The Role of Media Coverage in Shaping Household Inflation Expectations: An Analysis of ECB Press Conferences and News Reporting

Jasper Bär

May 3, 2023

Main Idea

- How does media coverage influence inflation expectations?
- Does the media inflation coverage and ECB reporting differ?
- Can the difference between media and ECB reports explain the inflation expectation gap of the households?

Model

- I follow Lamla and Lein (2014) and use a Bayesian Learning framework for forming my hypothesis.
- The central bank sends a normally distributed signal c_t about the central bank inflation forecast to the media.
- Without the central bank, the media would send a normally distributed "baseline" signal about the future inflation $s^b_{\nu,t}$ for a number of media reports V.
- The media sends a signal $s_{\nu,t}$ about the future inflation which is the weighted average of the central bank's signal and the "baseline" signal.

$$s_{\nu,t} = (1 - \lambda_{\nu,t})s^b_{\nu,t} + \lambda_{\nu,t}c_t \quad 0 \leq \lambda_{\nu,t} \leq 1$$

Model

- Given that $s_{\nu,t}$ is a linear combination of normal random variables and assuming that σ_t^c and $\sigma^{sb}\nu, t$ are independent, the media sends a normally distributed signal about $\pi t + 1$ with $s_{\nu,t} \sim N(\mu_{\nu,t}^s, \sigma_{\nu,t}^s)$, where:

$$\mu_{\nu,t}^s = (1 - \lambda_{\nu,t})(\alpha_t + \Psi_t) + \lambda_{\nu,t}\Theta_t \tag{1}$$

- The households hold a prior belief $\gamma_t \sim N(\pi_t, \sigma_t^h)$ about the future inflation.
- Following the Bayesian updating rule, the households' updated mean is

$$\mu_t = \rho_t \pi_t + (1 - \rho_t)(\alpha_t(1 - \bar{\lambda_t}) + \Psi_t)$$

Model

- B_t is the difference between the professional inflation forecast and the household inflation expectations. I assume that the rational inflation forecasts of the central bank and of the media are similar, i.e, $\Theta_t \approx \Psi_t$.

$$B_t = |\mu_t - \Psi_t| = |\rho_t \pi_t + (1 - \rho_t)(\alpha_t(1 - \bar{\lambda_t}) + \Psi_t) - \Psi_t| \tag{2}$$

$$= |(1 - \rho_t)(1 - \bar{\lambda}_t)\alpha_t + \rho(\pi_t - \Psi_t)| \tag{3}$$

- **Hypothesis 1:** *If the media's signal is affected by a media bias, an increase in the weight given to the central bank communication by the media has an ambiguous effect on the household inflation forecasting accuracy, depending on the size of the difference between the current inflation and the rational inflation forecast.*
- **Hypothesis 2:** *An increase of the media bias by the media has an ambiguous effect on the household inflation forecasting accuracy depending on the size of the difference between the current inflation and the rational inflation forecast.*

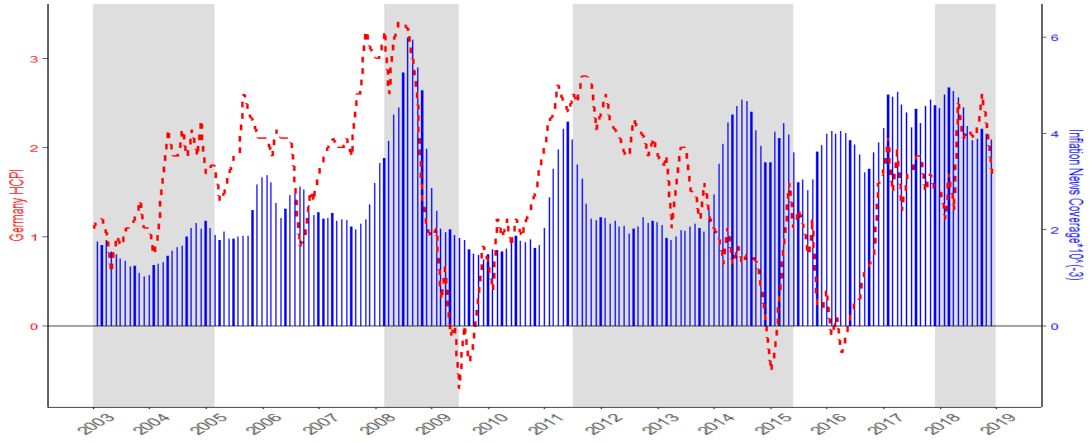
Data

- Newspaper Dataset from Dpa. I could also add "Die Welt" once the dataset is ready.
- All sentences which contain the word "Inflation" or its synonyms like "Preissteigerung" (price increase) are identified as inflation related.
- ECB press conferences are downloaded from the official ECB website and cleaned.

