

Macroeconomic Attention and Announcement Risk Premia

Adlai Fisher, Charles Martineau, Jinfei Sheng

解读：王梦涵

2024 年 10 月 23 日

Motivation

- Finance literature has long sought to connect asset prices to the macroeconomy
 - Savor and Wilson (2013, 2014)→Ai and Bansal (2018)
- Macroeconomic announcement premiums and endogenous attention share same drivers:
 - (a) economic uncertainty;
 - (b) risk aversion, or equivalently, the price of risk
- →Macroeconomic attention is a natural instrument for macroeconomic announcement premiums.

Question

- What is the relationship of MAI, macroeconomic announcements and fundamentals?
 - Macroeconomic announcements drive short-run fluctuations in MAI.
 - Changes in fundamentals drive Longer-horizon variations in MAI, but **asymmetrically**.
- What is the relationship between MAI and announcement returns?
 - High pre-MAI attention predicts high announcement premiums for employment situation and FOMC.

Hypothesis

- H1: Macroeconomic announcements and changes in fundamentals are drivers of MAI variations, but **asymmetrically for changes in fundamentals**.
 - Ai and Bansal (2018): Uncertainty builds between announcements until the state is revealed again at the next announcement.
 - Theories of endogenous attention and a countercyclical price of risk.
- H2: For employment and FOMC, pre-MAI predicts the announcement premium and decline in VIX.
 - High Pre-MAI suggests uncertainty for the announcement

Contribution

- Literature on empirical literature on macroeconomic announcements
 - Extension1: Propose a new tool for **specific** macroeconomic fundamentals
 - Extension2: **Pre-** MAI predicts announcement premiums and changes in VIX.
- Contribute to theories of endogenous attention and announcement premiums
 - Support some of the key elements of these theories(uncertainty...)
- New directions: Ai, Bansal, and Han (2021); future info risk for post- MA

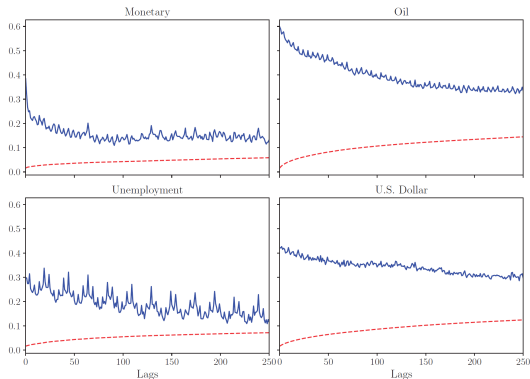
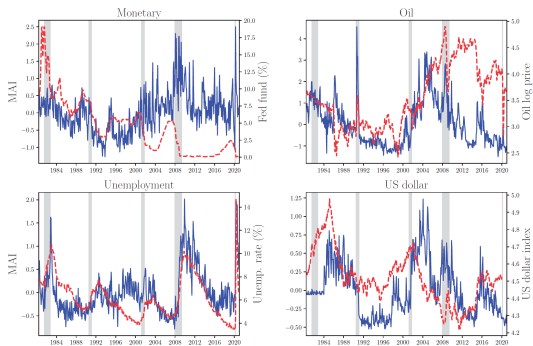
Data:MAI

- Macroeconomic news: **Unemployment**; **Monetary**; **GDP**, **Inflation**; Housing market; Credit rating; Oil; U.S. dollar; **(1980-2020)**
- Macroeconomic attention indexes (MAI):

$$MAI - p_{f,t} = \frac{N_{p,f,t}}{\hat{N}_{p,t}}$$

- f: fundamental
- p: the publication (NYT or WSJ)
- $\hat{N}_{p,t}$: average article count for p during the month including observation t
- $MAI_{f,t} = \frac{1}{2} \sum_{p=NYT/WSJ} MAI - p_{f,t}$
- Why MAI can represent attention?
 - Assumption: Stable info production

Data: Properties of MAI



- MAI: persistence; gradual trends& sharp change; cycles
- Related to fundamentals

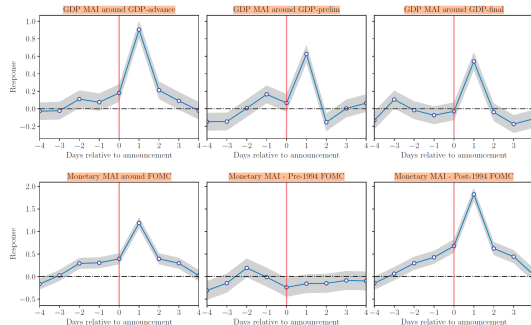
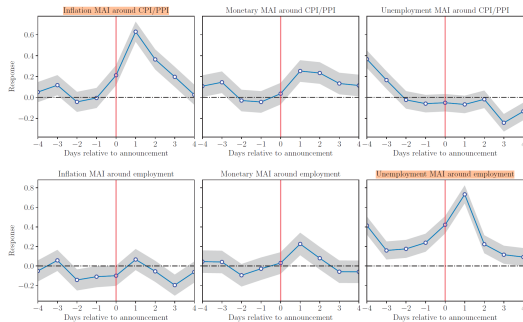
Q1:Design–Macroeconomic announcement

