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Inflation Levels and (In)Attention

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Abstract:
Inflation expectations are key determinants of economic activity and are central to the current policy debate about whether inflation expectations will remain anchored in the face of recent pandemic-related increases in inflation. This paper explores evidence of inattention by constructing two different measures of consumers' inattention and documents greater inattention when inflation is low. This suggests that there is indeed a risk of an acceleration in the increases in inflation expectations if actual inflation remains high.

JEL Classifications: D80, E31, E70
Keywords: inattention, inflation expectations, expectation anchoring

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I. Introduction

Forming expectations is essential for optimal decision making and, as such, is at the core of economic behavior. In macroeconomics, expectations about future economic conditions are key because they affect agents' decisions, and these decisions, in turn, drive macroeconomic outcomes.[1] Understanding properties of expectation formation is therefore central to understanding macroeconomic dynamics.[2] The Phillips curve is a good example. As suggested by Phelps (1967) and Friedman (1968), and supported by recent studies, inflation expectations are at the core of the inflation-unemployment relationship.[3]

In spite of the importance of expectations, a large body of literature recognizes that consumers often overlook information relevant to forming accurate expectations, particularly inflation expectations.[4] This inattention is especially important in the context of inflation given the outsized effects of inflation on the macroeconomy and the dramatic changes that we've seen recently in inflation around the world.

While inattention has potentially far-reaching effects in economics and has been studied extensively in the theoretical literature, direct empirical evidence of pure inattention is hard to

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[1] Inflation expectations, in particular, are shown to explain household borrowing and lending behavior (Malmendier and Nagel, 2016), householding spending (Andrade, Gautier, and Mengus, 2020; Burke and Ozdagli, 2021), and firms' decisions on pricing, borrowing, employment, and investment (Coibion, Gorodnichenko, and Ropele, 2020).
[2] A lack of full information, whether or not it results from a rational choice, can generate persistence of variables and delayed responses to shocks (Mankiw and Reis, 2002; Gorodnichenko, 2008; Maćkowiak and Wiederholt, 2015). Rational inattention generates variation in the extent of information frictions across states of the world and across economic variables (Sims, 2003; Maćkowiak and Wiederholt, 2009; Maćkowiak and Wiederholt, 2015).
[3] Two recent studies find that survey inflation expectations, particularly those of consumers, are necessary to explain the recent flattening of the Phillips curve, as well as to deliver a stable inflation-unemployment relationship and explain the missing (dis)inflation during the Great Recession (Coibion and Gorodnichenko, 2018a; Doser and others, 2018).
[4] Armantier and others (2016) find that consumers grossly exaggerate inflation assessments; when individuals are then given information on actual food price inflation or professional forecasts, they significantly revise their expectations, suggesting that some relevant information had been previously overlooked. This is also consistent with results of a lab experiment suggesting that individuals take information on past inflation into account when forming expectations; however when information is not directly provided, most participants admitted they were guessing (Roos and Schmidt, 2011).

find.[5] The supporting evidence that does exist is only indirect. One type of evidence shows that models featuring inattention better match aggregate moments and responses to shocks (Mankiw and Reis, 2007; Maćkowiak and Wiederholt, 2015). Another type shows properties of forecasts, namely that they reflect only incomplete responses to new information (Carroll, 2003; Andrade and Le Bihan, 2013; Coibion and Gorodnichenko, 2015a); or that consumer forecasts often feature rounded numbers, a sign of general uncertainty regarding future inflation (Binder, 2017). The first type of evidence (inattention models better fit the data) tests not only inattention but also other assumed properties of the economy. The second type of evidence (forecasts' properties) is based on forecasts that, by definition, confound inattention to current information and deficiencies in forecasting ability or uncertainty about future economic conditions. Other studies such as Cavallo, Cruces, and Perez-Truglia (2017) and Armantier and others (2016) improve on this by experimentally examining consumer attention to exogenously provided inflation information in forming expectations. In particular, Cavallo, Cruces, and Perez-Truglia (2017) show that consumers in Argentina, at a time of high inflation, respond more to provided information than consumers in the United States do, at a time of low inflation. *Direct* evidence of inattention that does not rely on forecasts of future inflation is rare. The only study we are aware of that examines inattention directly is Coibion, Gorodnichenko, and Kumar (2018b), who find evidence supporting inattention in firms in a survey implemented between September 2013 and January 2014.

[5]A leading explanation of inattention is that this behavior may actually be optimal if agents have limited or costly cognitive resources (Sims, 2003; Maćkowiak and Wiederholt, 2009; and the papers reviewed in Sims, 2010; Veldkamp, 2011; and Wiederholt, 2010). Other models that can explain why agents do not incorporate all relevant information when forming expectations include: (i) models of imperfect information, such as models of sticky information and noisy information (Lucas, 1972; Mankiw and Reis, 2002; Woodford, 2003); (ii) models that relax rationality, such as models of adaptive expectations or other learning processes (Sargent, 1994; Evans and Honkapohja, 2001; Gaspar, Smets, and Vestin, 2010; Malmendier and Nagel, 2016); or behavioral models such as Gabaix (2019), and (iii) models that relax both the full information and rationality assumptions (Angeletos, Huo, and Sastry, 2020).

This paper is the first in the literature to examine direct measures of consumer inattention to inflation over a long period of time. We do so using two novel measures, both constructed from a particular response sequence in the Michigan Survey of Consumers (MSC) that elicits estimates of current inflation: Respondents who expressed a belief that future inflation would remain the same as the current rate reveal their assessments of current inflation in answering questions about future inflation. We are the first to examine inattention using this subsample of respondents in the MSC who are indirectly asked for an estimate of the current level of inflation. No other long-running survey of U.S. consumers asks for such an estimate, either directly or indirectly.

To fix ideas, we first clarify the distinction between inattention and other related concepts, such as forecast uncertainty, in a standard rational inattention framework where individuals optimally choose a level of attention. The decision to pay a non-zero level of attention is summarized by a simple condition comparing (1) the prior variance of potential outcomes to (2) the ratio of the marginal cost of paying attention to its marginal value, which we informally refer to as the cost-benefit ratio. The agent only pays attention when this ratio is lower than the prior variance.

This mechanism highlights a threshold for paying attention that is likely to be heterogeneous among individuals. Such heterogeneity could stem from different cognitive resources or marginal values of having correct information about inflation, leading only a fraction of the population to pay attention at any given point. Importantly, we expect this cost-benefit ratio, and hence aggregate consumer inattention, to vary with the state of the economy. More specifically, we posit that inflation correlates negatively with the cost-benefit ratio and therefore correlates positively with the share of individuals paying attention.[6] This can occur for two

[6] Akerlof, Dickens, and Perry (2000) posit a similar relationship that agents place less weight on their inflation expectations in decision making when inflation is low. In contrast, our hypothesis is that overall attention to inflation

potential reasons. Since inflation tends to lower real wealth, individuals' marginal value of wealth tends to be high when inflation is high, thus potentially increasing their marginal value of more accurate inflation assessments; more consumers may also receive "free" information about prices as they hit their budget constraints.[7]

To test this prediction that attention is higher when inflation is high, we construct two novel measures and tests based on this particular subsample of MSC respondents who indirectly give estimates of current inflation. Our first measure is the share of this subset of individuals who admit that they do not know the level of inflation. This measure is unique in providing an estimate of the extent that the population lacks knowledge of current inflation, and it is not confounded with individuals' ability to form forecasts of future inflation from their knowledge of current conditions. In this way, the measure is both better suited for providing evidence to inform theories about inattention to *current* inflation and different from measures of *forecast* uncertainty.[8] Having a measure unconfounded with uncertainty about future shocks to inflation is particularly important for testing our hypothesized relationship between attention and inflation levels. This is because inflation has historically been subject to large shocks (to oil prices, etc.) in periods when it was high and therefore overall forecast uncertainty may have been high, despite consumers paying a lot of attention to current inflation. The share of such don't know responses (out of those asked for a current inflation estimate) captures an extreme form of inattention and should therefore only

is low when inflation levels are low, which, as we will show later, changes how expectations are formed and not just how they are subsequently used.

[7] Since individuals pay attention when the cost-benefit ratio is below the variance of their prior belief, aggregate attention also increases with this *prior* variance. This is consistent with the evidence in Andrade and Le Bihan (2013), Coibion and Gorodnichenko (2015a), and Baker, McEllroy, and Sheng (2020) showing that attention increases following large shocks such as the Great Recession. In other words, attention increases following an elevated (prior) uncertainty. Therefore, in our study of the relationship between attention and inflation *levels*, we control for a proxy for prior uncertainty about inflation and find a relationship between attention and inflation levels above and beyond the correlation between inflation levels and prior uncertainty.

[8] There are also papers using forecast disagreement as evidence of the existence of inattention (Mankiw, Reis, and Wolfers, 2003; Andrade and Le Bihan. 2013). However, movements in disagreement are not generally shown to be useful for studying changes in the degree of inattention over time. Indeed, we show below that disagreement is not monotonically related to attention in a rational inattention model.

be interpreted as a proxy of overall inattention. However, because this measure captures purely inattention, it allows us to test the inattention hypothesis, namely whether the share of inattentive individuals systematically varies with inflation. This is a major advantage of this measure.

Our second measure is the aggregate error in current inflation assessments. This measure is a complement to the first measure, which captured only an extreme form of inattention, and is related to the average attention in the population. We construct this measure based on the forecasts made once again by the subgroup of respondents for whom these forecasts are equivalent to a current inflation estimate. While forecast errors are widely used in the literature that studies expectation formation, our second measure is novel in examining errors in assessments of *current* inflation that are not confounded with uncertainty about future shocks or forecasting difficulties—an improvement on existing similar measures in the literature for the purposes of studying inattention. We use the rational inattention model to develop tests of the inattention and inflation relationship that involve this error measure.

