

# Bad news, Good News: Coverage and Response Asymmetries

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# Introduction

- ▶ Expectations about current and future economic conditions are key to agents' decision-making process
- ▶ Under *FIRE*, agents form expectations and take decisions with perfect knowledge of the economy
- ▶ In the real world, agents acquire information through a variety of channels (**newspapers**, TV, social media)
- ▶ This establishes a potentially important link between **news coverage** and **economic dynamics**

# Research questions

1. Do newspapers cover negative and positive economic developments **symmetrically**?
2. Do agents' information and expectations react symmetrically to bad and good news about the economy?
3. Does consumption react symmetrically to bad and good news about the economy?

## Related literature

- ▶ Negativity bias in media coverage of economic events:  
Goidel and Langley (1995), Fogarty (2005), Soroka (2006, 2012), Soroka *et al.* (2018)
- ▶ Effects of news on consumers' expectations, opinion and confidence:  
Carroll (2003), Doms and Morin (2004), Soroka (2014, 2015), Larsen *et al.* (2020).
- ▶ News shocks and the business cycle  
Cochrane (1994), Beaudry and Portier (2004, 2006), Jaimovich and Rebelo (2009), Barsky and Sims (2011, 2012), Schmitt-Grohé and Uribe (2012), Den Haan and Kaltenbrunner (2009), Forni and Gambetti (2017), Larsen and Thorsrud (2019).

# What we do

- ▶ Use **textual information** from three major US newspapers to build two monthly indexes of **bad and good news** on unemployment from 1980 to 2019
- ▶ Combine this information with the *Michigan Survey of Consumers* and US macroeconomic data
- ▶ Use **non-linear SVAR** to study:
  1. media response to positive and negative unemployment shocks
  2. response of agents' information, expectations and consumption to positive and negative news

# What we find

1. **No negativity bias** in media coverage of economic events
  - ▶ Negative economic events generate more news items than positive events
  - ▶ Asymmetry explained by higher persistence of bad shocks
2. Bad news increases agents' **information** and agreement about future outcomes. Opposite in place for good news
3. Agents' **expectations** react more to bad than good news
4. **Consumption** reacts to bad news but not to good news

# U-news indexes

Construct two monthly indexes of bad and good news about US **unemployment** using newspaper articles from *Dow Jones Factiva*

- ▶ Articles in *The New York Times*, *The Wall Street Journal*, *The Washington Post* from June 1980 to December 2019
- ▶ **U-news<sup>+</sup>**: number of articles in which “unemployment” appears close to word denoting **increase or high level**
- ▶ **U-news<sup>-</sup>**: number of articles in which “unemployment” appears close to word denoting **decrease or low level**

Final dataset contains 35.933 bad news and 22.317 good news

# Tone and total information

Using the indexes, we define **two measures of news coverage**:

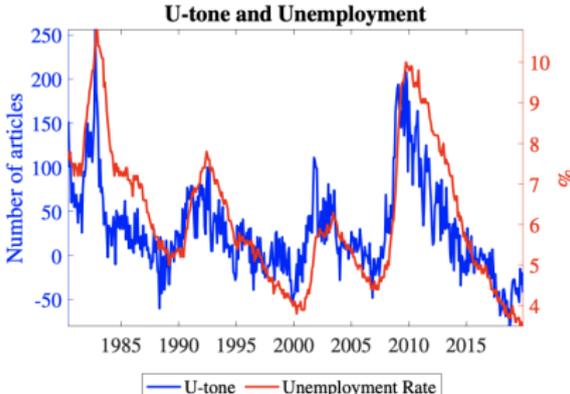
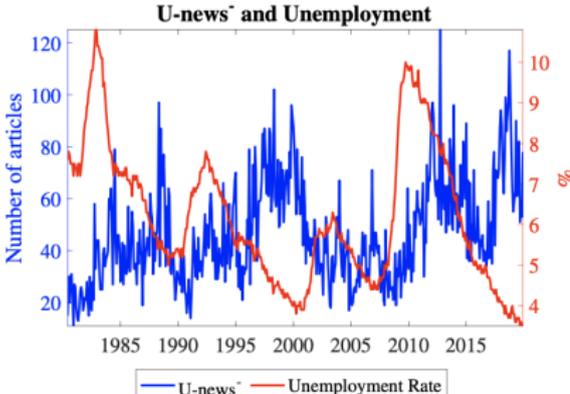
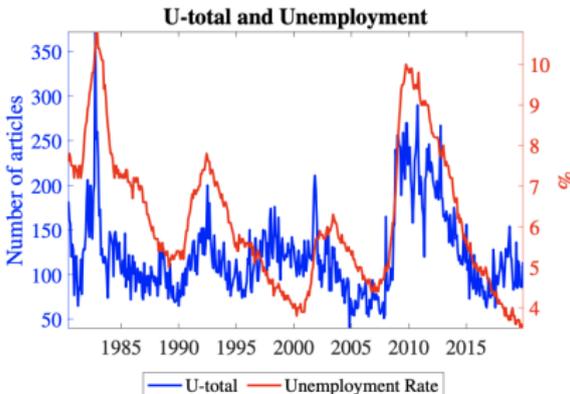
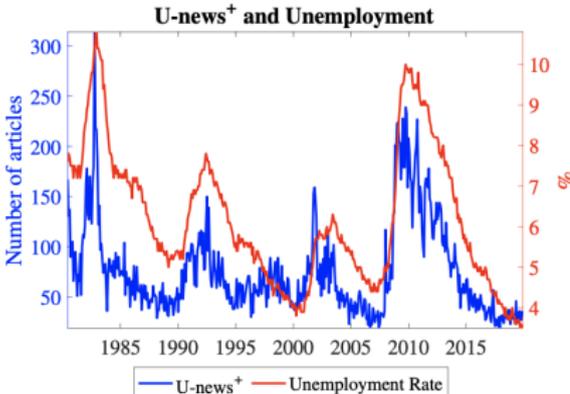
1. **Tone:** prevailing tone of news on unemployment

