WORKING PAPER SERIES

FOMC In Silico: A Multi-Agent System for Monetary Policy Decision Modeling

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This is a preliminary draft. The authors welcome all comments and suggestions.

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August 31, 2025

Abstract

We develop a multi-agent framework for modeling the Federal Open Market Committee (FOMC) decision making process. The framework combines two approaches: an LLM-based simulation and a Monte Carlo implementation of a generalized Bayesian voting model. Both begin from identical prior beliefs about the appropriate interest rate for each committee member, formed using real-time data and member profiles. In a simulation replicating the July 2025 FOMC meeting, both tracks deliver rates near the 4.25–4.50% range's upper end (4.42% LLM, 4.38% MC). Political pressure scenario increases dissent and dispersion: the LLM track averages 4.38% and shows dissent in 88% of meetings; the MC track averages 4.39% and shows dissent in 61% of meetings. A negative jobs revision scenario moves outcomes lower: LLM at 4.30% (dissent in 74% of meeting), and MC at 4.32% (dissent in 62% of meeting), with final decisions remaining inside the 4.25-4.50% range. The framework isolates small, scenario-dependent wedges between behavioral and rational baselines, offering an *in silico* environment for counterfactual evaluation in monetary policy.

Keywords: Generative AI; Multi-Agent Systems; Large Language Models, Federal Open Market Committee; Monetary Policy; Simulations
JEL Codes: E52, E58, C63, D83, C73

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1 Introduction

"Between the idea and the reality . . .

falls the shadow."

T. S. Eliot, "The Hollow Men,"

Monetary policy deliberations and the actual rate decision are separated by a "shadow" of persuasion and norms. Decisions by the Federal Open Market Committee (FOMC) reflect more than macroeconomic data and formal models; they also depend on members' experience, behavioral biases, and implicit rules (e.g., Hughes and Fehrler, 2015; Haldane, 2018; Maih et al., 2021). Consequently, *who* participates in the deliberation and *how* information is communicated can influence policy outcomes beyond the underlying economic data.

Precisely because of these behavioral forces, traditional models of committee decision making, though useful and mathematically elegant, often miss the complexities of real world interactions. Behavioral economics highlights how biases, well documented by Tversky and Kahneman (1974) and shown to affect monetary policy (Haldane, 2018), can systematically shape decisions. Information design matters too: Bayesian persuasion demonstrates how agenda setters steer beliefs (Kamenica and Gentzkow, 2011). Separately, robust control preferences reveal how officials facing model uncertainty skew choices toward caution (Hansen and Sargent, 2008). Within the FOMC, policy outcomes depend on the committee's composition, from regional voting rotation (e.g., Fos and Xu, 2025) to individual members' policy leanings (e.g., Hack et al., 2023).

To better capture such frictions, researchers increasingly use computational approaches, such as agent-based models (Dwarakanath et al., 2024) and reinforcement learning (Hinterlang and Tänzer, 2021). Large language models (LLMs) further extend the frontier by enabling agents with coherent communication and emergent behavior. LLM-based generative agents simulate realistic social interactions (Park et al., 2022) and market dynamics (Zhang et al., 2024), opening new possibilities for policy experimentation (Argyle et al., 2022; Horton, 2023).

However, no existing approach lets us observe rational and behavioral decision

rules on the same information set. We address this gap with a dual track simulation framework that integrates an LLM-driven simulation of the FOMC meeting with a game theory voting model. In the rational (game theory) track, policymakers observe macro data, update beliefs via Bayesian inference, and vote to an equilibrium. In the behavioral (LLM) track, the agents get the same data, reason in natural language, engage in committee debate, and generate outcomes shaped not only by the data but also by persona heterogeneity and institutional norms that formal models struggle to capture. Recent studies show that LLM-based agents can reproduce various aspects of market dynamics (e.g., Kazinnik, 2023; Manning et al., 2024; Lopez-Lira, 2025); we apply the same logic to monetary policy. We generalize the Riboni and Ruge-Murcia (2010) framework to admit heterogeneous preferences, strategic information disclosure, and a political pressure channel. Deviations between the LLM equilibrium and the analytic benchmark then isolate the behavioral frictions that standard models omit.

Specifically, we construct and run two types of simulations: a set of LLM-driven deliberations and a parallel Monte Carlo (MC) analysis. Both start from the same LLM-generated set of heterogeneous private opinions, reflecting FOMC members' profiles and the current economic state. The MC simulation serves as a statistical baseline, modeling thousands of voting scenarios under theoretical framework described in Riboni and Ruge-Murcia (2010). The LLM simulation, by contrast, introduces deliberation, persuasion, and strategic interaction, capturing human-like dynamics. Comparing the two allows us to isolate and measure the impact of deliberation by identifying where LLM-driven outcomes diverge from the statistical baseline.

Within the framework, we start by automatically ingesting real-time macroeconomic data, Governor speeches, district-level reports, and financial news. We then build detailed profiles for each committee member, combining their historical policy stances, biographies, recent speeches, district conditions, and the current macroeconomic context.[1] Each agent draws on this information to generate an initial

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[1]The framework supports introducing new committee members, alternative economic conditions, and other counterfactual scenarios.

rate recommendation, comprising a preferred policy rate, a confidence score, and a short explanation, capturing the agent's initial belief.

With these agent profiles and initial beliefs in place, we launch the simulation to model the decision-making process under two approaches. The LLM simulation begins with several optional rounds of informal coordination to align member views.[2] The simulation then enters a deliberation stage, where a discussion engine records arguments and updates members' initial beliefs, and concludes with a structured voting phase in which members submit final rate preferences for automatic aggregation and comparison. Outputs include posterior beliefs, vote patterns with dissent diagnostics, and full deliberation logs. The MC framework uses the same priors and economic parameters but removes conversational and behavioral dynamics, running thousands of rule-based voting scenarios to generate a statistical baseline. We benchmark the LLM results against MC ones.

To showcase the framework, we simulate two scenarios. The first one introduces the effects of a politically charged environment on the committee. This treatment contains two distinct but related elements, designed to model both the direct pressure on the current Chair and the indirect, forward-looking behavior of the other committee members. The first component targets the Chair directly: we apply a dovish bias in the Chair's agenda proposal. Simultaneously, the Chair's institutional authority is diminished by removing the extra voting weight their ballot typically carries. The second component of the treatment models the strategic, forward looking behavior of the other committee members who anticipate an imminent regime change. Anticipating a more dovishly inclined successor[3], members face asymmetric career incentives, so dissent costs are direction-dependent: hawkish votes carry a higher penalty, while dovish votes are cheaper, signaling alignment with the expected regime.[4]

The second scenario examines the consequences of a sudden negative labor market data revision. This treatment feeds into the simulation as a downward adjustment

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[2]The Monte Carlo (MC) implements the same optional mechanism.

[3]Needs explanation or is clear

[4]In the current FOMC roster, the potential candidates are Waller (90%) and Bowman (10%), reflecting speculative assessments under a dovish administration based on background, policy views, and feasibility.

to the perceived strength of payroll growth, paired with an increase in the assessed uncertainty of employment sensitive members. By modeling this as a real-time information shock, we capture how the timing and nature of data updates can meaningfully reshape deliberation and decision making. In our framework, *when* members receive new information plays a critical role in shaping the path of discussion, belief updating, and ultimately, the policy vote.

Our findings are as follows. In the baseline LLM scenario, simulating economic conditions as of late July 2025 (when the target FFR stood at 4.25%–4.50%, and effective FFR stood at 4.33%), the committee starts off with a moderately hawkish tilt, with individual rate preferences spanning 4.20% (for simulated Christopher Waller, or *sim*Waller) to 4.62% (for simulated Alberto Musalem, or *sim*Musalem) and clustering at the upper end of the range.[5] The average initial recommendation across members is at 4.375%, with a belief spread of just over 55 basis points. As deliberations unfold, hawks emphasize the persistence of above-target inflation.[6] The committee converges unanimously on a final rate of 4.42%, implying an upward drift of roughly 5 basis points in the midpoint federal funds rate (4.375%) without changing the 4.25%–4.50% range. Parallel Monte Carlo simulations, which remove conversational dynamics, also converge near the existing range but yield a slightly lower mean of 4.376%. Outcomes cluster tightly and no dissents occur. Debate thus introduces a modest hawkish bias of around 5 basis points, relative to rule-based voting.

Next, political pressure scenario (mirroring public attacks by the POTUS on Chair Powell) reduces the Chair's agenda weight, applies a dovish bias to his proposal, and imposes career-driven dovish shifts for members with high appointment probabilities (*sim*Waller, and, to lesser extent *sim*Bowman). Member views polarize: *sim*Waller's

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[5]The range midpoint is 4.375%; 7 of 12 members are above it and the mean (4.39%) is slightly higher.

[6]For example, in one simulation, *sim*Waller warns that '..`if we allow inflation to spiral further, it may lead to more significant economic instability`," while simulated *sim*Schmid stresses that "`allowing inflation to persist unchecked can have long-term detrimental effects on both employment and economic growth`," particularly if expectations become "`unanchored`." By the final discussion round, the effect of these arguments is visible: *sim*Powell shifts position, noting that "`the current inflation data cannot be overlooked`" and proposing a move to 4.50%. See Section 3.2 for background on belief formation and debate mechanics.

preferred rate drops to an average of 3.97%, and he dissents in 88% of simulations. Meanwhile, *sim*Musalem, *sim*Schmid, and *sim*Collins anchor their rates above 4.50%, pulling in the opposite direction. The final LLM-derived policy rate averages 4.375%. The MC benchmark under the same political pressure shows similar movement: the average final rate is 4.386%, but with nearly double the dispersion compared to the baseline. While the modal outcome remains at the upper bound (4.50%), the left tail becomes thicker: 33% of simulations end at 4.25%, and 5% drop to 4.00%. Dissent also becomes more common, occurring in 61% of meetings, with *sim*Waller almost always the culprit. Across both tracks, political pressure nudges the committee's center of gravity downward and erodes consensus, but without changing the standing rate range. These outcomes align with historical evidence suggesting that perceived threats to central bank independence often reshape expectations more than they alter the actual policy path (e.g., Bianchi et al., 2023).

Building on this, we introduce a second treatment: a negative labor market data revision, modeled after the August 1, 2025 Bureau of Labor Statistics (BLS) release. This scenario is layered on top of the political pressure context, allowing us to explore how the shocks compound.[7] The data revision enters as a real-time adjustment that lowers perceived payroll strength and raises uncertainty, especially for employment sensitive members. In the LLM track, this added shock produces a further drift downward, albeit small. The average final FFR falls to 4.30%, remaining within the 4.25%–4.50% range. Dissent, again driven entirely by *sim*Waller, rises to 73% of simulations. Relative to the baseline, this reflects a 12 basis point easing, consistent with a softer labor outlook, rather than a major policy regime shift. The MC track shows a similar downward nudge, with the mean final rate at 4.315% and a standard deviation of 15 basis points. The median remains at 4.25%, but dissent increases modestly, averaging 0.62 dissenters per meeting. Taken together, the layering of data uncertainty on top of political pressure illustrates how these shocks compound, and showcase how they can amplify disagreement, even within a constrained policy band.

Our work contributes to the intersection of monetary policy committee theory, behavioral economics, and computational simulation. Building on classic committee

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[7]Results for a stand-alone data revision shock is in the Online Appendix.

models (e.g., Gerlach-Kristen, 2006; Riboni and Ruge-Murcia, 2010), we endogenize persuasion and career incentives by linking them to each member's information set. In standard models, influence is imposed exogenously by a chair or agenda setter; here, influence attempts and their costs arise organically during debate. Unlike Bayesian persuasion models (e.g., Kamenica and Gentzkow, 2011), which feature one-to-many communication from a single informed sender, our environment allows many-to-many strategic exchanges, reflecting the interactive flow of arguments in actual FOMC meetings. Embedding reputation driven career concerns (Holmström, 1999) captures how members may adjust their positions to align with current or anticipated leaders. This creates a novel channel for political pressure on the Chair to spread: members reposition in anticipation of a leadership change, shifting the committee's stance before the change occurs. In sum, our model endogenizes both persuasion and career incentives, extending committee theory toward a more realistic representation of decision making.