The results from both measures confirm our hypothesized negative inattention-inflation relationship (that is, positive *attention*-inflation relationship). With these results in mind, we confirm this relationship in a commonly used model of inflation forecasts estimated using the full-sample median inflation expectation. In this setting, greater attention at high levels of inflation implies a stronger response of the median inflation expectation to new information, proxied using a lagged forecast error. This is exactly what we find for both the 1-year-ahead and the long-term 5- to 10-year-ahead median inflation expectations.[9] These results also suggest that expectations are better anchored when inflation is low, a result of particular interest in the current environment

[9] This is consistent with other findings showing that, in the 1997–2015 period characterized by low inflation, aggregate inflation expectations were less responsive to macroeconomic shocks (Pfajfar and Roberts, 2018).

of accelerating inflation. We confirm this fact using two other measures of the anchoring of expectations: the cross-sectional dispersion and size of revisions of long-term inflation forecasts.[10]

To complement this evidence, we examine an analogous survey measure of individual inattention in Europe. While the euro area (EA) data is only available over a sample that is both short and characterized by low levels of inflation (mostly below 3%), we nevertheless also find a negative and significant relationship between inattention and the level of inflation in the EA.

Lastly, we document that higher inflation is also associated with more news reporting about inflation, a fact that simultaneously indicates greater (media) attention to inflation and lower consumers' cost to acquiring information about inflation. Using a news reporting index, we show that consumer attention to inflation is positively correlated with news reporting and, importantly, this relationship is stronger when inflation levels are high.

II. Theoretical Framework

A. Model

Consider a simple rational inattention model that follows Sims (2003), where the agent's objective is to target next-period inflation. An agent has to decide how much (costly) information to gather to achieve the following:

$$\max_{f} -\gamma_t E_f[(a_t - \pi_t)^2] - \lambda_t I(a_t;\pi_t)$$

where a_t is an action, π_t is the true unobserved inflation rate for which the agent has a prior distribution of $\pi_t \sim N(\tilde{\pi}, \sigma_\pi^2)$, and the agent chooses a joint distribution $f(a_t, \pi_t)$ over a_t and π_t to solve the objective function. $E_f[\cdot]$ is the rational Bayesian expectation under the distribution f, γ_t is the marginal value of having a more accurate belief about current inflation, the quantity of

[10] This evidence that expectations are better anchored when inflation levels are low can be a factor underlying the observation in Fuhrer, Olivei, and Tootell (2012) that inflation appears to have a lower bound.

information is given by the Shannon mutual information $I(a_t;\pi_t)$, and λ_t is the marginal cost of information. Note that Gabaix (2019) shows that the solution to this problem is equivalent to that under a model of sparsity with a linear attention cost function. In the latter model, γ_t is positively related to the agent's marginal value of real wealth.

Since the objective function is quadratic and π_t has a normal prior distribution, the optimal joint distribution f will also be normal and is equivalent to receiving a signal $s_t = \pi_t + \varepsilon_t$ with an error $\varepsilon_t \sim N\left(0, \sigma^2_{\varepsilon,t}\right)$ that is uncorrelated with the error in the prior. This yields a posterior distribution with mean $E[\pi_t|\tilde{\pi}, s_t]$ and variance $\sigma^2_{\pi|s,t}$ where the agent can choose $\sigma^2_{\pi|s,t}$ or $\sigma^2_{\varepsilon,t}$. Since the focus of this study is attention, it's convenient to re-express this problem as a choice of an attention level m_t, which is the weight placed on the signal s_t when forming posterior expectation $E[\pi_t|\tilde{\pi}, s_t]$. In a full-information rational-expectations setting, agents are typically assumed to observe the current value of inflation perfectly without incurring any cost of doing so—that is that $m_t = 1$. We characterize any value $m_t < 1$ as "inattention" with inattention being greater when m_t is low. For a given signal noise variance $\sigma^2_{\varepsilon,t}$, the Bayesian posterior mean is $E[\pi_t|\tilde{\pi}, s_t] = (1 - m_t)\tilde{\pi} + m_t s_t$ with $m_t = \frac{\sigma^2_\pi}{\sigma^2_\pi + \sigma^2_{\varepsilon,t}}$ and the posterior variance is given by $\sigma^2_{\pi|s,t} = \frac{\sigma^2_\pi \sigma^2_{\varepsilon,t}}{\sigma^2_\pi + \sigma^2_{\varepsilon,t}} = (1 - m_t)\sigma^2_\pi$. In this case, the optimization can be rewritten as:

$$\max_{m_t \in [0,1]} -\gamma_t (1 - m_t)\sigma^2_\pi - \lambda_t \ln\left(\frac{1}{1 - m_t}\right),$$

yielding the following optimality condition:

$$m_t = max\left\{0, 1 - \frac{\lambda_t}{\gamma_t}\frac{1}{\sigma^2_\pi}\right\}.$$

That is, for prior variances smaller than the cost-benefit ratio, the agent pays no attention. When the optimal attention is positive, attention is increasing in the prior variance. The cost-benefit ratio

$\frac{\lambda_t}{\gamma_t}$ also plays a major role. When this ratio declines, whether due to an increase in the marginal value of wealth γ_t or a decline in marginal costs λ_t, greater attention is paid to new information.

To illustrate the distinction between attention m_t and forecast uncertainty (conditional variance in inflation forecasts), which is captured in papers such as Giordani and Söderlind (2003), Bruine de Bruin and others (2011), and Binder (2017), we consider inflation that follows an AR(1) process, $\pi_{t+1} = \rho\pi_t + v_{t+1}$. We assume that $v_{t+1} \sim N(0, \sigma_v^2)$ and that it is uncorrelated with both the noise in the prior and the signal noise ε_t. Then, given the attention level m_t, expectations of future inflation are given by $E[\pi_{t+1}|\tilde{\pi}, s_t] = \rho E[\pi_t|\tilde{\pi}, s_t]$ with conditional variance:

$$Var(\pi_{t+1}|\tilde{\pi}, s_t) = E[(\pi_{t+1} - E[\pi_{t+1}|\tilde{\pi}, s_t])^2] = \sigma_v^2 + \rho^2(1 - m_t)\sigma_{\tilde{\pi}}^2.$$

From this expression, it becomes clear that the mapping from inattention to forecast uncertainty depends on the persistence of the inflation process ρ, the prior variance $\sigma_{\tilde{\pi}}^2$, and the variance of shocks to future inflation σ_v^2. In particular, inflation has historically been more volatile when it is high. Thus, forecast uncertainty may have a positive correlation with inflation even if inattention has a negative correlation.[11]

Lastly, it is important to note that a commonly used measure of disagreement in current inflation assessments is not monotonically related to attention. This can be seen by examining the following expression for the deviation of an individual assessment from the aggregate assessment, where individuals are explicitly indexed using the subscript *i*:

$$E\left[\pi_t|\tilde{\pi}_i, s_{i,t}\right] - \int E\left[\pi_t|\tilde{\pi}_i, s_{i,t}\right] di = \left(1 - m_{i,t}\right)\left(\tilde{\pi}_i - \int \tilde{\pi}_i \, di\right) + m_{i,t}\varepsilon_{i,t}.$$

In fact, even using an extreme assumption that individuals are identical in their attention and prior distributions, that is, dispersion arises only from the error term, the relationship remains

[11] Note that, for simplicity, we follow the literature in not explicitly modeling a preference for accurate inflation forecasts in addition to the preference for accurate beliefs about current inflation.

nonmonotonic because while the weight on the signal noise increases with attention, the variance of the signal noise $\sigma^2_{\varepsilon,t}$ decreases with attention m_t since, as stated above, $m_t = \frac{\sigma^2_\pi}{\sigma^2_\pi + \sigma^2_{\varepsilon,t}}$.

B. Testable Hypothesis

As is clear from the derivation of sections II.A, the cost-benefit ratio is crucial for whether one pays attention and to what extent. We assume that this ratio is heterogeneous, that different people have a different cost of acquiring more information. That can be due to differences in cognitive resources and/or access to sources of information. Different people are also likely to have different marginal benefits of better information driven by different marginal values of wealth. For instance, people who exhaust their income on everyday necessities have a higher value of accurate knowledge of prices than people who live well within their means and can therefore afford to mistakenly spend more than intended.

If the cost-benefit ratio is heterogenous, the model implies that in any point in time, some fraction of the population will and some fraction of the population will not pay attention to inflation. Hence, we would expect to always have some share of individuals who believe inflation will stay the same but will not know what it is (measure I). Likewise, errors in the numeric response to inflation are also expected (measure II). Thus, in order to test for how inattention evolves with inflation, comparative statics on how these measures change with inflation are needed. These comparative statics, in turn, rely on the changes to the overall distribution of cost-benefit ratios as inflation varies. When inflation rises, consumers' value of wealth, and therefore the marginal benefit of better information, is likely to increase. When inflation rises, more individuals hit—or get close to hitting—their budget constraints. This also means that information costs are likely to decrease, since some people will get "free" information that prices are higher than they thought by hitting their budget constraint. Together, this implies that the cost-benefit ratio should decline with inflation, leading more individuals to find it worthwhile paying more attention. Formally, m_t is expected to increase with inflation; this is summarized in the hypothesis below:

Inattention-Inflation Hypothesis: The higher the inflation, the lower the fraction of inattentive individuals—or the higher the fraction of *attentive* individuals—in the population.

At the same time, note that attention is also increasing in the prior variance, which may be correlated with the level of inflation, and so we also control for a proxy of this variance in our analysis.

Lastly, it's important to keep in mind that we are not positing a causal relationship between inflation and inattention in our main hypothesis, but rather a correlation that exists due to the association between inflation and the cost-benefit ratio of paying more attention. Nonetheless, we are interested in this correlation, as opposed to a correlation between inattention and any other variable, because of the direct implications that it can have for the dynamics of inflation. We discuss some potential implications in the conclusion.

III. Data and Measures of Inattention in the United States

To test the Inattention-Inflation Hypothesis, we use the MSC set of questions regarding 1-year-ahead inflation expectations, as shown in Figure 1. We develop two measures to directly examine the hypothesis, both using the fact that the MSC asks about inflation expectation in two steps. In the first step respondents are asked a qualitative question—whether they think that prices next year will increase, decrease, or will not change. Those who think that prices will not change are then asked whether they truly mean that the price level will not change or actually that the rate of change in prices (that is, inflation) will remain the same. This is the first step of the question.

The second step requests a numeric expectation: What is the inflation rate expected? Respondents can provide a number or say they don't know. See Figure 1 for exact MSC wording.

Naturally, consumers may have difficulty providing a numeric response, certainly an accurate response, for various reasons; people may, for example, expect prices to go up but are not sure by how much. However, the consumers who expect the inflation rate to be the same as today should not have a problem providing a numeric response, and an accurate one too, *unless* they have not paid attention to current inflation. This is a major advantage of examining responses of individuals who reported in step 1 that they expect the inflation rate to remain the same (that is, responded "stay the same" to question A12 and "go up" to question A12a in Figure 1). Essentially, this particular question sequence provides a subsample of respondents who are indirectly asked about their assessments of current inflation, a question that is not directly asked in any long-running survey of U.S. consumers. The measurements constructed in this paper therefore focus on this subset of respondents.