Measuring Media Bias

- I annotated 3000 sentences from the Newspaper articles and the ECB press conferences.
- I used a method from Shapiro et al. (2022) based on PMI to create lexicons for the two datasets.
- Newspaper articles sentences are classified into "Inflation Direction" and "Inflation Sentiment".
- ECB press conferences are classified into "Inflation Direction".
- Dependency parsing is used to identify all sentences in which the ECB is directly or indirectly cited.

Measuring Media Bias



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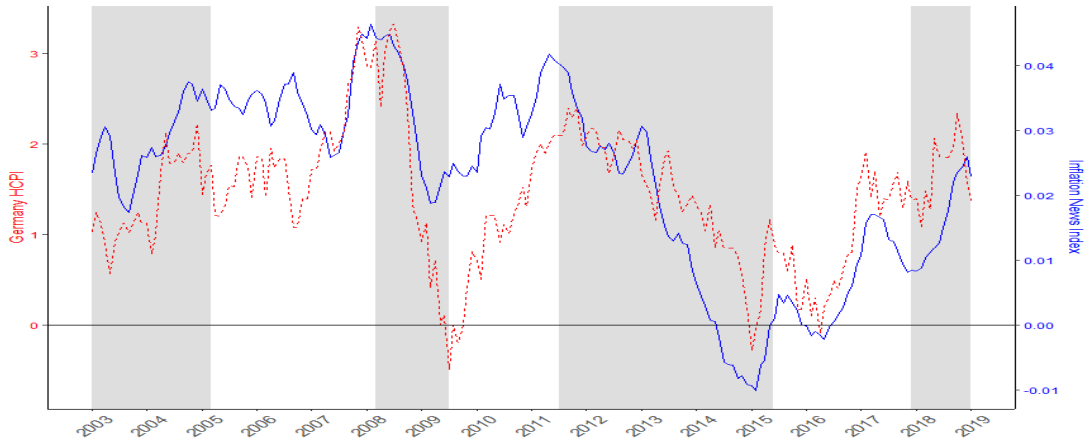

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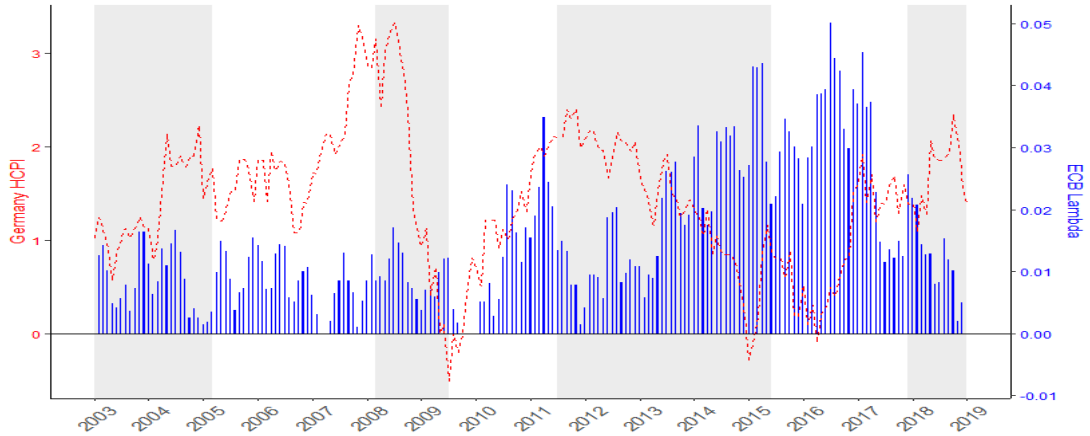

