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## Inflation target credibility and the Taylor rule

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# Inflation Target Credibility and the Taylor Rule

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School of Business & Economics

Discussion Paper

Economics

2025/9

# Inflation Target Credibility and the Taylor Rule

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## Abstract

This paper investigates how the ECB's monetary policy affects consumers' perceptions about the credibility of the inflation target. Monetary policy is assessed by the gap between the actual policy rate and a Taylor rate to approximate the interest rate expected by the public. Drawing on survey data for German consumers from 2019 to 2024, we find that the ECB's interest rate policy contributes significantly to the credibility of the inflation target. In particular, the massive dent in inflation target credibility observed from 2021 to the end of 2023 could have been ameliorated by an earlier and more decisive tightening of monetary policy. This suggests that simple outcome-based Taylor rules may deserve more attention in the communication of the ECB's monetary policy strategy.

*Keywords:* Credibility of Inflation Targets, Consumer Inflation Expectations, European Central Bank, Taylor Rules

*JEL classification:* E43, E52, E58

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# 1 Introduction

Inflation targets clarify the meaning of price stability and may even anchor inflation expectations but they can only be effective if their credibility is sufficiently high. This paper investigates to what extent monetary policy can ensure or restore credibility even if current inflation deviates from its target. Coleman and Nautz (2025) use survey data on inflation target credibility (ITC) to analyze how credibility responds to deviations of inflation from the ECB’s target. However, their analysis assumes that target deviations are the sole drivers of time-varying credibility, leaving no room for the influence of monetary policy actions. Therefore, we extend their analysis of inflation target credibility by incorporating monetary policy measures directly controlled by the central bank.

The credibility of the inflation target perceived by consumers should be particularly influenced by monetary policy measures that are highly visible and widely discussed in the media. A natural candidate for such a monetary policy measure is the ECB’s deposit rate, the key policy rate during our sample period.<sup>1</sup> In the Euro area, many consumers regarded the policy rate as too low for too long.<sup>2</sup> Yet, how low is too low — from a consumer’s perspective? In the following, we assume that a consumer’s view of the appropriate interest rate level can be approximated by a simple Taylor rule.<sup>3</sup> Since the Taylor rate explicitly accounts for deviations from the inflation target, closing the gap between the actual policy rate and the Taylor rate should enhance consumers’ perceptions of inflation target credibility. A significant and plausibly signed response of inflation target credibility to the interest rate gap would imply that the central bank can improve its credibility not only in the long run by its inflation performance but

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<sup>1</sup>From a rational expectations perspective, consumers should respond to monetary policy shocks rather than to partly anticipated changes of policy rates. However, sophisticated estimates of monetary policy shocks (Jarociński and Karadi, 2020) or shadow rates (Lemke and Vladu, 2017) to circumvent the zero lower bound problem are hardly acknowledged by the general public.

<sup>2</sup>In February 2020, the ECB launched its “ECB Listens Portal”, encouraging the general public to express their views on a range of issues. More than half of the contributions were critical of the ECB’s low interest rate policy, see European Central Bank (2021). A comparable consumer reaction is likely regarding the ECB’s delayed response to the 2022 inflation surge, see Tatar and Wieland (2025).

<sup>3</sup>Schmidt and Nautz (2012) and, more recently, Bernardini and Lin (2024) find that even professional monetary analysts may consider the Taylor rule as a starting point to form their expectations of the future path of the ECB’s policy rate.

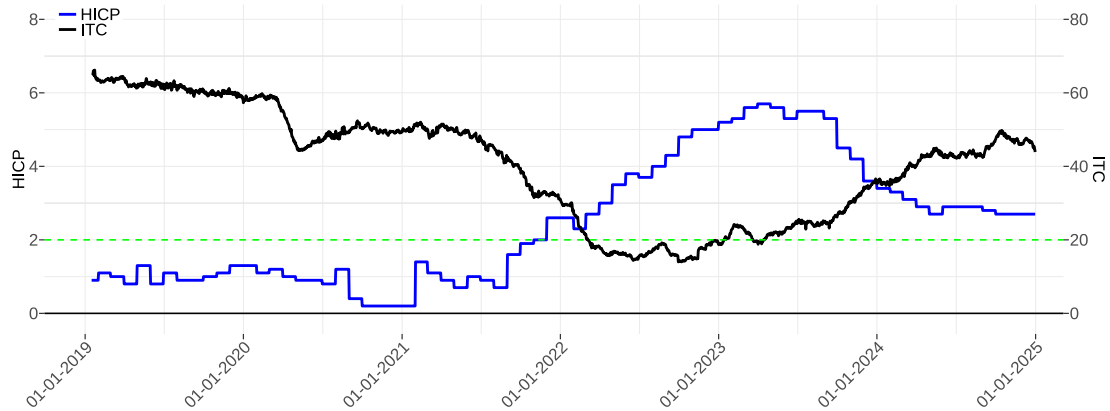
also in the short run by its interest rate decisions.