A concern with constructing measures based on a subsample of individuals who in step 1 indicated they believe inflation will remain the same, which we label "Same-Up," is that this is a group of respondents who misunderstood the first question, who may be less attentive than the general population. It is therefore worthwhile to examine the Same-Up group in terms of demographics and actual average forecasting error. Comparing the Same-Up group's average age, average income, share of females, and college attainment rate, to those of all other respondents we find that the Same-Up group is a bit younger (46 versus 49), better off financially (average income is $62,347 versus $56,512), has slightly lower share of females (52.3 percent vs. 53.5 percent), and is more educated (47 percent college educated versus 41)—see Table 1. Because being more educated and financially better off is associated with having more accurate information, more accurate inflation expectation, and higher financial literacy (see for example, van der Klaauw and others, 2008; Armantier and others, 2016; and reference within), the Same-Up group is expected, on average, to be better informed about inflation. Indeed, examining the forecast errors,[12] we find that the Same-Up group is similarly upwards biased in their inflation forecasts as the other respondents, but they make significantly smaller forecasting errors in absolute value than the rest of the sample population. In other words, based on demographics and actual forecasting errors, the Same-Up group seems to be as informed as the other sample, if not better, which suggests that proxies based on this subgroup to measure inattention are probably conservative. Furthermore, in terms of the response sequence, an inflation-naïve person who is asked whether prices will go up, go down, or stay the same will not confuse such a question with one about inflation. Only people who are thinking of inflation and are aware of the concept can make the mistake of responding that prices will stay the same, to then clarify that they meant that the rate of inflation will stay the same. We believe, then, that the individuals who are part of the Same-Up group are likely more aware of the concept of inflation compared to the general population. These individuals may therefore be more attentive to inflation as a group, rendering our measures of inattention conservative. Lastly, it is also important to note that the survey was conducted over the phone, and people sometimes use the words prices and inflation interchangeably.

[12] The forecasting error is computed with respect to the future realized inflation for all individuals who provided a numeric estimate (whether Same-Up or other respondents).

Another important point is that our measures are constructed as shares of "Don't know" responses or aggregate quantitative errors made *within* this subgroup of respondents. Therefore, our results are not driven by fluctuations in the size of this subgroup.[13,14]

Inattention Proxy Measure I

The first measure calculates the share of Same-Up individuals (those who believe inflation will remain the same in step 1) who in step 2 reported that they do not know the current rate of inflation (by responding "Don't know"). Individuals with such a response sequence—whom we label as "Same-DK"—reveal that they are completely inattentive to *current* inflation; after indicating that they believe prices will go up during the next year at the same annual rate as today, when probed, they could not provide a number for what this common rate is and instead said they "Don't know."[15] Interestingly, while this measure captures complete inattention, we verify a positive correlation with measures of milder forms of inattention. For example, we find a correlation of 0.55 between our inattention measure and the fraction of respondents who report

[13] The size of Same-Up group is higher with lower inflation over time, perhaps because more people believe inflation is going to stay stable when inflation is low, analogous to the findings in Andrade, Gautier, and Mengus (2020) regarding the fraction of respondents who believe that prices will stay stable. We find an increasing share of DK responses among the Same-Up group when inflation is low, despite the denominator of this share being larger.

[14] Aside from the size of the Same-Up group changing, one may be concerned that the composition of this survey subsample is changing systematically with inflation in a way that can influence our results. To assess this, we check whether inflation also correlates with relative differences between this subgroup and the other respondents in terms of the properties presented in Table 1. Of these measures, the only statistically significant relationships that we find are that income and education of the Same-Up group relative to other respondents decrease with inflation. To the extent that attention is generally higher among more educated and higher income people, these relationships suggest that changes in the Same-Up group over time may actually bias our estimates away from our hypothesis that attention is positively correlated with inflation.

[15] Binder (2017) uses all the responses to question A12b, including the "Don't know" response, to construct a measure of inflation uncertainty based on whether the numerical responses are round numbers. We measure only the fraction of respondents who answered "Don't know" to question A12b out of those who replied with "Stay the same" to question A12 and "Go up" to question A12a, as this discrepancy more directly indicates the respondent's inattention to current inflation conditions without being confounded with the individual's ability to form a forecast of future inflation based on his or her knowledge of current inflation.

extreme estimates of current inflation that deviate from the true level by more than 5 percentage points.

As is clear from the theoretical section, where the optimal solution for attention is given by $m_t = max\left\{0,1 - \frac{\lambda_t}{\gamma_t}\frac{1}{\sigma_\pi^2}\right\}$, the fraction of the population choosing complete inattention understates overall inattention, and we should expect many more individuals to be inattentive to a lesser degree or in ways not revealed by this particular response sequence. For instance, some inattentive individuals may respond "Don't know" to the first inflation expectation question: *"A12. During the next 12 months, do you think that prices in general will go up, or go down, or stay where they are now?"* However, such a DK response cannot serve as a proxy of inattention because it lumps together inattention with an inability to form a forecast of future inflation even with perfect knowledge of the current inflation rate. For example, a respondent may predict a decline in the price of oil due to a new extraction technology yet at the same time expect imported consumer goods prices to increase due to a trade war with China. In this case, the respondent may be uncertain of the net effect of these contradicting effects and hence may give a DK response despite being quite attentive to inflation and the factors driving it. The advantage of our proxy based on the "Same-DK" sequence is that it is not confounded with other such factors, and only inattention to current inflation can drive such a response.

Formally, consider a unit mass of individuals indexed by i that differ in information cost $\frac{\lambda_{i,t}}{\gamma_{i,t}}$, which has a cumulative distribution $G_t\left(\frac{\lambda_{i,t}}{\gamma_{i,t}}\right)$, and each chooses individually attention $m_{i,t}$. We consider our Same-DK measure in this setting to be a measure of individuals with attention $m_{i,t}$ below some threshold $\bar{m} \in [0,1)$, $DK_t = \int_0^1 \mathbb{1}\{m_{i,t} \leq \bar{m}\}\, di$. The threshold $\bar{m}$ can be mapped to a cost threshold $\frac{\lambda_{i,t}}{\gamma_{i,t}} \geq \frac{\bar{\lambda}}{\gamma} \equiv \sigma_\pi^2(1-\bar{m})$, and the fraction of Same-DK is then $DK_t = 1 - G_t\left(\frac{\bar{\lambda}}{\gamma}\right) = 1 - G_t\left(\sigma_\pi^2(1-\bar{m})\right)$.

Since $\bar{m} < 1$ and $G_t' \geq 0$, the fraction $DK_t = 1 - G_t\left(\sigma_\pi^2(1-\bar{m})\right)$ is weakly decreasing in σ_π^2 for a given distribution G_t. It is also decreasing in the overall distribution G_t itself, holding the threshold $\sigma_\pi^2(1-\bar{m})$ fixed. That is, the DK_t share will fall if the distribution of cost-benefit ratios shifts such that more individuals have cost-benefits below this threshold $\sigma_\pi^2(1-\bar{m})$. As we argue, when the cost-benefit ratios $\frac{\lambda_{i,t}}{\gamma_{i,t}}$ decrease with inflation, this rational inattention model implies the following: *The higher the inflation, the lower the fraction of inattentive "Same-DK" responses.*

Inattention Measure II

The second measure is complementary to the first measure in that it captures the error in reporting current inflation among those Same-Up respondents who in step 2 provided numeric responses rather than reporting that they "Don't know." Specifically, we take the difference between each of the numeric inflation estimates provided by individuals in the Same-Up group and the actual (current) inflation rate. According to the rational inattention model, this estimation error is equal to $E_i[\pi_t|\tilde{\pi}, s_{it}] - \pi_t = (1-m_{it})(\tilde{\pi} - \pi_t) + m_{it}\varepsilon_{it}$, where we now explicitly acknowledge the heterogeneity in attention and signal errors in the population. Making the standard assumptions that the realizations of the individual errors ε_{it} are cross-sectionally uncorrelated with attention m_{it}, the aggregate estimation error at time t is $(1-m_t)(\tilde{\pi} - \pi_t)$, where m_t is the average attention among all the individuals providing inflation prediction.

This formulation is static, given for a single time period where the agents have a prior belief that $\pi_t \sim N(\tilde{\pi},\ \sigma_\pi^2)$. To adapt this setup to the data, we generalize the model to a dynamic setting where agents' prior belief $\tilde{\pi}$ varies with time and is determined by information acquired in previous periods. We also allow a common component of signal noise such that the cross-sectional average of its realizations $\int_0^1 \varepsilon_{it}\, di = e_t$ may be non-zero though the ex-ante distribution of this common component, $e_t \sim N\left(0, \sigma_{e,t}^2\right)$, is mean zero, and is uncorrelated with other errors in the model, both contemporaneously and over time. This common error term could arise from, for example, a newspaper article providing an inflation estimate for the next year. In this case, the aggregate estimation error is:

$$\bar{\pi}_{t|t} - \pi_t = (1 - m_t)\left(\bar{\pi}_{t|t-1} - \pi_t\right) + m_t e_t,$$

where we now adopt the more compact notation $\bar{\pi}_{t|t} \equiv \int_0^1 E_i[\pi_t | \bar{\pi}_t, s_{it}] di$. The prior mean is proxied using the period $t-1$ aggregate prediction for π_t, denoted by $\bar{\pi}_{t|t-1}$. Using this relationship, we have two ways of evaluating the relationship between inattention and inflation. First, we regress the aggregate estimation error on the previous forecast error interacted with inflation and other control variables.[16] A significant negative interaction coefficient is consistent with the hypothesized positive relationship between attention and inflation. This is because a negative interaction means that the current assessment error is less correlated with the previous forecast error when inflation is high, consistent with consumers being more attentive to new information. Second, using the residuals from these regressions, we can isolate the attention

[16] Note that while the error being multiplicative in attention introduces a source of heteroskedasticity, the fact that attention multiplies an error that is assumed to be uncorrelated with other sources of prediction error in the model means that the error term remains uncorrelated with the lagged forecast error. Thus OLS estimates of this equation are unbiased. In the results below, we present standard error estimates that are robust to heteroskedasticity.

parameter of interest, m_t, by examining the logarithm of the absolute values of residuals from this regression:

$$\log\left|\bar{\pi}_{t|t} - \pi_t - (1 - m_t)\left(\bar{\pi}_{t|t-1} - \pi_t\right)\right| = \log|m_t e_t| = \log m_t + error_t.$$

This log absolute residual is a proxy for the log aggregate attention level, and according to the Inattention-Inflation Hypothesis, it should be increasing in inflation.[17]

IV. Results using U.S. Data

We start by examining a scatter plot of the share of Same-DK responses versus the annual (overall) inflation rate from March 1982 through November 2021—see Figure 2. Though there is noise in the Same-DK measure, a negative relationship with inflation remains evident. In particular, the fraction of this subsample of the MSC that fails to even venture a guess as to the current inflation rate is nearly double during the post-2007 period, when annual inflation rates averaged 1.9 percent, compared to the pre-1993 period, when inflation averaged 4.1 percent.