$$\mathbf{U-Tone} = \mathbf{U-news}^+ - \mathbf{U-news}^-$$

2. **Total information:** overall media coverage of unemployment

$$\mathbf{U-Total} = \mathbf{U-news}^+ + \mathbf{U-news}^-$$

# U-news indexes and unemployment



# The Michigan Survey of Consumers

Compare U-news indexes with measures of information from the *Michigan Survey of Consumers*

Focus on **two questions** from the *Survey*:

- ▶ Question A6 (Yes/No)

*"During the last few months, have you heard of any favorable or unfavorable changes in business conditions?"*

- ▶ If answer to A6 is "Yes", Question A6a (open-ended) asks:

*"What did you hear?"*

# Michigan Tone and Information

Focus on the following variables:

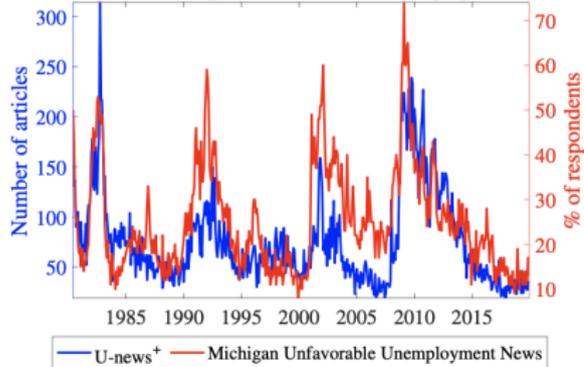
- ▶ **No News:** % of respondents answering "No" to A6
- ▶ **Favorable Employment:** % of respondents answering "Yes" to A6 and mentioning favorable conditions in the labor market
- ▶ **Unfavorable Unemployment:** % of respondents answering "Yes" to A6 and mentioning unfavorable conditions in the labor market

Define:

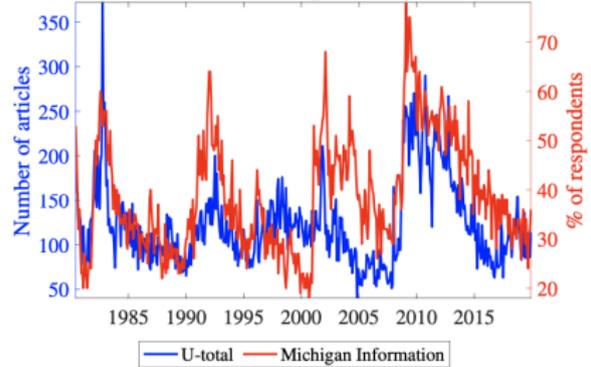
1. **M-Tone = Unfav. Unemployment – Fav. Employment**
2. **M-Total = Unfav. Unemployment + Fav. Employment**

