Long-Term Inflation Expectations, Inflation Target Credibility and the COVID-19 Pandemic: Evidence from Germany

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The prominent role of inflation targets and long-term inflation expectations

- Central banks announce inflation targets ...
  - to clarify the meaning of price-stability
  - and to increase transparency and accountability of monetary policy
  - Longer-term inflation expectations reflect target credibility
  - *Indirect* evidence via the anchoring of inflation expectations
- The wording of the inflation target seem to matter a lot:
  - ECB until 2003: *"CPI inflation rate below 2% over the medium term"*;
    until 7 July 2021: *"...below, but close to 2%..."*
    since then: *"...close to 2%...."*.
  - *Direct* evidence on inflation target credibility is scarce
    (Coibion et al. 2021; D'Acunto, Malmendier, Weber 2022)

How credible is the inflation target of the ECB?

Our survey: a direct measure of inflation target credibility

In what range do you think the annual inflation rate will be over the medium term?
It will be ...

- (A) ... clearly above 2%
- (B) ... slightly above 2%
- (C) ... (below, but) close to 2%
- (D) ... clearly below 2%
- (N) Do not know

Sample: Jan 2019 - 10 March 2022, ca. 120000 (German) participants.

This paper shows

- ... how the credibility indicator $CI = C + \frac{1}{2}B$ evolves over time
- ... how inflation expectations are related to personal characteristics
- ... how political attitude affects inflation expectations

Outline

Online Surveys: Probability vs Non-Probability Sampling

- *Probability surveys* use "representative sample" of e.g. 2000 obs.
  - Examples: MSC, SCE (US) EC, CES (EU)
  - RCTs, high external validity
  - Expensive, inflexible, low frequency

- *Non-probability surveys* take data from "everyone" but weight the raw data according to official statistics (post-stratification)
  - Civey panel consists of about one million German citizens
  - User profile contains personal information about age, gender, postcode, and (partly) education, purchasing power, religion etc.
  - Civey surveys are spread out across more than 25,000 partner websites
  - For representativeness (i.e. to obtain 5000 obs), "daily" survey results include responses up to 45 days before

Non-probability surveys are rarely used (Binder 2020)

How reliable are non-probability surveys?

External Validity of Civey Surveys: Short-term Inflation Expectations

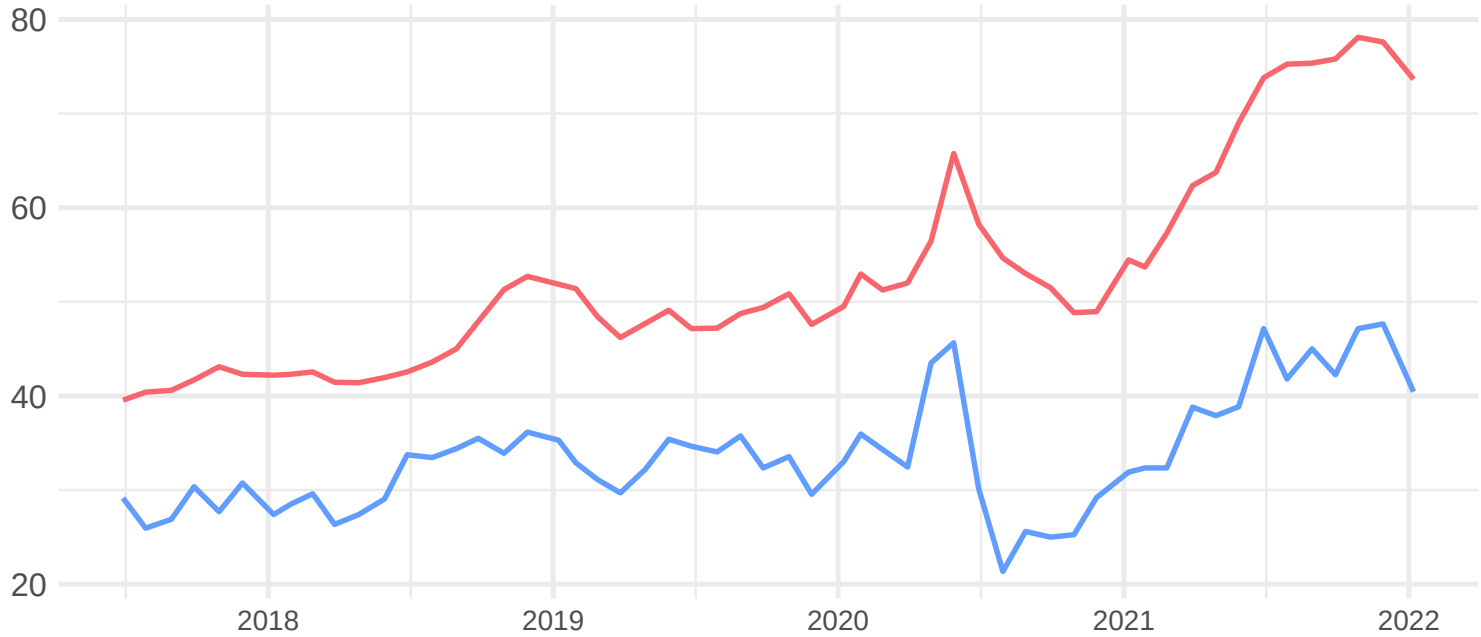
Civey runs the same survey question as the Business and Consumer Survey of the European Commission:
By comparison with the past 12 months, how do you expect that consumer prices will develop over the next 12 months? They will ...