This negative relationship is confirmed in a monthly regression of the share of Same-DK responses on the overall annual inflation level. The result is robust to controlling for past variation in realized inflation and the U.S. unemployment rate (see Table 2, columns 1–3). That is, we find that an increase in inflation rate is significantly and negatively related to the share of Same-DK responses, above and beyond its relationship with inflation volatility, consistent with our Inattention-Inflation Hypothesis. Furthermore, the negative relationship with the unemployment rate is also consistent with the idea behind our hypothesis, namely that the cost-benefit ratio of

[17] The second measure examines error in inflation estimates among those in the Same-Up who did give their inflation forecast (which is their estimate of current inflation, as implied by Step 1). This measure, like measure I, should not be affected by the size of the Same-Up group varying over time. If anything, this measure is a more accurate proxy of inattention as the group becomes larger, which happens at lower levels of inflation. Because the Same-Up group tends to be more educated and better off financially, and therefore more financially informed, this biases us against finding evidence in support of the Inattention-Inflation Hypothesis.

acquiring information about inflation is lower during bad times when consumers have higher marginal value of wealth and more frequently hit their budget constraints.

Next, we turn to the complementary measure of the aggregate estimation error, which we construct using the median inflation estimate.[18] We first run a regression of the observed median forecast error in each period, $\bar{\pi}_{t|t} - \pi_t$, on the lagged error, $\bar{\pi}_{t|t-1} - \pi_t$, where $\bar{\pi}_{t|t-1}$ is proxied using the 12-month lagged median prediction, and the interaction of this error with inflation.[19] According to the model, $\bar{\pi}_{t|t} - \pi_t = (1 - m_t)\left(\bar{\pi}_{t|t-1} - \pi_t\right) + m_t e_t$, the coefficient on the lagged error term should be positive while improved attention translates into an attenuated weight on lagged error and enhanced weight on the common signal error, e_t. According to the Inattention-Inflation Hypothesis, the interaction term of the inflation rate and the lagged error term should therefore be negative. We refer to this regression analysis as Stage 1 of testing inattention using the median forecast error measure among the Same-Up respondents. The results of these Stage 1 regressions are in Table 3, columns 1–3, showing results that are consistent with the Inattention-Inflation Hypothesis—namely that the coefficient on the lagged error is positive, yet declining with inflation. The results are robust to controlling for inflation volatility, the U.S. unemployment rate, and their corresponding interactions with the lagged error term.

Next we proceed to Stage 2, where we focus on the residuals of Stage 1's regression, which, as explained in section III, equal the attention times the common error in the individual signal. We then take the logarithm of the absolute value of the residuals ("log residuals") and regress that on inflation and controlling for inflation variance and the unemployment rate.

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[18] We conducted a similar analysis using the mean estimate and find similar results.

[19] Note that we use the 12-month lag since the survey asks about inflation over 12-month periods. Thus, the frequency in our model is one year. Our regression specifications can be interpreted as overlapping 1-year periods measured each month. We use Newey-West heteroskedasticity and autocorrelation consistent standard errors to account for the overlapping observations.

The results of the Stage 2 regressions are in Table 4, columns 1–3, showing that the log residuals—which equal the log attention plus error—are higher in times of high inflation. The result holds after controlling for inflation volatility and for the U.S. unemployment rate; without the controls, the coefficient is not statistically significant but has the expected sign and is of a similar magnitude to the estimates using the other specifications. Together, we conclude attention increases (or *inattention* decreases) with inflation: On average, individuals put more weight on the common error (a part of the contemporaneous signal) when inflation is high, consistent with the Inattention-Inflation Hypothesis.

A possible objection to using these measures is that the results they generate may be driven by a few episodes of large errors, such as the Great Recession. We address this objection by examining the results up to 2007, before the financial crisis and the Great Recession, excluding periods where aggregate forecast errors exceeded ±2 percent, excluding periods with inflation of over 5 percent, and excluding National Bureau of Economic Research (NBER) recessions. Generally, these robustness checks yield the same qualitative results, refuting such concerns. The results are presented in columns 4–7 in Table 2 for measure I and columns 4–7 in Tables 3 and 4 for measure II.

Recent influential studies highlight the importance of personal experience in behavior and long-term beliefs, including inflation expectations (Malmendier and Nagel, 2011, 2016; Malmendier and Shen, 2018). In the context of inflation inattention, experience effects suggest that the inflation-inattention relationship may be driven by individuals of specific cohorts, either because the variation of attention within specific cohorts drives the overall result or because the changing age composition in the sample leads to the relationship we find. In other words, inattention may not be related to the absolute level of inflation but rather its level relative to the inflation during one's formative years. In this case, one might expect the relationship to be driven by respondents who were in their prime (25 to 54 years of age) during high inflation periods (1973—1982). To examine these possibilities, we examine the share of Same-DK and the mean error measure (both Stage 1 and Stage 2 regressions) twice, once considering only individuals who were at their prime age during high inflation period and once considering only individuals who were not in their prime during this period. The results using these cohorts remain largely the same for measure I—see columns 8–9 in Table 2. For measure II, the signs of the point estimates remain robust but there is less statistical significance in the Stage 1 coefficient on inflation for respondents who were in their prime during high inflation periods, unsurprising considering that these age restrictions reduce our survey sample size in each period, thus increasing measurement error in our variables. This suggests that the pattern documented in this paper is not driven by the experience of a specific cohort—see columns 8–9 in Tables 3 and 4.

V. Fitting a Standard Inflation-Expectations Model

The strong results suggest a systematic relationship between inattention and the inflation level, where inattention declines as inflation rises. While we focus on a subset of respondents who are indirectly asked for estimates of current inflation, to further illustrate the implications of this systematic relationship, we show that at low levels of inflation, macroeconomists and policymakers should expect weaker responses to news *overall*. To do so, we turn to a standard specification for inflation expectations formation, where individual i's period t expectation for inflation at time $t+h$ is

$$E_{i,t}[\pi_{t+h}] = \alpha \underbrace{E_{i,t-1}[\pi_t]}_{past\ expectations} + \beta \underbrace{\left(E_{i,t-1}[\pi_t] - \pi_t\right)}_{lagged\ error}$$

where $E_{i,t-1}[\pi_t]$ is the lagged inflation expectation for current inflation and π_t is the realized current inflation. The expectation is that when the lagged error is positive—in other words, the past expectation for current inflation overshot realized inflation—individuals adjust their current expectations down, implying $\beta < 0$.

This specification is appealing for several reasons: It captures the general notion that individuals at least somewhat correct their expectations based on their past forecasting mistakes, and it is implied by the basic inattention model. Again assuming that inflation follows an AR(1) process, $\pi_{t+1} = \rho\pi_t + v_{t+1}$, future aggregate inflation expectations can be written as

$$\bar{\pi}_{t+h|t} = \rho^h \bar{\pi}_{t|t} = \rho^h \bar{\pi}_{t|t-1} - \rho^h m_t (\bar{\pi}_{t|t-1} - \pi_t) + \rho^h m_t e_t$$

where $\bar{\pi}_{t|t-1}$ is the past median expected inflation.[20]

Translating the model into the inattention setting, it is again clear that the relationship between current and past forecasting errors (β) should be negative. Given our results in the previous section (that individuals pay more attention during periods of high inflation) this relationship is expected to be stronger with inflation—i.e., individuals react more to news when inflation is high.

We fit this model to aggregate inflation forecast errors, now computed over the full sample of responses, again interpreting periods in the specification as years and using the 12-month lagged error.[21] As in the results section above, we estimate the relationship in two stages. In Stage 1, we regress the median inflation expectation on the lagged forecast and the lagged error along with its interaction with inflation. We repeat this exercise controlling for inflation volatility, the unemployment rate, and the interactions of each of these two variables with the lagged error. Given the form of the error in this specification, the log absolute residuals of the Stage 1 regression can

[20] Note that this expectations formation process can also arise in other settings such as under imperfect information with exogenous noise as in Woodford (2003) and Coibion and Gorodnichenko (2015a). The main difference is that m_t would instead be a Kalman gain that is a function of exogenously specified variances in information noise.
[21] Due to the rotating panel design of MSC where respondents are interviewed at most twice, six months apart, we cannot estimate this model at the individual level.

again serve as a proxy of log attention. Therefore, we again perform Stage 2 regressions of these log absolute residuals on inflation and other controls.

Because the MSC provides both 1-year-ahead inflation expectations and long-term, 5- to 10-year-ahead expectations, and because the relationship should hold for any horizon, we conduct the analysis laid out above using each of the available expectation horizons.

1-Year Ahead Inflation Expectations

Using the 1-year ahead median inflation expectation, we find a negative relationship between the current and lagged error in the Stage 1 regressions, which means that individuals do learn from their mistakes, and importantly for the Inattention-Inflation Hypothesis, we find that this negative relationship is amplified with inflation. In other words, the effect of the lagged error term gets stronger with inflation, consistent with the Inattention-Inflation Hypothesis. This result is robust to controlling for inflation volatility, unemployment rate, and the interactions of each of these two variables with the lagged error; in addition, it is also robust to excluding periods after 2007, periods when aggregate forecast errors exceeded ±2 percent, periods with inflation of over 5 percent, or NBER recessions—see Table 5.[22] The estimates of β and the inattention-consistent result are also related to the estimates in Coibion and Gorodnichenko (2015a), which documented a slow response of forecasts to information about inflation in a way consistent with a noisy information model. Our results suggest that these responses are especially attenuated in periods of low inflation.

