] category in the graph for the non-guided version is dominated by 18% of respondents choosing 2%, the official ECB target inflation rate.

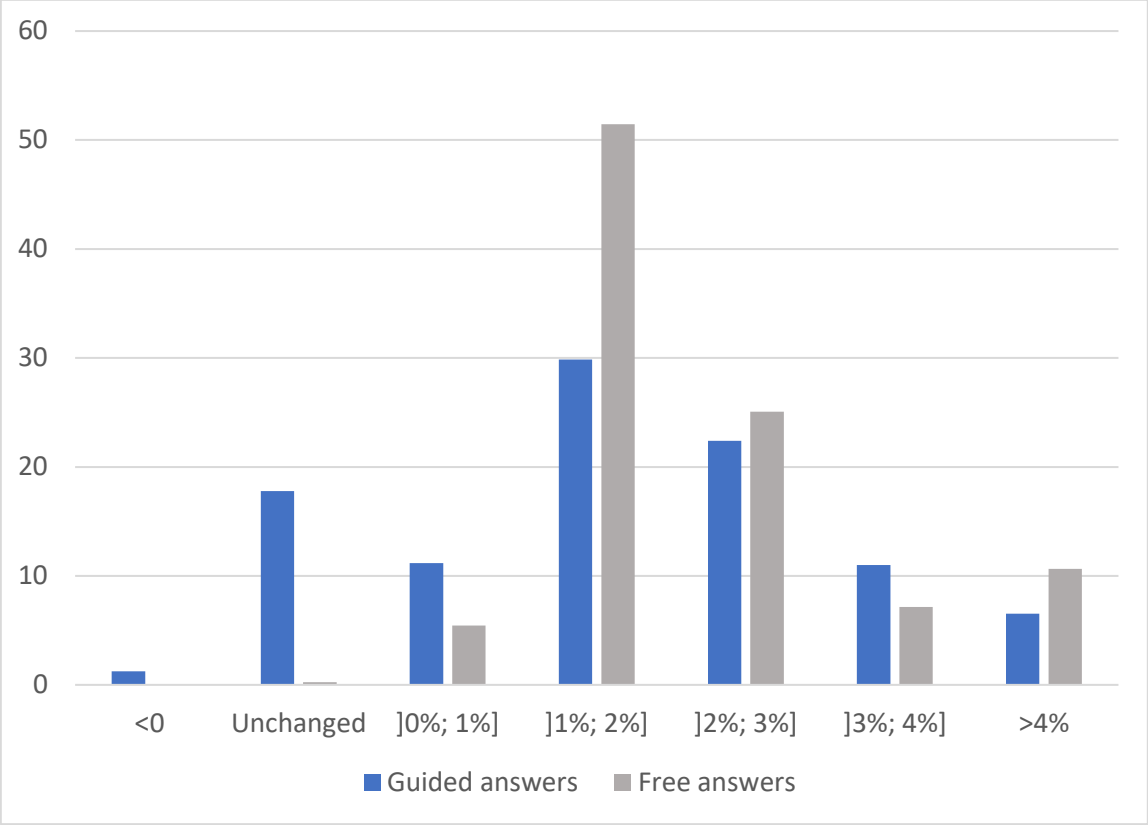
Figure 2a: Distribution of perceived *past* inflation by type of response option (in %)



Extreme answers are more frequent when answering the guided question than when answering the free question. For example, no respondent reported a negative inflation rate in the non-guided response option, whereas nearly 1% did in the guided one. Likewise, 3% of respondents reported an inflation rate larger than 4% in the non-guided case, whereas nearly 6% did in the guided one.

In the case of expected inflation, findings are similar with regard to the 'decrease' category (see Figure 2b). However, this time we observe a larger share of people with higher inflation expectations in the non-guided treatment. The]1%;2%] category in the non-guided version is dominated by 14% of respondents expecting an inflation rate of 2%.

Figure 2b: Distribution of *expected* inflation by type of response option (in %)



Do these differences in the distribution have an impact on the estimated mean and standard deviation of the inflation rate? To answer this question, Table 1 compares these statistics across the two treatments for perceived past inflation. As indicated above, in the case of guided answers, we provide results for two different assumptions about the lower and upper bounds.

Table 1: Past inflation: Comparing mean inflation and standard deviation across treatments

	Free answers			Guided answers	
	(1)	(2)	(3)	(4)	(5)
	Raw data	Coding [–0.5;4.5]	Coding [–1;10]	Coding [–0.5;4.5]	Coding [–1;10]
Mean	2.6	1.9	2.3	2.1	2.5
St. dev.	4.1	1.0	2.1	1.2	2.5
No of obs.		543		707	
Mean difference	(1) – (4): 0.53	(1) – (5): 0.1	(2) – (4): –0.15	(3) – (5): –0.3	
t-test:	***		**	**	
St. dev. difference	(1) – (4): 2.9	(1) – (5): 1.6	(2) – (4): –0.2	(3) – (5): –0.4	
Var. ratio test	***	***		***	

Notes: *** p<0.01, ** p<0.05, * p<0.1.

In 2017, the official annual CPI inflation rate in Germany was 1.8%. We find that the mean answer is 2.6 when using the non-guided answers in their raw form. This number decreases to 1.9 and 2.3, respectively, when transforming the values into the guided answer coding. For guided answers, we find values of 2.1 and 2.5, respectively. Equality across treatments can be rejected for all cases except coding [–0.5; 4.5] for both variables. We only interpret test results that are significant at a 5% level or lower. Although the perceived inflation rate is highest when using the raw non-guided answers, means for transformed variables are higher in the case of guided answers. Thus, the inflation rate as perceived by our respondents is systematically higher than the official inflation rate. Less surprisingly, we discover that the standard deviation of the raw non-guided answers is much higher than that of the transformed variables. The variation of the two alternative guided answers tends to be higher than that of the transformed non-guided answers.

We interpret our findings as suggesting that when left to their own devices, on average, people overpredict their own inflation rate as compared to the official one. However, when raw non-guided answers are transformed into ranges, this conclusion no longer holds: now we find that answers were noisier in the guided treatment. We interpret this result as suggesting that some respondents in the guided version who did not know the inflation rate just picked an answer. Pre-formulated answers make this easy to do without losing face, which could easily happen if one answered the free version of the question with a value far away from the true one.

Moreover, the additional noise created by adding answers from respondents who have a 'non-attitude' on that question is not neutral with regard to the average inflation rate. Since the multiple-choice answers include more choices of inflation values above the officially measured inflation rate, these options are relatively more often selected and our measurement of the average inflation rate is upwardly biased. By the same token, we observe that the relative frequency with which the correct range is chosen is higher in the non-guided version than in the guided one. Again, this finding is in line with the hypothesis that providing guided answer categories creates additional noise.

Table 2 sets out the results for the case of expected inflation. We find significant differences between the various treatments and codings. At over 3%, the non-guided specification yields the highest expected inflation rate, whereas the guided version with the low extreme value coding results in a 1.8% expected inflation rate. In terms of standard deviations, the results are not clear except for the high variability of the raw non-guided answers. All of these standard deviations are slightly larger than the corresponding values for past inflation in Table 1 and the

difference is statistically significant. This makes intuitive sense, as the past can be known, whereas the future is uncertain.

Table 2: Expected inflation: Comparing mean inflation and standard deviation across treatments

	Free answers			Guided answers	
	(1)	(2)	(3)	(4)	(5)
	Raw data	Coding [–0.5;4.5]	Coding [–1;10]	Coding [–0.5;4.5]	Coding [–1;10]
Mean	3.2	2.2	2.9	1.8	2.3
St. dev.	4.9	1.1	2.8	1.4	2.6
No of obs.		411		639	
Mean difference	(1) – (4): 1.4	(1) – (5): 0.9	(2) – (4): 0.4	(3) – (5): 0.6	
t-test:	***	***	***	***	
St. dev. difference	(1) – (4): 3.6	(1) – (5): 2.3	(2) – (4): –0.2	(3) – (5): 0.2	
Var. ratio test	***	***	***	*	

Notes: *** p<0.01, ** p<0.05, * p<0.1

How accurate are these expectations when compared to the official inflation rate of 1.9% in 2018? Similar to our findings on past inflation, the guided answers with low extreme value coding perform best here, whereas the raw non-guided average is the worst. Thus, in the case of expected inflation, the results are similar to the ones for past inflation when comparing raw non-guided answers with guided answers, but go the other way around when comparing the transformed non-guided answers with guided answers.

3. Baseline Estimations

In this section, we estimate the impact of different answer types on both the likelihood of providing a response and the reported levels of past and expected inflation. To achieve this, we estimate variants of the following logit model:

$$Prob\ (answer_i = 1) = f(\alpha_0 + \alpha_1 \cdot free_i + A \cdot X_i + \varepsilon_i) \quad (1)$$

where $answer_i$ is a dummy variable set to one if respondent i answered the questions about perceived or expected inflation. For expected inflation, we assign the dummy a value of 0 when respondents answered either 'I don't know' or 'I don't form expectations'. The variable $free_i$ is a dummy that takes the value of 1 when the respondent is asked the non-guided variant of the question. X_i represents a vector of control variables and ε_i the error term. α_0 and α_1 are coefficients and A a vector of coefficients. f is the logit cumulative density function.

In principle, a binary model linking outcome and treatment provides unbiased coefficients, since the treatment was randomly assigned to respondents. However, the zero correlation between control treatments and variables is strictly valid only in infinitely large samples. Moreover, the inclusion of control variables potentially reduces the idiosyncratic estimation error, thereby improving the efficiency with which the treatment effect is estimated. We therefore also include socio-demographic variables in the binary estimation.

We control for the respondent's age (in years), gender (a dummy variable set to 1 when the respondent is a woman), level of education (dummy variables coding whether he or she did an apprenticeship, went to secondary school, holds the German equivalent of A-levels/high school diploma, the Abitur, or went to university; the baseline category is primary education), and household income (in 1,000 euros). The two treatments are balanced across almost all of these variables.[4] Note that we adopt a 5% level of significance for our hypothesis tests, except where stated otherwise.

Columns (1) and (2) of Table 3 report the results of the regressions pertaining to the propensity to answer the question on past inflation; Columns (3) and (4) report regressions pertaining to the propensity to answer the question on expected inflation.

The main finding appears in the first row of Table 3, which reports the coefficient of the dummy coding the non-guided response option. In all regressions, the coefficient of that variable is negative and statistically significant at the 1% level. Therefore, respondents were less likely to provide an answer to a question when in the non-guided treatment compared to those in the guided one.

Our control variables show consistent signs across the two regressions. Specifically, the female dummy exhibits a negative sign, which implies that female respondents were less likely than male respondents to answer the two questions. Age bears a positive coefficient, implying that older respondents were more likely to answer the question. The apprenticeship, secondary school, Abitur, and university dummies all exhibit a positive coefficient, implying that respondents with more than primary education are more likely to answer the question. Finally,

[4] The only exception is the share of respondents who completed no education, whose difference between the treated and control groups is statistically significant at the 5% level for the question on expected inflation. However, the difference is only 2 percentage points, which is quantitatively small and unlikely to drive the results. For the question on past inflation, the difference in household income between the two groups is also marginally significant at the 10% level, but the difference only amounts to 58 euros. Table A1 in the Online Appendix reports the summary statistics for the control variables. Tables A2a and A2b report balance tests.

household income correlates positively with the propensity to answer both questions. These results are consistent with stylised facts on laypersons' interest in and knowledge about monetary policy in Germany (Hayo and Neuenkirch, 2018).

Based on Regressions 1 and 3 of Table 3, Figure 3 reports the marginal effects of being asked the non-guided response option for both past and expected inflation. The non-guided variant reduces the answer probability by 16 percentage points (pp) for past inflation and by 21pp for expected inflation. However, the two marginal effects are statistically indistinguishable, as the confidence intervals overlap.

Table 3: Dependent variable: Propensity to report past and expected inflation.

