



No. 47-2013

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This version: 31 October 2013

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* Thanks to Matthias Neuenkirch, Florian Neumeier, and Matthias Uhl, as well as participants of the workshops 'Recent Developments in Central Bank Transparency and Central Bank Communication' in Aachen and 'Walking the Talk? Challenges for Monetary Policy in Uncertain Times' in Waterloo and at research seminars at the Deutsche Bundesbank and the RWTH Aachen University, for their helpful comments. The usual disclaimer applies.

**The German Public and its Trust in the ECB:
The Role of Knowledge and Information Search**

Abstract

In this paper, we analyse the effects of objective and subjective knowledge about monetary policy, as well as the information search patterns, of German citizens on trust in the ECB. We rely on a unique representative public opinion survey of German households conducted in 2011. We find that subjective and factual knowledge, as well as the desire to be informed, about the ECB foster citizens' trust. Specific knowledge about the ECB is more influential than general monetary policy knowledge. Objective knowledge is more important than subjective knowledge. However, an increasing intensity of media usage, especially newspaper reading, has a significantly negative influence on trust. We conclude that the only viable way for the ECB to generate more trust in itself is to spread monetary policy knowledge.

Keywords: ECB, Economic knowledge, German public attitudes, Institutional trust

JEL: D83, E52, E58

1. Introduction

The last 25 years have witnessed a worldwide surge in central bank independence (CBI). The European Central Bank (ECB), a supranational central bank, may be the most independent central bank of all, and is perhaps 'the culmination of this trend' (Hayo and Hefeker 2002, 653f.). Benefits of central bank independence include a reduction in political influence, more credible management of expectations, and the possibility of focussing on price stability (Eijffinger and de Haan 1996). Empirically, there is evidence of a negative relationship between CBI and inflation (Cukierman 2008).

However, delegating monetary policy to a small group of unelected central bankers contradicts democratic principles such as representation and accountability (Stiglitz 1998). Arguably, this delegation obligates the independent central bank to explain its decisions to the public, a duty that may be even more important in turbulent times, for instance, during the ongoing economic and financial crisis. When not only single commercial banks but entire European countries are stumbling and the ECB is forced to interfere, CBI has the potential 'to shift the blame for unpopular policies away from democratically elected governments' (Kaltenthaler et al. 2010, 1265). The Outright Monetary Transactions programme announced in August 2012, under which the ECB will buy unlimited amounts of sovereign bonds if necessary, is a good example of a controversial decision. This decision, affecting the lives of over 330 million people in the euro area, was made by 23 members of the Governing Council and thus arguably lacks democratic legitimacy. Transparency and accountability are hence the 'quid pro quo for that independence' in a democracy and 'it is the duty of independent central banks to be transparent and to communicate' (Trichet 2005). In other words, central bank transparency can be viewed as the 'tool that keeps central bankers accountable for their policy' (van der Cruisen and Eijffinger 2010, 388).

In this paper, we argue that the public's knowledge about monetary policy is a key factor in creating confidence in an independent central bank. Although the ECB engages in communication, e.g., it publishes the *Monthly Bulletin* and holds press conferences after monetary policy decisions, it is not at all clear whether this information is actually understood and processed appropriately by private households and small firm owners. Effective communication, however, is a two-way street, involving not only the sender but, just as crucially, the recipient. Thus, in order to assess monetary policy and hold the ECB accountable, the general public needs to be able to decode the information provided by ECB. This will require a basic knowledge of how the ECB works

and some understanding of monetary policy in general. In the end, knowledge might be a key factor in the ECB gaining public support and legitimating its independence: ‘the best way to strengthen trust, also during a financial crisis, is to increase the public’s knowledge about the central bank itself and its policies’ (Ehrmann et al. 2013, 798). Therefore, it is important to discover how much the public knows about the ECB and to analyse the influence of knowledge on the trust-building process. In addition, it is necessary to understand the role information search about monetary policy issues plays in the trust-building process. Do people perceive that they do not understand monetary policy? Do they feel the need to remedy that situation by engaging in information searches? If yes, which media are they using to gather information and how does that affect their trust in the ECB?

Our analysis is designed to answer these questions and by so doing, we contribute to several branches of the literature. We combine research on central bank transparency and accountability, economic knowledge, institutional trust, and central bank communication. Walstad (1997), Hayo (1999), Blinder and Krueger (2004), and van der Cruijssen et al. (2013) analyse the link between economic knowledge and public attitudes towards economic issues. Economic knowledge is found to significantly influence public opinion and appears to bring public opinion more in line with economic theory, e.g., that the responsibility for monetary policy should be left to an independent central bank run by experts and not by politicians. There are two papers that investigate knowledge about the ECB, but they are unrelated to the question of trust in a central bank. Van der Cruijssen and Eijffinger (2010) use 2007 Dutch survey data on knowledge about ECB transparency. They find that people who know more about the ECB perceive it as more transparent. Van der Cruijssen et al. (2010) rely on a 2009 survey of Dutch households that asked people about their knowledge of the ECB’s mandate. Knowledge levels are higher the more intense respondents’ media usage. Moreover, knowledge helps anchor inflation expectations at the level targeted by the ECB.

Several papers analyse trust in national or international institutions. Hudson (2006) assumes that a person’s trust in an institution is a function of his/her specific knowledge of it, which can be proxied by general education level. Hessami (2011) reveals that people who are familiar with a certain institution, are interested in political and economic news, and read newspapers on a regular basis are more likely to trust that institution. Mishler and Rose (2001) find the subjectively perceived political and economic performance of an institution to be an important determinant of trust in it. Mosch

and Prast (2008) show that trust in the financial sector in the Netherlands is higher for people who are aware of DNB's existence and its supervision of financial institutions. Some recent studies analyse trust in the ECB using Eurobarometer data. The first group of papers studies trust at a country-level based on averages of individual responses. Fischer and Hahn (2008) and Roth et al. (2012) find a trust-enhancing effect for per capita GDP growth, whereas inflation and unemployment diminish trust in the ECB. In a similar study, Wälti (2012) shows that trust in the ECB during crisis times decreased in countries where sovereign bond yields rose significantly. A second group of papers focuses on individual Eurobarometer responses. Farvaque et al. (2011) study trust in the ECB and conclude that socio-demographic determinants dominate macroeconomic ones, whereas Bursian and Fürth (2012) emphasise the role of macroeconomic conditions in the trust-building process in addition to individual socio-economic characteristics. Kaltenthaler et al. (2010) and Ehrmann et al. (2013) add a subjective and noisy measure of factual knowledge of the ECB to individual determinants of trust and find respondents who previously heard about the ECB to be more trusting of it. Finally, Blinder et al. (2008) provide a survey on central bank communication and discover a lacuna in the literature on the topic of central bank communication with the broad public.

