The Credibility of the ECB's Inflation Target in times of Corona: New Evidence from an Online Survey

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Discussion Paper

Economics

2020/11

The Credibility of the ECB's Inflation Target in times of Corona: New Evidence from an Online Survey

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This version:

June 8, 2020

Evidence on the credibility of a central bank's inflation target typically refers to the anchoring of survey-based measures of inflation expectations. However, both the survey question and the anchoring criteria are only loosely connected to the actual inflation target used in monetary policy practice. By using the exact wording of the ECB's definition of price-stability, we started a representative online survey of German citizens in January 2019 that is designed to measure the time-varying credibility of the inflation target. Our results indicate that credibility has significantly decreased in our sample period, particularly in the course of the coronavirus pandemic. Interestingly, even though inflation rates in Germany have been clearly below 2% for several years, credibility has declined mainly because Germans increasingly expect that inflation will be much higher than 2% over the medium term.

Keywords: Credibility of Inflation Targets, Household Inflation Expectations, Online Surveys, Coronavirus pandemic

JEL classification: E31, E52, E58,

1 Introduction

An increasing number of central banks have published quantitative definitions of price-stability in order to improve the communication and accountability of monetary policy. Since 2004, the European Central Bank (ECB) has repeatedly emphasized that in the pursuit of price stability it aims to maintain inflation rates *below, but close to, 2% over the medium term*. This definition of price stability plays a central role in the communication strategy of the ECB. Both, conventional and unconventional monetary policy measures of the ECB have always been explained to the public by the ultimate goal of steering too low inflation rates in the Euro area back to the below, but close to, 2% level. Therefore, even in times of corona, the credibility of the inflation target perceived by the public is of crucial importance.

Direct evidence on the credibility of inflation targets is surprisingly scant.[1] The bulk of the empirical literature evaluates a central bank's credibility indirectly via the anchoring of inflation expectations. Since a credible inflation target should anchor long-term inflation expectations, the standard anchoring criterion is that inflation expectations should not respond to economic news, forecast errors or shocks that are unrelated to the inflation target. Following Gürkaynak et al. (2005), it has been widely investigated whether and how expected inflation responds to surprises in macroeconomic news announcements.[2] While this literature provides important insights into the dynamics of inflation expectations, the anchoring criteria are only loosely connected to the precise definition of price stability used in monetary policy practice. For example, irrespective of their level, *constant* inflation expectations are always well-anchored under the news-criterion. As a result, the degree of central bank credibility might be overestimated in times when inflation expectations are persistently above or below the inflation target.

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[1] Ehrmann et al. (2013), for example, analyze data of ECB trust taken from the Eurobarometer survey. Christelis et al. (2020) employ survey data provided by the Dutch National Bank to explore the influence of trust in the ECB on inflation expectations. For the United States, the *Chicago Booth Expectations and Communications Survey* suggests that almost 40% of the respondents believe that the Federal Reserve was targeting an inflation rate of 10% or more, see Coibion et al. (2019).

[2] Bauer (2015) and Nautz et al. (2017) employ news-regressions to investigate the anchoring of inflation expectations in the U.S. and the Euro area. Nautz et al. (2019) estimate the response of inflation expectations to macroeconomic news shocks in a structural VAR model. Carvalho et al. (2019) propose a learning mechanism to estimate the time-varying sensitivity of long-term inflation expectations to forecast errors. Another strand of literature uses macro models of imperfect information to estimate the difference between the actual inflation target and the target perceived by the public, see e.g. Diegel (2020) and the literature cited therein.

A further issue of the indirect approach to central bank credibility concerns the interpretation of survey-based measures of household inflation expectations. For instance, in the tradition of the Michigan Consumer Survey, the widely-used Business and Consumer Survey of the European Commission asks households how they *expect that consumer prices will develop over the next 12 months*. One of the answer categories is that prices will "stay about the same" which should imply that the expected inflation rate is zero and, thus, clearly below the policy-intended level. However, for many consumers the mapping between prices and inflation rates is not straightforward. In particular, respondents tend to react differently, depending on whether they are asked about expected changes in prices in general or about expectations for the rate of inflation, see e.g. Arioli et al. (2017). Therefore, it is far from obvious to what extent, for example, a high percentage of "prices will stay about the same"–answers actually indicates the low credibility of a non-zero inflation target.