# U-news indexes and the Michigan Survey

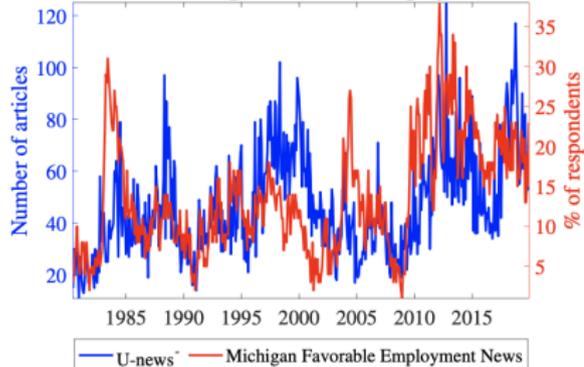
### U-news<sup>+</sup> and Michigan Unfavorable Unemployment News



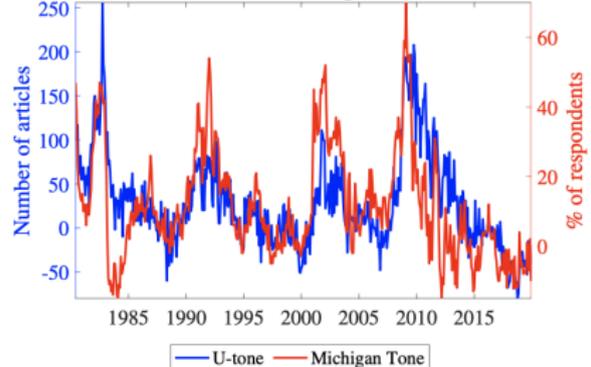
### U-total and Michigan Information



### U-news<sup>-</sup> and Michigan Favorable Employment News



### U-tone and Michigan Tone



# Asymmetric coverage of economic events

Explore potential asymmetries using a **Threshold SVAR**:

$$y_t = (1 - F(z_t)) [a + A(L)] y_{t-1} + F(z_t) [b + B(L)] y_{t-1} + \varepsilon_t$$

- ▶  $y_t = [\Delta U_t \text{ U-tone}_t]'$  where  $U_t$  is the unemployment rate
- ▶  $F(z_t) = \begin{cases} 0 & \text{if } \Delta U_{t-1} \leq 0 \\ 1 & \text{if } \Delta U_{t-1} > 0 \end{cases}$
- ▶  $A(L)$  parameters when  $\Delta U_{t-1} < 0$  and  $B(L)$  when  $\Delta U_{t-1} > 0$
- ▶  $\varepsilon_t \sim WN(0, \Sigma)$

# Identification

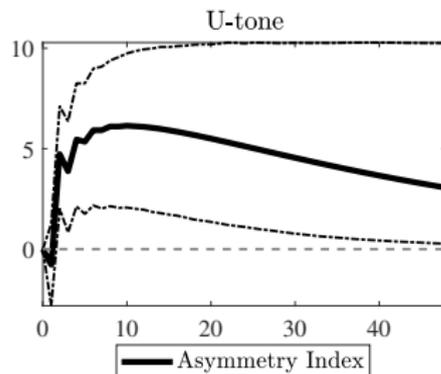
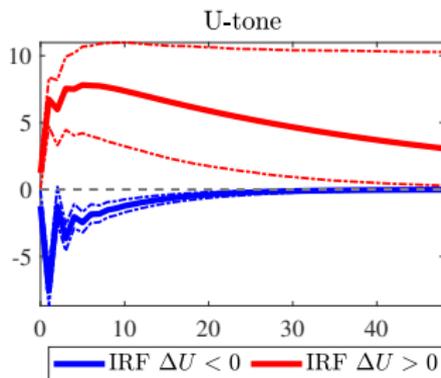
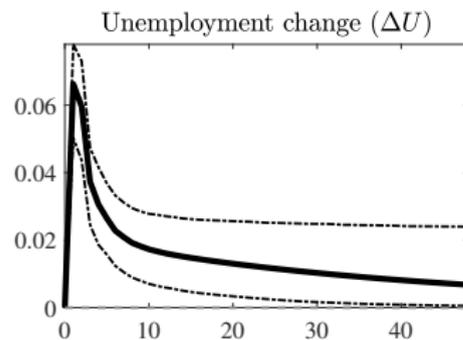
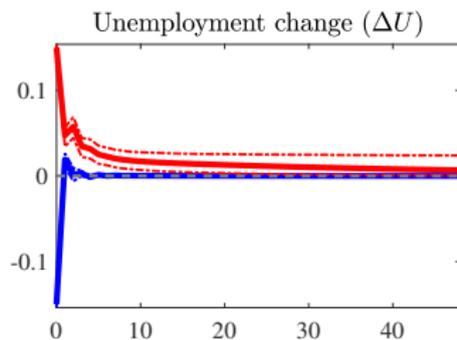
Test if increases and reductions in  $U_t$  induce asymmetric media coverage by studying IRFs to an orthogonal innovation in  $\Delta U_t$ :