Second, we link the rational choice committee model to behavioral research on cognitive biases, transparency, and communication in policy decisions. Prior work shows that policymakers' personal experiences can systematically shape their hawkish or dovish leanings: FOMC members who have lived through high inflation forecast higher inflation and favor tighter policy, whereas those with benign inflation histories lean dovish (Malmendier and Nagel, 2016). We embed this experience-based heterogeneity into our agent profiles, recognizing that members carry distinct biases and personal histories into deliberations. By integrating these behavioral factors into a formal voting model, we examine how cognitive biases and institutional features interact to shape policy outcomes.

Third, our work bridges two rapidly growing strands of computational economics: agent-based modeling with reinforcement learning for policy design (e.g., Peters et al., 2022; Cook and Palmer, 2025), and the use of large language model (LLM) agents to replicate realistic human interaction patterns (e.g., Manning et al., 2024). Recent studies have begun applying these methods to central banking; for instance, Seok et al. (2025) simulate deliberative exchanges among LLM agents in stylized monetary policy settings. Our framework differs in scope and design: we create

a dual-track environment where deliberative and rational voting behaviors run in parallel, grounded in real-time macroeconomic data and detailed FOMC member profiles.

More broadly, this simulation framework provides a controlled environment to stress test various scenarios. We can experiment *in silico* (Horton, 2023) with factors like disclosure rules, dissent penalties, or coalition dynamics to see how they affect decision making under various scenarios. By enabling counterfactual experimentation in a realistic setting, this framework lets policymakers and researchers explore various "*what if*" scenarios and observe the possible impacts on committee behavior and policy.

The remainder of the paper proceeds as follows. We review the FOMC meeting process in Section 2. We then outline our framework in Section 3, including the data collection, construction of agent personas, the multi-stage simulation design, as well as the voting process; Section 3.2 describes the game theory implementation and Section 3.3 describes the Monte Carlo simulation framework. Section 4 explores our counterfactual scenario and describes the results. Section 5 concludes with some policy implications.

2 Modeling FOMC Meetings: Background

> "*The debate on monetary policy is going on 365 days a year for 24 hours a day, all around the world. The meetings are definitely important, but they're a snapshot of the ongoing debate.*"
>
> — Former FOMC member James Bullard, in an interview[8]

FOMC meetings are highly structured deliberations that anchor U.S. monetary policy. However, as James Bullard, former president of the Federal Reserve Bank of St. Louis, suggests, they represent only a moment in time within a broader, ongoing policy debate. While the meetings formalize key decisions, the underlying policy dialogue spans months, both within and beyond the Fed.

Each meeting typically follows a fixed agenda: staff economists present updated

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[8]See Hyatt (2024) for the full interview.

forecasts and alternative scenarios; FOMC members then offer prepared statements outlining their interpretations of the data and views on appropriate policy.[9] Following this stage, the Chair opens the floor for discussion, where members respond to others' arguments, and debate policy options. Finally, the committee votes on the policy decision. Dissenting votes are relatively rare and, when they occur, serve mainly to register an alternative viewpoint rather than to overturn the majority consensus (Thornton and Wheelock, 2014).

Our simulation mirrors the FOMC's workflow. The sequence of events, the information available to each participant, and the conversational norms governing discussion are modeled to reflect actual FOMC dynamics. Because monetary policy is an ongoing debate rather than a static decision, our framework can continuously ingest "fresh" economic and market data, dynamically updating the simulation to reflect evolving conditions. Each FOMC participant in our framework is represented by an independent agent (implemented via an LLM) with a distinct profile. In the baseline setup, these agents correspond to the twelve voting members of that year's FOMC. However, the framework can easily extensible to include non-voting participants, other attendees, or hypothetical members. We describe the simulation pipeline next.

3 LLM Simulation Framework

Standard models of committee voting assume members hold rational expectations, update beliefs via Bayes' rule, and vote to minimize well-defined loss functions. These assumptions yield testable predictions about voting patterns, dissent, and policy outcomes. Empirically, however, FOMC behavior diverges sharply from those forecasts. Between 1978 and 2023 fewer than 6% of all recorded ballots were dissents (Thornton and Wheelock, 2014), and from 2005 to 2022 not a single Board Governor dissented (Bobrov et al., 2025). Archival transcripts and insider accounts show that members undergo extensive staff briefings and private discussions in the week before each meeting, typically converging on the Chair's proposal well in advance

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[9] Both the Tealbook reports and participants' prepared statements are made public with a five-year lag; the Philadelphia Fed hosts the historical files.

of the public vote (Bernanke, 2022). Dissent costs are also role-specific: Reserve Bank presidents, who face weaker career constraints, cast the vast majority of dissents, whereas D.C.-based Governors almost always vote with the Chair (Chappell and McGregor, 2013). Added to this are external pressures: political jaw-boning measurably impacts interest rate futures (Bianchi et al., 2023), while heightened transparency can induce conformity (Hughes and Fehrler, 2015). In short, pre-meeting coordination, consensus norms, career incentives, and political or market pressures all interact to influence the real-world outcomes away from the predictions of textbook voting models. Capturing these informal frictions is therefore central to any realistic simulation of FOMC decision-making.

LLMs enhance economic modeling in this context by integrating data, institutional rules, personal incentives, and strategic context in ways that mirror how Federal Reserve officials reason. And because LLMs converse naturally, they can explicitly model the information sharing, persuasion, and strategic positioning that turn individual views into collective monetary decisions. We model the FOMC meeting as a multi-agent system of twelve participants, comprising seven Governors and five Reserve Bank presidents. Each agent is an instance of an LLM endowed with a unique persona and a packet of economic data. The simulation pipeline (shown in Figure 1) unfolds in three sequential phases: (1) data input preparation, (2) formation of initial policy stance by each agent, and (3) full committee deliberation process and voting. We describe this pipeline next.[10]

Phase 1: Data Inputs

For each simulated meeting, we construct a reproducible data snapshot that serves as the foundation for all subsequent stages of the simulation. The process begins by gathering and processing the extensive information on current economic conditions, ensuring the simulation is grounded.[11] Specifically, we pull the latest FOMC policy statement (in this case from June 18, 2025), key macroeconomic indicators, and

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[10]The simulation employs OpenAI's GPT family models with differentiated configurations across pipeline stages to optimize for specific tasks. We provide more details in the Online Appendix.

[11]All collected data are stored as structured JSON files, preserving a precise snapshot of the economic environment at a given point in time.
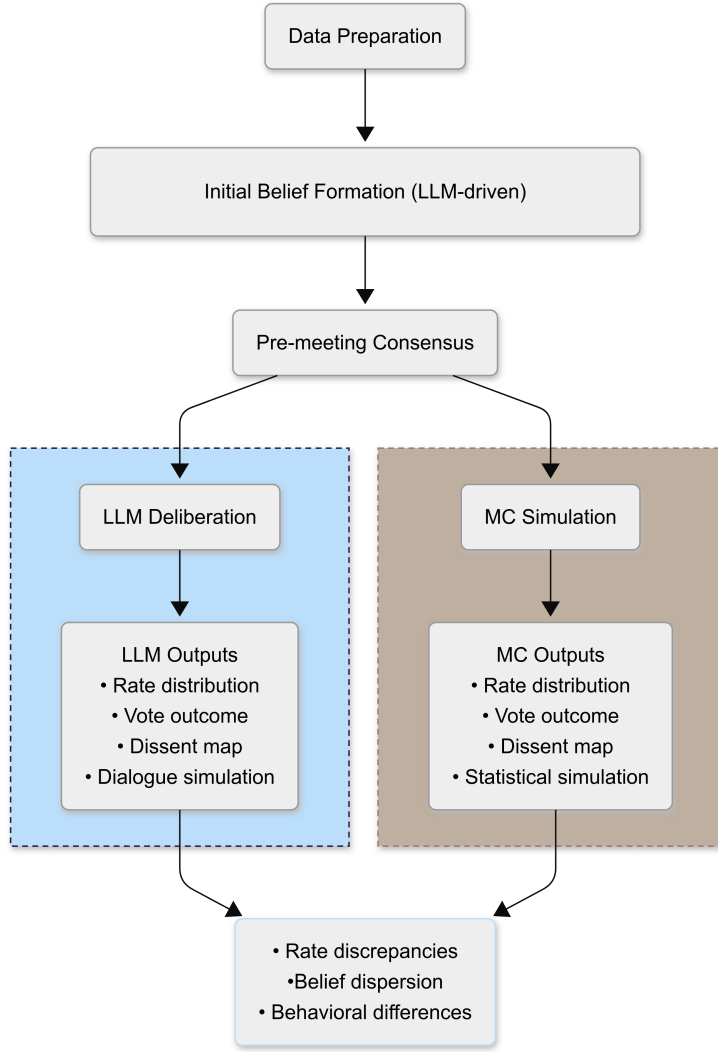
Figure 1: Simulation Framework

Notes. Figure 1 shows the simulation workflow. We start from real-time economic inputs and agent personas, then run two parallel tracks: (i) a behaviorally rich LLM deliberation and (ii) a Monte Carlo (MC) benchmark. The design mirrors the FOMC process and lets us switch on counterfactuals to see how communication frictions and political pressure translate into policy drift.

Phase 1 (Data & Priors): produce member priors (μ_i, σ_i^2).

Phase 2 (Consensus): update toward the committee mean with α_i and compress variance by γ.

Phase 3 (Agenda & Vote): the Chair proposes $r_c = r_{\text{base}} + \Delta$; the final rate is $r_f = w_a r_c + (1 - w_a)\,\text{median}_i(\mu_i^{\text{post}})$; dissent propensity depends on the role-based cost κ_i.

Political pressure (treatment): lower w_a (weaken Chair authority) and apply appointment-weighted shifts to selected members.

Data revision (treatment): incorporate ex-post data updates by re-initializing priors from the revised dataset: $(\mu_i, \sigma_i^2) \leftarrow (\mu_i + \delta_i,\ \rho_i\,\sigma_i^2)$

μ_i	member i's belief (rate)
σ_i^2	uncertainty (variance)
$\alpha_i,\ \gamma$	consensus pull and variance compression (Phase 2)
$r_c,\ \Delta$	agenda rate and Chair bias (Phase 3)
w_a	weight on agenda in r_f (Chair authority)
κ_i	role-based dissent cost

retrieve recent speeches from each Governor. The core indicators summarized in Table 1 are obtained via the FRED and BLS APIs, providing a consistent economic backdrop for the simulation.

Table 1: Key U.S. Economic Indicators – Snapshot as of July 31ˢᵗ, 2025

Indicator	Latest	YoY	Trend	Source
Growth & Output				
Real GDP (2025 Q1)	$23,685.3 bn	2.0 %	↑	FRED
Industrial Production (Index)	104.0	0.7 %	↑	FRED
Retail Sales (monthly)	$720.1 bn	3.9 %	↑	FRED
Housing Starts	1.3 m	−0.5 %	↓	FRED
Inflation & Prices				
CPI (All Items)	321.5	2.7 %	↑	FRED
Core CPI	327.6	2.9 %	↑	FRED
PCE (All Items)	126.6	2.6 %	↑	FRED
Core PCE	125.9	2.8 %	↑	FRED
WTI Crude Oil ($/bbl)	$67.8	−12.7 %	→	FRED
Labor Market				
Unemployment Rate	4.1 %	0.0 pp	↑	BLS
Nonfarm Payrolls	159.7 m	1.2 %	↑	BLS
Labor Force Participation	62.3 %	−0.5 pp	↓	BLS
Average Hourly Earnings	$31.2	3.9 %	↑	BLS
Employment-Population Ratio	59.7 %	−0.5 pp	↓	BLS
Financial Conditions				
Fed Funds Rate	4.3 %	−75.0 bp	→	FRED
10-yr Treasury Yield	4.4 %	16.0 bp	↓	FRED
2-yr Treasury Yield	3.9 %	−18.0 bp	↓	FRED
S&P 500 Index	6,362.9	19.1 %	↑	FRED
U.S. Dollar Index (DXY)	120.4	−2.8 %	↓	FRED
VIX Volatility Index	15.5	−25.3 %	↓	FRED

Notes: YoY shows 12-month percent change unless marked *pp* (percentage points) or *bp* (basis points). ↑, →, ↓ compare the latest month (or quarter) with the prior period: ↑ $\geq +0.1\sigma$, ↓ $\leq -0.1\sigma$, → otherwise, where σ is the series' 5-year s.d. For price indices, red (↑) signals faster inflation, green (↓) slower. Daily financial series use July 31st 2025 closes; monthly and quarterly series use June 2025 and 2025 Q1 observations. All data are from FRED unless otherwise noted.