	(1)	(2)	(3)	(4)
	Reports past inflation		Reports expected inflation	
Free answers	–0.71	–0.81	–0.87	–0.92
	(–7.62)***	(–8.19)***	(–9.51)***	(–9.80)***
Female		–0.52		–0.29
		(–5.18)***		(–3.11)***
Age		0.01		0.01
		(4.04)***		(2.77)***
Apprenticeship		1.03		0.59
		(4.80)***		(2.84)***
Secondary school		1.42		0.99
		(6.75)***		(4.86)***
Abitur		1.72		0.89
		(6.99)***		(3.81)***
University		2.01		1.64
		(7.46)***		(6.48)***
Household income		0.49		0.21
		(5.15)***		(2.54)**
Observations	2,015	2,015	2,015	2,015

Notes: Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

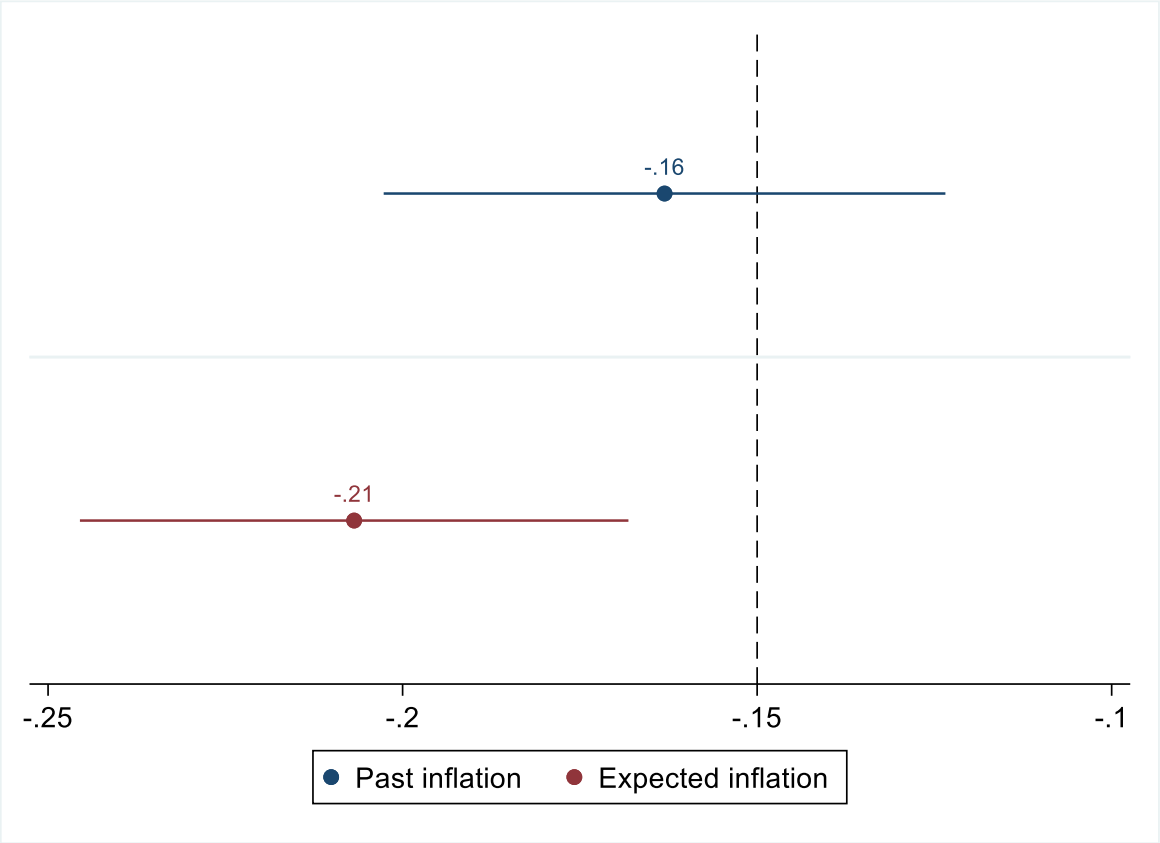
In Table A4 in the Online Appendix, we distinguish between 'I don't know' and 'I don't form expectations' answers to the expected inflation question and estimate a multinomial logit model. The result show that the non-guided response option significantly decreases the probability of giving an answer and increases the probability of choosing one of the two ways not to answer. The main additional information stemming from the multinomial logit model is that the marginal effect of the non-guided question on the probability to reply 'I don't form expectations' is three times as large as on the probability to reply 'I don't know'.

We interpret this finding as revealing the relative social desirability of the two answers. Replying that one does not form expectations is likely less embarrassing than replying that one

does not know. As a result, non-guided respondents concerned about giving a foolish reply will be more likely to reply that they do not form expectations than that they just do not know.

In a second step, we compare the quantitative inflation answers across the two response options by estimating models, where the dependent variable is the answer reported by respondents regarding perceived or expected inflation, respectively (see Table 4). For perceived inflation, the dependent variable is obtained by merging Questions 1a and 1b. For expected inflation, the dependent variable is obtained by merging Questions 4a and 4b.

Figure 3: Average marginal effect of the non-guided response option on the propensity to answer



Notes: Estimates obtained from Regressions 1 and 3 of Table 3. 95% confidence intervals.

For a proper comparison, the answers to the two questions need to be expressed on the same scale. We therefore convert continuous answers into intervals. We regress the stated past inflation level on a dummy variable taking the value 1 when the respondent was asked Question 1a and 0 otherwise. As the dependent variable now follows a natural ordering, the model is estimated as the following ordered logit model:

$$Prob\left(inflation_i \in interval_j\right) = f(\beta_0 + \beta_1 \cdot free_i + B \cdot X_i + \mu_i) \qquad (2)$$

where $inflation_i$ is the inflation interval reported by respondent i and belongs to the set $\{< 0;\ \text{unchanged};\ ]0\%, 1\%];\ ]1\%, 2\%];\ ]2\%, 3\%];\ ]3\%, 4\%];\ > 4\%\}$. β_0 and β_1 are coefficients, whereas B represents a vector of coefficients. All the other variables are defined as in Equation 1.

We first estimate a bivariate model and then add control variables: demographics (age and gender), a series of dummies capturing education level, and a series of dummies coding income. Table 4 shows that most control variables are statistically insignificant. In the regression taking past inflation as its dependent variable, household income correlates negatively with past inflation, as the coefficient of household income is negative and statistically significant. This finding on perceived past inflation is in line with that found by Jaravel (2019) for the US and that found by Gürer and Weichenrieder (2020) for the EU, who observe that measured consumer price inflation decreases with income. For expected inflation, none of the control variables is statistically significant (Column (4)).

Columns (1) and (2) of Table 4 show that the coefficient of the dummy variable coding the non-guided response option is always negative and statistically significant. Accordingly, respondents who replied to the non-guided variant, on average reported lower levels of perceived past inflation than those who answered the guided one.

Table 4: Dependent variable: Reported past and expected inflation.

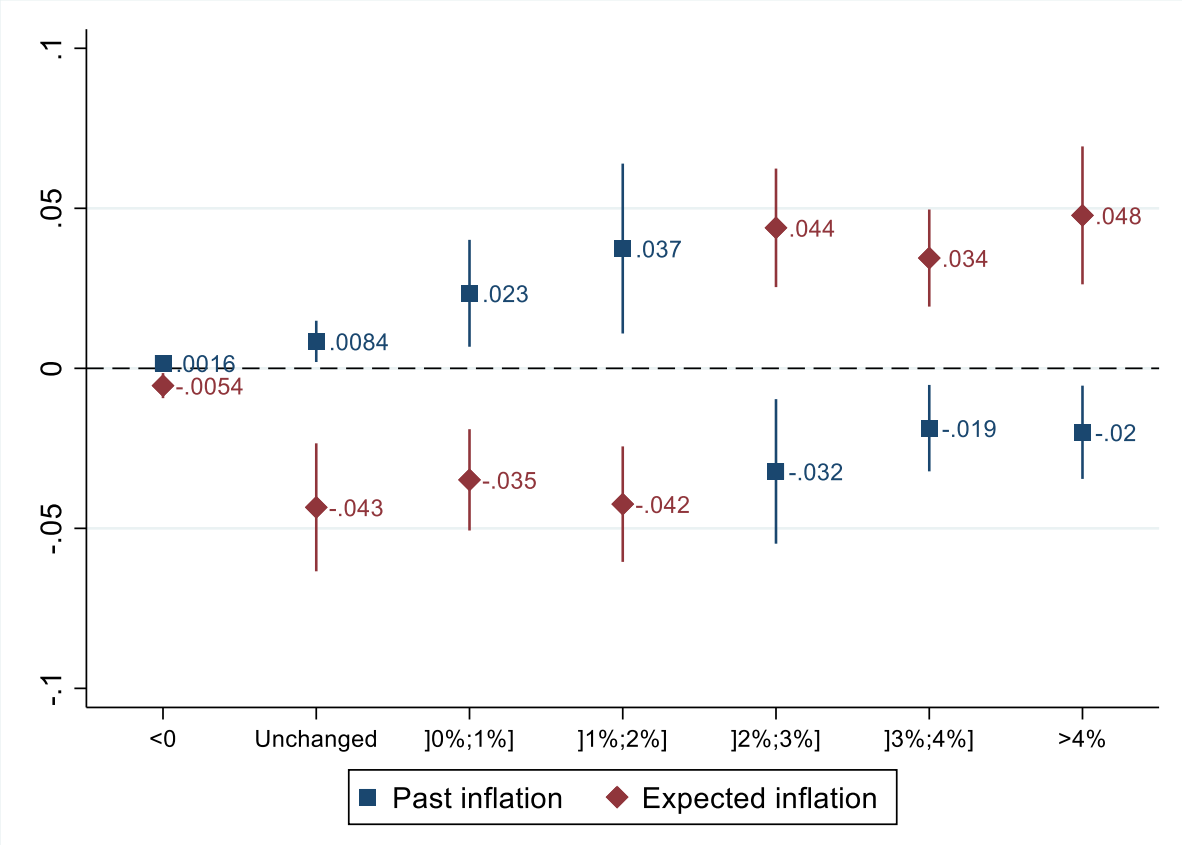
	(1)	(2)	(3)	(4)
	Past inflation		Expected inflation	
Free answers	–0.29	–0.25	0.52	0.52
	(–2.78)***	(–2.40)**	(4.63)***	(4.64)***
Female		0.10		–0.07
		(0.95)		(–0.59)
Age		–0.001		0.002
		(–0.37)		(0.44)
Apprenticeship		–0.28		0.004
		(–0.88)		(0.01)
Secondary school		–0.38		–0.03
		(–1.19)		(-0.10)
Abitur		–0.66		–0.20
		(–1.93)*		(–0.596)
University		–0.56		–0.03
		(–1.65)*		(–0.10)
Household income		–0.17		–0.14
		(–2.01)**		(–1.50)
Observations	1,250	1,250	1,050	1,050

Notes: Estimator: Ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure 4 reports the average marginal effect of the non-guided response option, which allows assessing its magnitude and observing which inflation brackets are affected. The negative average effect noted above is not uniformly observed for all stated inflation rates. In the case of past inflation, the non-guided variant has little impact on the probability of reporting that inflation decreased or remained unchanged. This raises, by 2pp and 4pp, respectively, the probability that respondents report an increase of less than 1% or between 1% and 2%. For higher stated past inflation values, the impact of the free question switches sign and reduces, by about 2pp, the likelihood of choosing any value higher than 2%. Thus, the average negative effect noted above is driven by reported past inflation rates above 2%.

Columns (3) and (4) of Table 4 show that the effect of the non-guided variant on expected inflation is, on average, positive and statistically significant. Accordingly, and in notable contrast to its effect on past inflation, the non-guided response option prompted respondents to report higher expected inflation.

Figure 4: Average marginal effect of the free variant of the question on reported past and expected inflation



Notes: Estimates obtained from Regressions 1 and 3 of Table 4. 95% confidence intervals.

Reflecting their opposite qualitative effects, the quantitative assessment in Figure 4 illustrates that, again, the average effect, in this case positive, can be misleading. The magnitude of the response option effect on expected inflation mirrors its impact on past inflation. The non-guided version reduces the probability that expected inflation is lower than 1% or between 1% and 2% but increases, by up to 5pp, the probability that it will be reported as any value above 2%. The main quantitative differences in absolute terms between the effects of the non-guided response option on past and expected inflation are that the likelihood of reporting unchanged prices is five times larger and that of reporting a rate greater than 4% is two times smaller in the case of the former compared to the latter.

4. Robustness Checks and Extensions

In this section, we study whether the effect of the treatment is heterogenous with regard to respondent characteristics. Specifically, we condition the effect on being socialised in the former German Democratic Republic, socio-demographic variables such as income, education, and gender, objective and subjective knowledge about monetary policy, and political affiliation. Generally, we find that conditioning on these variables does not result in significant switches in the sign of the response option effect. However, when considering the magnitude of the response option effect, we discover a number of cases where there is a notable degree of heterogeneity across the various categories of a variable, which we summarise below (only reporting significant effects).

Conditioning on Inflation Experience in East and West Germany: Until 1990, Germany was divided into the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR), which might have caused differences in attitude between the inhabitants of the two regions (Alesina and Fuchs-Schündeln, 2007). West Germans had always lived in a market economy; East Germans experienced a transition from a planned to a market economy in the early 1990s. East Germans had to adjust to a new economic system based on generally flexible prices. These differences in experience may prompt (formerly) East Germans to react differently from (formerly) West Germans to the two response options of the inflation questions.

We thus distinguish respondents based on their area of residence and estimate our models separately for residents of former East and West Germany. Tables 5 and 6 report the marginal effects of free answers respectively on the propensity to reply to the questions on inflation and

on the answers to the questions.[5] Table 5 shows a significantly lower influence of the response option effect for East Germans compared to West Germans, but the magnitude of the difference is small. A striking finding appears in Table 6, which reports results pertaining to the stated inflation rate. We find that the response option type influences only the answers of West Germans, whereas it has no statistically significant effect on East Germans. Specifically, West Germans report a significantly lower past inflation rate and a significantly higher expected inflation rate when faced with the non-guided response option.

