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# Where do they care?

## The ECB in the media and inflation expectations\*

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### Abstract

This paper examines how news coverage of the European Central Bank (ECB) affects consumer inflation expectations in the four largest euro area countries. Utilizing a unique dataset of multilingual European news articles, we measure the impact of ECB-related inflation news on inflation expectations. Our results indicate that German and Italian consumers are more attentive to this news, whereas in Spain and France, we observe no significant response. The research underscores the role of national media in disseminating ECB messages and the diverse reactions among consumers in different euro area countries.

**JEL-codes:** D80, E32, E66

**Keywords:** ECB, Inflation expectations, News coverage, Textual analysis

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# 1 Introduction

Monetary policy involves managing inflation expectations of economic agents. To this end, communication has become an increasingly important tool for central bankers (Blinder et al., 2008), who communicate through various channels, including press conferences, statements, speeches, and interviews. However, economic agents typically receive this communication indirectly through the news media, which play a crucial role in transmitting central bank communication to financial markets and the wider public (Berger et al., 2011; Hayo and Neuenkirch, 2012, 2015) and may help households form expectations (Larsen et al., 2021). The European Central Bank (ECB) faces a particular challenge in its communication: The currency union is characterized by considerable heterogeneity in terms of economic conditions and the impact monetary policy has on them (Corsetti et al., 2022), perceptions of the ECB (Bergbauer et al., 2020), and cultural aspects such as language. This emphasizes the role of the national media in transmitting the central bank’s messages and influencing how people form their expectations.

This paper studies the potential heterogeneity in agents’ reactions to news about the ECB among euro area member states. We construct a novel dataset of economic newspaper articles covering the ECB from the four major euro area countries and identify an inflation topic in this news coverage. Employing country-level structural vector autoregressions, we analyze whether national inflation expectations react to an increase in national ECB-related inflation news. Our results indicate that inflation expectations increase in Germany and Italy when there is an unexpected rise in ECB inflation news, suggesting that consumers pay attention to news coverage about the ECB in those countries, whereas no significant response is observed in France and Spain. This may be due to differences in knowledge of or interest in the ECB, or to variations in economic conditions, especially labor market characteristics.

Our findings provide a first insight into the heterogeneity of consumer reactions to ECB communication as picked up in the news and suggest that the ECB may have to adapt its messages in order to reach the entire population of the euro area in equal measure. Therein, our research contributes to the broader literature on the transmission of monetary policy in the euro area and the perception of central bank communication.

## 2 Data and methodology

### 2.1 News data

Our original dataset comprises all articles mentioning the ECB from the major daily economic newspaper of each of the four largest euro area economies: The Handelsblatt (Germany), Il Sole 24 Ore (Italy), Les Echos (France) and El País/Cinco días (Spain), covering the period from January 1999 to July 2022. In order to ensure that the included articles are specifically about the ECB (rather than just mentioning it in passing), we select articles in which at least one in 100 words is *European Central Bank* or *ECB*. The resulting dataset contains approximately 60,000 articles (Table 1). For our analysis, we define total volume of ECB news coverage as the number of articles per country and month.

The news articles are written in the native language of each country, i.e. in German, Italian, French and Spanish, respectively. Whilst this is a desirable feature for the identification of heterogeneity among euro area

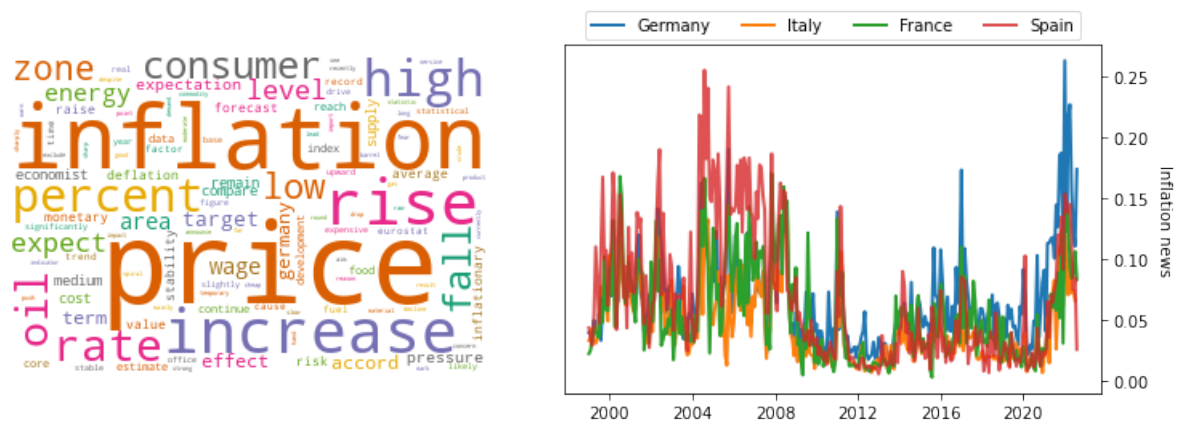
**Table 1:** Descriptive statistics of newspaper articles

	Germany	Italy	France	Spain	Total
Total number	48457	45262	21710	10366	125795
ECB articles	26192	17408	7591	8615	59806

Notes: Total number is the number of articles that mention the ECB. ECB articles are those, in which at least one in 100 words is European Central Bank or ECB.

member states, it makes textual analysis cumbersome and cross-country comparisons difficult. To tackle this issue, we translate all articles into English using automated translation<sup>1</sup> before preprocessing the translated text.<sup>2</sup> This ensures that our shock measure is comparable across countries.