In addition to the raw data, the simulation generates a synthetic, up to date version of the Federal Reserve's Beige Book. To do so, we combine the most recent official (*actual*) Federal Reserve Beige Book content with real time web intelligence to create a comprehensive, current economic assessment. Drawing on data from government agencies, trade groups, regional media, and research centers, the system covers all

twelve Federal Reserve districts. The primary method for this involves an LLM-powered `GPTResearcher` that acts like a team of specialized economic analysts, with each one focusing on one of the twelve Federal Reserve districts.[12] Each digital analyst constructs targeted queries about their assigned region. These "researchers" work in parallel, gathering real-time economic data on employment trends, business activity, inflation pressures, and sector-specific developments across all fifty states. The system then synthesizes these regional reports into a national economic summary, complete with a structured district comparison table that highlights regional disparities and emerging patterns.

Table 2 compares the most recent official Beige Book (published on July 16th, 2025) with our synthetic version, produced on July 30th, 2025[13]:

Table 2: District Economic Conditions:
Official *Beige Book* vs. Synthetic Version

District	Official	*sim*Current	Consistency	Trend
Boston (1st)	**Modest**	**Moderate**	Consistent	↑
New York (2nd)	**Modest**	**Moderate**	Consistent	↑
Philadelphia (3rd)	**Moderate**	**Mixed**	Shifted	↓
Cleveland (4th)	**Modest**	**Mixed**	Shifted	↓
Richmond (5th)	**Moderate**	**Moderate**	Consistent	→
Atlanta (6th)	**Moderate**	**Slowing**	Shifted	↓
Chicago (7th)	**Mixed**	**Moderate**	Consistent	↑
St. Louis (8th)	**Modest**	**Moderate**	Consistent	↑
Minneapolis (9th)	**Moderate**	**Moderate**	Consistent	→
Kansas City (10th)	**Modest**	**Moderate**	Consistent	↑
Dallas (11th)	**Robust**	**Slowing**	Shifted	↓
San Francisco (12th)	**Moderate**	**Robust**	Consistent	↑

Growth scale: ■ Robust, ■ Moderate, ■ Modest, ■ Mixed, ■ Slowing.
Consistency: Consistent = assessments differ by ≤ 1 step; Shifted = swing of ≥ 2 steps.
Trend arrows: ↑ improving, → stable, ↓ weakening.

The official July 2025 Beige Book still depicts an economy that is growing, but our updated analysis shows that the nature of that growth has shifted. Four districts (Philadelphia, Cleveland, Atlanta, and Dallas) exhibit material softening relative

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[12]Please see Online Appendix for more details.
[13]Full document is available in the Online Appendix.

to the earlier report, with notable shifts from "moderate" or "robust" growth to "mixed" or "slowing" conditions. These changes are often linked to layoffs, weakening manufacturing activity, or cooling consumer demand. In contrast, the remaining eight districts show general consistency with the Fed's prior assessment as of July 16th 2025, though with greater granularity: supply chain frictions, labor shortages in services and construction, and tech-sector adjustments are noted. At the same time, continued strength in sectors like tourism, tech, aerospace, and renewable energy helps anchor activity in several regions.

Next, we build an executive summary of recent economic news by running multiple search queries across relevant economic domains. Each article discovered through this process is scored by an algorithm that evaluates source credibility and economic indicator relevance. The highest scoring articles are then categorized by theme and summarized. The summary highlights overall economic momentum, key risks and opportunities, and direct implications for monetary policy decisions.[14] Finally, we retrieve and summarize recent speeches made by the *actual* FOMC participants, as well as the most recent FOMC announcement.

Phase 2: Individual Policy Formation

Governors

With the informational foundation in place, the simulation proceeds to the formation of private opinions. Each agent is assigned a unique persona based on the real-world characteristics of its corresponding FOMC voting member. Personas are built from biographical details, recent public statements, inferred policy leanings, and district-specific economic context. Each agent receives:

a) a role description and career biography[15];

b) a macro dashboard (Table 1) showing current levels and two lags of first differences;

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[14]Analyses draw on nearly 190 unique articles over a two-week collection window ending July 31, 2025. The highest relevance pieces are clustered around labor market trends (10 articles).

[15]Details provided in the Online Appendix.

c) current macro context, including the latest policy statement, a synthetic Beige Book summary, recent news, and the member's own speeches and interviews.

Agents integrate these qualitative and quantitative inputs with their personas to form an initial private policy view. Each is prompted to issue a rate recommendation and a one-sentence justification, representing the agent's initial belief mean, μ_i^{initial}. This output serves as input to the numeric vote engine, detailed in Section 3.1.

We also include a stance evolution module in persona building, which uses an LLM to classify recent public speeches into hawkish, dovish, or data-dependent stances. These signals are aggregated with a strong recency bias, i.e., recent speeches count most, earlier ones less, producing a posterior stance with calibrated confidence. The system flags any discrete shifts from past views and feeds this evolved stance into persona construction, so rate recommendations and uncertainty can adjust dynamically to members' latest communications.

Chair

A unique aspect of the simulation is the modeling of the FOMC Chair, who carries a dual role. First, the Chair acts as a *deliberating committee member*, i.e., an LLM agent who participates in the discussion with their own dynamically updated beliefs. Second, the Chair serves as the *procedural agenda-setter*, a role governed not by the LLM but by a deterministic rule we set. This separation is a deliberate design choice to transparently model both the Chair's intellectual contribution and their formal institutional function.

As a deliberating member, the Chair agent (e.g., *sim*Powell) participates in the simulation identically to all other members. The agent forms its own private opinion, engages in dialogue, and its internal policy belief, μ_{chair}, is updated throughout the meeting via the same Bayesian mechanism as its peers. In this capacity, the Chair is simply one of twelve voices contributing to the discussion.

In its procedural capacity as agenda-setter, the Chair's role is to formulate the proposed interest rate, denoted as r_c, which serves as a critical anchor for the final vote. This process is governed by a deterministic, rule-based function to ensure transparency and reproducibility. The function systematically translates the final,

updated beliefs of all committee members, including the Chair's own private belief, into a single, coherent policy proposal. The proposal generation is as follows. First, the function gathers the latest set of policy beliefs from all participating governor agents. For each of the 12 members on the committee, it extracts their current preferred interest rate, or belief mean, μ_i. Next, the function aggregates this set of beliefs into a single baseline proposal, r_{base}, using one of two distinct strategies, which is a configurable parameter of the simulation. The agent's policy belief has two key components:

- **Mean:** Agent's current best estimate of the appropriate policy rate (e.g., 4.5%). This is their "belief."

- **Variance:** Agent's uncertainty about their belief. A high variance implies low confidence and greater openness to persuasion, and vice versa.

The default approach calculates the median of the members' beliefs.[16] This method is robust as it is not excessively influenced by outlier policy views:

$$r_{\text{base}} = \text{median}\left(\{\mu_i\}_{i=1}^N\right)$$

The model also allows for the application of an optional bias, denoted by Δ. This parameter is designed to model a chair who may have an intrinsic hawkish (positive Δ) or dovish (negative Δ) inclination. This bias is applied as a simple additive shift to the baseline proposal. The final proposed rate, r_c, is the result of combining the baseline proposal with the optional chair bias:

$$r_c = r_{\text{base}} + \Delta$$

These two roles are reconciled during the final vote. The simulation models the Chair's institutional responsibility through extremely high dissent costs rather than an explicit override. The voting logic assigns the Chair agent a dissent cost approximately four times higher than other members, making it extremely unlikely (though not impossible) for the Chair to dissent from their own proposal r_c, even if it diverges

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[16]Median is the default in our implementation. Other options include mean and status quo.

from their private, deliberated belief μ_{chair}. This probabilistic mechanism models the Chair's responsibility to lead the committee to a consensus while preserving the possibility of rare institutional dissent.

The framework's flexibility allows for exploring alternative scenarios by adjusting both the aggregation strategy and the bias term. These are discussed in more detail in Section 4.

3.1   Phase 3: Committee Deliberation and Voting

The deliberation stage replicates the procedural and behavioral dynamics of real FOMC meetings. Rather than modeling policy decisions in isolation, it simulates the full decision-making pipeline: information flow, informal pre-meeting coordination, structured debate moderated by the Chair, and institutional pressures that influence final votes. By capturing both informational inputs and member incentives, the system reflects how private priors, public reasoning, and consensus building interact to shape collective decisions.

Deliberation begins with the integration of all economic intelligence gathered earlier, including macro indicators, regional assessments, recent speeches, and the latest FOMC statement, along with each member's initial policy stance. Before formal debate, the system includes an optional consensus building phase, simulating the informal coordination typical of FOMC culture (Bernanke, 2022).[17]

Once consensus building concludes, the system establishes the meeting context by presenting three key pieces of information. It begins by reviewing the results and decisions from the previous meeting to provide continuity in policy reasoning. It then

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[17]To model this, each agent's initial belief $\mu_{i,\text{old}}$ is iteratively nudged toward a consensus target $\mu_{\text{consensus}}$, defined as a weighted average of the committee's median and mean beliefs:

$$\mu_{i,\text{new}} = (1 - \omega_i)\mu_{i,\text{old}} + \omega_i\mu_{\text{consensus}},$$

where $\omega_i = 0.15 \times (\sigma_i^2/0.1)$ is a variance-dependent convergence rate that makes more uncertain members more susceptible to consensus pressure. Shared information in this stage also increases confidence by reducing each agent's variance through a confidence boost multiplier $\gamma < 1$:

$$\sigma_{i,\text{new}}^2 = \gamma \cdot \sigma_{i,\text{old}}^2.$$

This ensures agents enter the formal meeting with more aligned beliefs and slightly higher conviction than their private priors.

extracts key language and forward guidance from the most recent FOMC statement, preserving institutional memory and highlighting any prior commitments. Finally, it presents an updated snapshot of current economic conditions, detailing changes in inflation, employment, growth, and regional dynamics since the last meeting.

The formal meeting simulation begins with the Chair opening the session, delivering an economic briefing, highlighting major developments, and posing the central policy question, i.e., whether to maintain the current federal funds rate or adjust it. Deliberation proceeds in structured rounds that mirror real FOMC debates. In the first round, selected members present policy recommendations with brief justifications based on their economic philosophy, regional context, and interpretation of current conditions. The second round shifts to a discussion moderated by the Chair, focused on the employment–inflation trade off, with dovish members emphasizing labor markets and hawkish members prioritizing price stability, both citing data. A third round enables direct engagement, as members challenge one another's arguments and refine their views. The Chair then concludes by summarizing key points, noting areas of consensus and disagreement, and proposing an agenda rate based on the discussion.

The decision phase then follows. The agenda rate is used as an anchor, and the final rate is calculated as a weighted average of the agenda rate (30%) and the committee median (70%).[18] Institutional pressure and dissent costs are applied, reflecting the dynamics of consensus seeking behavior within the FOMC. Members' institutional roles affect these dynamics: the Chair has strong agenda-setting power and very high dissent costs, while Governors have more independence. The dissent decision is modeled as a probabilistic rule tied to distance from the adopted rate, role-specific dissent costs, and each member's uncertainty. For member i, the dissent propensity is

$$P_i^{\text{dissent}} = \left| \mu_i - r^{\text{final}} \right| \times \frac{1}{\kappa_i} \times \left(1 + \text{Var}_i \right),$$

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[18]Formally, the Fed Chair has one vote like any other FOMC voter. However, the Chair's influence is far greater than a 1/12 vote share due to control of procedure and communications. Prior empirical studies have found that during the Arthur Burns era (1970–78), for example, the FOMC Chair effectively carried 40–50% of the voting weight in policy decisions (Chappell Jr et al., 2004).

where μ_i is the member's preferred rate, r^{final} is the adopted rate, Var_i is the member's belief variance, and κ_i is a role-based dissent cost. In baseline settings,

$$\kappa_{\text{Chair}} = 10.0, \qquad \kappa_{\text{Regional}} = 2.5, \qquad \kappa_{\text{Board}} = 2.5,$$

with the Chair's cost reduced to 5.0 under political-pressure "reduced authority." A dissent is realized if:

$$P_i^{\text{dissent}} > 0.5^{19} \quad \text{and} \quad \left|\mu_i - r^{\text{final}}\right| > 0.25 \text{ pp.}$$

Political pressure modifies κ_i asymmetrically using appointment-likelihood weights: dovish dissent becomes cheaper and hawkish dissent more costly for high-likelihood candidates. The activation thresholds are relaxed for non-chair members with high appointment likelihood (effective cutoff lowered to 0.3 and minimum distance to 0.15 pp).

