



Reading Between the Lines: Economic Signals and Sentiment from BoE Speeches

Understanding How BoE Communications Reflect
and Influence the UK Economy

Presented by

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Client: Bank of England

Objective:

Understand how the sentiment and content of Bank of England (BoE) speeches relate to key economic events and indicators.

Key Questions:

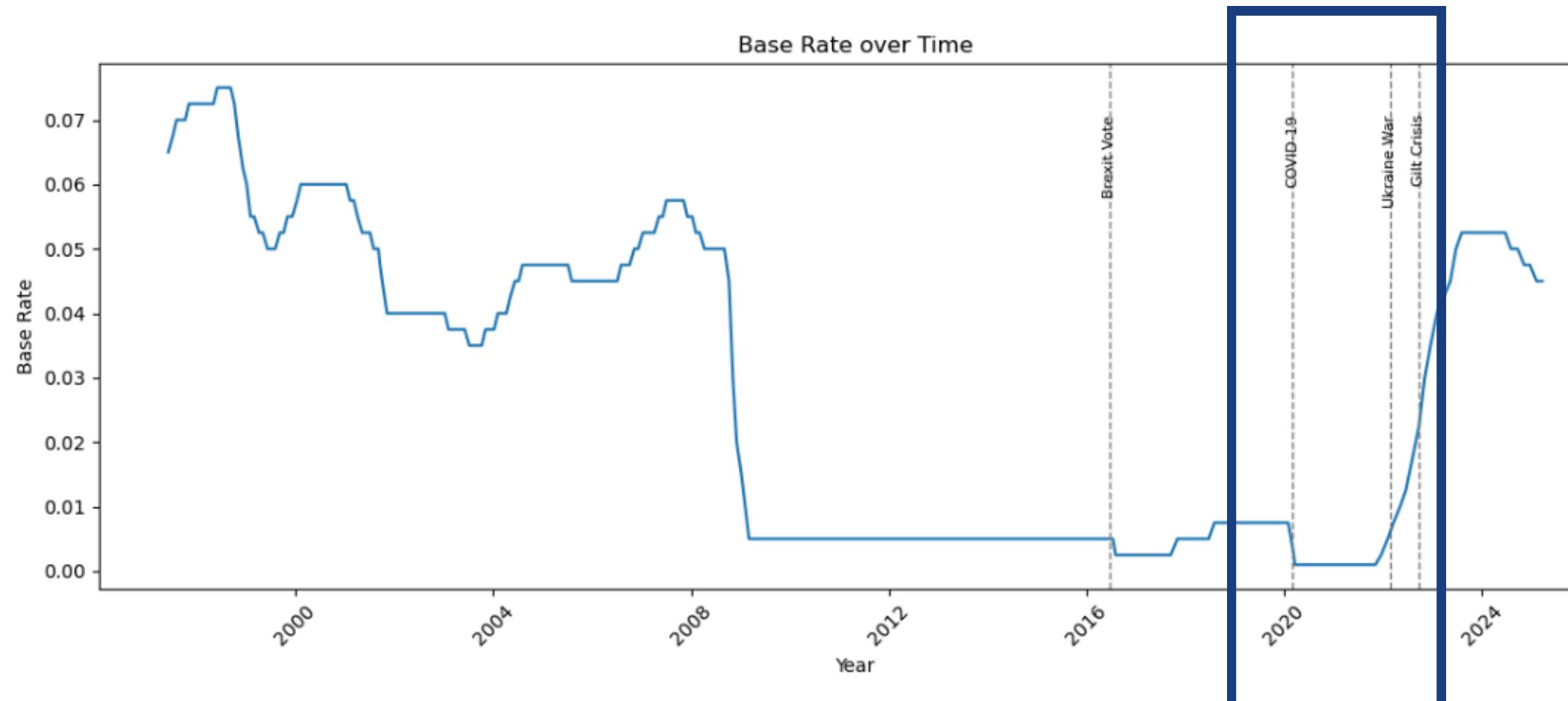
- How does speech sentiment evolve over time?
- How is tone related to:
 - Bank rate decisions
 - Major macro events
 - Key indicators like unemployment, GDP, and inflation
- Does sentiment signal upcoming shifts in the market?
- What themes or patterns in speech tone could support the Bank's strategic messaging?

Uncovering patterns beneath the surface ...



Focusing on 2019–2022: Why This Window Matters

Characterised by volatility, central bank response, and measurable indicators

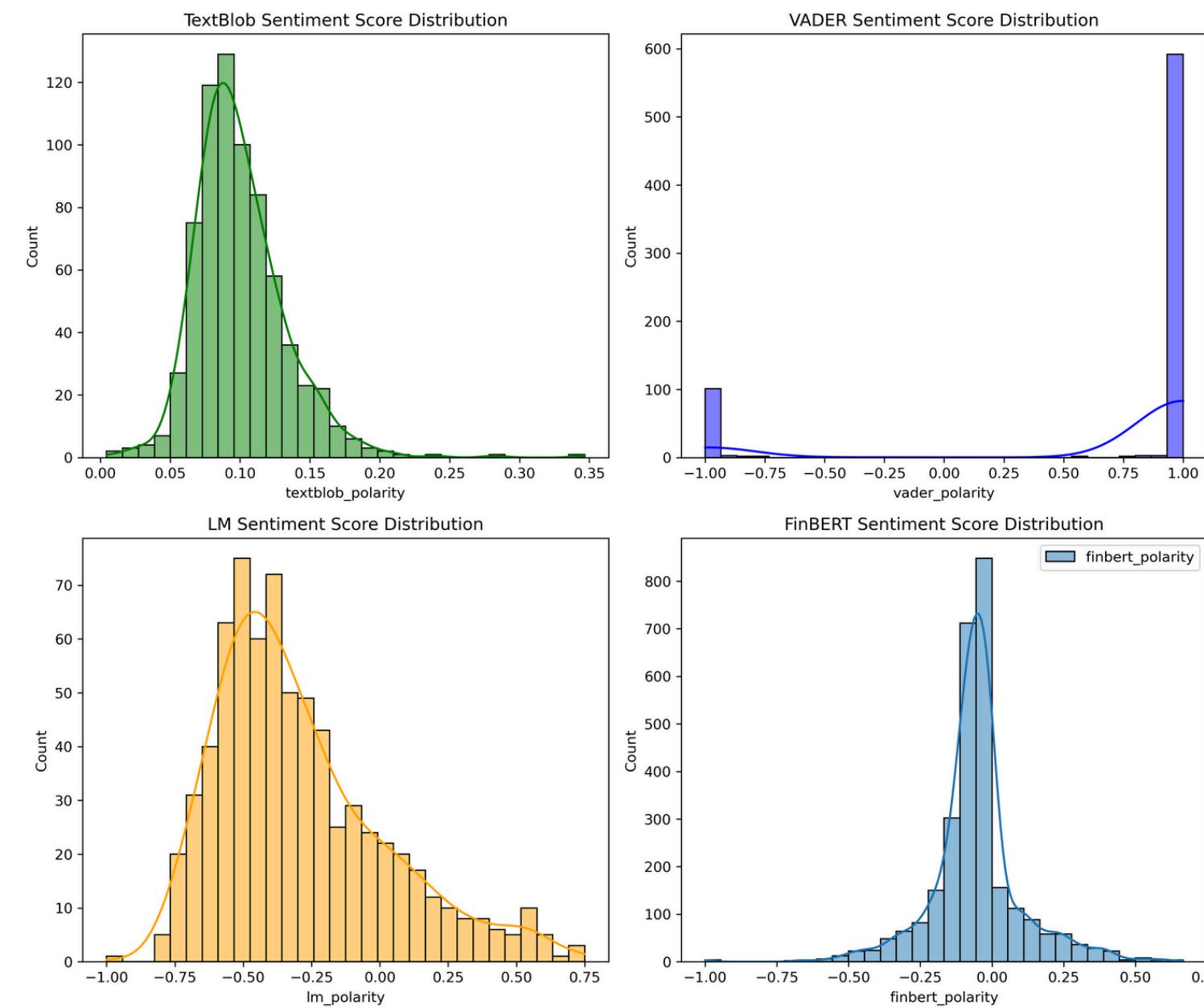


- Captures a period of major macroeconomic shocks:
 - Brexit aftermath
 - COVID-19 pandemic
 - Russia–Ukraine war
 - UK Gilt Crisis
- Reflects active BoE communication and policy signalling
- Matches available speech and economic indicator data for consistent analysis
- Provides a manageable, recent time frame for drawing relevant insights

Filtered Dataset: 240 Speeches



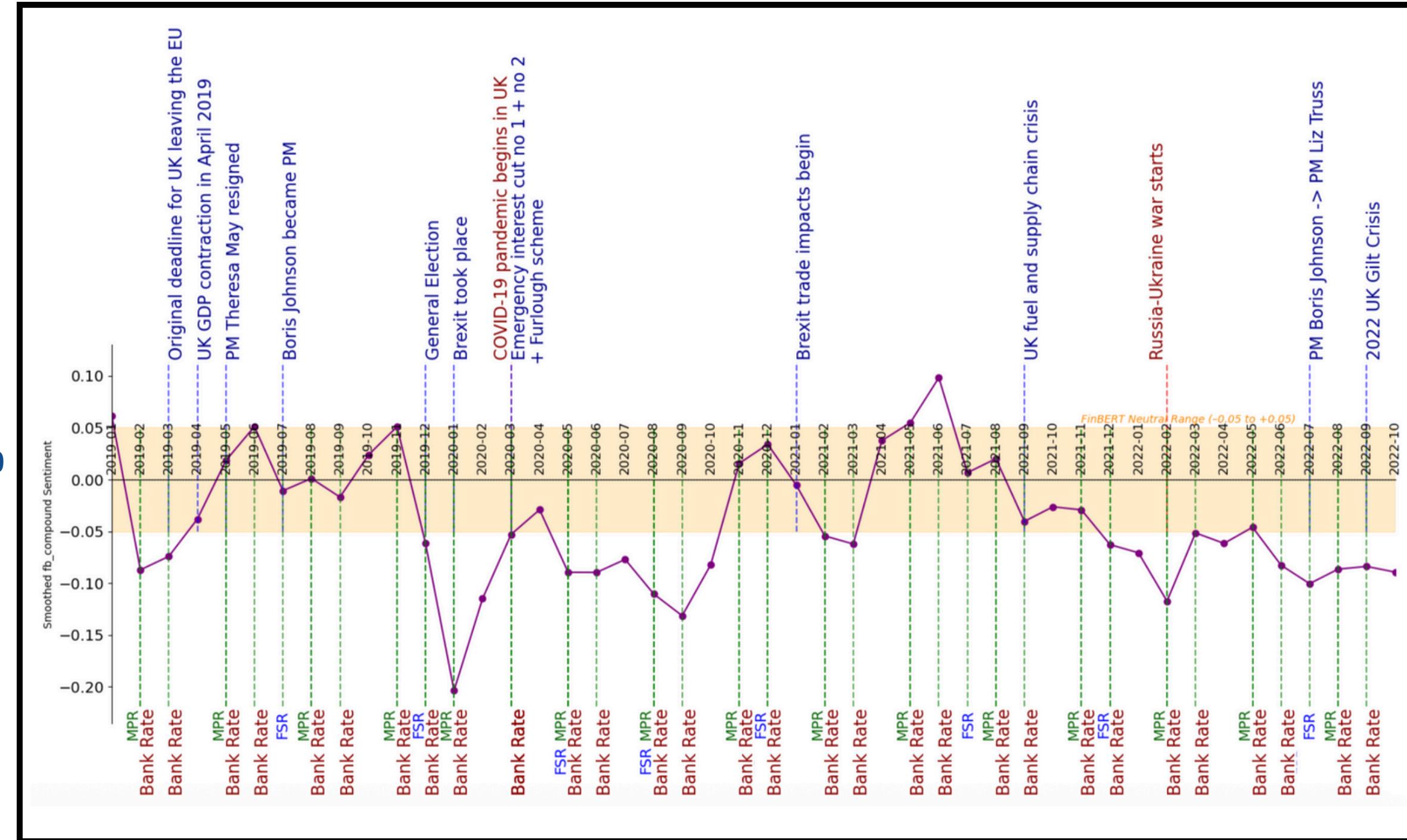
Selecting the Most Suitable Sentiment Model



FinBERT offers a more nuanced and centered sentiment distribution than TextBlob, VADER, and LM, making it better suited for financial text analysis.



BoE Speech Sentiment vs. Events



The overall sentiment of speeches has changed over time, though shifts are generally subtle and remain close to neutral.

