Inflation Expectations, Perceptions and News Media: Regional Differences in Switzerland*

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Abstract

This paper studies newspaper inflation reporting and its effects on inflation expectations and perceptions in Switzerland. We create a standard quantitative inflation news measure and a novel qualitative measure of inflation sentiment for newspapers written in two national languages. We find that newspapers written in French report significantly more about an inflation increase compared to a decrease and German newspapers report more negatively about an inflation decrease. Using regional inflation expectations and perceptions from a national household survey, we exploit the language barrier in Switzerland to study the effects of inflation news reporting. We find that both the quantitative and the qualitative news measure affect perceptions and expectations. Additionally, we document socio-demographic differences in the response of expectations and perceptions to news.

JEL Codes: C32, E31, D84

Keywords: Inflation News Coverage, Inflation Expectations and Perceptions

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1 Introduction

Since the Covid-19 crisis, inflation rates have reached historical heights in many countries around the entire globe. Theoretically and empirically, inflation expectations are an important driver of inflation. For households, expectations are strongly linked to inflation perceptions (Weber et al., 2022). Survey evidence shows that households draw their information about the current price levels from their personal shopping experience as well as social media and news from television and newspapers (Blinder and Krueger, 2004; Cavallo et al., 2017; D'Acunto et al., 2021; Kumar et al., 2015).

This paper focuses on the latter aspect. Using a comprehensive data set of newspaper articles in Switzerland, we study the inflation news coverage and its effects on households' inflation expectations and perceptions. First, we construct a quantitative inflation news measure and a novel inflation news sentiment for newspapers written in two of the national languages in Switzerland, French and German.[1] Second, we follow an empirical approach developed by Gambetti et al. (2021), henceforth GMZ, using a Threshold Structural Autoregression (TSVAR) to study differences in inflation news reporting. Third, we exploit the language barrier in Switzerland as a quasi-natural experiment to analyze how differences in news reporting affect households' inflation expectations and perceptions.

In Switzerland, inflation rates have peaked at 3.5% in August 2022 after a steady increase since the Covid-19 crisis. This inflation rate seems low compared to other countries such as the United States where the inflation rate was at 8.2% at the same time. However, for Switzerland, this level is unprecedented over the last 25 years and can only be compared to the situation during the financial crisis.

We start by discussing the two inflation news measures and descriptive results. The quantitative inflation news measure is defined as the difference of the number of articles reporting an inflation increase minus the number of articles reporting an inflation decrease. This measure is inspired by GMZ and Soroka (2006). For households, Soroka (2006) argue that news about an inflation increase is bad news whereas news about an inflation decrease is good news. Thus, the difference of articles reporting an increase versus decrease of inflation reflects the prevailing negative or positive tone of news. We show that this measure correlates well with the actual inflation rate for news articles in both languages, French and German.

The quantitative inflation news measure, however, is not a sentiment-based indicator. A

[1]Switzerland has four national languages: German, French, Italian and Romansh which are reported by 62.3%, 22.8%, 8% and 0.5% of the population in Switzerland as their main language, respectively. Respondents could report up to 3 main languages. 23.1% reported different main language (Federal Statistical Office, 2022a).

decrease (increase) in the inflation rate is not necessarily assessed as good (bad) by newspapers. As we highlight in an example, Switzerland experienced a rather strong inflation decrease after 2015 where the inflation rate plunged into negative territory. During this time, newspapers in both languages reported in a negative way about the level of the inflation rate warning about the risk of a deflationary spiral. For this reason, we construct a novel qualitative inflation news sentiment measure to explore potential differences in sentiment news reporting and its effects on households' expectations and perceptions.

This qualitative news measure is the positive or negative sentiment derived from the same set of articles using a state-of-the-art Natural Language Processing (NLP) Model. The model, called BERT and short for Bidirectional Encoder Representations, was originally developed at Google by Devlin et al. (2018a). It has been used extensively for various NLP tasks, including sentiment analysis (see, among others, Nemes and Kiss (2021), Lee (2020)). We fine-tune the model on 1000 self-annotated inflation articles for each language and show that this measure captures different information than the quantitative news measure of inflation.

We proceed by analyzing newspaper inflation reporting using a TSVAR. In more detail, we study the dynamic responses of the quantitative and qualitative inflation news measure to unexpected positive and negative changes in the inflation rate. For the quantitative inflation news measure of newspapers written in German, a positive and negative unexpected change in the inflation rate generate similar responses. For newspapers written in French, however, we find that they report significantly more after a positive change in the inflation rate compared to a negative change. For the qualitative inflation news measure, we find that German newspapers report significantly more negative about an negative unexpected change in the inflation rate compared to a positive change. In contrast, the dynamic responses of newspapers written in French show no significant difference with respect to the qualitative inflation measure.

Arguably, Swiss newspapers written in French and in German report about the same national inflation rate. We assume that households living in the French speaking part of Switzerland mostly consume news written in French and those in the German speaking part news written in German. This allows us to exploit regional differences in news reporting to investigate how news shocks affect households' expectations and perceptions while controlling for household characteristics as well as time fixed-effects.

We find that both the quantitative and qualitative news measure have small but significant effects on inflation expectations and perceptions. For the quantitative news measure, a positive shock, i.e. relatively more news about an inflation increase compared to an inflation decrease,

has a negative effect on the relative share of households reporting an increase in inflation expectations and perceptions versus a decrease. This effect is counter-intuitive as we would expect that more news of an inflation increase leads to higher inflation expectations and perceptions. Potentially, the quantitative news measure captures information about other economic topics that lead households to adjust their expectations and perceptions downwards. Although we cannot explain this pattern, we recognize that the effect of the quantitative news measure tends to be larger for elderly households and those located in the French speaking region of Switzerland.

For the qualitative news measure, we find that a positive shock, i.e. when inflation is positively assessed in the news articles, decreases the share of households that report an inflation increase, especially during times of positive inflation. With respect to demographics, we show that this effect increases with the age of the household and is stronger for households in the French speaking region.

These results are policy relevant. Both the quantitative and the qualitative news measure affect households expectations and perceptions. Therefore, news media coverage may have several real effects. First, well-anchored inflation expectations increase the effectiveness of monetary policy (Lamla and Lein, 2014; Nautz and Strohsal, 2015). Second, inflation expectations may be self-fulfilling (Leduc et al., 2007).

Our paper broadly relates to three different strands of literature. First, it contributes to the literature in political science and economics about news reporting of economic events. Most findings in this literature document a negativity bias, i.e., negative news receive a relatively higher coverage than positive news (see, for example, Goidel and Langley (1995), Fogarty (2005), Soroka (2006), Soroka (2012)). However, for unemployment news coverage in the United States, GMZ find that the negativity bias disappears when taking into account the non-linearity in the unemployment rate response to economic shocks itself. Using the approach of GMZ, we explore the news coverage of inflation and find that the negativity bias exists in Switzerland for newspapers written in French but not so for German written newspapers.

Second, our paper belongs to a literature that studies the role of information for expectations and perceptions. Motivated by increasing empirical evidence about the rejection of the full-information rational expectation (FIRE) model, there is a growing body of literature studying different sources of information economic agents use and how they affect their economic decisions, perceptions and expectations.[2] For instance, recent survey evidence finds

[2]For the rejection of the FIRE, see, for example, Mankiw et al. (2003), Coibion and Gorodnichenko (2015), Bordalo et al. (2020), Kohlhas and Broer (2019) or Angeletos et al. (2020).

that shopping experience is an important driver of inflation perception and expectations (Cavallo et al., 2017; D'Acunto et al., 2021). For newspapers, Larsen et al. (2021) find that news media coverage plays an important role in the expectation formation process. Moreover, households update their expectations more often during periods of high news coverage, for example during recessions (Carroll, 2003; Doms and Morin, 2004). Switzerland provides an interesting framework to study the effects of media to inflation expectations and perceptions. While Swiss newspapers report about the same national inflation rate, households in the different language regions are likely to consume news in the language predominant in their region. To the best of our knowledge, we are the first to exploit this language barrier to study how differences in inflation news reporting affect inflation expectations and perceptions.

Third, our paper contributes to the literature that studies cultural aspects of economies and its link to economic outcomes. For example, a high inflation aversion is often attributed to Germany due to its experience of hyperinflation in 1923 (Beyer et al., 2008; Cukierman, 1992; Ehrmann and Tzamourani, 2012; Hayo, 1998; Issing, 2005). For Switzerland, Eugster et al. (2017) use the language border to study how culture might affect unemployment. We show that households in the French speaking part of Switzerland tend to react more to news compared to German speaking households.

The rest of the paper is organized as follows. In section 2, we describe the newspaper article data used and construct the quantitative and qualitative inflation news measure. Section 3 discusses the household survey used for inflation expectations and perceptions. Section 4.1 presents the model from GMZ to analyze the inflation news coverage for newspapers written in French and German and presents the results. Section 5.1 provides information about the second model that we use to investigate the effects of news shocks on inflation expectations as well as perceptions and discusses the results. In section 6, we provide several robustness checks. Finally, Section 7 concludes.

2 Newspaper Articles Data

In this section, we outline the newspaper articles data and how we derive the quantitative and qualitative news measures of inflation. Moreover, we provide some descriptive results.

2.1 Quantitative News Measure

To construct the quantitative news measure of inflation, we use a novel database, called "Swissdox". Swissdox is an online media database that aims to provide the broadest possible

coverage of the Swiss media landscape (Swissdox, 2022). The database contains more than 20 million news articles. In this study, we focus on the largest media outlets in the French speaking and German speaking part of Switzerland that have the longest time coverage in the database. For newspapers written in German, we include articles from *Neue Zürcher Zeitung, Tages Anzeiger, Blick* and *20 Minuten*. French-written newspapers encompass articles from *Le Temps, 24 heures, Tribune de Genève, 20 minutes* and *Le Matin*. For all newspapers, we focus on printed articles.

To construct our quantiative news measure for both languages, we first clean the text of the articles, remove the most frequent stopwords and apply lemmatization to the remaining words. After that, we follow closely GMZ, who constructed similar indices for news about unemployment. In more detail, we search for economic articles that contain the words inflation or prices. If these words are preceded or followed by indicators of an increase (bad news) or decrease (good news) in the distance of five words, the article is classified as inflation increase or inflation decrease, respectively. Appendix A provides a detailed description of all words considered for both languages. For newspapers written in German, we find a total of 36,528 newspapers and 30,838 articles written in French.

The quantitative news measure is defined as the difference between the number of articles talking about an increase of inflation and those that report a decrease of inflation. Similar to GMZ, we focus on articles that mentioned exclusively an increase or decrease in inflation as we are interested in potential asynnetries in publication frequency of articles mentioning an inflation increase versus an inflation decrease. We declared 7.45% German articles as "neutral" and 12.7% French articles.

Over the entire sample period, we observe 25,207 German written articles that write about an inflation increase and 5,275 that write about an inflation decrease. For French written articles, we have 15,925 and 10,799, respectively.

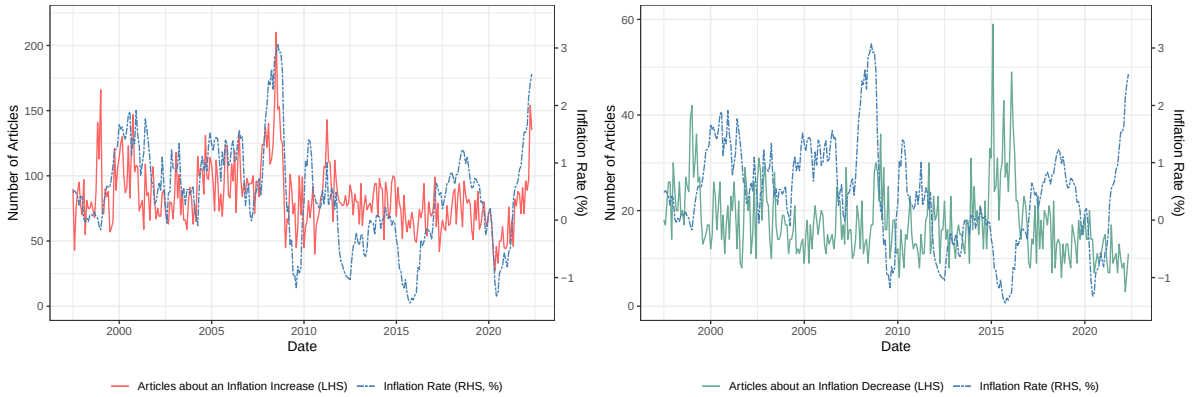
2.2 Descriptive Results

Figure 1 plots the time series of news articles reporting an inflation increase or a decrease together with the observed inflation rate for each language separately. Panel 1a plots the inflation rate and the number of articles that report an inflation increase. In general, the number of articles reporting an inflation increase in German written newspapers increases when inflation rises. The reporting of articles about an inflation increase peaked during the financial crisis with 210 articles published in June 2008.

Panel 1b plots the inflation rate together with the number of articles writing about an

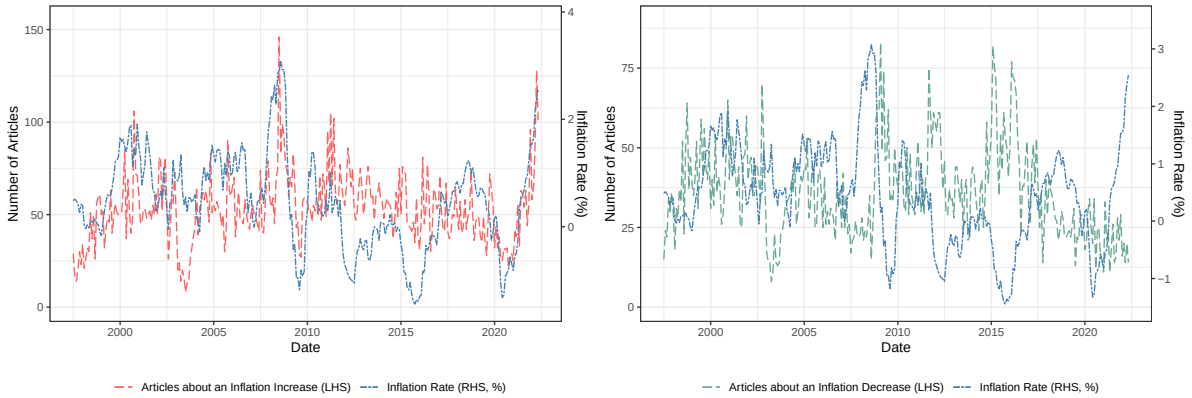
inflation decrease. During the financial crisis, the maximum articles mentioning an inflation decrease was 36 in January 2009. The highest number of articles published in a given month was reached in January 2015 with 59 articles, which was during a period of relatively strong negative inflation in Switzerland.

Panel 1c and 1d plot the same indices for all articles from French written newspapers. In general, the reporting of inflation increase and decrease follows closely the corresponding evolution of the inflation rate. One exception is the period between January 2003 to December 2003, with unusually low levels of articles writing about inflation increase or decrease. This is due to a reporting issue in the Swissdox database. For this reason, we will discard this time period from our sample for both, the German articles and the French articles.