Table 5: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. East vs. West Germany

	(1) East	(2) West	(3) >15 in the GDR	(4) >15 in the FRG	(5) <15 in the GDR	(6) <15 in the FRG
Past inflation						
Free answers (Q1a)	–0.14	–0.17	–0.13	–0.17	–0.19	–0.18
	(–3.40)***	(–7.36)***	(–2.51)**	(–5.88)***	(–2.63)***	(–4.62)***
Observations	482	1,533	336	979	146	554
Expected inflation						
Free answers (Q4a)	–0.20	–0.21	–0.20	–0.21	–0.21	–0.19
	(–5.06)***	(–9.13)***	(–4.17)***	(–7.49)***	(–2.90)***	(–5.04)***
Observations	482	1,533	336	979	146	554

Notes: Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Having to adjust to a new economic system may have made East Germans more mindful of inflation and less likely to be affected by a simple variation in the response options. A testable implication of this explanation is that the East German reaction should be driven by respondents who lived in the GDR before its collapse in 1989. We therefore further distinguish respondents based on how old they were when the Berlin Wall fell, which is in line with the 'impressionable years' hypothesis. This hypothesis refers to the phase of primary socialisation, which is extensively discussed in sociology (e.g., Berger and Luckmann, 1966; Mead, 1967) and psychology (e.g., Krosnick and Alwyn, 1989), and posits that values, attitudes, and dispositions are all formed before a certain age. Accordingly, we distinguish respondents who were younger or older than 15 in 1989. The results by age group are reported in Columns (3) to (6) of Tables 5 and 6. All groups are less likely to answer when faced with the non-guided version, but among respondents who were 15 or older in 1989, West Germans react significantly more strongly to

[5] Raw regressions are reported in Table A5 and Table A6 of the Online Appendix.

the two response options than do East Germans. By contrast, the regional difference is statistically insignificant for respondents who were younger than 15 in 1989.

Table 6: Average marginal effects: Dependent variable: Reported past and expected inflation. East vs. West Germany

	(1) East	(2) West	(3) >15 in the GDR	(4) >15 in the FRG	(5) <15 in the GDR	(6) <15 in the FRG
Past inflation						
< 0	0.002	0.002	0.001	0.003	0.004	0.015
	(0.93)	(1.72)*	(0.62)	(1.58)	(0.64)	(1.42)
Unchanged	0.002	0.01	0.001	0.01	0.004	0.03
	(0.93)	(2.49)**	(0.62)	(2.03)**	(0.64)	(1.51)
≤ 1%	0.02	0.03	0.01	0.03	0.02	0.03
	(1.20)	(2.68)***	(0.77)	(2.21)**	(0.78)	(1.47)
]1%; 2%]	0.05	0.04	0.04	0.04	0.05	–0.04
	(1.25)	(2.64)***	(0.78)	(2.18)**	(0.83)	(–1.52)
]2%; 3%]	–0.03	–0.04	–0.02	–0.04	–0.03	–0.02
	(–1.24)	(–2.71)***	(–0.78)	(–2.24)**	(–0.8)	(–1.47)
]3%; 4%]	–0.02	–0.02	–0.01	–0.02	–0.02	–0.02
	(–1.21)	(–2.62)***	(–0.77)	(–2.16)**	(–0.81)	(–1.45)
> 4%	–0.02	–0.02	–0.02	–0.02	–0.03	
	(–1.21)	(–2.57)**	(–0.77)	(–2.12)**	(–0.80)	
Observations	299	951	215	643	84	308
Expected inflation						
< 0	–0.002	–0.007	–0.001	–0.01	–0.06	–0.01
	(–1.01)	(–2.51)**	(–0.42)	(–1.89)*	(–1.58)	(–1.57)
Unchanged	–0.02	–0.06	–0.005	–0.04	–0.04	–0.10
	(–1.36)	(–4.11)***	(–0.44)	(–2.75)***	(–1.58)	(–3.24)***
≤ 1%	–0.02	–0.04	–0.01	–0.04	–0.07	–0.05
	(–1.37)	(–4.2)***	(–0.44)	(–2.82)***	(–1.86)*	(–3.17)***
]1%; 2%]	–0.03	–0.03	–0.01	–0.03	0.03	–0.03
	(–1.44)	(–3.71)***	(–0.44)	(–2.73)***	(1.08)	(–1.88)*
]2%; 3%]	0.01	0.06	0.001	0.05	0.07	0.07
	(0.87)	(4.64)***	(0.31)	(3.03)***	(1.87)*	(3.70)***
]3%; 4%]	0.0278	0.03	0.01	0.03	0.08	0.04
	(1.44)	(4.07)***	(0.44)	(2.76)***	(1.67)*	(3.03)***
> 4%	0.04	0.05	0.02	0.04		0.08
	(1.42)	(4.07)***	(0.44)	(2.74)***		(3.13)***
Observations	282	768	197	524	85	244

Notes: Estimator: Ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The response option effect on the reported inflation rate is reported in Tables A6a and A6b. The results reveal that the significant difference between East and West Germans is again essentially driven by those who were 15 or older in 1989. Our results therefore support the 'impressionable years' hypothesis: Germans who lived long enough in the GDR do not, on average, react to the variation in the response options. One interpretation is that older East Germans had to adapt to

a market economy with free prices. As a result, they became more mindful of price changes than West Germans, who never had to adjust to a new system, or younger East Germans, who grew up in the new system.[6]

Conditioning on Income: Respondents with different incomes purchase different bundles of goods and services and, hence, might be affected differently by inflation. For instance, Jaravel (2019) and Gürer and Weichenrieder (2020) show that the price of poor households' consumption basket increased more than that of rich households. Households with different levels of income may also be affected by different types of shocks or have different degrees of optimism (Souleles, 2004). As a result, their reactions to the specific form of the response options to the inflation question may vary too. To test this possibility, we estimate our model separately for each income quartile (see Tables A7a, A5b, A8a, and A6b of the Online Appendix). In the case of past inflation, respondents in the bottom and top income quartiles react significantly less to free answers than do middle-income respondents. The magnitude of the difference in marginal effects is notable: for instance, the reaction of respondents from the third income quartile is twice as large as that of those from the fourth quartile. Interestingly, this ordering of answer probabilities is reversed when asking about inflation expectations: people from the low and high end of the income distribution show the highest sensitivity to the type of question. Among these two groups, the latter react significantly more strongly than the former to the non-guided variant.

Conditioning on Education: The effect of survey question design on people's answers may depend on their education level. In the context of the 'forbid-allow anomaly', Rugg (1941) reports a greater effect of variations in the phrasing of the question on better-educated respondents, which can be interpreted as education increasing people's sensitivity to variations in language. However, Hippler and Schwarz (1988) report the opposite. They argue that educated people tend to have stronger opinions that are less likely to be influenced by the concrete specification of the question. In the context of inflation expectations, Coibion et al. (2020) recall that household surveys document systematic differences between respondents

[6] As we do not know whether respondents were born where they live, we cannot rule out the possibility that some respondents who were interviewed in one part of the country moved there after growing up in the other part. However, such migration would likely dampen the estimated difference between the two parts of the country because some Western respondents were socialised in the Eastern part before moving the West and vice-versa.

with different levels of formal education. To test the possible influence of education, we ran specific regressions by level of education; the results are reported in Tables A9a, A7b, A10a, and A8b. For past inflation, free answers reduce the probability of answering and the effect generally declines with level of education, as the coefficient of the dummy variable is negative and statistically significant, thus generally supporting Hippler and Schwarz's (1988) argument. At up to a factor of three, the differences in marginal effects for past inflation can be sizable.

Conditioning on Gender: Men and women have been found to have different perceptions and expectations of inflation that may be driven by household gender roles (Coibion et al. 2020; D'acunto et al., 2020). There is also empirical evidence that women have relatively lower objective and subjective knowledge about monetary policy affairs (Hayo and Neuenkirch, 2018). We therefore estimated each regression separately for each gender (see Tables A11a, A9b, A12a, and A10b). We find little evidence that the response option effect is different for men and women.

Conditioning on Objective and Subjective Monetary Policy Knowledge: For the most part, the public is ill-informed about monetary policy and central banking (van der Cruijsen et al., 2015; Hayo and Neuenkirch, 2018; Coibion et al., 2020) and its expectations can differ from those of professional forecasters (Lamla and Lein, 2014). Respondents' imperfect knowledge of monetary policy may affect not only their propensity to answer questions about inflation but also how they react to cues provided by intervals. To test that possibility, we successively conditioned the effect of the type of question on respondents' objective and subjective knowledge about monetary policy. We constructed an index of objective knowledge based on four questions pertaining to monetary policy and the European Central Bank.7 We added one point to the index for each correct answer, resulting in an index ranging from 0 when the respondent did not answer any of the four questions correctly, to 4 when he/she answered all of them correctly. We also conditioned the response option effect on respondents' subjective knowledge, assessed directly by asking them to indicate it on a scale from 1 to 5.

[7] The four questions pertained to the ECB's objective, to its independence from governments, to the value of the repo rate at the time of the interview, which was zero, and to the relationship between policy rates and inflation (see Hayo and Neuenkirch, 2014).

Tables A13a and A13b show that those who were unable to answer even one question correctly are relatively more sensitive to the specific response options. Their likelihood of answering the non-guided version decreases by 20pp more than that of respondents with very high knowledge. We find a similar result for expected inflation. The non-guided version tends to significantly reduce (increase) reported past (expected) inflation for respondents with the lowest objective knowledge score.

Moving on to subjective knowledge, in Tables A15a and A15b, we discover that the response option effects on past inflation across subjective knowledge levels are generally insignificantly different from each other. Tables A16a and A16b set out the response option effect for subjective knowledge on the stated inflation rates. Similar to the case of objective knowledge, the non-guided version reduces (increases) the past (expected) inflation value given by respondents who think they know very little about the ECB and monetary policy issues.

Conditioning on Political Affiliation: There is empirical evidence suggesting that both the perception of past performance (Evan and Andersen, 2006) and expectations of future economic performance (Gerber and Huber, 2010; Bachmann et al., 2021) are subject to partisan biases. We therefore condition the 'type-of-question' effect on political affiliation.

As Tables A17a and A17b show, we generally find relatively small differences across party preferences. In the case of inflation expectations, FDP supporters stand out because their likelihood of answering the question is not subject to a response option effect. Thus, the self-claimed competence of the FDP in economic matters seems to be reflected in its supporters' willingness to provide an inflation expectation even in the case of non-guided responses. For instance, compared to FDP voters, left party supporters have a 20pp greater probability of not answering when faced with the non-guided variant.

Tables A18a and A18b study whether the choice between guided form and non-guided form leads to significant differences with regard to the stated values for past and future inflation. For past inflation, we find no notable differences, whereas for expected inflation, we find that the expected inflation rates provided by FDP supporters are not affected by different response options.

The role of previous non-answers: As the questions on inflation were part of a larger questionnaire, they were not the first ones to be asked. Before coming to the inflation questions, respondents answered a series of questions on other topics. One of these questions was to gauge

the number of asylum seekers who had come to Germany in 2015 and 2016, a question that has an objective true answer, like the one on past inflation.[8] The answer of respondents to that question may be related to the answers to the questions on inflation in two ways.

On the one hand, respondents who indicated that they did not know the answer to the question on asylum seekers might have felt more comfortable admitting their lack of knowledge in response to the open-ended question on inflation.[9] On the other hand, if respondents were shy about revealing their lack of knowledge, the perceived social desirability to give an answer may have been larger for respondents who had already failed to give an answer to the question on asylum seekers. We performed to series of regressions to examine these possibilities.

First, we created a dummy variable, which was set equal to one if a respondent had answered the question on asylum seekers, and included this variable in our regressions as an additional control. Second, we ran separate regressions for respondents who had answered the question on asylum seekers and for those who had not. The results of those two series of regressions are set out in Tables A19a to A22b.

Table A19a reports the results of the logit regressions on the effect of being asked the non-guided response option for both past and expected inflation when including the dummy capturing whether the respondent had answered the question on asylum seekers. We find that this dummy is statistically significant at the one-per cent level, revealing that respondents who had answered that question were more likely to also answer the questions on past and expected inflation. However, the coefficient of the dummy coding the type of inflation answers remains negative and statistically significant at the one-per cent level, which is in line with the baseline results. The baseline finding also holds when estimating the ordered logit model relating quantitative answers to the type of inflation answers (see Table A20a). However, in this case, the dummy for answering the question on asylum seekers is statistically insignificant.

Table A21a reports the result of separately running the baseline logit regressions on the propensity to answer the questions on inflation for respondents who answered the question on asylum seekers and for those who did not. The coefficient of the variable coding the type of

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[8] Specifically, the question came in two variants. 84% of respondents were asked 'Roughly, how many asylum seekers who came to Germany in 2015 and 2016 do your think are from predominantly Islamic countries?', while the remaining 16% were asked 'Roughly, how many asylum seekers do you think came to Germany in 2015 and 2016?'.

[9] We thank an anonymous referee for suggesting that possibility.

answer appears negative and statistically significant in all four regressions. Accordingly, our baseline finding does not depend on having or not having answered the question on asylum seekers. However, we observe that marginal effect at the mean of reported past inflation is larger for respondents who did not answer the question on asylum seekers than for those who did. When we turn to the outcome of ordered logit regressions that assess the impact of the type of answer on reported values, we find the same qualitative effects as in the baseline regressions, specifically free answers reduce reported past inflation and increase reported expected inflation (Table A22a). However, the effect for past inflation is only statistically significant among respondents who answered the question about asylum seekers. The effect of the type of question on expected inflation is positive and statistically significant in both groups of respondents.