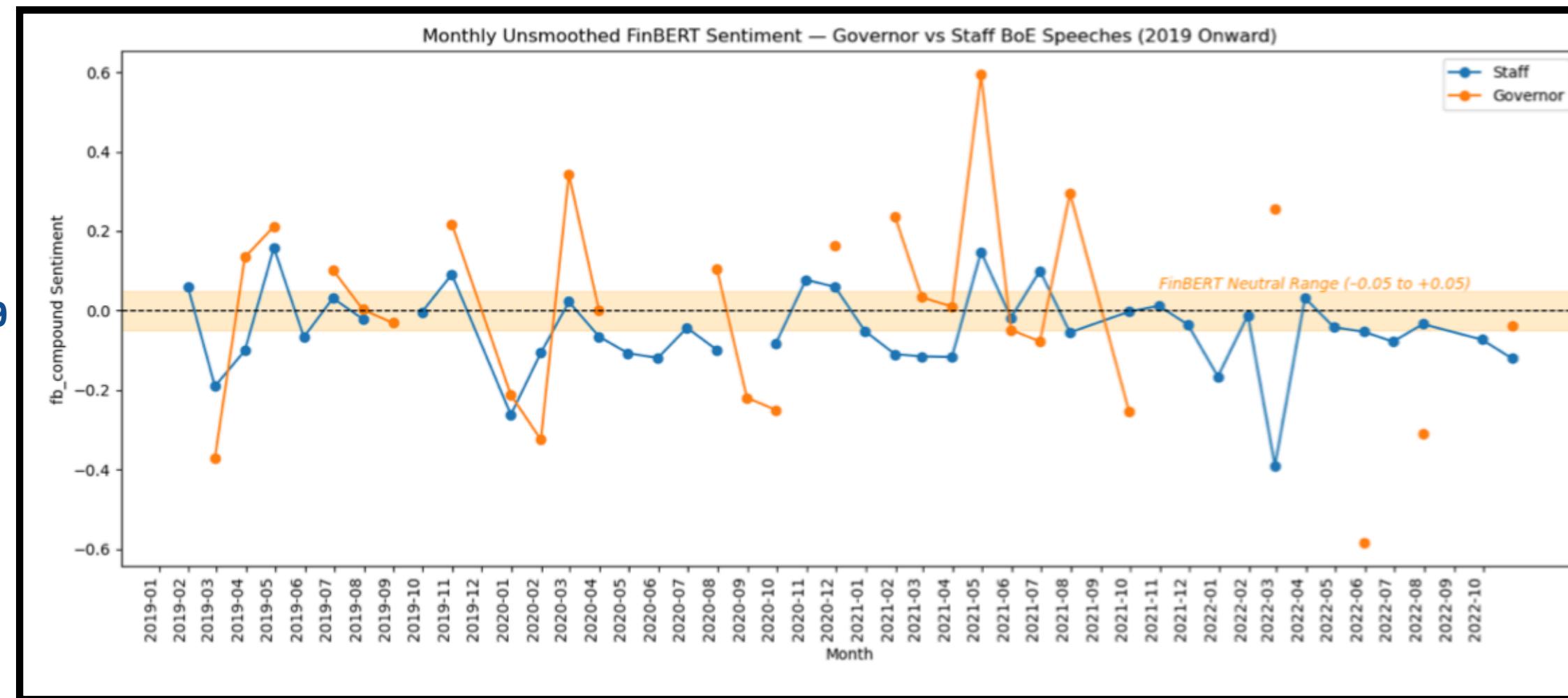
Major **global and UK events** correspond with brief sentiment dips, especially around COVID and geopolitical shocks. However, the BoE does not react strongly or erratically.

2022/

Scheduled BoE actions show minimal correlation with speech sentiment — suggesting that tone is not dictated by internal decisions, but by broader communication strategy.



Not One Voice: Governor and Staff Tone Diverge



- While the overall tone of BoE speeches remains relatively stable and resilient to events, this at times masks internal differences in who is speaking.
- Governor speeches show more volatile and expressive sentiment patterns than staff, who tend to remain closer to neutral
- A clear divergence appears in 2021, where Governor sentiment spikes — consistent with post-pandemic optimism and policy signalling — aligning with statistically significant differences found in Chi-square tests.
- While overall speech tone differs by role, these divergences are episodic, not consistent year to year.



Note: data sparsity in some months (especially for governors) may exaggerate individual swings.



Different Voices, Different Priorities

BoE Speaker Role vs. Topic Sentiment Correlation –
how closely the tone of BoE speeches aligns with topic-specific narratives

Sentiment Role/Topic	Economic Growth	Inflation	Financial Markets	Labour Market
Overall	Strong (≈0.75)	Weak (≈0.12)	Weak (≈0.15)	Moderate (≈0.52)
Governor	Moderate (≈0.42)	Weak (≈0.13)	Moderate (≈0.41)	Weak (≈0.13)
Staff	Strong (≈0.69)	Weak (≈0.12)	Weak negative (≈-0.12)	Moderate (≈0.47)

Growth sentiment consistently drives speech tone across roles, while Governors show stronger alignment with financial markets, and Staff with labour topics—though inflation sentiment remains weakly connected overall.



Event-Driven Impact on BoE Speech Tone? Mostly Minimal

Event Correlation with Sentiment

- **External Events (Global/UK)** - Weak to negligible across all topics and lags

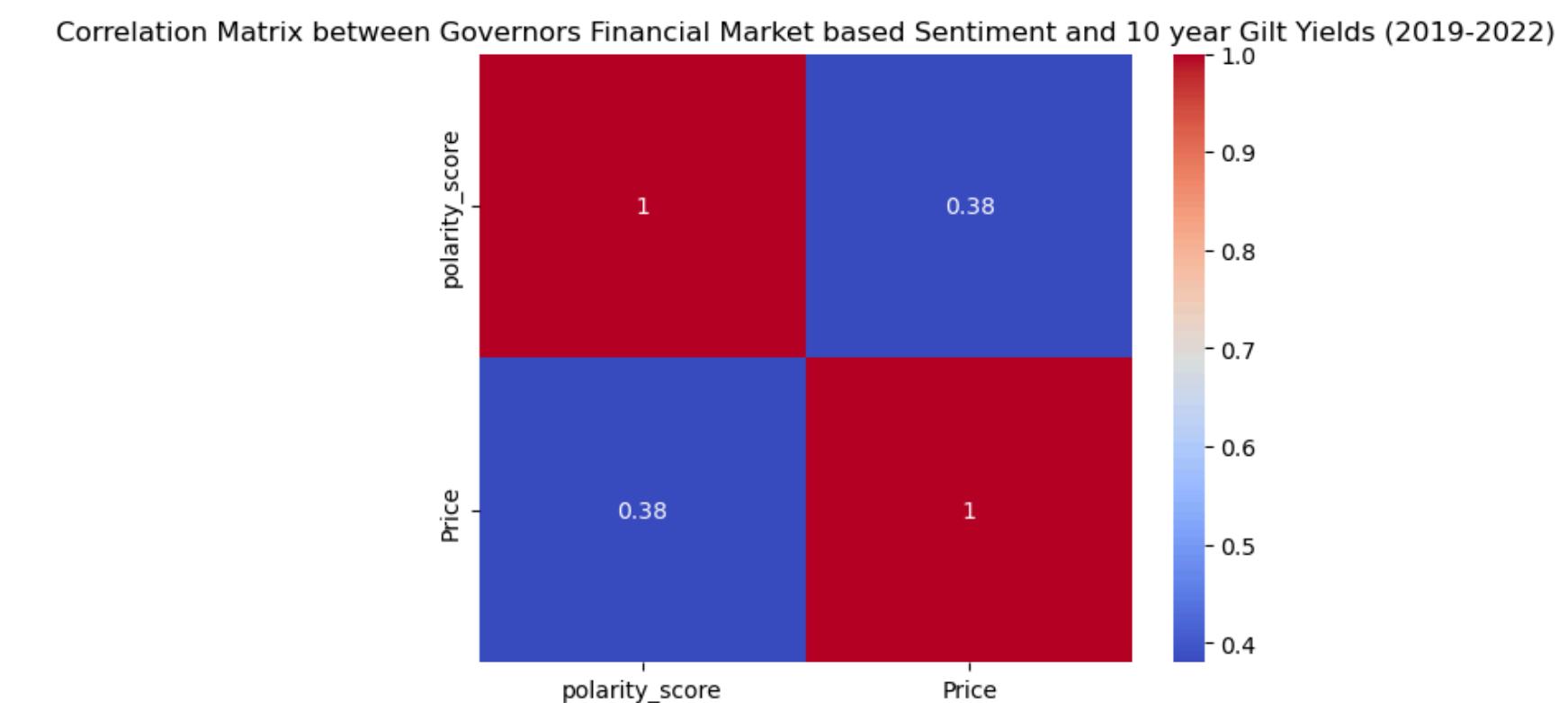
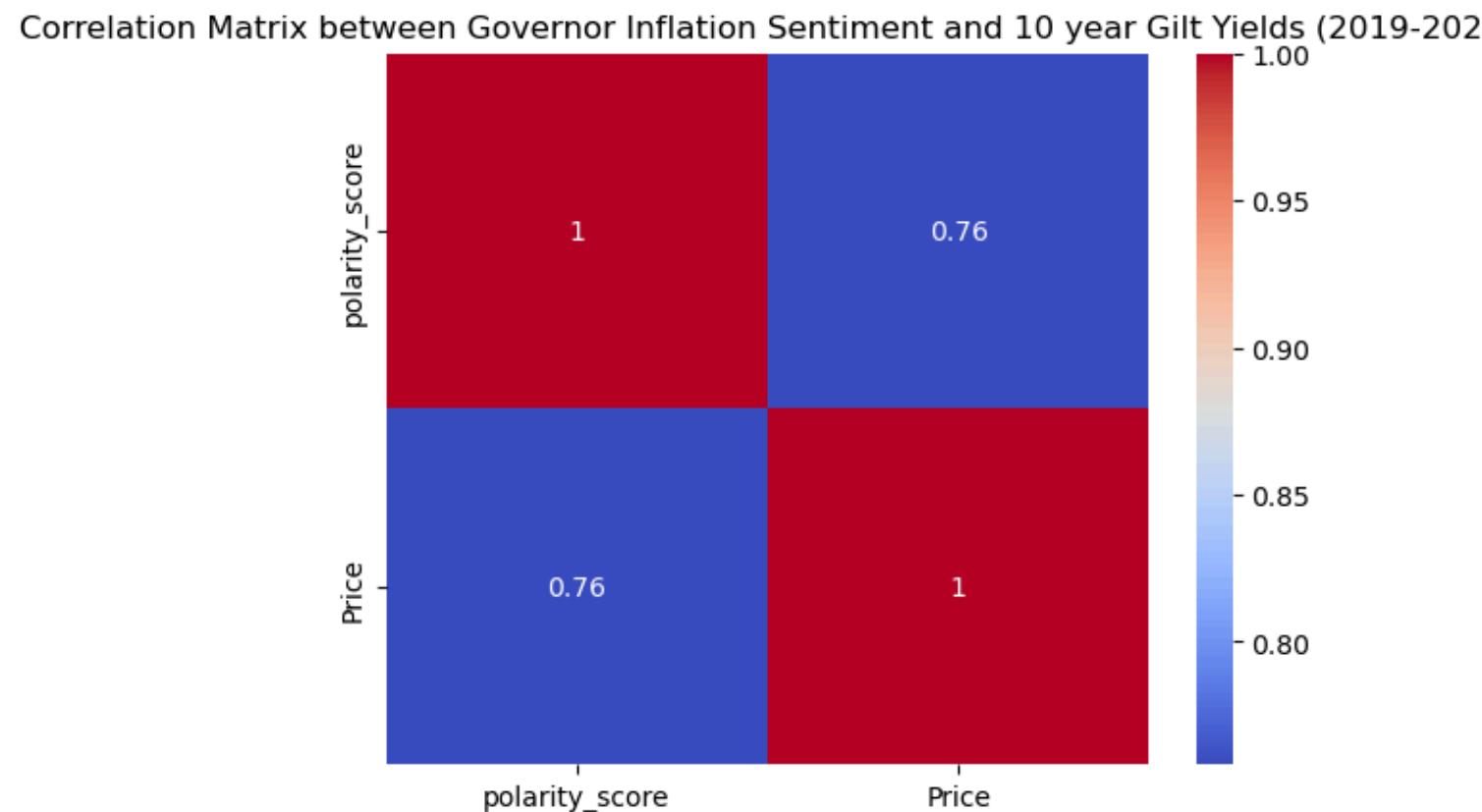
	global_event	uk_event		global_event_lag1	uk_event_lag1		global_event_lag2	uk_event_lag2
overall	-0.16	-0.16		0.01	-0.09		-0.12	0.03
inflation	0.13	-0.24		0.15	-0.17		-0.09	0.09
growth	-0.16	0.02		0.05	0.07		-0.03	0.08
labour	-0.06	-0.23		-0.00	-0.09		-0.15	-0.07
financial_markets	0.17	0.07		0.29	0.16		0.14	0.01

- **Bank Rate decision / Monetary Policy Report** - Minimal changes (mostly $< \pm 0.10$)
- **Financial Stability Report** - Moderate negative correlation with financial markets sentiment (≈ -0.22)

Despite significant events and policy actions, BoE speech sentiment remains largely steady. This reflects **a strategy of message consistency and expectation anchoring rather than reactive commentary**.