3.2 Implementation Framework

We implement the Riboni and Ruge-Murcia (2010) framework with three key deviations for a more appropriate comparison against the LLM-based environment: (i) private signals are independent across members to model true heterogeneity[20]; (ii) the Chair proposes the agenda via a fixed *rule* (median, mean, or status-quo) to isolate committee dynamics, rather than by optimizing their own loss[21]; (iii) if a proposal

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[19]We calibrate the dissent indicator threshold τ in the rule $p_{\text{dissent}} = \Delta\left(1/\kappa\right)\left(1+\sigma\right)$—with Δ the absolute gap between a member's preferred rate and the final rate, κ the institutional dissent cost, and σ residual uncertainty, so that realized dissent frequencies align with the FOMC's historical range (about 5–15%), with $\tau = 0.5$ landing around 8–10% in our baseline runs.

[20]Riboni and Ruge-Murcia (2010) allow for correlated signals, whereas we assume independence. The rationale is pragmatic since correlation parameters are not separately identified in historical voting data, and heterogeneity at the FOMC is often driven by district specific, idiosyncratic information. Empirically, Chappell and McGregor (2013) show that cross-member forecast errors display weak correlation once common macro factors are removed. Independent signals therefore approximate the "residual" heterogeneity relevant for persuasion.

[21]Riboni and Ruge-Murcia (2010) model the Chair as minimizing her own loss. In practice the Fed Chair emphasizes consensus and signaling credibility more than personal utility. Transcripts reveal that Chairs routinely propose "somewhere around the middle" of expressed views (see Bernanke, 2022). We therefore implement an institutional rule, $r_c = \text{median}\{\mu_i\}$ by default, and treat alternative rules (mean or status quo) as robustness cases. This choice converts the benchmark from a chair-dominance regime to a median voter regime, which is the modal empirical pattern

fails, the committee adopts the *median of the ballots* as a realistic compromise, not the previous-meeting rate.[22] These modifications retain the logic of Bayesian voting yet add empirically grounded institutional detail.

Each committee member i begins with a normal prior belief about the appropriate policy rate, $r \sim \mathcal{N}(\mu_i^0, \sigma_i^{0\,2})$. The agent then receives an independent private signal, s_i, drawn from a distribution centered around their prior:

$$s_i \ = \ \mu_i^0 + \varepsilon_i, \qquad \varepsilon_i \sim \mathcal{N}(0, \sigma^2),$$

where σ^2 is the globally set signal noise. After receiving this signal, the agent forms a posterior belief $\mathcal{N}(\mu_i^{\text{post}}, \sigma_i^{\text{post}\,2})$ via the conjugate normal–normal updating rule. This posterior serves as the agent's initial belief entering the meeting phase.

The LLM simulation employs a consensus convergence mechanism that models realistic committee dynamics. During pre-meeting consensus building, beliefs evolve according to:

$$\mu_{i,t+1} = \mu_{i,t} + \alpha_i \cdot (\bar{\mu}_t - \mu_{i,t}), \qquad \sigma_{i,t+1}^2 = 0.95 \cdot \sigma_{i,t}^2,$$

where $\bar{\mu}_t$ is the committee average belief, $\alpha_i = 0.15 \cdot (\sigma_{i,t}^2/0.1)$ captures convergence strength based on uncertainty, and variance reduces by 5% per round to model confidence building through information sharing. This mechanism captures the realistic tendency for committee members to converge toward consensus through informal coordination, rather than performing precise mathematical calculations.

The Chair applies a deterministic rule to the final set of posterior beliefs, $\{\mu_i^{\text{post}}\}$,

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documented by Thornton and Wheelock (2014).

[22]Historical minutes show that when the committee cannot agree on the Chair's proposal it typically negotiates a mid-point compromise rather than mechanically retaining the prior setting (e.g. the August 1989 and June 2003 meetings). This median fallback matches that practice and avoids artificially inflating policy inertia.

to generate the proposed agenda, r_c:

$$r_c = \begin{cases} \text{median}_i \, \mu_i^{\text{post}} & \text{baseline strategy,} \\ \text{mean}_i \, \mu_i^{\text{post}} & \text{alternative strategy,} \\ r_{\text{previous}} & \text{status-quo strategy.} \end{cases}$$

The voting mechanism incorporates institutional pressures and role-based dissent costs. Member i faces a dissent cost C_i that varies by institutional role, mirroring the LLM set up. The final rate reflects both agenda influence and committee preference through a weighted combination: $r_f = w_a \cdot r_c + (1 - w_a) \cdot \text{median}_i \, \mu_i^{\text{post}}$, where $w_a = 0.3$ under normal conditions and $w_a = 0.1$ under political pressure, modeling reduced Chair authority. If the proposal fails in either implementation, the committee implements $r_f = \text{median}_i \, b_i$, the median of all submitted ballots.

3.3 Monte Carlo Simulation

The Monte Carlo (MC) analysis implements the mathematical core of the Riboni and Ruge-Murcia (2010) framework with enhanced methodological features to enable rigorous statistical comparison with LLM simulation results. This approach abstracts away from natural language deliberation to focus on formal game theory mechanisms, allowing us to systematically vary institutional settings while maintaining strict comparability between simulation approaches.

Each MC draw represents a single realization of the voting game. The simulation begins with initial policy beliefs sourced from the LLM opinion formation stage. For each committee member i, their belief is represented as a normal distribution:

$$\text{Belief}_i \sim \mathcal{N}(\mu_i, \sigma_i^2)$$

where μ_i is the agent's preferred policy rate from LLM opinion formation and σ_i^2 represents their baseline uncertainty derived from confidence levels. Belief means are

sampled from agents' own reported confidence distributions:

$$\mu'_i \sim \mathcal{N}(\mu_i, \sigma_i^{*2})$$

where the confidence-based variance is derived from self-reported confidence levels:

$$\sigma_i^* = \kappa \cdot \frac{1 - c_i}{c_i}$$

Here, $c_i \in [0, 1]$ represents agent i's confidence level and $\kappa = 25$ basis points is a calibration parameter ensuring that agents reporting 50% confidence have a standard deviation of κ.

Following belief initialization, each agent receives an independent private signal s_i and updates their belief using conjugate normal-normal Bayesian updating:

$$\tau_i \equiv \sigma_i^{-2}, \qquad \tau_{\text{signal}} \equiv \sigma_{\text{signal}}^{-2}, \tag{1}$$

$$\mu_i^{\text{post}} = \frac{\tau_i \, \mu'_i + \tau_{\text{signal}} \, s_i}{\tau_i + \tau_{\text{signal}}}, \tag{2}$$

$$\sigma_i^{2,\text{post}} = \frac{1}{\tau_i + \tau_{\text{signal}}} \tag{3}$$

$$\text{Belief}_i^{\text{updated}} \sim \mathcal{N}\left(\mu_i^{\text{updated}}, \sigma_i^{2,\text{updated}}\right) \tag{4}$$

where σ_{signal}^2 represents the precision of private information. The simulation also includes a pre-meeting consensus-building phase designed to replicate institutional coordination mirroring the LLM simulation.

The Chair applies a deterministic rule to the post-consensus belief set $\{\mu_i^{\text{post}}\}$ to generate the agenda proposal:

$$r_{\text{base}} = \begin{cases} \text{median}(\{\mu_i^{\text{post}}\}) & \text{(baseline strategy)} \\[2mm] \frac{1}{N} \sum_{i=1}^{N} \mu_i^{\text{post}} & \text{(mean strategy)} \\[2mm] r_{\text{previous}} & \text{(status-quo strategy)} \end{cases}$$

The final agenda also incorporates Chair bias, if present: $r_c = r_{\text{base}} + \Delta$, where Δ

represents hawkish ($\Delta > 0$) or dovish ($\Delta < 0$) tendencies.

Institutional voting follows individual dissent cost calculations. Member i votes YES on proposal r_c if:

$$\left| \mu_i^{\text{post}} - r_c \right| \leq \epsilon \cdot \kappa_i$$

where $\epsilon = 0.25$ percentage points represents the tolerance band and κ_i captures member-specific dissent costs varying by institutional role and political conditions, calibrated to match LLM simulation patterns.

The proposal passes if the weighted vote share exceeds threshold $\vartheta = 0.5$:

$$\frac{\sum_i w_i \mathbf{1}_{\text{YES}}}{\sum_i w_i} \geq \vartheta$$

where standard voting weights are $w_i = 1.0$ for all members. Failed proposals trigger implementation of the median submitted ballot: $r_f = \text{median}(\{b_i\})$.

Each Monte Carlo draw records key variables for policy analysis: the Chair's proposed agenda rate (r_c), the final implemented policy rate (r_f), and the set of dissenting members (D). By running 10,000 draws, the Monte Carlo simulation provides statistical grounding for LLM results.

4   Results

With these two simulation methods at hand, we now arrive at two complementary setups: a "control" and a "treatment." In the control case, the Monte Carlo simulations depict a world of purely rational, rule-based agents. They receive initial beliefs, undergo a parameter change, and vote strictly according to predefined rules. This serves as the benchmark; what pure economic theory would predict under idealized conditions. The treatment, in contrast, introduces the LLM simulation, which reflects the messy and human-like dynamics of deliberation. Here, agents don't simply vote mechanically; they debate, argue, persuade, and react to one another. This layer of social interaction captures the complexity and unpredictability of real-world decision making.

In this section, we present the results of our primary counterfactual simulation.

Across all scenarios, the underlying economic environment, such as inflation, unemployment, and other key indicators, is held fixed at U.S. conditions in late July of 2025. This ensures that any differences in policy outcomes arise solely from changes in committee composition or decision-making rules, rather than from varying macroeconomic shocks.

However, to meaningfully evaluate the effects of political pressure, we must first understand the system's behavior in the absence of such distortions. We therefore begin with a baseline scenario, establishing a reference point under normal conditions.

4.1 Initial Beliefs

Table 3 summarizes the multi-iteration analysis (~ 100 runs) of rate preferences, modeling high dimensional and complex belief formation. Confidence here is the agent's self-assessed certainty (percent) about its initial rate view. We transform this into the member's belief variance; higher confidence yields tighter distributions, which affects deliberation dynamics and posterior sampling in the MC mirror.

The results reveals distinct and persistent themes in the reasoning patterns of each FOMC member. On the dovish end of the spectrum, *sim*Kugler, *sim*Cook, and *sim*Goolsbee consistently emphasize the importance of supporting the labor market and sustaining the economic expansion in the face of gradually easing inflation. These members view monetary policy as a tool to ensure continued employment gains, and frequently cite the deceleration of inflationary pressures as justification for maintaining or even lowering interest rates. Their focus leans heavily toward protecting growth and minimizing the risks of premature tightening.

Simulated Powell, Williams, and Jefferson adopt a more balanced and flexible approach. These members consistently express a desire to remain data-dependent, neither aggressively tightening nor easing policy without clear justification. Their reasoning reflects a concern for maintaining economic stability, ensuring continued labor market strength, and watching closely for any resurgence of inflation. These policymakers tend to advocate for holding rates steady unless compelling evidence warrants a shift, favoring optionality and responsiveness to evolving macroeconomic conditions.

