

The Predictive Power of FedSpeak

Nick Hallmark Andrej Sokol

Bloomberg LP

The views expressed here are those of the authors, and do not necessarily reflect those of Bloomberg LP.

Motivation

- ▶ Central bankers speaking publicly may reveal new information about economic outlook, not just signal policy preferences.
- ▶ Idea usually studied using central bank's own texts: statements, minutes, reports, speeches, and transcripts.
- ▶ Different angle here: *received* communication through financial news headlines.

What We Do

- ▶ Construct semantic scores from Bloomberg's proprietary database of 'FedSpeak' headlines.
 - ▶ Daily coverage from January 2009, 70,000+ headlines.
 - ▶ Full range of Fed communication: post-FOMC statements and press conferences, minutes, speeches, interviews, essays, tweets, ...
 - ▶ Encoding using RoBERTa model, fine-tuned with supervised SimCSE on headline-lead pairs.
 - ▶ Monthly aggregation of embedding vectors, then principal components extraction.
- ▶ Scores added to Bayesian VAR for point, and to quantile regression models for density forecasting.
- ▶ Improves forecasts of inflation, unemployment and yields, tracks shifts in macroeconomic tail risks.

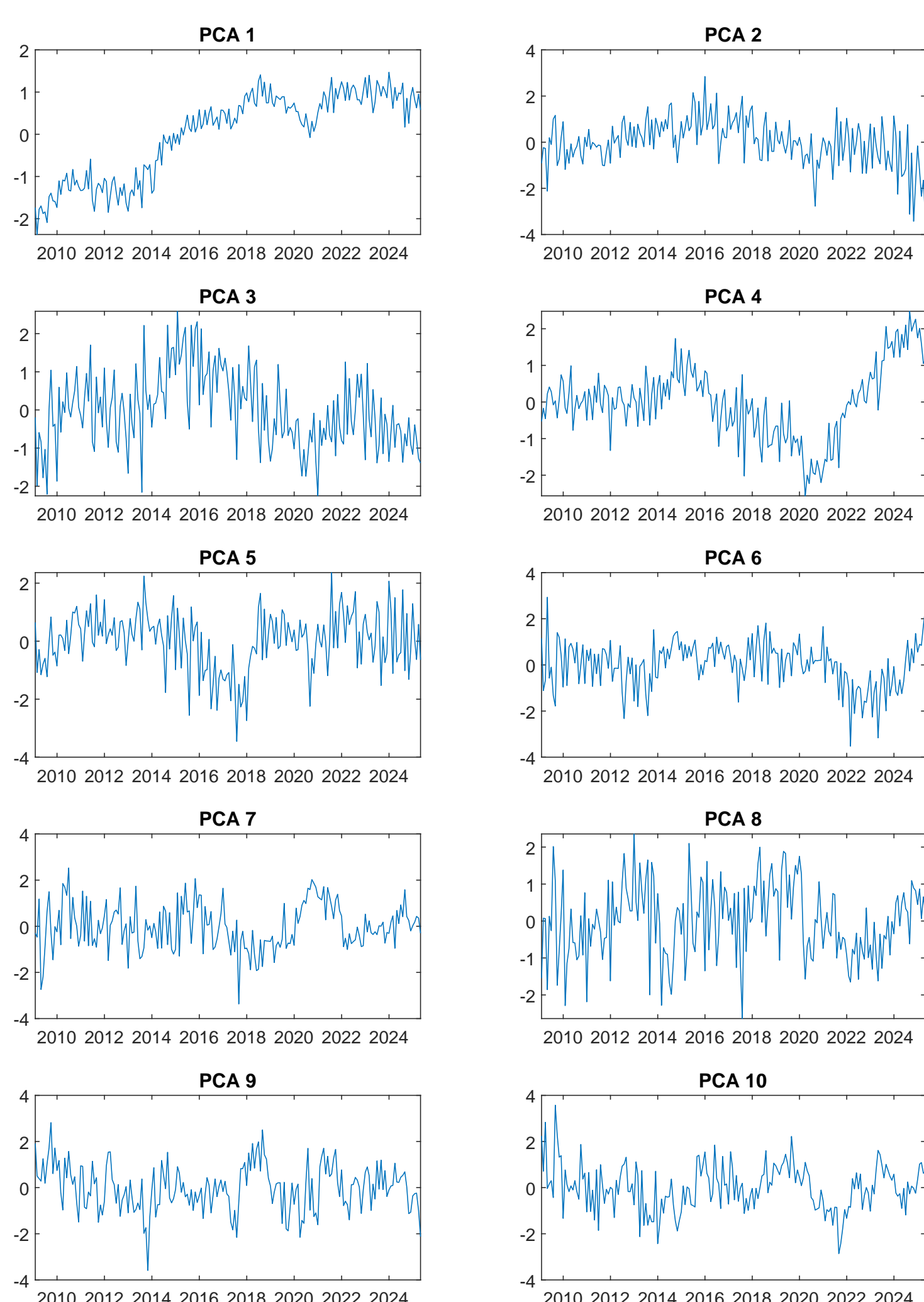
Why Headlines?