(PP)	... increase more rapidly
(P)	... increase at the same rate
(E)	... increase at a slower rate
(M)	... stay about the same
(MM)	... fall
(N)	Do not know

Expectations balance: $PP + 1/2P - MM - 1/2M$
Are Civey balances similar to those obtained from the EC-survey?

Comparing Expectations Balances from Civey and the EC: Monthly Data from June 2017 until Dec 2021

Figure: Expectations Balances from Civey (red) and EC (blue)

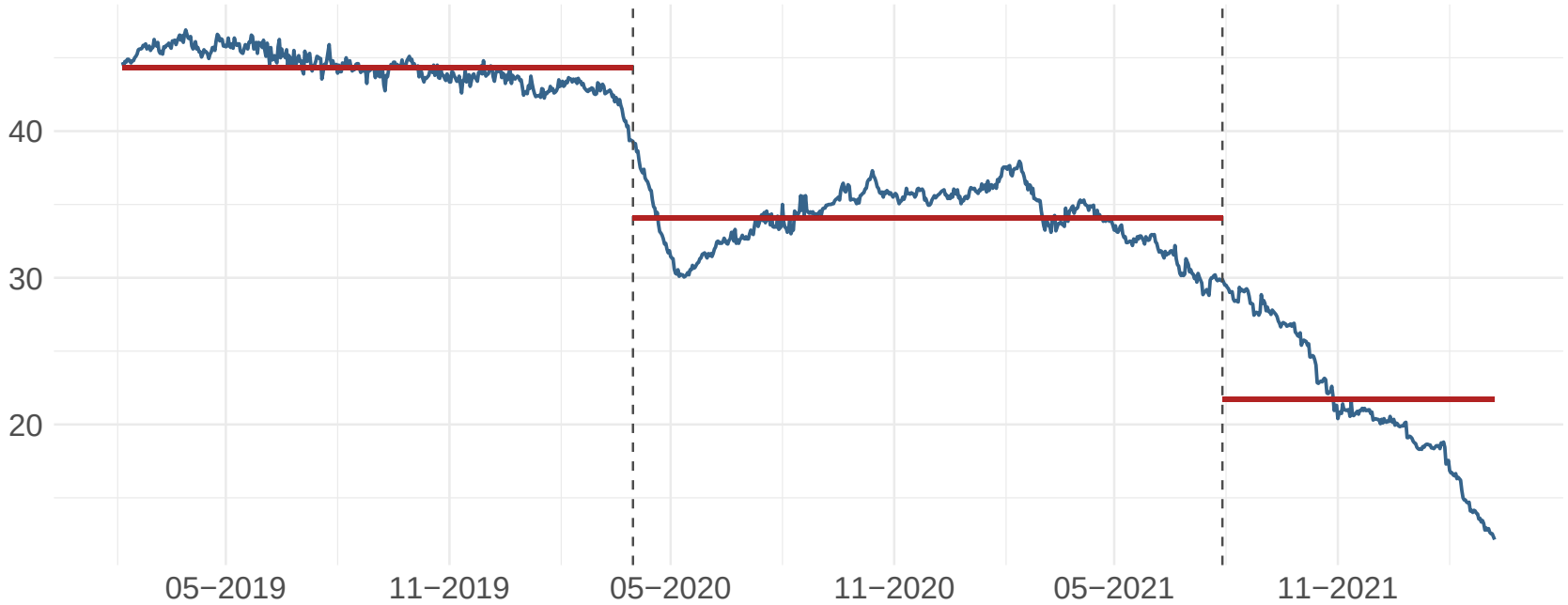


Daily Data

External validity of Civey data apparently very high!