The remainder of the paper is structured as follows. In the next section, we describe the survey data on inflation target credibility and the Euro area Taylor rates taken from Tatar and Wieland (2025). Section 3 shows our empirical results on the impact of the ECB’s interest rate policy on inflation target credibility. Section 4 concludes.

## 2 Data

### 2.1 Inflation Target Credibility

Figure 1: Inflation target credibility and the rate of inflation



NOTE. The Figure shows the degree of inflation target credibility (ITC) for the representative German consumer (right scale) and the European HICP core inflation (left scale). Green dashed line indicates the ECB’s 2% inflation target. Sample period: January 16, 2019 to December 31, 2024.

Data on consumers’ perceptions about the credibility of the ECB’s inflation target are taken from a survey run by Civey, Germany’s largest company for online surveys. Civey’s panel consists of approximately one million adult German residents with a user profile containing further personal characteristics. From January 16, 2019, until December 31, 2024, more than 140,000 survey participants submitted a total number of about 250,000 responses. Because not every user profile provides the full set of personal characteristics, the actual number of observations used in our regressions is 222,203.<sup>4</sup>

<sup>4</sup>For more details on the survey design and its external validity, see Coleman and Nautz (2025).

A consumer’s view on the credibility of the ECB’s inflation target is derived from the following survey question:

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

<p>(A) ... clearly above 2%</p> <p>(B) ... slightly above 2%</p> <p>(C) ... (below, but) close to 2%</p>	<p>(D) ... clearly below 2%</p> <p>(N) Do not know</p>
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Note that the survey question *and* the answer category (C) exactly follow the definition of the ECB’s target. In particular, in July 2021, the answer category (C) was adjusted from *below but close to 2%* to the new target *close to 2%*. Accordingly, (C) implies that the inflation target is perceived as fully credible. In contrast, categories (A) and (D) clearly contradict the ECB’s inflation target irrespective of the individual consumer’s interpretation of “close”. Following Coleman and Nautz (2025), we consider both (C) and (B) as compatible with a credible inflation target and define the aggregate inflation target credibility indicator ITC as

$$ITC = C + B, \tag{1}$$

where  $C$  and  $B$  denote the shares of the corresponding answers.

Figure 1 displays the daily credibility measure  $ITC$  obtained for the representative consumer together with the monthly rate of inflation. Apparently, the current rate of inflation influences the evolution of  $ITC$  but this relation is not obvious. According to e.g., Binder (2020) and Binetti et al. (2024), consumers tend to have a stagflationary view of the economy, always associating bad economic times with high rates of inflation. This explains why in Germany, for example, the credibility of the inflation target decreased during the COVID pandemic. More consumers expected inflation to increase *clearly above 2%*, even though the inflation rate was too low and the economy headed for a recession, see Coleman and Nautz (2023).

If deviations of inflation from the target were the sole source of time variation in inflation target credibility, the influence of monetary policy would be rather limited — at least in the short run. To allow for a more active role of monetary policy in shaping inflation target credibility, we extend the empirical analysis of Coleman and Nautz (2025) by incorporating a monetary policy measure that is directly under the central bank’s control.

## 2.2 The ECB’s interest rate policy through the lens of a Taylor rate

Let us now consider the impact of the ECB’s interest rate decisions on consumers’ perception of inflation target credibility. To do this, we propose an interest rate gap,  $|i^* - i|$ , defined as the difference between the actual policy rate set by the ECB ( $i$ ) and a hypothetical rate ( $i^*$ ) that approximates the policy rate consumers assume to be appropriate. Large interest rate gaps indicate that consumers view the policy rate as too low or too high. Consequently, inflation target credibility should decrease in the interest rate gap.