5. Conclusion

Conducting a survey experiment within a representative survey of the German population, we test how the way in which respondents are asked to state their perceived past inflation rate and their expected inflation rate affects their propensity to answer and the reported magnitude of their answers. The first main finding is that letting respondents report a number without giving them any guidance results in a lower response rate than does asking them to choose from a list of ranges. The result holds when respondents are asked to state their perceived past inflation rate and when they are asked about their expected inflation rate.

Interestingly, we also find a strong response option effect when considering the share of people stating that they do not form inflation expectations. Thus, it seems likely that the provision of predefined response options prompts respondents to select a number as an inflation expectation even though they would not have done so if they had faced a free-form answer. We consider this as suggesting that the answers to the standard guided question on inflation expectations contain a noticeable number of people who do not actually form such expectations (in our sample: 30% plus 15% choosing ‘don’t know’).

The second main finding is that the type of response option also affects the average reported inflation rate. The effect, however, bears an opposite sign for past and expected inflation. Specifically, letting respondents state a number without giving them any guidance resulted, on average, in a lower reported past inflation rate but a higher reported expected inflation rate.

A third set of results was obtained by conditioning the response option effect on a variety of respondent characteristics: income, education, gender, objective and subjective knowledge about monetary policy, and political affiliation. The working of the effect remains qualitatively

unchanged, but different categories of these variables can have a notable effect on the quantitative importance of the 'response option effect'.

In particular, we found a meaningful difference in the effect of the type of question between East and West German respondents if they were 15 or older when the Berlin Wall fell, whereas we found no such difference for younger respondents. This finding is in line with the 'impressionable years' hypothesis and likely reflects different inflation experiences in the two parts of Germany.

We believe our findings are relevant for researchers conducting or using surveys that intend to measure perceived past or expected future inflation and demonstrate that response options can have a meaningful impact on the outcome. It is tempting to use predefined response options, as this reduces the number of missings. However, inasmuch as multiple-choice answers induce respondents to provide an answer even though they do not have clearly defined inflation views (i.e., non-attitudes), they increase the amount of noise in responses. Even more worrying is the finding that offering guided answers affects the average answer. This suggests that by offering predefined answer choices, one may actually introduce an undesirable bias in the answers. Therefore, offering predefined answers to reduce the number of missings could be problematic when drawing inferences about laypersons' inflation perceptions and expectations.

Generalising this result beyond the field of subjective inflation measurement suggests that the way answers are phrased is an integral part of question design. Not only does it affect the propensity of respondents to answer the questions, but it also affects their average answers. In addition, the magnitude of the response option effect varies over categories of socio-demographic and knowledge variables. Thus, the design of response options can affect the outcome of surveys along various dimensions and researchers should be aware of this.

The finding that non-guided answers reduce the propensity to answer is the same for past and expected inflation; however, we observe opposite results for the stated value of past and expected inflation rates. This leads to the question of when and why a specific type of answer affects non-response and biases answers upwards or downwards, a question that warrants further research. Part of the explanation may rest on respondents' previous inflation experiences, as our results for East and West Germany show. Hence, how respondents react to a specific type of answer may be a function of their early life experience. Clearly, the connection between respondents' economic experience and sensitivity to response options deserves more scrutiny.

When considering future research involving experiments in the measurement of inflation perceptions and expectations, there are several potentially interesting approaches that could be pursued. First, the current survey is conducted through face-to-face interviews in combination with pen-pads, which is often regarded as the 'gold standard' in survey methodology. However, the COVID-19 pandemic has had profound effects on numerous survey companies, including GfK, leading to a shift from face-to-face interviews to online data collection. Consequently, almost all survey studies conducted today rely on online data. As researchers, it is important to examine the implications of analysing online-collected data. Some of these implications can be explored through survey experiments, which involve comparing symmetric sets of questionnaires administered in face-to-face and online surveys.

Second, our present work can be combined with previous research that focuses on the specific types of questions relating to inflation (Armantier et al., 2013; Bruine de Bruin et al., 2017). In other words, the responses to questions about inflation attitudes may be influenced by the combination of question type and answer type. Conducting research that controls for both question type and answer type has the potential to provide a more comprehensive understanding of how questionnaire design affects individuals' responses.

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Measuring Household Inflation Perceptions and Expectations: The Effect of Guided vs Non-Guided Inflation Questions

Appendix

A.1. Summary Statistics

Table A1: Summary statistics

	Mean	Std. dev. (when relevant)
Free answers (Q1a)	0.516	
Free answers (Q4a)	0.496	
Age	50.89	18.54
Female	0.54	
No completed training	0.043	
Apprenticeship	0.288	
Secondary school	0.408	
Abitur	0.123	
University	0.108	
Net household income per capita	1.207	0.60
Objective monetary policy knowledge	1.343	1.26
Subjective monetary policy knowledge	2.247	0.98
Do you trust the ECB?	2.582	1.01
Vote for Linkspartei/PDS	0.076	
Vote for SPD	0.15	
Vote for Die Grünen	0.097	
Vote for FDP	0.064	
Vote for CDU/CSU	0.227	
Vote for AfD	0.095	
Vote for other Party	0.071	
Would not vote	0.22	
East Germany	0.212	
West Germany	0.788	
15 or older in 1989	0.659	

Table A2a: Balance test: Past inflation

	(1) Control group	(2) Treated group	(3) Mean (control)	(4) Mean (treated)	(5) (3)-(4)	(6) s.e.	(7) t-stat.
Age	1005	1010	50.13	51	-.87	.81	-1.05
Female	1005	1010	0.52	.54	-.02	.02	-.8
No completed training	1005	1010	0.06	.05	.01	.01	1.1
Apprenticeship	1005	1010	0.31	.29	.02	.02	1
Secondary school	1005	1010	0.40	.42	-.02	.02	-1.05
Abitur	1005	1010	0.12	.13	-.01	.01	-.7
University	1005	1010	0.10	.09	.01	.01	.7
Household income	765	742	1298	1356	-58.12	31.25	-1.85*
Objective monetary policy knowledge	1005	1010	1.35	1.32	.02	.05	.45
Subjective monetary policy knowledge	1005	1010	2.24	2.26	-.02	.04	-.5
Do you trust the ECB?	1005	1010	2.61	2.64	-.04	.04	-.8
Vote for Linkspartei/PDS	1005	1010	0.08	.08	-.01	.01	-.7
Vote for SPD	1005	1010	0.18	.16	.02	.02	1.2
Vote for Die Grünen	1005	1010	0.10	.11	-.01	.01	-.5
Vote for FDP	1005	1010	0.07	.06	.01	.01	.55
Vote for CDU/CSU	1005	1010	0.24	.23	.01	.02	.4
Vote for AfD	1005	1010	0.11	.1	0	.01	.25
Vote for other Party	1005	1010	0.06	.06	0	.01	.2
Would not vote	1005	1010	0.17	.19	-.02	.02	-1.4
East Germany	1005	1010	0.22	.25	-.03	.02	-1.6
West Germany	1005	1010	0.78	.75	.03	.02	1.6
15 or older in 1989	1005	1010	0.64	.67	-.03	.02	-1.5

Notes: The treated group was presented with free answers (Q1a) and the control group with guided answers (Q1b). . *** p<0.01, ** p<0.05, * p<0.1

Table A2b: Balance test: Expected inflation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Control group	Treated group	Mean (control)	Mean (treated)	(3)-(4)	s.e.	t-stat.
Age	1020	995	50.74	50.39	0.35	0.81	0.45
Female	1020	995	0.53	0.53	-0.01	0.02	-0.3
No completed training	1020	995	0.06	0.04	0.02	0.01	2.15 **
Apprenticeship	1020	995	0.29	0.3	-0.01	0.02	-0.4
Secondary school	1020	995	0.42	0.4	0.02	0.02	0.95
Abitur	1020	995	0.12	0.14	-0.02	0.01	-1.35
University	1020	995	0.10	0.1	0	0.01	-0.25
Household income	765	742	1320.00	1333.72	-13.72	31.27	-0.45
Objective monetary policy knowledge	1020	995	1.33	1.33	0	0.05	0.05
Subjective monetary policy knowledge	1020	995	2.23	2.28	-0.05	0.04	-1.1
Do you trust the ECB?	1020	995	2.62	2.63	0	0.04	-0.1
Vote for Linkspartei/PDS	1020	995	0.09	0.07	0.01	0.01	0.9
Vote for SPD	1020	995	0.17	0.16	0.01	0.02	0.5
Vote for Die Grünen	1020	995	0.10	0.1	0	0.01	-0.25
Vote for FDP	1020	995	0.06	0.07	-0.02	0.01	-1.4
Vote for CDU/CSU	1020	995	0.23	0.24	-0.01	0.02	-0.75
Vote for AfD	1020	995	0.11	0.1	0	0.01	0.3
Vote for other Party	1020	995	0.06	0.06	0	0.01	0.25
Would not vote	1020	995	0.18	0.18	0.01	0.02	0.35
East Germany	1020	995	0.25	0.23	0.01	0.02	0.75
West Germany	1020	995	0.75	0.77	-0.01	0.02	-0.75
15 or older in 1989	1020	995	0.66	0.64	0.02	0.02	0.8

Notes: The treated group was presented with free answers (Q4a) and the control group with guided answers (Q4b). . *** p<0.01, ** p<0.05, * p<0.1

Table A3a: Descriptive statistics of respondents who reply 'I don't know' vs. those who give an answer: Past inflation

	(1) 'I don't know'	(2) Answer	(3) Mean (control)	(4) Mean (treated)	(5) (3)-(4)	(6) s.e.	(7) t-stat.
Age respondent	765	1250	48.70	51.71	-3	0.86	-3.5 ***
Female	765	1250	0.62	0.48	0.14	0.02	6.1 ***
No completed training	765	1250	0.09	0.03	0.07	0.01	5.7 ***
Apprenticeship	765	1250	0.32	0.28	0.04	0.02	2.05 **
Secondary school	765	1250	0.39	0.42	-0.03	0.02	-1.45
Abitur	765	1250	0.10	0.14	-0.04	0.01	-2.4 **
University	765	1250	0.05	0.13	-0.07	0.01	-6.05 ***
Net household income per capita	536	971	1180.95	1407.24	-226.29	30.2	-7.5 ***
Objective monetary policy knowledge	765	1250	0.78	1.67	-0.9	0.05	-18.45 ***
Subjective monetary policy knowledge	765	1250	1.92	2.46	-0.53	0.04	-12.35 ***
Do you trust the ECB?	765	1250	2.49	2.71	-0.22	0.04	-4.9 ***
Vote for Linkspartei/PDS	765	1250	0.06	0.09	-0.03	0.01	-2.15 **
Vote for SPD	765	1250	0.16	0.17	-0.01	0.02	-.85
Vote for Die Grünen	765	1250	0.08	0.11	-0.03	0.01	-2.3 **
Vote for FDP	765	1250	0.05	0.07	-0.02	0.01	-2.15 **
Vote for CDU/CSU	765	1250	0.19	0.27	-0.08	0.02	-4.05 ***
Vote for AfD	765	1250	0.10	0.11	-0.01	0.01	-0.6
Vote for other Party	765	1250	0.06	0.06	0.01	0.01	0.6
Would not vote	765	1250	0.29	0.12	0.17	0.02	9.15 ***
East Germany	765	1250	0.24	0.24	0	0.02	0
West Germany	765	1250	0.76	0.76	0	0.02	0
15 or older in 1989	765	1250	0.60	0.69	-0.09	0.02	-4.05 ***

Notes: Question Q1 (a and b): 'Do you remember, roughly, what Germany's rate of inflation was in 2017?'. . *** p<0.01, ** p<0.05, * p<0.1

Table A3b: Descriptive statistics of respondents who reply 'I don't know' vs. those who give an answer: Expected inflation

	(1) 'I don't know'	(2) Answer	(3) Mean (control)	(4) Mean (treated)	(5) (3)-(4)	(6) s0.e0.	(7) t-stat.
Age respondent	965	1050	49.41	51.62	-2.21	0.82	-2.7 ***
Female	965	1050	0.57	0.49	0.08	0.02	3.6 ***
No completed training	965	1050	0.07	0.04	0.03	0.01	2.9 ***
Apprenticeship	965	1050	0.33	0.27	0.06	0.02	2.85 ***
Secondary school	965	1050	0.38	0.43	-0.05	0.02	-2.2 **
Abitur	965	1050	0.13	0.12	0.01	0.01	0.5
University	965	1050	0.06	0.14	-0.08	0.01	-5.85 ***
Net household income per capita	672	835	1253.41	1385.78	-132.36	31.03	-4.25 ***
Objective monetary policy knowledge	965	1050	0.90	10.74	-0.84	0.05	-16.7 ***
Subjective monetary policy knowledge	965	1050	1.99	20.5	-0.51	0.04	-12 ***
Do you trust the ECB?	965	1050	2.52	20.72	-0.19	0.04	-4.4 ***
Vote for Linkspartei/PDS	965	1050	0.06	0.1	-0.04	0.01	-3.35 ***
Vote for SPD	965	1050	0.17	0.17	-0.01	0.02	-0.4
Vote for Die Grünen	965	1050	0.10	0.11	-0.01	0.01	-1.05
Vote for FDP	965	1050	0.06	0.07	-0.01	0.01	-0.75
Vote for CDU/CSU	965	1050	0.21	0.26	-0.05	0.02	-2.6 **
Vote for AfD	965	1050	0.10	0.11	-0.02	0.01	-1.3
Vote for other Party	965	1050	0.07	0.05	0.01	0.01	1.25
Would not vote	965	1050	0.25	0.12	0.12	0.02	7.2 ***
East Germany	965	1050	0.21	0.27	-0.06	0.02	-3.25 ***
West Germany	965	1050	0.79	0.73	0.06	0.02	3.25 ***
15 or older in 1989	965	1050	0.62	0.69	-0.07	0.02	-3.35 ***