- ▶ Define  $u_t = S^{-1}\varepsilon_t$ .  $S$  is the Cholesky factor of  $\Sigma$ , i.e.  
 $SS' = \Sigma$
- ▶  $u_{1,t}$  is the innovation in  $\Delta U_t$  orthogonal to  $u_{2,t}$

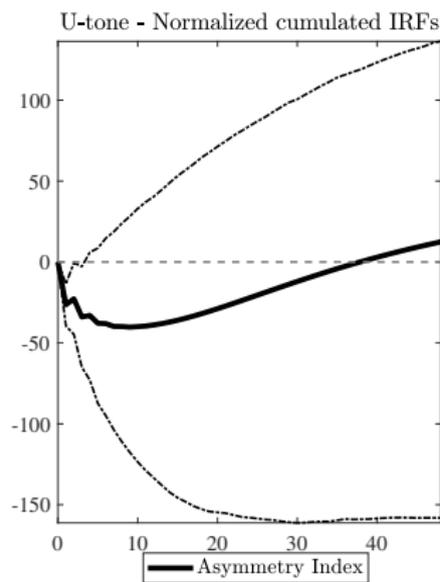
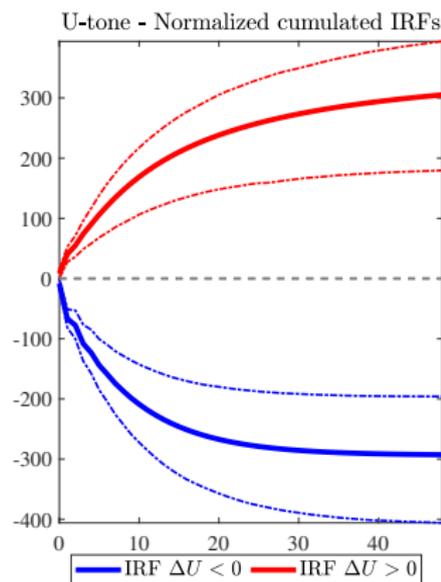
**Novelty:** the **sign** of  $u_{1,t}$  defines the relevant state for the IRFs

- ▶ When  $u_{1,t} > 0$ , IRF is  $\beta(L) = (I - B(L)L)^{-1}S$ ,  $\beta_1(L)$
- ▶ When  $u_{1,t} < 0$ , IRF is  $\alpha(L) = (I - A(L)L)^{-1}S$ ,  $\alpha_1(L)$

# IRFs of U-tone to an innovation in $\Delta U$



# The media multiplier



Asymmetric responsiveness of news coverage is **not** due to media bias *per se*, but due to **non-linearity** of  $\Delta U$

## Consistency with previous studies

Estimate the regression of Soroka (2006):

$$y_t = c + \beta_1 I_t \Delta U_t + \beta_2 (1 - I_t) \Delta U_t + \sum_{i=1}^p \gamma_i y_{t-i} + u_t$$

where  $p = 4$  and  $I_t$  takes value 1 if  $\Delta U_t > 0$  and 0 otherwise.

	U-tone		U-total	
	Estimate	t-stat	Estimate	t-stat
$\beta_1$	<b>29.66*</b>	2.37	<b>28.09*</b>	2.25
$\beta_2$	2.30	0.19	14.84	1.18

Note: \* Significant at the 5% level.

# Asymmetric responses to news

Study the effects of good and bad news on agents' information, expectations, and consumption

- ▶ Previous studies (e.g. Soroka 2006) regress variables of interest on measures of news
- ▶ Univariate linear regressions may suffer from endogeneity and miss dynamic effects
- ▶ Use baseline Threshold SVAR to build component of news **exogenous** to current unemployment:

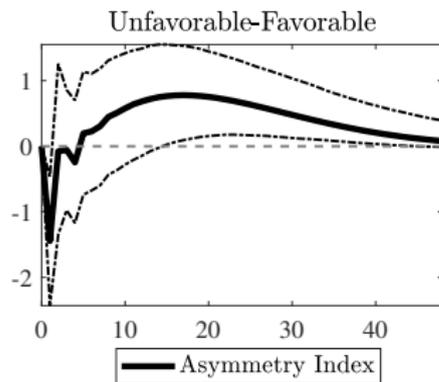
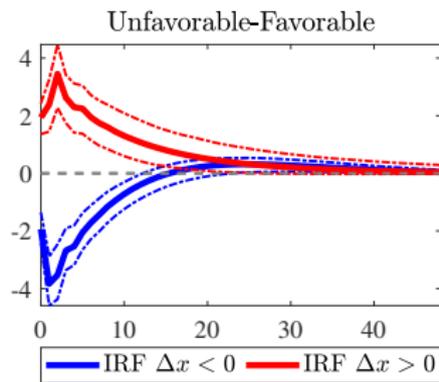
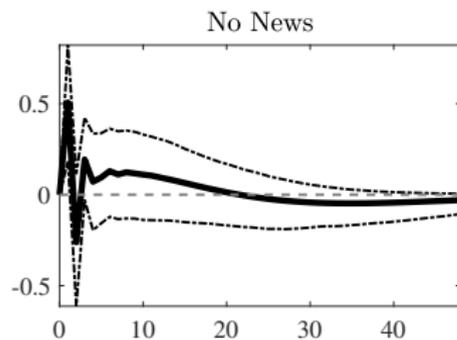
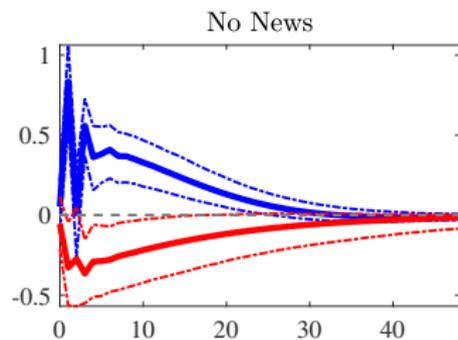
$$x_t = (1 - F(z_t))\alpha_{22}(L)u_{2t} + F(z_t)\beta_{22}(L)u_{2t}$$

# Asymmetric responses to news

Use **same** Threshold SVAR with **new specification**:

- ▶  $y_t = [\Delta x_t \ w_t]'$  where  $w_t$  is a vector of time series of interest
- ▶  $F(z_t) = \begin{cases} 0 & \text{if } \Delta x_{t-1} \leq 0 \\ 1 & \text{if } \Delta x_{t-1} > 0 \end{cases}$
- ▶  $A(L)$  parameters when  $\Delta x_{t-1} < 0$  and  $B(L)$  when  $\Delta x_{t-1} > 0$
- ▶ Define  $u_t = S^{-1}\varepsilon_t$ , s.t.  $SS' = \Sigma$
- ▶  $u_{1,t}$  is the innovation in  $\Delta x_t$  orthogonal to  $u_{2,t}$

# Effect of news on agents' information



# Effect of news on agents' agreement

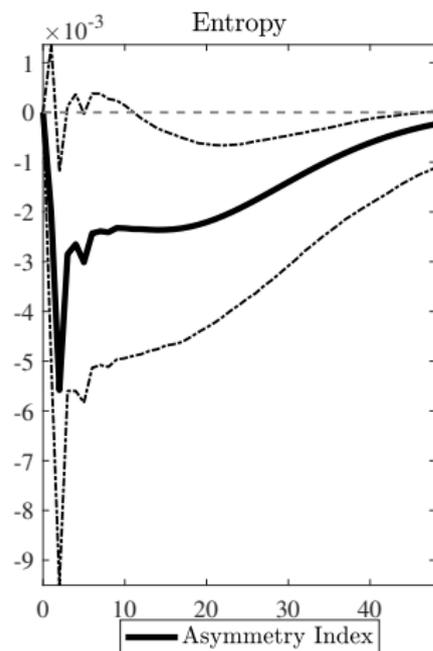
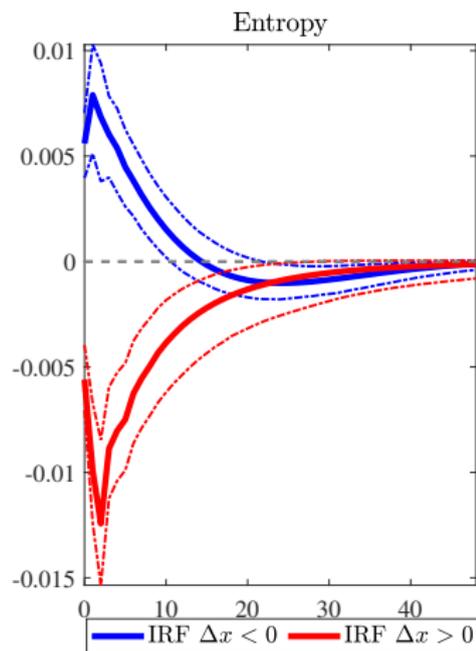
Compute Shannon's entropy of responses to questions A6 and A6a of the *Michigan Survey*