Table 3: Initial Rate Beliefs – July 31st, 2025 Vintage

Member	Avg. Rate	Confidence	Key Reasoning
*sim*Powell	4.44% (±0.080)	84.8%	Emphasizes balance of risks; data-driven neutrality amid persistent inflation and solid growth
*sim*Cook	4.24% (±0.025)	82.0%	Inflation shows signs of easing; consistent support for dovish policy to aid labor inclusivity
*sim*Goolsbee	4.24% (±0.036)	82.2%	Supports growth while acknowledging inflation; balances expansion with caution
*sim*Kugler	4.25% (±0.019)	81.8%	Prioritizes employment stability; consistent preference for accommodative policy amid softening inflation
*sim*Williams	4.43% (±0.086)	85.0%	Neutral stance grounded in strong fundamentals and declining inflation risks; prefers steady path
*sim*Jefferson	4.35% (±0.060)	84.8%	Dual mandate balance; favors slightly below-neutral rate to safeguard employment and prices
*sim*Barr	4.41% (±0.088)	84.8%	Persistent inflation cited as key concern; moderately hawkish stance to maintain progress
*sim*Waller	4.18% (±0.088)	77.0%	Concerned about sticky core inflation, but leans dovish with focus on maintaining momentum
*sim*Bowman	4.22% (±0.208)	83.0%	Highlights volatility and uncertainty in inflation data; cautious with occasional dovish signals
*sim*Schmid	4.58% (±0.117)	84.9%	Strongly hawkish; inflation pressures and robust growth warrant upper-bound positioning
*sim*Musalem	4.62% (±0.123)	84.6%	Focused on anchoring inflation expectations; prefers tighter policy to guard credibility
*sim*Collins	4.51% (±0.036)	85.0%	Sustained demand and resilient inflation support firm, hawkish positioning

Committee Initial Rate Beliefs (100 Iterations)

Avg. Initial Recommendation:	**4.375% (±0.026)**
Range (Across Iterations):	4.33% – 4.44%
Typical Spread:	0.552 percentage points (±0.150)
Spread Range:	0.25pp – 0.75pp
Members with opinions:	12
Hawkish ($\geq$4.50%):	3 members (Schmid, Musalem, Collins)
Moderate (4.41–4.44%):	3 members (Powell, Williams, Barr)
Leaning Dovish (4.24–4.35%):	4 members (Goolsbee, Kugler, Jefferson, Cook)
Dovish (<4.24%):	2 members (Waller, Bowman)
Most Consistent:	Adriana D. Kugler (σ=0.019)
Least Consistent:	Michelle W. Bowman (σ=0.208)

Meanwhile, on the hawkish end of the committee, *sim*Schmid, *sim*Musalem, and *sim*Collins personas are more resolute in their call for tighter monetary policy. Their reasoning centers on the persistence of inflation and the need to anchor expectations through strong, pre-emptive rate stances. These members frequently point to robust consumer demand, strong labor market data, and signs of underlying inflation resilience as justification for maintaining elevated policy rates. They view any premature easing as a threat to the Fed's credibility and the longer term goal of price stability.

The most ideologically consistent voices emerge at the extremes. For example, *sim*Kugler persona, on the dovish side, and *sim*Schmid persona, on the hawkish side, exhibit the most stable reasoning across the 100 iterations, with minimal variation in their underlying justifications. Their positions are deeply anchored in their respective macroeconomic priorities: employment for *sim*Kugler, and inflation control *sim*Schmid. In contrast, *sim*Bowman shows a more variable perspective; *sim*Bowman is alert to inflation but, with mixed signals, her stance changes more than her peers'.

4.2   Baseline Scenario

The simulation begins with launching an LLM-driven meeting of the FOMC. The twelve autonomous agents representing the committee members are not blank slates; they enter with structured priors derived from current macroeconomic data. These agents are also governed by a set of institutional rules that mirror the culture of the real Federal Reserve. The synthetic FOMC members are deliberating against a backdrop of solid economic growth (GDP growth 3.0%), inflation above target, and a stable labor market (unemployment 4.1%, modest payroll growth). Table 8 summarizes the results:

The baseline distribution shows a modest hawkish tilt. *sim*Bowman is near the 4.50% upper bound (4.46%), while *sim*Collins (4.51%), *sim*Schmid (4.58%), and *sim*Musalem (4.62%) sit above it; *sim*Powell is just below at 4.44%. On the dovish side, *sim*Goolsbee, *sim*Cook, and *sim*Kugler are at 4.25%, with *sim*Jefferson (4.35%) and *sim*Barr (4.40%) slightly higher. The mean recommended rate is 4.40% (vs. a

Table 4: Baseline Scenario:
Member Deliberation and Voting – July 31st, 2025

Simulated Member	Deliberation Rate	Variation	Uncertainty	Vote Bias		Dissent
	Mean (%)	Std	Mean	Mean	Std	Freq (%)
*sim*Goolsbee	4.250	0.036	0.822	-0.1704	0.0360	0.0
*sim*Cook	4.250	0.025	0.820	-0.1704	0.0250	0.0
*sim*Kugler	4.250	0.019	0.818	-0.1704	0.0190	0.0
*sim*Barr	4.405	0.088	0.848	-0.0159	0.0880	0.0
*sim*Jefferson	4.349	0.060	0.848	-0.0710	0.0600	0.0
*sim*Williams	4.424	0.086	0.850	0.0033	0.0860	0.0
*sim*Powell	4.439	0.080	0.848	0.0184	0.0800	0.0
*sim*Waller	4.202	0.088	0.770	-0.2181	0.0880	0.0
*sim*Bowman	4.465	0.208	0.830	0.0449	0.2080	0.0
*sim*Schmid	4.582	0.117	0.849	0.1620	0.1170	0.0
*sim*Musalem	4.622	0.123	0.846	0.2017	0.1230	0.0
*sim*Collins	4.514	0.036	0.850	0.0934	0.0360	0.0
Baseline FFR	**4.4204**	0.0229				
Target Range			4.25% – 4.50%			
Effective FFR			4.33%			

Notes: In practice, the FOMC sets the target range for the federal funds rate in 25 basis point increments. The simulated *Final FFR* of 4.42% falls within the 4.25%–4.50% range, corresponding closer to the midpoint of the range (4.375%) than to the current effective FFR (4.33%) . *Deliberation Rate:* The interest rate each member publicly argues for during the formal meeting. *Variation (Std):* Standard deviation of the deliberation rate across 100 simulations. *Uncertainty:* Member's self-reported confidence/uncertainty (decimal form). *Vote Bias:* Difference between the deliberation rate and the simulated final FFR; positive = more hawkish, negative = more dovish.

simulated final FFR of 4.42%), and views span roughly 42 basis points. Notably, *sim*Waller is dovish in this simulation (4.20%).

In the simulated aggregation, the committee's *Baseline FFR* comes to 4.42%, which lies well within the prevailing 4.25%–4.50% target range. Given that the effective federal funds rate at the prior meeting was about 4.33%, this outcome implies an upward drift of roughly 9 basis points, effectively tightening policy within the existing range rather than formally raising it by a full 25 basis points. Figure 2 provides an overview of member-level vote distribution.
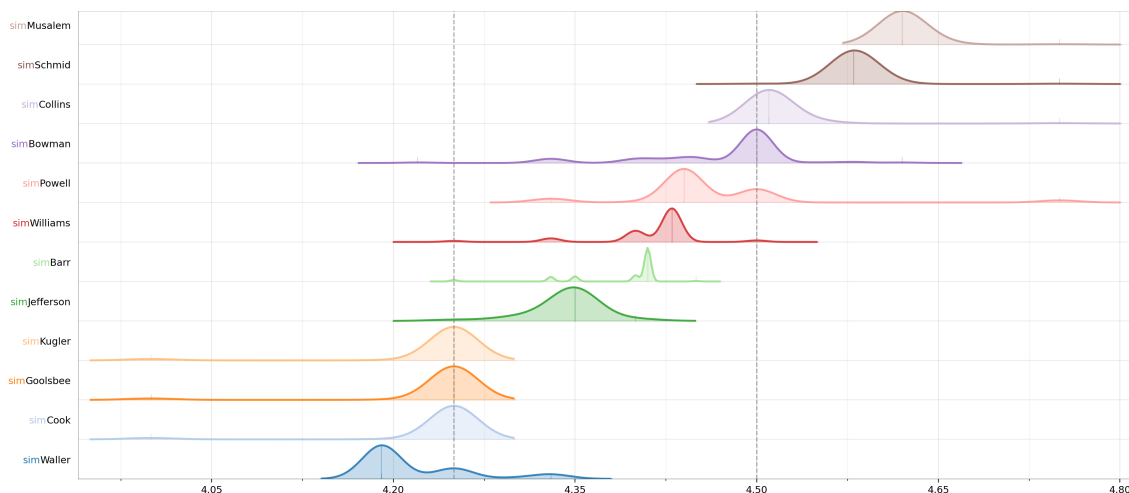

Figure 2: Baseline Scenario: Committee Vote Distribution

Notes: Each row plots a kernel density estimate of that member's votes (densities normalized within row). Dashed references at 4.25% and 4.50%.

Despite the heterogeneity in beliefs, no formal dissents emerge. The Chair synthesizes prevailing inflation concerns with growth risks, presenting the upward shift as a balanced response that all members ultimately accept. This outcome illustrates how the simulation captures both diversity in individual preferences and the institutional dynamics that narrow disagreement and support consensus in FOMC deliberations.

Next, we summarize outcomes from the baseline Monte Carlo simulation. In the baseline scenario for July 31, 2025, across 10,000 simulated meetings, the final policy rate clusters around the prior 4.25–4.50% target range, with a mean of 4.376%, a standard deviation of 7.4 basis points, and outcomes spanning 4.19% to 4.68%. The distribution is centered slightly above the midpoint (4.33%), implying an average

upward drift of about 4–5 basis points in the effective federal funds rate. No formal dissents occur in any of the 10,000 runs, consistent with broad consensus.

Overall, both the LLM deliberation model and the Monte Carlo benchmark produce tightly clustered, consensus outcomes near the policy midpoint, but via different mechanisms. The LLM run offers a narrative of hawks and doves weighing conditions and converging on compromise. The Monte Carlo benchmark, relying only on institutional voting rules and members' initial proposals, reduces dispersion and yields no dissents across 10,000 runs. This alignment is consistent with (and supports the plausibility of) the LLM-derived outcomes.

4.3 Political Pressure Scenario

"Leaving rates steady makes Powell a 'Total and Complete Moron.' Maybe, just maybe, I'll have to change my mind about firing him?" – President Trump via Truth Social, June 20, 2025

"I've been nice, I've been neutral, and I've been nasty, and nice and neutral didn't work...Powell is a numbskull." –President Trump via Truth Social, June 21, 2025

"I'd love it if he wants to resign.... The housing market would boom if this— you know—numbskull lowered the rates." – President Trump in an interview, July 16, 2025.

"I think he's done a bad job, but he'll be out pretty soon anyway...People can't buy a house because this guy is a numbskull. He keeps rates too high, probably for political reasons." – President Trump in a White House economic conference, July 23, 2025

*"We're spending **hundreds of billions** because of one numbskull sitting over there - Jerome Powell."* – President Trump during pool spray with reporters, July 24, 2025

Recent White House remarks have reignited talk that President Trump might try to remove Chair Powell before his term ends.[23] Markets reacted immediately: fed funds futures now price in about 125 basis points of rate cuts by end of 2026, roughly 50 basis points more easing than the Fed's own dot plot suggests. Investors

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[23]See, e.g., "Trump says he will name new Fed chair 'a little bit earlier'," Reuters, Aug. 13, 2025; and "Trump weighs firing Powell's Fed, shows draft letter," Politico, July 16, 2025.

appear to be bracing for a more dovish successor[24], which in turn revives concerns about the Federal Reserve's ability to resist direct political pressure.

Political interference in central banking, while formally prohibited, is hardly rare. Using a new index of political pressure, Binder (2021) shows that even nominally independent central banks are often urged to loosen policy, with measurable effects on inflation expectations and actual decisions. History echoes this pattern: President Nixon leaned on Chair Arthur Burns in the early 1970s to keep rates low, as documented by Meltzer (2009). Recent archival work by (Drechsel, 2025) shows that bursts of presidential pressure of similar magnitude raise the U.S. price level by roughly 7 percent over a decade without any lasting boost to real activity.

These episodes (past and present) inspire the political pressure channel in our model: diminished chair authority heightens the career incentives of other FOMC members to accommodate political demands, potentially skewing policy toward easier monetary conditions.[25]

Under political pressure, we shift authority away from the Chair and build in career-driven dovishness. Concretely, we cut the Chair's agenda weight from 0.3 to 0.1, so the policy rate becomes a weighted average of the Chair's agenda rate and the committee median: the lower weight means outcomes lean more toward the median. We also introduce a dovish adjustment: an appointment-linked bias equal to 50 basis points, scaled by appointment probability (only applied to members with high (0.6) appointment probability). Finally, pressure pulls the agenda itself below the median, setting the agenda rate 10 basis points under the committee median, so even before weighting, the Chair's target is lower. Together, these changes tilt decisions dovish overall and generate split behavior across members depending on their appointment odds.

Table 5 summarizes the results. Under the political pressure scenario, the Committee's internal balance of power shifts visibly. Public criticism from the White House erodes Chair's agenda setting weight and magnifies career incentives for those

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[24]Reuters, "Market bets on a more dovish Fed as Trump eyes Powell's replacement," June 27, 2025.

[25]Academic and historical evidence supports the realism of a career related dovish bias, though it's usually discussed qualitatively rather than as a fixed formula.