Employing novel survey data for Germany, our paper links both individual monetary policy knowledge and information search to the literature that analyses citizens' trust in central banks. We make two novel contributions. First, this is the first analysis to consider three aspects of monetary policy knowledge: (i) subjective monetary policy information, (ii) objective knowledge about the ECB's primary objective and decision-making process, and (iii) general knowledge about monetary policy. Second, we link these knowledge issues with information-search-related indicators to discover determinants of German citizens' trust in the ECB. The empirical analysis is based on a specially designed, representative survey of more than 4,000 German households, conducted on our behalf in summer and autumn 2011 by Gesellschaft für Konsumforschung (GfK), one of the biggest private German institutes specialising in collecting public opinion data.

Methodically, we employ ordered logistic regressions to study the following research questions. First, does subjective and/or objective knowledge about the ECB and monetary policy in general influence trust in the central bank and, if so, what are the transmission mechanisms? Second, what type of knowledge about the ECB is especially important for the trust-forming process? Third, does a higher desire to be informed

about the ECB and intensity of media use affect trust in the ECB? Fourth, how does reading newspapers influence trust in the ECB?

The remainder of this paper is organised as follows. Section 2 introduces the data and the empirical methodology. Section 3 sets forth the results. Section 4 concludes.

2. Data and Empirical Methodology

2.1 Data and Descriptive Statistics

We use data from a unique survey of German households (population 14 years and older), conducted on our behalf by GfK. Fieldwork was done in July and October 2011, and involved completing a structured questionnaire during face-to-face interviews with the help of pen pads. Our sample is comprised of 4,122 observations.

The questionnaire includes four questions on economic knowledge.¹ To measure degree of subjective knowledge, respondents were asked to rate their own knowledge about the ECB from 1 ‘very bad’ to 5 ‘very good’. It turns out that the Germans do not claim to know much about the ECB. Only every tenth respondent declares his/her knowledge to be either good or very good, whereas 57 per cent think their knowledge is either bad or very bad.²

To measure factual knowledge, we use three questions, each accompanied by a choice of answers, only one of which is correct, and a ‘don’t know’ option. Two of the questions involve important ECB design features, i.e., its mandate and its independence. In the first of these ECB-related factual knowledge questions, people are asked to identify the ECB’s main policy objective. In the second, they are asked to identify who is responsible for setting the key interest rates in the euro area. Fifty per cent of our sample knows the ECB’s main objective; but only 34 per cent of respondents are aware of the fact that European governments do not have a say in setting the ECB’s key interest rates. Our third question deals with the general functioning of monetary policy and answers to it reveal even more ignorance. In framing the question, we briefly describe a scenario consisting of strong inflation expectations in the euro area. The respondent is then asked to decide whether the key interest rates should fall, rise, or remain constant. The vast majority of respondents decided to lower the interest rate in such a situation; only 20 per cent chose to increase the rate when facing future inflationary pressures.

¹ The complete questionnaire can be found in Table A2 in the Appendix.

² To show representative descriptive results for Germany, observations were weighted by gender, age, household size, city size, occupation, and state (Bundesland).

The questionnaire also includes questions about respondents' information search behaviour on monetary policy issues. First, we wanted to know whether and, if so, to what degree, our respondents wanted to be informed about the ECB. Respondents were asked to rank how important it is to them to be informed about the ECB on a scale from 1 'not important at all' to 5 'very important'. More than 30 per cent of Germans say that it is important or very important for them to be informed about the ECB; 37 per cent value this sort of information as not important or not at all important.

To assess how our respondents search for information about monetary policy issues, we asked interviewees about their use of several information channels: newspapers, magazines, radio, TV, internet, and friends and relatives. For each type, respondents were asked to specify whether they used it regularly, occasionally, or never. A notable proportion—32 per cent—indicate consulting none of the listed information channels for information about the ECB, but at least every second respondent uses newspapers occasionally or regularly for this purpose.

Finally, we wanted to know to what extent Germans trust the ECB and to this end asked the respondents to rate their trust of the ECB on a scale from 1 'no trust at all' to 5 'very much trust' (see Table 1 for the distribution of answers). We find German trust in the ECB to be relatively weak, as a majority of respondents (42 per cent) have no trust or no trust at all in the ECB, followed by 38 per cent who have a moderate degree of trust. Only 20 per cent of Germans in our sample have high or very high trust in the ECB.

Table 1: Distribution of Trust in the ECB

	Category	Frequency	Per cent	Cumulated
1	'No trust at all'	717	18	18
2	-	1,036	25	43
3	-	1,573	38	81
4	-	674	16	97
5	'Very high trust'	122	3.0	100
		<u>4,122</u>	<u>100.00</u>	

Notes: Frequencies and per cent weighted by gender, age, household size, city size, occupation, and state (Bundesland) to show representative results for the German population.