(a) German - Increase

(b) German - Decrease



(c) French - Increase

(d) French - Decrease

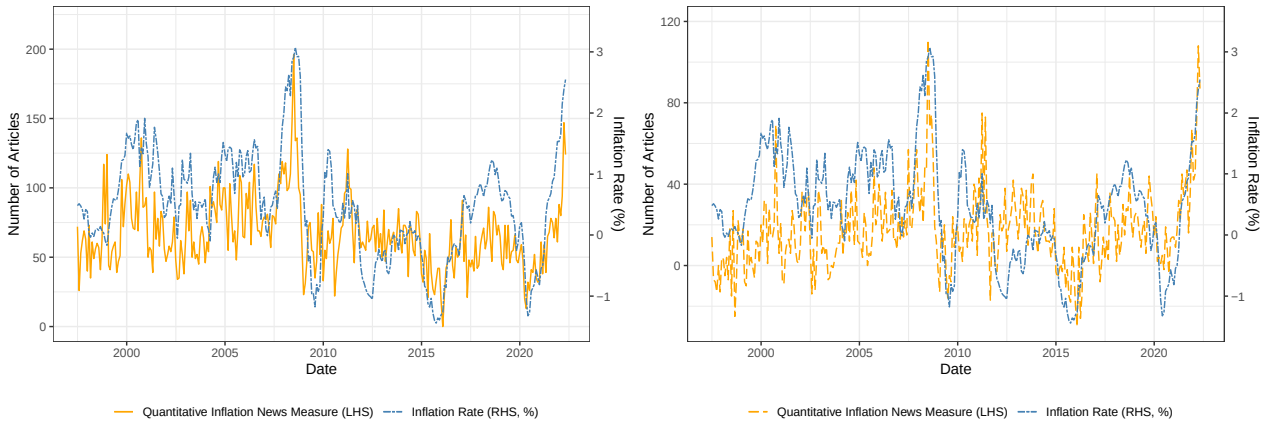
Figure 1: Articles writing about an Inflation Increase and Decrease

Notes: On the left hand side, the panels show the number of articles that write about an inflation increase (left hand scale) together with the actual observed inflation rate (right hand scale) for both newspapers written in German and French, respectively. The observed inflation rate is the change in percentage compared to the same month in the previous year. On the right hand side, the panels show the number of articles writing about an inflation decrase (left hand scale) together with the observed inflation rate (right hand scale) for both newspapers written in German and French, respectively.

Figure 2 plots the quantitative inflation news measure for both languages. This measure is the difference between the number of articles writing about an increase minus the number of articles writing about a decrease of inflation. When the measure increases, there are relatively more articles published that report an inflation increase versus an inflation decrease.

As Soroka (2006) argues, for households, news about an inflation decrease are good news, whereas news about an inflation increase are bad news. Hence, an increase in the measure of quantitative inflation news could be interpreted as relatively more bad news versus good news. However, for inflation in Switzerland, this is not necessarily always the case. For example, the period around 2015 is described by a negative inflation and, at the same time, a decrease in economic activity. Newspapers reported negatively about the inflation decrease, warning about a deflationary spiral.[3]

For German articles in panel 2a, the tone tracks the evolution of the inflation rate considerably well. Over the entire sample period, the correlation between the tone and the observed inflation rate is 0.63. A similar pattern can be observed for the French written articles in panel 2b. The correlation between the tone and the observed inflation rate is only slightly lower at 0.48.



(a) Newspapers written in German

(b) Newspapers written in French

Figure 2: Quantitative Inflation News Measure

Notes: In the left panel, the figure shows the quantitative inflation news measure (right hand scale) of news calculated as the difference between the number of articles writing about an inflation increase minus the number of articles writing about an inflation decrease using only newspapers written in German, together with the observed inflation rate (right hand scale). The left panel shows the same time series of quantitative

[3]For example, the title and lead of an article in the German written newspaper 20 Minuten in December 2014 translates as follows: *"How falling prices hurt the economy - The Swiss National Bank expects inflation to fall into negative territory in 2015. Even if falling prices seem positive - they do not always have good consequences."*, (Frommberg, 2014).

inflation news measure using newspapers written in French (left hand scale) together with the actual inflation rate (right hand scale).

2.3 Qualitative Inflation News Measure

The qualitative inflation news measure represents the sentiment of the inflation news articles. To derive the sentiment, we use a state-of-the-art NLP model called BERT developed at Google by Devlin et al. (2018a). Their seminal contribution is a model that generates context-aware embeddings for words and documents. In contrast to alternative NLP models that process text only in one direction (either from left to right or right to left), BERT uses a bidirectional approach.

This is achieved by pre-training the model on two specific task called Masked Language Modelling (MLM) and Next Sentence Prediction (NSP), respectively. In MLM, some percentage of the input text is masked at random. The goal of the model is then to predict these masked words. In NSP, the model learns about the relationship between two sentences. As input, the model receives two sentences A and B. The goal of the model is to decide whether sentence B follows A, where this is in 50% of the cases true and in 50% B is a random sentence from the Corpus.

BERT has been used extensively for various NLP tasks in economics and finance, including sentiment analysis (see, for example, Araci (2019), Sousa et al. (2019)).[4] For our sentiment analysis, we use the pre-trained multilingual base model (Devlin et al., 2018b) for the French language and the BERT model provided by Deepset (2019) for the German language.

To fine-tune the model, we create a random sample of 1,000 articles for each language. In these articles, we focus on the paragraphs that write about inflation. We then self-classify these articles into two categories, positive and negative. An article is classified as positive (negative) if inflation is assessed to be positive (negative). For example, in February 2008, a newspaper article of "Le Matin" translates to *"[...] The economy does not need it. Inflationary pressures have just returned to a level not seen for more than a decade. [...] "*. In this article, inflation is negatively assessed. In contrast, the following article of the "NZZ" in March 2002 that translates to *"[...] The Swiss National Bank (SNB) considers the current interest rate level [...] is appropriate for a sustainable and inflation-free economic development. [...] An increase would be inappropriate in view of the favorable inflation outlook [...]"*. Here, the level

[4]Other popular approaches, such as sentiment analysis via dictionary method would require comparable dictionaries for the two languages that classify sentiment similarly. The most common dictionary from Loughran and McDonald (2011) has only been translated to German (see Bannier et al. (2019)), but not to French. Moreover, these dictionary usually capture the general sentiment, non-specific to inflation.

of inflation is positively connoted.

Our training data set consists of 85% of the articles. Validating the predictions on our test data set, we achieve an accuracy of 72% and 68% to predict the sentiment for the French and German language, respectively. Due to the novelty of the inflation sentiment measure, the accuracy can be compared most closely with the financial sentiment prediction of Araci (2019). In their paper, Araci (2019) achieved an accuracy of 86%. However, the sentiment prediction of Araci (2019) is based on single sentences and the model was pre-trained on financial vocabulary. In contrast, due to the different languages considered, we use two models that were trained on non-specialized text corpora and use entire paragraphs to predict the sentiment of inflation.

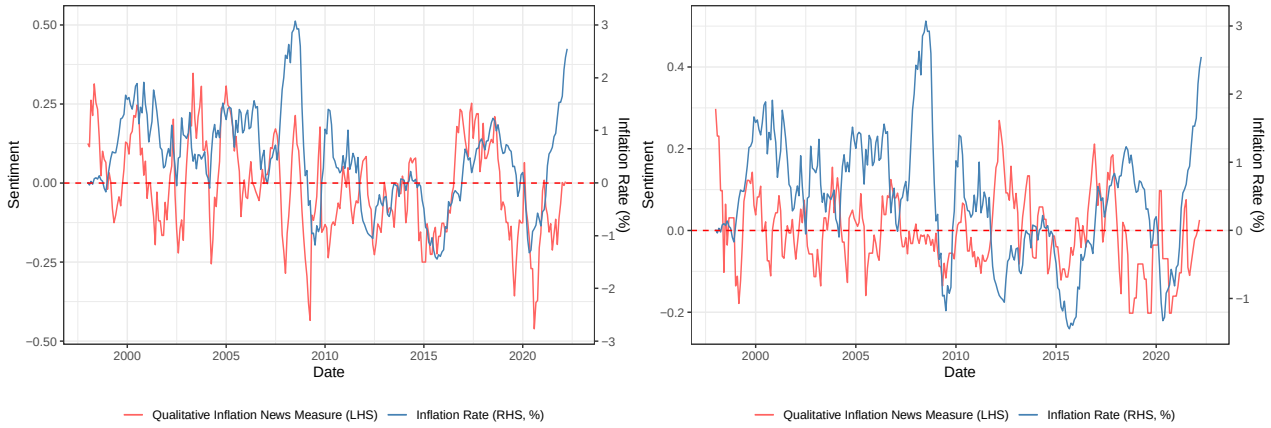
Using the fine-tuned model, we predict the sentiment of the same articles considered for the quantitative inflation news measure. Then, we average the prediction of negative and positive sentiment for a given month. We standardize the time series by subtracting the mean over the entire sample period and dividing by its standard deviation.

2.4 Descriptive Results

In Figure 3, we plot the qualitative inflation news measure for the newspapers written in German and French, respectively. For newspapers written in German, during the time before the global financial crisis, the correlation between the qualitative inflation news measure and the observed inflation is 0.04. The correlation increases to a positive value of 0.25 after 2008.

For the newspapers written in French, the correlation of the qualitative inflation news measure and the observed inflation rate is -0.21 before the financial crisis and -0.04 after 2008. The correlation after 2008 is clearly lower than for the newspapers written in German. In particular, the difference to the qualitative inflation measure in newspapers written in German is most apparent for the period around march 2012 where the sentiment is positive for newspapers written in French but negative for those written in German.

Despite temporary differences, the qualitative measures for both newspapers also share common trends. For example, during the period around 2015 where Switzerland experienced a rather strong negative inflation, the sentiment is negative for newspapers written in both German and French. similarly, the sentiment for the recent increase in inflation is rather negative.

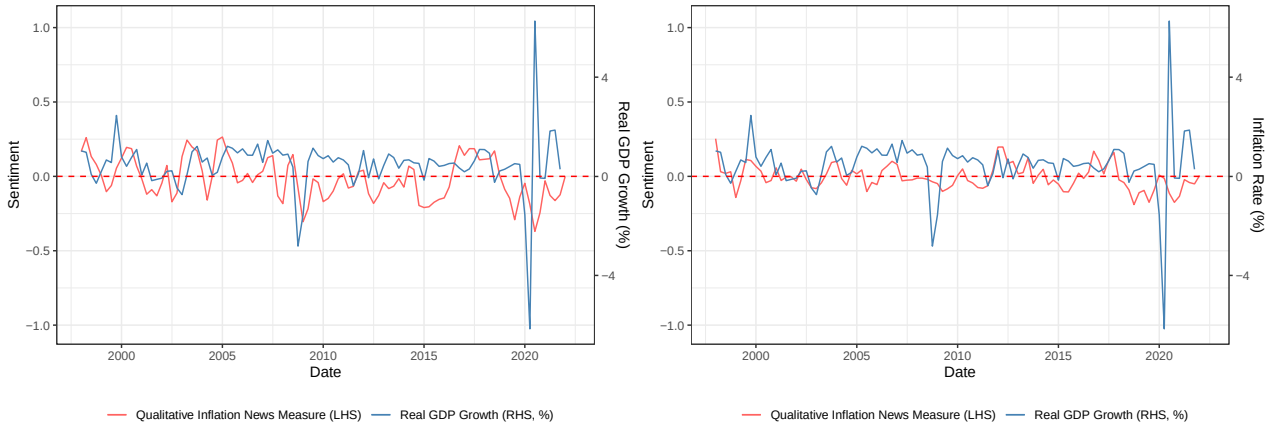


(a) Newspapers written in German (b) Newspapers written in French

Figure 3: Qualitative Inflation News Measure

Notes: In the left panel, the figure plots the qualitative inflation news measure for newspapers written in German (left hand scale) together with the observed inflation rate (right hand scale). The qualitative news measure is the average sentiment resulting from the prediction of the BERT model. In the right panel, we plot the qualitative news measure for newspapers written in French (left hand scale) together with the actual inflation rate (right hand scale). The qualitative inflation news measure is standardized. Values above (below) the horizontal zero line indicate periods of a predominantly positive (negative) sentiment with respect to inflation.

In Figure 4, we plot the qualitative inflation news measure together with the real GDP growth rate of Switzerland to show that our inflation news measure captures information that is not exclusively related to the business cycle. If we suspect the qualitative news measure to capture the general sentiment of the economic conditions, we would expect a strong correlation between the two series. However, for both newspapers written in German and in French, the correlation is very low at 0.04 and 0.05, respectively.



(a) Newspapers written in German (b) Newspapers written in French

Figure 4: Qualitative Inflation News Measure and Real GDP Growth

Notes: In the left panel, the figure plots the qualitative inflation news measure for newspapers written in German (left hand scale) together with the real GDP growth rate (right hand scale). The qualitative news measure is the average sentiment resulting from the prediction of the BERT model. In the right panel, we plot the qualitative news measure for newspapers written in French (left hand scale) together with the real GDP growth rate (right hand scale). The qualitative inflation news measure is standardized. Values above (below) the horizontal zero line indicate periods of a predominantly positive (negative) sentiment with respect to inflation. All data is averaged to quarterly frequency.

3 Inflation Expectations Data

To analyze inflation expectations and perceptions, we use data from the national Swiss Consumer survey (State Secretariat for Economic Affairs (SECO), 2022) conducted by the State Secretariat for Economic Affairs (SECO). This quarterly survey provides information of a repeated cross-section of representative households about their perceptions and expectations with respect to the economy, inflation, but also financial situation and job security. The survey started with a sample size of approximately 500 households. Between the first quarter 1981 up until 2012 in the second quarter, the sample size increased to around 1100 households. From the third quarter 2012 up until now, the sample size encompasses roughly 1200 households.

In the survey, the households provide qualitative answers to the following questions about inflation perception and expectations:

- *Question:* How, in your view, have prices changed over the last 12 months? Have they:
- *Answers:* risen sharply; risen slightly; remained virtually unchanged; fallen slightly; fallen sharply; Don't know; No answer given.
- *Question:* How, in your view, will prices change over the next 12 months? Will they:

- *Answers:* rise sharply; rise slightly; remain virtually unchanged; fall slightly; fall sharply; Don't know; No answer given.

Importantly for us, the survey also includes socio-demographic information. Until 2012, the survey reported so-called WEMF regions. WEMF regions group communities into self-contained economic areas. This allows us to separately analyze the replies from the survey of households in the French speaking part of Switzerland and the German speaking part. From 2013 onward, the regional information is more detailed and even available at the cantonal level. Unfortunately, in between 2012 and 2013 no information about the location was recorded. For this reason, we will discard this period from our sample size.

While our main empirical analysis focuses on individual household level data from the qualitative responses of the survey, we also quantify inflation expectations as an additional measure. The quantification of inflation expectations allows for a more direct interpretation of the size of the effect of news on expectations and serves as a robustness check.

To quantify inflation expectations from qualitative survey data, we use similar methods as Rosenblatt-Wisch and Scheufele (2015). The authors compare different quantification methods for inflation expectations using the same data from the national Swiss Consumer survey. All details about the approach are described in the appendix B.

3.1 Descriptive Results

Figures 2 and 3 in the appendix plot the shares of the replies to the question about inflation expectations and perceptions for the two regions, respectively. Overall, the share of households with both high inflation expectations and perceptions is bigger for households in the French speaking part than the German speaking part.

Table 1 summarizes the mean shares of the replies of the qualitative survey for each of the two language regions. On average, 8.43% of the households expected prices to strongly increase compared to 5.32% of the households in the German speaking part. Also for a small expected increase of prices, the share is higher for households in the French speaking part with 50.47% compared to 45.60% in the German speaking part. Inversely, more households in the German speaking part expect prices to decrease (10.12%) compared to the French speaking households (5.95%).