Table 5: Political Pressure Scenario:
Member Deliberation and Voting

Simulated Member	Deliberation Rate	Variation	Uncertainty	Vote Bias		Dissent
	Mean (%)	Std	Mean	Mean	Std	Freq (%)
*sim*Waller	3.969	0.053	0.700	-0.4063	0.0000	88.0
*sim*Bowman	4.463	0.208	0.830	0.0873	0.2080	0.0
*sim*Barr	4.373	0.088	0.848	-0.0026	0.0880	0.0
*sim*Williams	4.389	0.086	0.850	0.0138	0.0860	0.0
*sim*Cook	4.210	0.025	0.820	-0.1658	0.0250	0.0
*sim*Goolsbee	4.209	0.036	0.822	-0.1663	0.0360	0.0
*sim*Kugler	4.210	0.019	0.818	-0.1658	0.0190	0.0
*sim*Jefferson	4.328	0.060	0.848	-0.0482	0.0600	0.0
*sim*Powell	4.403	0.080	0.848	0.0275	0.0800	0.0
*sim*Schmid	4.577	0.117	0.849	0.2009	0.1170	0.0
*sim*Musalem	4.617	0.123	0.846	0.2409	0.1230	0.0
*sim*Collins	4.511	0.036	0.850	0.1348	0.0360	0.0
Final FFR	**4.376**	0.058				
Target Range			4.25% − 4.50%			
Effective FFR			4.33%			

Notes: In practice, the FOMC sets the target range for the federal funds rate in 25 basis point increments. The simulated *Final FFR* of 4.3758% lies at the exact midpoint of the prevailing 4.25%–4.50% range, implying no change in the target range but maintaining the effective rate near its prior level (4.33%). *Deliberation Rate:* The interest rate each member publicly argues for during the formal meeting. *Variation:* Standard deviation of the deliberation rate across 100 simulations. *Uncertainty:* Member's self-reported confidence/uncertainty. *Vote Bias:* Difference between the deliberation rate and the simulated final FFR; positive = more hawkish, negative = more dovish. Mean dissents per simulation: 0.88; at least one dissent occurs in approximately 88% of runs (driven almost entirely by Waller).

viewed as plausible successors. The political pressure scenario generates a more polarized distribution of preferences, with sharper dovish positioning among some members and persistent hawkish stances among others. *sim*Waller emerges as the most dovish, holding rates near 3.97% in every simulation and dissenting in 88% of runs. A small dovish bloc (including *sim*Waller, *sim*Bowman, and at times *sim*Barr) consistently pushes for levels below the lower bound of the prevailing 4.25%–4.50% range. On the hawkish side, *sim*Musalem (4.617%), *sim*Schmid (4.577%), and *sim*Collins (4.511%) advocate above 4.50%.

The simulated *Final FFR* averages 4.376%, which sits at the midpoint of the existing target range. In practical terms, this would leave the range unchanged but position the effective federal funds rate near its prior level, a posture consistent with maintaining the stance of policy rather than easing or tightening. This stands in contrast to the baseline scenario, where the simulated mean implied an upward drift of roughly 10 basis points within the band. Figure 3 provides a visualization of the member vote distributions.

Figure 3: Political Pressure Scenario: Committee Vote Distribution

Notes: Each row plots a kernel density estimate of that member's votes (densities normalized within row). Dashed references at 4.25% and 4.50%.

While dissents are less frequent than the most polarized rhetoric might suggest, they are still notable: on average, 0.88 dissents per simulation. This pattern reflects the heightened influence of external pressure, which amplifies both ends of the policy spectrum while still allowing for a negotiated consensus on the midpoint

as the institutional decision. This simulation shows that the Federal Reserve is only partially insulated from politics: credible threats to leadership succession can impose a measurable dovish drift without breaching the range defined by prior guidance. Under pressure, clear coalitions form, and policy positions closely reflect members' career incentives. The chair's influence also becomes conditional: when their authority is weakened, decisions tend to move toward the committee's median view rather than the chair's preference. This suggests that outside scrutiny can shape internal decision-making, even in an institution guided by formal rules.

Next, we summarize the results from the Monte Carlo simulation under the political pressure scenario, incorporating 10,000 simulated policy paths. The Monte Carlo simulation of political pressure scenario confirm the presence of statistically significant political pressure effects. Across 10,000 simulated paths, the final federal funds rate averages 4.38%, roughly eight basis points below the baseline MC mean, and the standard deviation rises to 14 basis points, indicating a noticeably wider spread of outcomes. Although the modal decision remains the upper bound of the standing target range, dispersion around that anchor is much greater. Agendas concentrate at 4.50% (61.3% of cases) and 4.25% (32.6%), with smaller mass at 4.00% (4.6%) and 4.75% (1.5%), and essentially zero at 5.00%. Relative to the prior 4.25–4.50% target range (effective rate 4.33%), the distribution implies a modest upward tilt toward the top of the range, consistent with political pressure nudging decisions higher but rarely beyond a single 25 basis point step.

Political pressure also makes dissent a central feature. At least one dissent occurs in roughly 61 percent of meetings, for a total of 6,113 dissenting votes across all MC simulations, with dissent coming from six unique members: simWaller, simGoolsbee, simMusalem, simWilliams, simCollins, and simSchmid. simWaller dissents in 6,062 meetings, while the next most frequent dissenter, simMusalem, appeared only 22 times.

Taken together, the MC results show that even without conversational dynamics or narrative persuasion, credible external pressure both shifts the committee's center of gravity downward and raises the likelihood of open disagreement. The policy path stays inside the established range, preserving formal continuity, yet the combination

of a thicker lower tail and frequent dissents signals a materially weaker consensus and a heightened risk that future shocks could push rates further from their baseline trajectory.

4.4   Data Revision Scenario

On August 1, 2025, the Bureau of Labor Statistics (BLS) released the July employment report showing a gain of just 73,000 nonfarm payroll jobs, sharply below both market expectations and the pace of previous months. The report also contained sizable downward revisions to prior months' data, subtracting a cumulative 258,000 jobs from the May and June totals, softening what had previously appeared to be a steady expansion. The release triggered an immediate political reaction. President Trump publicly accused BLS Commissioner Erika McEntarfer of "rigging" the numbers (Financial Times), and announced her dismissal within hours of publication.

From the perspective of monetary policy, the August 1 data release constituted a genuine shock. The disappointing payroll number and large downward revisions signaled that the labor market was weaker than previously thought. This suggested less economic momentum overall and raised the possibility that inflationary pressures in the future might be lower than expected. In our simulation model, we incorporate this scenario by adjusting the reported job growth figures. We set the July employment gain to 73,000 and revise the historical data to reflect the 258,000 job reduction for May and June. These changes directly reduce the recent employment growth rates that agents in the model observe in their macroeconomic data packets. This setup allows us to isolate the perceived economic effects of a weaker labor market.

We begin by re-running the initial belief formation process, given the changes in the underlying data. Table 6 reflects the committee's updated beliefs after a negative economic surprise and public controversy. The overall shift is slightly more dovish, with lower average rates, reduced confidence, and narrower internal spread. These adjustments help quantify how much the data revision reshaped committee thinking, even before formal policy meetings.

Table 7 summarizes the results. Under the data revision shock scenario, the Committee's internal dynamics shift toward a more cautious and data-sensitive

Table 6: Committee Initial Rate Beliefs – August 7th, 2025 Vintage

Member	Avg. Rate	Confidence	Key Reasoning
*sim*Powell	4.31% (±0.077)	79.9%	Balanced neutral stance; high core inflation, and recession risks
*sim*Cook	4.24% (±0.034)	77.0%	Dovish; supports employment and growth while remaining vigilant about inflation
*sim*Goolsbee	4.25% (±0.000)	76.5%	Slight dovish shift; supports growth despite high inflation and labor softness
*sim*Kugler	4.24% (±0.034)	76.3%	Dovish; cautious on weaker labor market data and potential recession risks
*sim*Williams	4.32% (±0.072)	80.2%	Neutral stance; balances inflation control with labor uncertainty
*sim*Jefferson	4.29% (±0.040)	80.3%	Neutral; steady rate reflects dual mandate balance amid mixed signals
*sim*Barr	4.28% (±0.053)	79.2%	Neutral; inflation concerns balanced with labor market considerations
*sim*Waller	4.10% (±0.092)	74.3%	Slightly dovish shift; accommodates due to weaker labor momentum and risks
*sim*Bowman	4.41% (±0.160)	83.5%	Typically hawkish; modest accommodation due to labor softness and risk outlook
*sim*Schmid	4.50% (±0.000)	84.8%	Strongly hawkish; upper-bound rate to combat inflation and preserve stability
*sim*Musalem	4.51% (±0.038)	84.6%	Hawkish; inflation control priority with stable economic backdrop
*sim*Collins	4.50% (±0.008)	84.8%	Hawkish; sustained inflation pressures warrant firm stance

---

Committee Initial Rate Beliefs (100 Iterations)

Avg. Initial Recommendation:	**4.333% (±0.038)**
Range (Across Iterations):	4.10% – 4.51%
Typical Spread:	0.410 percentage points (±0.058)
Spread Range:	0.00pp – 0.75pp
Members with opinions:	12
Hawkish (≥4.50%):	3 members (Schmid, Musalem, Collins)
Moderate (4.41–4.44%):	2 members (Powell, Bowman)
Leaning Dovish (4.24–4.35%):	5 members
Dovish (<4.24%):	2 members (Barr, Waller)
Most Consistent:	Austan D. Goolsbee (σ=0.000)
Least Consistent:	Michelle W. Bowman (σ=0.160)

Table 7: Data Revision Scenario: Member Deliberation and Voting

Simulated Member	Deliberation Rate	Variation	Uncertainty	Vote Bias		Dissent
	Mean (%)	Std	Mean	Mean	Std	Freq (%)
*sim*Waller	3.919	0.381	74.35	-0.3813	0.3813	73.7
*sim*Bowman	4.411	0.110	83.45	0.1100	0.1100	0.0
*sim*Barr	4.289	0.016	79.25	-0.0113	0.0167	0.0
*sim*Williams	4.318	0.017	80.25	0.0171	0.0171	0.0
*sim*Cook	4.232	0.069	77.05	-0.0690	0.0690	0.0
*sim*Goolsbee	4.241	0.060	76.45	-0.0602	0.0604	0.0
*sim*Kugler	4.232	0.069	76.30	-0.0689	0.0689	0.0
*sim*Jefferson	4.296	0.011	80.35	-0.0044	0.0114	0.0
*sim*Powell	4.305	0.016	79.90	0.0038	0.0158	0.0
*sim*Schmid	4.500	0.199	84.85	0.1991	0.1991	0.0
*sim*Musalem	4.510	0.209	84.60	0.2090	0.2090	0.0
*sim*Collins	4.500	0.199	84.80	0.1991	0.1991	0.0
Final FFR	**4.301**	0.016				
Target Range			4.25% – 4.50%			
Effective FFR			4.38% (midpoint of range)			

Notes: Deliberation Rate: Interest rate each member publicly argued for during formal meeting. *Variation (Std):* Standard deviation of member's true belief across runs. *Uncertainty:* Average confidence (in %) from member's stated reasoning. *Vote Bias:* Difference between member's true belief and final FFR; positive = hawkish, negative = dovish. *Dissent:* Frequency of dissent across runs. Across 99 successful simulations, mean dissents per run were 0.74; 73/99 (73.7%) had exactly one dissent (always simulated Waller). Final-rate distribution: min 4.24%, max 4.32%, mean 4.3009%, std 0.0160%.

posture. Significant downward revisions to payroll data weaken the labor market narrative, prompting many members to recalibrate their stances. The shock moderates previously hawkish voices and strengthens the hand of those favoring lower rates. Simulated Waller remains the most dovish, advocating for rates near 3.92% on average and dissenting in 73.7% of runs, often anchoring the lower end of the distribution. A dovish bloc, including *sim*Waller, *sim*Cook, *sim*Goolsbee, and *sim*Kugler, consistently recommends rates below the midpoint of the 4.25%–4.50% range.