- ▶ Let  $P_t$  be the sum of "No News", "Favorable" and "Unfavorable" responses
- ▶ Let  $p_{1t}$  be the proportion of "Favorable" responses over  $P_t$
- ▶ Let  $p_{2t}$  be the proportion of "Unfavorable" responses over  $P_t$

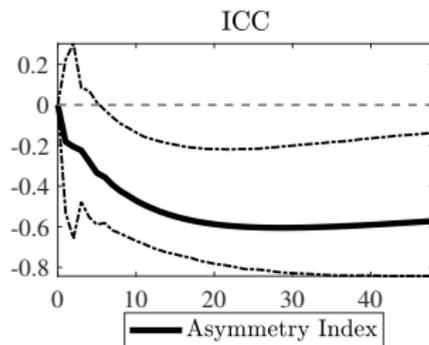
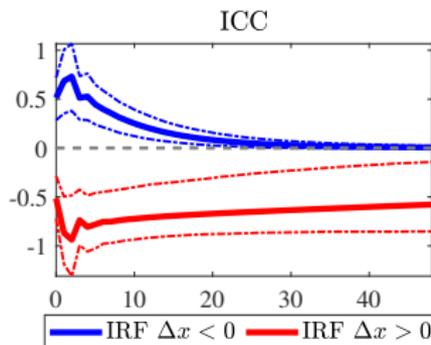
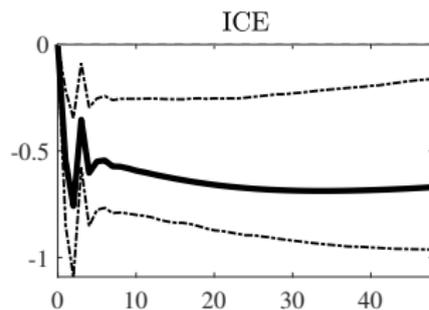
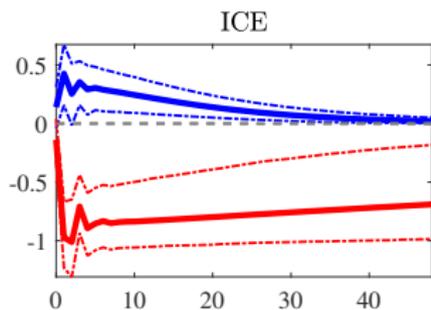
Define **entropy** as:

$$e_t = p_{1t} \log(p_{1t}) + p_{2t} \log(p_{2t}) + (1 - p_{1t} - p_{2t}) \log(1 - p_{1t} - p_{2t})$$

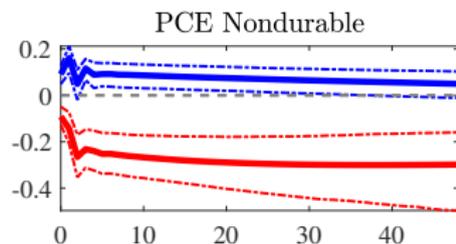
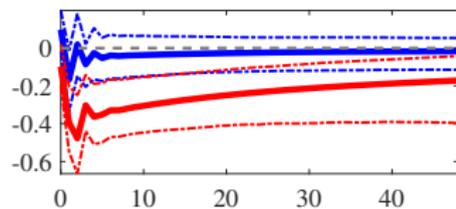
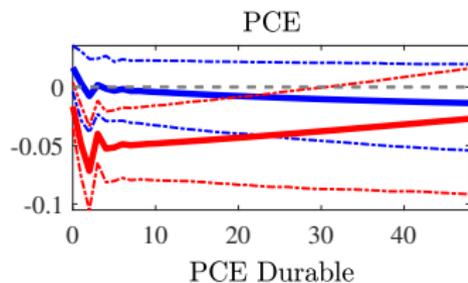
# Effect of news on agents' agreement



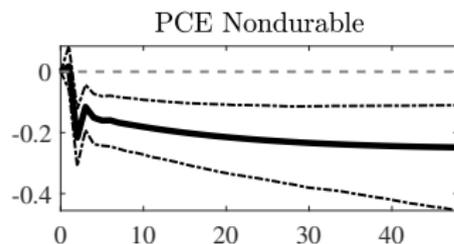
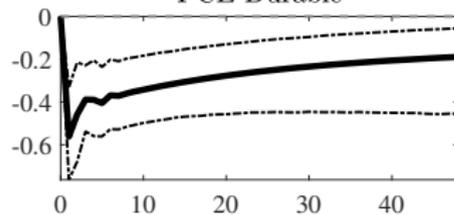
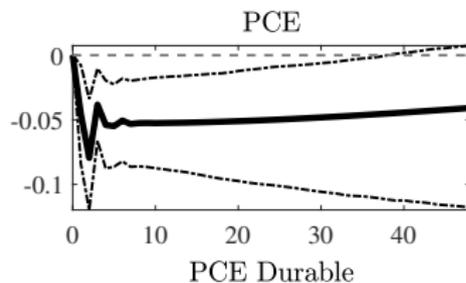
# Effect of news on agents' expectations