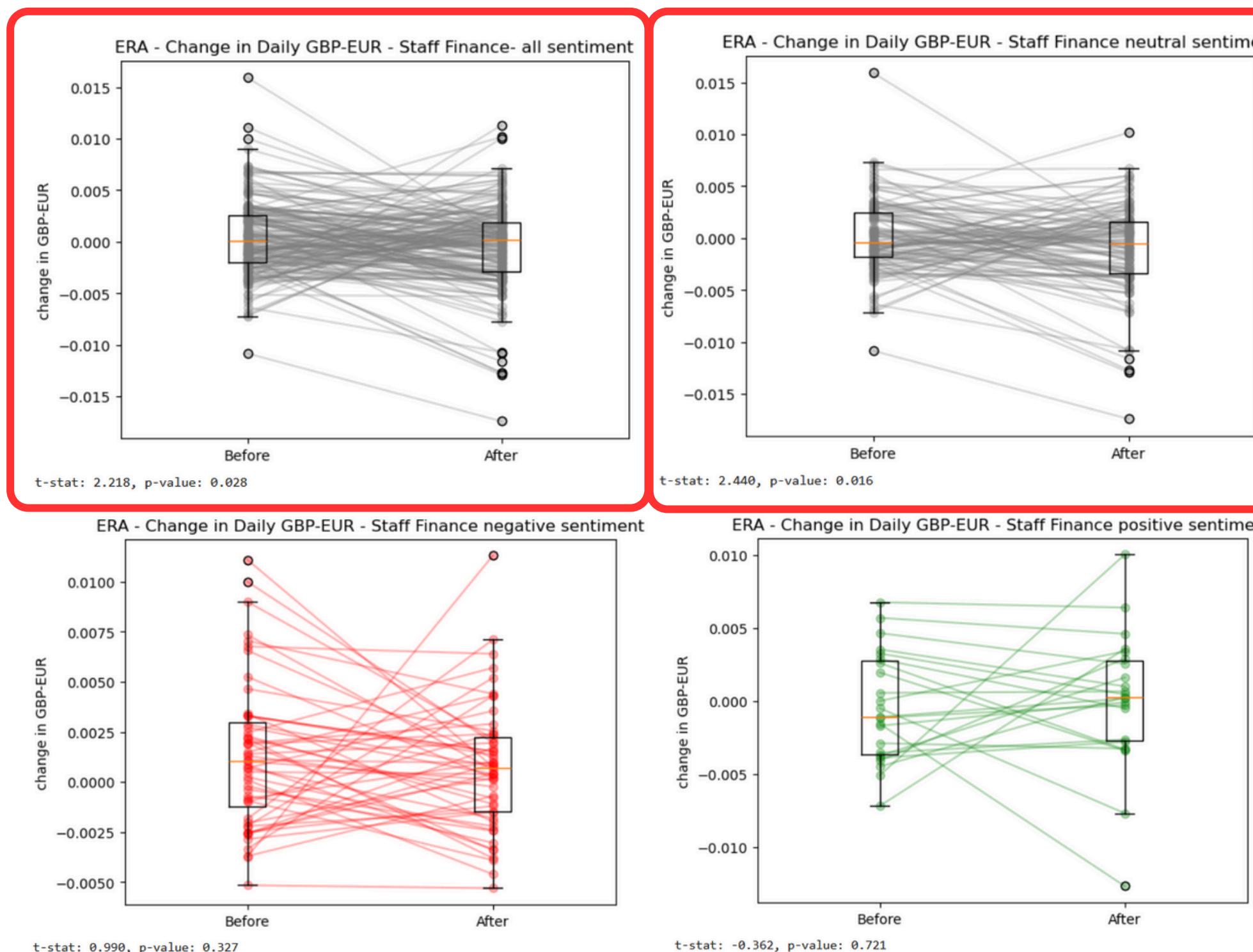
Governor speeches correlate with UK Gilt market movement during high inflationary periods



- Over the past decade, no direct relationship persists with changes in 10-year yields and speech sentiment
- However, **during inflationary period** of 2019–2022, we found a **76% correlation** between yield changes and Governor inflation themed speeches and a **38% correlation** between Governor Financial Market themed speeches. **No correlation existed with staff speeches.**



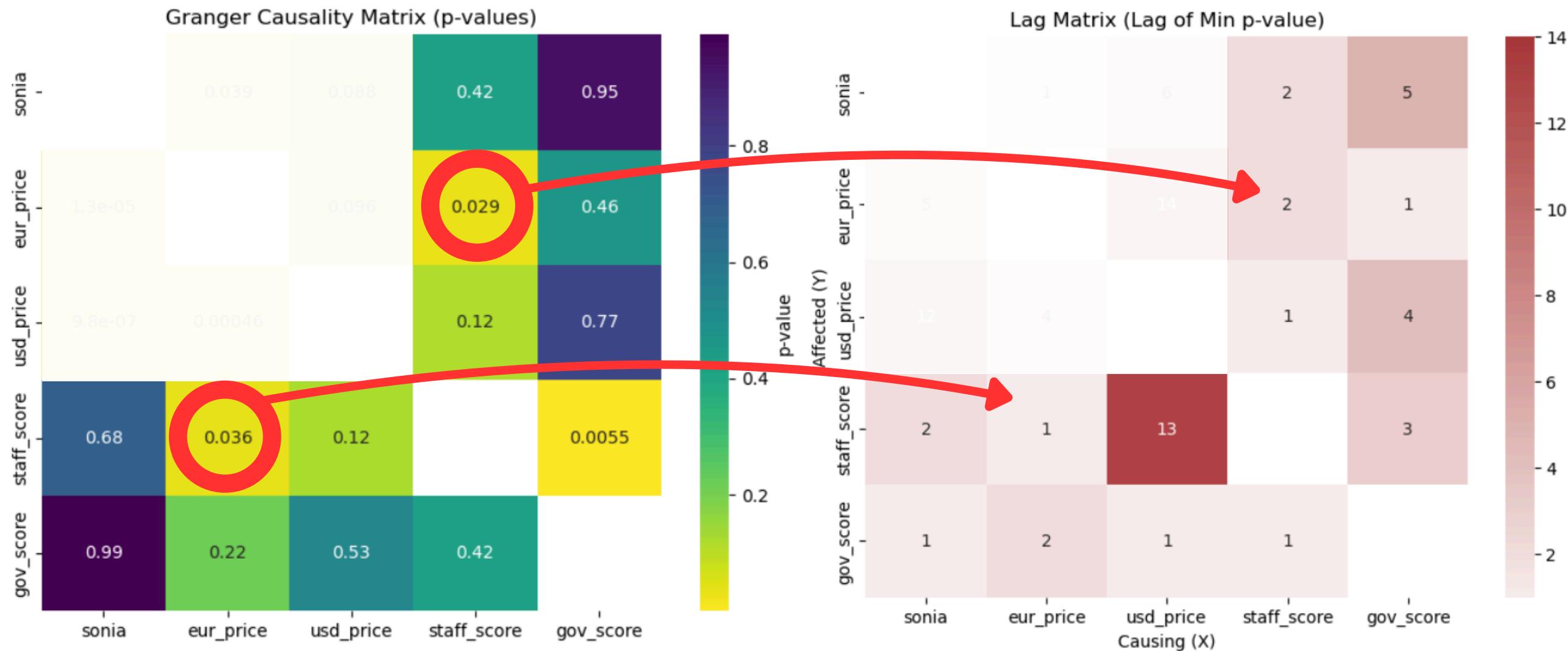
Trajectory of GBP-EUR Changes around Neutral Staff Speeches



- After Topic Modelling for Financial Market:
- Event Related Analysis
 - Compares changes in (slope) indicators before and after speeches
- Significant changes in (slope) GBP-EUR before vs after staff speeches
 - Splitting between speech sentiment revealed significant differences around neutral speeches only



Staff Polarity Score Granger Causes GBP-EUR Price and Vice Versa

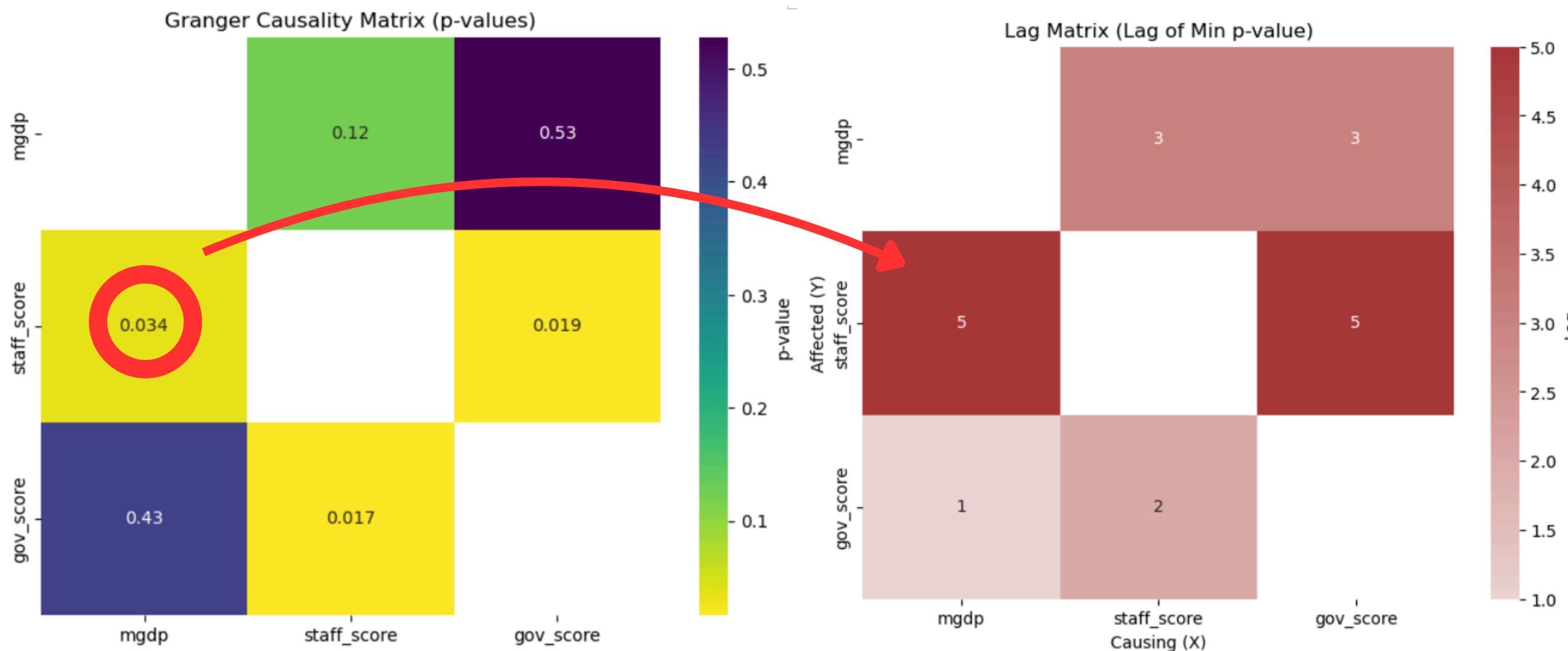


- Significant p values between GBP-EUR and staff polarity score
- These values occur within a 1-2 day lag
- Staff polarity score and GBP-EUR can significantly predict each other's future values

- Max lag = 15 (days)



Staff Speeches follow economic performance with GDP Granger predicting Staff Sentiment