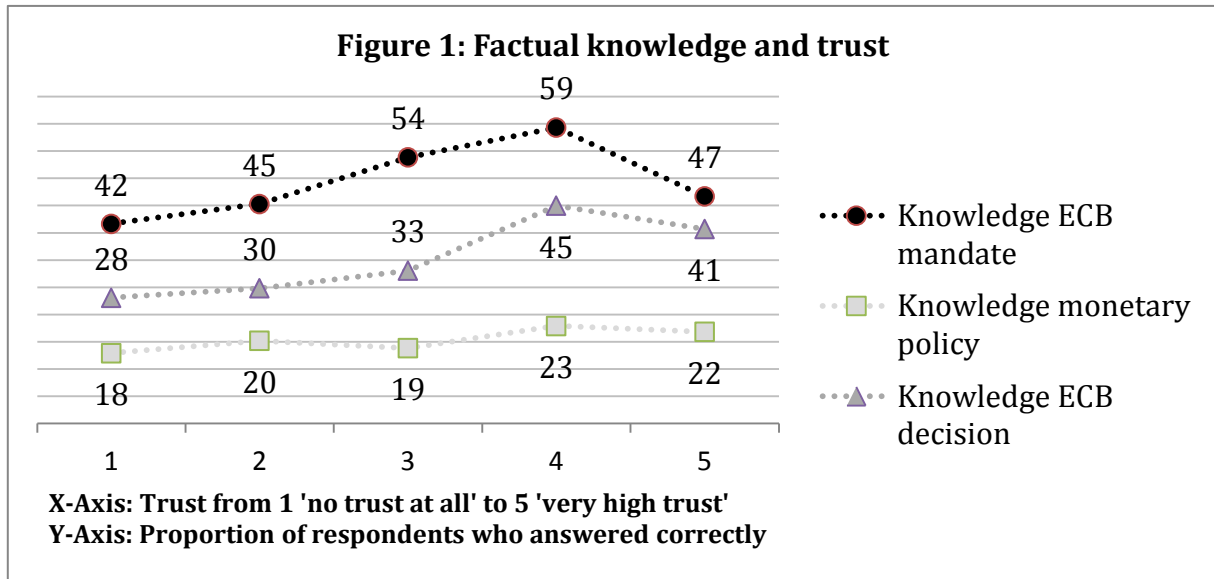
We commence our analysis of the relationship between knowledge and information search, on the one hand, and trust, on the other hand, using mean-comparison tests. Table 2 shows average trust in the ECB for different magnitudes of information desire and newspaper usage and both subjective as well as factual knowledge.

Desire to be informed	Not important (at all)	2.10	}*
	Somewhat important	2.72	
	(Very) important	3.20	
Newspapers	Never	2.39	}*
	Occasionally/regularly	2.86	
Knowledge subjective	(Very) bad	2.33	}*
	Fair	2.89	
	(Very) good	3.55	
Knowledge ECB mandate	Wrong answer/Don't know	2.52	}*
	Correct answer	2.74	
Knowledge monetary policy	Wrong answer/Don't know	2.62	}
	Correct answer	2.69	
Knowledge ECB decision	Wrong answer/Don't know	2.56	}*
	Correct answer	2.79	

Notes: Weighted means. } denotes significant differences ($\alpha = 0.05$).*

Respondents who value information about the ECB as important and very important have significantly more trust in the ECB on average. Similarly, those people who specify that it is somewhat important to them to be informed about the ECB are significantly more trustful on average than those who do not care that much about being informed. Searching for information about the ECB by reading newspapers from time to time or more frequently fosters trust in the ECB. There is a similar link between trust and subjective knowledge, as those who claim to have good or very good knowledge are significantly more trustful than people who rate their own knowledge as fair. Furthermore, respondents rating their subjective knowledge as fair show higher trust on average than those with bad or very bad subjective knowledge. Factual knowledge and trust are positively related, too: those who are aware of the ECB's mandate and independence have significantly more trust in the ECB on average than those who are ignorant of these facts. We do not find a significant effect for those with knowledge about monetary policy in general. Figure 1 is a more detailed illustration of the relationship between factual knowledge and trust. The proportion of respondents who correctly answered the two knowledge questions about the ECB is generally increasing with high-

er levels of trust. However, the proportion of correct answers is decreasing for the highest trust level.



To summarise our descriptive analysis, we expect indicators of information search and subjective and objective knowledge to be positively related to trust in the ECB. Our expectation is that those respondents who desire information about the ECB, use media to find such information, claim to have better knowledge, and are factually aware of the ECB's mandate and independence will have a relatively higher degree of trust in the ECB.

3.2 The Role of Generalised Institutional Trust

A problem when measuring trust in specific institutions is that people's trust in one specific institution is not independent of their trust in other institutions. For instance, Torgler (2008) concludes that trust in the UN is highly influenced by trust in the parliament and the legal system. More generally, Mishler and Rose (2001) emphasise that both cultural as well as institutional theories of political trust assume a generalised sense of trust or distrust across different institutions. They use a principal component analysis of trust in 11 civil and political institutions in post-communist countries to confirm that trust or distrust in institutions tends to be the same across institutions. One factor is found to account for more than 40 per cent of the total variance in the 11 measures of trust. Mishler and Rose (2001) go on to show that the manner in which citizens individually evaluate the performance of a specific institution has substantial effects on trust (see also Hudson 2006). Based on these findings, we include a variable measuring generalised institutional trust, so that the other regressors pertain specifical-

ly to trust in the ECB. A respondent's overall institutional trust is represented by the first principal component of trust in Bundestag, EU, UN, Bundesbank, and IMF. Results of the principal component analysis and (squared) factor loadings of the first principal component are shown in Table 3.

The eigenvalue of the first component is 3.6 (all other components show eigenvalues far below 1) and it captures 72 per cent of the total variation. Squared factor loadings indicate that this component explains about 20 per cent of the variance of trust in every institution. We label this component 'general institutional trust' and employ it as an additional variable in our regression models explaining trust in the ECB.