# Effect of news on consumption



— IRF  $\Delta x < 0$  — IRF  $\Delta x > 0$



— Asymmetry Index

# Asymmetric effects of news on Consumption

- ▶ Aggregate consumption responds **more** to bad than to good news about the economy
- ▶ Shea(1995) and Bowman(1999) found similar results with different techniques
- ▶ Asymmetry we document contradicts LC/PIH
- ▶ May find foundation in models of *rational inattention* with CRRA (Tutino, 2013) or *Loss Aversion* (Kahneman, 1979)
- ▶ Plan to study this in **future research**

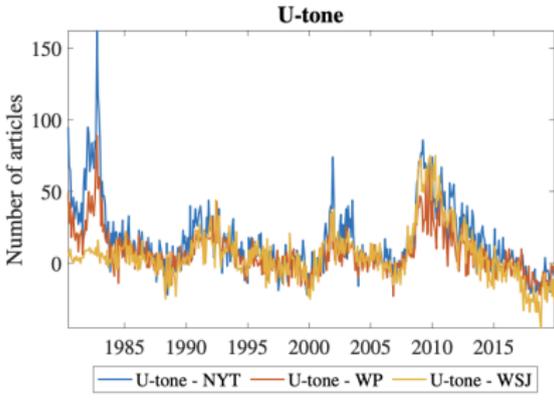
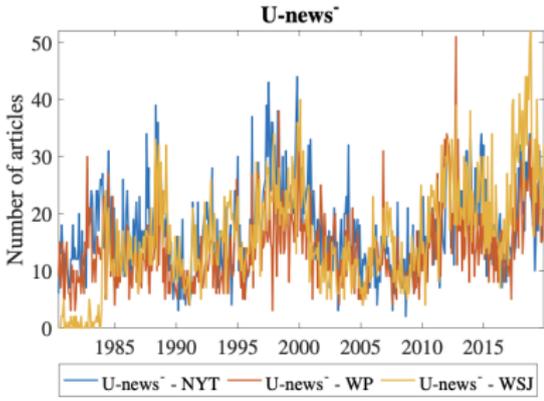
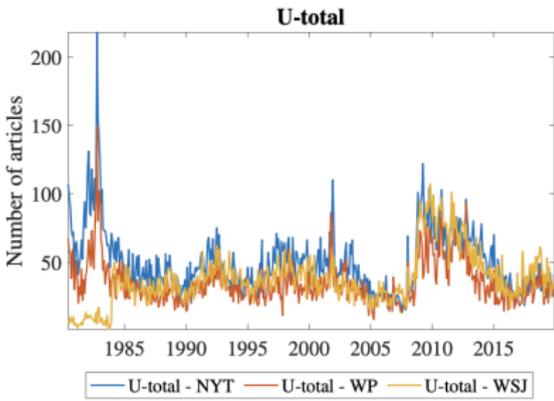
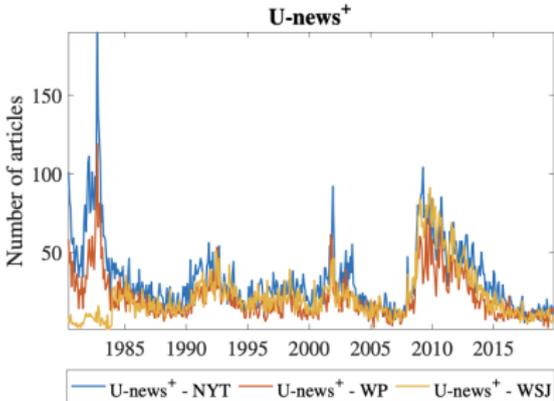
# Conclusions

We study **asymmetries** in news coverage of economic events and in the effects of news on agents' information, expectations and consumption