- Regression:

$$MAI_{f,t} = \alpha + \sum_{\sigma=-4}^{\sigma=4} \beta_{\sigma} Ann_{j,t+\sigma} + \epsilon_t$$

- $MAI_{f,t}$: composite attention index corresponding to fundamental f
- $Ann_{j,t+}$ equal 1 if there is an announcement on day- $t + \delta$ for topic j and 0 otherwise

Q1:Result1–Macroeconomic announcement



- MAI spikes around macroeconomic announcements, especially the day after.
- MAI can capture specific fundamental attention

Q1:Design–Macroeconomic fundamentals

- Regression:

$$MAI_{f,t} = \alpha + \beta_1 F_t^{M-Q} + \beta_2 F_t^{Q-Y} + \beta_3 F_t^{Y-4Y} + \beta_4 |F_t^{M-Q}| + \beta_4 |F_t^{Q-Y}| + \beta_5 |F_t^{Y-4Y}| + \epsilon_t$$

- $MAI_{f,t}$: Average MAI for corresponding month or quarter
- F_t^M : Fundamental available at a month frequency
- F_t^Q, F_t^Y, F_t^{4Y} : moving average F_t^M over 3-,12-,48-month windows

$$\begin{aligned} F_t^M &\equiv (F_t^M - F_t^Q) + (F_t^Q - F_t^Y) + (F_t^Y - F_t^{4Y}) + F_t^{4Y} \\ &\equiv F_t^{M-Q} + F_t^{Q-Y} + F_t^{Y-4Y} + F_t^{4Y} \end{aligned}$$

- $\beta_1, \beta_2, \beta_3$ capture asymmetry in the response to + versus - changes in fundamental

Q1:Result1–Macroeconomic fundamentals

MAI:	Credit	GDP	Housing	Inflation	Oil	Unemp	U.S. dollar	Monetary	
Fund.:	Cred spread (1)	GDP growth (2)	House ret (3)	Infl rate (4)	Oil price (5)	Unemp rate (6)	USD index (7)	Fed Fund (8)	Bal sheet
F^M-Q	0.027* (0.016)		-0.298* (0.172)	-0.142 (0.099)	0.004 (0.027)	0.152 (0.103)	-0.009 (0.010)	-0.041 (0.104)	0.002 (0.017)
F^Q-Y	0.005 (0.005)	0.025 (0.019)	-0.254*** (0.082)	0.006 (0.127)	0.026** (0.010)	0.074 (0.093)	-0.020** (0.009)	0.003 (0.043)	-0.014 (0.010)
F^Y-4Y	-0.004 (0.011)	0.002 (0.077)	-0.281** (0.129)	2.011*** (0.514)	0.024*** (0.009)	0.135*** (0.042)	-0.002 (0.005)	0.017 (0.035)	0.007** (0.003)
$ F^M-Q $	-0.007 (0.022)		1.180*** (0.221)	-0.066 (0.209)	0.034 (0.046)	0.028 (0.133)	0.025 (0.019)	0.144 (0.126)	0.070*** (0.015)
$ F^Q-Y $	0.006 (0.008)	0.034 (0.030)	0.442*** (0.107)	0.308* (0.174)	0.032*** (0.012)	0.215** (0.097)	0.048*** (0.011)	0.166** (0.073)	0.014 (0.010)
$ F^Y-4Y $	0.026* (0.014)	0.054 (0.121)	0.968*** (0.208)	2.706*** (0.566)	0.026** (0.012)	0.211*** (0.071)	0.033*** (0.007)	0.028 (0.045)	0.004 (0.004)
Obs.	487	161	472	487	487	487	475	487	
Adj- R^2	.12	.01	.61	.18	.20	.51	.44	.23	

- Changes in macroeconomic fundamentals, in either direction, can increase attention, but asymmetrically.

Q2: Design

- Preannouncement change in attention (ΔMAI_t^{Pre}):

$$\Delta MAI_{\tau}^{Pre} \equiv MAI_{\tau}^{pre} - MAI_{\tau}^b$$

- MAI_t^{Pre} : Average MAI in a 3-day window prior to the announcement τ
- MAI_{τ}^b : Average MAI from day +4 post previous to day -4 pre τ
- Regression

$$R_{\tau} / \Delta VIX_{\tau} = \alpha + \beta_1 \Delta MAI_{\tau}^{pre} + \beta_2 \Delta EPU_{\tau}^{pre} + \beta_3 \text{Surp}_{\tau} + \beta_4 \text{Surp}_{\tau} \times \mathbf{1}_{\tau}^{NBER} + \epsilon_{\tau}$$

- R_{τ} : Announcement-date S&P 500 excess return
- Surp_{τ} : Announcement surprise
- $\mathbf{1}_{\tau}^{NBER}$: NBER recession indicator