Notes: Question Q2 (a and b): 'What do you expect the inflation rate will be next year, i.e., 2018?'. *** p<0.01, ** p<0.05, * p<0.1

A.2. Distinguishing Between ‘I don’t know’ and ‘I don’t form expectations’

Table A4: Distinguishing ‘I don’t know’ from ‘I don’t form expectations’

	(1) Reports expected inflation	(2) Doesn’t form expectations	(3) Doesn’t know
Free answers (Q4a) (raw coefficient)	-	1.15 (9.70)***	0.64 (5.85)***
Average marginal effect	–0.21 (–10.48)***	0.15 (8.66)***	0.05 (2.80)***
Observations	2,015	2,015	2,015

Estimator: multinomial logit. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3. Robustness Checks and Extensions

A.3.1. Effect Conditional on Early Life in East or West Germany

Table A5: Dependent variable: Propensity to report past and expected inflation. East vs. West Germany: Raw coefficients

	(1) East	(2) West	(3) ≥15 in the GDR	(4) ≥15 in the FRG	(5) <15 in the GDR	(6) <15 in the FRG
Past inflation						
Free answers (Q1a)	–0.626	–0.742	–0.568	–0.764	–0.827	–0.750
	(–3.26)***	(–6.91)***	(–2.43)**	(–5.54)***	(–2.42)**	(–4.31)***
Observations	482	1,533	336	979	146	554
Expected inflation						
Free answers (Q4a)	–0.873	–0.867	–0.864	–0.889	–0.903	–0.811
	(–4.61)***	(–8.29)***	(–3.81)***	(–6.77)***	(–2.62)***	(–4.64)***
Observations	482	1,533	336	979	146	554

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A6: Dependent variable: Reported past and expected inflation. Effect conditioned on income: Raw coefficients

	(1) East	(2) West	(3) >15 in the GDR	(4) >15 in the FRG	(5) <15 in the GDR	(6) <15 in the FRG
Past inflation						
Free answers (Q1a)	–0.263	–0.326	–0.196	–0.328	–0.341	–0.321
	(–1.24)	(–2.7)***	(–0.78)	(–2.23)**	(–0.82)	(–1.51)
Observations	299	951	215	643	84	308
Expected *inflation*						
Free answers (Q4a)	0.308	0.601	0.113	0.478	0.738	0.856
	(1.43)	(4.50)***	(0.44)	(2.96)***	(1.83)*	(3.61)***
Observations	282	768	197	524	85	244

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3.2. Effect Conditional on Income

Table A7a: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on income

	(1) 1st quartile	(2) 2nd quartile	(3) 3rd quartile	(4) 4th quartile
Past inflation				
Free answers	–0.616	–0.862	–0.991	–0.467
	(–3.483)***	(–4.632)***	(–5.216)***	(–2.157)**
Observations	524	503	542	446
Expected inflation				
Free answers	–0.837	–0.766	–0.718	–1.319
	(–4.626)***	(–4.213)***	(–4.077)***	(–6.463)***
Observations	524	503	542	446

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A7b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on income

	(1) 1st quartile	(2) 2nd quartile	(3) 3rd quartile	(4) 4th quartile
Past inflation				
Free answers (Q1a)	–0.15	–0.20	–0.21	–0.09
	(–3.66)***	(–5.06)***	(–5.74)***	(–2.19)**
Observations	524	503	542	446
Expected inflation				
Free answers (Q4a)	–0.20	–0.18	–0.17	–0.29
	(–5.04)***	(–4.54)***	(–4.34)***	(–8.03)***
Observations	524	503	542	446

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A8a: Dependent variable: Reported past and expected inflation. Effect conditioned on income

	(1) 1st quartile	(2) 2nd quartile	(3) 3rd quartile	(4) 4th quartile
Past inflation				
Free answers	–0.369	–0.228	–0.175	–0.388
	(–1.625)	(–1.059)	(–0.900)	(–1.878)*
Observations	263	301	362	324
Expected inflation				
Free answers	0.187	0.647	0.702	0.551
	(0.777)	(2.810)***	(3.354)***	(2.398)**
Observations	231	251	308	260

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A8b: Average marginal effects: Dependent variable: Reported past and expected inflation. Effect conditioned on income

	(1) 1st quartile	(2) 2nd quartile	(3) 3rd quartile	(4) 4th quartile
Past inflation				
< 0	0.00	0.00	0.00	0.01
	(0.85)	(0.85)	(0.82)	(1.50)
Unchanged	0.01	0.01	0.01	0.04
	(1.43)	(1.02)	(0.88)	(1.85)*
≤ 1%	0.02	0.02	0.01	0.05
	(1.53)	(1.05)	(0.90)	(1.85)*
]1%; 2%]	0.06	0.03	0.02	–0.04
	(1.65)*	(1.05)	(0.89)	(–1.90)*
]2%; 3%]	–0.03	–0.03	–0.02	–0.02
	(–1.61)	(–1.06)	(–0.90)	(–1.80)*
]3%; 4%]	–0.03	–0.01	–0.01	–0.02
	(–1.59)	(–1.04)	(–0.89)	(–1.75)*
> 4%	–0.03	–0.02	–0.01	
	(–1.57)	(–1.04)	(–0.88)	
Observations	263	301	362	324
Expected inflation				
< 0	–0.00	–0.01	–0.00	–0.01
	(–0.71)	(–1.27)	(–1.31)	(–1.55)
Unchanged	–0.02	–0.06	–0.07	–0.03
	(–0.76)	(–2.53)**	(–3.01)***	(–2.10)**
≤ 1%	–0.01	–0.04	–0.04	–0.05
	(–0.76)	(–2.52)**	(–3.00)***	(–2.27)**
]1%; 2%]	–0.02	–0.05	–0.05	–0.04
	(–0.79)	(–2.73)***	(–3.19)***	(–2.28)**
]2%; 3%]	0.01	0.06	0.07	0.05
	(0.77)	(2.86)***	(3.42)***	(2.44)**
]3%; 4%]	0.01	0.04	0.03	0.05
	(0.78)	(2.63)***	(2.93)***	(2.32)**
> 4%	0.02	0.05	0.07	0.04
	(0.77)	(2.50)**	(3.04)***	(2.14)**
Observations	231	251	308	260

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3.3. Effect Conditional on Education

Table A9a: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on education

	(1) Education 1	(2) Education 2	(3) Education 3	(4) Education 4	(5) Education 5
Past inflation					
Free answers	–1.44	–1.09	–0.45	–0.61	–0.75
	(–3.08)***	(–6.31)***	(–3.04)***	(–2.22)**	(–2.07)**
Observations	107	597	823	255	199
Expected inflation					
Free answers	–0.70	–1.02	–0.78	–1.15	–0.63
	(–1.66)*	(–6.04)***	(–5.43)***	(–4.41)***	(–1.98)**
Observations	107	597	823	255	199

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A9b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on education

	(1) Education 1	(2) Education 2	(3) Education 3	(4) Education 4	(5) Education 5
Past inflation					
Free answers (Q1a)	–0.29	–0.25	–0.10	–0.13	–0.12
	(–3.67)***	(–7.30)***	(–3.10)***	(–2.30)**	(–2.11)**
Observations	107	597	823	255	199
Expected inflation					
Free answers (Q4a)	–0.16	–0.24	–0.18	–0.27	–0.13
	(–1.74)*	(–6.92)***	(–5.86)***	(–5.25)***	(–2.04)**
Observations	107	597	823	255	199

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A10a: Dependent variable: Reported past and expected inflation. Effect conditioned on education

	(1) Education 1	(2) Education 2	(3) Education 3	(4) Education 4	(5) Education 5
Past inflation					
Free answers	–0.60	–0.16	–0.28	–0.28	–0.44
	(–0.85)	(–0.80)	(–1.74)*	(–0.99)	(–1.47)
Observations	35	350	526	175	159
Expected inflation					
Free answers	0.30	0.25	0.70	0.020	0.96
	(0.51)	(1.12)	(4.06)***	(0.063)	(3.06)***
Observations	41	282	453	129	142

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A10b: Average marginal effects: Dependent variable: Reported past and expected inflation. Effect conditioned on education

	(1) Education 1	(2) Education 2	(3) Education 3	(4) Education 4	(5) Education 5
Past inflation					
< 0	0.03	0.00	0.00	0.00	0.01
	(0.75)	(0.73)	(1.10)	(0.81)	(1.03)
Unchanged	0.01	0.01	0.01	0.01	0.04
	(0.67)	(0.79)	(1.59)	(0.92)	(1.45)
≤ 1%	0.10	0.01	0.02	0.03	0.05
	(0.87)	(0.80)	(1.72)*	(0.99)	(1.42)
]1%; 2%]	–0.02	0.02	0.04	0.03	–0.05
	(–0.60)	(0.80)	(1.74)*	(0.97)	(–1.49)
]2%; 3%]	–0.02	–0.02	–0.03	–0.03	–0.03
	(–0.79)	(–0.80)	(–1.75)*	(–1.00)	(–1.40)
]3%; 4%]	–0.11	–0.01	–0.02	–0.02	–0.02
	(–0.84)	(–0.80)	(–1.70)*	(–0.96)	(–1.30)
> 4%		–0.01	–0.02	–0.01	
		(–0.80)	(–1.69)*	(–0.95)	
Observations	35	350	526	175	159
Expected inflation					
< 0	–0.01	–0.00	–0.01	–0.00	–0.01
	(–0.46)	(–0.88)	(–2.11)**	(–0.06)	(–1.30)
Unchanged	–0.03	–0.02	–0.06	–0.00	–0.06
	(–0.50)	(–1.09)	(–3.56)***	(–0.06)	(–2.24)**
< 1%	–0.02	–0.01	–0.05	–0.00	–0.07
	(–0.50)	(–1.09)	(–3.71)***	(–0.06)	(–2.64)***
[1%; 2%]	–0.02	–0.02	–0.05	0.00	–0.08
	(–0.52)	(–1.13)	(–3.88)***	(0.06)	(–2.85)***
[2%; 3%]	0.02	0.02	0.05	0.00	0.07
	(0.50)	(1.12)	(4.01)***	(0.06)	(3.06)***
[3%; 4%]	0.01	0.01	0.05	0.00	0.06
	(0.51)	(1.11)	(3.85)***	(0.06)	(2.76)***
> 4%	0.04	0.02	0.06		0.08
	(0.51)	(1.10)	(3.64)***		(2.55)**
Observations	41	282	453	129	142

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3.4. Effect Conditional on Gender

Table A11a: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on gender

	(1) Male	(2) Female
Past inflation		
Free answers	–0.74	–0.70
	(–5.16)***	(–5.56)***
Observations	944	1,071
Expected inflation		
Free answers	–0.80	–0.93
	(–5.99)***	(–7.43)***
Observations	944	1,071

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A11b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on gender

	(1) Male	(2) Female
Past inflation		
Free answers (Q1a)	–0.15	–0.17
	(–5.42)***	(–5.90)***
Observations	944	1,071
Expected inflation		
Free answers (Q4a)	–0.19	–0.22
	(–6.49)***	(–8.32)***
Observations	944	1,071

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A12a: Dependent variable: Reported past and expected inflation. Effect conditioned on gender

	(1) Male	(2) Female
Past inflation		
Free answers	–0.30	–0.29
	(–2.03)**	(–1.90)*
Observations	651	599
Expected inflation		
Free answers	0.56	0.49
	(3.51)***	(3.04)***
Observations	532	518

Estimator: ordered logit. Constant included but not reported. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A12b: Average marginal effects: Dependent variable: Reported past and expected inflation. Effect conditioned on gender

	(1) Male	(2) Female
Past inflation		
< 0	0.00	0.00
	(1.43)	(1.28)
Unchanged	0.01	0.01
	(1.87)*	(1.74)*
≤ 1%	0.02	0.02
	(2.01)**	(1.88)*
]1%; 2%]	0.04	0.04
	(2.01)**	(1.90)*
]2%; 3%]	–0.03	–0.03
	(–2.04)**	(–1.91)*
]3%; 4%]	–0.02	–0.02
	(–1.99)**	(–1.84)*
> 4%	–0.02	–0.02
	(–1.95)*	(–1.85)*
Observations	651	599
Expected inflation		
< 0	–0.01	–0.01
	(–1.89)*	(–1.92)*
Unchanged	–0.05	–0.04
	(–3.19)***	(–2.83)***
≤ 1%	–0.03	–0.04
	(–3.18)***	(–2.89)***
]1%; 2%]	–0.05	–0.03
	(–3.53)***	(–2.99)***
]2%; 3%]	0.05	0.04
	(3.52)***	(3.05)***
]3%; 4%]	0.03	0.03
	(3.34)***	(2.96)***
> 4%	0.05	0.04
	(3.27)***	(2.87)***
Observations	532	518