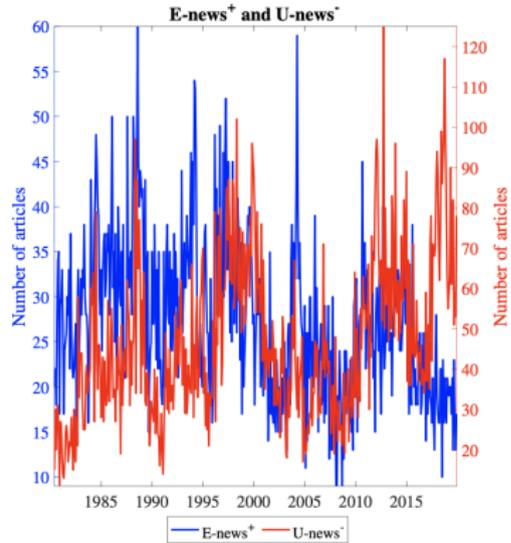
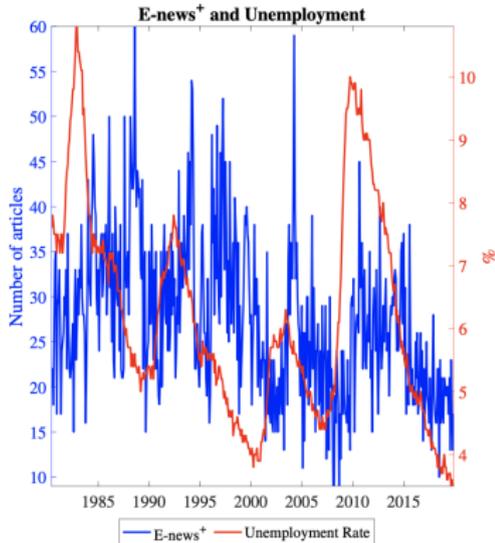
- ▶ Construct two indicators of bad and good news about unemployment using three major US newspapers
- ▶ Use a Threshold SVAR model to show:
  1. No significant negativity bias in media coverage of economic events
  2. Bad news increase agents' information and agreement about future outcomes more than good news
  3. Agents' expectations react more to bad than to good news
  4. Consumption reacts to bad news but not to good news

Thank you!

# Do newspapers cover unemployment differently?



# U-word<sup>-</sup> and E-word<sup>+</sup>

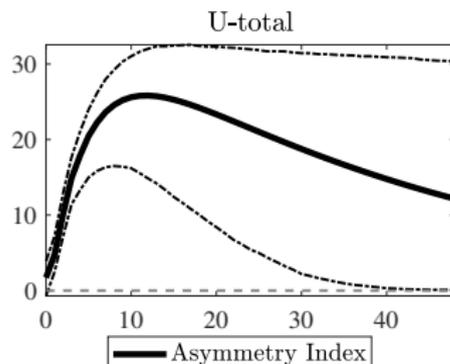
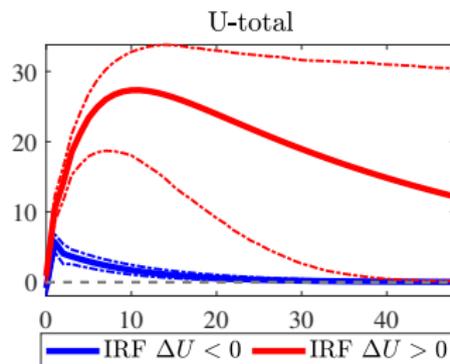
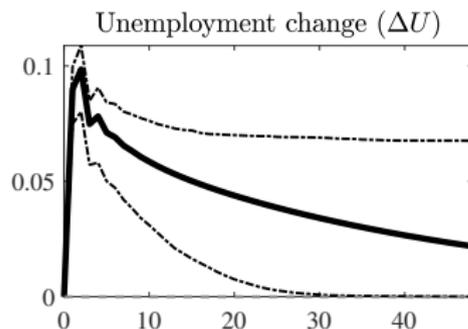
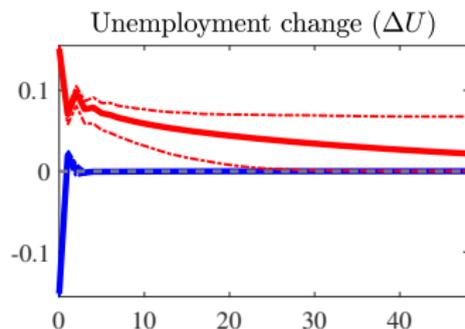


▶  $\rho(\text{E-word}^+, \text{Unempl.}) = 0.28$

▶  $\rho(\text{E-word}^+, \text{U-word}^-) = 0.14$

▶ back

# IRFs of U-total to an innovation in $\Delta U$



# The media multiplier - U-total