Our Results: The Time-Varying Credibility of the ECB's Inflation Target

Figure: The ECB's Inflation Target Credibility Indicator



Notes: Credibility indicator $CI = C + \frac{1}{2}B$. The vertical lines refer to the credibility regimes identified by multiple endogenous break tests. The horizontal lines show the corresponding mean value of the indicator. End of sample 10.03.2022

Why has credibility decreased?

Table: Survey Results across Regimes until March 2022

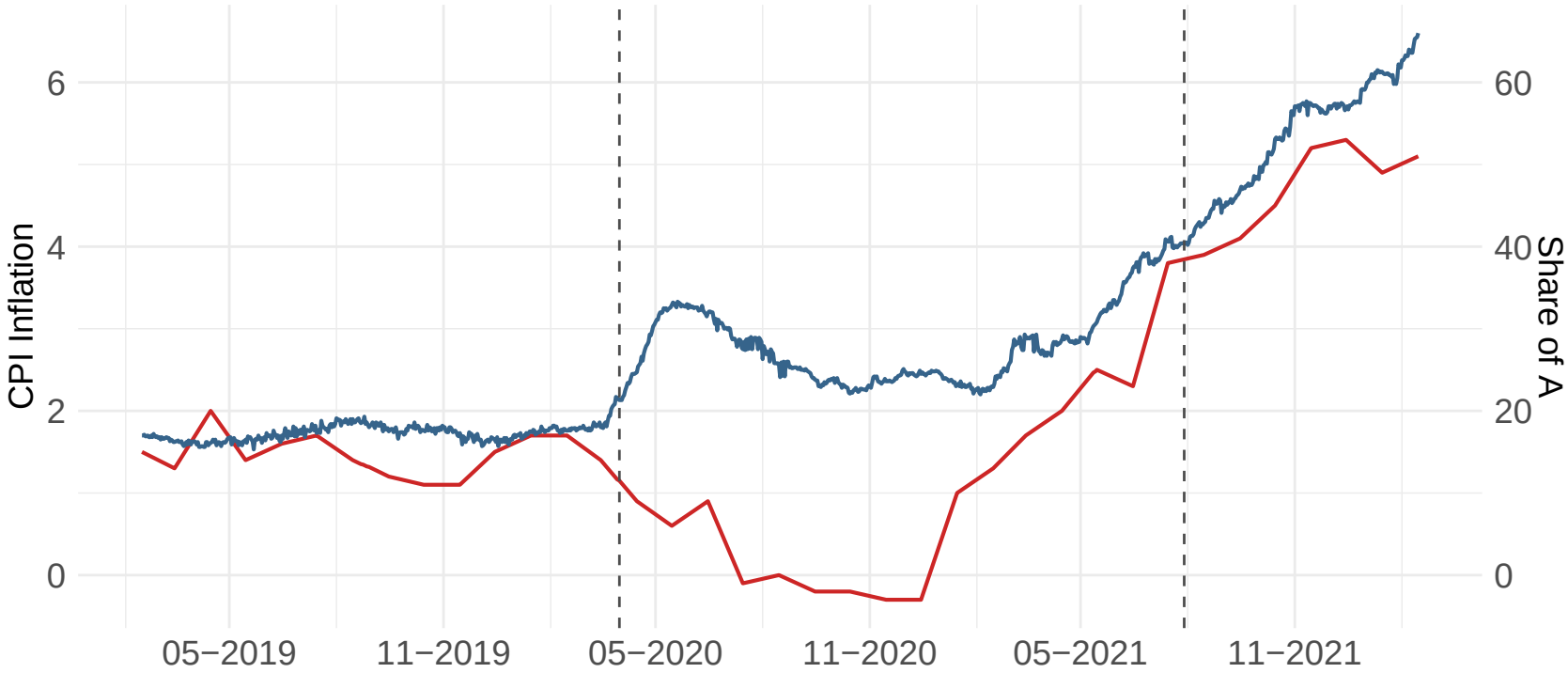
Credibility Regime	A $\gg 2\%$	B $> 2\%$	C $\approx 2\%$	D $\ll 2\%$	N	CI
05.02.2019–30.03.2020	17.31	33.06	27.80	8.43	13.40	44.33
31.03.2020–28.07.2021	28.06	29.85	19.13	7.54	15.42	34.06
29.07.2021–10.03.2022	55.08	23.74	9.86	2.26	9.05	21.73