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3.5. Effect Conditional on Objective and Subjective Knowledge

Objective Knowledge

Table A13a: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on objective knowledge

Objective knowledge	(1) Very bad	(2)	(3)	(4)	(5) Very good
Past inflation					
Free answers (Q1a)	–0.98	–0.71	–0.83	–0.53	–0.19
	(–5.77)***	(–4.22)***	(–3.51)***	(–1.43)	(–0.28)
Observations	615	608	444	201	147
Expected inflation					
Free answers (Q4a)	–0.95	–0.92	–1.14	–1.35	–0.35
	(–5.16)***	(–5.55)***	(–5.36)***	(–4.03)***	(–0.74)
Observations	615	608	444	201	147

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A13b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on objective knowledge

	(1) Very bad	(2)	(3)	(4)	(5) Very good
Past inflation					
Free answers (Q1a)	–0.22	–0.17	–0.14	–0.08	–0.01
	(–6.46)***	(–4.48)***	(–3.63)***	(–1.44)	(–0.28)
Observations	615	608	444	201	147
Expected inflation					
Free answers (Q4a)	–0.19	–0.22	–0.23	–0.26	–0.05
	(–5.56)***	(–6.20)***	(–6.08)***	(–4.68)***	(–0.74)
Observations	615	608	444	201	147

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A14a: Dependent variable: Reported past and expected inflation. Effect conditioned on objective knowledge

Objective knowledge	(1) Very bad	(2)	(3)	(4)	(5) Very good
Past inflation					
Free answers (Q1a)	–0.50	–0.22	–0.26	–0.57	0.46
	(–2.11)**	(–1.12)	(–1.28)	(–1.89)*	(1.38)
Observations	244	358	346	165	137
Expected inflation					
Free answers (Q4a)	0.61	0.65	0.61	0.25	0.01
	(2.22)**	(3.10)***	(2.90)***	(0.80)	(0.03)
Observations	183	300	302	141	124

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A14b: Average marginal effects: Dependent variable: Reported past and expected inflation. Effect conditioned on objective knowledge

	(1) Very bad	(2)	(3)	(4)	(5) Very good
Past inflation					
< 0	0.002	0.002	0.001	0.003	–0.003
	(0.91)	(0.94)	(0.79)	(0.89)	(–0.81)
Unchanged	0.017	0.009	0.004	0.013	–0.010
	(1.76)*	(1.09)	(1.14)	(1.40)	(–1.08)
≤ 1%	0.041	0.019	0.021	0.037	–0.034
	(2.04)**	(1.12)	(1.27)	(1.77)*	(–1.31)
]1%; 2%]	0.063	0.024	0.036	0.078	–0.053
	(2.10)**	(1.11)	(1.28)	(1.87)*	(–1.36)
]2%; 3%]	–0.026	–0.022	–0.033	–0.080	0.081
	(–2.04)**	(–1.12)	(–1.29)	(–1.93)*	(1.40)
]3%; 4%]	–0.032	–0.019	–0.014	–0.026	0.013
	(–2.03)**	(–1.11)	(–1.25)	(–1.64)	(1.14)
> 4%	–0.066	–0.013	–0.015	–0.026	0.007
	(–2.04)**	(–1.10)	(–1.24)	(–1.60)	(0.99)
Observations	244	358	346	165	137
Expected inflation					
< 0	–0.007	–0.006	–0.008	–0.002	–0.000
	(–1.20)	(–1.52)	(–1.66)*	(–0.63)	(–0.03)
Unchanged	–0.070	–0.056	–0.055	–0.016	–0.000
	(–2.08)**	(–2.76)***	(–2.63)***	(–0.78)	(–0.03)
≤ 1%	–0.036	–0.050	–0.046	–0.014	–0.000
	(–2.04)**	(–2.87)***	(–2.72)***	(–0.78)	(–0.03)
]1%; 2%]	–0.030	–0.045	–0.036	–0.030	–0.002
	(–1.91)*	(–2.98)***	(–2.62)***	(–0.81)	(–0.03)
]2%; 3%]	0.037	0.048	0.057	0.030	0.001
	(2.17)**	(3.04)***	(2.96)***	(0.81)	(0.03)
]3%; 4%]	0.029	0.038	0.039	0.015	0.001
	(2.08)**	(2.92)***	(2.70)***	(0.79)	(0.03)
> 4%	0.077	0.071	0.050	0.016	0.000
	(2.15)**	(2.90)***	(2.61)***	(0.78)	(0.03)
Observations	244	358	346	165	137

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Subjective Knowledge

Table A15a: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on subjective knowledge

	(1)	(2)	(3)	(4)	(5)
Subjective knowledge	Very bad				Very good
Past inflation					
Free answers	–0.73	–0.72	–0.83	–1.41	–
	(–4.23)***	(–4.13)***	(–4.83)***	(–2.68)***	
Observations	565	585	676	168	9
Expected inflation					
Free answers	–0.91	–1.03	–0.90	–1.45	–0.69
	(–4.96)***	(–6.03)***	(–5.59)***	(–3.15)***	(–0.53)
Observations	565	585	676	168	21

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A15b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on subjective knowledge

	(1)	(2)	(3)	(4)	(5)
	Very bad				Very good
Past inflation					
Free answers (Q1a)	–0.17	–0.16	–0.17	–0.18	
	(–4.52)***	(–4.37)***	(–5.12)***	(–2.70)***	
Observations	565	585	676	168	9
Expected inflation					
Free answers (Q4a)	–0.20	–0.24	–0.21	–0.21	–0.08
	(–5.39)***	(–6.93)***	(–6.17)***	(–3.32)***	(–0.53)
Observations	565	585	676	168	21

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A16a: Dependent variable: Reported past and expected inflation. Effect conditioned on subjective knowledge

	(1)	(2)	(3)	(4)	(5)
	Very bad				Very good
Past inflation					
Free answers	–0.63	–0.39	–0.047	–0.04	–
	(–2.66)***	(–2.03)**	(–0.27)	(–0.13)	
Observations	247	369	472	142	20
Expected inflation					
Free answers	0.70	0.43	0.57	0.59	0.31
	(2.63)***	(2.06)**	(3.06)***	(1.87)*	(0.32)
Observations	193	313	391	135	18

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A16b: Average marginal effects: Dependent variable: Reported past and expected inflation. Effect conditioned on subjective knowledge

	(1) Very bad	(2)	(3)	(4)	(5) Very good
Past inflation					
< 0	0.024	0.002	0.000	0.000	0.000
	(2.08)**	(1.16)	(0.27)	(0.12)	(0.00)
Unchanged	0.041	0.015	0.001	0.001	0.000
	(2.43)**	(1.83)*	(0.27)	(0.13)	(0.00)
≤ 1%	0.088	0.034	0.003	0.004	0.000
	(2.72)***	(2.01)**	(0.27)	(0.13)	(0.00)
]1%; 2%]	–0.037	0.043	0.007	0.004	–0.000
	(–2.48)**	(2.00)**	(0.27)	(0.13)	(–0.00)
]2%; 3%]	–0.044	–0.040	–0.006	–0.007	–0.000
	(–2.55)**	(–2.06)**	(–0.27)	(–0.13)	(–0.00)
]3%; 4%]	–0.072	–0.030	–0.003	–0.001	
	(–2.50)**	(–1.96)**	(–0.27)	(–0.13)	
> 4%		–0.024	–0.003	–0.001	
		(–1.90)*	(–0.27)	(–0.13)	
Observations	247	369	472	142	20
Expected inflation					
< 0	–0.007	–0.001	–0.010	–0.004	–0.043
	(–1.25)	(–0.90)	(–2.01)**	(–0.89)	(–0.31)
Unchanged	–0.09	–0.03	–0.04	–0.06	–0.01
	(–2.45)**	(–1.93)*	(–2.70)***	(–1.72)*	(–0.25)
≤ 1%	–0.04	–0.03	–0.03	–0.04	0.05
	(–2.41)**	(–1.98)**	(–2.73)***	(–1.76)*	(0.32)
]1%; 2%]	–0.03	–0.04	–0.06	–0.03	
	(–2.27)**	(–2.09)**	(–3.10)***	(–1.58)	
]2%; 3%]	0.04	0.04	0.05	0.04	
	(2.51)**	(2.06)**	(3.09)***	(1.88)*	
]3%; 4%]	0.04	0.02	0.04	0.06	
	(2.46)**	(1.99)**	(2.93)***	(1.86)*	
> 4%	0.09	0.04	0.04	0.04	
	(2.50)**	(1.99)**	(2.78)***	(1.63)	
Observations	193	313	391	135	18

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3.6. Effect Conditional on Political Affiliation

Table A17a: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on political affiliation

	(1) Linkspartei	(2) SPD	(3) Grüne	(4) FDP	(5) CDU/CSU	(6) AfD	(7) Other Party
Past inflation							
Free answers (Q1a)	–0.74	–0.91	–0.83	–0.80	–0.55	–0.66	–0.92
	(–2.09)**	(–3.91)***	(–2.66)***	(–2.04)**	(–2.75)***	(–2.28)**	(–2.38)**
Constant	1.24	1.03	1.27	1.28	1.12	0.91	0.85
	(4.52)***	(6.08)***	(5.24)***	(4.39)***	(7.50)***	(4.28)***	(3.01)***
Observations	161	339	207	132	480	213	118
Expected inflation							
Free answers (Q4a)	–1.33	–0.89	–1.11	–0.30	–0.93	–1.02	–0.91
	(–3.81)***	(–4.01)***	(–3.80)***	(–0.83)	(–4.90)***	(–3.56)***	(–2.40)**
Constant	1.28	0.56	0.80	0.38	0.78	0.76	0.30
	(4.91)***	(3.57)***	(3.74)***	(1.42)	(5.58)***	(3.72)***	(1.15)
Observations	161	339	207	132	480	213	118

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A17b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Effect conditioned on political affiliation

	(1) Linkspartei	(2) SPD	(3) Grüne	(4) FDP	(5) CDU–CSU	(6) AfD	(7) OtherParty
Past inflation							
Free answers (Q1a)	–0.15	–0.20	–0.17	–0.16	–0.12	–0.15	–0.21
	(–2.18)**	(–4.27)***	(–2.82)***	(–2.15)**	(–2.82)***	(–2.39)**	(–2.63)***
Observations	161	339	207	132	480	213	118
Expected inflation							
Free answers (Q4a)	–0.28	–0.21	–0.25	–0.07	–0.22	–0.23	–0.22
	(–4.65)***	(–4.44)***	(–4.45)***	(–0.84)	(–5.45)***	(–4.06)***	(–2.67)***
Observations	161	339	207	132	480	213	118

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A18a: Dependent variable: Reported past and expected inflation. Effect conditioned on political affiliation

	(1) Linkspartei	(2) SPD	(3) Grüne	(4) FDP	(5) CDU/CSU	(6) AfD	(7) Other Party
Past inflation							
Free answers (Q1a)	0.25	0.64	0.51	0.67	0.20	0.32	0.64
	(0.89)	(3.21)***	(2.03)**	(2.09)**	(1.20)	(1.29)	(1.87)*
Observations	161	339	207	132	480	213	118
Expected inflation							
Free answers (Q4a)	1.02	0.71	0.94	0.46	0.76	0.89	0.73
	(3.54)***	(3.63)***	(3.69)***	(1.45)	(4.62)***	(3.59)***	(2.19)**
Observations	161	339	207	132	480	213	118

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A18b: Average marginal effects: Dependent variable: Reported past and expected inflation. Effect conditioned on political affiliation