[22] There may be a potential concern that, due to rounding, the MSC's median inflation expectation would require a significant change to show in the data. That is, due to rounding, if many responses change from one month to another only by a little, the median may not change at all. This concern would act against finding a relationship between the lagged error term and current median inflation expectations. In contrast to this concern and its potential impact on the result, we both observe monthly changes in the median MSC's inflation expectation and find a negative and significant relationship between the lagged error terms and current inflation expectations, a relationship that is weaker when inflation is low.

The results of Stage 2 regressions are in Table 6 columns 1—3 and show that the log absolute residual from the Stage 1 regressions, a proxy for log attention, is indeed larger when inflation is high. Examining the results excluding observations later than 2007, the relationship is positive and of similar magnitude, yet is insignificant. However, the results are still intact when excluding periods when aggregate forecast errors exceeded ±2 percent, high inflation periods of over 5 percent, or all NBER recession periods. Taken all together—Stage 1 and Stage 2, all specifications, and all robustness checks—the results are consistent with the Inattention-Inflation Hypothesis, implying that the procedure of inflation formation is different when inflation is high versus when inflation is low.

5- to 10-Year Ahead Inflation Expectations

We repeat the exercises of Stage 1 and Stage 2 using the 5- to 10-year median inflation expectations. Recall that we can write $\bar{\pi}_{t+h|t} = \rho^h \bar{\pi}_{t|t} = \rho \bar{\pi}_{t+h-1|t-1} - \rho^h m_t \left(\bar{\pi}_{t|t-1} - \pi_t \right) + \rho^h m_t e_t$, since $\bar{\pi}_{t+h-1|t-1} = \rho^{h-1} \bar{\pi}_{t|t}$ in the model. Therefore, we regress the median 5- to 10-year-ahead forecast on a 12-month lag of the median 5- to 10-year-ahead forecast and the 12-month lagged forecast error.

The results in Table 7 show no significant negative effect of the lagged error in Stage 1 when inflation is low. However, when inflation increases, the relationship becomes more negative and this interaction effect is statistically significant, consistent with our Inattention-Inflation Hypothesis. In Stage 2, where we examine the residuals of the Stage 1 regressions, the results again are consistent with the hypothesis—the log absolute residuals are significantly increasing in inflation. Stage 2 results are in Table 8.

Using the long-term inflation expectations is of special interest to policymakers and to the question of whether long-term expectations are well anchored. Our results suggest that the long-term expectations are indeed well anchored when inflation is low, since the Stage 1 estimates show that individuals adjust their long-term forecasts by less, when inflation is low, in response to the news conveyed by lagged forecast errors.[23]

While the previous exercise examined differences in forecasts in response to news over time, two other ways to look at anchoring are whether cross-sectional dispersion and the absolute size of revisions in long-term, 5- to 10-year ahead, inflation expectations are low.[24] If expectations are all well anchored at a particular level, then forecasts should also not differ by much across individuals at a given point in time, and individuals should also not change their forecasts by much across time. Table 9 contains results of regressions of the cross-sectional standard deviation in the 5- to 10-year-ahead inflation forecast, showing that dispersion increases in the inflation level. Table 10 shows that the median absolute forecast revision also increases with inflation.[25] The results remain when we control for inflation variability and/or unemployment, and in the various alternate subsamples that have been used throughout this study.

VI. Data and Measure of Inattention in the Euro Area

To complement the results obtained for the United States, we examine additional surveys of inflation in other countries. The Joint Harmonised EU (European Union) Consumer Survey (part of the Joint Harmonised EU Program of Business and Consumer Surveys—BCS) asks about inflation, and unlike the Michigan Survey of Consumers in the United States, it also asks directly about inflation in the past 12 months. The question is: "How do you think consumer prices have

[23] Gürkaynak, Levin, and Swanson (2010); Beechey, Johannsen, and Levin (2011); and Davis (2012) also examine the response of long-term inflation expectations to news to assess whether expectations are well-anchored include.

[24] Beechey, Johannsen, and Levin (2011) uses evidence of lower cross-sectional dispersion of long-term inflation expectations to argue that expectations are better anchored in the European Union than in the United States

[25] This is the median of the absolute change in numerical 5- to 10-year-ahead inflation forecasts across individuals, where the change is between the current month's forecast and the forecast made when the individual was last surveyed, 6 months prior. Due to the rotating panel design of the survey, only about a third of the responses have a corresponding previous forecast in each month so this median is computed over a smaller sample than the aggregate inflation forecast. Lastly, while the published aggregate inflation forecast is computed using an imputation procedure, we use the raw responses in computing these revisions.

developed over the last 12 months?" The options for responding to this question are qualitative: "They have (1) Risen a lot, (2) Risen moderately, (3) Risen slightly, (4) Stayed about the same, (5) Fallen, or (DK) Don't Know." The analogous measure of inattention to the first direct proxy constructed for the United States is the share of responses that said "DK." Figure 2(b) plots the share of DK responses in the EA as a whole (using fixed weights[26]) against the level of overall inflation (again using fixed weights[27]) between January 1997 and August 2021 and exhibits a strong negative relationship. The figure indicates observations during the transition to the monetary union in 1997–2001 using a different color; it is easy to see that the result is not driven by these transition years. A complementary regression analysis (see Table 11) confirms the negative and significant relationship between the share of DK responses and inflation seen in Figure 2(b). The results are robust to restricting attention only to the "core" countries that were

[26] According to the *BCS User Guide* (2019), survey responses are aggregated using fixed weights, which refer to the fact that the weights are based on a fixed set of countries. That is, the currently available historical data for the overall measure includes all countries currently in the Euro Area. The survey has all countries now part of the EA weighted by their private final real consumption expenditure out of all such expenditures across all EA countries. The weights are smoothed by calculating a 2-year moving average. See pages 14–15 of the *BCS User Guide* (2019). In case of missing survey data, it seems that the specific country with the missing data is dropped. This statement is based on our reverse-engineering calculation. Slovakia survey responses are available since April 1999; Greece since January 2001; Cyprus, Latvia, and Lithuania since May 2001; Luxemburg in January 2002; Malta since November 2002; and Ireland starting in August 2016. Repeating the exercise only with the "core" Euro Area countries—the countries that were part of the Euro Area since its inception or very close to it—as well as repeating the exercise with the core Euro Area counties dropping Greece, Ireland, and Luxemburg, that are missing some survey responses, does not change the qualitative result.

[27] According to the Harmonized Index of *Consumer Prices (HICP) Methodological Manual*, the Euro Area actual inflation rate is calculated using fixed weights, similar to the fixed weights used to aggregate the survey responses. In particular, all countries currently part of the EA are taken into account in the overall European inflation calculation, even in years before they joined the EA. However, in contrast to the fixed weight used to aggregate the survey responses, the weights used in the inflation calculation are the relative size of consumption expenditure according to the national accounts *two years prior*. See pages 221—226 of the *HICP Methodological Manual* (2018).

members of the EA in the year 2000 (together with Greece that joined in 2001)[28] and are in a panel regression taking advantage of the cross-country variability in inflation. See Table 12.[29]

VII. Inflation in the Media

In this section, we explore whether the media is a possible channel through which higher inflation levels may lead to greater attention. The idea is that when inflation is high there may be more corresponding media reporting. Through the lens of our model, increased reporting about inflation in the lay media can reduce consumers' cost of acquiring inflation information. Of course, media reporting itself is still very much related to consumer attention; it can be driven by the attention that journalists (who are also consumers) pay to inflation, and it can also reflect news outlets' responses to consumer attention, supplying news about topics that readers care about.

To analyze the relationships between inflation levels, inattention, and media reporting about inflation, we use an index consisting of articles that mention words with the root "inflation" in the *Washington Post* and the *New York Times*, following Carroll (2003).[30] Table 13 shows a strong relationship between this news index and inflation that remains equally strong when we control for inflation volatility and the unemployment rate, indicating that there is indeed more reporting about inflation when inflation levels are high.

We then examine how inattention varies with this news index. The first two columns of Table 14 show that the DK share (measure I) decreases significantly when inflation news is high,

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[28] Greece survey responses prior to 2001 are not available. As a result, the results reported for years 1997 through 2000 calculate the weighted average of DK responses and inflation for all countries excluding Greece. All results for year 2001 onwards include Greece in calculating weights, weighted DK responses, and weighted inflation rates for the Euro Area. Excluding Greece from this exercise or focusing on the post-transition period of 2002 through 2021 yields similar results.

[29] The panel regression is based on the following countries: Austria, Belgium, Finland, France, Germany, Greece, Italy, Ireland, Luxemburg, Netherland, Portugal, and Spain. Note that while Ireland and Luxemburg are included in the panel regression, they are excluded when using the weighted average inflation and survey response for the Euro-Area due to missing observations (Ireland data starts in August 2016 and Luxemburg in January 2002). Running the panel regression excluding Ireland and Luxemburg yields very similar results.

[30] As in Carroll (2003), we rescale the index to be the number of such articles in each month relative to the maximum number of articles over the sample expressed in percentage points.

suggesting that consumer attention does increase with greater media coverage of inflation and that this channel can potentially account for the previously presented relationships between the DK share and inflation, inflation volatility, and the unemployment rate. The last three columns of Table 14 show that this is not the case—controlling for inflation and interacting it with the inflation news index, we find that the inflation level plays an important role in how consumer attention relates to news reporting. Namely, we find a stronger negative association between the news index and the DK share when inflation is high. Again, this relationship remains robust to controlling for inflation variability and the unemployment rate.

VIII. Concluding Remarks

We present evidence on inattention to inflation among U.S. consumers using two different measures: the share Same-DK responses out of Same-Up and forecast errors among Same-Up respondents who did provide numerical inflation estimates. We find results consistent with a hypothesis that consumers pay more attention to inflation when it is high—using either one of our inattention measures, or fitting an inflation expectations model, whether using 1-year or 5- to 10-year ahead expectations. An analogous relationship appears using European data, and we conclude that consumers' inflation expectations become more sensitive to actual inflation as inflation rates rise.