While the actual policy rate  $i$  is the ECB’s deposit rate, the choice for the hypothetical rate  $i^*$  is less obvious.  $i^*$  must follow a simple rule to offer a realistic perspective on consumers’ expectations about the ECB’s interest rate policy that accounts for the inflation target and the state of the economy. Therefore, an interest rate derived from a simple Taylor rule is a natural candidate for  $i^*$ . In the following, we employ the Taylor rates for the Euro area calculated by Tatar and Wieland (2025). Following Taylor (1993), they define

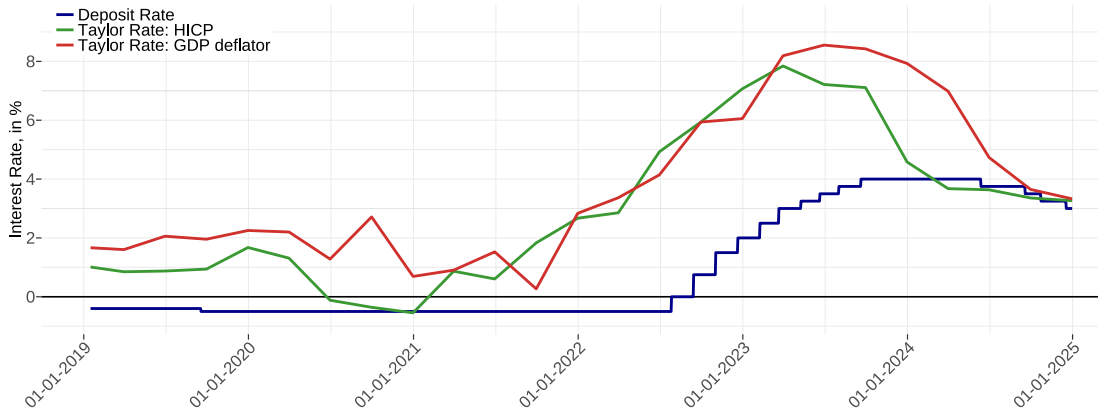
$$i_t^* = r^* + \pi_t + 0.5(\pi_t - 2) + 0.5(y_t - y_t^*), \quad (2)$$

where  $r^*$  is the natural real interest rate,  $(\pi_t - 2)$  is the deviation of inflation from the target and  $(y_t - y_t^*)$  refers to the output gap. Tatar and Wieland (2025) derive Taylor rates for two different inflation measures, the HICP core to exclude volatile energy prices and the GDP deflator. GDP data is only available on a quarterly basis. Therefore, the Taylor rates provided by Tatar and Wieland (2025) are also quarterly.

To account for the exact timing of the changes in the ECB’s policy rate and to fully exploit the daily frequency of the survey data, we construct daily Taylor rates using a weighted average of the quarterly Taylor rates for the current and the previous quarter where the weights depend on the position of day  $t$  within the quarter. In accordance with the estimates from European Central Bank (2025), Tatar and Wieland (2025) consider Taylor rates based on  $r^* = -1.5\%$  and  $r^* = 0.5$ .

Figure 2 shows the ECB’s deposit rate and the Taylor rates for  $r^* = 0.5\%$ . Note that both Taylor rates exceed the ECB’s deposit rate most of the time. In line with the ”too low for too long” hypothesis, the resulting interest rate gaps are particularly high during the period of high inflation. For  $r^* = -1.5$ , Taylor rates shift downwards and the period of the high interest gap would be a few months shorter. In our application, we prefer the HICP-based Taylor rate because the inflation target refers to the HICP and the latter is much more visible for consumers than the GDP-deflator. Moreover, we prefer  $r^* = 0.5$  because the higher real rate ensures that Taylor rates do not fall below the deposit rate when the latter is already below zero. In our empirical analysis, we shall also experiment with Taylor rates based on the GDP deflator and  $r = -1.5$  to assess the robustness of our results.

Figure 2: The ECB’s policy rate and the Taylor rule



NOTE. The Figure shows the ECB’s deposit rate and the (daily interpolated) Taylor rates based on HICP and the GDP deflator as provided by Tatar and Wieland (2025), see Eq. (2). For both rates, the natural rate of interest  $r^*$  is set to 0.5. Sample period: January 16, 2019 to December 31, 2024.