We find the same pattern for inflation perceptions. A higher share of French speaking households perceive prices to have strongly increased (12.99%) or slightly increased(45.87%) versus households in the German speaking part (7.45% and 41.47%, respectively). Again,

more households located in the German speaking part perceived prices to have decreased (11.43%) compared to households in the french speaking part (6.10%).

Table 1: Summary Table for Regional Inflation Expectations and Perceived Inflation

Variable	Reply	French Region	German Region
Inflation Expectations	Strong Increase	8.43	5.32
	Slight Increase	50.47	45.60
	Constant	35.15	38.96
	Decrease	5.95	10.12
Inflation Perceptions	Strong Increase	12.99	7.45
	Slight Increase	45.87	41.47
	Constant	35.04	39.64
	Decrease	6.10	11.43

Notes: The table shows the shares of replies for each category with respect to expected inflation and perceived inflation from the qualitative survey data for German and French speaking households. The shares are in percentages.

For brevity, the results for the quantified average inflation expectations are summarized and discussed in the appendix B.3.

4 Inflation Reporting of Newspapers

4.1 Model

In this section, we describe the framework from GMZ to analyze how the quantitative and qualitative inflation news measure in newspapers reacts to changes in inflation rate using a TSVAR model. In brief, we investigate whether the quantitative and qualitative measures react differently in times of an inflation increase versus a decrease.

y_t is a $m \times 1$ time series vector with m endogenous variables of interest and y_{t-1} being a $m \times (mp + 1)$ matrix, where p is the lag-order such that $y_{t-1} = (1, y_{t-1}, \ldots, y_{t-p})$. Then, a threshold VAR can be written as

$$y_t = (1 - \Gamma(z_t))[y_{t-1}\beta_1] + \Gamma(z_t)[y_{t-1}\beta_2] + \varepsilon_t \tag{1}$$

where ε_t is a $m \times 1$ disturbance term with $\varepsilon_t \sim WN(0, \Sigma)$. z_t is a scalar and $\Gamma(\cdot)$ a function taking the value 0 or 1 Similar to GMZ, we set $z_t = \Delta\pi_{t-1}$, the lagged change in the inflation

rate. The lag ensures unconfoundedness with the disturbance term ε_t. As we are interested in potential differences in media reporting in cases of an inflation decrease or increase, we set $\Gamma(z_t) = 0$ if $\Delta\pi_{t-1} \leq 0$ and $\Gamma(z_t) = 1$ if $\Delta\pi_{t-1} > 0$. The model can then be estimated as an OLS on two distinct samples, with β_1 being the coefficients that describe the dynamics in case of an inflation decrease, and β_2 the coefficients for the dynamics in case of an inflation increase.

To investigate whether the inflation news measures derived from the newspaper articles react differently during times of an inflation increase or decrease, we analyze the dynamic response of the quantitative and qualitative news measure to an innovation in the inflation rate that is not related to the other shocks in the system. To identify the shock, we follow GMZ by using a Cholesky decomposition. We define C to be the Cholesky factor of Σ. C is a lower triangular matrix such that $\Sigma = CC'$. Therefore, the identified shocks can be calculated by $v_t = C^{-1}\varepsilon_t$. Our first endogenous variable in the system is the change in the inflation rate and the second variable is the inflation news measure. Consequently, the first identified shock v_{1t} is orthogonal to v_{2t}. In that case, v_{1t} represents unexpected changes in the inflation rate, unrelated to past changes in the inflation rate or the inflation news measure. The identified shock is not structural but it suits the purpose to analyze whether the inflation news measure reacts differently to a positive or a negative change in the inflation rate.

As the observed inflation rate is the same for the French speaking and German speaking region, the regime indicator z_t as well as the impact effects in both regimes ($\Gamma(z_t) = 0, \Gamma(z_t) = 1$) are the same. This makes it easier to compare the dynamics in the system across the regimes, but also across regions. As in GMZ, we condition on the sign of the shock to retrieve the regime-specific impulse response functions. For confidence intervals, we use bias-corrected bootstrap confidence bands as proposed by Kilian (1998).

4.2 Results

In the first specification, we set $y_t = [\Delta\pi_t, \text{News Measure}_{t,r}]$, where News Measure is the quantitative or qualitative inflation news measure. $r \in$ [DE,FR] stands for the region and refers to whether the news measure is derived from the German written media ("DE") or the French written media ("FR"), respectively. Using the Schwarz Information Criterion (SIC) for lag selection, we obtain a value of $p = 2$ for the models with the quantitative and qualitative inflation news measure for both newspapers written in German and French.

In a first step, we focus on the results of the quantitative news measure and compare the results across the newspapers written in German versus French. In a second step, we repeat

the analysis for the qualitative news measure.

In Figure 5 we plot the results of the model using the quantitative inflation news measure from newspapers written in German. On the left hand side, we plot the impulse response function of a one standard deviation inflation innovation (0.28 percentage points) on the change in the inflation rate. On the right hand side, we plot the impulse response function of an innovation in inflation on the quantitative inflation news measure, that is, the number of articles that write about an inflation increase minus the number of articles writing about an inflation decrease. In both figures, we differentiate between a positive innovation in inflation, hence, an unexpected increase versus an unexpected decrease. We discuss two main observations.

First, the change in the inflation rate to a positive and negative shock is very similar in terms of size and persistence. This is in contrast to what GMZ find for unemployment where positive shocks to unemployment (that is, an increase in unemployment) are significantly more persistent than negative shocks.

Second, the quantitative inflation news measure reacts very similar to an increase or decrease in the inflation rate. If inflation media reporting were to be biased, that is, over-reporting of articles writing about an inflation increase versus decrease, the reaction of the quantitative inflation news measure would be asymmetrical. Only initially, the quantitative inflation news measure reacts more (becomes more negative) to a decrease in inflation but converges faster towards 0 than in the case of an inflation increase. We get a similar picture if we focus on the cumulative response functions and calculate the difference between the two impulse response functions. The results are plotted in Figure 7 in the appendix.

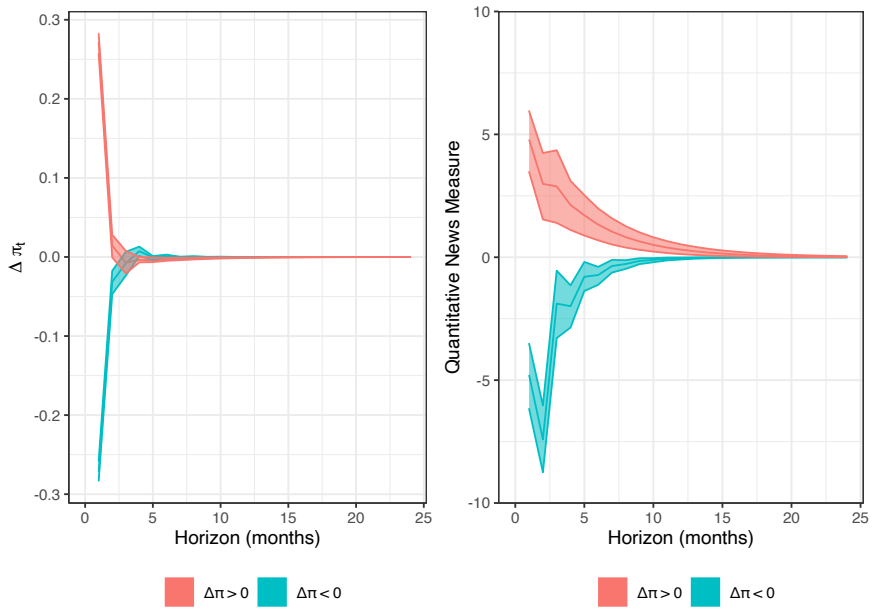


Figure 5: Results TSVAR for Quantitative News Measure in German Newspapers

Notes: The Figure shows the impulse response functions of the TSVAR model described in section 4.1. The left hand panel plots the response of the change in the inflation rate to a positive (red) and negative (blue) inflation rate innovation, respectively. The right hand side panel shows the response of the quantitative news measure (number of articles writing about an inflation increase minus number of articles writing about an inflation decrease) to the positive (inflation increases) and negative inflation rate innovation. The shadowed areas correspond to 68% confidence bands.

However, as brought forward by GMZ, to correctly analyze whether media reporting is indeed (un-)biased, we need to look at the normalized impulse response functions and their differences. In more detail, reporting in newspapers may differ just because the shocks have different persistences. For the United States, GMZ show that after taking into account the potential non-linearity of the response of unemployment to an unemployment shock, they find no evidence of media bias about unemployment.

For this reason, we calculate the GMZ dynamic media multiplier for inflation reporting in both German written newspapers and French written newspapers. At each horizon, we divide the cumulative sum of the impulse response functions of the quantitative inflation news measure by the cumulative sum of the changes in the inflation rate. The dynamic media multiplier can be interpreted as follows. At the end of the time horizon of our impulse response functions at 24 months, the dynamic media multiplier shows how many excess articles about an inflation increase compared to inflation decrease articles are generated by the news media in response to a 1 percentage point shock in inflation. Furthermore, we compute the difference of the dynamic media multiplier between states where changes in

inflation are positive versus negative.

The results are displayed in Figure 6. The left hand panel shows the dynamic media multiplier for both times with an increase in the inflation rate ($\Delta\pi > 0$) and when the inflation rate is decreasing ($\Delta\pi < 0$). The dynamic media multiplier is slightly higher for German written news articles during an increase in inflation compared to a decrease in inflation. The right hand panel, however, shows that the difference in this media multiplier is rather small and insignificant. At the end of the time horizon, it amounts to 19 articles.

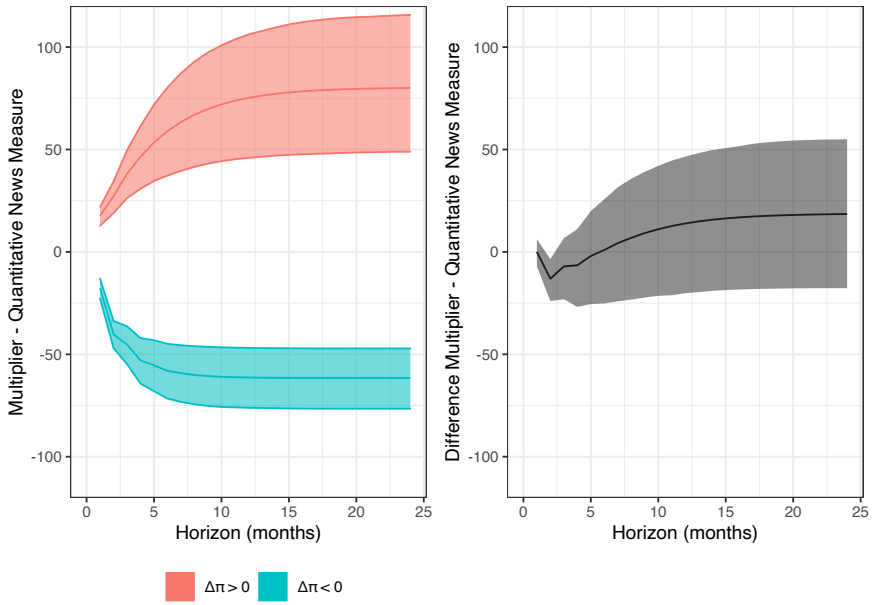


Figure 6: Dynamic Media Multiplier for German written Newsarticles

Notes: On the left hand side, the panel shows the dynamic media multiplier from the IRF calculated from the TSVAR model described in section in section 4.1. The dynamic media multiplier is calculated as the cumulative sum of the response of the quantitative inflation news measure to an innovation in inflation divided by the cumulative sum of the response of inflation to an innovation in inflation. The right hand panel shows the difference in the media multiplier for the state of positive inflation compared to negative inflation. The shadowed areas correspond to 68% confidence bands.

Now, we turn to the results for the newspapers written in French. Figure 7 plots the impulse response functions of the inflation rate and the quantitative inflation news measure to a shock in the inflation rate. Focusing on the left hand panel, due to our model specification and the fact that the inflation rate is the same for both models, the impact effect of an innovation in inflation on inflation is the same as in figure 5 and across states.

The right hand panel shows the effect of an innovation in inflation on the quantitative inflation news measure in french newspapers. In contrast to German newspapers, the quantitative news measure derived from the French newspapers reacts more in case of an

inflation increase compared to an inflation decrease. In case of an inflation increase, the quantitative news measure increase persistently and stays significantly positive until the horizon of 12 months. In case of an inflation decrease, the quantitative news measure reacts only on impact and shortly after, converging to zero faster. The results point towards a relatively higher media publication of news writing about an inflation increase compared to a articles about an inflation decrease. Figure 8 in the appendix plots the cumulative impulse response function.

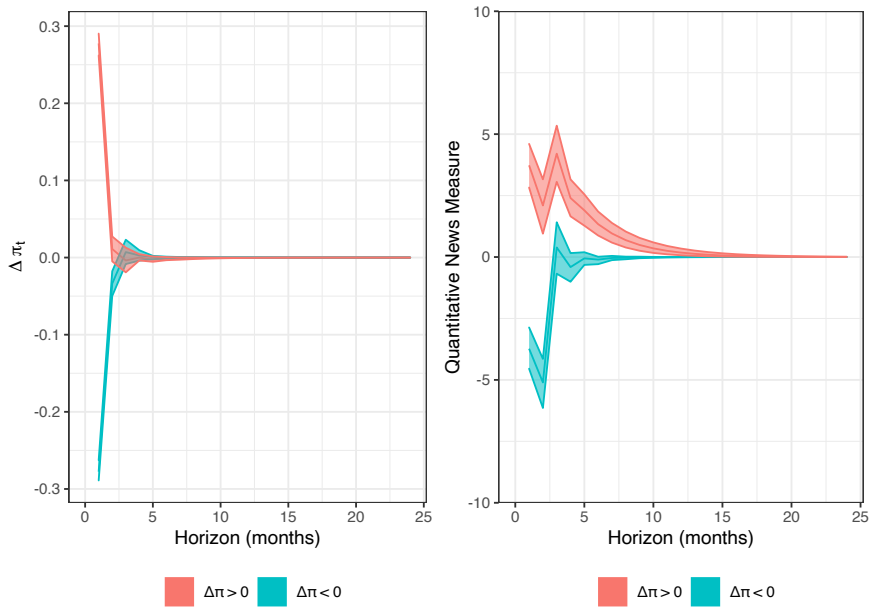


Figure 7: Results TSVAR for Quantitative News Measure in French Newspapers

Notes: The Figure shows the impulse response functions of the TSVAR model described in section 4.1. The left hand panel the response of the change in the inflation rate to a positive (red) and negative (blue) inflation rate innovation, respectively. The right hand side panel shows the response of the quantitative inflation news measure (number of articles writing about an inflation increase minus articles writing about an inflation decrease) to the positive (inflation increases) and negative inflation rate innovation. The shadowed areas correspond to 68% confidence bands.

Figure 8 confirms this result. It shows the normalized impulse response functions and the difference between the state where inflation increases and where inflation decreases. The difference of the media multiplier is significantly positive and reaches a maximum of 38 at the end of the horizon.