Notes: $CI = C + \frac{1}{2}B$: Credibility Indicator

Credibility has decreased because more Germans expected inflation to be *clearly above 2% over the medium term*!

Longer-term expectations increased in times when inflation was below 2%!

Figure: *Clearly above 2%* Responses and CPI Inflation



Do A answers depend on personal characteristics and political attitude?

Inflation expectations and personal characteristics

Our data confirms:

- Inflation expectations increased in the pandemic
  For the U.S.: Dietrich et al. (2020), Weber et al. (2022)
- Females have higher inflation expectations than males
  Bryan and Venkatu (2001) and D'Acunto et al. (2020)
- Age effects (inflation experience)
  Malmendier and Nagel (2016), Meyler and Reiche (2021)
- East-Germans have higher inflation expectations than West-Germans
  Goldfayn-Frank and Wohlfart (2020)
- Low-educated and people with low purchasing power have higher expectations (financial literacy)
  Blanchflower and MacCoille (2009), Bruine de Bruin et al. (2010)

Inflation expectations, political attitude, and the partisan bias

Partisan bias: *"Consumers expect lower inflation rates when the political party they support holds executive office."*
(Claus and Nyguen, 2018, AUS; Bachmann et al. 2021, US; Gillitzer et al. 2021, AUS, US)

Until October 2021, German government was challenged from two sides:

$$A^{\text{AfD}} - A^{\text{CDU}} = \sum_{i=1}^{3} \rho_i^R D_i + u_t^R \quad (1)$$

$$A^{\text{Linke}} - A^{\text{CDU}} = \sum_{i=1}^{3} \rho_i^L D_i + u_t^L \quad (2)$$

where D_1, D_2, D_3 dummies indicating the CI- regimes.

- Political expectations gaps: $\rho_1, \rho_2, \rho_3 > 0$?
- Gaps increased during the pandemic: $\rho_3 > \rho_1$?

Political expectation gaps under the CDU government

Table: Inflation expectations and political attitude: Jan 2019 - Oct 2021

Dependent variable		$\hat{\rho}_1$	$\hat{\rho}_2$	$\hat{\rho}_3$	F-statistic: $\forall i: \rho_i = 0$	t-statistic: $\rho_1 = \rho_3$
(1)	$A^{\text{AfD}} - A^{\text{CDU}}$	24.92	31.91	30.48	76.77***	-7.74***
		(0.34)	(0.52)	(0.64)		
(2)	$A^{\text{Linke}} - A^{\text{CDU}}$	6.62	6.85	10.74	6.18***	-3.51***
		(0.36)	(0.61)	(1.12)		

- Both political expectation gaps positive, esp. large for AfD supporters
- Both expectation gaps increased over time

Political expectation gaps and the partisan bias

CDU looses executive office in Oct 21 $\implies$ smaller expectations gaps?

$$A^P - A^{\text{CDU}} = \sum_{i=1}^{3} \rho_i^P D_i + \delta^P D_{elect} + u_t^P$$

where $P = AfD, Linke$ and $D_{elect} = 1$ since Oct 21 and zero before.