### 3 Inflation target credibility and the interest rate gap

#### 3.1 The empirical model

Coleman and Nautz (2025) investigate the impact of inflation on the credibility of the inflation target but do not account for the ECB’s interest rate policy. Therefore, we extend their analysis by incorporating the interest rate gap  $|i_t^* - i_t|$ , the difference between the Taylor rate ( $i_t^*$ ) and the ECB’s policy rate ( $i_t$ ). Specifically, our empirical results are based on the following linear probability model:

$$ITC_{it} = \alpha + \beta' X_i + \gamma^+ |\pi_t - 2|^+ + \gamma^- |\pi_t - 2|^- + \delta |i_t^* - i_t| + \varepsilon_{it} \quad (3)$$

where  $ITC_{it}$  is the credibility indicator variable that equals one if consumer  $i$  answers  $C$  or  $B$  (and is zero in all other cases).  $X_i$  contains a whole battery of personal characteristics of consumer  $i$ , including, for example, age, gender, and the level of education.<sup>5</sup> To be consistent with the inflation measure used for the Taylor rate,  $\pi_t$  is the monthly HICP core inflation. Specifically,  $\pi_t$  is defined as the inflation rate in the month before  $t$ , the day of the survey response.<sup>6</sup> Following Coleman and Nautz (2025), we consider positive ( $|\pi_t - 2|^+$ ) and negative ( $|\pi_t - 2|^-$ ) deviations of inflation from the target separately and allow consumers to respond differently to inflation rates below and above the target.

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<sup>5</sup>The full list of demographics we control for in the empirical analysis further contains the consumer’s job position, employment status, marital status, and a dummy variable to control for differences between East and West Germany. The results obtained for demographics are not presented but are available on request.

<sup>6</sup>Since the treatment variable  $\pi_t$  is constant in a given month, we clustered the standard errors accordingly, see Abadie et al. (2023).

### 3.2 Estimation results

Table 1: Inflation target credibility, inflation and the interest rate gap

$ITC_{it} = \alpha + \beta' X_i + \gamma^+  \pi_t - 2 ^+ + \gamma^-  \pi_t - 2 ^- + \delta  i_t^* - i_t  + \varepsilon_{it}$			
	(1)	(2)	(3)
$ i_t^* - i_t $	<b>-0.044</b> (0.006)	<b>-0.040</b> (0.011)	<b>-0.039</b> (0.011)
$ \pi_t - 2 ^+$	<b>-0.026</b> (0.013)	<b>-0.046</b> (0.012)	<b>-0.027</b> (0.018)
$ \pi_t - 2 ^-$	<b>0.084</b> (0.025)	<b>0.096</b> (0.029)	<b>0.111</b> (0.029)
$r^*$	0.5	-1.5	0.5
$i_t^*$	HICP core	HICP core	GDP deflator
$R^2$	9.4	8.6	8.7
Obs.	222,203	222,203	222,203

NOTE.  $ITC_{it} = 1$  if consumer  $i$  answers  $C$  or  $B$  implying that the inflation target is seen as credible.  $r^*$  indicates the real rate used in the Taylor rate. In Columns (1) and (2), the inflation measure is HICP-core inflation. (3) shows the results for a Taylor rate based on the GDP deflator. Controls include the full list of personal characteristics. Standard errors clustered at the monthly level in parentheses. Bold font shows significance at the 5% level. Sample period Jan 16, 2019 to Dec, 31 2024.

Table (1) summarizes our main results obtained for different versions of the Taylor rate. First, they confirm the asymmetric adjustment of inflation target credibility to deviations of inflation from its target for the model extended by the interest rate gap. In accordance with Coleman and Nautz (2025), there is only a plausibly signed response of ITC to target deviations if inflation is above target. In particular, increasing inflation from, for example, 1% to 2% decreases, not increases, the credibility of the target. More importantly, however, and irrespective of the underlying Taylor rate, the corresponding interest rate gap is highly significant and plausibly signed. Column (1) shows the results based on the HICP-based Taylor rate with a real rate of  $r^* = 0.5$ , the most plausible Taylor rate in our application. Note that this Taylor rate also leads to the ITC equation with the highest  $R^2$ . The estimated coefficients indicate a strong impact of the interest rate gap compared to inflation. While an increase of inflation from, say, 3% to 4% lowers credibility by 2.6, a comparable widening of the interest

rate gap would lower credibility by 4.4 percentage points. This suggests that closing the interest rate gap could have helped restore inflation target credibility during the recent high inflation period.