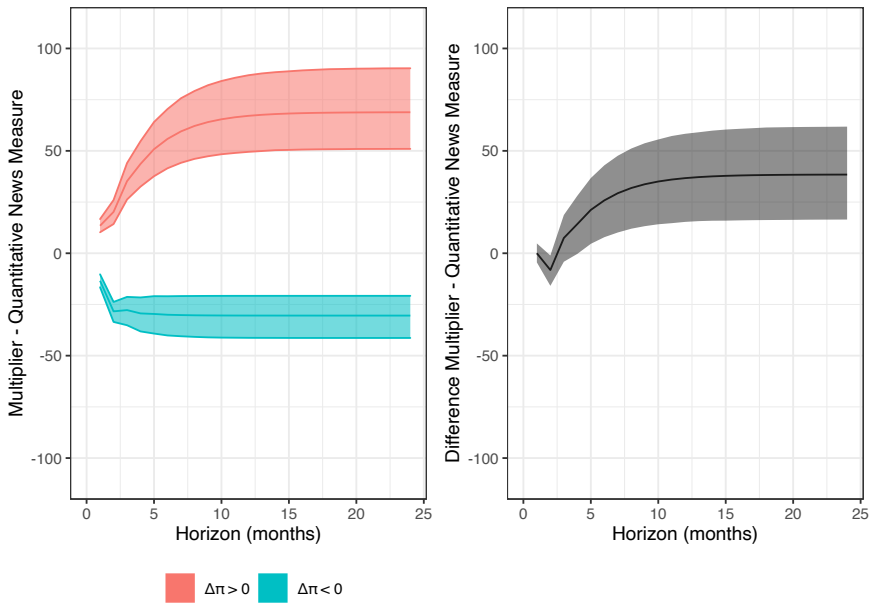


Figure 8: Dynamic Media Multiplier for French written Newsarticles

Notes: On the left hand side, the panel shows the dynamic media multiplier from the IRF calculated from the TSVAR model described in section in section 4.1. The dynamic media multiplier is calculated as the cumulative sum of the response of the quantitative inflation news measure to an innovation in inflation divided by the cumulative sum of the response of inflation to an innovation in inflation. The right hand panel shows the difference in the media multiplier for the state of positive inflation compared to negative inflation. The shadowed areas correspond to 68% confidence bands.

The figures highlight an important result. While the dynamic media multiplier is positive but insignificant over the entire time horizon for German written newspapers, the media multiplier is twice as big and significantly positive for French written newspapers. This points towards a media bias in French written newspapers, that is, an over-reporting of articles mentioning an inflation increase relative to articles mentioning an inflation decrease.

Next, we focus on the results of the qualitative inflation news measure. For brevity, we only report the results of the dynamic multiplier and the multiplier difference for both newspapers written in German and French in the main text and let the reader refer to the appendix for the additional results.

For German written newspapers, Figure 9 shows that the qualitative inflation news measure is more negative in case of a unexpected decrease in the inflation rate. For an unexpected increase in the inflation rate, the response is slightly positive at the beginning but insignificant. The difference in the multiplier is clearly negative and significant.

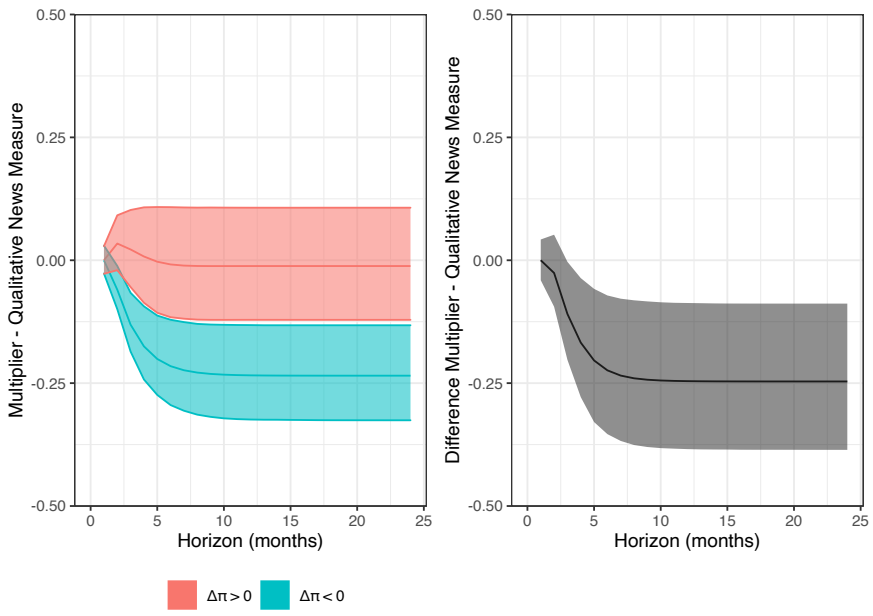


Figure 9: Dynamic Media Multiplier for German written Newsarticles

Notes: On the left hand side, the panel shows the dynamic media multiplier from the IRF calculated from the TSVAR model described in section in section 4.1. The dynamic media multiplier is calculated as the cumulative sum of the response of the qualitative inflation news measure to an innovation in inflation divided by the cumulative sum of the response of inflation to an innovation in inflation. The right hand panel shows the difference in the media multiplier for the state of positive inflation compared to negative inflation. The shadowed areas correspond to 68% confidence bands.

For French written newspapers, Figure 9, the multiplier is very similar in case of an unexpected increase or decrease of the inflation rate. In both cases, the response is not significant but tends to be slightly negative in case of an inflation decrease and positive in case of an inflation increase. In the right panel of the figure, the difference of the multiplier is close to zero and non-significant.

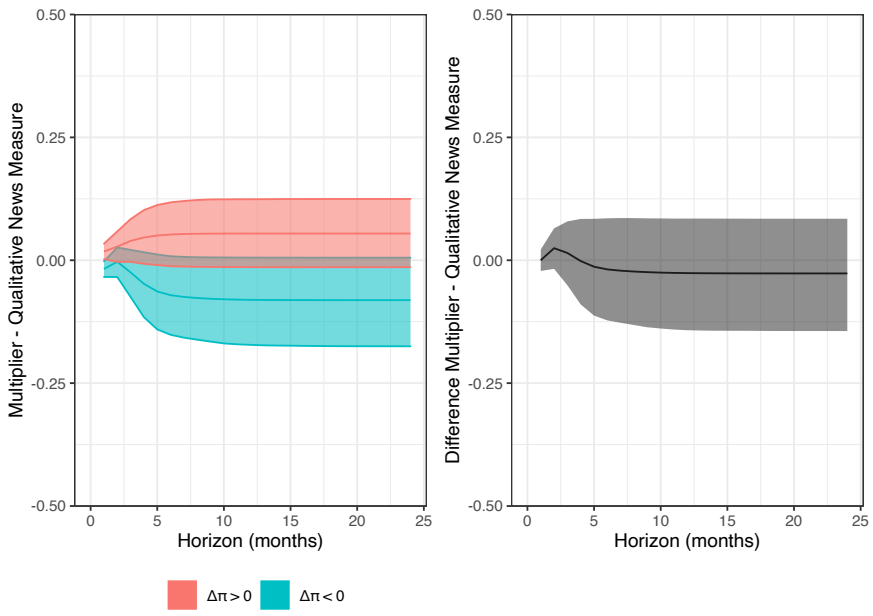


Figure 10: Dynamic Media Multiplier for French written Newsarticles

Notes: On the left hand side, the panel shows the dynamic media multiplier from the IRF calculated from the TSVAR model described in section in section 4.1. The dynamic media multiplier is calculated as the cumulative sum of the response of the qualitative inflation news measure to an innovation in inflation divided by the cumulative sum of the response of inflation to an innovation in inflation. The right hand panel shows the difference in the media multiplier for the state of positive inflation compared to negative inflation. The shadowed areas correspond to 68% confidence bands.

In summary, we find that the quantitative inflation news measure derived from newspapers written in German reacts similarly when inflation unexpectedly increases or decreases. However, the qualitative inflation news measure reacts more negatively in case of a inflation decrease. On the other hand, the quantitative inflation news measure derived from newspapers written in French shows a larger response in case of an unexpected inflation increase. Hence, there are relatively more articles published about an inflation increase versus decrease. Yet, the qualitative inflation news measure shows no asymmetry in the response to a unexpected inflation increase or decrease.

5 News Media and Inflation Expectations and Perceptions

5.1 Model

In this section, we discuss the approach to derive the quantitative and qualitative inflation news measure shocks, following GMZ, and how we use them to investigate the effects on

inflation expectations and perceptions. For this, we need changes in the news measures that are unrelated to the dynamics of the inflation rate. Otherwise, stronger reactions of the expectations could simply be due to a stronger increase or decrease in the inflation rate.

For this reason, we make use of the series of shocks from our model in section 4.1. In more detail, the residuals v_{2t} represent variations in the news measure that are unrelated to the (current and past) inflation rate. In what follows, we name this series nms_t, short for news measure shock.

Arguably, households in the French speaking part of Switzerland consume more news written in French whereas households in the German speaking part consume more news in German. We exploit this language barrier in our empirical set-up. In more detail, it allows us to control for time-fixed effects that capture confounds that affect the news shock as well as the perceptions and expectations at the same time. For example, we control for a national shock that increases news coverage but also expectations and perceptions. The main linear probability model used can be written as follows.

$$\text{Share}_{i,t,m} = \alpha + \beta_1 nms_{t,r} + \beta_2 \text{HH}_{i,t} + \beta_3 \text{Region}_{i,t} + \gamma_t + \varepsilon_t \tag{2}$$

where $\text{HH}_{i,t}$ are household level controls that include education, gender and age fixed effects, $\text{Region}_{i,t}$ is an indicator whether the households is located in the French or German speaking part of Switzerland, and γ_t are time fixed-effects. $\text{share}_{i,t,m}$ stands for the relative share of households expecting or perceiving an increase in prices versus a decrease in prices. For the regressions, we scale the share from 0 to 100 to indicate percentages.

5.2 Results

In Table 2 we show the effects of a quantitative and qualitative news shock on the share of households expecting or perceiving an increase in prices versus a decrease in prices.

Overall, we find that a one unit increase in the quantitative news shock decreases the share of households indicating an inflation increase versus decrease by 0.77 percentage points. Taking a one standard deviation increase in the quantitative news shock leads to a 1.65 percentage point decrease in the share. This effect is small but significant on the 5% level. Note, however, that an increase in the quantitative news shock corresponds to relatively more news about an inflation increase versus decrease. Similarly, a one unit increase in the quantitative news shock decreases the share of households perceiving inflation to have increased versus decreased by 0.54 percentage points.

Table 2: Effect of Quantitative and Qualitative News Shock on Inflation Expectations and Perceptions

	(1) Share Exp.	(2) Share Perc.	(3) Share Exp.	(4) Share Perc.
Quantitative News Shock	-0.77**	-0.54*		
	(0.34)	(0.28)		
Qualitative News Shock			-0.27**	0.09
			(0.13)	(0.10)
Date FE	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes
Observations	62,820	63,643	62,820	63,643

Note: The table shows the effects of quantitative and qualitative news shocks derived in section 4.1 on the share of households expectations and perceptions indicating an increase versus decrease. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, ***. Standard Errors are clustered at the date × region level.

For the qualitative news shock, we find that a one unit increase reduces the share of households indicating an inflation increase versus decrease by 0.27 percentage points. Calculating a one standard deviation increase in the qualitative news shock, this translates to a decrease of the share by 0.60 percentage points. Note that an increase in the qualitative news shock corresponds to a more positive assessment of inflation in the news. For inflation perceptions, we find no significant effect.

In Table 3, we investigate the effect of a news shock conditional on periods where inflation is increasing or decreasing. Focusing on quantitative news shocks, the effect is stronger during times of inflation. However, the direction of the effect is negative, i.e. the share of households replying with an increase versus decrease for both inflation expectations and perceptions decreases. *A priori*, we would expect that a relative increase of the number of news writing about an inflation increase versus decrease leads to an increase in inflation expectations and perceptions (see, for example, Soroka (2006)).

For qualitative news shocks, we find similar results. When inflation is increasing, a positive qualitative news shock decreases the relative share of households expecting or perceiving inflation to increase. When inflation is decreasing, the effects are still negative but not significant.

Table 3: Effect of Quantitative and Qualitative News Shock conditional on Inflation

	$\pi > 0$		$\pi < 0$		$\pi > 0$		$\pi < 0$	
	(1) Share Exp.	(2) Share Perc.	(3) Share Exp.	(4) Share Perc.	(5) Share Exp.	(6) Share Perc.	(7) Share Exp.	(8) Share Perc.
Quantitative News Shock	-0.54	-0.49*	-1.78**	-1.47**				
	(0.34)	(0.26)	(0.75)	(0.72)				
Qualitative News Shock					-0.28**	-0.32**	-0.14	-0.12
					(0.11)	(0.13)	(0.65)	(0.58)
Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	42,692	43,993	20,125	19,648	42,692	43,993	20,125	19,648

Note: The table shows the effects of quantitative and qualitative news shocks derived in section 4.1 on the share of households expectations and perceptions indicating an increase versus decrease, conditional on whether current inflation is positive or negative. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, *** p<0.010. Standard Errors are clustered at the date × region level.

Although we cannot explain the negative effect of a quantitative news shock, we recognize that the effect of the quantitative news measure tends to be larger for elderly households. Moreover, we find that the effect of the quantitative news shock is insignificant for households located in the German speaking part but significantly negative for those located in the French speaking part of Switzerland. The results are displayed in table 4.

For the qualitative news shock, the effects are also increasing with the age of the household and households located in the French speaking part tend to be more receptive towards the qualitative news shock.

Table 4: Effect of Quantitative and Qualitative News Shock - Age and Location

	(1) Share Exp.	(2) Share Perc.	(3) Share Exp.	(4) Share Perc.	(5) Share Exp.	(6) Share Perc.	(7) Share Exp.	(8) Share Perc.
Quantitative News Shock	-0.30	-0.21	-0.46*	0.31				
	(0.32)	(0.36)	(0.25)	(0.28)				
Age $\geq 30 \leq 50\times$ Quantitative News Shock	-0.23*	-0.25**						
	(0.11)	(0.08)						
Age $\geq 50\times$ Quantitative News Shock	-0.35*	-0.3						
	(0.19)	(0.26)						
HH in Swiss-French region=1			6.06***	8.61***			6.04***	8.43***
			(0.65)	(0.58)			(0.30)	(0.79)
HH in Swiss-French region=1 × Quantitative News Shock			-0.54*	-1.28***				
			(0.27)	(0.29)				
Qualitative News Shock					- 0.04	- 0.07	-0.1	0.15
					(0.14)	(0.36)	(0.34)	(0.23)
Age $\geq 30 \leq 50\times$ Qualitative News Shock					-0.28*	-0.14		
					(0.15)	(0.18)		
Age $\geq 50\times$ Qualitative News Shock					-0.54***	-0.63**		
					(0.15)	(0.21)		
HH in Swiss-French region=1 × Qualitative News Shock							-0.43**	-0.74*
							(0.20)	(0.38)
Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,820	63,643	52,171	53,495	62,820	63,643	52,171	53,495

Note: The table shows the effects of quantitative and qualitative news shocks on inflation expectations and perceptions. Interaction effects of news shocks and age as well as news shocks and location of the households are displayed. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, *** p<0.010. Standard Errors are clustered at the date × region level.

Higher effects of news on expectations and perceptions with increasing age may be related to differences in news consumption among younger and elderly respondents. In various studies, age has been found to be an important driver of newspaper consumption (see, for example, Lauf (2001), Elvestad and Blekesaune (2008)), even after taking into account online articles of newspapers (Thurman and Fletcher, 2019).