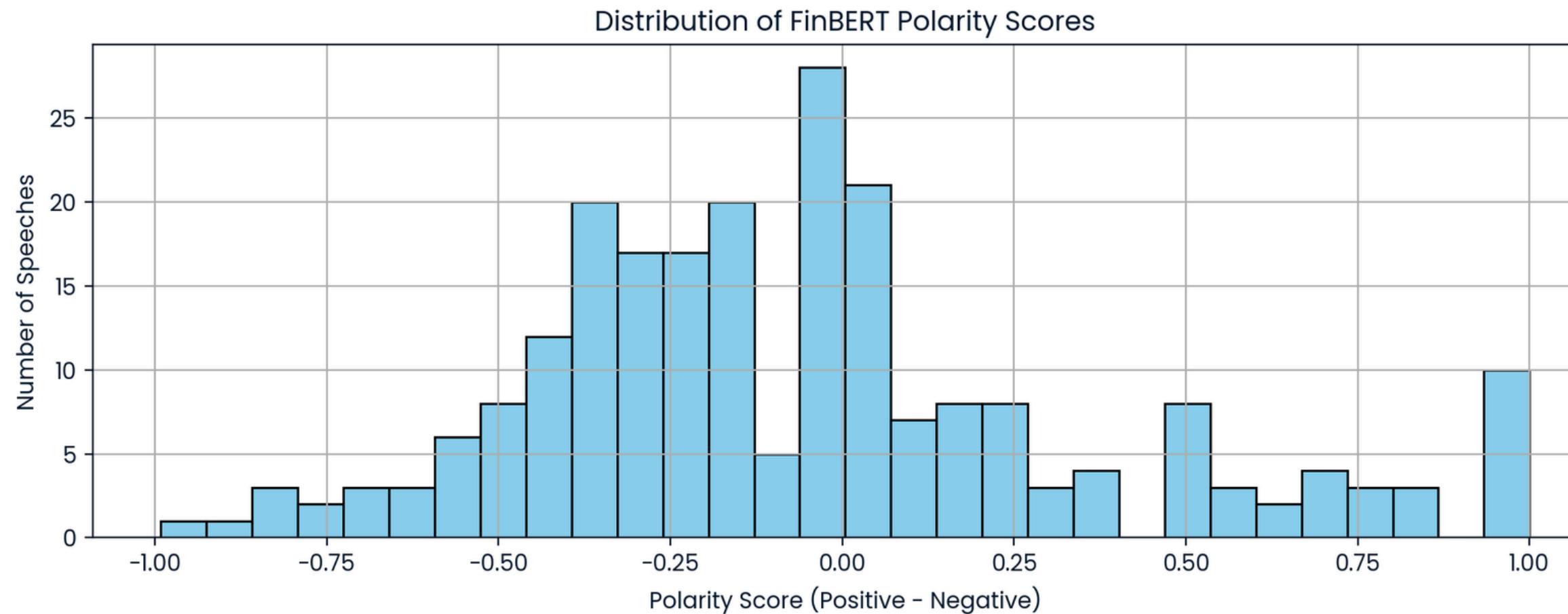


- Max lag = 6 (Months)

- Significant p values between GBP-EUR and staff polarity score occurring at lag of 5 months
- GBP-EUR can significantly predict staff polarity scores with a lag of 5 months



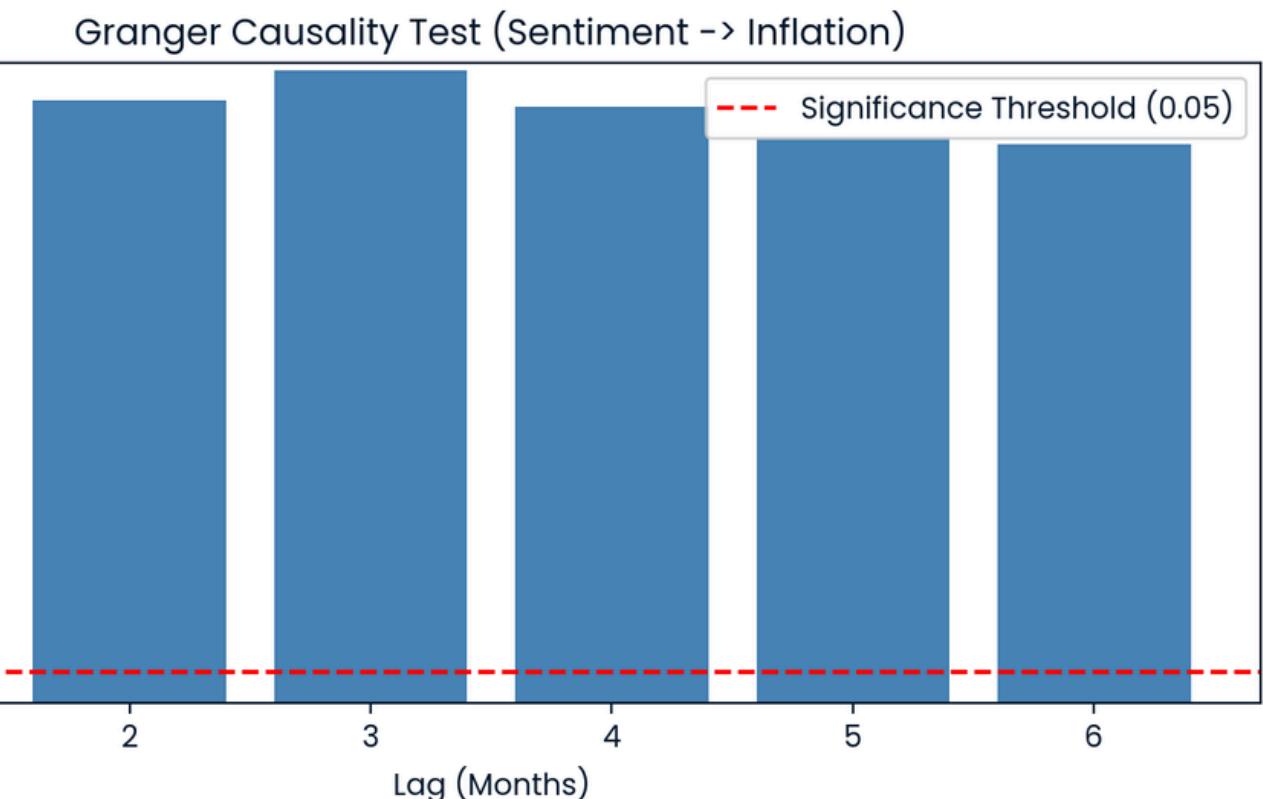
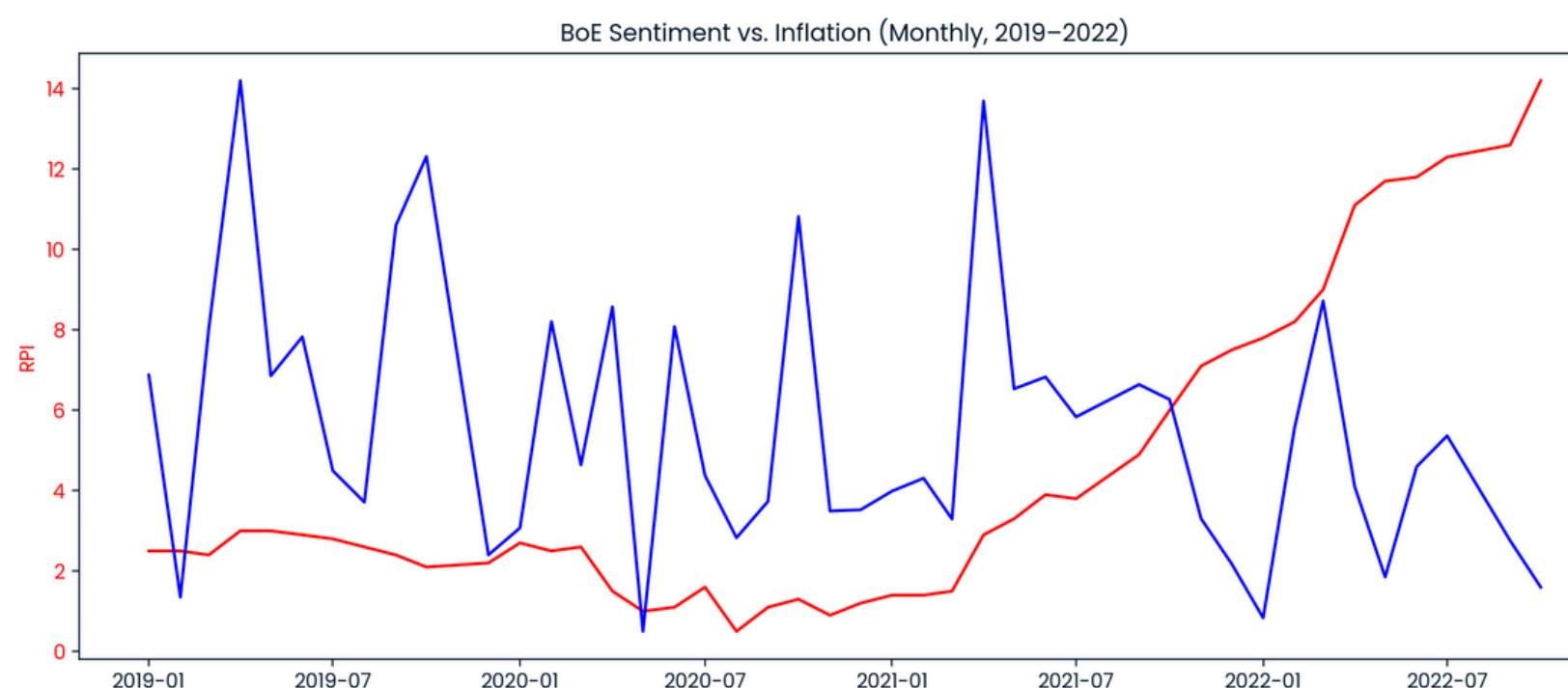
Neutral Sentiment persists for speeches focused on Growth and Inflation



- Most scores cluster around neutral to slightly negative → reflects cautious tone
- Few highly positive or negative speeches → consistent with the BoE's measured communication style
- Highlights the BoE's tendency to emphasise risks and stability during uncertain periods



No consistent relationship between BoE Sentiment and Inflation



- Shows monthly Bank of England sentiment (blue) and RPI inflation (red)
- Inflation rises sharply in 2021–2022, while sentiment remains volatile and inconsistent
- Visual indication: sentiment is reactive, not predictive

- Tests if past sentiment can statistically predict inflation
- All lags (1–6 months) have p-values > 0.85
- Well above the red significance threshold (0.05)
- Confirms no statistical evidence that BoE sentiment Granger-causes inflation



Key Conclusions:

1. **FinBERT** is the **most suitable model** for capturing financial sentiment, as it is **more centered** and less extreme than other models.
2. BoE **speeches** maintain a **neutral tone** overall, with only minor shifts even around major events.
3. **External events** such as COVID-19 and the Russia–Ukraine war cause **brief sentiment dips**, but **scheduled BoE actions** have **limited** influence on tone.
4. Governor and staff speeches show **tone divergence**, with governor sentiment being more volatile, expressive and correlated to markets such as UK Gilts and GBP-EUR
5. **Growth** sentiment consistently **aligns** with speech tone, while **inflation** sentiment remains **weakly connected**.



Analytical Recommendations

Recommendations	Priority
<ul style="list-style-type: none">Integrate sentiment tracking into internal dashboards<ul style="list-style-type: none">Use FinBERT scores to monitor speech tone over time, flagging shifts or deviations	Top
<ul style="list-style-type: none">Contextualise sentiment by speaker role and topic<ul style="list-style-type: none">Build tone profiles by speaker and theme to detect outliers or changes in strategic emphasis.Assess communication consistency by stress-testing sentiment remains aligned across formats	Medium
<ul style="list-style-type: none">Apply sentiment findings to scenario-based communication planning<ul style="list-style-type: none">Use past tone patterns to guide communications in future shocks (e.g. another crisis or rate hike cycle).	Low



Next Steps

Perform FinBert sentiment analysis on **financial stability** and **monetary policy report** and evaluate how they are correlated to speech sentiment.

Include **other economic indicators** such as GBP/CNY and balance of trade with US, Europe and China

Expand on machine learning topic modelling:
via **latent Dirichlet allocation technique** to identify further topics in BoE messaging
by **refining topic keyword sets** to label speeches more accurately by theme

Apply analysis across **historical time periods** e.g. 2007–2010, 1999–2003

Explore **staff speech tone by seniority**/function to assess whether measurable tone differences exist within BoE beyond the Governor–Staff split.