### 3.3 Counterfactual inflation target credibility

Table 1 shows that inflation target deviations and the ECB’s policy rate significantly affect the credibility of the inflation target. To illustrate the economic relevance and size of both effects, we employ the estimated ITC equations for a simple counterfactual analysis. In a first step, we adjust the degree of inflation target credibility perceived by the representative consumer ( $ITC_t$ ) for the estimated impact of the target deviation. Using the estimates from Column (1), the counterfactual degree of inflation target credibility adjusted for the impact of target deviations,  $ITC_t^\pi$ , is defined as:

$$ITC_t^\pi = ITC_t + 0.026 \cdot |\pi_t - 2|^+ - 0.084 \cdot |\pi_t - 2|^- \quad (4)$$

Accordingly, in a second step,  $ITC_t^{\pi,i}$  describes the counterfactual degree of inflation target credibility if both inflation was on target and the ECB’s policy rate followed the Taylor rule:

$$ITC_t^{\pi,i} = ITC_t + 0.026 \cdot |\pi_t - 2|^+ - 0.084 \cdot |\pi_t - 2|^- + 0.044 \cdot |i_t^* - i_t| \quad (5)$$

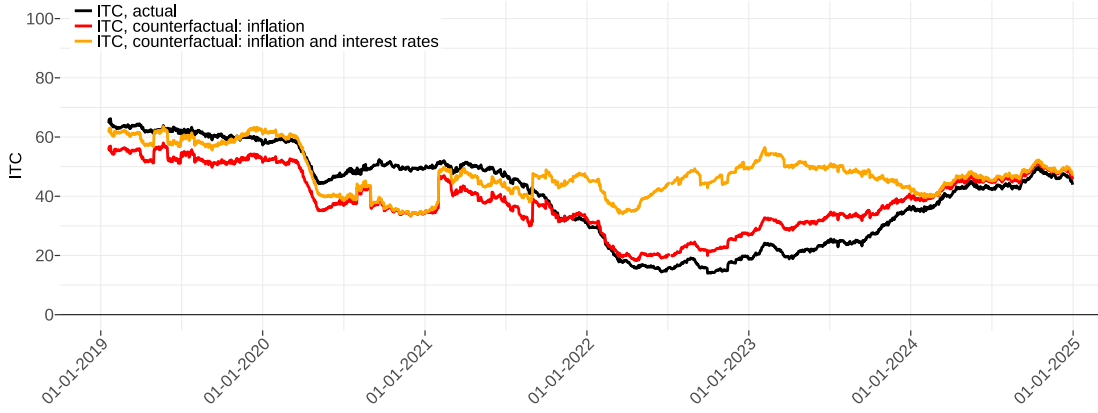
By construction, the counterfactual series are very close to actual ITC when inflation is close to target and the deposit rate follows the Taylor rate, see Figures 1 and 2.

Figure 3 displays the actual degree of inflation target credibility ( $ITC$ ) and the counterfactuals obtained from (4) and (5).<sup>7</sup> According to the counterfactual series, the massive dent in inflation target credibility observed from 2021 to the end of 2023 could have been ameliorated by an earlier and more decisive tightening of monetary policy, see Tatar and Wieland (2025). Note that in this period, the ECB’s interest rate policy was more important for the decline of inflation target credibility than the actual rate of inflation.

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<sup>7</sup>Results for the alternative Taylor rates are similar and shown in the appendix.

Figure 3: Actual and counterfactual inflation target credibility



NOTE. The Figure displays the actual degree of inflation target credibility  $ITC$  (black) together with the counterfactual series  $ITC^\pi$  and  $ITC^{\pi,i}$  based on equations (4) and (5).  $ITC^\pi$  (red) adjusts only for the estimated effect of deviations of inflation from target.  $ITC^{\pi,i}$  (yellow) additionally accounts for deviations of the ECB's policy rate from the Taylor rate.