	(1) Linkspartei	(2) SPD	(3) Grüne	(4) FDP	(5) CDU–CSU	(6) AfD	(7) OtherParty
Past inflation							
< 0	0.005	0.001	0.002	–0.009	0.001	0.003	0.004
	(0.83)	(0.37)	(0.38)	(–0.65)	(0.89)	(0.82)	(0.52)
Unchanged	0.004	0.004	0.002	–0.016	0.016	0.024	0.029
	(0.83)	(0.38)	(0.38)	(–0.67)	(1.75)*	(1.28)	(0.60)
≤ 1%	0.053	0.010	0.010	–0.040	0.029	0.083	0.033
	(1.44)	(0.38)	(0.39)	(–0.71)	(1.88)*	(1.44)	(0.60)
]1%; 2%]	0.065	0.007	0.014	0.036	0.047	–0.016	–0.023
	(1.48)	(0.37)	(0.39)	(0.71)	(1.89)*	(–1.19)	(–0.60)
]2%; 3%]	–0.067	–0.013	–0.016	0.020	–0.051	–0.039	–0.013
	(–1.52)	(–0.38)	(–0.39)	(0.69)	(–1.94)*	(–1.41)	(–0.59)
]3%; 4%]	–0.030	–0.006	–0.006	0.009	–0.024	–0.056	–0.030
	(–1.34)	(–0.38)	(–0.39)	(0.65)	(–1.82)*	(–1.38)	(–0.60)
> 4%	–0.030	–0.004	–0.006		–0.019		
	(–1.31)	(–0.38)	(–0.39)		(–1.75)*		
Observations	112	217	143	93	334	136	70
Expected inflation							
< 0	–0.004	–0.004	–0.010	–0.021	–0.006	–0.009	–0.088
	(–0.75)	(–0.93)	(–1.07)	(–1.11)	(–1.35)	(–0.56)	(–1.41)
Unchanged	–0.032	–0.067	–0.043	–0.038	–0.032	–0.009	–0.039
	(–1.06)	(–2.22)**	(–1.46)	(–1.34)	(–1.73)*	(–0.56)	(–1.30)
≤ 1%	–0.031	–0.047	–0.040	–0.033	–0.031	–0.027	–0.057
	(–1.08)	(–2.27)**	(–1.51)	(–1.36)	(–1.76)*	(–0.57)	(–1.44)
]1%; 2%]	–0.034	–0.040	–0.036	–0.088	–0.024	0.001	0.039
	(–1.15)	(–2.09)**	(–1.48)	(–1.80)*	(–1.73)*	(0.28)	(1.50)
]2%; 3%]	0.040	0.074	0.085	0.066	0.042	0.013	0.048
	(1.10)	(2.58)***	(1.68)*	(1.76)*	(1.86)*	(0.57)	(1.50)
]3%; 4%]	0.031	0.044	0.017	0.041	0.024	0.031	0.097
	(1.11)	(2.20)**	(1.29)	(1.57)	(1.75)*	(0.57)	(1.46)
> 4%	0.029	0.039	0.028	0.073	0.027		
	(1.06)	(2.02)**	(1.37)	(1.56)	(1.72)*		
Observations	104	180	115	73	275	120	55

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.3.7. The role of previous non-answers

Table A19a: Dependent variable: Propensity to report past and expected inflation. Controlling for answering the question on refugees

	(1)	(2)	(3)	(4)
	Reports past inflation		Reports expected inflation	
Free answers	-0.804	-0.895	-0.980	-1.018
	(-7.471)***	(-6.781)***	(-9.249)***	(-8.089)***
Answered Question A4	1.184	1.057	1.310	1.243
	(10.773)***	(7.673)***	(11.625)***	(9.049)***
Female		-0.437		-0.160
		(-3.336)***		(-1.276)
Age		0.012		0.006
		(2.950)***		(1.559)
Apprenticeship		0.913		0.466
		(3.387)***		(1.744)*
Secondary school		1.316		0.753
		(4.902)***		(2.846)***
Abitur		1.444		0.482
		(4.577)***		(1.581)
University		1.667		1.678
		(4.741)***		(4.812)***
Household income		0.561		0.268
		(4.530)***		(2.436)**
Observations	1,674	1,247	1,674	1,247

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A19b: Average marginal effect: Dependent variable: Propensity to report past and expected inflation. Controlling for answering the question on refugees

	(1) Past inflation (bivariate regression)	(2) Past inflation (with controls)	(3) Expected inflation (bivariate regression)	(4) Expected inflation (with controls)
Free answers	-0.169	-0.172	-0.213	-0.212
	(-7.946)***	(-7.252)***	(-10.24)***	(-8.976)***
Observations	1,674	1,247	1,674	1,247

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A20a: Dependent variable: Reported past and expected inflation. Controlling for answering the question on refugees

	(1)	(2)	(3)	(4)
	Past inflation		Expected inflation	
Free answers	-0.308	-0.291	0.582	0.580
	(-2.687)***	(-2.187)**	(4.661)***	(4.140)***
Answered Question A4	-0.005	0.037	0.184	-0.122
	(-0.038)	(0.232)	(1.178)	(-0.664)
Female		0.056		-0.229
		(0.425)		(-1.636)
Age		0.000		0.005
		(0.085)		(1.057)
Apprenticeship		-0.539		-0.152
		(-1.417)		(-0.431)
Secondary school		-0.503		-0.096
		(-1.346)		(-0.278)
Abitur		-0.581		-0.154
		(-1.430)		(-0.390)
University		-0.575		0.027
		(-1.397)		(0.069)
Household income		-0.219		-0.217
		(-2.150)**		(-1.933)*
Observations	1,047	806	863	687

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A20b: Average marginal effects: Dependent variable: Reported past and expected inflation. Controlling for answering the question on refugees

	(1) Past inflation (bivariate regression)	(2) Past inflation (with controls)	(3) Expected inflation (bivariate regression)	(4) Expected inflation (with controls)
< 0	0.00	0.00	-0.01	-0.01
	(1.89)*	(1.57)	(-2.54)**	(-2.35)**
Unchanged	0.01	0.01	-0.05	-0.05
	(2.47)**	(2.05)**	(-4.23)***	(-3.73)***
≤ 1%	0.03	0.02	-0.04	-0.04
	(2.66)***	(2.17)**	(-4.31)***	(-3.83)***
]1%; 2%]	0.04	0.04	-0.05	-0.05
	(2.66)***	(2.17)**	(-4.55)***	(-4.12)***
]2%; 3%]	-0.03	-0.03	0.05	0.05
	(-2.70)***	(-2.20)**	(4.72)***	(4.13)***
]3%; 4%]	-0.02	-0.02	0.03	0.03
	(-2.61)***	(-2.14)**	(4.38)***	(3.90)***
> 4%	-0.02	-0.02	0.05	0.06
	(-2.59)***	(-2.12)**	(4.31)***	(3.88)***
Observations	1,047	806	863	687

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A21a: Dependent variable: Propensity to report past and expected inflation. Conditioning on answering the question on refugees

	(1)	(2)
Answered A4	no	yes
Past inflation		
Free answers (Q1a)	-1.215	-0.545
	(-6.926)***	(-3.999)***
Observations	579	1,095
Expected inflation		
Free answers (Q4a)	-1.125	-0.911
	(-5.972)***	(-7.101)***
Observations	579	1,095

Estimator: logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A22b: Average marginal effects: Dependent variable: Propensity to report past and expected inflation. Conditioning on answering the question on refugees

	(1)	(2)
Answered A4	no	yes
Past inflation		
Free answers (Q1a)	-0.275	-0.109
	(-8.385)***	(-4.091)***
Observations	579	1,095
Expected inflation		
Free answers (Q4a)	-0.230	-0.205
	(-6.713)***	(-7.799)***
Observations	579	1,095

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A23a Dependent variable: Reported past and expected inflation. Conditioning on answering the question on refugees

	(1)	(2)
Answered A4	no	yes
Past inflation		
Free answers (Q1a)	-0.356	-0.292
	(-1.533)	(-2.205)**
Observations	261	786
Expected inflation		
Free answers (Q4a)	1.293	0.389
	(4.523)***	(2.776)***
Observations	186	677

Estimator: ordered logit. Constant included but not reported. z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A23b: Average marginal effects: Dependent variable: Reported past and expected inflation. Conditioning on answering the question on refugees

	(1) Did not answer	(2) Answered
Past inflation		
< 0	0.00	0.00
	(1.15)	(1.48)
Unchanged	0.02	0.01
	(1.46)	(1.98)**
≤ 1%	0.03	0.02
	(1.53)	(2.18)**
]1%; 2%]	0.03	0.04
	(1.48)	(2.20)**
]2%; 3%]	-0.03	-0.04
	(-1.54)	(-2.22)**
]3%; 4%]	-0.03	-0.02
	(-1.50)	(-2.14)**
> 4%	-0.03	-0.02
	(-1.48)	(-2.12)**
Observations	261	786
Expected inflation		
< 0	-0.01	-0.00
	(-1.36)	(-1.92)*
Unchanged	-0.18	-0.03
	(-4.02)***	(-2.59)***
≤ 1%	-0.07	-0.03
	(-3.68)***	(-2.65)***
]1%; 2%]	-0.02	-0.04
	(-1.17)	(-2.81)***
]2%; 3%]	0.08	0.04
	(4.18)***	(2.80)***
]3%; 4%]	0.06	0.02
	(3.60)***	(2.70)***
> 4%	0.15	0.03
	(3.97)***	(2.66)***
Observations	186	677

z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

A.4. The questionnaire

To economise on space, we only report the questions underlying the variables that we use in our analysis. See Hayo et al. (2018) for the complete version of the questionnaire. Note that the numbering of the questions has been maintained to facilitate comparison. The socio-demographic questions designed and automatically collected by GfK can only be found in the frequency tables at the end of this section.

Base: *All respondents*

Part C: The annual inflation rate measures the change in prices compared to last year in per cent and thus the change in the purchasing power of money.

Filter*: The first half of the respondents are asked Question C1a); the other half Question C1b).*

Question C1a) Do you remember, roughly, what Germany's rate of inflation was in 2017? Please write the percentage here:

a) % _____.
b) Don't know.

Question C1b) Do you remember, roughly, what Germany's rate of inflation was in 2017? Which of the following options describes best how prices have changed?

a) Decreased.
b) Unchanged.
c) Increased by 1% or less.
d) Increased by more than 1% but not more than 2%.
e) Increased by more than 2% but not more than 3%.
f) Increased by more than 3% but not more than 4%.
g) Increased by more than 4%.
h) Don't know.

Base: *All respondents*

Question C4a) What do you expect the inflation rate will be next year, i.e., 2018? Please write the percentage here:

a) % _____.

b) I do not form opinions about what might be the rate of inflation in the future.

c) Don't know.

Question C4b) What do you expect the inflation rate will be next year, i.e., 2018? Which of the following options describes best how prices will change?

a) Decrease.

b) Unchanged.

c) Increase by 1% or less.

d) Increase by more than 1% but not more than 2%.

e) Increase by more than 2% but not more than 3%.

f) Increase by more than 3% but not more than 4%.

g) Increase by more than 4%.

h) I do not form opinions about what might be the rate of inflation in the future.

i) Don't know.

Filter: All respondents who do **not** answer Questions C4a) or C4b): 'I do not form opinions about what might be the rate of inflation in the future'.

Base: *All respondents*

Question C6) The monetary policy of all countries in the euro area is managed by the European Central Bank (ECB). How do you rate your own knowledge about the ECB? Value 1 means that your knowledge is very good. Value 5 means that your knowledge is very bad. You may grade your knowledge with the values in between.

a) (1) Very good.

b) (2)

c) (3)

d) (4)

e) (5) Very bad.

Base: *All respondents*

Question C7) Which of the following do you think is the main objective of the ECB? The main objective of the ECB is to …

a) Promote growth in the euro area.
b) Fight unemployment in the euro area.
c) Maintain price stability in the euro area.
d) Provide credit to European Union member states.
e) Control the euro/US dollar exchange rate.
f) Don't know.

Base: *All respondents*

Question C8) In the euro area, commercial banks (e.g., Deutsche Bank, Commerzbank, Sparkassen, Volksbanken, etc.) borrow money from the European Central Bank (ECB) at a given interest rate (Main Refinancing Rate). The commercial banks then lend this money at a higher interest rate to households and firms. Do you know, roughly, the interest rate that the ECB charges the commercial banks? Please write the percentage here:

a) % _____.
b) Don't know.

Base: *All respondents*

Question C9) Private banks borrow liquidity from the European Central Bank (ECB) at a given interest rate. Assume that prices in the euro area are expected to increase strongly. How do you think the interest rate should be set?

a) Decrease interest rate.
b) Keep interest rate constant.
c) Increase interest rate.
d) Don't know.

Base: *All respondents*

Question C10) Who is responsible for setting this interest rate?

a) The ECB, independently of euro area governments.
b) The ECB; euro area governments have to agree afterward.
c) The ECB together with euro area governments.
d) The euro area governments, with the ECB executing the decisions.
e) Don't know.

Screen:

Part F: I would like to hand over the pen-pad for the following questions and ask you to fill in the answers yourself. Please answer honestly. I can ensure you that your data will be treated as fully confidential and anonymous. It will not be possible to personally identify you during the data analysis phase.

If you have questions, I would be happy to offer my help.

Interviewer: *Hand over the console to the interviewee!*

Base: *All respondents*

Question F1) Which party would you vote for if federal elections were held this Sunday?

CDU/CSU	□
SPD	□
AfD	□
FDP	□
Linkspartei/PDS	□
Bündnis 90/Die Grünen	□
Other party	□
Would not vote	□

Screen: *Thank you for your honest answers! Please hand over the console to the interviewer!*

Base: *All respondents*

Absolute and Relative Frequencies

On the right-hand side of the tables, the population-weighted values are given. Note that in some cases, weighting may change the total absolute number of respondents. In other cases, rounding differences may appear when adding up column values.