Thank You

We welcome any questions
or feedback

Appendix



Topic Related Keywords

Inflation

Inflation,
CPI,
Price Stability,
Interest Rates,
Monetary Policy,
Wage Growth,
Cost of Living,
Price Pressure,
Price Increases,
Consumer Price Index,
Monetary Tightening,
Monetary Easing,
Sticky Prices,
Inflationary Pressure,
Deflation

Economic Growth

GDP,
FTSE,
Output,
Productivity,
Investment,
Unemployed,
Recession,
Economic,
Recovery,
Growth,
Demand,
Supply,
Expansion,
Consumption,
Deflation,
Slowdown,
Headwinds,
Spending,
Consumer Confidence

Labour Market

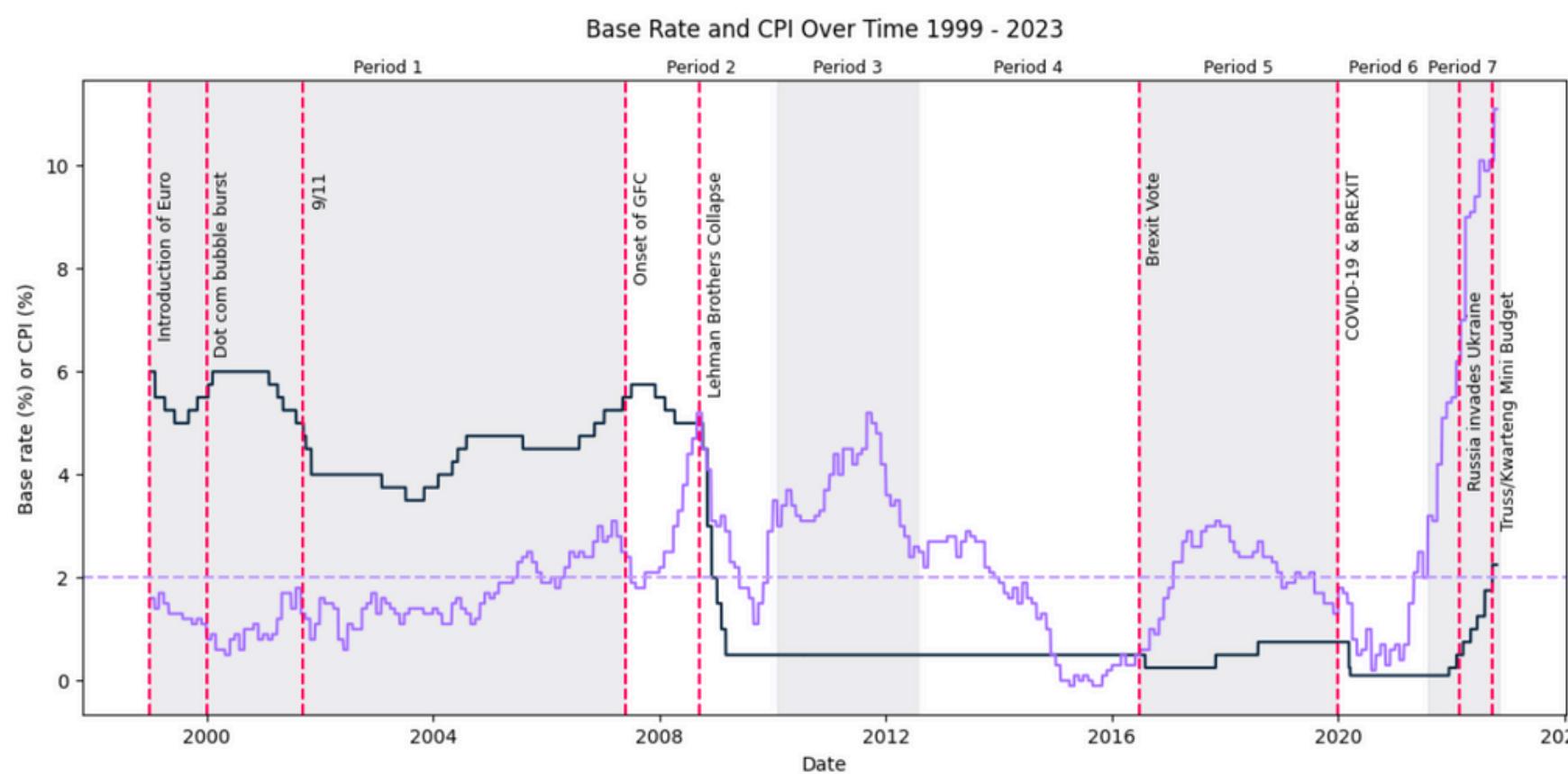
Employment,
Unemployment,
Wage Growth,
Labour Force,
Job Creation,
Workforce Participation,
Hiring,
Vacancies,
Layoffs,
Tightening Labour Market,
Labour Productivity,
Furlough,
Expanding Labour Market

Financial Markets

Stock Markets,
Equities,
FTSE,
Yields,
Guilts,
FX,
Foreign Exchange,
Investor Sentiment,
Exchange Rate,
Liquidity,
Market Crash,
Boom,
Volatility,
Yield Curve,
Risk,
Capital Markets,
Credit Spreads,
Bond Market



Mapping Inflation, Rates & Key Events

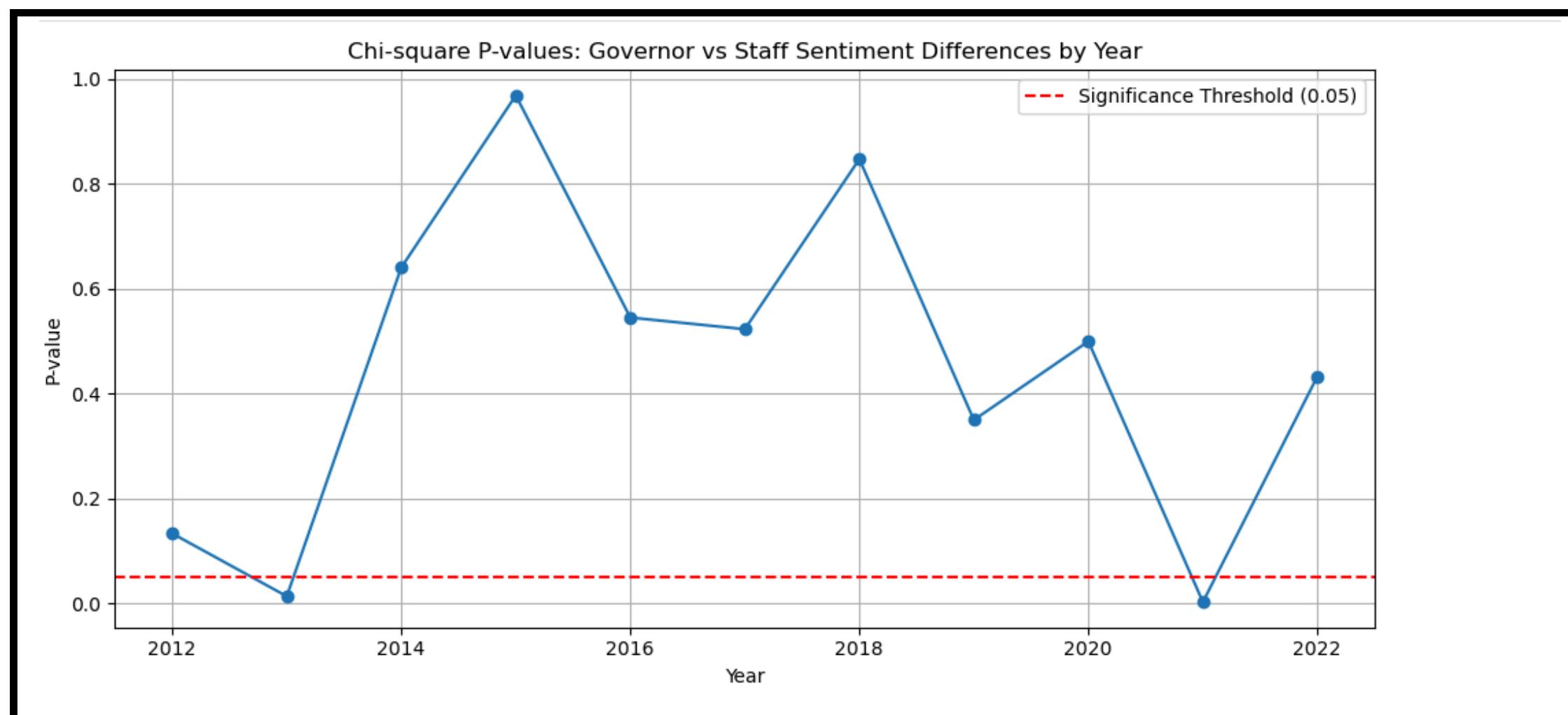


- Graph shows BoE base rate and CPI inflation from 1999–2023
- Key events (e.g. GFC, Brexit, COVID) marked with red lines
- CPI target = 2%, shown as dashed purple line
- Base rate reacts to crises, often falling sharply after shocks
- Inflation deviates during crises, especially post-2021 surge
- Timeline split into 7 periods for detailed analysis of sentiment and policy shifts
- Provides context for interpreting BoE speech tone over time



Governor vs Staff Sentiment Differences by Year

Is there a meaningful difference in sentiment between speeches made by Governors and Staff, as measured by Chi-square test?

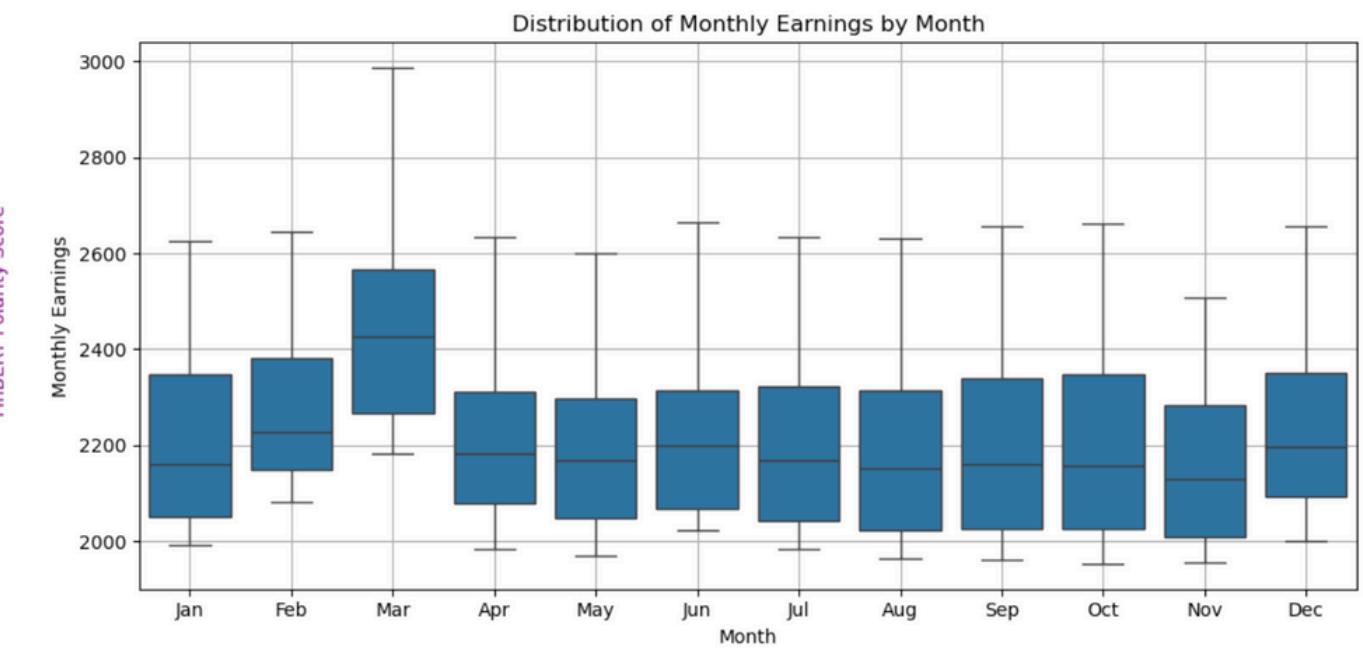
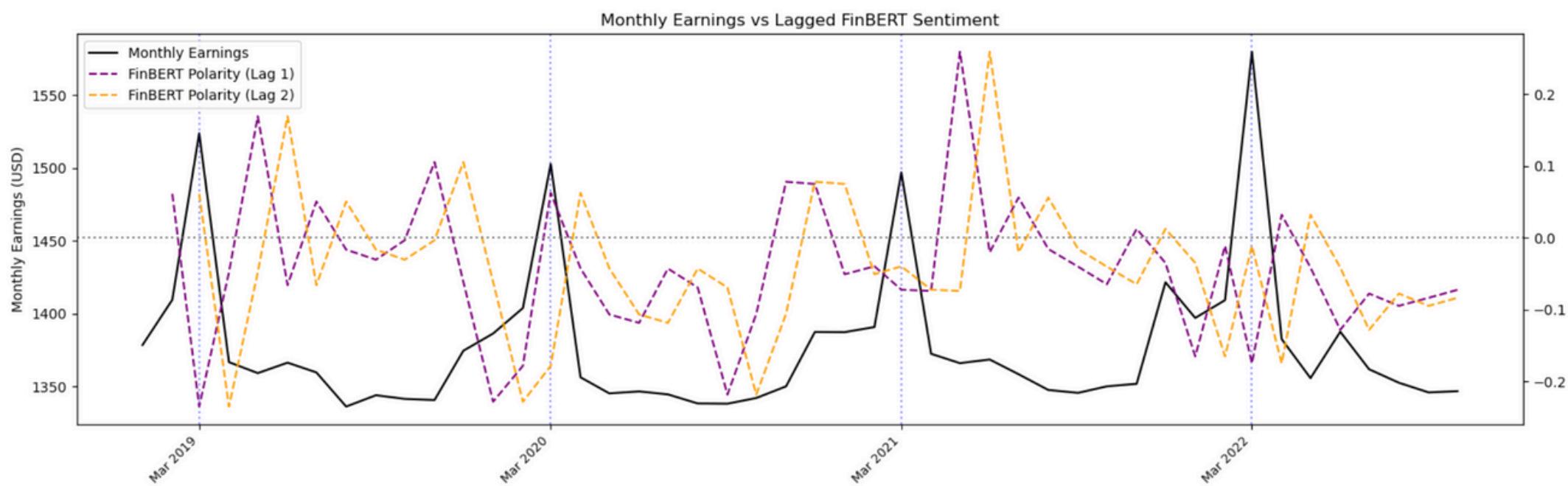