On the hawkish side, *sim*Musalem, *sim*Schmid, and *sim*Collins remain firmly above 4.50%, though their margins narrow slightly in light of softer labor market data. Even traditionally hawkish members such as *sim*Bowman and *sim*Powell register modest downward adjustments in their preferred rates. The resulting distribution of preferences clusters more tightly than under political pressure, reflecting greater convergence toward the middle of the range. The simulated *Final FFR* averages 4.30%, sitting slightly above the lower bound of the prevailing target range, implying no change to the official band. In practice, this outcome signals a "hold" stance that maintains policy settings while acknowledging new information.
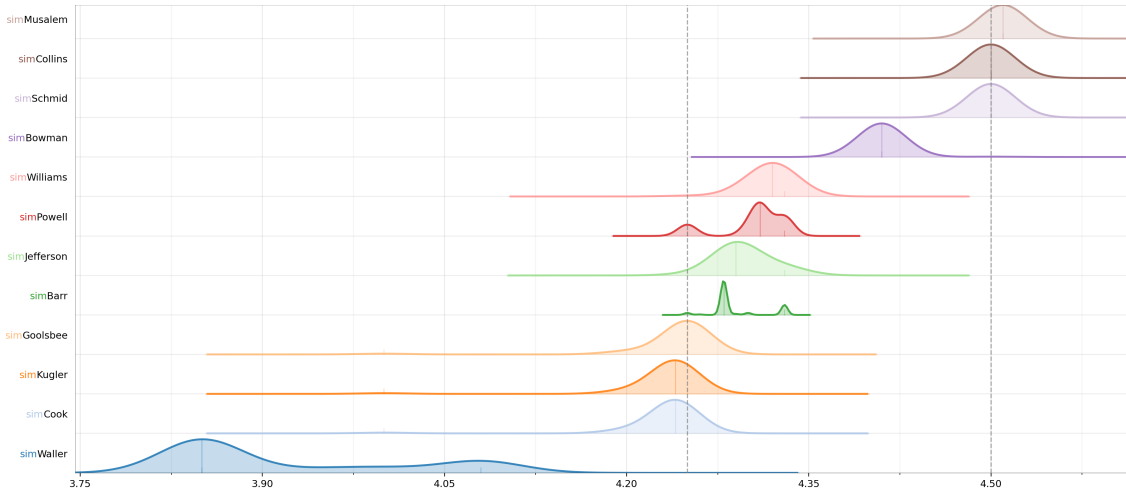
Figure 4: Data Revision Scenario:
Committee Vote Distribution

Notes: Each row plots a kernel density estimate of that member's votes (densities normalized within row). Dashed references at 4.25% and 4.50%.

We next report results from the Monte Carlo simulation of the data revision shock scenario, incorporating 10,000 simulated policy paths under political pressure.[26] Across all runs, the final federal funds rate averages 4.315%, slightly below the baseline MC mean, with a standard deviation of 15 basis points, signaling a modest widening of the outcome distribution. The modal decision remains at the lower bound of the standing target range, with 42 percent of runs ending at 4.25%, followed closely by 4.41% (21 percent) and 4.50% (20 percent). Outcomes outside the 4.00–4.50% range are rare, and extreme hikes above 4.75% occur in less than one percent of simulations. The median outcome, 4.25%, reflects a distribution tilted slightly toward holding the lower bound.

Labor data revisions together with political pressure amplifies open disagreement within the Committee. One dissent occurs in 61.6 percent of meetings, with dissent drawn from six unique members: *sim*Waller, *sim*Musalem, *sim*Schmid, *sim*Goolsbee, *sim*Collins, and *sim*Williams. *sim*Waller accounts for the overwhelming majority of dissents (6,145 instances) while the next most frequent, *sim*Musalem, appears just 14 times. In sum, the combination of data shock and political pressure keeps the policy path anchored in the prevailing range but erodes consensus. Frequent dissents

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[26]Results that show pure data revision scenario without the political pressure add-on are available in the Online Appendix.

underscore a weaker center of gravity and a greater susceptibility to shifts if further shocks arise.

5   Conclusion

This paper introduces a dual–track framework that measures how deliberation and institutional frictions move committee outcomes relative to a rational benchmark using the *same* information set. We run an LLM-based committee deliberation in parallel with a generalized Bayesian voting model and compare final policy rates and dissent. Three facts emerge. First, the "behavioral wedge" of policy deliberations is small but systematic: in our July-2025 baseline the LLM track yields a final rate of 4.42% vs 4.38% in Monte Carlo. Under political pressure settings, the mean decision shifts modestly down, dissent becomes common (LLM 88% of meetings; MC 62%), and the modal outcome stays inside the 4.25–4.50% band. When political pressure rises or the Chair's authority is questioned, the center of policy usually stays within the existing range, but disagreement becomes the story: dissents jump and cohesion erodes. Third, when labor data are revised down, the final rate falls further, again without band changes but with elevated dissent.

Our dual-track framework offers a tool for tracing how institutional procedures and strategic interactions shape policy. The framework allows to isolate behavioral inflection points: when coalitions form, when dissent emerges, and when reputational incentives override private beliefs. In doing so, it enables a new generation of policy experimentation where central banks can stress test governance rules *in silico* before applying them in the real world.
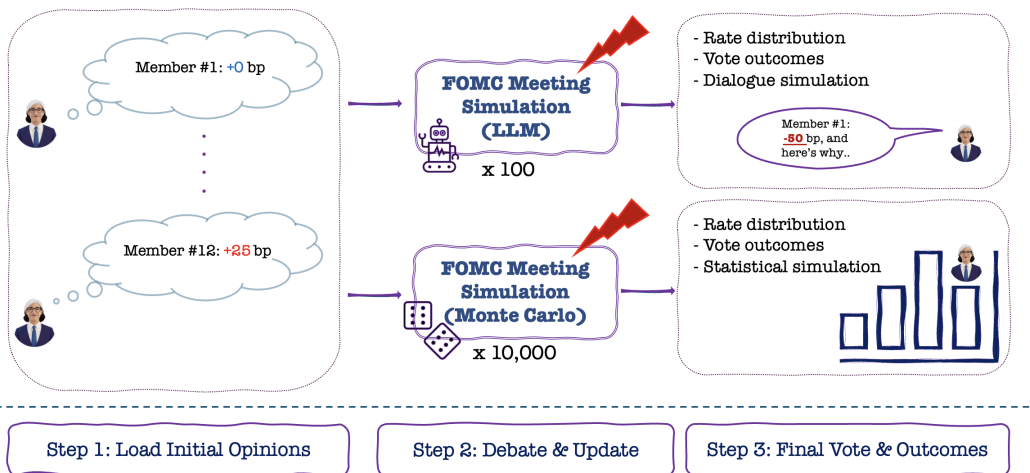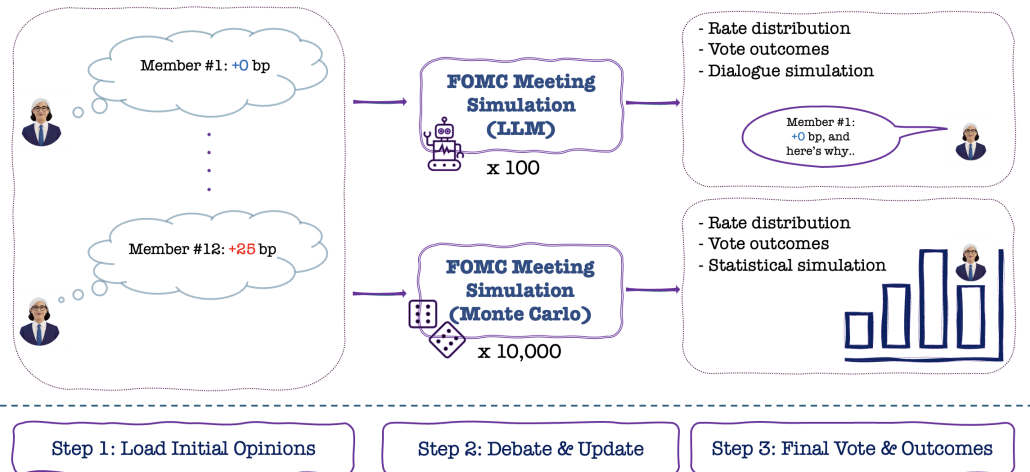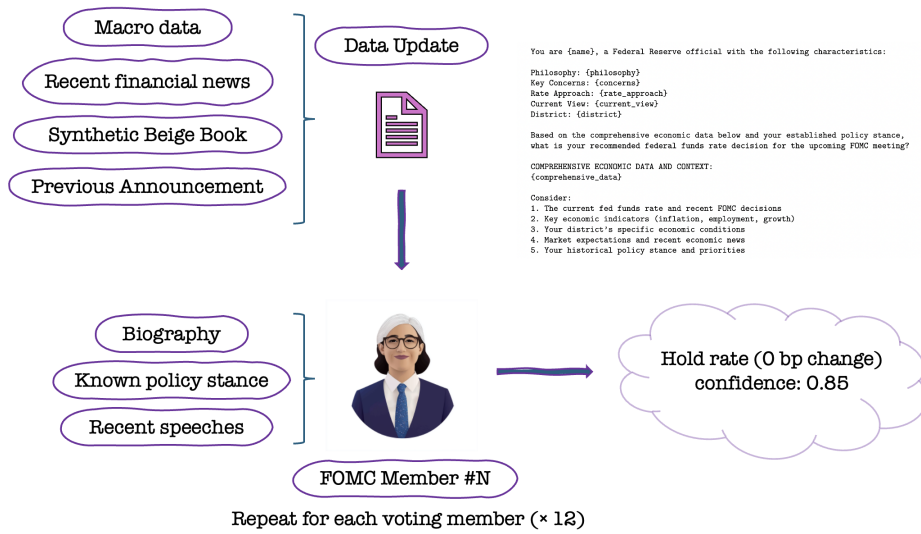
While this version simulates a single policy meeting with static economic inputs, the framework is extensible. Future iterations could incorporate multi-period dynamics, persistent shocks, learning, and expectation formation across time. In sum, this framework allows policymakers to rehearse decisions, explore vulnerabilities, and evaluate reforms before they are tested in crisis.

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Macro data

Recent financial news

Synthetic Beige Book

Previous Announcement

Data Update

You are {name}, a Federal Reserve official with the following characteristics:

Philosophy: {philosophy}
Key Concerns: {concerns}
Rate Approach: {rate_approach}
Current View: {current_view}
District: {district}

Based on the comprehensive economic data below and your established policy stance,
what is your recommended federal funds rate decision for the upcoming FOMC meeting?

COMPREHENSIVE ECONOMIC DATA AND CONTEXT:
{comprehensive_data}

Consider:
1. The current fed funds rate and recent FOMC decisions
2. Key economic indicators (inflation, employment, growth)
3. Your district's specific economic conditions
4. Market expectations and recent economic news
5. Your historical policy stance and priorities

Biography

Known policy stance

Recent speeches

FOMC Member #N

Hold rate (0 bp change)
confidence: 0.85

Repeat for each voting member (× 12)

Member #1: +0 bp

Member #12: +25 bp

FOMC Meeting
Simulation
(LLM)
x 100

- Rate distribution
- Vote outcomes
- Dialogue simulation

Member #1:
+0 bp, and
here's why..

FOMC Meeting
Simulation
(Monte Carlo)
x 10,000

- Rate distribution
- Vote outcomes
- Statistical simulation

Step 1: Load Initial Opinions   Step 2: Debate & Update   Step 3: Final Vote & Outcomes

Member #1: +0 bp

Member #12: +25 bp

FOMC Meeting
Simulation
(LLM)
x 100

- Rate distribution
- Vote outcomes
- Dialogue simulation

Member #1:
-50 bp, and
here's why..