Table: Inflation expectations and political attitude: Jan 2019 - March 2022

Dependent variable		$\hat{\rho}_1$	$\hat{\rho}_2$	$\hat{\rho}_3$	$\hat{\delta}$	t-statistics $\delta = 0$	t-statistics $\rho_3 + \delta = 0$
(1)	$A^{\text{AfD}} - A^{\text{CDU}}$	24.92 (0.34)	31.91 (0.52)	30.35 (0.67)	-11.45 (1.43)	-8.03***	14.91***
(2)	$A^{\text{Linke}} - A^{\text{CDU}}$	6.62 (0.36)	6.85 (0.61)	11.51 (0.84)	-16.83 (1.36)	-12.40***	-5.18***

- Both political expectation gaps decrease after Oct 21
- Expectation gap remains positive only for AfD supporters

Time Series

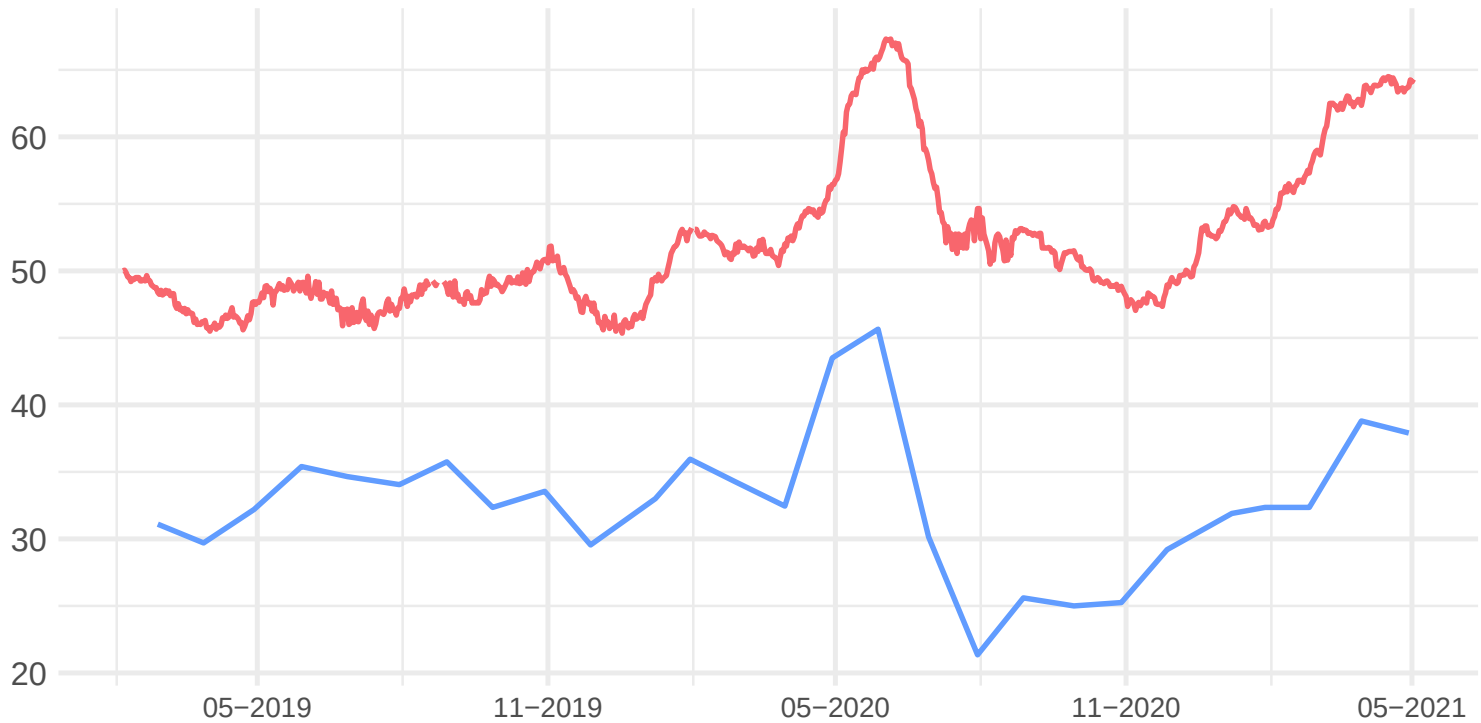
Conclusions

- Credibility of the ECB's inflation target has decreased since 2019 (ECB projection from March 2022: 2,1% 2023, 1,9% 2024)
- Credibility decreased because inflation expectations *increased*
- Inflation expectations **increased** when inflation rates were too high (since summer 2021) **and** too low (until 2021)
- Inflation expectations gaps for age, gender, income, education, and East- vs West-Germany
- Evidence for political expectations gaps and the partisan bias, especially for supporters of the anti-European, right-wing party AfD

In addition to established (probability) surveys, (non-probability) surveys can be a valuable source of information for monetary policy!