Years with significant sentiment difference between roles:
2013 with p-value 0.014157, 2021 with p-value 0.003220 & 2019 just above significance threshold



Seasonality dominates short-term wage shifts

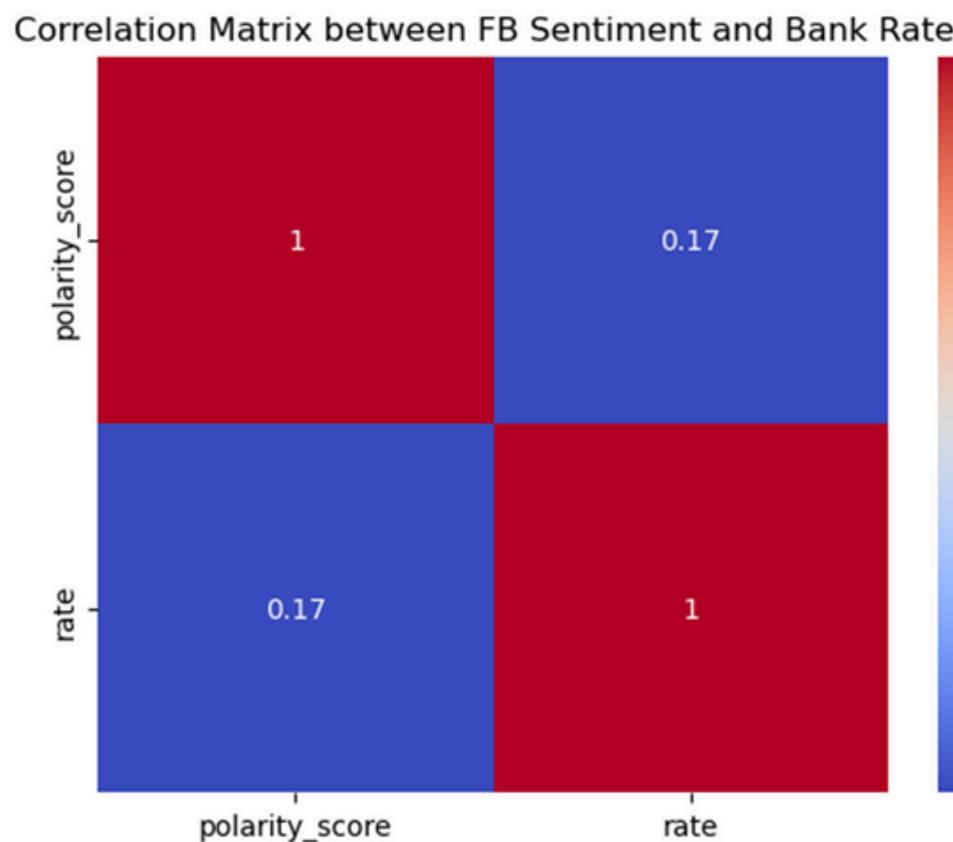
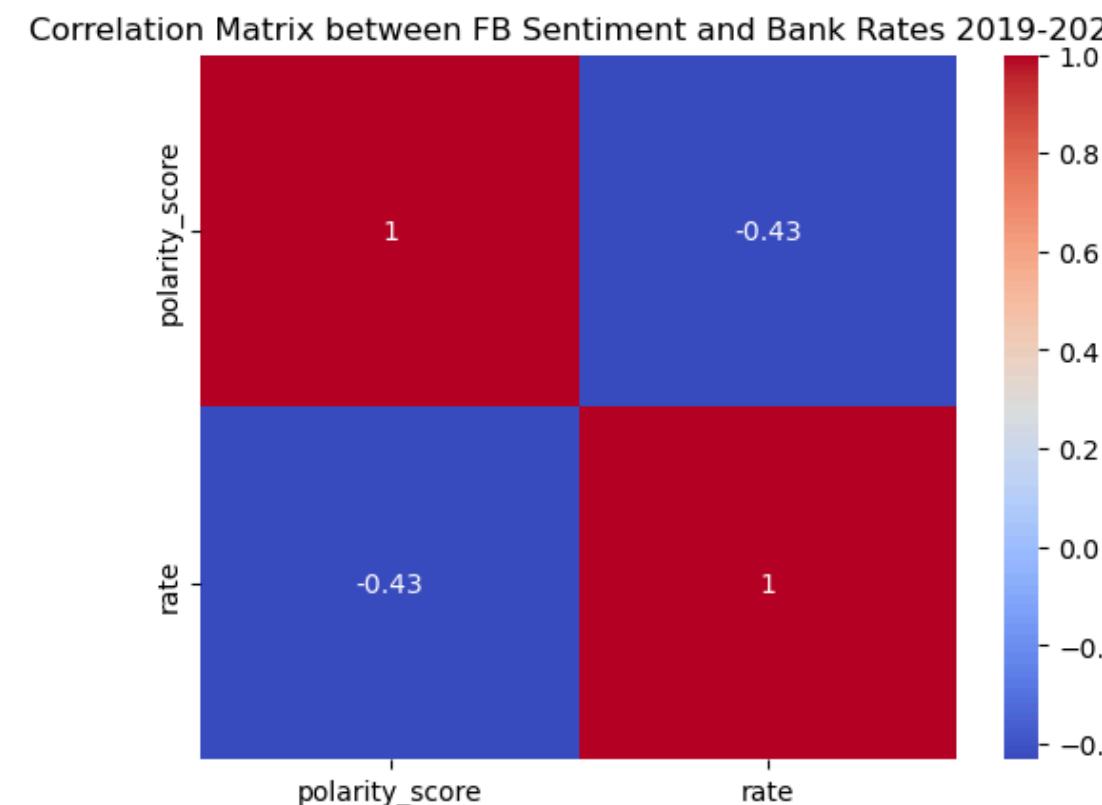
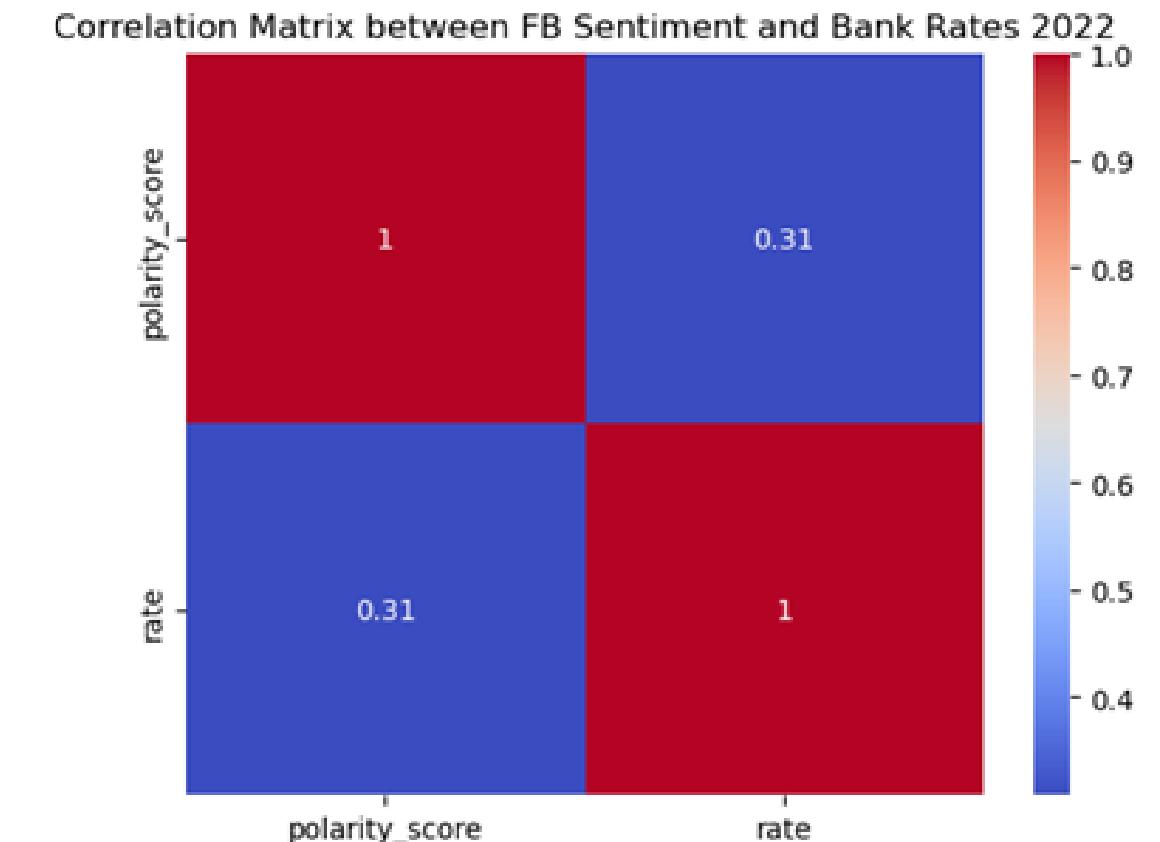
Real earnings show strong seasonality, with consistent spikes in March across years – suggesting short-term wage changes may reflect timing effects more than sentiment or macro events.



