Master Thesis Presentation 2

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Part 1: Identifying perceived drivers of inflation as well as perceived Central Bank response, using narratives

Reporting on the perceived origins of inflation represents expectations of **surging inflation**.
News covering the Central Bank's response constitute the opposite, expectation for future **slump in inflation**.

I am planning on investigating the perceived causes, also referred to as **narratives**, separately. This allows to give account of the perceived causes of inflation and their evolution over time.

- Narratives for 2021 - 2022 inflation have have been identified by [1]
- Further narratives can be identified by analysing expressions frequently employed in articles alongside inflation
- The sum of all individual narratives n_i makes up the overall inflation reporting time series $I_t^{\pi} = \sum_{i=0}^{N} n_{it}$, where $N \in [5, 10]$ different narratives.

Part 1: Analysis of raw news data time series

Question 1: What are the perceived drivers of inflation and how do they contribute to inflation expectation?

- Regressing overall inflation reporting index on inflation expectation
- Time variant VAR (individual narratives, expected inflation), the influence of one narrative over time is likely to vary
- **Question to you**: What other model could account for time variant coefficients?

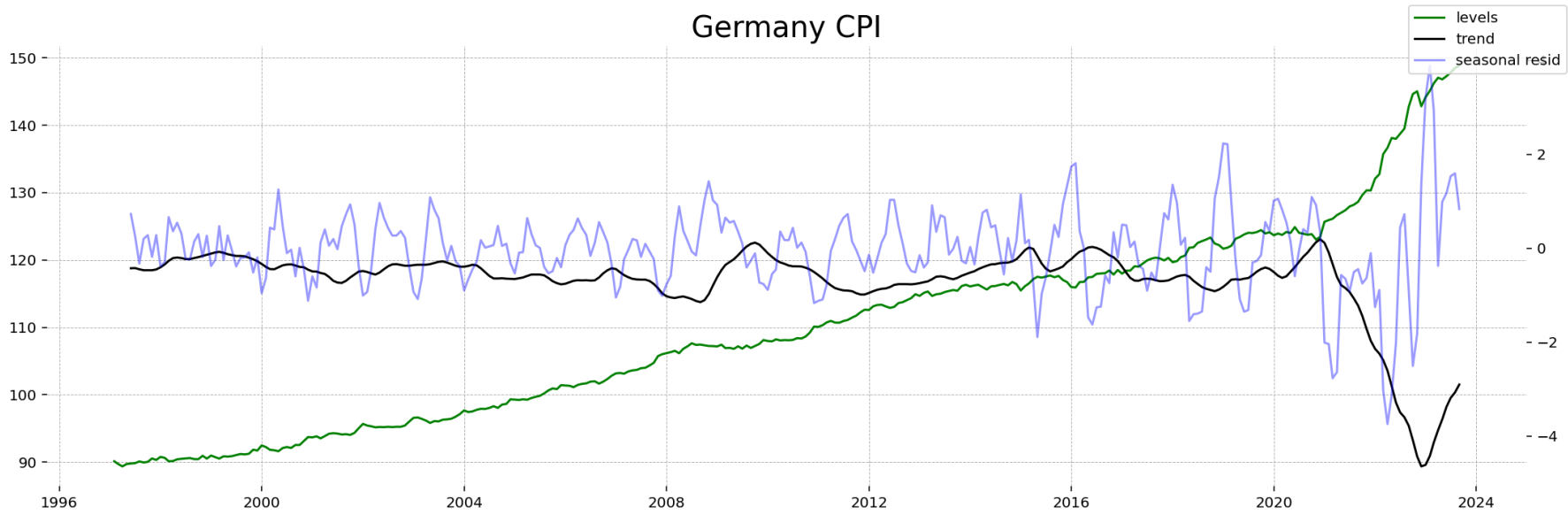
Question 2: How is the Central Bank's response perceived and does it cause expectations to decrease?

