1. The Fed and Downside Risks

--- Summary ---

Uncertainty around FOMC announcements builds up days ahead of the meeting and fully resolves once the policy decision is announced. Disentangling tail uncertainty shows that the perception of bad economic states is the primary driver of this pattern, despite the stabilizing intent of policy outcomes. Investors are afraid of the revelation of bad states and are willing to pay a hedging premium of approx. 9% per meeting. FOMC announcements are spurious as uncertainty around other macroeconomic news releases is not driven by downside uncertainty. Not only does tail uncertainty predict pre-announcement stock market returns but also changes in the fed fund target rate for horizons up to one year. Our results indicate that policy makers closely monitor downside uncertainty and use this information as part of their decision-making process.

The Fed and (Downside) Uncertainty

The Federal Reserve aims to reduce economic uncertainty through timely policy communications.

- **Clarity in policy communications** [/] reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency [ ... ] are essential in a democratic society.

- **How and why does economic uncertainty behave around U.S. monetary policy announcements?**

The literature so far:

- Interventions by the Fed are perceived as [ ... ] operations:

- **Fed acts as lender or market maker of last resort** (Duflo, 2009).
- **"GreenSPAN Put"** [ ... ] more likely after periods of stock market declines (Cieslak and Vissing-Jorgensen, 2020).

- At the same time, put options are cheaper when target rate is lower than fundamentally motivated by the Taylor rule (Dayiha et al., 2019).

- **What is the role of downside uncertainty around FOMC announcements?**

Identifying Event-driven Changes in Uncertainty

We measure uncertainty using information embedded in the most liquidly traded options contracts at a high frequency (S&P 500 index options).

Following Bloom (2009) we use expected volatility to gauge overall stock market uncertainty:

\[
\sigma^2_t = \sum_{j=1}^{n} \alpha_j \epsilon_{j,t-1}^2 + \beta_j \left( \int_{j-1}^{j} \sum_{i=1}^{K} \epsilon_{i,t} \right)\]

Left tail uncertainty follows Bollerslev et al. (2015):

\[
\sigma_{LT}^2 = \sum_{j=1}^{n} \alpha_j \epsilon_{j,t-1}^2 + \beta_j \left( \int_{j-1}^{j} \sum_{i=1}^{K} \epsilon_{i,t} \right)
\]

with generalized tempered stable jumps,

\[
\sigma_{j,t} = \left( \alpha_j \epsilon_{j,t-1}^2 + \beta_j \int_{j-1}^{j} \sum_{i=1}^{K} \epsilon_{i,t} \right)^{1/2}.
\]

Difference estimation of meeting effects (Bollerslev et al., 2018) at each time 0-day:

- **Purge uncertainty around intra-day effects:**

- **Compare announcement uncertainty to levels before blackout period** (here 21 business days).

- **Approximates prevailing economic state.**

Impact of Downside Uncertainty

- **Preliminary pattern of uncertainty around FOMC announcements:**

Other Macro Announcements

- **Is this pattern unique to FOMC announcements?**

- Build pseudo-blackout weeks around the announcement time of the three most important macroeconomic news releases (as defined by Bloomberg, 221 announcements in total).

Robustness

- **Tail impact reverses (black minus blue line) → from positive to negative.**

- **Release of macroeconomic news decreases downside risks ahead of the announcement.**

2. Announcement Behavior

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<th>Sample:</th>
<th>S&amp;P 500 options, 2004 through 2018</th>
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<td></td>
<td>→ After filters, left with 235 OTM calls, and 784 OTM puts per minute on average.</td>
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112 FOMC announcements in our sample (199 in an extended-daily sample going back to 1996).

Uncertainty Announcement Pattern

- **Uncertainty below control group levels at start of blackout period.**

- **Larger increase, typically on Friday and during weekend.**

- **Aprent decline in uncertainty overnight from day F = 1 to F.**

- **Significant downward jump in uncertainty as news is announced.**

- **Recovery one day after announcement, back to starting levels.**

- **No lasting resolution of uncertainty through FOMC meetings?**

3. Predicting Monetary Policy Decisions

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<th>Target Rate Changes</th>
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<td>Dependent Variable: ( FF_{RT} = - FF_{C} )</td>
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Stock Market Returns

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Interpretation and Conclusion

Challenges for theoretical models simultaneously explaining announcement uncertainty and return drift:

- **Downside component of uncertainty seems disconnected from overall uncertainty → meeting premiums exclusively jump-driven.**

- **Announcements reduce uncertainty, but spark fear of revelation of bad (or good) economic states (corroborates Wachter and Zhu, 2019).** This downside premium resolves almost fully once information is revealed.

- **High-frequency announcement resolution driven exclusively by tail uncertainty. Requires separately modeling jump component.**

Summary of Our Results:

- **Economic uncertainty reacts to the prospect of possible changes in monetary policy released at FOMC announcement times.** This reaction is amplified by increased downside uncertainty (which corresponds to more frequent mention of “downside risk” in FOMC meeting minutes). ... and unique to FOMC announcements.

- **The economic content of elevated downside uncertainty is large, predicting both stock market returns and target rate changes around scheduled FOMC announcements.**

- **A question left for us to answer:** is this increase in downside uncertainty driven by increased demand for tail insurance, or by decreased supply provided by market makers in the options market?