To classify the news content, we use a Latent Dirichlet Allocation (LDA) model (Blei et al., 2003), where an article is treated as a mixture of topics while each topic is treated as a mixture of words. We run an LDA model with 20 topics on the entire translated and preprocessed sample of what we identify as *ECB articles*, resulting in common topics across countries. We single out the topic concerned with inflation, which is illustrated as a word cloud in the left panel of Figure 1, and define ECB inflation news as the proportion of each article dedicated to that topic. As we are interested in monthly inflation news, we follow the approach of Hansen et al. (2018) by re-classifying the document-topic distribution on per-country monthly aggregates of articles. The right panel of Figure 1 displays the monthly levels of inflation news in the coverage of the ECB in each euro area member state. While the coverage of inflation seems to follow similar dynamics across countries over time, with higher interest in the topic during periods of increased inflation and a lower inflation focus during the sovereign-debt crisis, there are also some notable differences, with e.g. greater relative interest in inflation in Spain during the mid-2000s and more prominent coverage in Germany during the Covid-19 pandemic and the energy crisis.

**Figure 1:** ECB inflation news.

Notes: Left panel: Word cloud. The 200 words with the highest probabilities are shown. The size of the words corresponds to the probability of that word occurring in the topic distribution. Right panel: Inflation news measure, defined as the share of ECB news devoted to the inflation topic. Re-classified topic distribution on per-country monthly aggregated articles.

<sup>1</sup>We use the GoogleTranslator package in Python to translate the text. Note that the newspapers disclaim liability for any translation errors resulting from automatic translation.

<sup>2</sup>Our preprocessing steps are standard in the NLP literature. First, we remove special characters, numbers, stopwords and punctuation. Second, we convert the remaining text into lower case. Finally, we lemmatize the text.

## 2.2 Expectations and inflation data

We use monthly consumer inflation expectations data provided by the European Commission (EC) for Germany, Italy, France and Spain, which are available only on a qualitative level. Asked about their expectations regarding price developments over the following twelve months, participants have five answer possibilities: increase more rapidly (*PP*), increase at the same rate (*P*), increase at a slower rate (*E*), stay about the same (*M*) and fall (*MM*). Given the percentage of respondents for each answer, a balance (*B*) is computed as  $B = PP + P/2 - M/2 - MM$ . An equivalent measure is computed for participants' perceptions of price developments over the previous twelve months.<sup>3</sup>

For our inflation measure, we collect the monthly Harmonized Index of Consumer Prices (HICP) for each of the four countries from Eurostat. All expectations and inflation measures are available for the sample of January 1999 to July 2022.

## 2.3 Estimation

We develop a model to estimate the impact of inflation news on inflation expectations, taking into account factors such as actual inflation, consumer perceptions, and the volume of ECB news coverage. We use a reduced-form vector autoregressive (VAR) model for each country and estimate it using Bayesian methods and two lags of the dependent variables as selected by the average of different information criteria (AIC, BIC and HQC). Our VAR model includes five variables in levels, in the following order: HICP inflation, consumer inflation perceptions and expectations, the volume of ECB news coverage and the inflation topic of ECB news. We employ a recursive scheme to identify an inflation news shock.<sup>4</sup> This shock represents unexpected changes in inflation news not explained by current and past values of inflation, inflation perceptions and expectations or the amount of ECB news coverage. The inflation news shock could be interpreted as ECB communication, news about future inflation, distortions in journalists' views, fake news, or other possibilities.

## 3 Results

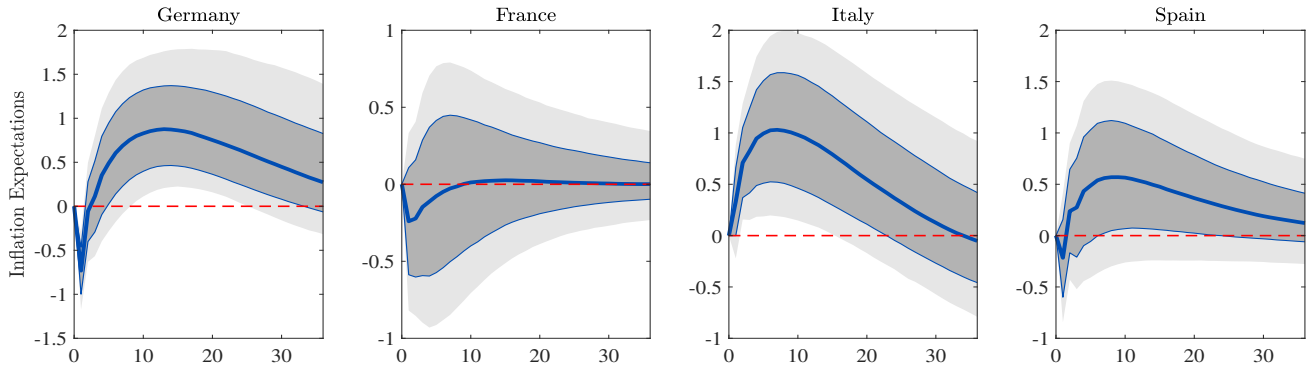
Figure 2 displays the estimated impulse response functions of inflation expectations following an inflation news shock for each country. The bold, continuous lines represent the median posterior estimates at each time horizon, while the shaded areas show the 68th and 90th posterior probability regions, respectively. The horizontal axis represents time periods in months.