This aspect of inflation expectations is particularly important to understand in light of the current pandemic-related acceleration of inflation. Figure 3 shows that long-term consumer inflation expectations have risen sharply since the start of the COVID-19 pandemic in the United States, from 2.3 percent in February 2020 to 3 percent in November 2021, our last observation. This is the fastest 21-month increase in this series since this question was introduced in the survey in February 1979. Going forward, the increase in consumers' (and workers') attention to inflation as inflation rises will be an important determinant of whether we enter into a wage-price spiral as occurred in the 1970s.

While we model and measure attention to inflation directly, the intuition for this relationship extends to attention to other indicators of economic conditions. To the extent that individuals act according to their expectations, insensitivity of expectations to inflation when inflation is low can result in attenuated sensitivity of consumption decisions and wage negotiations to current economic conditions. This, in turn, can hold back inflationary pressures when inflation is low, even if the labor market is tight. Furthermore, given that MSC inflation expectations have been shown to best explain realized inflation, both before and after the Great Recession (see for example Coibion and Gorodnichenko, 2015b; Coibion, Gorodnichenko, and Kamdar, 2018a; and Doser and others, 2018), consumers' inflation expectations may best reflect firms' inflation expectations. Indeed, this point has been argued by Kumar and others (2015), who suggest that managers form expectations based on their individual shopping experiences. Hence, the insensitivity of consumer expectations to economic conditions at times of low inflation suggests a similar insensitivity of firm expectations. Thus, we speculate that the tendency of inattention to be prevalent when inflation is low, as we document in this paper, may have contributed to the flat relationship between labor market tightness and inflation that was seen from 2008 through 2020, a period when inflation was low.

Such nonlinearities in relationships between inflation and economic conditions can in turn generate other well-known properties of inflation. For example, if consumers' wage demands and firms' pricing plans are more sensitive to economic conditions when inflation is high due to greater attention, this can also generate the observed positive association between volatility and level of inflation.

From a behavioral perspective, perhaps it is not surprising to find insensitivity to the inflation rate when it is low. Psychologists have shown that individuals are insensitive to small changes, a response that is often called Weber's Law. The law, originally documented using visual stimuli and weight sensations, suggests that the threshold of a "Just Noticeable Difference" (*jnd*), above which humans sense change, is proportional to the initial stimuli. Applying this insight to a numeric setting, such as perceptions of the price level, it means that individuals are insensitive to small changes in price up to a certain threshold that is proportional to the initial price level—that is, individuals are insensitive to inflation up to a certain rate threshold. Some authors have found mixed results for the *jnd* in inflation expectations using different methods and different survey instruments (see, for example, Henzel and Wollmershauser, 2005; and earlier work by Batchelor, 1986). Our results are consistent with the *jnd*, implying that a fresh look at the *jnd* directly may be worthwhile in our efforts to understand inflation expectations.

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Figure 1: 1-Year Ahead Michigan Survey of Consumers Inflation Expectation Questions

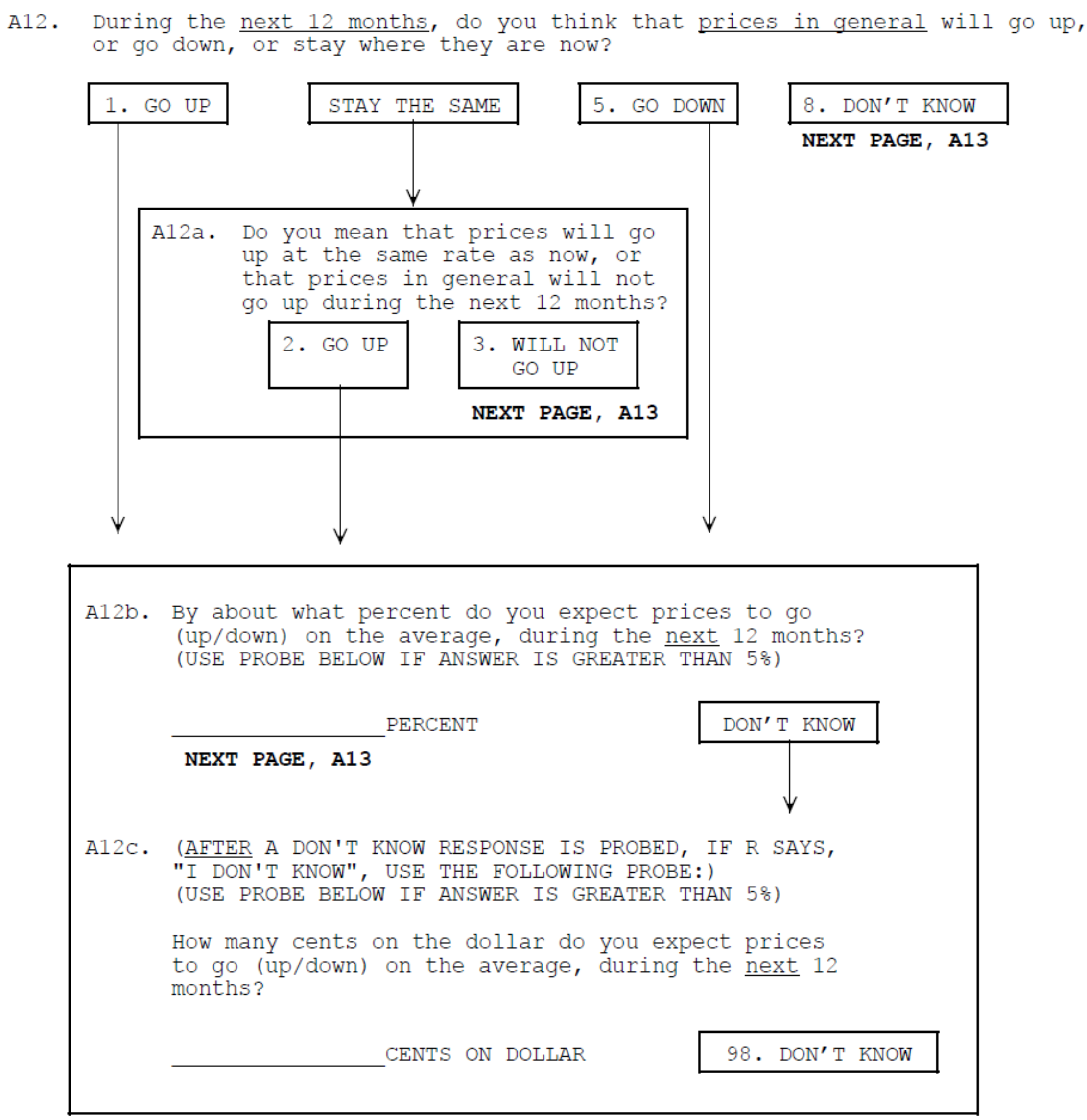


Figure 2: Share of Same-DK Responses versus Actual Inflation Rates

(a) United States, March 1982 through Nov 2021 **(b) The Euro Area, Jan. 1997 through Nov. 2021**

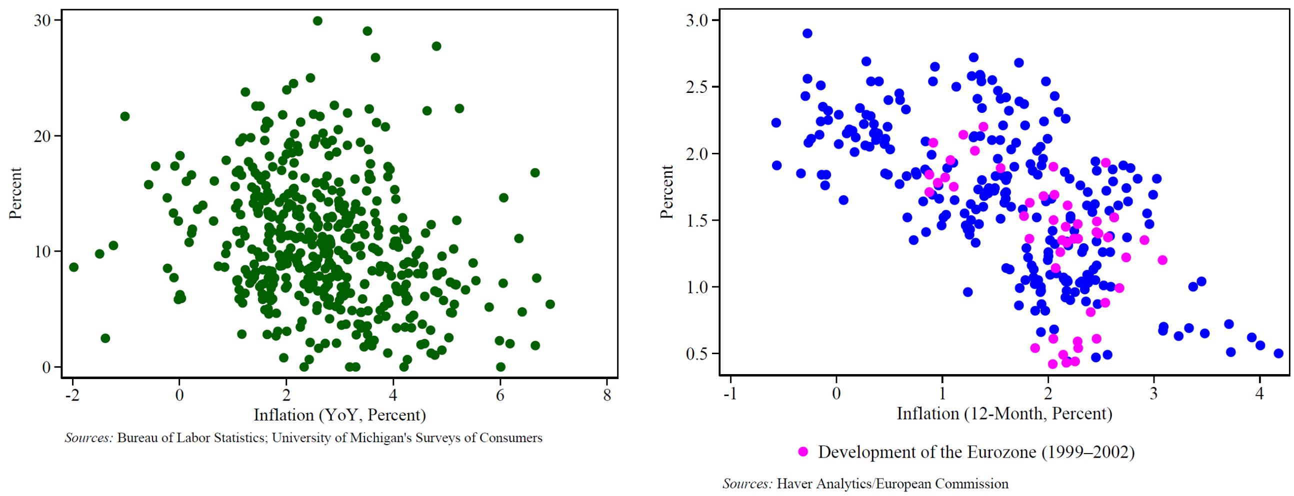


Table 1: Properties of Same-Up Respondents vs. All Others

	Same-Up	Not Same-Up	P-Value of Difference
	Demographic Characteristics		
Age	45.959	49.150	0.000
	(0.107)	(0.041)	
Household Income	62,600.062	57,006.375	0.000
	(405.210)	(141.291)	
Female	0.523	0.535	0.000
	(0.003)	(0.001)	
College Graduate	0.468	0.407	0.000
	(0.003)	(0.001)	
	Inflation Forecast Properties		
Error	1.148	1.121	0.397
	(0.028)	(0.014)	
Absolute Error	2.311	3.456	0.000
	(0.024)	(0.011)	
# of Obs.	31,879	226,326	

Table 2: DK Share Regressions

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions	Only Prime Age During 1973–1982	Not Prime Age During 1973–1982
Dep. Var.: Prob. Same DK	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Inflation (12-Month)	–0.938***	–0.941***	–0.957***	–1.268**	–1.057***	–0.912***	–0.821**	–0.828**	–0.828**
	(0.285)	(0.286)	(0.266)	(0.500)	(0.291)	(0.348)	(0.379)	(0.326)	(0.349)
Rolling SD of 12M Inflation		–0.204	1.073	2.919*	0.790	0.778	1.053	2.784***	0.054
		(0.817)	(0.771)	(1.635)	(0.802)	(0.865)	(0.982)	(0.897)	(0.999)
Unemployment Rate			–0.627*	–1.838***	–0.711**	–0.589*	–0.638*	–0.923**	–0.350
			(0.329)	(0.325)	(0.344)	(0.347)	(0.352)	(0.367)	(0.339)
Constant	13.196***	13.319***	16.491***	23.784***	17.240***	16.344***	16.170***	17.369***	14.684***
	(0.866)	(1.070)	(2.029)	(2.130)	(2.100)	(2.239)	(2.308)	(2.359)	(2.129)
R-Squared	0.06	0.06	0.09	0.30	0.12	0.07	0.06	0.06	0.03
Adjusted R-Squared	0.05	0.05	0.08	0.30	0.11	0.06	0.05	0.05	0.03
Observations	477	477	477	310	410	451	432	477	477