In view of these problems, this paper introduces a representative online survey of German citizens that is *designed* to measure the credibility of the ECB's inflation target. Using the exact wording of the ECB's definition of price stability, we measure the credibility of the inflation target directly and on a daily basis from January 2019 until May 2020. Our empirical results suggest that the credibility of the ECB's inflation target has decreased significantly during this period. The largest drop in credibility, observed in March 2020, could be related to the economic disturbances stirred by the coronavirus pandemic. However, it is worth emphasizing that even though inflation rates in Germany have been clearly below 2% for several years, we find that the credibility of the inflation target has declined mainly because Germans increasingly expect that inflation will be clearly above 2% over the medium term.

The rest of our paper is structured as follows. Section 2 introduces the online survey. Section 3 defines the credibility indicator and investigates how the credibility of the inflation target developed over time. Section 4 offers concluding remarks.

2 The Online Survey

2.1 Data

In order to collect data on the credibility of the ECB's inflation target, we cooperate with Civey, Germany's largest company for online surveys. Civey surveys are spread out across more than 25,000 partner websites including major German online-newspapers. The Civey panel consists of approximately one million German citizens that signed up with their email-address and created a user profile that provides further personal information about age, gender, education, purchasing power, and the respondent's postcode. Since the launch of our credibility survey in January 2019, the total number of participants has increased steadily to approximately 86,000 respondents in May 2020.

The statistical procedures to achieve representative results in online surveys are standard. In particular, Civey exploits official socio-demographic data taken from the German statistical office to accordingly weigh survey responses. Without weighting, for example, male respondents aged above 50 and a high purchasing power would be clearly over-represented in our sample. Online surveys can be answered on mobile devices which then improves the participation from people working full-time and other households that are "hard-to-reach" by traditional surveys. For more technical details about the online survey methodology, see Civey (2020).

Compared with traditional surveys that are conducted on a monthly or even quarterly basis, online surveys are easily implemented and can be evaluated at short notice and without any delay. Therefore, online surveys could be of particular interest for a central bank monitoring vigilantly how certain news or policy announcements have affected the credibility of its inflation target. In line with the practice of traditional surveys, results of Civey online surveys are based on at least 5000 observations. However, in order to fulfill that requirement, survey results may include responses given up to two months before. Accordingly, a daily time series of survey results may underestimate short-run developments. Our empirical analysis of the time-varying credibility of the ECB's inflation target is therefore based on tests for breaks in the long-run average of the daily survey data.

2.2 External Validity

In the monthly Business and Consumer Survey of the European Commission, a representative sample of European citizens including approximately 5000 Germans, is employed to measure short-term inflation expectations of consumers. Since 2017, Civey has conducted a corresponding online survey that adopts exactly the same wording:[3]

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) don't know.

The qualitative survey answers are typically summarized by the so-called expectations balance defined as $PP + 1/2P - MM - 1/2M$, see e.g. Arioli et al. (2017). In order to assess the external validity of our results, we compare the expectations balances obtained from the online survey with those from the survey of the European Commission.
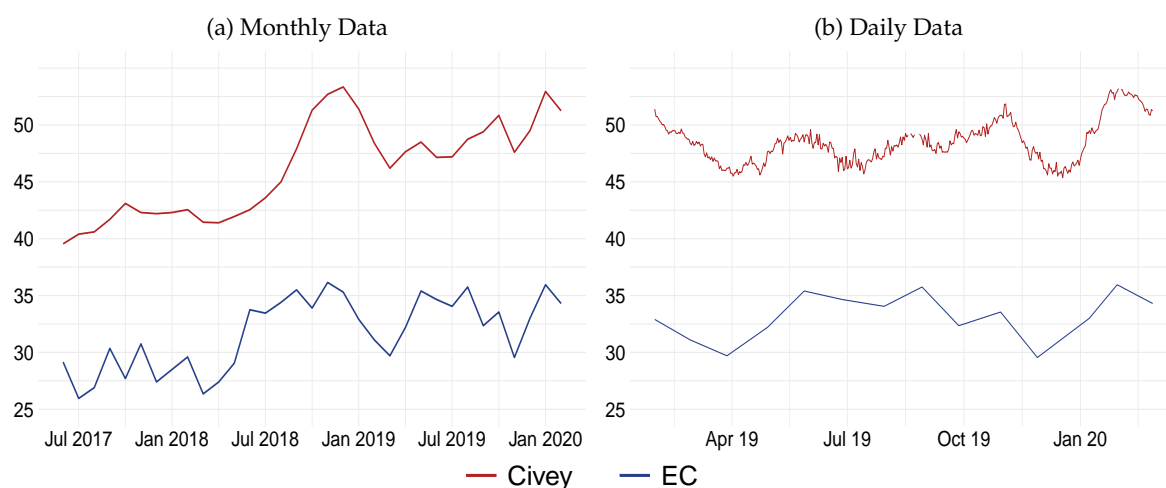