Furthermore, our results show differences in the effect to both quantitative and qualitative news shocks across locations. This could be due to cultural differences or the fact the households in the French speaking part spend more time reading newspapers or journals (Federal Statistical Office, 2019).

6 Robustness Checks

In this section, we provide several robustness checks. First, we estimate the main results including a business cycle indicator. Arguably, inflation is a lagged variable that follows business cycle activity. For this reason, our shock identified in section 5.1 might be confounded by other shocks.[5] The results are displayed in appendix D.1. Overall, our results remain unchanged with respect to both newspaper reporting as well as for the effects of news shocks on inflation expectations and perceptions.

[5]While GMZ use industrial production, we use a business cycle indicator as an alternative due to the lack of monthly data for industrial production.

Second, if news affects expectations and perceptions of inflation, we could also expect effects on consumption (see, for example, Soroka (2006) or GMZ). We use an additional survey question that asks households whether they believe that the timing for major purchases is good, neither good or bad, or bad. Using the quantitative and qualitative news shocks, we explore how news affects these consumption decisions. We find that an increase in the quantitative news shock, i.e., relatively more news about an inflation increase than decrease, has a negative effect on the consumption decision. Thus, a higher share of households replies that the timing for major purchases is not favorable if following an increase in the quantitative news measure. The effect is, again, stronger for households in the French speaking part. For the qualitative news shock, we find that an increase, i.e. a more positive assessment of inflation, has a significant positive effect on the share of households that believe the timing for major purchases is good. However, the effect is only significant for the households located in the French speaking part. The results are reported in appendix Table 6.

Third, for the newspaper reporting, we estimate the same models using the intensive margin. So far, we focused on simple counts of the articles and whether they contained, overall, information about an increase or decrease of inflation. However, for the general message of an article, the intensity an article writes about a certain topic might also be important. For this reason, we count all the indicators of an inflation increase or decrease for every article and take the sum overall articles and for a given month. The results are displayed in appendix XX. Overall, the results are comparable but more pronounced. For the intensive margin, we still find a significant higher coverage of articles writing about an inflation increase versus decrease for French written newspapers where we find no such evidence for German written newspapers.

Fourth, we use the quantitative inflation expectations derived from the qualitative survey replies. In general, the results are similar to the qualitative survey replies about inflation expectations but less significant due to the low number of observations. We find that both the quantitative and qualitative news shocks have a negative effect on inflation expectations, especially for households in the French speaking part. The results are displayed in Table D.4 in the appendix.

7 Conclusion

In this paper, we use a novel data set of newspaper articles in Switzerland to shed light on the links between regional news reporting and households' inflation expectations and perceptions. We create a standard quantitative inflation news measure that reports the

differences in the number of articles published about an inflation increase and those that report an inflation decrease. Then, we develop a novel qualitative inflation news measure. Using a state-of-the-art NLP model, we conduct a sentiment analysis on the news articles to report whether inflation is positively or negatively assessed.

We proceed by investigating how newspapers in Switzerland report about inflation using a threshold SVAR. Regarding the quantitative inflation news measure, we find that newspapers written in French report significantly more about an inflation increase compared to an inflation decrease. We find no evidence that this is the case for newspapers written in French. For the qualitative inflation news measure, we find that newspapers written in German assess an inflation decrease significantly more negative than an inflation increase, where newspapers written in French assess an inflation increase and decrease similarly.

Deriving news shock for both the quantitative and qualitative news measure, we find that both affect inflation expectations and perceptions. Even though the effects are relatively small, we find significant negative effects for both news measures on expectations and perceptions. Relatively more news about an inflation increase versus decrease decreases the share of households indicating an inflation increase versus decrease. Also, if inflation is more positively assessed in the news, it decreases inflation expectations and perceptions. For both news measures, we find that the effect is increasing with age and stronger for households in the French speaking part. This is likely due to the different media usage between younger and older households as well as across the language border.

These results are robust to different model specifications. Moreover, if news affect inflation expectations and perceptions, we would expect an effect on consumption decisions. We show that the households' consumption decisions about major purchases are negatively affected by the quantitative news measure and positively by the qualitative news measure.

Overall, our findings are policy relevant. As news coverage affects inflation expectations, real effects can be the consequence. Well-anchored inflation expectations improve the effectiveness of monetary policy. Moreover, as inflation expectations can be self-fulfilling, biased news coverage could eventually affect inflation (Leduc et al., 2007). Finally, we show that the news measure also affect consumption decisions.

We think that several directions of further research seem to be worth following. First of all, in this paper, we focused on printed newspaper articles. An in-depth analysis of online articles (and social platforms), changing media consumption habits and its effects on households' expectations and perceptions would contribute to our understanding of news coverage and its effects on households. Another question that we have left aside in this paper is whether

different narratives might lead to asymmetric effects in households' expectations. Promising methods in topic modelling, as in Müller et al. (2022), provide a fruitful starting point for this question. Finally, analyzing the linkages of media reporting to other expectations and different agents in the economy is a valuable topic for future research.

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Appendix

A Inflation News Indices - Details

To construct indices about bad and good inflation news, we focus on printed articles that write about the Swiss economy. For newspapers written in German, we focus on *Neue Zürcher Zeitung, Tages Anzeiger, Blick* and *20 Minuten*. For French written newspapers, we select *Le Temps, 24 heures, Tribune de Genève, 20 minutes* and *Le Matin*. These newspapers are among the largest in terms of readership (Federal Statistical Office, 2022b). We analyze articles from June 1997 to April 2022. For all articles, we look for the words inflation, a synonym of inflation and price ("Inflation", "Teuerung" and "Preis" in German, "inflation", "renchérissement" and "prix" in French). Similar to GMZ, we search for words indicating an increase or decrease in the vicinity of inflation. The words that identify an increase or decrease are translated and described in table 1. We use similar words for both languages.

Table 1: Words indicating decrease or increase in Inflation

Indicator	Words
Increase	Increase∗, pop+upward, spike, augment∗, markup, boom∗, boost, growth, grow∗, increment∗, drive∗, high∗, soar∗, more expensive, accelerate∗
Decrease	Decrease∗, decline∗, drop∗, dampen∗, reduce∗, reduction, fall∗, dip∗, downward∗ , low∗, abate∗, shrink∗, go + down, plunge∗, attenuate∗

We count newsarticles that report an increase in inflation if inflation or its synonym appears within a five word distance of an indicator for increase, and without an indicator of a decrease in a two word distance. Symetrically, we count newsarticles that report a decrease in inflation when inflation or its synonym appears within a five word distance of an indicator for decrease and no indicator of an increase within a two word distance. In contrast to GMZ, we use a two word instead of a one word distance. Especially in German, an increase (decrease) is often indicated with the combination of two words, i.e. "nehmen" + "zu" ("nehmen" + "ab").

With this information, we construct a "quantitative inflation news" measure. This measure is defined as the difference between the number of articles writing about an increase in inflation minus the number of articles that writing about a decrease in inflation. We then

aggregate these measures on a monthly frequency.

For the quantitative inflation news measure, we focus on articles that report exclusively an increase or a decrease in inflation. Articles that contain information about both an increase and a decrease may contain ambiguous, or neutral, information about inflation and potentially signal situations with high uncertainty. Over the entire sample period, 7.45% German articles are "neutral" and 12.7% French articles, respectively. Focusing on this subset of articles is an interesting point for future research.

B Inflation Expectations - Details

In this section, we will discuss the probability approach of Carlson and Parkin (1975) in more detail. Originally, this approach, often called the Carlson-Parkin method (CP method henceforth), was developed for only three categorical answers with respect to price developments but can easily be extended to more categories. The method is widely used (see Nardo, 2003 for a review), but has been criticized in its original form recently Lolić and Sorić (2018). Especially the strong assumption of unbiased inflation expectations has been questioned. For this reason, we will use the modified approach from Rosenblatt-Wisch and Scheufele (2015) which circumvents the assumption of unbiased inflation expectations.

To start with, the probability approach assumes that individuals form their inflation expectations from a subjective probability distribution $f_i(\pi_{i,t+4})$, characterized by mean $\mathbb{E}_t[\pi_{i,t+4}]$ and standard deviation $\sigma_t(\pi_{i,t+4})$. This probability distribution function is the same across all agents. Further, the method assumes that the individuals reply to the question whether prices will *go down* if $\mathbb{E}_t[\pi_{i,t+4}] \leq -\delta_{it}^L$, *stay the same* if $-\delta_{it}^L < \mathbb{E}_t[\pi_{i,t+4}] \leq \delta_{it}^U$, *will rise moderatly* if $\delta_{it}^U < \mathbb{E}_t[\pi_{i,t+4}] \leq \lambda_{it}$ and *will rise strongly* if $\mathbb{E}_t[\pi_{i,t+4}] > \lambda_{it}$. Therefore, in between the range of $-\delta_{it}^L$ to δ_{it}^U, the individual does not notice that prices either increase or decrease.

Given that all individuals share the same probability distribution function, we can describe the aggregate probability distribution using the shares of the survey replies for each category.

$$
\begin{aligned}
&P(\mathbb{E}_t[\pi_{i,t+4}] \geq -\delta_{it}^L) = A_t \\
&P(\mathbb{E}_t[\pi_{i,t+4}] \geq \delta_{it}^U) - P(\mathbb{E}_t[\pi_{i,t+4}] > -\delta_{it}^L) = B_t \\
&P(\mathbb{E}_t[\pi_{i,t+4}] \geq \lambda_{it}) - P(\mathbb{E}_t[\pi_{i,t+4}] > \delta_{it}^U) = C_t
\end{aligned}
$$

We define the abscissae a_t, b_t, c_t of the distribution function to correspond to the cumulative probabilities of $A_t, A_t + B_t, A_t + B_t + C_t$, respectively. Following Rosenblatt-Wisch and

Scheufele (2015), we choose the normal distribution as the distribution function, as they find that alternatives have only minor effects on the results.

Finally, assuming that the interval in between individuals don't notice any differences in prices is symmetrical around 0, $-\delta_t^L = \delta_t^U$, we can define $\mathbb{E}_t[\pi_{i,t+4}]$ and $\sigma_t(\pi_{i,t+4})$ in terms of the parameter λ_t and the quantiles of the distribution.

$$\mathbb{E}_t[\pi_{t+4}] = \frac{\lambda_t(a_t + b_t)}{(a_t + b_t - 2c_t)} \tag{3}$$

$$\sigma_t(\pi_{t+4}) = \frac{-2\lambda_t}{(a_t + b_t - 2c_t)} \tag{4}$$

$$\delta_t = \frac{\lambda_t(a_t - b_t)}{(a_t + b_t - 2c_t)} \tag{5}$$

Figure 1 provides an illustration.

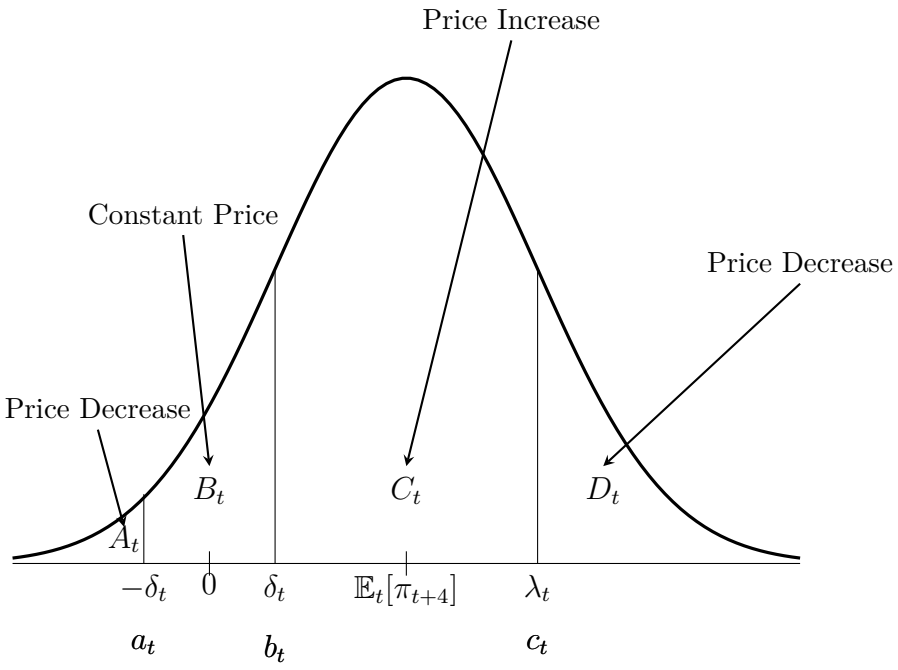


Figure 1: Illustration CP method - Joint Probability Distribution

There exist different methods to estimate the parameter λ_t. The CP method assumes that the parameter is time-invariant and inflation expectations are unbiased, such that $\mathbb{E}_t[\pi_{i,t+4}] = \pi_{i,t+4}$ and the parameter can be easily estimated using the observed inflation rate. These rigorous assumptions can be relaxed in several ways. First, Rosenblatt-Wisch and Scheufele (2015) propose a time-variant scaling parameter and second, they circumvent the assumption of unbiased inflation expectations by using information about the perceived inflation rate.

On average, Rosenblatt-Wisch and Scheufele (2015) assume that individuals have, on average, a correct perception of prices (compare also Berk, 1999). This is arguably a less strong assumption than unbiased inflation expectations. Following the same logic as for inflation expectations using the survey shares for inflation perceptions, $\hat{\pi}_t$, we can write

$$\hat{\pi}_t = \frac{\lambda_t(a'_t + b'_t)}{(a'_t + b'_t - 2c'_t)}$$

with a'_t, b'_t, c'_t being the abscissae of the distribution function of perceived inflation. Now, assuming that $\hat{\pi}_t = \pi_t$ on average, we can estimate the parameter λ_t.

In this paper, we focus on the estimation of λ_t using a state-space model and present robustness checks using rolling regressions as an alternative. In Rosenblatt-Wisch and Scheufele (2015), both methods have led to reasonable results. First, we describe the state-space model and its estimation. Second, we brifely summarize the rolling regression method.

B.1 State-Space Model

The State-Space Model was originally proposed by Seitz (1988). It consists of one measurement equation (6) and a transition equation (7).

$$\pi_t = \lambda_t \frac{(a'_t + b'_t)}{(a'_t + b'_t - 2c'_t)} + u_t \tag{6}$$

$$\lambda_t = \lambda_{t-1} + v_t \tag{7}$$

with $\mathbb{V}ar(u_t) = (1-\gamma)\sigma^2$ and $\mathbb{V}ar(v_t) = \gamma\sigma^2$. This is a simple Kalman Filter set-up. To proceed, however, we need initial estimates of the variance parameters σ^2 and γ. We follow the approach of Cooley and Prescott (1976) using a constrained maximum likelihood function.

B.2 Rolling Regressions

Another approach to estimate λ_t is using rolling regressions. For each window, we run the regression

$$\pi_t = \lambda \frac{(a'_t + b'_t)}{(a'_t + b'_t - 2c'_t)} + u_t$$

. Using a window of 30 quarters, λ_t is defind as

$$\lambda_t^r = \frac{\sum_{k=t-w+1}^{t}(a'_k + b'_k)/(a'_k + b'_k - 2c'_k)\pi_k}{\sum_{k=t-w+1}^{t}((a'_k + b'_k)/(a'_k + b'_k - 2c'_k))^2}$$

The choice of the window leads to similar results as in Rosenblatt-Wisch and Scheufele (2015).