A sudden increase in inflation topic coverage significantly and persistently raises inflation expectations in Germany and Italy, in line with results by [de Haan et al. \(2020\)](#), who find a central bank information shock to increase inflation expectations. In Spain, a similar response pattern is observed, but it falls short of reaching statistical significance. Conversely, inflation expectations in France remain largely unaffected by the shock.

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<sup>3</sup>While qualitative data does not permit direct comparison to realized inflation nor the computation of forecasting errors, it is strongly correlated with quantitative measures collected on the country level by the ECB since April 2020. The use of the qualitative data further has some clear advantages, first and foremost the data availability across countries and over time.

<sup>4</sup>The model is robust to alternative lag specifications and orderings of the dependent variables.



**Figure 2:** Impulse response functions to a news shock

*Notes:* The bold continuous lines represent the posterior median at each horizon and the shaded areas indicate the 68th and 90th posterior probability regions of the estimated impulse responses. The horizontal axis refers to months after the shock occurred.

The differences observed in the impulse responses could be explained by various factors. Firstly, a profound understanding of monetary policy in general and the ECB in particular may foster trust in the institution (Hayo and Neuenkirch, 2014) and lead to a greater interest in the ECB’s actions and communications. In the ECB Knowledge and Attitudes Survey, higher proportions of participants rated their knowledge of the ECB as very good or rather good in Germany and Italy compared to France and Spain (ECB, 2022). The survey also revealed considerable heterogeneity among euro area member states concerning their populations’ interest in the ECB. For example, in the 2021 survey round, German participants expressed one of the highest levels of interest, whereas a comparatively large fraction of respondents in France stated a complete lack of interest. This could result in a closer monitoring of relevant news in Germany and Italy and, subsequently, explain their stronger responses to news shocks.

The different responses observed in inflation expectations may be attributed to differences in macroeconomic conditions. Corsetti et al. (2022) reveal significant heterogeneity in the response of macroeconomic variables to monetary policy shocks across the euro area, which can be partly explained by differences in labor market characteristics, such as wage rigidity and the level of employment protection. For instance, in line with our results, they find that inflation in Spain, a country with comparatively low employment protection, responds less to monetary policy than inflation in Germany, which has relatively robust employment protection. Moreover, Christoffel and Linzert (2005) suggest that a low level of wage rigidity, as found in France, may also constrain the effects of monetary policy on inflation expectations. Additionally, a more active fiscal policy may redirect consumers’ attention away from the common monetary policy and toward national issues, thereby diminishing the effects of central bank communication on expectations.

A thorough investigation of these possible explanations is beyond the scope of this paper, but opens up an extensive array of questions for future research.

## 4 Conclusion

In this paper, we have presented an analysis of how news coverage of the European Central Bank (ECB) by major business newspapers in Europe impacts inflation expectations in Germany, Italy, France, and Spain.

Our findings indicate differences in the effects of news coverage of the ECB on inflation expectations in Germany and Italy as compared to France and Spain. Specifically, we find that Germans and Italians are more sensitive to news about ECB policy actions than their counterparts in France and Spain.

The differences in the effects of news coverage on inflation expectations may be attributed to a variety of factors, such as general knowledge of the ECB in the country and national economic conditions. Our findings suggest that policymakers and central bankers should be mindful of these differences when communicating their policy actions to different countries and regions within Europe. This can help to ensure that policy messages are received and interpreted appropriately by different audiences, leading to more effective policy outcomes.

Our analysis is subject to a number of caveats that prompt further research. First and foremost, it is beyond our scope to thoroughly investigate the reasons behind the differences in responses. More in-depth research will help to shed light on the sources of heterogeneity in order to understand how central bank communication reaches the public across the euro area and to guide appropriate policy reactions. Furthermore, we do not account for the tone of reporting or the direction of price movements implied by the news. For example, news in Germany and Italy may be more prone to document increasing inflation tendencies, whereas the reporting in France and Spain may be more balanced. Further analysis is needed to understand these aspects of news coverage of ECB and inflation better. Finally, another possible direction for further analysis would be an expansion of the dataset to include a larger set of countries or a more diverse set of media outlets, including social media.

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