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Median Forecast Error Regressions (Stage 1 Regressions)

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions	Only Prime Age During 1973–1982	Not Prime Age During 1973–1982
Dep. Var.: Median Current Belief Error	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged Error	0.528***	0.358***	0.457***	0.220*	0.510***	0.472***	0.417***	0.190	0.635***
	(0.055)	(0.082)	(0.104)	(0.129)	(0.115)	(0.123)	(0.098)	(0.162)	(0.113)
Inflation (12-Month)	–0.034**	–0.017	–0.029**	–0.048**	–0.035**	–0.045**	–0.031**	–0.030*	–0.052***
× Lagged Error	(0.016)	(0.015)	(0.014)	(0.021)	(0.016)	(0.022)	(0.015)	(0.018)	(0.013)
Rolling SD of 12M Inflation		0.100**	0.123***	0.241	0.089*	0.058	0.112***	0.101**	0.140***
× Lagged Error		(0.048)	(0.042)	(0.157)	(0.053)	(0.055)	(0.039)	(0.040)	(0.045)
Unemployment Rate			–0.025	–0.009	–0.028	–0.016	–0.013	0.000	–0.045**
× Lagged Error			(0.018)	(0.026)	(0.019)	(0.021)	(0.015)	(0.025)	(0.018)
Inflation (12-Month)	–0.394***	–0.417***	–0.463***	–0.622***	–0.468***	–0.463***	–0.445***	–0.551***	–0.416***
	(0.052)	(0.056)	(0.052)	(0.064)	(0.063)	(0.055)	(0.051)	(0.056)	(0.040)
Rolling SD of 12M Inflation		–0.027	–0.130	–0.134	–0.079	–0.038	–0.296***	–0.020	–0.334**
		(0.154)	(0.156)	(0.121)	(0.171)	(0.186)	(0.110)	(0.168)	(0.156)
Unemployment Rate			0.093***	0.168***	0.103***	0.083**	0.087***	0.094**	0.144***
			(0.032)	(0.030)	(0.035)	(0.035)	(0.029)	(0.041)	(0.037)
Constant	1.158***	1.273***	0.922***	1.032***	0.855***	0.921***	0.945***	1.101***	0.647***
	(0.154)	(0.169)	(0.171)	(0.151)	(0.173)	(0.181)	(0.167)	(0.221)	(0.208)
R-Squared	0.84	0.85	0.86	0.80	0.85	0.84	0.86	0.78	0.76
Adjusted R-Squared	0.84	0.85	0.85	0.80	0.85	0.83	0.85	0.78	0.75
Observations	465	465	465	298	401	445	429	465	465

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Absolute Median Error Residual Regressions (Stage 2 Regressions)

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions	Only Prime Age During 1973–1982	Not Prime Age During 1973–1982
Dep. Var.: Abs Residual of Median Error	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Inflation (12-Month)	0.074	0.106*	0.132**	0.364***	0.188***	0.095*	0.070	0.089**	0.202***
	(0.080)	(0.054)	(0.057)	(0.071)	(0.068)	(0.056)	(0.070)	(0.043)	(0.062)
Rolling SD of 12M Inflation		0.633***	0.532**	–0.244	0.687**	0.604***	0.280	0.533***	0.363*
		(0.180)	(0.231)	(0.375)	(0.292)	(0.232)	(0.244)	(0.145)	(0.211)
Unemployment Rate			0.071	0.148**	0.058	0.060	0.084*	0.023	0.171***
			(0.047)	(0.066)	(0.062)	(0.053)	(0.045)	(0.033)	(0.058)
Constant	–1.748***	–2.241***	–2.720***	–3.668***	–2.878***	–2.609***	–2.539***	–1.995***	–3.064***
	(0.248)	(0.184)	(0.317)	(0.345)	(0.368)	(0.330)	(0.315)	(0.231)	(0.419)
R-Squared	0.01	0.06	0.07	0.13	0.08	0.06	0.03	0.05	0.12
Adjusted R-Squared	0.01	0.05	0.07	0.12	0.08	0.05	0.03	0.04	0.12
Observations	465	465	465	298	401	445	429	465	465

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: 1-Year Ahead Inflation-Expectation Model, Median Forecast Error Regressions (Stage 1 Regressions)

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions
Dep. Var.: Inflation Expectations	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lagged Expectation	0.447***	0.473***	0.448***	0.468***	0.445***	0.463***	0.390***
	(0.032)	(0.037)	(0.035)	(0.044)	(0.036)	(0.055)	(0.046)
Lagged Error	–0.202***	–0.084*	–0.176**	–0.401***	–0.198**	–0.179**	–0.115
	(0.037)	(0.043)	(0.088)	(0.115)	(0.087)	(0.091)	(0.073)
Inflation (12-Month)	–0.046***	–0.062***	–0.061***	–0.071***	–0.052***	–0.058***	–0.062***
× Lagged Error	(0.010)	(0.009)	(0.010)	(0.013)	(0.014)	(0.017)	(0.012)
Rolling SD of 12M Inflation		–0.084***	–0.099***	0.179	–0.063	–0.105*	–0.116***
× Lagged Error		(0.022)	(0.026)	(0.111)	(0.039)	(0.057)	(0.026)
Unemployment Rate			0.015	0.028	0.014	0.016	0.013
× Lagged Error			(0.013)	(0.021)	(0.013)	(0.017)	(0.012)
Rolling SD of 12M Inflation		0.023	–0.048	–0.170	–0.134	–0.037	–0.094
		(0.076)	(0.086)	(0.113)	(0.107)	(0.128)	(0.106)
Unemployment Rate			0.028	–0.030	0.023	0.025	0.040
			(0.029)	(0.028)	(0.022)	(0.035)	(0.028)
Constant	1.745***	1.626***	1.568***	1.812***	1.597***	1.526***	1.674***
	(0.105)	(0.106)	(0.147)	(0.168)	(0.130)	(0.191)	(0.176)
R-Squared	0.58	0.59	0.60	0.65	0.60	0.47	0.56
Adjusted R-Squared	0.57	0.59	0.60	0.64	0.60	0.46	0.55
Observations	477	477	477	310	410	451	432

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: 1-Year Ahead Inflation-Expectation Model, Absolute Median Error Residual Regressions (Stage 2 Regressions)

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions
Dep. Var.: Abs Residual of Median Expectations	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Inflation (12-Month)	0.109**	0.158***	0.140***	0.115	0.098**	0.146***	0.161***
	(0.049)	(0.040)	(0.037)	(0.074)	(0.044)	(0.051)	(0.047)
Rolling SD of 12M Inflation		0.417***	0.407**	0.689**	0.482***	0.399*	0.361*
		(0.152)	(0.172)	(0.321)	(0.161)	(0.222)	(0.185)
Unemployment Rate			0.071*	0.021	0.058	0.082**	0.070
			(0.042)	(0.054)	(0.047)	(0.040)	(0.051)
Constant	–2.064***	–2.497***	–2.898***	–2.762***	–2.791***	–2.995***	–3.051***
	(0.173)	(0.187)	(0.270)	(0.317)	(0.288)	(0.291)	(0.366)
R-Squared	0.02	0.06	0.07	0.07	0.07	0.06	0.05
Adjusted R-Squared	0.01	0.05	0.07	0.06	0.06	0.05	0.04
Observations	477	477	477	310	410	451	432

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: 5- to 10-Year Ahead Inflation-Expectation Model, Median Forecast Error Regressions (Stage 1 Regressions)

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions
Dep. Var.: Inflation Expectations	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lagged Expectation	0.744***	0.745***	0.696***	0.653***	0.708***	0.697***	0.697***
	(0.051)	(0.052)	(0.057)	(0.077)	(0.063)	(0.057)	(0.060)
Lagged Error	–0.029	–0.004	0.060	0.185**	0.078	0.093	0.094
	(0.027)	(0.031)	(0.061)	(0.086)	(0.074)	(0.066)	(0.069)
Inflation (12-Month)	–0.014***	–0.020***	–0.025***	–0.076**	–0.037***	–0.032***	–0.026***
× Lagged Error	(0.005)	(0.007)	(0.007)	(0.029)	(0.010)	(0.009)	(0.008)
Rolling SD of 12M Inflation		–0.002	0.007	0.103	–0.023	–0.015	0.009
× Lagged Error		(0.012)	(0.012)	(0.063)	(0.018)	(0.015)	(0.015)
Unemployment Rate			–0.007	–0.013	–0.003	–0.006	–0.009
× Lagged Error			(0.007)	(0.025)	(0.008)	(0.008)	(0.008)
Rolling SD of 12M Inflation		–0.064	–0.142***	–0.149	–0.101*	–0.108**	–0.151***
		(0.039)	(0.048)	(0.093)	(0.053)	(0.051)	(0.056)
Unemployment Rate			0.041***	0.052*	0.028	0.037**	0.044***
			(0.014)	(0.027)	(0.018)	(0.016)	(0.016)
Constant	0.666***	0.651***	0.515***	0.475***	0.475***	0.443***	0.415***
	(0.107)	(0.110)	(0.109)	(0.105)	(0.119)	(0.127)	(0.139)
R-Squared	0.90	0.90	0.90	0.91	0.90	0.90	0.90
Adjusted R-Squared	0.89	0.90	0.90	0.90	0.90	0.89	0.89
Observations	396	396	396	229	336	385	364

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: 5- to 10-Year Ahead Inflation-Expectation Model, Absolute Median Error Residual Regressions (Stage 2 Regressions)