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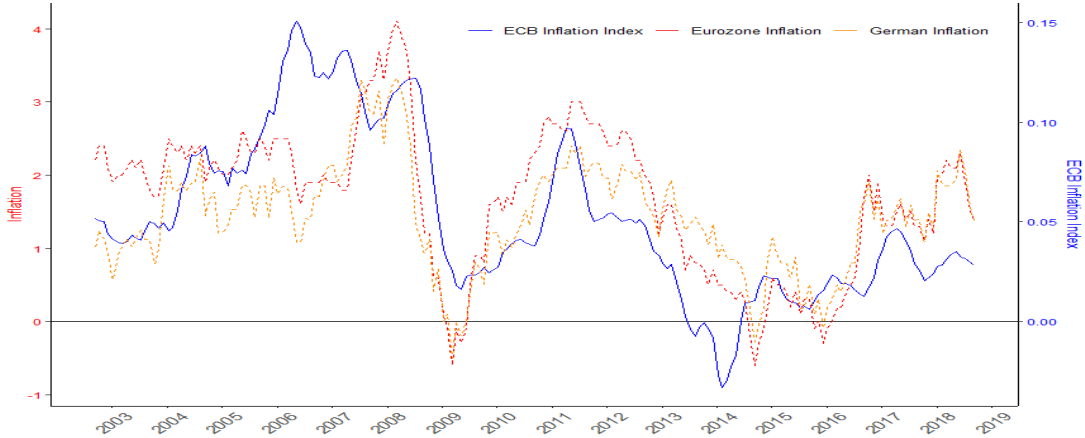
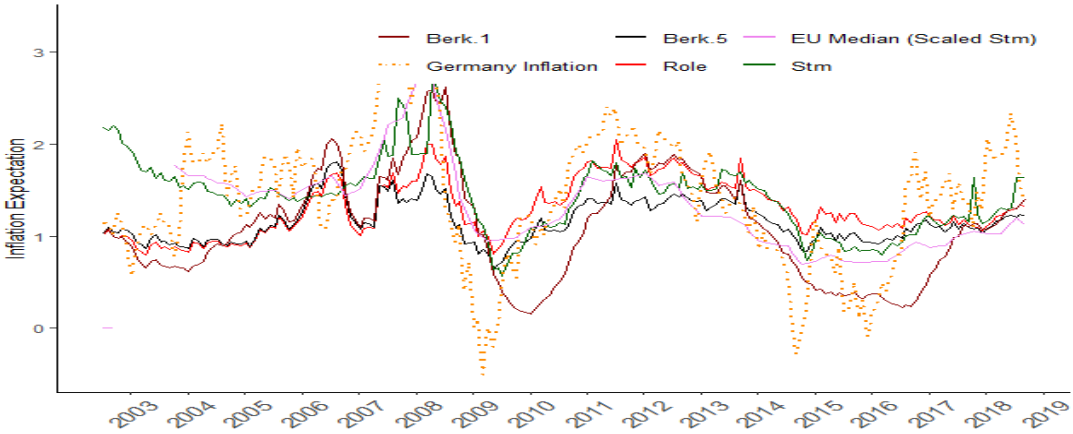


Inflation Expectations Gap

- I follow Lamla and Lein (2014) and measure the inflation expectations gap as the quantified inflation forecast and the professional one-year-ahead forecasts.
- Several quantification methods exist.
- Quantification methods are barely mentioned in the literature after 2014. Why?