Spike in Monthly Earnings happens in March each time



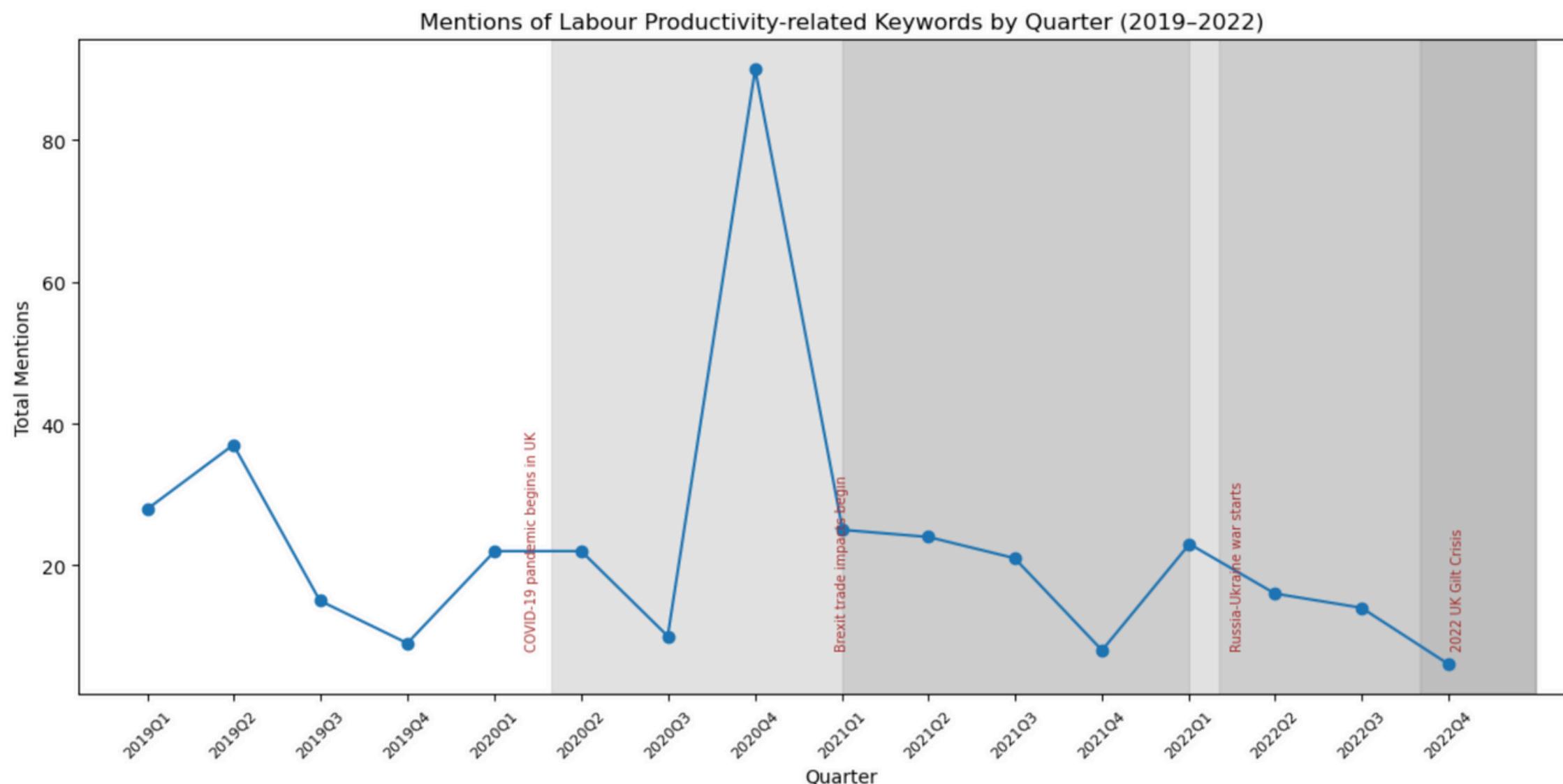
Inconsistent correlations between Central Bank Sentiment and Bank Rate changes

2012–2022**2019–2021****2022**

- Between 2012 and 2022 a **17% correlation** existed between Bank Rate variation and sentiment scores derived from a FINBERT model
- This relationship fluctuates on a yearly basis: in **2019** we see a **negative 43%** correlation, in **2020** correlation is **close to 0** and in **2022** we a **positive 31%** correlation



Spike in productivity mentions reflects structural concerns post-COVID

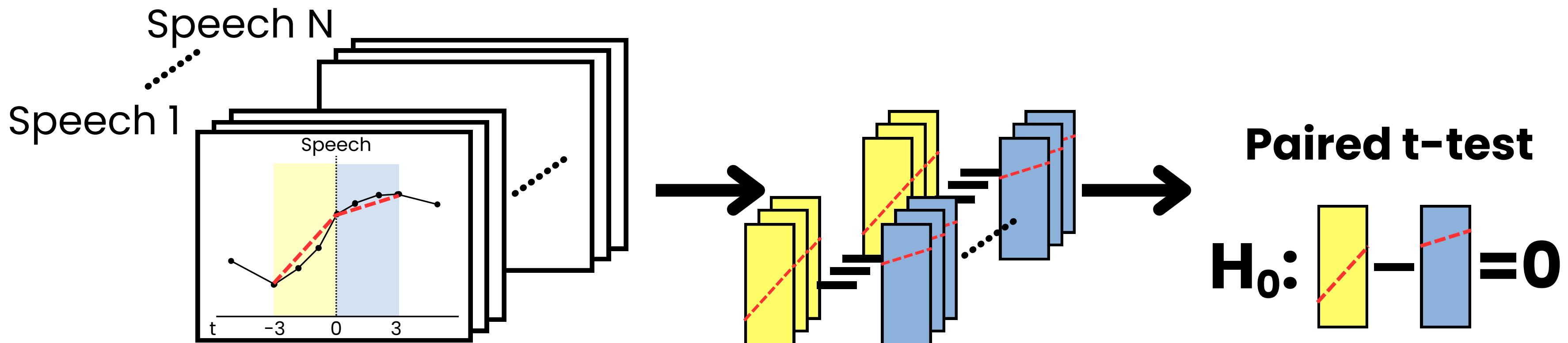


Spike driven mainly by one Haldane speech with 50+ mentions.

Productivity mentions peaked in 2020 Q4, reflecting the Bank's focus on remote work and structural labour changes post-COVID.



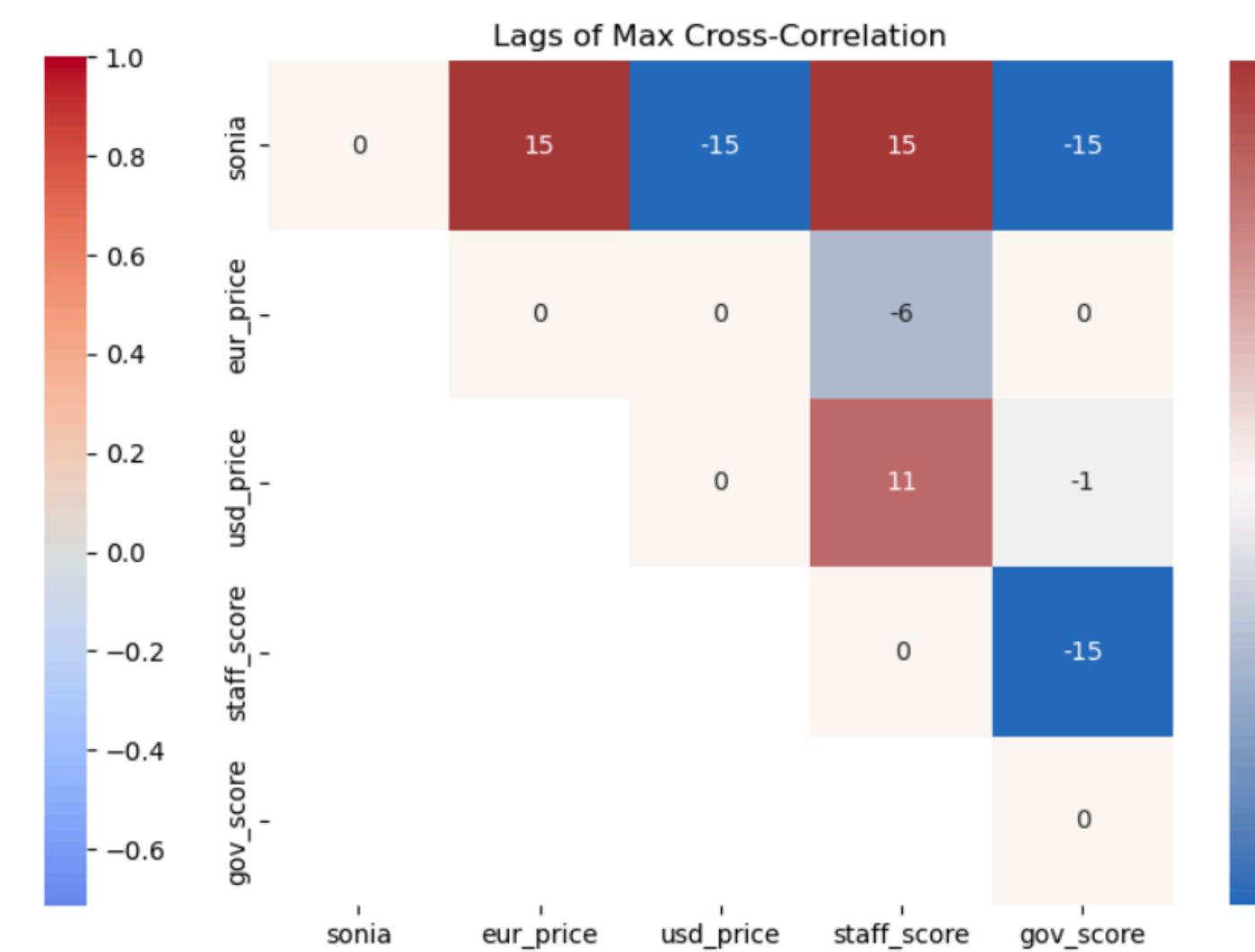
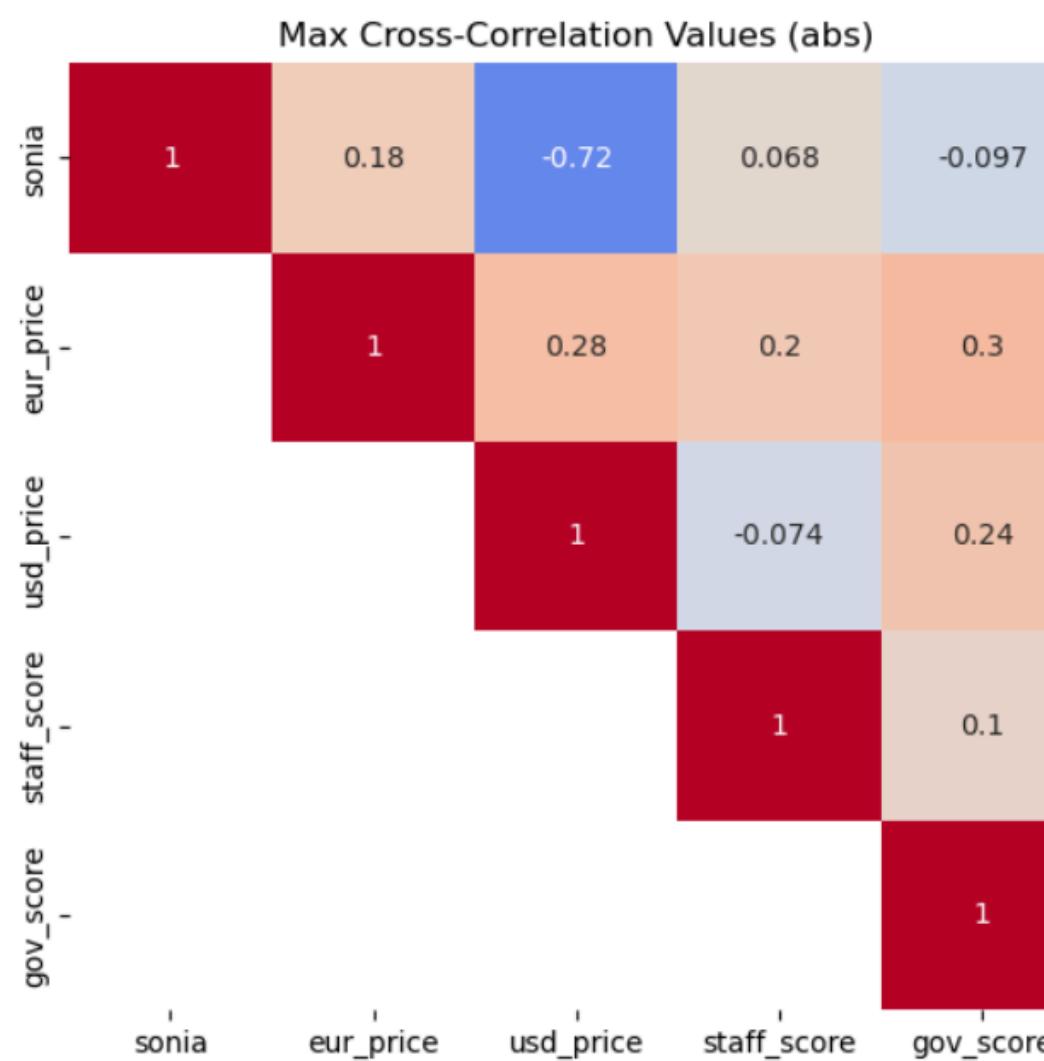
Event Related Analysis Diagram