Principal components/correlation			
<u>Component</u>	<u>Eigenvalue</u>	<u>Difference</u>	<u>Proportion</u>
1	3.61	3.17	0.72
2	0.44	0.07	0.09
3	0.37	0.05	0.08
4	0.33	0.08	0.07
5	0.24		0.05
Loadings of Component 1			
<u>Variable</u>	<u>Loadings</u>	<u>Squared Loadings</u>	
Trust Bundestag	0.44	0.19	
Trust EU	0.46	0.21	
Trust UN	0.43	0.18	
Trust Bundesbank	0.45	0.20	
Trust IMF	0.46	0.21	

3.3 Econometric Methodology

To analyse the influence of our knowledge and communication variables, as well as the influence of generalised institutional trust and other control variables, on trust in the ECB, we estimate the following model:

$$t_i^* = \beta_1 K_i + \beta_2 C_i + \beta_3 X_i + \beta_4 m_i + \beta_5 l_i + \varepsilon_i$$

where t_i^* denotes the latent continuous variable 'trust in the ECB', K_i is a vector of knowledge variables, and C_i a vector of information search variables. X_i represents a vector of socio-demographic variables: age, gender, respondent is living with children in his/her household, state (Bundesland), city size, education, and household net income. We include m_i to control for possible differences between the two phases of fieldwork. It

takes the value 1 if the interview was conducted in October. i_i denotes generalised institutional trust and ε_i is the error term.³ As the dependent variable contains five ordered responses from 1 ‘no trust at all’ to 5 ‘very much trust’, we use ordered logistic regressions to estimate the model.

To address our four research questions, we estimate eight model specifications that differ in the dimensions of factual knowledge, included in K_i , and information use, included in C_i . Table 4 provides an overview of the estimated specifications.

	<u>A1</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>
K_i	Knowledge sum	Knowledge sum	Knowledge sum	Knowledge sum
C_i	Info use	Info use	Newspapers	Newspapers
X_i	√	√	√	√
m_i	√	√	√	√
i_i		√		√
	<u>C1</u>	<u>C2</u>	<u>D1</u>	<u>D2</u>
K_i	All knowledge variables	All knowledge variables	All knowledge variables	All knowledge variables
C_i	Info use	Info use	Newspapers	Newspapers
X_i	√	√	√	√
m_i	√	√	√	√
i_i		√		√

All specifications contain socio-demographic controls X_i as well as the survey wave dummy m_i . In general, we differentiate between specifications controlling (Models A2, B2, C2, D2) or not controlling (Models A1, B1, C1, D1) for generalised institutional trust i_i . The latter specifications will allow us to compare our findings with those from other studies on trust in the ECB that do not control for generalised institutional trust.

To answer our first research question—Does subjective and/or objective knowledge about the ECB and monetary policy in general influence trust in the central bank?—we include indicator variables for the sum of correctly answered questions, which assume values of 1 if one, two, or three questions, respectively, are correctly answered (Models A1, A2, B1, B2). Our second research question—What type of knowledge about the ECB is especially important for the trust-forming process?—is addressed by using three different dummy variables that take the value 1 if the respective knowledge question was

³ Univariate summary statistics for all variables included in the regressions can be found in Table A1 in the Appendix.

answered correctly (Models C1, C2, D1, D2). Our third research question, which has to do with the influence of general information search, is measured by the overall use of media (Info use), ranging from 0 (none of the listed information channels is ever used to find out information about the ECB) to 6 (all listed information channels are used at least occasionally) (Models A1, A2, C1, C2). Finally, to address our fourth research question, we include a dummy for respondents who read newspapers occasionally or regularly for the purpose of informing themselves about the ECB (Newspapers) (Models B1, B2, D1, D2).

4. Empirical Results

We start our analysis by estimating Model A1 in Table 4. The results are presented in Table 5. Both subjective and objective knowledge exert a significantly positive influence on trust in the ECB. Compared to the base group with bad or very bad subjective knowledge, trust is higher for respondents who rate their own knowledge as fair and even higher for those who claim to have good or very good knowledge. Considering factual knowledge, trust increases with number of correct answers. However, only the most knowledgeable group shows trust that is significantly higher than that of respondents who answered none of the questions correctly.

Among our information search variables, we find that desire to be informed about the ECB has a significantly positive influence on trust. This trust-enhancing effect is even larger for respondents who express the greatest information desire. We find no clear relationship between media use and trust, as people who rely on more media channels to inform themselves are not significantly more trustful than people who use only a few or none.

Various socio-demographic variables exert significant influence on trust in the ECB, according to Model A1. Trust initially decreases with age, but the effect reverses after 65 years. Women are significantly more trustful than men. Living together with children deteriorates trust in the ECB, as does living in East Germany. People in urbanised regions are more trustful than people in rural regions, as we find highly significant and rising coefficients for locations with more residents. Well-educated people tend to have higher trust in the ECB. However, the positive education effect reaches its maximum for respondents who finished secondary school. Trust in the group with a university degree is lower than that in the secondary school group.

Table 5: Ordered Logistic Regressions Explaining Trust in the ECB

<u>Variable</u>	<u>Category</u>	<u>A1</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>
Knowledge subjective	Fair	0.49 ***	0.18 *	0.47 ***	0.15
	(Very) good	1.7 ***	0.47 ***	1.67 ***	0.43 **
Knowledge sum	1 correct answer	0.1	0.15 *	0.09	0.15 *
	2 correct answers	0.12	0.35 ***	0.1	0.36 ***
	3 correct answers	0.61 ***	0.77 ***	0.59 ***	0.77 ***
Info desire	Somewhat important	1.02 ***	0.4 ***	1 ***	0.38 ***
	(Very) important	1.76 ***	1.02 ***	1.74 ***	0.98 ***
Info use		0.01	-0.06 ***		
Newspapers	Yes			0.16 **	-0.2 **
Age	Age	-0.03 **	0.02 *	-0.03 **	0.02 *
	Age squared	0.0002 *	-0.0003 **	0.0002 *	-0.0003 ***
Gender	Female	0.13 *	-0.02	0.14 **	-0.02
Children in HH	Yes	-0.18 **	-0.11	-0.19 **	-0.11
Region	East Germany	-0.33 ***	-0.07	-0.32 ***	-0.08
City size	5,000–20,000	0.24 **	0.04	0.25 **	0.04
	20,000–100,000	0.3 ***	-0.06	0.3 ***	-0.05
	≥ 100,000	0.36 ***	-0.1	0.36 ***	-0.1
Education	Apprentice	0.32 **	0.25 *	0.31 **	0.24 *
	Junior high	0.35 **	0.13	0.34 **	0.12
	Secondary	0.54 ***	0.11	0.52 ***	0.09
	University	0.43 **	0.09	0.41 **	0.06
HH net income	€1,500–2,500	0.18 **	0.01	0.17 **	0.01
	€2,500–3,500	0.25 **	0.04	0.24 **	0.04
	≥ 3,500 €	0.32 ***	0.13	0.31 ***	0.13
October	Yes	-0.2 ***	-0.06	-0.2 ***	-0.07
Generalised institutional trust			1.59 ***		1.59 ***
	N	3170 obs	3170 obs	3170 obs	3170 obs
	Pseudo R²	0.11	0.44	0.11	0.44