Question C1a) Do you remember, roughly, what Germany's rate of inflation was in 2017? Please write the percentage here:

	Sample		Weighted	
Remembered inflation rate in 2017	Freq	Per cent	Freq	Per cent
0	3	0.3	2	0.2
0.1	1	0.1	1	0.1
0.2	1	0.1	1	0.1
0.4	2	0.2	2	0.2
0.5	2	0.2	2	0.2
0.7	2	0.2	3	0.3
0.8	1	0.1	1	0.1
0.9	2	0.2	2	0.2
1	45	4.5	49	4.8
1.2	5	0.5	6	0.6
1.3	3	0.3	3	0.3
1.4	3	0.3	4	0.4
1.5	39	3.9	41	4.0
1.6	9	0.9	9	0.9
1.7	13	1.3	14	1.3
1.8	30	3.0	30	3.0
1.9	5	0.5	4	0.4
2	183	18.1	183	17.9
2.2	4	0.4	3	0.3
2.3	4	0.4	4	0.4
2.4	1	0.1	1	0.1
2.5	35	3.5	35	3.5
2.6	1	0.1	1	0.1
2.7	2	0.2	2	0.2
3	83	8.2	74	7.3
3.2	2	0.2	1	0.1
3.25	1	0.1	1	0.1

3.5	2	0.2	2	0.1
3.6	1	0.1	1	0.1
3.9	1	0.1	1	0.1
4	24	2.4	26	2.6
4.5	4	0.4	4	0.4
5	15	1.5	13	1.3
6	2	0.2	3	0.3
7	1	0.1	1	0.1
8	3	0.3	3	0.3
10	4	0.4	4	0.4
20	1	0.1	1	0.1
23	1	0.1	1	0.1
40	1	0.1	2	0.2
80	1	0.1	1	0.1
Don’t know	467	46.2	477	46.8
	1,010	100	1,020	100

Question C1b) Do you remember, roughly, what Germany’s rate of inflation was in 2017? Which of the following options describes best how prices have changed?

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
Decreased.	7	0.7	6	0.6
Unchanged.	35	3.5	44	4.3
Increased by 1% or less.	67	6.7	65	6.5
Increased by more than 1% but not more than 2%.	256	25.5	258	25.6
Increased by more than 2% but not more than 3%.	208	20.7	197	19.6
Increased by more than 3% but not more than 4%.	74	7.4	67	6.7
Increased by more than 4%.	60	6.0	58	5.8
Don’t know.	298	29.7	311	30.9
	1,005	100	1,005	100

Question C4a) What do you expect the inflation rate will be next year, i.e., 2018? Please write the percentage here:

	Sample		Weighted	
Expected inflation rate in 2018	Freq	Per cent	Freq	Per cent
0	2	0.2	1	0.1
0.2	1	0.1	1	0.1
0.5	2	0.2	2	0.2
0.6	1	0.1	1	0.1
1	21	2.1	21	2.1
1.2	6	0.6	7	0.7
1.3	4	0.4	4	0.5
1.5	22	2.2	25	2.5
1.6	2	0.2	1	0.1
1.8	15	1.5	15	1.5
1.9	8	0.8	8	0.8
2	138	13.9	140	14.0
2.1	1	0.1	1	0.1
2.2	5	0.5	5	0.5
2.3	2	0.2	3	0.3
2.4	1	0.1	1	0.1
2.5	31	3.1	31	3.1
3	62	6.2	61	6.1
3.1	1	0.1	1	0.1
3.2	1	0.1	0	0.0
3.5	8	0.8	6	0.7
4	24	2.4	20	2.0
4.7	1	0.1	1	0.1
4.75	1	0.1	0	0.0
5	24	2.4	24	2.4
5.5	2	0.2	2	0.2
5.7	1	0.1	1	0.1
6	4	0.4	3	0.3
6.2	1	0.1	1	0.1
7	4	0.4	4	0.4
8	2	0.2	3	0.3
10	2	0.2	2	0.2
11	2	0.2	3	0.3

12.5	1	0.1	2	0.2
14	1	0.1	2	0.2
20	2	0.2	2	0.2
25	2	0.2	2	0.2
29	1	0.1	1	0.1
50	1	0.1	1	0.1
70	1	0.1	1	0.1
I do not form opinions about what might be the rate of inflation in the future.	301	30.3	308	31.0
Don't know.	283	28.4	276	27.7
	995	100	994	100

Question C4b) What do you expect the inflation rate will be next year, i.e., 2018? Which of the following options describes best how prices will change?

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
Decreases.	11	1.1	11	1.1
Unchanged.	96	9.4	101	9.9
Increases by 1% or less.	75	7.4	77	7.6
Increases by more than 1% but not more than 2%.	183	17.9	178	17.4
Increases by more than 2% but not more than 3%.	151	14.8	145	14.2
Increases by more than 3% but not more than 4%.	68	6.7	60	5.9
Increases by more than 4%.	55	5.4	51	5.0
I do not form opinions about what might be the rate of inflation in the future.	148	14.5	161	15.8
Don't know.	233	22.8	237	23.2
	1,020	100	1,020	100

Question C6) The monetary policy of all countries in the euro area is managed by the European Central Bank (ECB). How do you rate your own knowledge about the ECB? Value 1 means that your knowledge is very good. Value 5 means that your knowledge is very bad. You may grade your knowledge with the values in between.

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
(1) Very good.	21	1.0	24	1.2
(2)	168	8.3	168	8.3
(3)	676	33.6	668	33.2
(4)	585	29.0	585	29.1
(5) Very bad.	565	28.0	570	28.3
	2,015	100	2,015	100

Question C7) Which of the following do you think is the main objective of the ECB? The main objective of the ECB is to …

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
Promote growth in the euro area.	236	11.7	249	12.4
Fight unemployment in the euro area.	45	2.2	46	2.3
Maintain price stability in the euro area.	983	48.8	966	47.9
Provide credit to European Union member states.	266	13.2	263	13.1
Control the euro/US dollar exchange rate.	52	2.6	56	2.8
Don’t know.	433	21.5	435	21.6
	2,015	100	2,015	100

Question C8) In the euro area, commercial banks (e.g., Deutsche Bank, Commerzbank, Sparkassen, Volksbanken, etc.) borrow money from the European Central Bank (ECB) at a given interest rate (Main Refinancing Rate). The commercial banks then lend this money at a higher interest rate to households and firms. Do you know, roughly, the interest rate that the ECB charges the commercial banks? Please write the percentage here:

	Sample		Weighted	
Main Refinancing Rate	Freq	Per cent	Freq	Per cent
0	389	19.3	392	19.4
0.01	2	0.1	3	0.1
0.02	2	0.1	1	0.1

0.05	4	0.2	2	0.1
0.1	22	1.1	22	1.1
0.15	1	0.0	1	0.1
0.2	6	0.3	6	0.3
0.23	1	0.0	1	0.1
0.25	4	0.2	5	0.3
0.3	7	0.3	9	0.4
0.4	2	0.1	2	0.1
0.5	59	2.9	56	2.8
0.65	1	0.0	1	0.0
0.7	2	0.1	2	0.1
0.8	1	0.0	2	0.1
0.9	1	0.0	1	0.1
1	109	5.4	107	5.3
1.2	2	0.1	2	0.1
1.25	1	0.0	1	0.1
1.5	10	0.5	13	0.6
2	65	3.2	63	3.1
2.2	1	0.0	1	0.0
2.5	5	0.2	3	0.2
3	32	1.6	34	1.7
3.5	1	0.0	2	0.1
3.8	1	0.0	1	0.0
4	24	1.2	22	1.1
4.2	1	0.0	1	0.1
4.5	1	0.0	2	0.1
5	29	1.4	31	1.5
5.1	1	0.0	1	0.0
5.5	1	0.0	1	0.0
5.6	1	0.0	1	0.0
6	7	0.3	7	0.3
7	8	0.4	9	0.4
8	2	0.1	2	0.1
10	7	0.3	7	0.4
11	1	0.0	1	0.1
12	5	0.2	4	0.2
15	1	0.0	1	0.0

17	1	0.0	0	0.0
20	1	0.0	1	0.0
25	1	0.0	2	0.1
40	2	0.1	2	0.1
Don’t know	1,190	59.1	1,193	59.1
	2,015	100	2,018	100

Question C9) Private banks borrow liquidity from the European Central Bank (ECB) at a given interest rate. Assume that prices in the euro area are expected to increase strongly. How do you think the interest rate should be set?

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
Decrease interest rate.	247	12.3	240	11.9
Keep interest rate constant.	428	21.2	440	21.9
Increase interest rate.	589	29.2	588	29.2
Don’t know.	751	37.3	747	37.0
	2,015	100	2,015	100

Question C10) Who is responsible for setting this interest rate?

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
The ECB, independently of euro area governments.	726	36.0	716	35.5
The ECB; euro area governments have to agree afterward.	234	11.6	233	11.6
The ECB together with euro area governments.	320	15.9	324	16.1
The euro area governments, with the ECB executing the decisions.	106	5.3	111	5.5
Don’t know.	629	31.2	631	31.3
	2,015	100	2,015	100

Question F1) Which party would you vote for if federal elections were held this Sunday?

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
CDU/CSU	480	23.8	488	24.2
SPD	339	16.8	336	16.7
AfD	213	10.6	198	9.9
FDP	132	6.6	139	6.9
Linkspartei/PDS	161	8.0	139	6.9
Bündnis 90/Die Grünen	207	10.3	228	11.3
Other party	118	5.9	110	5.5
Would not vote	365	18.1	377	18.7
	2,015	100	2,015	100

Variables automatically collected by GfK

Question G1) Age

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
14	9	0.5	14	0.7
15	10	0.5	12	0.6
16	16	0.8	20	1.0
17	21	1.0	30	1.5
18	18	0.9	20	1.0
19	39	1.9	44	2.2
20	18	0.9	24	1.2
21	26	1.3	34	1.7
22	21	1.0	24	1.2
23	32	1.6	38	1.9
24	22	1.1	24	1.2
25	19	0.9	20	1.0
26	26	1.3	32	1.6
27	20	1.0	22	1.1
28	27	1.3	34	1.7
29	16	0.8	20	1.0

30	32	1.6	40	2.0
31	23	1.1	29	1.4
32	19	0.9	23	1.1
33	26	1.3	32	1.6
34	28	1.4	31	1.5
35	22	1.1	25	1.2
36	20	1.0	21	1.1
37	25	1.2	31	1.6
38	22	1.1	29	1.4
39	18	0.9	22	1.1
40	20	1.0	22	1.1
41	26	1.3	26	1.3
42	27	1.3	30	1.5
43	24	1.2	24	1.2
44	28	1.4	34	1.7
45	40	2.0	39	2.0
46	30	1.5	32	1.6
47	39	1.9	35	1.7
48	40	2.0	41	2.1
49	46	2.3	46	2.3
50	37	1.8	30	1.5
51	43	2.1	39	1.9
52	56	2.8	48	2.4
53	50	2.5	45	2.3
54	55	2.7	49	2.4
55	35	1.7	33	1.6
56	25	1.2	19	0.9
57	35	1.7	28	1.4
58	39	1.9	35	1.7
59	37	1.8	31	1.5
60	40	2.0	27	1.4
61	41	2.0	29	1.4
62	39	1.9	29	1.4
63	47	2.3	32	1.6
64	32	1.6	21	1.1
65	43	2.1	33	1.6
66	28	1.4	21	1.0

67	30	1.5	23	1.1
68	36	1.8	26	1.3
69	30	1.5	27	1.3
70	35	1.7	35	1.7
71	26	1.3	29	1.5
72	30	1.5	35	1.7
73	34	1.7	34	1.7
74	23	1.1	24	1.2
75	25	1.2	29	1.4
76	21	1.0	22	1.1
77	25	1.2	28	1.4
78	25	1.2	30	1.5
79	21	1.0	22	1.1
80	18	0.9	22	1.1
81	12	0.6	13	0.7
82	11	0.6	11	0.5
83	9	0.5	9	0.5
84	6	0.3	7	0.3
85	4	0.2	3	0.2
86	4	0.2	4	0.2
87	5	0.3	5	0.3
88	2	0.1	3	0.2
89	2	0.1	1	0.1
90	1	0.1	1	0.0
91	2	0.1	2	0.1
92	1	0.1	1	0.1
	2,015	100	2,015	100

Question G 2) Sex

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
Male	944	47	987	49
Female	1,071	53	1,028	51
	2,015	100	2,015	100

Question G 9) Education of interviewed person

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
No certified apprenticeship training	107	5.3	106	5.2
Certified apprenticeship	597	29.6	574	28.5
Secondary school	823	40.8	794	39.4
University-entrance diploma	255	12.7	294	14.6
University degree	199	9.9	207	10.3
No response	34	1.7	41.2	2.0
	2,015	100	2,015	100

Question G 16) Net household income

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
€0 to €499	16	0.8	21	1.0
€500 to €749	18	0.9	16	0.8
€750 to €999	64	3.2	63	3.1
€1,000 to €1,249	75	3.7	73	3.6
€1,250 to €1,499	133	6.6	121	6.0
€1,500 to €1,999	191	9.5	184	9.1
€2,000 to €2,499	229	11.4	217	10.8
€2,500 to €2,999	222	11.0	216	10.7
€3,000 to €3,499	140	7.0	151	7.5
€3,500 to €3,999	166	8.2	172	8.5
More than €4,000	253	12.6	271	13.5
No response	508	25.2	510	25.3
	2,015	100	2,015	100

Question G 19) East/West Germany

	Sample		Weighted	
Answers	Freq	Per cent	Freq	Per cent
West	1,533	76.1	1,618	80.3
East	482	23.9	397	19.7
	2,015	100	2,015	100