B.3 Descriptive Results

To calculate a_t, b_t and c_t, we use the mean shares the survey replies for each category with respect to price expectations and price perceptions.Figure 2 plots the qualitative survey replies for inflation expectations over the relevant sample period from the second quarter of 1997 up until the second quarter 2022 conditional on the region. In general, the shares over time follow a similar evolution. However, the share of households that expect inflation to increase (strongly or moderate) is, on average, higher for the French region.

Figure 3 plots the share for each category with respect to inflation perceptions. Similarly to inflation expectations, the share of households that perceive inflation to be high or moderate is higher compared to the German region.

The differences in the shares of survey replies observed may be due to two different reasons. First, it is possible the different perceptions and expectations actually mirror different inflation rates in these regions. Second, the implicit rates for which households' perceive and expect inflation to belong to either category differ across regions.

For this reason, we plot in Figure 4 cantonal inflation indices.[6]. In Switzerland, cantonal inflation indices are only available for three cantons, namely Basel, Zürich and Geneva. These cities are also the three biggest in terms of population. Except for the very beginning of the sample period around 1997, inflation rates across the cantons are very similar and similar to the overall Swiss inflation rate. Therefore, the observed difference in the shares of perceived and expected inflation is most likely due to different thresholds in the rates at which households perceive (and expect) inflation to change.

Figure 5 plots the resulting inflation expectations using both methods, the Kalman Filter and the Rolling Regression approach for each region, respectively. Overall, the inflation expectations are similar with some exceptions at the very beginning of the sample and shortly after 2015.

[6]Sources are linked in the references (Basel-Stadt, 2022; République et Canton de Genève, 2022; Stadt Zürich, 2022).

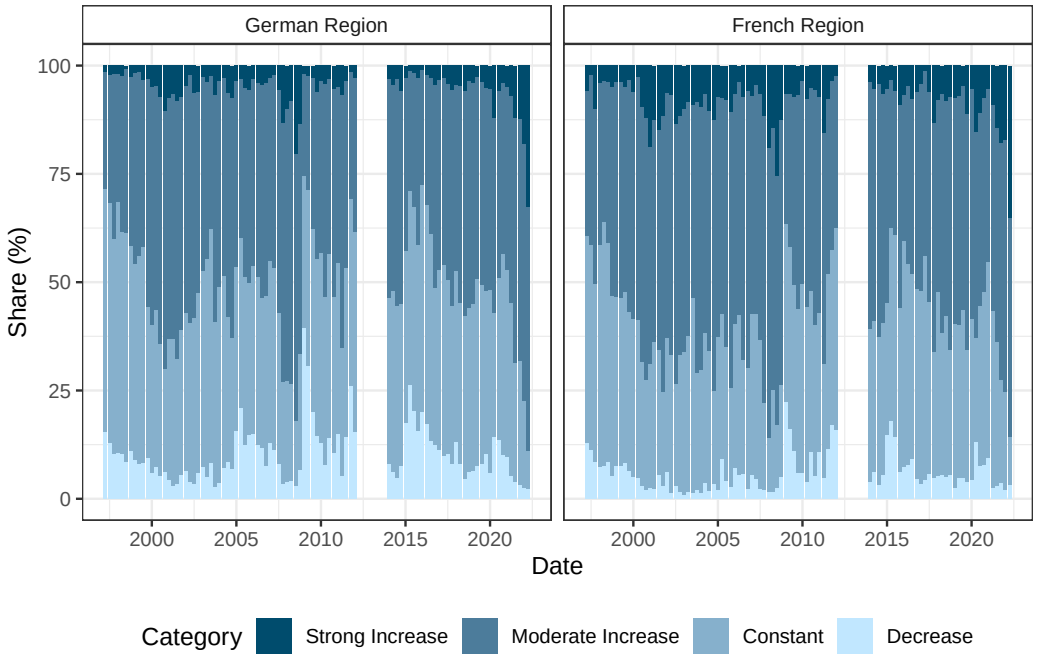


Figure 2: Qualitative Inflation Expectations

Notes: The Figure shows the share of replies for the survey question about inflation expectations over the next 12 months conditional on the region. Note that from 2012 to 2013, there is no information about the region of the households available.

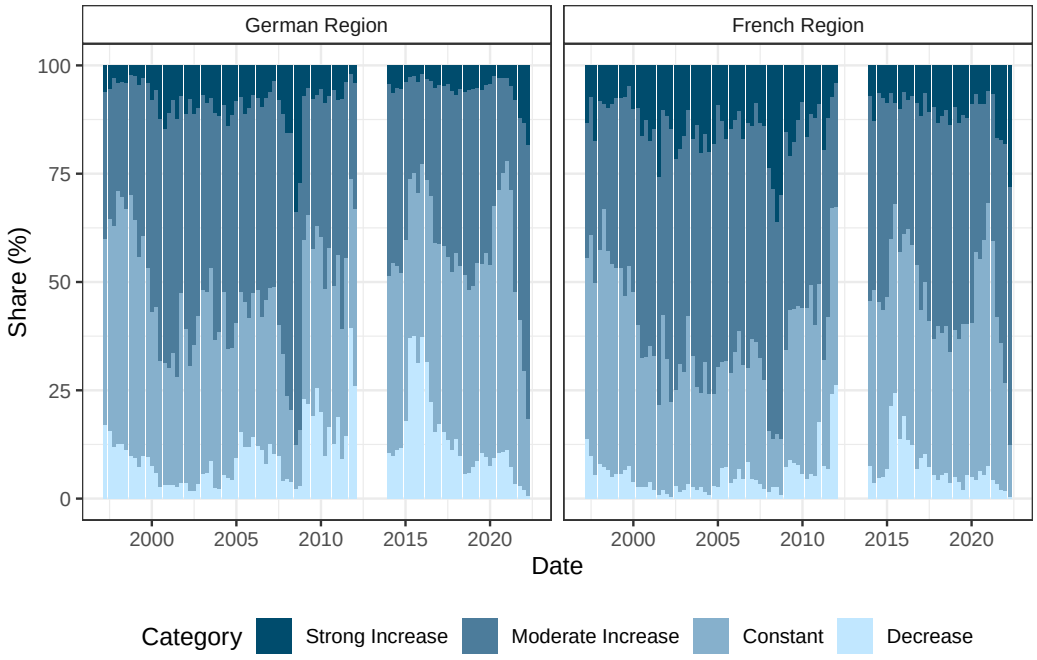


Figure 3: Qualitative Inflation Perception

Notes: The Figure shows the share of replies for the survey question about inflation perceptions from the past 12 months conditional on the region. Note that from 2012 to 2013, there is no information about the region of the households available.

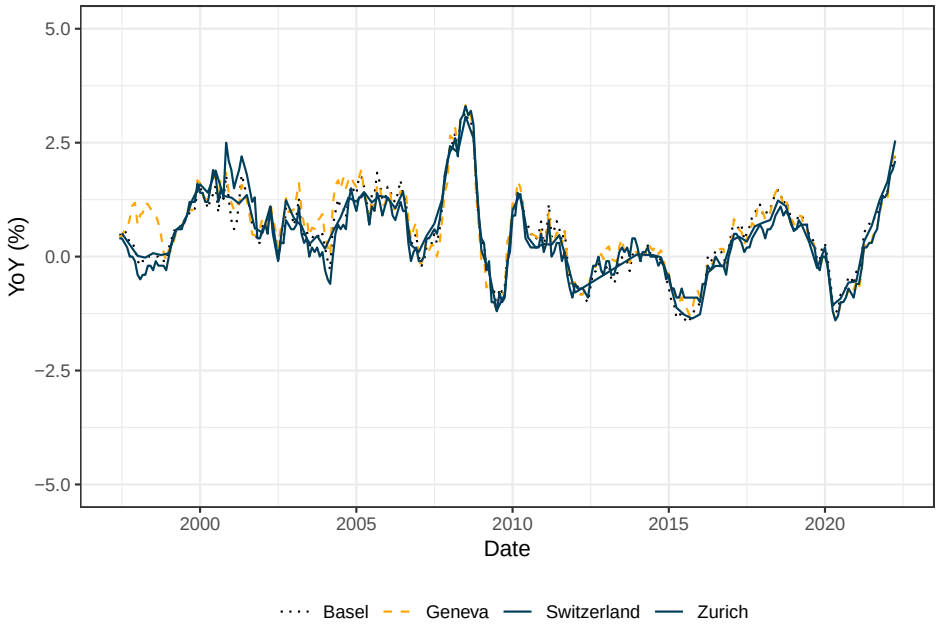


Figure 4: Cantonal Inflation Rates

Notes: This Figure plots three different cantonal inflation indices, namely from Basel, Geneva and Zurich, together with the average inflation index of Switzerland.

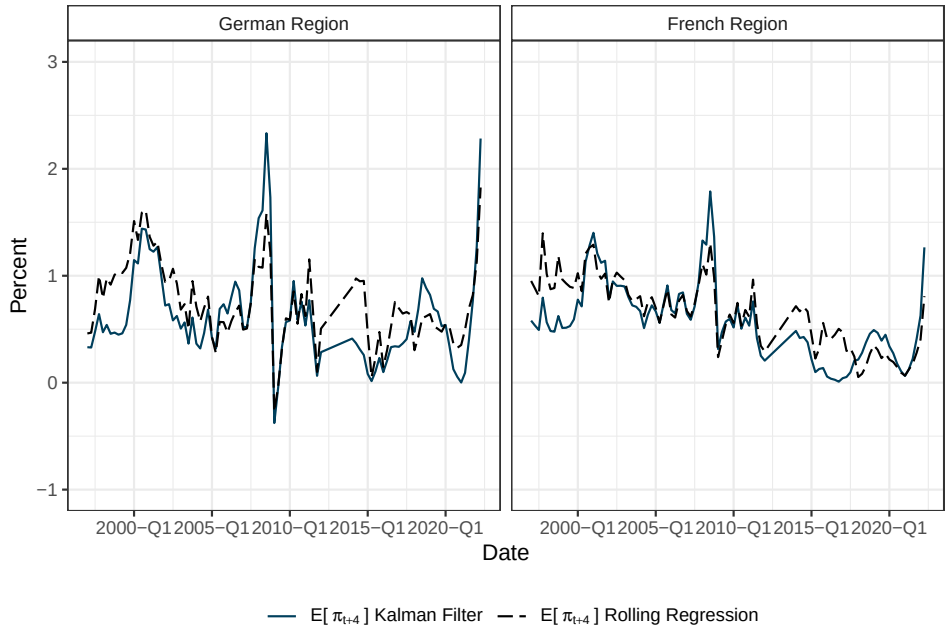


Figure 5: Inflation Expectations with Kalman Filter and Rolling Regressions

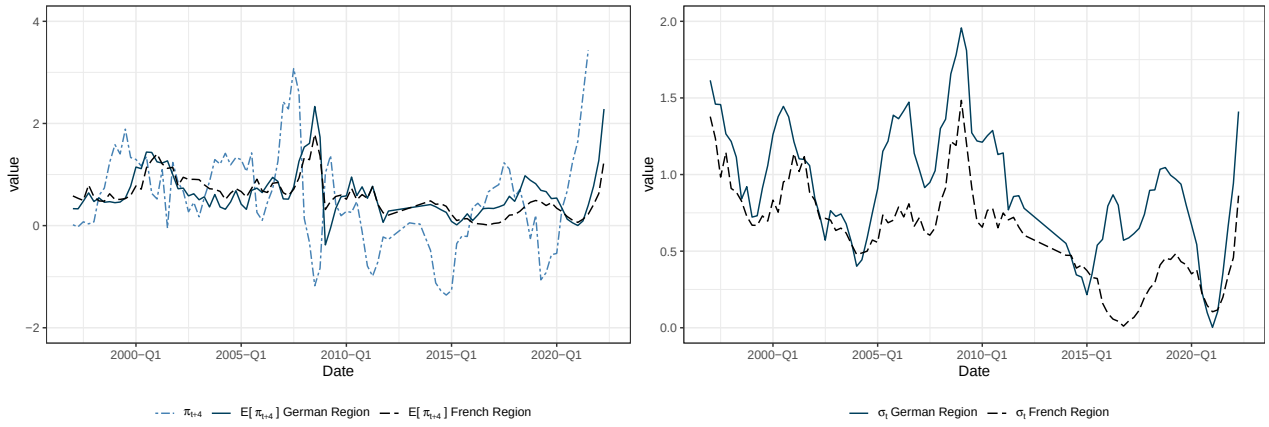
Notes: The Figure shows the mean inflation expectations for households using two different estimation techniques for the parameter λ_t. We compare the results from the Kalman Filter estimation process described in B.1 with the Rolling Regression approach described in B.2.

In Figure 6 panel 6a, we plot the average inflation expectations $\mathbb{E}[\pi_{t+4}]$ derived from the qualitative survey conditional on each region together with the actual observed inflation rate

π_{t+4}. Inflation expectations differ across regions but overall share a very similar trend in the French and German speaking regions. Only after 2015, inflation expectations are higher for the German speaking regions. Overall, inflation expectations seem well anchored, with exceptions during the financial crisis and most recently following the pandemic.

While households in the French speaking part show higher shares of inflation perceptions and expectations in the categories of strong and slight increase, average inflation expectations are lower for households in the French speaking part. This is due to the different thresholds at which these households perceive inflation to be decreasing, constant, slightly increasing or strongly increasing. As, by assumption, inflation perceptions are unbiased on average, this means that households in the French speaking part perceive inflation to be slightly increasing or increasing at a lower rate than German households do. For this reason, adjusting inflation expectations for the scaling parameters results in lower inflation expectations for households in the French speaking part.

In panel 6b, we plot the standard deviation of the inflation expectations conditional on the regions. In general, the inflation expectations in the French region are less volatile than in the German region. Similar to the mean inflation expectations, the standard deviation is higher during the financial crisis and increasing since the pandemic.



(a) Mean (b) Standard Deviation

Figure 6: Mean and Standard Deviation of $\mathbb{E}[\pi_{t+4}]$ conditional on the Region

Notes: The left panel shows the observed inflation rate (change comapred to the same month in the previous year) and the mean inflation expectations for changes in prices in the next 12 months for households in both regions, the German and French speaking part (equation 3). The right panel shows the standard deviation of the inflation expectations calculated as in equation 4.

Table 2 summarizes the main moments of the observed inflation rate and households' inflation expectations over the entire sample period. The average observed inflation of 0.52 is

quite close to expectations of the German speaking region with 0.63 and French speaking region with 0.58. While observed inflation reaches a maximum at 1.79 in the third quarter 2021, inflation expectations for both regions reach a local maximum in the third quarter of 2008, with 2.33 for the German region and 3.43 for the French speaking region.

Table 2: Summary Table for Regional Inflation Expectations and Observed Inflation

Variable	Mean	Sd.	Min.	Max.
Observed Inflation	0.52	0.95	-1.36	3.43
Inflation Expectations German Region	0.63	0.46	-0.38	2.33
Inflation Expectations French Region	0.58	0.36	0.01	1.79

Notes: The table shows summary statistics of observed inflation and the quantified inflation expectations derived from qualitative survey data for German and French speaking households.

