

Discussion: FOMC Event Risk

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Summary of the Paper

- Construct an ex-ante measure of **FOMC event risk** using S&P 500 index options with various maturities.
- **Methodology**
 - Leverage **short-dated options**, which are highly sensitive to event risk.
 - Apply a **structural model** to isolate FOMC event risk from factors such as time-varying volatility, the term structure of volatility, and crash risks.
- **Main Empirical Findings**
 - The average FOMC event volatility is 0.88%, with substantial **time variation**.
 - Ex-ante FOMC event risk positively predicts ex-post **realized volatility** on FOMC days.
 - Evidence of early **resolution of uncertainty** leading up to FOMC announcements.
 - FOMC event risk carries significant **volatility risk premia**, with ATM straddle returns falling by 4-5% around the announcement.

Main Comments: Outline

- Extremely interesting measurement of ex-ante event risk.
- **Comment 1:** Interpretation of FOMC event risk
 - captures informativeness of FOMC announcements
- **Comment 2:** Provide important evidence for understanding the monetary policy
 - “stock return and long-term bond disconnect puzzle”

Summary of Methodology

- Black-Scholes implied variance at time t with maturity T :

$$\sigma_{t,T}^2 = \frac{\left(\sigma_{FOMC}^Q\right)^2}{T-t} + \sigma^2$$

σ is the diffusion volatility.

- If we have two maturities, $T_1 < T_2$,

$$\sigma_{FOMC}^2 = \frac{\sigma_{t,T_1}^2 - \sigma_{t,T_2}^2}{(T_1 - t)^{-1} - (T_2 - t)^{-1}}$$

- Innovation in methodology: Use a structural model incorporating multiple maturities and controlling for factors such as stochastic volatility, term structure of volatility, etc.

Comment 1: Interpretation of FOMC event risk

- The correlation between FOMC event risk and other uncertainty measures is **relatively low**.
 - Correlation with the EPU (Baker-Bloom-Davis, 2016): -12%
 - Correlation with the MPU (Mueller-Bauer-Lakdawala, 2022): 27%
 - Correlation with the VIX: 54%
- Question: What specific type of uncertainty does FOMC event risk capture?
- A potential interpretation: reflects information-driven volatility (Ai-Han-Xu, 2022)

Comment 1: Interpretation of FOMC event risk

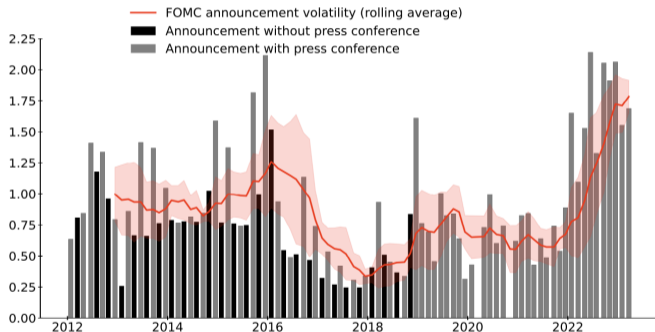
- A micro-founded interpretation based on information-driven volatility.

$$\underbrace{\sigma_{t,T}^2}_{\text{Var}(x_T)} = \underbrace{\frac{\left(\sigma_{FOMC}^Q\right)^2}{T-t}}_{\text{Var}[\mathbb{E}(x_T|s_t)]} + \underbrace{\sigma^2}_{\mathbb{E}[\text{Var}(x_T|s_t)]}$$

- Volatility can be driven by fundamentals x_T or **information** s_t .
- Other measures tend to capture the total variance of fundamentals: $\text{Var}(x_T)$.
- FOMC event risk captures the **informativeness** of announcements in s_t .
- More precise information triggers ex-post realized variance on FOMC day: $\text{Var}[\mathbb{E}(x_T|s_t)]$.
- **Supporting Evidence 1:** FOMC event risk positively predicts ex-post realized volatility.

Comment 1: Interpretation of FOMC Event Risk

- **Supporting Evidence 2:** FOMC meetings with press conferences have higher event risk.