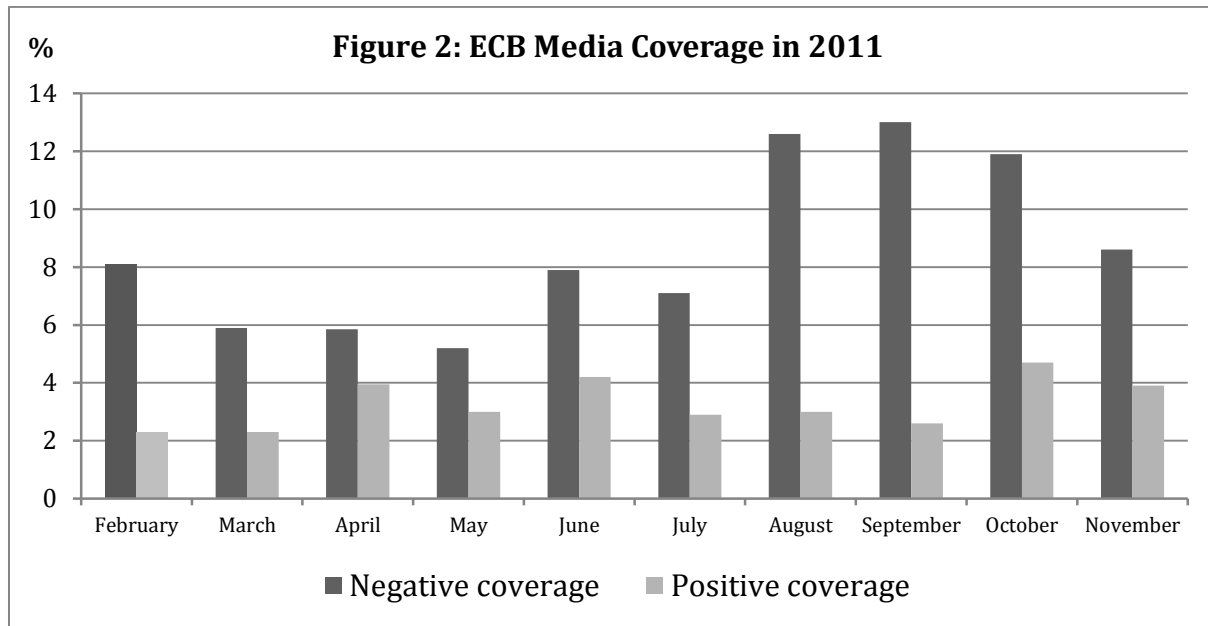
Notes: Coefficients of ordered logistic regressions are shown. Dependent variable: Trust in the ECB from 1 'no trust at all' to 5 'very much trust'. Huber/White standard errors are used. Base categories are as follows: knowledge subjective: (very) bad; knowledge sum: 0 correct answers; info desire: not important and not at all important; newspapers: never used; gender: male; children in HH: no children; city size: < 5,000; education: primary; HH net income < €1,500; October: July. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

One explanation might be that university students are more likely to scrutinise and criticise specific actions rather than simply trust that a public institution is always doing the right thing. Trust increases with income, as we find significant and increasing positive coefficients for higher household net incomes. Finally, we discover that October respondents are relatively less trusting than those who completed the questionnaire in July. This finding is in line with other studies on ECB trust. Wälti (2012), Roth et al. (2012), Bursian and Fürth (2012), and Ehrmann et al. (2013) all discover a general decline in trust in the ECB over the course of the financial crisis. However, as we will argue later, this conclusion may be premature.

In Model A2, we introduce generalised institutional trust as a further control variable. It shows a significant and considerable positive influence on trust in the ECB, thus supporting the hypothesis that trust in a specific institution is partly determined by overall institutional trust. Although subjective knowledge is still positively related to trust, the magnitude of the effect is dramatically less; it is now only about one-third of the coefficient estimated in Model A1. In contrast, the influence of factual knowledge is stronger in Model A2. Respondents who answered one question correctly have significantly more trust in the ECB than those who know nothing, and the impact of knowledge on trust further increases with two and three correct answers. Similar to Model A1, the desire to be informed has a positive influence on trust in the ECB, but the magnitude of this effect is now about half as great. The effect of the use of information channels changes even more remarkably. When controlling for generalised institutional trust, we find a highly significant negative influence of information use on trust in the ECB. Thus, the more channels used to be informed about the ECB, the less the institution is trusted. Our interpretation of this finding is based on the negative media coverage of the ECB that occurred during the financial crisis in Germany. Media Tenor, a renowned media research institute, analysed approximately 27,000 reports on the ECB and its directorate in 2011 to gauge the tone of media coverage. Figure 2 shows the share of positive ECB coverage (green bars) and negative ECB coverage (red bars) for each month. The figure demonstrates that there were many more negative reports on the ECB than positive ones, especially during our fieldwork period.

Considering the results for our control variables, generalised institutional trust dominates the influence of socio-demographic characteristics. In Model A2, age still exerts a significant influence, but in the opposite direction. Now, trust in the ECB increases until the age of 40 and then begins to decrease. This finding supports theoretical expla-

nations of the evolution of an inflation culture in Germany, either based on emphasising social processes (Tognato 2012) or individual experiences (Ehrmann and Tzamourani 2012).



Notes: Proportions of positive media coverage (green bars) and negative media coverage (red bars) between February and November 2011, based on 26,984 reports on the ECB and its directorate. Source: Media Tenor.