- Investigate the impact of CB reporting on inflation expectations

Question 3: How is news reporting linked to the actual inflation rate

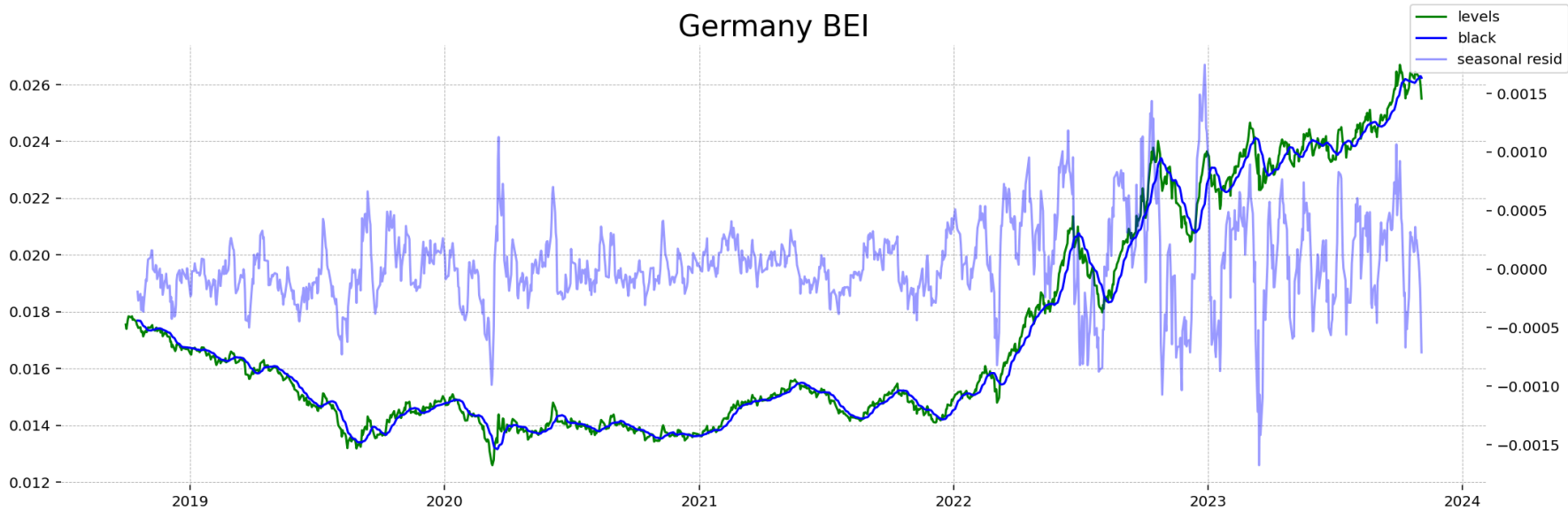
- This links is difficult to investigate as inflation rates are monthly measures, hence only little data is available

Part 1: Measure of Inflation - CPI Inflation



	CPI
count	319.0000
mean	0.0016
std	0.0040
min	-0.0154
max	0.0230

Part 1: Measure of expected Inflation - Break Even Inflation: Bund 10y - Bund 10y (Inflation adj.)



	BEI
count	1294.0000
mean	0.0003
std	0.0097
min	-0.0547
max	0.0526

Part 2: Constructing a model of theoretical inflation expectation

The transition from news reporting to inflation expectation is subject to two phenomena, **belief updating and peer influence**. As a result inflation expectation is likely to lag [5, 4, 3].

Peer influence refers to the effect of one's immediate peers on the temporal evolution of beliefs w_{ij}. An agent updates her beliefs with new information through $u_j(\pi^e_{jt}, I^\pi_t)$, the Bayesian update conflating prior expectation π^e_{jt-1} and new information I^π_t. This can be accounted for by the French-DeGrooth framework, describing the evolution of opinion in society [2].

$$\pi^e_{jt} = \sum_{i=0}^{A} w_{ij}\ u_j(\pi^e_{it-1}, I^\pi_t) \quad \forall j \in [0, A]$$

The model allows analyse the influence on rise/fall inflation information on the evolution of believes analytically. This is interesting when considering the **Central Bank's communication** and concepts such as forward guidance.

Part 2: Estimating theoretical inflation expectation

Estimating the French-DeGrooth model requires forming an estimate of $\Gamma(\mathbf{w}, \delta)$, where $\mathbf{w}$ are opinion weights and δ a possible bias parameter to the Bayesian update.

$$\pi_t^e = \Gamma(\mathbf{w}, \delta)\ I_{t-1}^{\pi}$$

In estimating we rely on the inflation news index I_{t-1}^{π}, observed at a daily frequency. Moreover, we require some data for π_t^e, ideally at similar frequency. Household inflation surveys are only available at monthly intervals. The yield difference between inflation protected and common government bonds are a daily indicator of inflation expectation. This is also referred to as the **Break Even Inflation BEI**.

Nevertheless, household survey data can be useful in forming prior beliefs about persistency of beliefs. In order to incorporate this knowledge the relationship will be estimated using **Bayesian Inference** through an **MCMC sampling** procedure.

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