- ▶ High frequency and available in real time.
- ▶ Editorially curated for consistency and salience.
- ▶ Closer to information set seen by markets.

What FedSpeak Looks Like



FedSpeak Scores Over Time

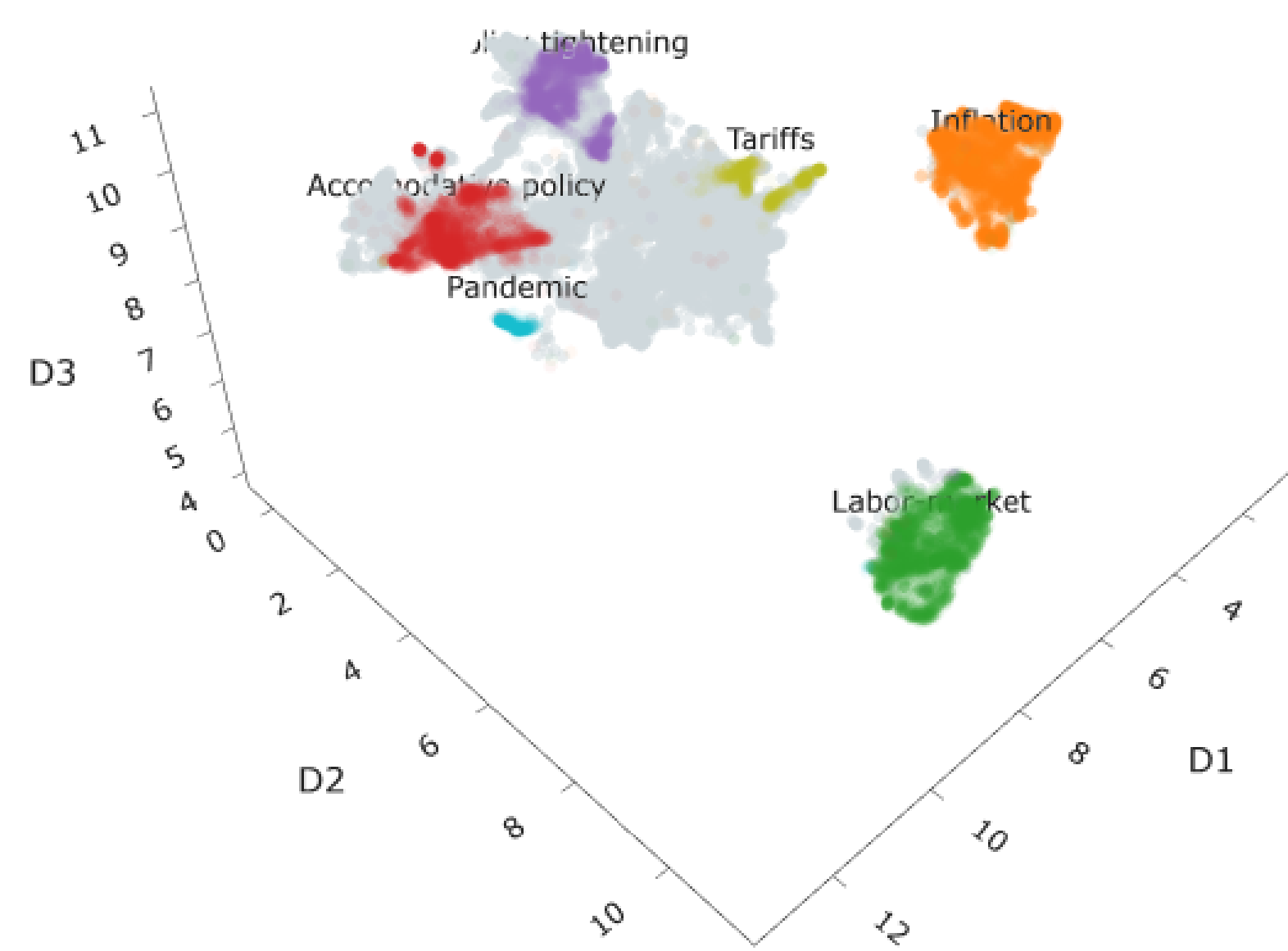


Time series of principal-component scores extracted from monthly headline embeddings.

Embeddings and Scores Are Not a Black Box

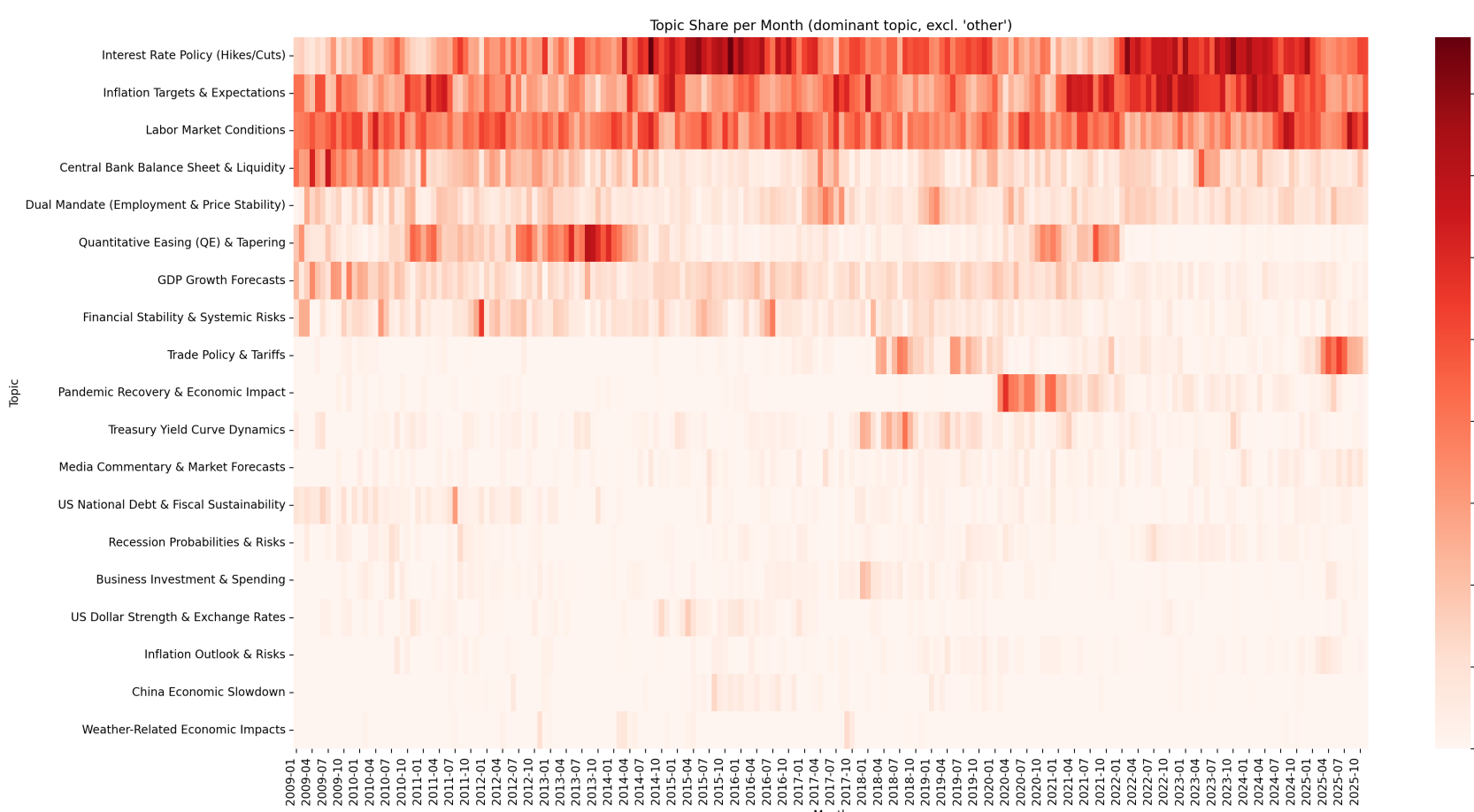
- ▶ Low-dimensional projection of embedding vectors reveals dominant themes such as inflation, labour, rates, quantitative easing, recession risk, and trade.
- ▶ Topic prevalence shifts over time in line with historical record: pandemic-related headlines surges in 2020, inflation becomes more prominent in early 2021, tariff-related coverage spikes during both Trump administrations.
- ▶ Shapley decomposition links topics back to PCA scores. Each score associated with one or a few related topics, supporting narrative interpretation of forecast movements.