C Additional Results Inflation Reporting of Newspapers

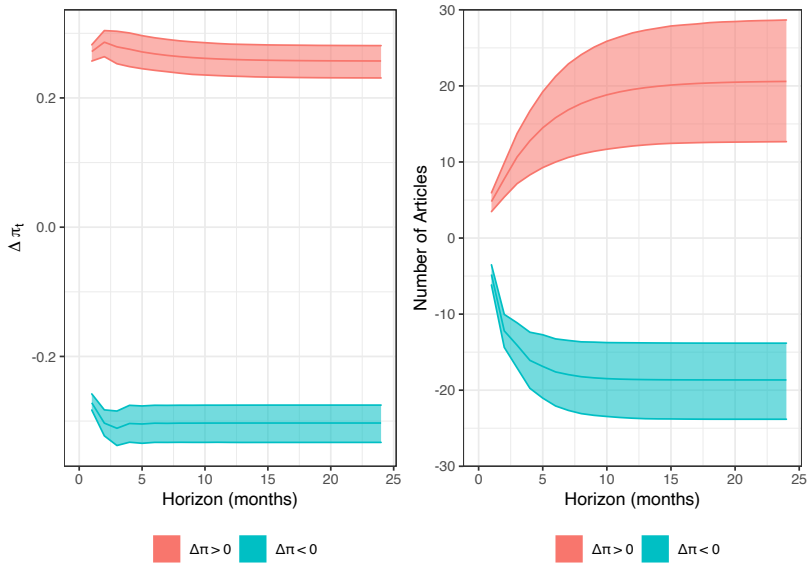


Figure 7: Results TSVAR for Quantitative News Measure in German Newspapers

Notes: The Figure shows the cumulative impulse response functions of the TSVAR model described in section 4.1. The left hand panel shows the cumulative sum of the responses of the change in the inflation rate to a positive (red) and negative (blue) inflation rate innovation, respectively. The right hand side panel shows the cumulative sum of the responses of the quantitative inflation news measure (number of articles writing about an inflation increase minus number of articles writing about an inflation decrease) to the positive (inflation increases) and negative inflation rate innovation. The shadowed areas correspond to 68% confidence bands.

Table 3: Effect of Quantitative and Qualitative News Shock on Inflation Expectations and Perceptions

	(1) Share Exp.	(2) Share Perc.	(3) Share Exp.	(4) Share Perc.
Quantitative News Shock	-0.77**	-0.54*		
	(0.34)	(0.28)		
Qualitative News Shock			-0.27**	0.09
			(0.13)	(0.10)
Date FE	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes
Observations	62,820	63,643	62,820	63,643

Note: The table shows the effects of quantitative and qualitative news shocks derived in section 4.1 on the share of households expectations and perceptions indicating an increase versus decrease. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, ***. Standard Errors are clustered at the date × region level.

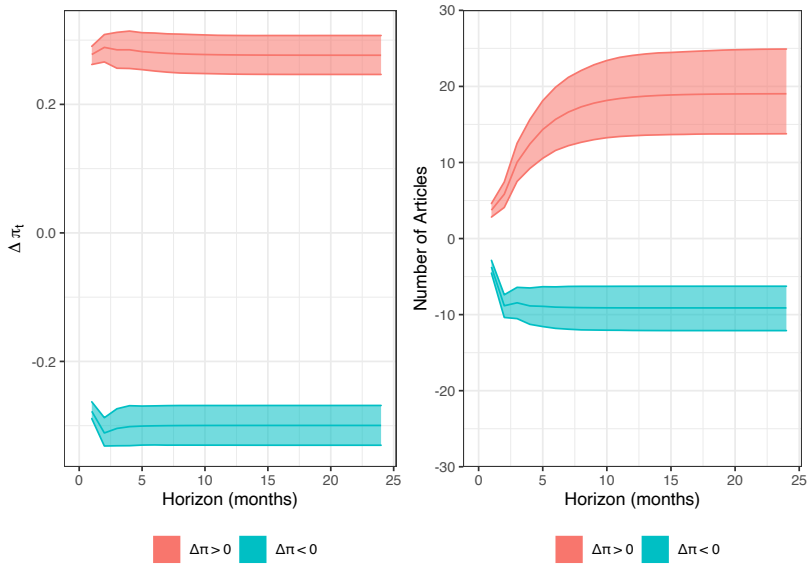
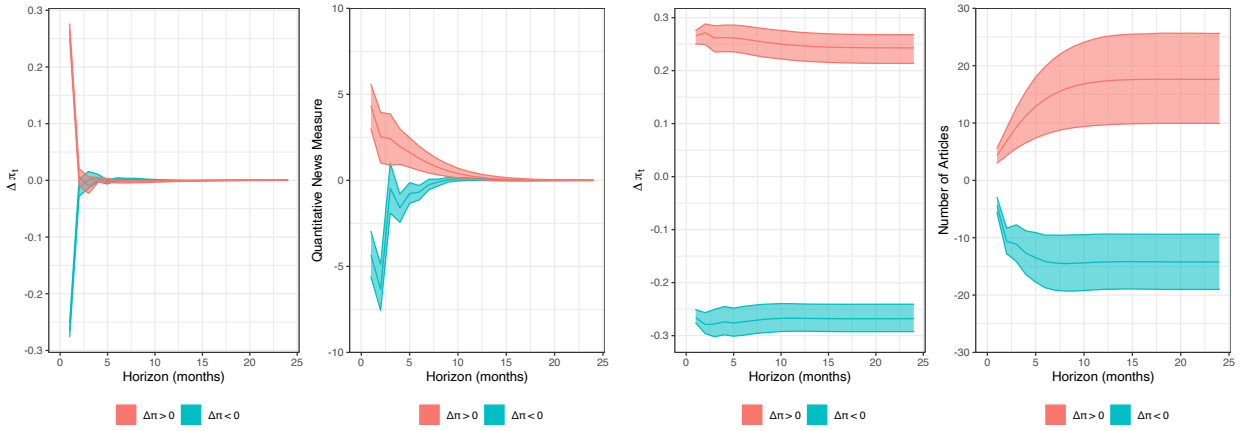


Figure 8: Results TSVAR for Quantitative News Measure in French Newspapers

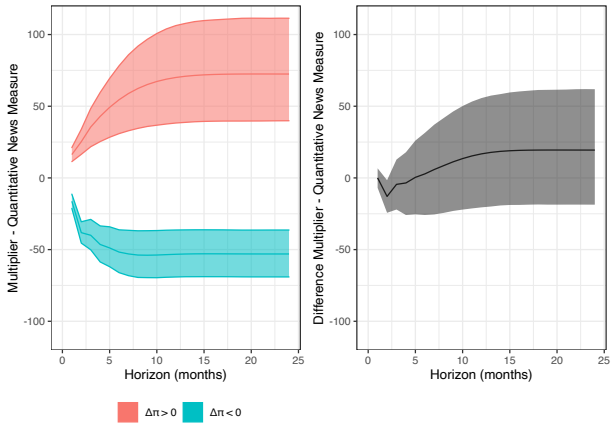
Notes: The Figure shows the cumulative impulse response functions of the TSVAR model described in section 4.1. The left hand panel shows the cumulative sum of the responses of the change in the inflation rate to a positive (red) and negative (blue) inflation rate innovation, respectively. The right hand side panel shows the cumulative sum of the responses of the quantitative inflation news measure (number of articles writing about an inflation increase minus number of articles writing about an inflation decrease) to the positive (inflation increases) and negative inflation rate innovation. The shadowed areas correspond to 68% confidence bands.

D Robustness Checks



(a) Impulse Response Functions

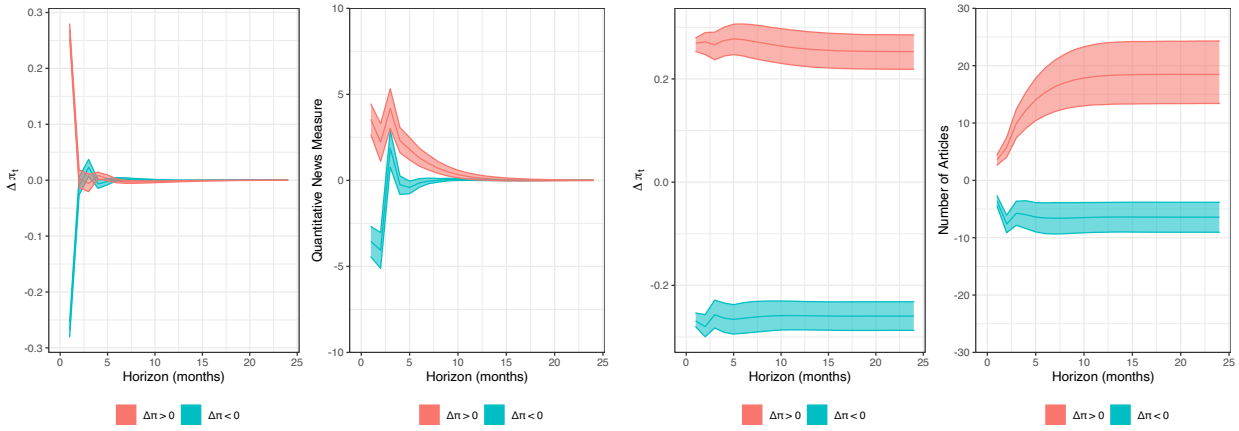
(b) Cumulative Impulse Response Functions



(c) Dynamic Media Multipliers

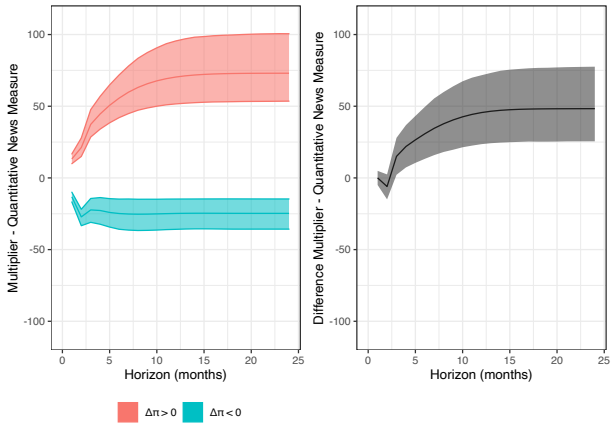
Figure 9: With Business Cylce Indicator: German written Newspapers

Notes: The Figure shows the impulse response functions of the modified TSVAR model described in section 4.1 using the German written newspapers. A business cycle indicator was included in the TSVAR at the second position, after the inflation rate but before the quantitative newspaper measure. Panel (a) shows the impulse response functions of an unexpected increase and decrease in the inflation rate on the inflation rate and the quantitative news measure. Panel (b) is similar but plots the cumulative impulse responses. Panel (c) shows the dynamic media multiplier and the difference of the dynamic media multiplier. The dynamic media multiplier is a normalization of the impulse response function where, at every time t, the cumulative response of the quantitative news measure is normalized by the cumulative response of the inflation rate. The shadowed areas correspond to 68% confidence bands.



(a) Impulse Response Functions

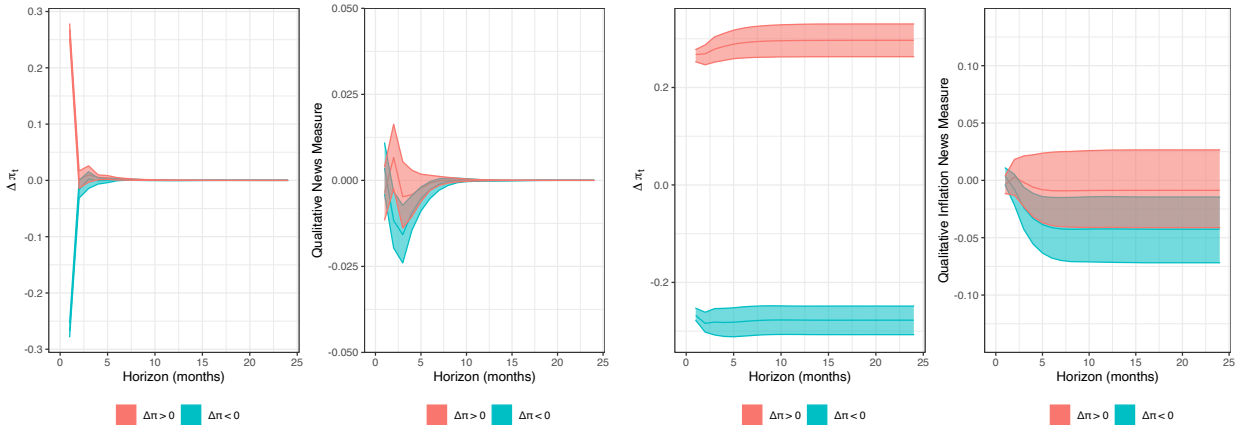
(b) Cumulative Impulse Response Functions



(c) Dynamic Media Multipliers

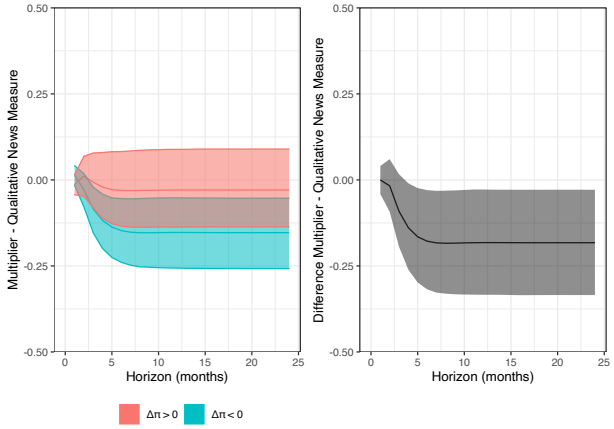
Figure 10: With Business Cylce Indicator: French written Newspapers

Notes: The Figure shows the impulse response functions of the modified TSVAR model described in section 4.1 using the French written newspapers. A business cycle indicator was included in the TSVAR at the second position, after the inflation rate but before the quantitative newspaper measure. Panel (a) shows the impulse response functions of an unexpected increase and decrease in the inflation rate on the inflation rate and the quantitative news measure. Panel (b) is similar but plots the cumulative impulse responses. Panel (c) shows the dynamic media multiplier and the difference of the dynamic media multiplier. The dynamic media multiplier is a normalization of the impulse response function where, at every time t, the cumulative response of the quantitative news measure is normalized by the cumulative response of the inflation rate. The shadowed areas correspond to 68% confidence bands.