	Full sample			Ending in 2007	Excl Large Errors	Excl High Infl	Excl Recessions
Dep. Var.: Abs Residual of Median Expectations	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Inflation (12-Month)	0.123**	0.098*	0.159***	0.126*	0.233***	0.274***	0.164***
	(0.053)	(0.051)	(0.050)	(0.069)	(0.059)	(0.052)	(0.057)
Rolling SD of 12M Inflation		0.256*	0.058	0.469*	0.131	0.163	–0.008
		(0.152)	(0.208)	(0.260)	(0.269)	(0.206)	(0.224)
Unemployment Rate			0.106*	0.160***	0.084	0.066	0.121**
			(0.058)	(0.053)	(0.064)	(0.059)	(0.051)
Constant	–2.708***	–2.806***	–3.542***	–3.817***	–3.613***	–3.614***	–3.574***
	(0.129)	(0.172)	(0.341)	(0.324)	(0.388)	(0.337)	(0.340)
R-Squared	0.02	0.02	0.05	0.13	0.06	0.07	0.06
Adjusted R-Squared	0.02	0.02	0.04	0.12	0.05	0.07	0.05
Observations	396	396	396	229	336	385	364

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Cross-Sectional SD in 5- to 10-Year Ahead Inflation Forecast

Dep. Var.: Cross-Sectional SD in 5-10Y Forecast	Full sample (1)	(2)	(3)	Ending in 2007 (4)	Excl Large Errors (5)	Excl High Infl (6)	Excl Recessions (7)
Inflation (12-Month)	0.657***	0.662***	0.708***	0.658***	0.821***	0.693***	0.746***
	(0.164)	(0.159)	(0.137)	(0.136)	(0.133)	(0.168)	(0.156)
Rolling SD of 12M Inflation		0.242	–0.667	–1.476***	–0.460	–0.570	–1.173**
		(0.485)	(0.483)	(0.517)	(0.550)	(0.545)	(0.455)
Unemployment Rate			0.475***	1.195***	0.497***	0.445***	0.497***
			(0.150)	(0.095)	(0.156)	(0.155)	(0.149)
Constant	2.320***	2.169***	–0.302	–3.480***	–0.646	–0.146	–0.264
	(0.360)	(0.484)	(0.784)	(0.528)	(0.791)	(0.858)	(0.879)
R-Squared	0.19	0.19	0.37	0.74	0.42	0.34	0.38
Adjusted R-Squared	0.18	0.18	0.37	0.74	0.42	0.34	0.38
Observations	410	410	410	243	350	392	370

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Median Absolute Revision in 5- to 10-Year Ahead Inflation Forecast

Dep. Var.: Median Abs Revision in 5-10Y Expectations	Full sample (1)	(2)	(3)	Ending in 2007 (4)	Excl Large Errors (5)	Excl High Infl (6)	Excl Recessions (7)
Inflation (12-Month)	0.136**	0.140**	0.153***	0.130**	0.180***	0.146***	0.149***
	(0.067)	(0.059)	(0.051)	(0.053)	(0.045)	(0.051)	(0.048)
Rolling SD of 12M Inflation		0.233	–0.015	–0.128	0.058	0.034	–0.175
		(0.172)	(0.158)	(0.145)	(0.160)	(0.159)	(0.146)
Unemployment Rate			0.130***	0.323***	0.127***	0.111**	0.133***
			(0.047)	(0.031)	(0.045)	(0.045)	(0.044)
Constant	1.031***	0.888***	0.213	–0.632***	0.180	0.318	0.275
	(0.160)	(0.182)	(0.283)	(0.236)	(0.250)	(0.266)	(0.265)
R-Squared	0.09	0.12	0.25	0.55	0.28	0.20	0.22
Adjusted R-Squared	0.09	0.12	0.25	0.54	0.28	0.20	0.22
Observations	403	403	403	236	343	387	365

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: DK Share Regressions, Euro Area Countries

	EA			Core EA		
Dep. Var.: Prob. Share DK	(1)	(2)	(3)	(4)	(5)	(6)
Inflation (12-Month)	–0.382***	–0.375***	–0.346***	–0.383***	–0.376***	–0.346***
	(0.053)	(0.051)	(0.053)	(0.058)	(0.059)	(0.060)
Rolling SD of 12M Inflation		0.152	0.209		0.193	0.259
		(0.312)	(0.323)		(0.321)	(0.336)
Unemployment Rate			0.059			0.066
			(0.046)			(0.052)
Constant	2.249***	2.181***	1.555***	2.195***	2.112***	1.438**
	(0.083)	(0.102)	(0.519)	(0.082)	(0.104)	(0.566)
R-Squared	0.398	0.402	0.421	0.367	0.374	0.391
Observations	296	295	284	296	295	295

Notes: Annual inflation for the EA is calculated using the total HICP. Columns 1–3 include all 19 current member states of the EA. The analysis presented in columns 4–6 is based on the following countries: Austria, Belgium, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, and Spain. Greece is included in the analysis in columns 4–6 only from January 2001 onwards. Although they belong to the original core of European Area members, Ireland and Luxembourg are omitted from the analysis in columns 4–6 due to missing observations in the data set. Standard errors in all columns are Newey-West heteroskedasticity and autocorrelation consistent.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: DK Share Regressions, Panel Regressions Euro Area Countries

	EA			Core EA		
Dep. Var.: Prob. Share DK	(1)	(2)	(3)	(4)	(5)	(6)
Inflation (12-Month)	–0.169*	–0.168*	–0.216*	–0.226***	–0.220***	–0.286**
	(0.083)	(0.084)	(0.110)	(0.051)	(0.055)	(0.093)
Rolling SD of 12M Inflation		0.255	0.279		0.297	0.288
		(0.199)	(0.209)		(0.243)	(0.240)
Unemployment Rate			–0.063			–0.071
			(0.082)			(0.084)
R-Squared	0.027	0.031	0.048	0.065	0.072	0.107
Observations	5111	5110	5047	2911	2911	2911

Notes: Annual inflation for the EA is calculated using the total HICP. Columns 1–3 include all 19 current member states of the EA. The analysis presented in columns 4–6 is based on the following countries: Austria, Belgium, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, and Spain. Greece is included in the analysis in columns 4–6 only from January 2001 onwards. Although they belong to the original core of European Area members, Ireland and Luxembourg are omitted from the analysis in columns 4–6 due to missing observations in the data set. Standard errors in all columns are Driscoll-Kraay clustered by country and date.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Inflation News Index Regressions

Dep. Var.: Inflation News Index	(1)	(2)	(3)
Inflation (12-Month)	4.747***	4.765***	4.817***
	(0.733)	(0.709)	(0.659)
Rolling SD of 12M Inflation		1.511	–2.561
		(2.602)	(2.159)
Unemployment Rate			1.999***
			(0.762)
Constant	13.150***	12.235***	2.116
	(2.027)	(2.669)	(4.469)
R-Squared	0.36	0.37	0.45
Adjusted R-Squared	0.36	0.36	0.44
Observations	477	477	477

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

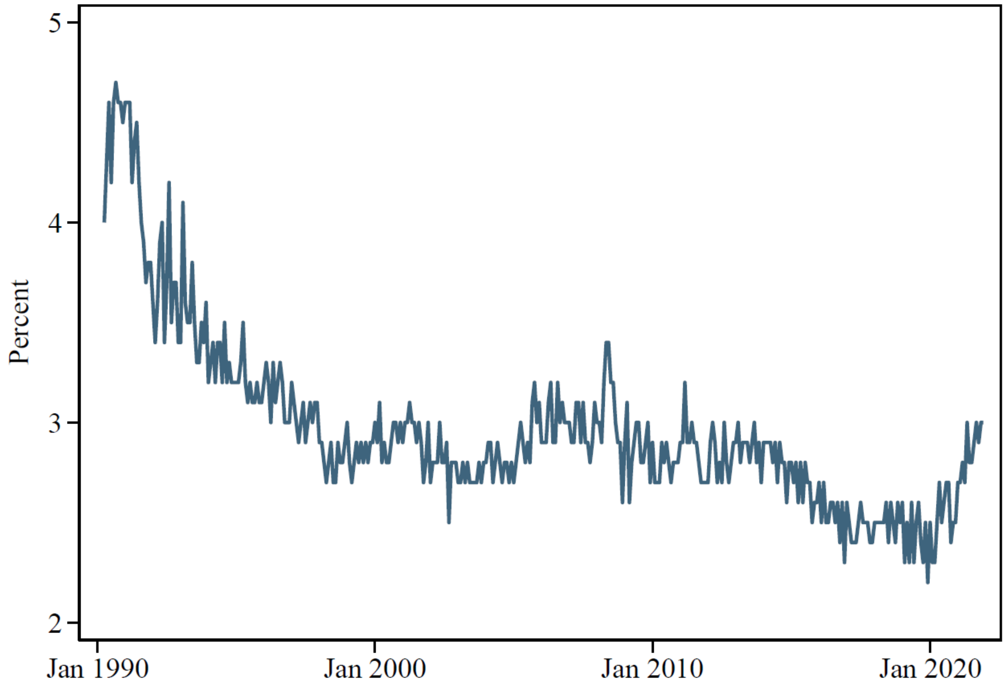
Table 14: Relationship between the DK Share and Inflation News

Dep. Var.: Prob. Same DK	(1)	(2)	(3)	(4)	(5)
Inflation News Index	–0.203***	–0.192***	–0.185***	–0.185***	–0.136***
	(0.032)	(0.035)	(0.040)	(0.042)	(0.043)
Inflation (12-Month)			–0.041*	–0.049**	–0.051**
× Inflation News Index			(0.021)	(0.021)	(0.023)
Rolling SD of 12M Inflation				0.025	0.175**
× Inflation News Index				(0.053)	(0.073)
Unemployment Rate					–0.045***
× Inflation News Index					(0.015)
Inflation (12-Month)		–0.034	0.042	0.043	–0.162
		(0.276)	(0.268)	(0.265)	(0.272)
Rolling SD of 12M Inflation		0.582		0.695	1.541**
		(0.627)		(0.663)	(0.721)
Unemployment Rate		–0.244			–0.361*
		(0.254)			(0.217)
Constant	10.661***	10.661***	11.030***	11.105***	11.308***
	(0.417)	(0.415)	(0.458)	(0.475)	(0.462)
R-Squared	0.16	0.17	0.18	0.18	0.20
Adjusted R-Squared	0.16	0.16	0.17	0.17	0.19
Observations	477	477	477	477	477

Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses. All variables demeaned.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 3: Median 5- to 10-Year Ahead Inflation Expectation



Source: University of Michigan's Surveys of Consumers