Inflation Expectations Gap



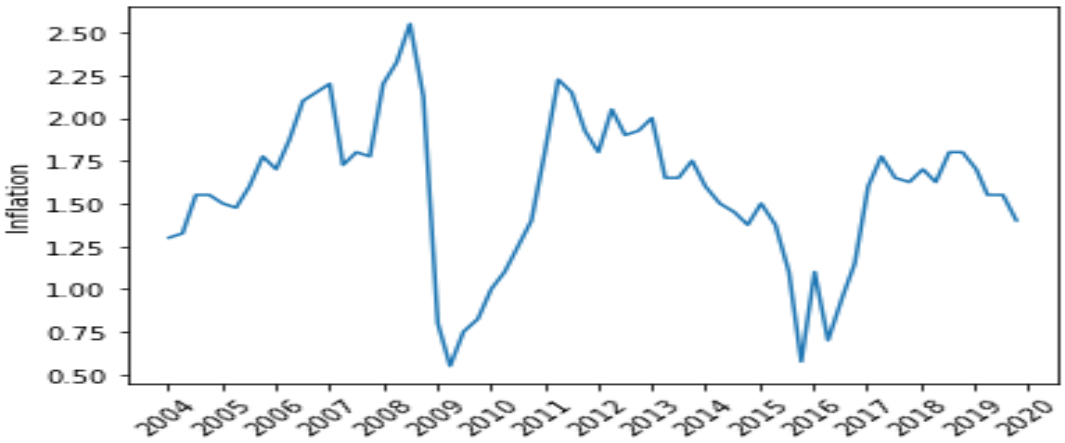
Inflation Expectations Gap

- I base the professional inflation forecast on Reuters Poll data
- To get the one-year-ahead forecast I follow Dovern et al. 2012 and transform the forecast as follows: for month m of a given year t, the expectation of inflation is defined as (13-m)/12 times the forecast for year t plus (m-1)/12 times the forecast for year $t + 1$.

Preliminary Results

- To get the media bias, I regress the ECB inflation index on the inflation news index.
- I directly use the occurrence of ECB related inflation as a measure for λ_t.

Inflation Expectations Gap



Inflation Expectations Gap

Table: Inflation Expectation Gap Stm-Reuter

	(1)	(2)	(3)	(4)	(5)
B_{t-1}		-0.134	-0.123	-0.175	-0.134
		(0.101)	(0.101)	(0.108)	(0.101)
π_{t-1}		0.029	0.038	0.036	0.029
		(0.054)	(0.048)	(0.048)	(0.054)
$\tilde{V}_t$	8.542	16.346	10.648	24.031	21.087
	(18.605)	(17.296)	(17.226)	(16.387)	(16.438)
$\tilde{\alpha_t}$			1.227		1.218
			(1.118)		(1.074)
$\tilde{\lambda_t}$				-2.369	-2.340
				(1.560)	(1.453)
Constant	0.299***	0.230***	0.273***	0.334***	0.328***
	(0.041)	(0.075)	(0.079)	(0.083)	(0.081)
R^2	0.003	0.030	0.090	0.076	0.110

Inflation Expectations Gap

Table: Inflation Expectation Gap Berk 5-Reuter

	(1)	(2)	(3)	(4)	(5)
B_{t-1}		-0.239	-0.214	-0.269	-0.239
		(0.163)	(0.171)	(0.189)	(0.163)
π_{t-1}		0.117***	0.131***	0.140***	0.117***
		(0.030)	(0.035)	(0.045)	(0.030)
$\tilde{V}_t$	11.181	30.037	19.441	46.170**	38.676**
	(30.345)	(22.872)	(18.464)	(19.710)	(16.863)
$\tilde{\alpha_t}$			2.723***		2.725***
			(0.695)		(0.627)
$\tilde{\lambda_t}$				-4.304***	-4.313***
				(1.604)	(1.431)
Constant	0.447***	0.281***	0.342***	0.432***	0.442***
	(0.057)	(0.097)	(0.094)	(0.114)	(0.086)
R^2	0.004	0.124	0.300	0.217	0.351

Inflation Expectations Gap

Table: Inflation Expectation Gap Role-Reuter

	(1)	(2)	(3)	(4)	(5)
B_{t-1}		0.283***	0.342***	0.336***	0.283***
		(0.094)	(0.097)	(0.122)	(0.094)
π_{t-1}		0.013	0.024	0.031	0.013
		(0.031)	(0.033)	(0.036)	(0.031)
$\tilde{V}_t$	4.896	16.201	9.442	33.589*	25.693
	(27.311)	(24.768)	(17.531)	(19.324)	(16.457)
$\tilde{\alpha}_t$			3.079***		3.136***
			(0.671)		(0.635)
$\tilde{\lambda}_t$				-3.363**	-3.702***
				(1.646)	(1.406)
Constant	0.351***	0.251***	0.183***	0.240***	0.279***
	(0.055)	(0.064)	(0.058)	(0.078)	(0.066)
R^2	0.001	0.046	0.368	0.221	0.403