(a) Impulse Response Functions

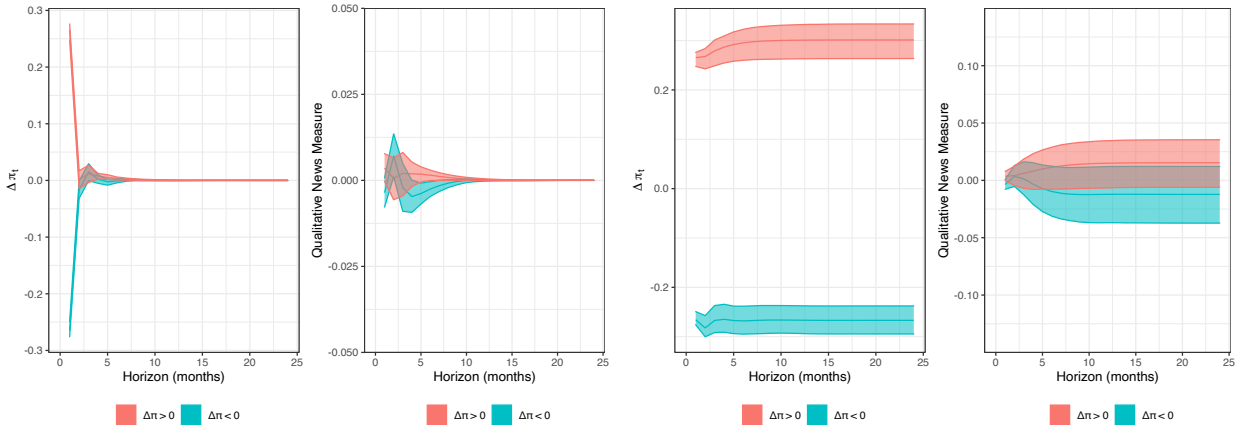
(b) Cumulative Impulse Response Functions



(c) Dynamic Media Multipliers

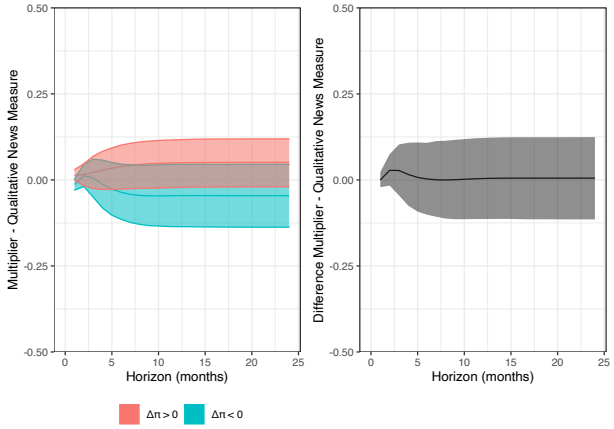
Figure 11: With Business Cylce Indicator: German written Newspapers

Notes: The Figure shows the impulse response functions of the modified TSVAR model described in section 4.1 using the German written newspapers. A business cycle indicator was included in the TSVAR at the second position, after the inflation rate but before the qualitative newspaper measure. Panel (a) shows the impulse response functions of an unexpected increase and decrease in the inflation rate on the inflation rate and the qualitative news measure. Panel (b) is similar but plots the cumulative impulse responses. Panel (c) shows the dynamic media multiplier and the difference of the dynamic media multiplier. The dynamic media multiplier is a normalization of the impulse response function where, at every time t, the cumulative response of the qualitative news measure is normalized by the cumulative response of the inflation rate. The shadowed areas correspond to 68% confidence bands.



(a) Impulse Response Functions

(b) Cumulative Impulse Response Functions



(c) Dynamic Media Multipliers

Figure 12: With Business Cylce Indicator: French written Newspapers

Notes: The Figure shows the impulse response functions of the modified TSVAR model described in section 4.1 using the French written newspapers. A business cycle indicator was included in the TSVAR at the second position, after the inflation rate but before the qualitative newspaper measure. Panel (a) shows the impulse response functions of an unexpected increase and decrease in the inflation rate on the inflation rate and the qualitative news measure. Panel (b) is similar but plots the cumulative impulse responses. Panel (c) shows the dynamic media multiplier and the difference of the dynamic media multiplier. The dynamic media multiplier is a normalization of the impulse response function where, at every time t, the cumulative response of the qualitative news measure is normalized by the cumulative response of the inflation rate. The shadowed areas correspond to 68% confidence bands.

D.1 Inclusion Business Cycle Indicator

Table 4: Effect of Quantitative and Qualitative News Shock conditional on Inflation

	$\pi > 0$		$\pi < 0$		$\pi > 0$		$\pi < 0$	
	(1) Share Exp.	(2) Share Perc.	(3) Share Exp.	(4) Share Perc.	(5) Share Exp.	(6) Share Perc.	(7) Share Exp.	(8) Share Perc.
Quantitative News Shock	-0.34	-0.45*	-1.72**	-1.55**				
	(0.24)	(0.22)	(0.74)	(0.73)				
Qualitative News Shock					-0.32**	-0.25**	-0.12	-0.10
					(0.12)	(0.12)	(0.7)	(0.64)
Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	42,692	43,993	20,125	19,648	42,692	43,993	20,125	19,648

Note: The table shows the effects of quantitative and qualitative news shocks derived in section 4.1 on the share of households expectations and perceptions indicating an increase versus decrease, conditional on whether current inflation is positive or negative. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, *** p<0.010. Standard Errors are clustered at the date × region level.

Table 5: Effect of Quantitative and Qualitative News Shock - Age and Location

	(1) Share Exp.	(2) Share Perc.	(3) Share Exp.	(4) Share Perc.	(5) Share Exp.	(6) Share Perc.	(7) Share Exp.	(8) Share Perc.
Quantitative News Shock	-0.20	-0.15	-0.48*	0.05				
	(0.26)	(0.25)	(0.25)	(0.15)				
Age $\geq 30 \leq 50\times$ Quantitative News Shock	-0.26*	-0.31**						
	(0.12)	(0.09)						
Age $\geq 50\times$ Quantitative News Shock	-0.40*	-0.36						
	(0.2)	(0.26)						
HH in Swiss-French region=1			6.09***	8.51***			6.02***	8.63***
			(0.72)	(0.76)			(0.25)	(0.88)
HH in Swiss-French region=1 × Quantitative News Shock			-0.60*	-1.21***				
			(0.29)	(0.33)				
Qualitative News Shock					- 0.06	- 0.03	-0.15	0.05
					(0.17)	(0.26)	(0.40)	(0.33)
Age $\geq 30 \leq 50\times$ Qualitative News Shock					-0.31*	-0.16		
					(0.16)	(0.15)		
Age $\geq 50\times$ Qualitative News Shock					-0.6***	-0.58**		
					(0.11)	(0.20)		
HH in Swiss-French region=1 × Qualitative News Shock							-0.57**	-0.80*
							(0.25)	(0.41)
Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,820	63,643	52,171	53,495	62,820	63,643	52,171	53,495

Note: The table shows the effects of quantitative and qualitative news shocks on inflation expectations and perceptions. Interaction effects of news shocks and age as well as news shocks and location of the households are displayed. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, *** p<0.010. Standard Errors are clustered at the date × region level.

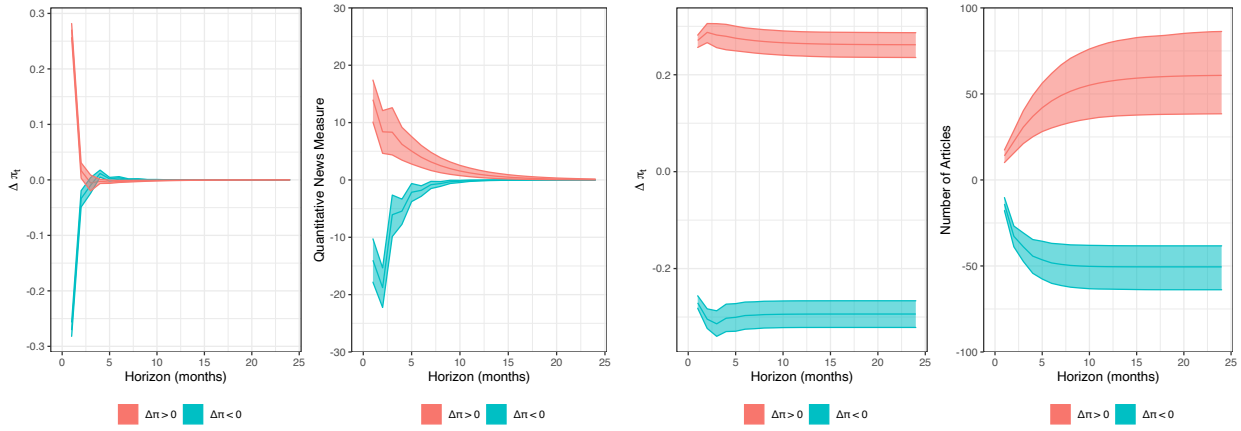
D.2 Major Purchases

Table 6: Effect of Quantitative and Qualitative News Shock - Age and Location

	(1) Purchases	(2) Purchases	(3) Purchases	(4) Purchases
Quantitative News Shock	-0.63**	-0.39		
	(0.25)	(0.27)		
HH in Swiss-French region=1	21.87***	21.87***	21.88***	21.91***
	(0.42)	(0.42)	(0.42)	(0.78)
HH in Swiss-French region=1 × Quantitative News Shock		-0.54**		
		(0.24)		
Qualitative News Shock			-0.00	-0.34
			(0.14)	(0.26)
HH in Swiss-French region=1 × Qualitative News Shock				0.71*
				(0.40)
Constant	48.99***	48.99***	49.03***	49.02***
	(0.24)	(0.24)	(0.24)	(0.26)
Date FE	Yes	Yes	Yes	Yes
Main Controls	Yes	Yes	Yes	Yes
Observations	65,621	65,621	65,621	65,621

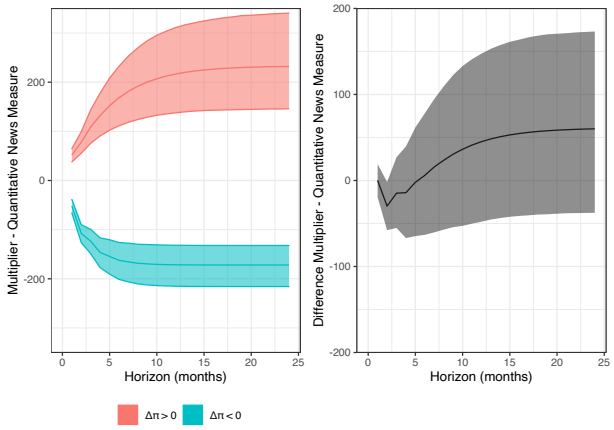
Note: The table shows the effects of quantitative and qualitative news shocks on inflation expectations and perceptions. Interaction effects of news shocks and age as well as news shocks and location of the households are displayed. Main controls include education, gender, age fixed effects and region fixed effects. * p<0.10, ** p<0.05, *** p<0.010. Standard Errors are clustered at the date × region level.

D.3 Intensive Margin



(a) Impulse Response Functions

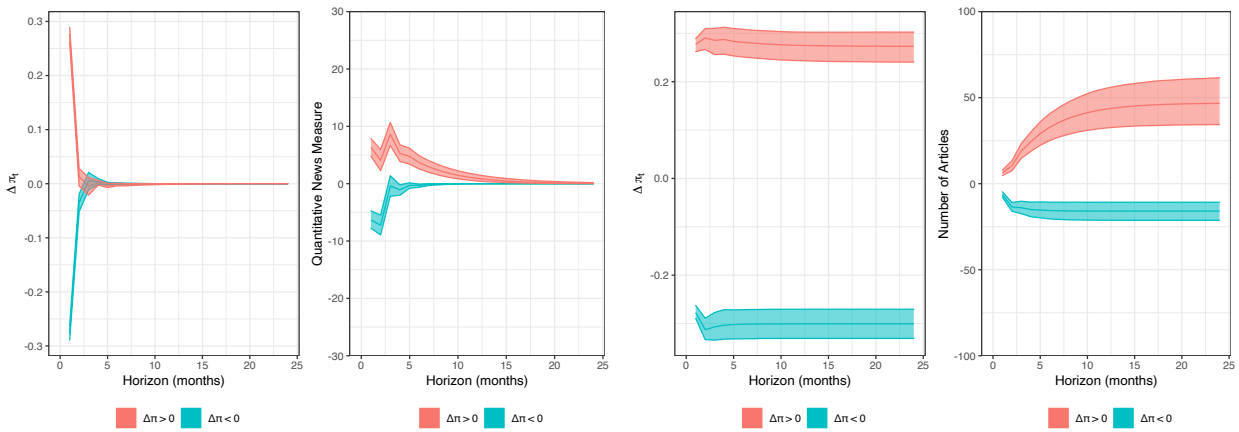
(b) Cumulative Impulse Response Functions



(c) Dynamic Media Multipliers

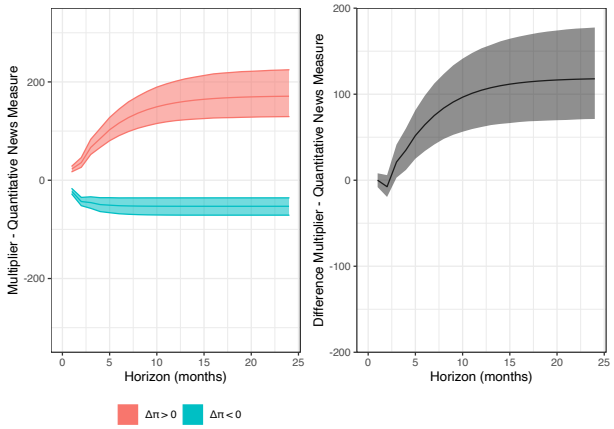
Figure 13: Intensive Margin: German written Newspapers

Notes: The Figure shows the impulse response functions of the model described in section 4.1 using the German written newspapers. However, here we use the intensive margin. In more detail, we count all occurences of words indicating an inflation increase or decrease per article and calculate the sum per article. Panel (a) shows the impulse response functions of an unexpected increase and decrease in the inflation rate on the inflation rate and the intensive margin of the qualitative news measure. Panel (b) is similar but plots the cumulative impulse responses. Panel (c) shows the dynamic media multiplier and the difference of the dynamic media multiplier. The dynamic media multiplier is a normalization of the impulse response function where, at every time t, the cumulative response of the qualitative news measure is normalized by the cumulative response of the inflation rate. The shadowed areas correspond to 68% confidence bands.



(a) Impulse Response Functions

(b) Cumulative Impulse Response Functions



(c) Dynamic Media Multipliers

Figure 14: Intensive Margin: French written Newspapers

Notes: The Figure shows the impulse response functions of the model described in section 4.1 using the French written newspapers. However, here we use the intensive margin. In more detail, we count all occurences of words indicating an inflation increase or decrease per article and calculate the sum per article. Panel (a) shows the impulse response functions of an unexpected increase and decrease in the inflation rate on the inflation rate and the intensive margin of the qualitative news measure. Panel (b) is similar but plots the cumulative impulse responses. Panel (c) shows the dynamic media multiplier and the difference of the dynamic media multiplier. The dynamic media multiplier is a normalization of the impulse response function where, at every time t, the cumulative response of the qualitative news measure is normalized by the cumulative response of the inflation rate. The shadowed areas correspond to 68% confidence bands.

D.4 Quantified Inflation Expectations

Table 7: Effect of Quantitative and Qualitative News Shock on Quantified Inflation Expectations

	(1) $\mathbb{E}[\pi_{t+4}]$	(2) $\mathbb{E}[\pi_{t+4}]$	(3) $\mathbb{E}[\pi_{t+4}]$	(4) $\mathbb{E}[\pi_{t+4}]$
Quantitative News Shock	-0.04**	-0.02		
	(0.02)	(0.02)		
HH in Swiss-French region=1	-0.07**	-0.07***	-0.06**	-0.06**
	(0.03)	(0.03)	(0.03)	(0.03)
HH in Swiss-French region=1 × Quantitative News Shock		-0.04***		
		(0.01)		
Qualitative News Shock			-0.02	-0.02
			(0.02)	(0.02)
HH in Swiss-French region=1 × Qualitative News Shock				-0.02
				(0.02)
Constant	0.64***	0.64***	0.64***	0.64***
	(0.02)	(0.02)	(0.02)	(0.02)
Date FE	Yes	Yes	Yes	Yes
Observations	178	178	178	178

Note: The table shows the effects of quantitative and qualitative news shocks on the quantified inflation expectations. The quantification of qualitative survey data is described in detail in appendix B. * p<0.10, ** p<0.05, *** p<0.010. Standard Errors are clustered at the date × region level.