Clustering of FedSpeak Headlines



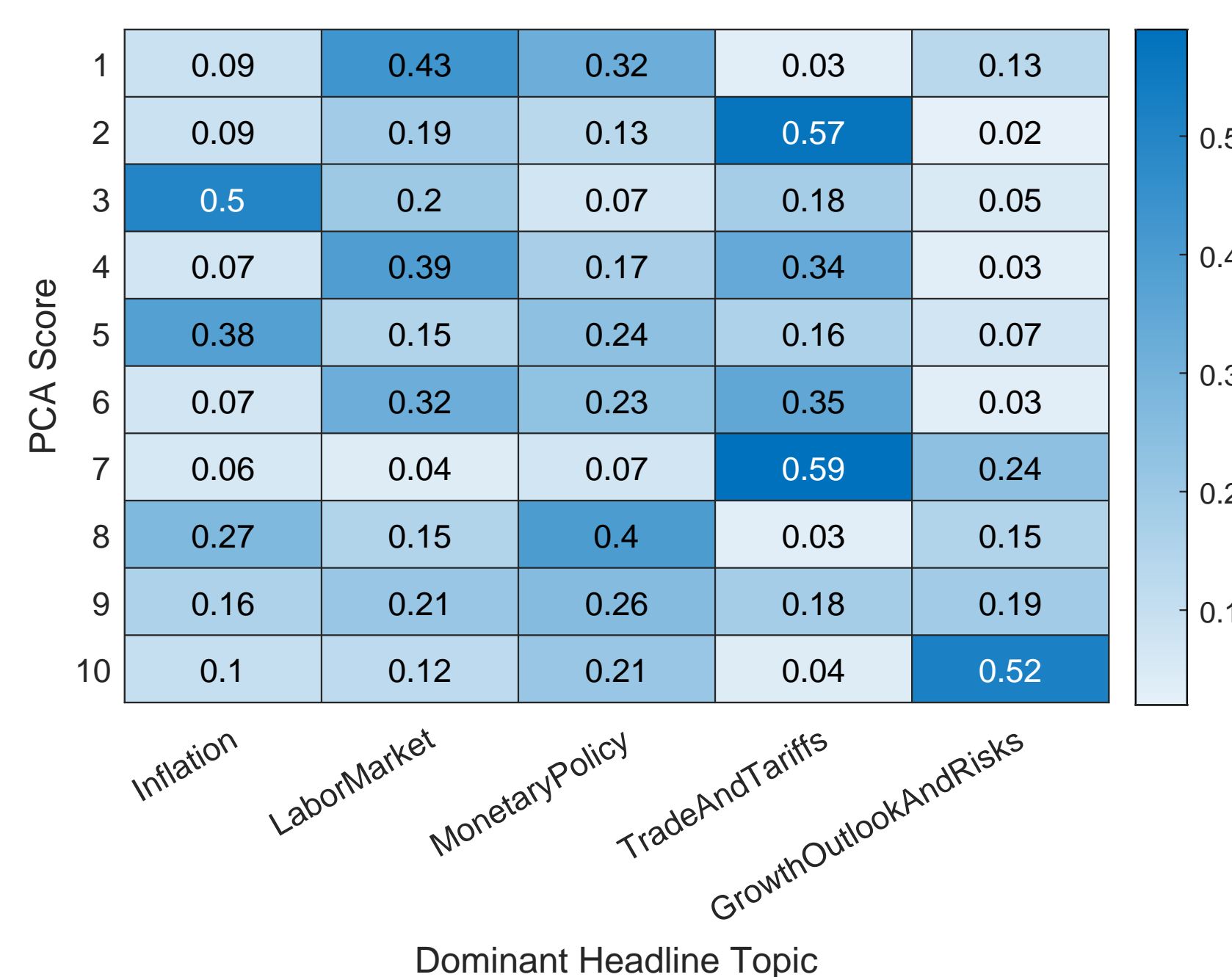
Headline embeddings projected into low-dimensional space using UMAP.