Q2:Result–Employment

- Y: R_T

Dep. var.:	1980-2020								1980-2019 (excl. COVID)	
	R_T				ΔVIX_t				R_T	ΔVIX_t
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Intercept	0.05 (0.05)	0.03 (0.05)	0.03 (0.06)	0.03 (0.06)	−0.33*** (0.08)	−0.31*** (0.08)	−0.31*** (0.08)	−0.32*** (0.08)	0.04 (0.06)	−0.29*** (0.08)
ΔMAI^{pre}		0.12** (0.05)	0.14*** (0.05)	0.14*** (0.05)		−0.21*** (0.08)	−0.21*** (0.08)	−0.22*** (0.08)	0.15*** (0.05)	−0.25*** (0.08)
ΔEPU^{pre}			−0.01 (0.06)	−0.03 (0.06)			−0.04 (0.07)	0.02 (0.07)	−0.00 (0.06)	0.03 (0.07)
Surp				0.08*** (0.02)				−0.12** (0.05)	0.08 (0.06)	−0.02 (0.10)
Surp × $\mathbb{1}^{NBER}$				−1.15 (0.72)				2.73** (1.32)	−0.50* (0.26)	1.04** (0.48)

- Pre- MAI predicts employment announcement premiums and changes in VIX.

Q2:Result–FOMC

- Y: R_T

	1994-2020			1994-2006			2007-2020		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>A. Dependent variable: R_T</i>									
Intercept	0.28*** (0.08)	0.19*** (0.07)	0.16** (0.07)	0.20** (0.09)	0.19** (0.09)	0.09 (0.10)	0.36*** (0.12)	0.18* (0.11)	0.19* (0.11)
ΔMAI^{pre}		0.26*** (0.10)	0.25** (0.10)		0.02 (0.09)	0.02 (0.09)		0.45*** (0.15)	0.46*** (0.17)
ΔEPU^{pre}			0.05 (0.09)			0.19*** (0.07)			−0.09 (0.17)
Surp			−0.16 (0.11)			−0.15* (0.09)			−0.13 (0.22)
<i>B. Dependent variable: ΔVIX_T</i>									
Intercept	−0.55*** (0.11)	−0.37*** (0.08)	−0.34*** (0.09)	−0.49*** (0.09)	−0.49*** (0.09)	−0.37*** (0.09)	−0.60*** (0.19)	−0.27** (0.14)	−0.28** (0.14)
ΔMAI^{pre}		−0.48** (0.20)	−0.45** (0.18)		0.00 (0.09)	0.01 (0.09)		−0.85*** (0.32)	−0.88*** (0.33)
ΔEPU^{pre}			−0.09 (0.11)			−0.24*** (0.07)			0.14 (0.16)
Surp			0.16 (0.13)			0.09 (0.07)			0.14 (0.26)

- Pre- MAI predicts FOMC announcement premiums and changes in VIX.

Conclusion

- MAI increase around related announcements and changes in related fundamentals.
 - Bad news raises MAI more than good news.
- For unemployment and FOMC, MAI predicts announcement premiums and VIX changes.
 - Higher MAI, higher announcement premiums
 - Higher MAI, lower VIX

New ideas

- Adjusting MAI using click-through rate
 - Other attention index: Bloomberg, Google Search index...
- Discuss about post attention pattern
 - Future info risk

Additional Discuss:Design

- Change in attention($MAI_{\tau}^{post,N-pre}$):

$$MAI_{\tau}^{post,N-pre} \equiv MAI_{\tau}^{post,N} - MAI_{\tau}^{pre}$$

- $MAI_{\tau}^{post,N}$:Average MAI from 1 to N days after the announcement
- $N \in 3, 10, 20$
- Regression

$$MAI_{\tau}^{post,N-pre} = \alpha + \beta_1 \mathbf{1}_{R_{\tau} < 0} + \beta_2 |R_{\tau}| + \epsilon$$

- $\mathbf{1}_{R_{\tau} < 0}$ for bad news

Additional Discuss:Result

- Y: $MAI^{post,N-pre}$

	N = 3		N = 10		N = 20	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Employment announcements</i>						
$\mathbb{I}_{R_\tau < 0}$	0.17*** (0.06)		0.10** (0.05)		0.10** (0.05)	
R_τ		-0.08*** (0.03)		-0.07*** (0.02)		-0.06*** (0.02)
$ R_\tau $		0.02 (0.04)		0.01 (0.03)		0.02 (0.03)
Intercept	0.11** (0.04)	0.17*** (0.05)	-0.04 (0.03)	-0.00 (0.04)	-0.05 (0.03)	-0.02 (0.03)
<i>B. FOMC announcements</i>						
$\mathbb{I}_{R_\tau < 0}$	0.19* (0.11)		0.18* (0.09)		0.18** (0.09)	
R_τ		-0.11** (0.05)		-0.08* (0.04)		-0.07* (0.04)
$ R_\tau $		0.24*** (0.07)		0.08 (0.05)		-0.02 (0.05)
Intercept	0.68*** (0.08)	0.59*** (0.07)	-0.07 (0.07)	-0.03 (0.06)	-0.18*** (0.06)	-0.07 (0.06)

- Bad news ($R_\tau < 0$) raises post-MAI.