Comparing Expectations Balances from Civey and the EC: Daily Data from Jan 2019 until May 2021

Figure: Expectations Balances from Civey (red) and EC (blue)



External validity of Civey data appears to be high!

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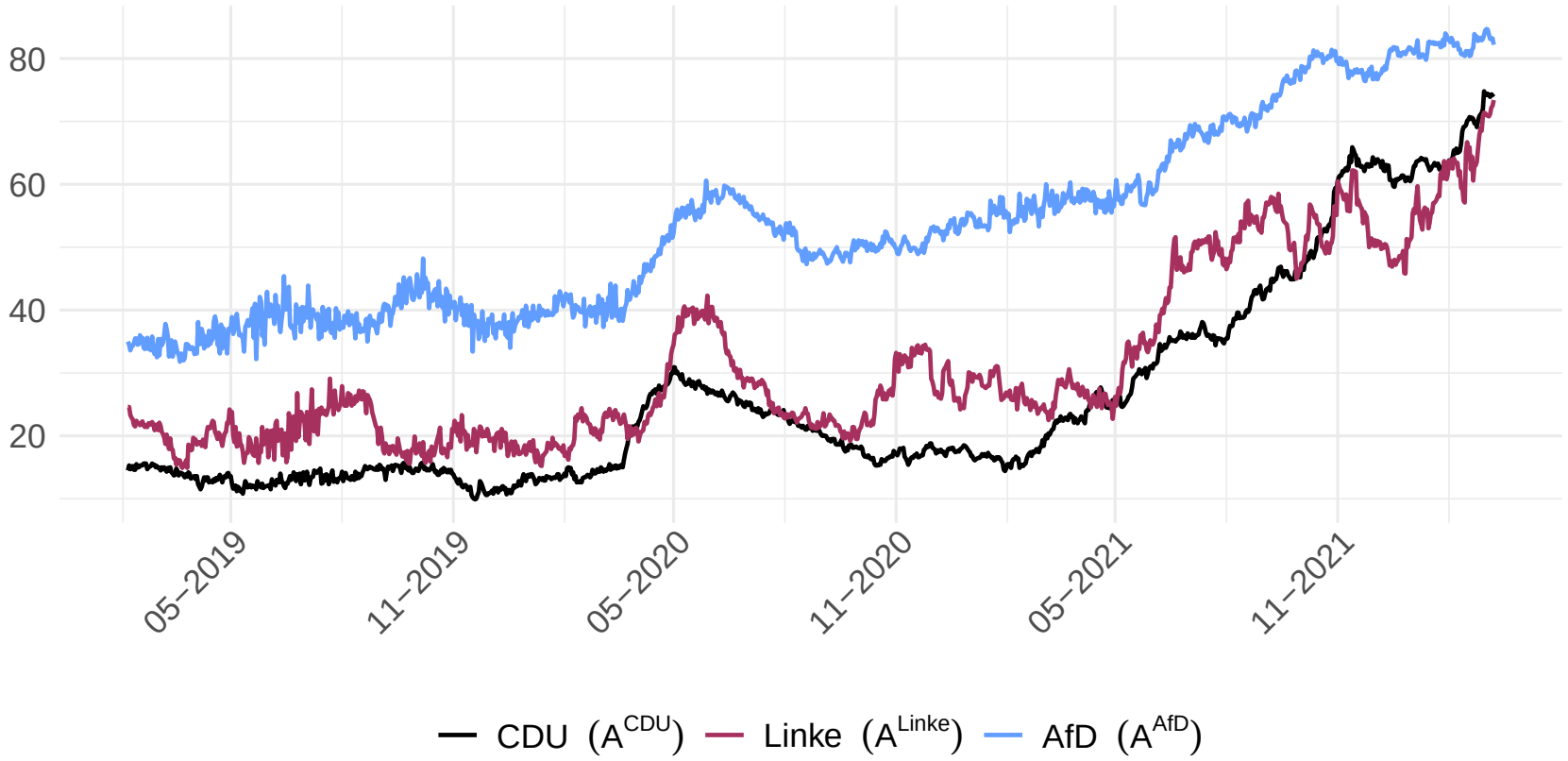
Inflation expectations and political attitude

Figure: A Answers and Political Attitude



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