## 4 Conclusion

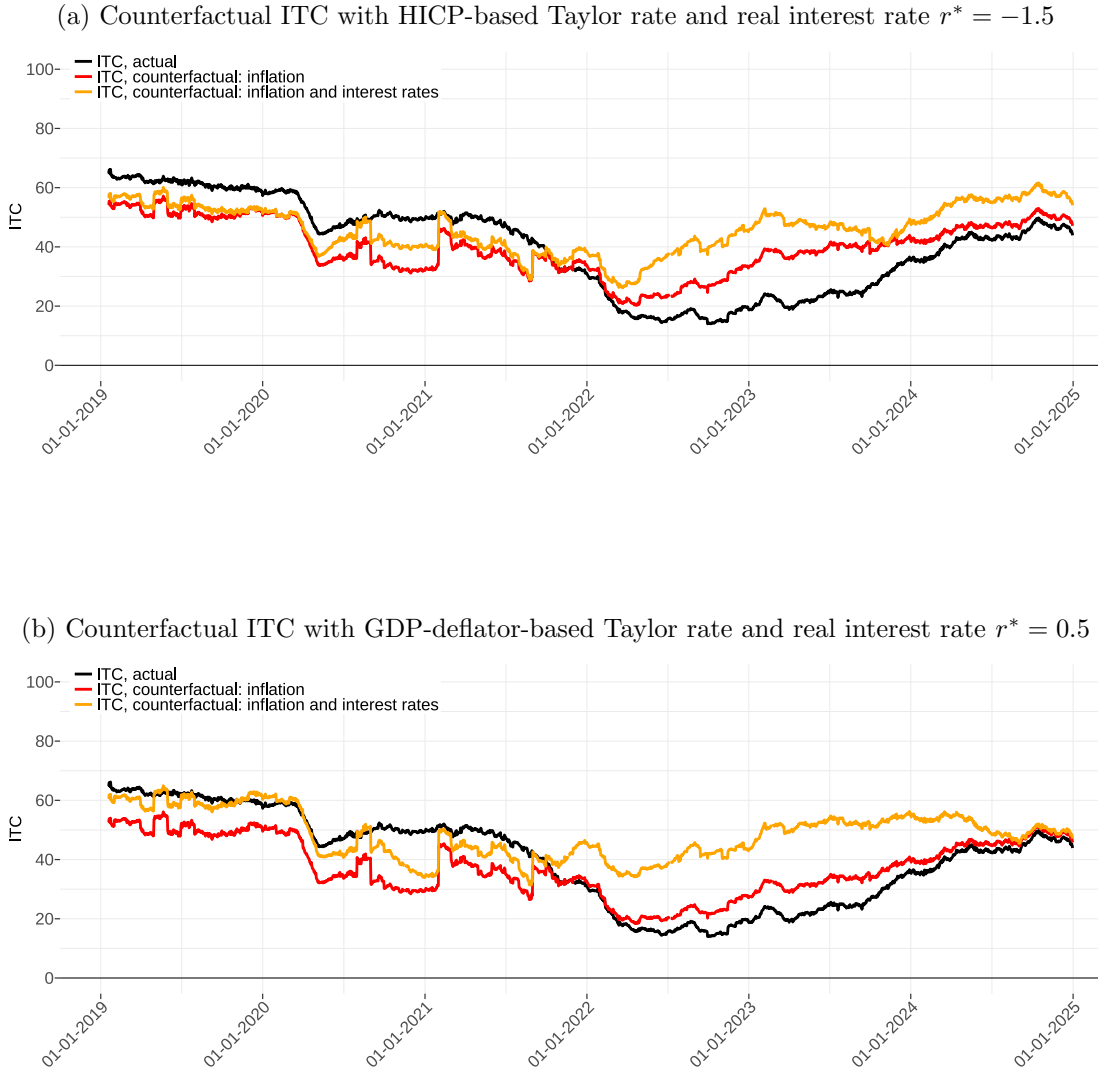
Inflation targets can only be effective if they are credible, that is, if enough people expect that monetary policy will actually achieve the target. Drawing on survey data for German consumers from 2019 to 2024, we find that the time-varying degree of inflation target credibility depends not only on the prevailing rate of inflation but also on the interest rates set by the central bank. In particular, the marked decline in the credibility of the inflation target observed between 2021 and late 2023 could potentially have been attenuated through an earlier and more resolute tightening of monetary policy. Our survey measures the credibility perceived by consumers, not the actual one. In the same vein, the Taylor rate serves as a proxy for the policy rate expected by the average consumer and need not be optimal from a monetary policy point of view, see Nakamura et al. (2025). However, in line with Tatar and Wieland (2025), our results indicate that simple outcome-based Taylor rules deserve more attention in the communication of the ECB's monetary policy strategy.

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## A Appendix

Figure A1: Counterfactual inflation target credibility: robustness analysis



NOTE. The Figures A1a and A1b display the actual degree of inflation target credibility  $ITC$  together with the counterfactual series  $ITC^\pi$  and  $ITC^{\pi,i}$  based on the estimation results obtained for alternative specifications of the Taylor rate, see Columns (2) and (3) of Table 1.  $ITC^\pi$  (red) adjusts only for the estimated effect of deviations of inflation from target.  $ITC^{\pi,i}$  (yellow) additionally accounts for deviations of the ECB's policy rate from the Taylor rate.

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