Figure 1   The Expectations Balance in Germany

Notes: Data provided by the Business and Consumer Survey of the European Commission and Civey. Figure 1a shows the expectations balance observed at the publication date of the monthly survey. Daily expectations balances from the online survey are shown in Figure 1b.

While expectations balances are always higher in the online survey, the two monthly time series have been highly correlated since 2017, compare Figure 1a. Figure 1b shows that this

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[3]The online survey can be accessed via `https://widget.civey.com/4433`. Arioli et al. (2017) provide a comprehensive analysis of the inflation expectations data provided by the Business and Consumer Survey of the European Commission.

is also true for daily expectations data from January 2019 onward. This strongly suggests that the reliability of the expectations data from the online survey is very high.

3 The Time-Varying Credibility of the ECB's Inflation Target

3.1 A Survey-Based Credibility Indicator

Surveys on household inflation expectations are often not designed to assess the credibility of a central bank's inflation target. To the best of our knowledge, our survey is the first one yet to use the exact wording of the ECB's definition of price stability and therefore allows a direct way of measuring the credibility of the inflation target. That being said, Civey launched the following survey question in January 2019.[4]

- 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

The answers C and, to a much lesser degree, B are compatible with a credible inflation target. Therefore, we propose to summarize the degree of credibility by the indicator variable $CI = C + \frac{1}{2}B$. Note that $CI = 1$ ($CI = 0$) indicates full (zero) credibility of the inflation target. Similar to the expectations balances that are widely used to evaluate qualitative inflation expectations data (see e.g. Arioli et al. (2017)), the weighting scheme of the credibility indicator is adhoc and debatable. We also experimented with alternative indicators, partly with negative weights on answers A, D, and/or N. It is worth emphasizing that our main results do not depend on that choice.[5]

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[4]The actual survey question is stated in German and applies to the official translation used by the ECB and the Bundesbank, i.e. *unter aber nahe bei 2% in der mittleren Frist*, see `https://widget.civey.com/4417`.
[5]For brevity, the results for alternative credibility indicators are not presented here but are available on request.

Figure 2   The Time-Varying Credibility of the ECB's Inflation Target
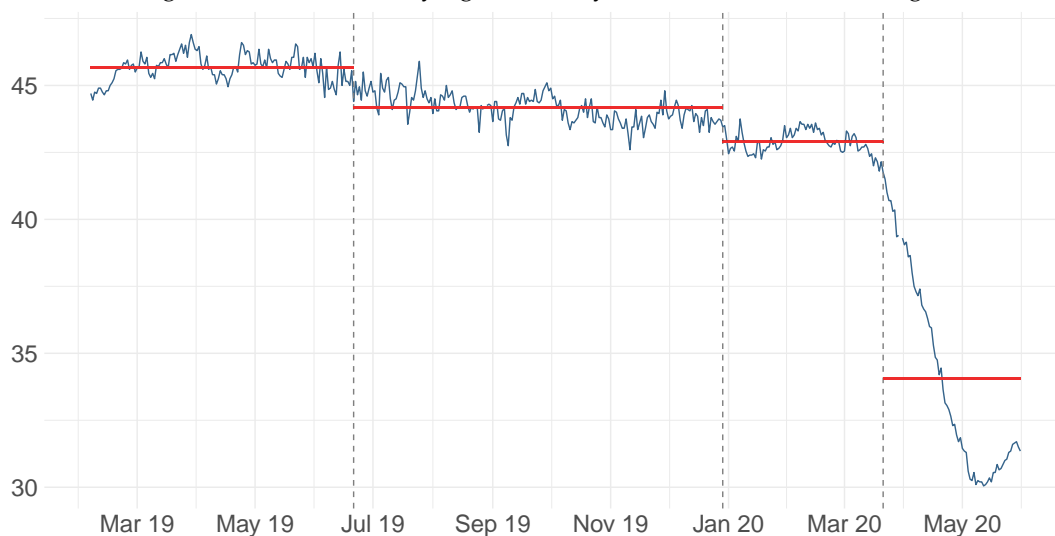
Notes: The Figure shows the daily development of the credibility indicator $CI = C + \frac{1}{2}B$. The vertical lines refer to the credibility regimes identified by multiple endogenous break tests. The horizontal lines show the corresponding mean value of the indicator. For more information, see Table 1.