- With press conferences, ex-ante market belief in the informativeness of FOMC is high.
- Press conferences do not add more risk; they resolve more risk.

Comment 1: Interpretation of FOMC Event Risk

- **Supporting Evidence 3:** Changes in FOMC event risk are negatively correlated with returns prior to the FOMC: correlation is -34%, highly significant.
 - Greater reduction in event risk (more informative announcement) \Rightarrow greater resolution of uncertainty \Rightarrow higher realization of risk premium
 - \Rightarrow negative correlation.
- **Supporting Evidence 4:** FOMC event risk can decrease or even **increase**.
 - Fed may provide clear information (very informative) or **create confusion (uninformative)**.

Comment 2: Stock Return and Long-Term Bond Disconnect Puzzle

- **Puzzle in the literature:** Regress stock market returns on components of monetary policy surprises — federal funds rate (FFR), forward guidance (FG), and large-scale asset purchases (LSAPs) — on FOMC announcement days (Swanson, 2021).

	S&P500
(A) full sample, Jul. 1991–Jun. 2019 (241 observations)	
change in federal funds rate	-0.37***
(std. err.)	(0.042)
[<i>t</i> -stat.]	[-9.00]
change in forward guidance	-0.14***
(std. err.)	(0.049)
[<i>t</i> -stat.]	[-2.83]
change in LSAPs	0.03
(std. err.)	(0.059)
[<i>t</i> -stat.]	[0.48]
Regression R^2	0.31

- Both changes in FFR and FG explain stock return movements, but not LSAPs.
- Question: Since stocks are **long-duration assets**, shouldn't they be more sensitive to long-maturity discount rates rather than to short-maturity discount rates?

Comment 2: Stock Return and Long-Term Bond Disconnect Puzzle

- This paper offers an important evidence for understanding the puzzle!
- Regress realized bond return volatility over the FOMC window on FOMC event risk.

Instrument	const		Spot Volatility		Event Risk		R2	Obs	Avg Mat
30 Day Fed Funds	-0.02	(-1.66)			0.05	(3.54)	0.39	89	169
	-0.01	(-1.46)	0.35	(4.42)	0.04	(3.21)	0.69		
Eurodollars	-0.01	(-0.66)			0.06	(3.26)	0.40	88	323
	-0.02	(-2.66)	1.34	(10.34)	0.03	(2.73)	0.75		
2Y Treasury	-0.01	(-0.54)			0.10	(3.93)	0.41	89	79
	-0.01	(-1.29)	0.77	(4.07)	0.05	(3.56)	0.74		
5Y Treasury	0.05	(1.77)			0.17	(4.42)	0.36	86	79
	-0.08	(-2.94)	1.10	(5.76)	0.09	(3.31)	0.54		
10Y Treasury	0.10	(3.73)			0.20	(5.38)	0.36	86	69
	-0.11	(-2.23)	0.93	(4.62)	0.13	(4.10)	0.48		
30Y Treasury	0.22	(8.68)			0.24	(6.88)	0.36	86	69
	0.03	(0.43)	0.40	(3.31)	0.20	(4.95)	0.41		

- R^2 for 30-year Treasury bonds can be as high as 41%!

Comment 2: Stock Return and Long-Term Bond Disconnect Puzzle

- How to interpret this?
 - The first moment (returns) correlation between stocks and long-term bonds is low.
 - However, the **second moment (event risk) correlation** can be very **high**.
- Lessons learned from the evidence
 - Low correlation in first moment does not necessarily indicate a disconnect.
 - Time-varying stock-bond correlation is well-documented.
 - Correlation changes over time depend on the sources of shocks (e.g., monetary, growth, or risk premium news (Cieslak-Pang, 2021)) \Rightarrow first moment correlation can be low.
 - High correlation in second moment can help resolve the disconnect puzzle.
 - But, regardless of shock type, FOMC always provides information and resolves uncertainty \Rightarrow second moment correlation can be high.
- Guidance for theoretical models.

Conclusion

- An extremely interesting paper.
- Introduces a novel measurement for ex-ante event risk.
- Reflect informativeness of macroeconomic announcements.
- Offers valuable insights for understanding the effects of monetary policy.