Low Correlation between Staff Speeches and Indicators

Financial Markets



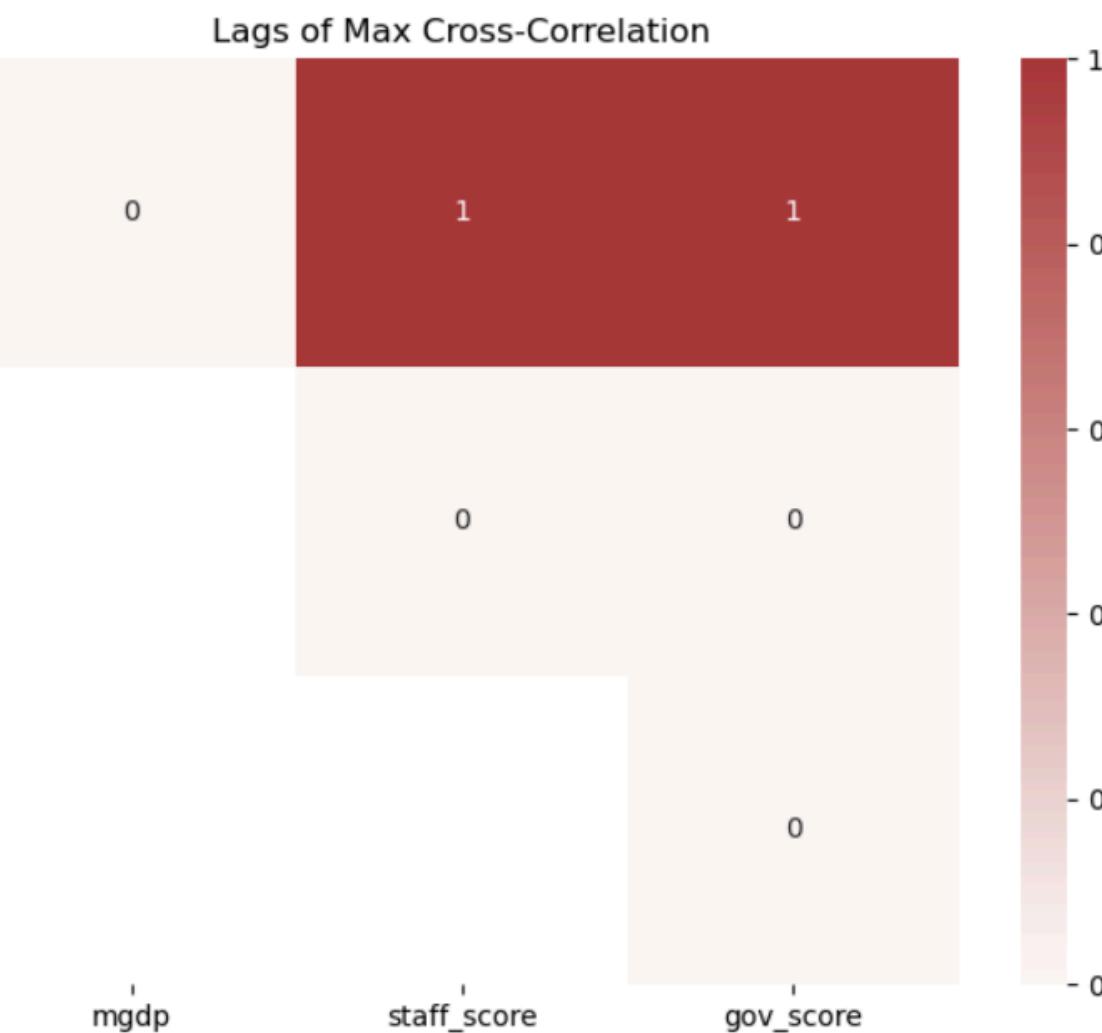
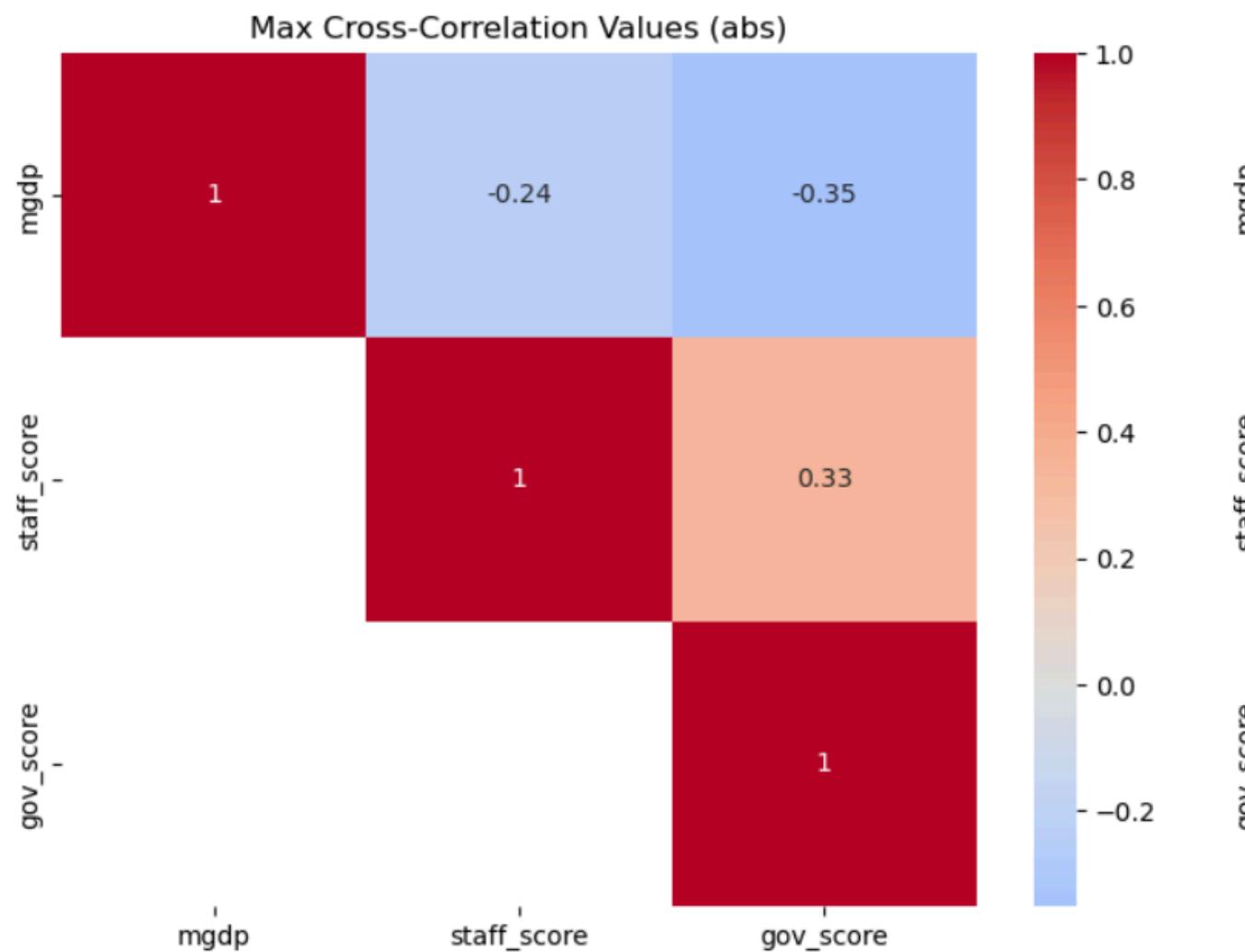
- Max lag = 15 (days)

- Low correlation between indicators and speeches in general
- Greater correlation found in Governor polarity scores compared to staff scores



Low Correlation between Speeches and GDP

Economic Growth



- Max lag = 6 (months)

- Low correlation between indicators and speeches in general
- Highest correlation = 0.2 between GBP-EUR and staff polarity score
- Highest correlation = 0.3 between GBP-EUR and govenor polarity score



Event-Driven Impact on BoE Speech Tone? Mostly Minimal

Event Correlation with Sentiment

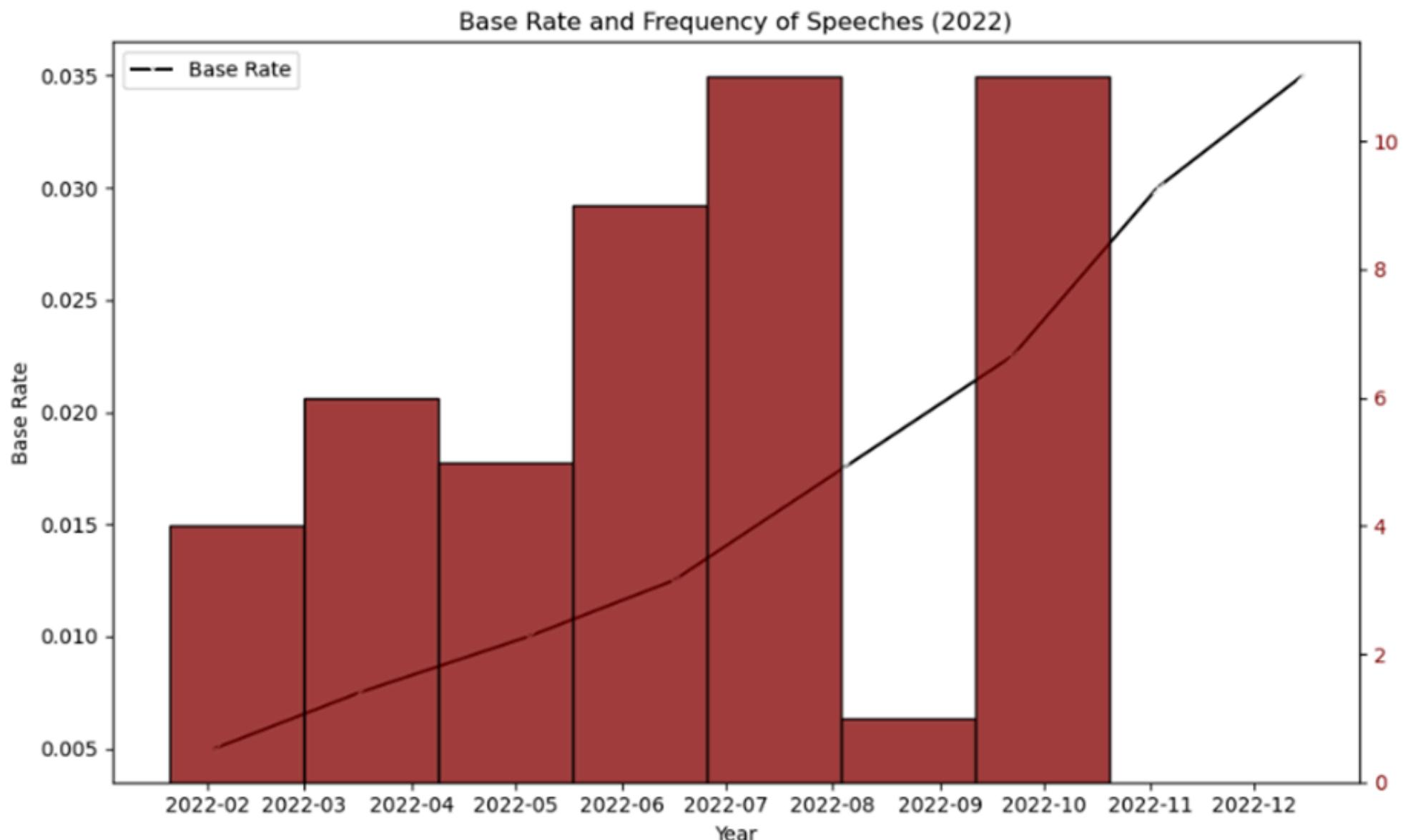
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	bank_rate_decision	MPR	FSR
overall	-0.00	-0.02	-0.05
inflation	-0.07	-0.07	-0.12
growth	0.03	0.02	-0.04
labour	0.04	0.06	-0.06
financial_markets	0.00	-0.02	-0.22

Despite significant events and policy actions, BoE speech sentiment remains largely steady. This reflects **a strategy of message consistency and expectation anchoring rather than reactive commentary.**



Frequency of Speeches increased during period of significant rate hikes



- In 2022; a period of high inflation saw significant bank rate rises; accompanied by increases in the frequency of speeches.
- Increased frequency is likely due to a persistently high period of inflation requiring increased communication from the Bank on their monetary policy



Analytical Recommendations

Recommendations:

1. Integrate sentiment tracking into internal dashboards
 - a. Use FinBERT sentiment scores to monitor speech tone over time, flagging sharp shifts or deviations from neutral as potential signals.
2. Contextualise sentiment by speaker role and topic
 - a. Build profiles of typical tone by Governor vs Staff and by theme (e.g. growth, labour). Use this to detect outliers or changes in strategic emphasis.
3. Use sentiment analysis to stress-test communication consistency
 - a. During major events, evaluate if BoE messaging remains aligned across formats – speeches, reports, and public statements.
4. Account for timing-based distortions in economic indicators
 - a. Adjust for known seasonal effects (e.g. March wage spikes) when interpreting sentiment vs macro data relationships.
5. Apply sentiment findings to scenario-based communication planning
 - a. Use past tone patterns to guide how the BoE might communicate in future shocks (e.g. another crisis or rate hike cycle).



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<ul style="list-style-type: none">Apply sentiment findings to scenario-based communication planning<ul style="list-style-type: none">Use past tone patterns to guide communications in future shocks (e.g. another crisis or rate hike cycle).	Low