The Model A2 results do not indicate that October respondents have lower trust in the ECB than July respondents. Thus, there appears to be a drop in generalised institutional trust during the summer and autumn of 2011, but no decline in specific trust in the ECB. While Ehrmann et al. (2013) and Farvaque et al. (2011) control for trust in the European Commission, and Fischer and Hahn (2008) include trust in the national parliament and government as well as trust in the EU, Bursian and Fürth (2012), Roth et al. (2012), and Wälti (2012) do not control for trust in other institutions. Our finding that generalised institutional trust drops but trust in the ECB remains constant casts doubt on whether the latter studies capture the specific dynamics of trust in the ECB. Thus, it seems likely that their estimates reflect a general decline of trust following the widespread consequences of the recent financial, economic, and debt crises rather than a specific loss of trust in the ECB.

We now turn to Models B1 and B2. Here, the results on the information search indicators are particularly interesting. Instead of overall media use, we now focus on the effect of reading newspapers to inform oneself about the ECB. Model B1 suggests that reading newspapers is positively related to trust, but when we control for generalised institutional trust in Model B2, the effect reverses. Reading newspapers has a signifi-

cantly negative influence on trust in the ECB. This finding is again in line with Media Tenor’s study of ECB media coverage. The other results from Models B1 and B2 are similar to those from Models A1 and A2, respectively.

<u>Variable</u>	<u>Category</u>	<u>C1</u>	<u>C2</u>	<u>D1</u>	<u>D2</u>
Knowledge subjective	Fair	0.49 ***	0.17 *	0.46 ***	0.15
	(Very) good	1.7 ***	0.47 ***	1.67 ***	0.43 **
Knowledge	ECB mandate	0.14 **	0.19 **	0.13 *	0.19 **
	ECB decision	0.21 ***	0.39 ***	0.2 ***	0.39 ***
	Monetary policy	-0.03	0.01	-0.04	0.01
Info desire	Somewhat important	1 ***	0.38 ***	0.99 ***	0.36 ***
	(Very) important	1.75 ***	1.01 ***	1.73 ***	0.97 ***
Info use		0.01	-0.06 ***		
Newspapers	Yes			0.16 **	-0.2 **
Age	Age	-0.03 **	0.02 *	-0.03 **	0.02 *
	Age squared	0.0002 *	-0.0003 **	0.0002 *	-0.0003 ***
Gender	Female	0.13 *	-0.01	0.14 **	-0.01
Children in HH	Yes	-0.17 **	-0.09	-0.18 **	-0.09
Region	East Germany	-0.33 ***	-0.07	-0.32 ***	-0.08
City size	5,000–20,000	0.24 **	0.02	0.24 **	0.03
	20,000–100,000	0.29 ***	-0.08	0.29 ***	-0.08
	≥ 100,000	0.37 ***	-0.1	0.37 ***	-0.1
Education	Apprentice	0.33 **	0.25 *	0.32 **	0.24 *
	Junior high	0.35 **	0.12	0.34 **	0.11
	Secondary	0.54 ***	0.1	0.52 ***	0.09
	University	0.44 **	0.09	0.41 **	0.06
HH net income	€1,500–2,500	0.17 *	0	0.16 *	0
	€2,500–3,500	0.24 **	0.02	0.23 **	0.02
	≥ 3,500 €	0.32 ***	0.12	0.3 ***	0.12
October	Yes	-0.21 ***	-0.06	-0.2 ***	-0.07
Generalised institutional trust			1.59 ***		1.59 ***
	N	3170 obs	3170 obs	3170 obs	3170 obs
	Pseudo R²	0.11	0.44	0.11	0.44

Notes: See notes to Table 5, except base categories are as follows: ECB mandate, ECB decision, and monetary policy: wrong answer/don’t know.

Models C1 to D2 investigate the influence of knowledge in more detail by analysing the impact of every knowledge question separately. The results are shown in Table 6. Knowledge about specific ECB institutional details has a significantly positive impact on trust, whereas knowledge about the functioning of monetary policy in general does not matter in the trust-forming process. In all four specifications, respondents with knowledge about the ECB's mandate as well as those with knowledge regarding the ECB decision-making process are significantly more trustful than those who did not know the correct answer. In contrast, people with basic knowledge about the central bank interest rate reaction function with respect to expected inflation do not exhibit a significantly higher degree of trust. The results for subjective knowledge and the desire to be informed do not change in Models C2 and D2 compared to Models A1 to B2. The results for our control variables are also similar to those derived from Models A1 to B2.

To get an impression of the magnitude of the influence of knowledge and information search on trust in the ECB, selected average marginal effects for these variables are shown in Table 7.⁴ In general, the sign of the average marginal effects changes between outcomes 2 and 3. More knowledge and a higher desire to be informed lower the probability of having no trust at all (outcome 1) or little trust (outcome 2) in the ECB, but they increase the likelihood of having moderate trust (outcome 3), high trust (outcome 4), or very high trust (outcome 5). In contrast, overall media use and reading newspapers increases the probability for (very) low trust and decreases the probability for moderate and (very) high trust. Reflecting the nonlinear relationship of trust displayed in Figure 1, the—in absolute terms—largest marginal effects are found for outcome 4.

Desire to be informed has the largest influence on trust in the ECB. In both Models A2 and D2, a respondent who values information about the ECB as (very) important has a more than 6 percentage point (pp) higher probability of having high trust (outcome 4) in the ECB compared to a respondent stating that information about the ECB is not important (at all) for him/her. Similarly, the probability of having no trust at all (outcome 1) is lowered by about 6pp compared to the base group.

Factual knowledge has a notable impact as well. In Model A2, the probability of having high trust in the ECB (outcome 4) increases by almost 5 pp if a respondent answered all three knowledge questions correctly compared to a respondent who did not

⁴ Average marginal effects for all specifications and variables are available on request.

know any of the answers. Someone with two correct answers has a more than 2 pp higher probability of exhibiting high trust.