Topic Shares Over Time



Estimated headline topic shares over time.

Interpretability of the PCA Scores



Shapley decomposition of contribution of topic shares to each PCA score.

Takeaways

- ▶ Bloomberg FedSpeak headlines contain real-time information about U.S. macro outlook.
- ▶ Embedding-based PCA scores empirically useful and economically interpretable.
- ▶ Models augmented with FedSpeak scores provide better point and density forecasts.
- ▶ Additional application as narrative tool for tracking changing macroeconomic risks.

Point Forecasts

- ▶ Monthly BVAR includes unemployment, CPI inflation, gasoline prices, and 2-year Treasury yield, augmented with FedSpeak scores.
- ▶ Minnesota-style prior setup with hierarchical hyperprior selection and volatility adjustment for pandemic.
- ▶ Recursive forecast evaluation using real-time data.
- ▶ No leakage from text model: RoBERTa training and fine-tuning samples end before forecast evaluation window, scores only computed from embeddings available at cutoff date.
- ▶ Strongest gains for inflation forecasts; frequent outperformance of FRED-MD scores and sentiment-based alternatives, competitive against Bloomberg consensus despite informational disadvantage.

Relative RMSEs for Point Forecasts

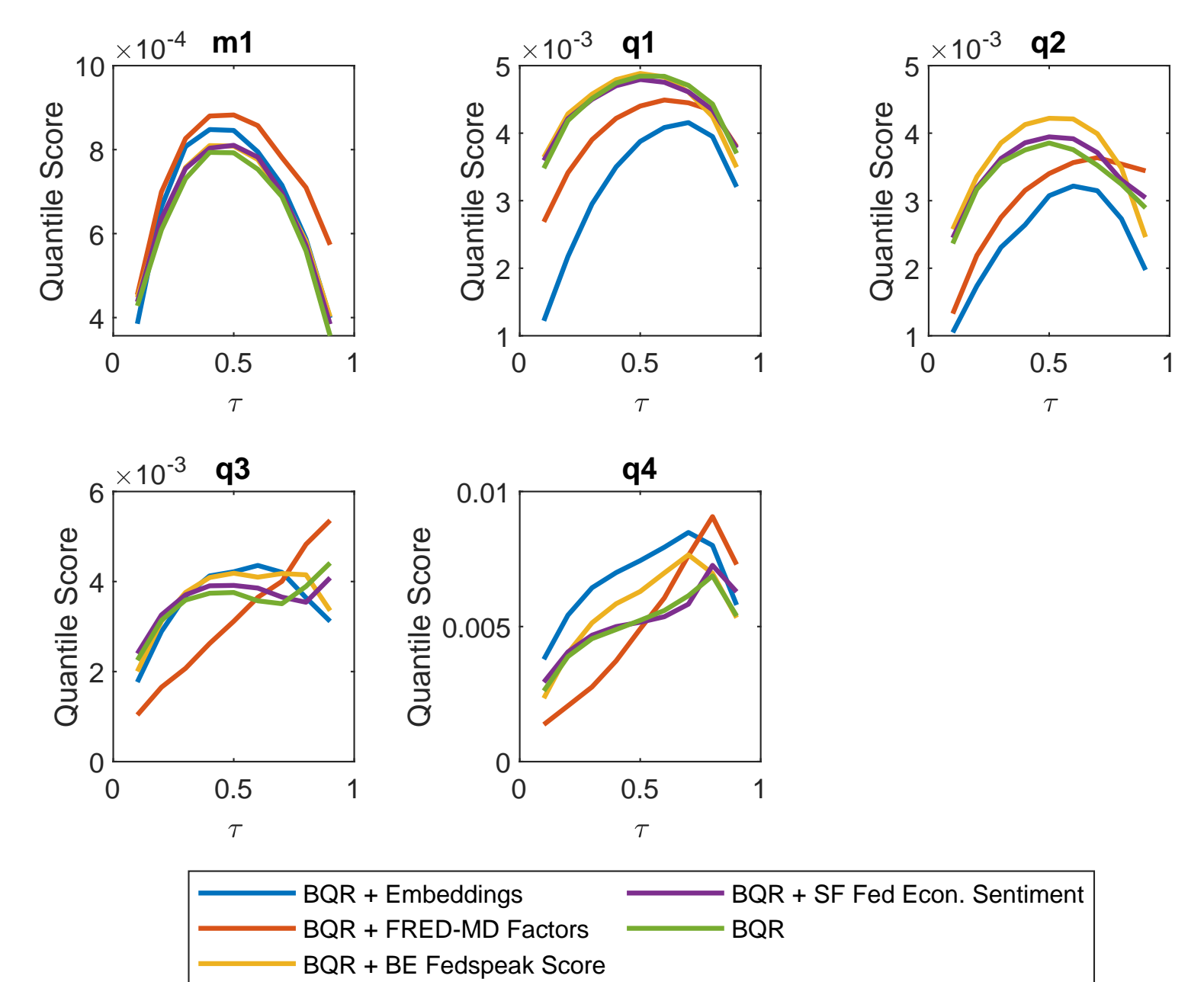
	Nowcast	1Q	2Q	3Q	4Q
Unemployment					
Embeddings	0.77	0.49	0.62	0.73	0.77
FRED-MD Scores	0.91	0.74	0.77	0.91	0.90
BE FedSpeak Score	1.03	1.10	1.17	1.08	1.00
SF Fed Sentiment	1.01	1.05	1.11	1.07	1.03
Consensus	0.64	0.36	0.48	0.52	0.50
CPI Inflation					
Embeddings	0.88	1.05	0.91	0.82	0.76
FRED-MD Scores	1.24	1.00	1.00	0.95	0.95
BE FedSpeak Score	0.98	1.00	1.01	1.02	1.03
SF Fed Sentiment	0.91	0.92	0.95	0.96	0.97
Consensus	0.71	1.20	1.16	1.12	1.06

Relative RMSEs versus plain VAR. Values below 1 indicate improvement.