3.2 Empirical Results

The data obtained for the credibility indicator CI are shown in Figure 2. Figure 2 indicates that the credibility of the ECB's inflation target slightly decreased throughout 2019 followed by a sudden decline in March 2020. This first impression can be supported by the results of multiple endogenous break point tests, see Table 1. According to these tests, the mean of the credibility indicator has decreased three times in our sample period. While the mean of CI fluctuated around 45.67 in the first half of 2019, it decreased in two small steps up to 42.90 during the first quarter of 2020. The reduction in credibility is more distinct in the most recent regime where the indicator CI reached its minimum and its mean has fallen to 34.06.

The survey data provides further insights into the drivers of the observed credibility decline. Table 1 presents the mean proportions of all 5 answer categories. Interestingly, the four credibility regimes identified by the break point tests do not only differ in the mean of the credibility indicator. Compared with the first regime, the credibility indicator has decreased in the second half of 2019 because both low-credibility categories, A and D, have increased. Therefore, even though inflation rates in Germany have been clearly below 2% for several years, the credibility indicator has declined partly because more people expected inflation

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Table 1   Survey Results

Credibility Regime	A >> 2%	B > 2%	C < 2%	D << 2%	N	CI
05.02.2019-20.06.2019	16.49	34.43	28.45	7.03	13.59	45.67
21.06.2019-28.12.2019	17.60	32.85	27.76	8.64	13.15	44.18
29.12.2019-20.03.2020	17.64	31.51	27.14	10.14	13.57	42.90
21.03.2020-31.05.2020	27.85	29.70	19.22	7.91	15.33	34.06

Notes: The Table shows the mean values of the various survey responses in the credibility regimes identified by the global testing procedure for multiple endogenous breaks introduced by Bai and Perron (1998). The procedure allows for heterogeneous error distributions and applies HAC standard errors. We trim 15% of the observations at the boundaries of each regime. *A*: Clearly above 2%, *B*: Above, but close to, 2%, *C*: Below, but close to, 2%, *D*: Clearly below 2%, *N*: Don't know, $CI = C + 0.5B$: Credibility Indicator

to be *clearly above 2% over the medium term*. By contrast, in the third regime, covering the first quarter of 2020, the proportion of *A* answers in the survey responses has remained stable and the further loss of credibility of the inflation target is mainly driven by a higher proportion of survey respondents that expect inflation to be *clearly below 2% over the medium term*. This trend, however, is reversed in the most recent regime that is presumably triggered by the coronavirus pandemic. Here, the significant decline of the credibility indicator is partly due to higher uncertainty (*N*) but predominantly driven by the higher proportion of people expecting inflation rates clearly above 2%.

4 Concluding Remarks

The current paper employs a novel data set taken from a representative online-survey of German citizens to investigate the time-varying credibility of the ECB's inflation target. Our results show that credibility has significantly declined during 2019 and, particularly, in March 2020 probably in response to the massive fiscal and monetary policy interventions implied by the coronavirus pandemic. Remarkably, even though inflation rates in Germany have been clearly *below* 2% for several years, the survey suggests that credibility of the ECB's inflation target has declined mainly because more people expect inflation rates to be *clearly above 2% over the medium term.*

In accordance with Coibion et al. (2020), a lack of credibility of the inflation target could be particularly problematic in times of unconventional monetary policies that are thought to operate primarily through the inflation expectations of households and firms. In fact, there has been an increased interest in the analysis of household expectations and several new, though standard, consumer surveys like the Fed's Survey of Consumer Expectations (SCE) or the ECB's Household Finance and Consumption Survey (HFCS) have been launched. Our results suggest that online surveys could be an additional tool for monetary policy analysis that might help to evaluate and improve the communication of the central bank with the public.

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