		<u>Model A2</u>				
<u>Variable</u>	<u>Category</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Knowledge subjective	Fair	-1.06 *	-0.74 *	0.39 *	1.10 *	0.31 *
	(Very) good	-2.73 ***	-1.98 ***	0.80 ***	3.02 **	0.89 **
Knowledge sum	1 correct answer	-0.92 *	-0.61 *	0.38 *	0.90 *	0.26 *
	2 correct answers	-2.11 ***	-1.43 ***	0.76 ***	2.14 ***	0.64 ***
	3 correct answers	-4.42 ***	-3.17 ***	1.13 ***	4.91 ***	1.55 ***
Info desire	Somewhat important	-2.53 ***	-1.77 ***	1.31 ***	2.43 ***	0.56 ***
	(Very) important	-6.04 ***	-4.58 ***	2.23 ***	6.67 ***	1.71 ***
Info use		0.39 ***	0.26 ***	-0.14 ***	-0.39 ***	-0.12 ***
		<u>Model D2</u>				
<u>Variable</u>	<u>Category</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Knowledge subjective	Fair	-0.90	-0.62	0.32	0.93	0.26
	(Very) good	-2.47 **	-1.78 **	0.73 ***	2.73 **	0.80 **
Knowledge	ECB mandate	-1.15 **	-0.78 **	0.41 **	1.17 **	0.35 **
	ECB decision	-2.31 ***	-1.61 ***	0.74 ***	2.44 ***	0.74 ***
	Monetary policy	-0.04	-0.03	0.01	0.04	0.01
Info desire	Somewhat important	-2.30 ***	-1.60 ***	1.17 ***	2.21 ***	0.51 ***
	(Very) important	-5.73 ***	-4.33 ***	2.10 ***	6.33 ***	1.63 ***
Newspapers	Yes	1.21 **	0.81 **	-0.42 **	-1.22 **	-0.37 **

Note: Average marginal effects of ordered logistic regressions for Models A2 and D2 are shown. All effects are multiplied by 100 for illustration reasons. For dummy variables, the effect of a discrete change is given. See also notes to Tables 5 and 6.

Model D2 gives the effects for the different types of factual knowledge. The largest positive effects are found for knowledge about the ECB's independence in making interest rate decisions. A respondent who answered this question correctly has an al-

most 2.5 pp higher probability of choosing high trust (outcome 4) compared to a respondent who did not know the correct answer. People who know about the ECB's inflation mandate have a more than 1 pp higher probability of having high trust. The probability of having no trust at all (outcome 1) decreases by more than 2 pp when the respondent has knowledge about ECB interest rate decisions and by more than 1 pp for mandate knowledge (Model D2).

Considering subjective knowledge, the probability of having high trust (outcome 4) is roughly 3 pp (Models A2 and D2) higher for respondents who rated their own knowledge as (very) good compared to those with (very) bad subjective knowledge. For Model D2, we find no significant effects for people with fair subjective knowledge, and these effects are significant only at a 10 per cent level in Model A2. Thus, the marginal effects associated with very good objective knowledge are of greater magnitude and more significant than those estimated for very good subjective knowledge.

We also find significant effects for media use, but the magnitude of these effects is generally smaller in absolute terms. People who use more media channels to inform themselves about the ECB have an almost 0.5 pp higher probability of answering no trust at all (outcome 1) compared to someone who uses media less intensively (Model A2). The influence of negative ECB media coverage on trust is apparent in Model D2, as those respondents who rely on newspapers to keep informed have a more than 1 pp higher probability of declaring no trust at all in the ECB (outcome 1).

5. Conclusion

In this paper, we study the effects of objective and subjective knowledge about European monetary policy and information search on degree of trust in the ECB. We rely on a unique representative survey of German households (population 14 years and older) conducted in summer and autumn of 2011 by GfK. Factual knowledge is measured with three multiple-choice questions. Two of them deal with specific institutional details of the ECB, namely, its main policy objective and its independence in setting interest rates. The third question has to do with the functioning of monetary policy in general. The impact of information search is measured by asking respondents about their own desire to be informed about the ECB as well as the use of different media channels, such as newspapers, for informational purposes. Ordered logistic regressions are used to explain trust in the ECB by employing various knowledge and information indicators as well as a

set of control variables that includes socio-demographic characteristics and a measure for generalised institutional trust. Our findings are as follows.

First, both subjective and objective knowledge have significant influence on trust in the ECB. People who rate their own knowledge about the ECB as fair are more trustful compared to those with bad or very bad subjective knowledge. Respondents who claim to have good or very good knowledge about the ECB are even more trustful. The probability of having high trust is roughly 3 percentage points higher for respondents who rated their own knowledge as good or very good compared to those with bad and very bad subjective knowledge.

Factual knowledge has a significantly positive effect, too. Respondents who answered more knowledge questions correctly have significantly more trust in the ECB than those with less factual knowledge. A person answering all knowledge questions correctly has an almost 5 percentage point higher probability of having high trust in the ECB compared to a person who failed to answer any question correctly. Thus, compared to subjective knowledge, objective knowledge is of greater economic, as well as statistical, significance.

Second, not all types of objective knowledge are equally important for the trust-building process. We find significantly positive influences for knowledge about the ECB's mandate and independence, whereas knowledge about the general functioning of monetary policy seems irrelevant.

Third, a person's information search behaviour is a key determinant of trust in the ECB. The more a respondent values information about the ECB, the higher is his/her trust in it. People with a moderate desire to be informed about the ECB are more trustful than people with a weak or very weak desire to be informed; even more trustful are people who rank information about the ECB as important or very important. The latter have an over 6 percentage point higher probability of answering that they have high trust in the ECB. Somewhat paradoxically, however, the people who use a greater number of media channels to inform themselves about the ECB have less trust in the institution than those who use just a few or none media channels.

Fourth, reading newspapers has a particularly negative influence on trust in the ECB. Respondents who read newspapers at least occasionally to inform themselves about the ECB are significantly more distrustful of it. These findings can be explained by looking at the tone of ECB media coverage at the time of our fieldwork. Media Tenor counted many more negative reports about the ECB than positive ones in 2011. Thus,

during times of negative reporting, media use in general and reading newspapers in particular appears to erode trust in the ECB.

Fifth, considering our control variables, generalised institutional trust is found to be a key determinant of specific trust in the ECB and dominates most of our socio-demographic control variables other than age, which has a negative influence. Theory regarding the evolution of an inflation culture in Germany, either based on emphasising social processes or individual experiences, helps explain this result. Our findings strongly suggest that estimates found in some of the existing studies on trust in the ECB (Bursian and Fürth 2012, Roth et al. 2012, and Wälti 2012) may be severely biased, as they do not control for this influence. Thus, research on trust in a specific institution should systematically control for generalised institutional trust.