Density Forecasts

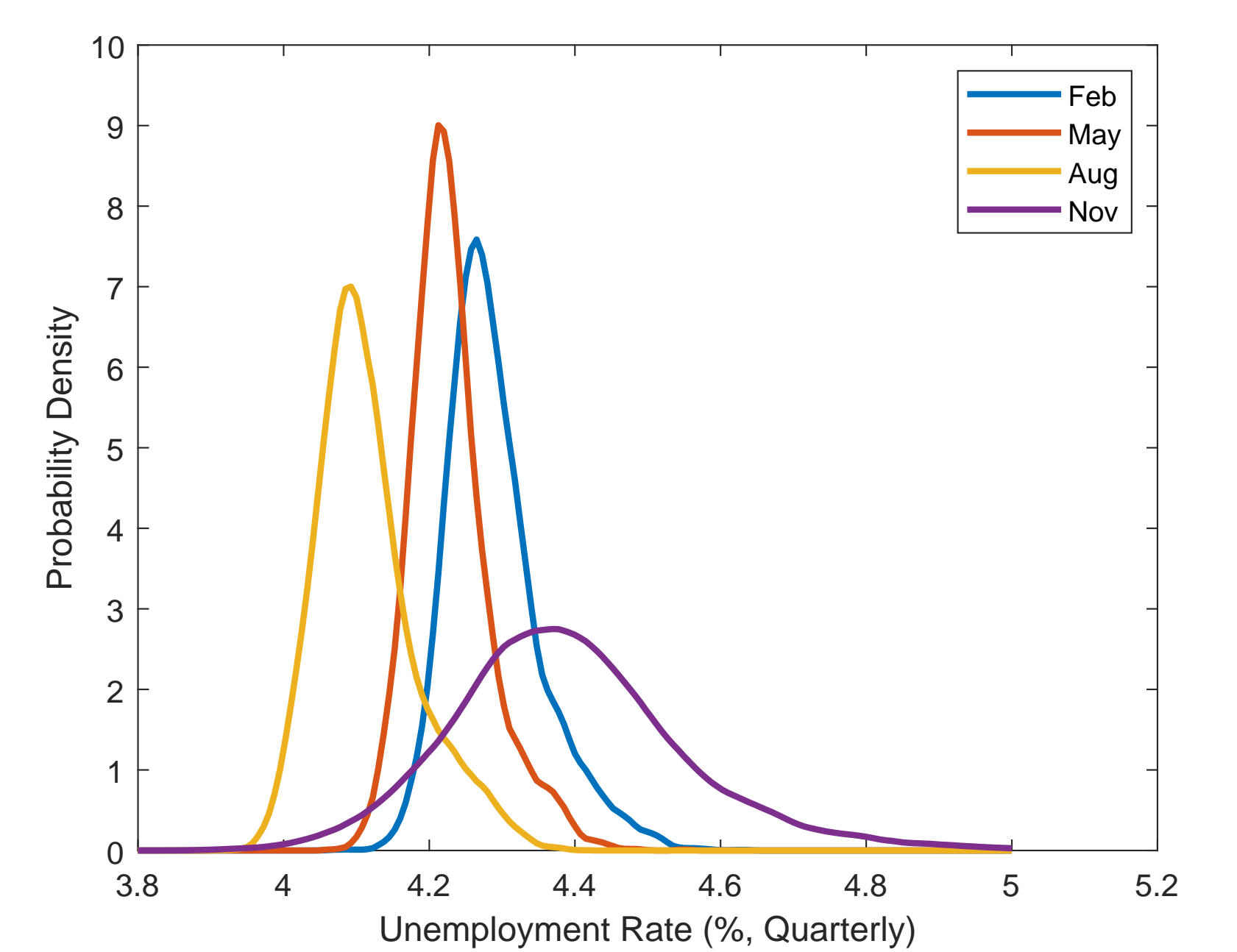
- ▶ Bayesian quantile-regression framework for full predictive distributions, same variables as BVAR, same real-time setup.
- ▶ Evaluation using quantile scores and weighted CRPS scores.
- ▶ Strongest gains in tails of predictive distributions.
- ▶ Additional use as narrative tool: forecast densities shifting with changing emphasis in received Fed communication.

Quantile Scores: Unemployment



Quantile scores for unemployment forecasts. Lower values indicate better performance at a given quantile of predictive distribution.

Illustration: Density Forecasts and Risk Narratives



Example of predictive distribution evolving with inclusion of FedSpeak information.