Sixth, controlling for generalised institutional trust severely reduces the influence of subjective knowledge about the ECB, whereas it somewhat strengthens the effect of objective indicators. Moreover, since no other study on trust in the ECB includes an objective knowledge indicator, the results in the extant literature likely underestimate the overall impact of knowledge.

To summarise, we find that both subjective and objective knowledge about the ECB fosters trust in it, whereas information search during periods of dominantly negative media reporting has a negative influence. It seems likely that a well-trusted central bank will receive more public support in times of crises, i.e., when it has to implement unpopular decisions or is in conflict with governments over appropriate monetary policy. When it comes to what can be done to increase trust in the central bank and thus, it is hoped, public support of it, we note that since it is unlikely that the ECB can exert much control over media reporting, its only course of action is to somehow increase people's knowledge of its workings and function.

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Appendix

Table A1: Summary Statistics

<u>Variable</u>	<u>Description</u>	<u>Obs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Std. Dev.</u>
Trust	Trust in the ECB	4,122	1 'no trust at all'	5 'very high trust'	2.62	1.04
Knowledge subjective	Subjective knowledge on the ECB	4,122	1 '(very) bad'	3 '(very) good'	1.53	0.67
Knowledge sum- ledge	Number of correct answers to three factual knowledge questions	4,122	0 '0 correct answers'	3 '3 correct answers'	1.03	0.88
Knowledge ECB mandate	Correct answer to factual knowledge question 1	4,122	0 'wrong answer/don't know'	1 'correct answer'	0.50	0.50
Knowledge mone- tary policy	Correct answer to factual knowledge question 2	4,122	0 'wrong answer/don't know'	1 'correct answer'	0.19	0.39

Table A1 continued						
Knowledge ECB decision	Correct answer to factual knowledge question 3	4,122	0	1	0.34	0.47
			'wrong answer/don't know'	'correct answer'		
Info desire	Desire to be informed about the ECB	4,122	1	3	1.94	0.82
			'not important (at all)'	'(very) important'		
Info use	Number of information channels used	4,122	0	6	2.35	2.05
			'0 channels'	'6 channels'		
Newspapers	Reading newspapers at least occasionally	4,122	0	1	0.52	0.50
			'never'	'occasionally/regularly'		
Age		4,122	14	97	47.84	17.89
Age squared		4,122	196	9,409	2608.41	1758.09
Gender		4,122	0	1	0.55	0.50
			'male'	'female'		

Table A1 continued						
Children in HH	There are children living in the household of the respondent	4,122	0	1	0.23	0.42
			'no children'	'children'		
Region		4,122	0	1	0.23	0.42
			'West Germany'	'East Germany'		
City size	Number of residents, grouped	4,122	1	4	2.69	1.08
			'up to 4,999'	'100,000 and more'		
Education	Educational background, grouped	4,055	1	5	2.82	1.03
			'primary school'	'university'		
HH net income	Household net income, grouped	3,196	1	4	2.26	1.02
			'up to 1,499 Euro'	'3,500 Euro and more'		
October	Date of fieldwork	4,122	0	1	0.49	0.50
			'July'	'October'		
Generalised institutional trust	Generalised institutional trust, based on a principal component analysis	4,122	-3.60	5.01	0.00	1.90

Table A2: Questionnaire**Knowledge questions****Subjective knowledge (Knowledge subjective)**

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 bad. Value 5 means that your knowledge is very good. You may grade your opinion with the values in between.

- 1 'very bad'
- 2
- 3
- 4
- 5 'very good'

Factual knowledge question 1 (Knowledge ECB mandate)

Which of the following objectives is from your point of view the main objective of the ECB? The main objective of the ECB is to ...

- ... promote growth in the Euro area
- ... fight unemployment in the Euro area
- ... maintain price stability in the Euro area
- ... provide credit to European Union member states
- ... control the euro/US dollar exchange rate
- Don't know

Factual knowledge question 2 (Knowledge monetary policy)

Private banks borrow liquidity from the 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?

- Decrease interest rate
- Keep interest rate constant
- Increase interest rate
- Don't know

Factual knowledge question 3 (Knowledge ECB decision)

Who is responsible for setting this interest rate?

- The ECB, independently of euro area governments
- The ECB, euro area governments have to agree afterwards
- The ECB together with euro area governments
- The euro area governments, with the ECB executing the decisions
- Don't know

Table A2 continued

Communication questions**Desire to be informed (Info desire)**

How important is it for you personally to be informed about the following institutions? Value 1 means that it is not important at all for you to be informed. Value 5 means that it is very important for you to be informed. You may grade your opinion with the values in between.

	1	2	3	4	5
	<i>'not important at all'</i>			<i>'very important'</i>	
German Bundestag	()	()	()	()	()
European Union	()	()	()	()	()
United Nations	()	()	()	()	()
German Bundesbank	()	()	()	()	()
European Central Bank	()	()	()	()	()
International Monetary Fund	()	()	()	()	()

Use of information channels (Info use, Newspapers)

How many times do you use the following channels to inform yourself about the ECB?

	1	2	3
	<i>'never'</i>	<i>'occasionally'</i>	<i>'regularly'</i>
Newspapers	()	()	()
Magazines	()	()	()
Radio	()	()	()
Television	()	()	()
Internet	()	()	()
Relatives/friends/colleagues	()	()	()

Trust questions (ECB trust, Generalised institutional trust)

To what extent do you trust the following institutions? Value 1 means that you have no trust at all. Value 5 means that you have very much trust. You may grade your opinion with the values in between.

	1	2	3	4	5
	<i>'no trust at all'</i>			<i>'very much trust'</i>	
German Bundestag	()	()	()	()	()
European Union	()	()	()	()	()
United Nations	()	()	()	()	()
German Bundesbank	()	()	()	()	()
European Central Bank	()	()	()	()	()
International Monetary Fund	()	()	()	()	()