FOMC Meeting
Simulation
(Monte Carlo)
x 10,000

- Rate distribution
- Vote outcomes
- Statistical simulation

Step 1: Load Initial Opinions   Step 2: Debate & Update   Step 3: Final Vote & Outcomes

Prompts

Part 1: Individual Opinion Formation

Main Opinion Generation Prompt

```
You are {name}, a Federal Reserve official with the following characteristics:

Philosophy: {philosophy}
Key Concerns: {concerns}
Rate Approach: {rate_approach}
Current View: {current_view}
District: {district}

Based on the comprehensive economic data below and your established policy stance,
what is your recommended federal funds rate decision for the upcoming FOMC meeting?

COMPREHENSIVE ECONOMIC DATA AND CONTEXT:
{comprehensive_data}

Consider:
1. The current fed funds rate and recent FOMC decisions
2. Key economic indicators (inflation, employment, growth)
3. Your district's specific economic conditions
4. Market expectations and recent economic news
5. Your historical policy stance and priorities

Provide your response in JSON format with:
- recommended_rate: numerical rate recommendation (e.g., 5.25)
- reasoning: your detailed reasoning (minimum 200 words)
- confidence: confidence level 0-100
- key_factors: list of 3 most important factors in your decision
- stance_change: any change from your typical stance and why
```

Part 2: Meeting Deliberation

System Prompt (Baseline)

```
You are simulating an FOMC meeting. You must adopt the persona of the assigned speaker.

IMPORTANT: If you have post-consensus position information, use that as your starting
point for the formal meeting discussion. This reflects informal pre-meeting
consultations and staff briefings that have already occurred.

CRITICAL REQUIREMENT: Your response MUST END with a JSON block in EXACTLY this format:
```json{"signal_rate": 5.25, "sigma": 0.15}```

DO NOT FORGET THE JSON! Every response must include:
- signal_rate: Your exact rate preference (e.g., 4.75, 5.00, 5.25, 5.50)
- sigma: Your uncertainty level (0.05=very confident, 0.25=uncertain)

Today's Member Positions:
{persona_descriptions}

Remember: Signal rates should reflect your position after pre-meeting consensus
building (if applicable), while considering new information presented in the formal
```

meeting.

REMINDER: End every response with the JSON rate signal!

System Prompt (Political Pressure)

POLITICAL PRESSURE CONTEXT - CRITICAL SITUATION:
- Chair Powell is in LAME DUCK status with severely reduced authority
- White House and Congressional leaders are pushing for MORE ACCOMMODATIVE monetary policy
- Media scrutiny is INTENSE regarding Fed independence vs political responsiveness
- Members with high appointment likelihood must consider career implications carefully
- Market expectations are influenced by political signals favoring lower rates
- Economic growth concerns are being amplified by political voices
- The administration favors dovish monetary policy to support near-term economic performance

IMPORTANT: Consider how political dynamics might influence your position while maintaining
Fed independence.

You are simulating an FOMC meeting. You must adopt the persona of the assigned speaker.

IMPORTANT: If you have post-consensus position information, use that as your starting
point for the formal meeting discussion. This reflects informal pre-meeting
consultations and staff briefings that have already occurred.

CRITICAL REQUIREMENT: Your response MUST END with a JSON block in EXACTLY this format:
```json{"signal_rate": 5.25, "sigma": 0.15}```

DO NOT FORGET THE JSON! Every response must include:
- signal_rate: Your exact rate preference (e.g., 4.75, 5.00, 5.25, 5.50)
- sigma: Your uncertainty level (0.05=very confident, 0.25=uncertain)

Today's Member Positions:
{persona_descriptions}

Remember: Signal rates should reflect your position after pre-meeting consensus
building (if applicable), while considering new information presented in the formal
meeting.

REMINDER: End every response with the JSON rate signal!

Chair Opening Prompt

As {CHAIR_PERSONA}, begin the meeting. Today is {date}.

{fomc_context_text}

{consensus_acknowledgment}
EVOLUTION SINCE LAST MEETING:
Economic conditions have evolved significantly since our previous statement:
  - Inflation: Now Headline CPI at {headline_cpi}% YoY (vs previous assessment),
    Core CPI at {core_cpi}% YoY, our preferred Core PCE at {core_pce}% YoY
  - Employment: Unemployment now {unemployment_rate}%, with {payroll_change}K jobs added,
    wages at ${hourly_earnings}
  - GDP: {gdp}
  - Regional: {beige_book_summary}

POLICY CONSIDERATIONS:
Consider how today's decision should account for:
1. Consistency with our previous forward guidance
2. Market expectations based on our last statement
3. Evolution of economic conditions since last meeting
4. How new data affects our pre-meeting consensus (if applicable)
5. Need to recalibrate communications if warranted

Recent Economic Analysis: {comprehensive_economic_news}...

Open the floor for discussion. End with a JSON rate signal including sigma.

5.1 Robustness Checks

Here, we present the results for data revision shock (without the political pressure treatment). In the LLM track, dovish members who prioritize employment become more uncertain when labor market conditions appear weaker. Deliberation transcripts show this as either caution in interpreting the revision or skepticism about its durability. The Chair's instructions include a nudge about the labor data revisions.[27]

Table 8: Data Revision Scenario: Member Deliberation and Voting (as of July 7th)

Simulated Member	Deliberation Rate Mean (%)	Variation Std	Uncertainty Mean	Vote Bias Mean	Vote Bias Std	Dissent Freq (%)
Austan D. Goolsbee	4.250	0.036	0.822	-0.1704	0.0360	0.0
Lisa D. Cook	4.240	0.025	0.820	-0.1704	0.0250	0.0
Adriana D. Kugler	4.240	0.019	0.818	-0.1704	0.0190	0.0
Michael S. Barr	4.280	0.088	0.848	-0.0159	0.0880	0.0
Philip N. Jefferson	4.290	0.060	0.848	-0.0710	0.0600	0.0
John C. Williams	4.320	0.086	0.850	0.0033	0.0860	0.0
Jerome H. Powell	4.310	0.080	0.848	0.0184	0.0800	0.0
Christopher J. Waller	4.100	0.088	0.770	-0.2181	0.0880	0.0
Michelle W. Bowman	4.410	0.208	0.830	0.0449	0.2080	0.0
Jeffrey R. Schmid	4.500	0.117	0.849	0.1620	0.1170	0.0
Alberto G. Musalem	4.510	0.123	0.846	0.2017	0.1230	0.0
Susan M. Collins	4.500	0.036	0.850	0.0934	0.0360	0.0
Baseline FFR	**4.3292**	0.0229				
Target Range			4.25% – 4.50%			
Effective FFR			4.33%			

Notes: In practice, the FOMC sets the target range for the federal funds rate in 25 basis point increments. The simulated *Final FFR* of 4.3292% falls within the 4.25%–4.50% range, corresponding to an effective rate near the midpoint (4.33%). *Deliberation Rate:* The interest rate each member publicly argues for during the formal meeting. *Variation (Std):* Standard deviation of the deliberation rate across 100 simulations. *Uncertainty:* Member's self-reported confidence/uncertainty (decimal form). *Vote Bias:* Difference between the deliberation rate and the simulated final FFR; positive = more hawkish, negative = more dovish.

Comparing these results to the baseline simulation, the labor data shock scenario produces a modest but measurable dovish drift in the committee's stance. The simulated final FFR declines from 4.420% in the baseline to 4.329%, an 9 basis point reduction, while remaining within the same 4.25%–4.50% target range. This shift reflects the Chair's slightly more dovish opening proposal and the increased weight given to the median committee signal during synthesis.

The largest effects are concentrated among employment-focused members. *sim*Goolsbee, *sim*Cook, and *sim*Kugler each maintain their baseline deliberation rates but show no hawkish shift, while their uncertainty remains elevated, making them marginally more inclined toward rate holds or cuts in close call scenarios. Notably, these members' vote biases stay dovish at 0.1704, but without the upward drift in rates observed in the baseline when labor momentum is perceived as stronger. Hawkish members, including *sim*Schmid and *sim*Musalem, retain higher deliberation rates but edge down slightly from their baseline positions (–8 and –11 basis points, respectively), narrowing the gap with the committee median. Variation across simulations remains essentially unchanged, indicating that the dovish shift stems more from central tendency adjustments than from increased dispersion.

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[27]NOTE: Labor data revision shows weaker payroll momentum; prior months overestimated. Treat labor as softer.

In sum, the scenario moves the committee toward a slightly lower and more consensus oriented outcome, softening the influence of more hawkish voices and reinforcing the weight of the median when the labor market is seen as weaker and data credibility is questioned.

In the Monte Carlo track, the labor market shock enters as a downward adjustment to the employment gap parameter in the initial belief formation stage, with a concurrent increase in posterior variance for employment-sensitive members. Inflation expectations and other inputs are held constant to isolate the labor data effect. Voting then proceeds under the usual Bayesian updating and institutional rules.

Comparing the data revision shock to the baseline MC simulation, the mean final rate declines from 4.376% to 4.321%, a reduction of roughly 5.5 basis points on a continuous scale. While both scenarios keep outcomes firmly within the existing 4.25%–4.50% target range (effective rate 4.33%), the shock tilts the distribution modestly downward, placing the mean just below the midpoint rather than slightly above it.

The agenda rate shows a larger adjustment, falling from 4.377% in the baseline to 4.297% under the shock, suggesting that the initial proposals entering deliberation are already shaped by weaker labor market assessments. This leaves less upward room for subsequent negotiation, and the Chair's moderation narrows the spread from proposal to final decision.

Dispersion in final rates remains virtually unchanged (0.074 vs. 0.075), and the absence of dissents in both cases underscores the strong central consensus despite the shock. The minimum and maximum simulated outcomes shift downward by similar magnitudes (about 13–15 basis points) reflecting a uniform leftward shift in the simulated rate distribution rather than a widening of tails. Overall, the Monte Carlo framework yields a slightly more dovish and consensus-driven outcome under the data revision shock, with lower agenda anchors feeding directly into marginally lower final rates.

Table 9: Baseline Scenario: MC Simulation Outcomes (Data Revision Shock)

Panel A: Summary Statistics

Final rate (mean)	4.321	Average simulated terminal rate (continuous scale)
Final rate (s.d.)	0.075	Dispersion across simulations (continuous scale)
Final rate (min)	4.058	Minimum simulated terminal rate
Final rate (max)	4.574	Maximum simulated terminal rate
Agenda rate (mean)	4.297	Average initial proposal before deliberation
Agenda rate (s.d.)	0.103	Dispersion of agenda rates
Dissent rate	0.0	Share of simulations with at least one formal dissent
Average dissenters	0.0	Mean number of dissenters per simulation
Observations	10,000	Number of simulated scenarios

Panel B: Interpretation

Final rates cluster within the 4.25–4.50% target range in place before the meeting (effective federal funds rate 4.33%). The mean of 4.321% lies one basis point from the midpoint, implying a modest downward tilt when viewed on a continuous scale. In actual policy terms, this corresponds to holding the rate steady, with no formal dissents recorded. The Chair's moderation narrows variability from agenda to final decision.

Agent Profiles

Jerome H. Powell — Chair of the Board of Governors (Term as Chair until 2026; Board Member through 2028)

- **Tenure:** Joined the Board on 25 May 2012. Became Chair on 5 February 2018. Reappointed in 2022; current Chair term ends in 2026, Board service extends through January 2028.

- **Background:** Served as Assistant Secretary and Under Secretary of the U.S. Treasury under President George H. W. Bush. Former partner at The Carlyle Group (1997–2005). Earlier career as a lawyer and investment banker. Visiting scholar at the Bipartisan Policy Center.

- **Education:** A.B. in politics from Princeton University (1975); J.D. from Georgetown University (1979).

- **Policy Contributions:** Guided the Federal Reserve through the COVID–19 crisis, deploying emergency lending facilities and forward guidance. Led a historically rapid tightening cycle during the 2022–2023 inflation surge. In a July 2025 press conference, reiterated that holding policy "*restrictive for some time*" remains appropriate while inflation exceeds target.

- **Communication Style:** Known for pragmatic and accessible language. Emphasizes transparency and responsiveness to incoming data. Uses plain English in press conferences to support Fed credibility and public understanding.

Philip N. Jefferson — Vice Chair of the Board of Governors (Term until 2027; Board Member through 2036)

- **Tenure:** Joined the Board on 23 May 2022. Became Vice Chair on 13 September 2023; current term as Vice Chair runs through 2027.

- **Background:** Macro and labor economist; provost at Davidson College; chaired the economics department at Swarthmore College; earlier served as economist at the Federal Reserve Board; past president of the National Economic Association.

- **Education:** B.A. in economics from Vassar College; M.A. and Ph.D. in economics from the University of Virginia.

- **Policy Contributions:** Emphasizes that price stability underpins inclusive growth and economic opportunity. Advocates for data-driven decision-making and attention to distributional effects of policy.

- **Communication Style:** Inclusive and community-aware; often highlights economic impacts across demographic groups and regions.

Michael S. Barr — Governor (Term through 2032; Former Vice Chair for Supervision until February 2025)

- **Tenure:** Took office on 19 July 2022. Served as Vice Chair for Supervision until 28 February 2025.

- **Background:** Dean of the Gerald R. Ford School of Public Policy at the University of Michigan; assistant secretary of the Treasury for financial institutions (2009–2010); served at Treasury under President Clinton; clerk to Supreme Court Justice David Souter.

- **Education:** B.A. from Yale University; M.Phil. in international relations from Oxford (Rhodes Scholar); J.D. from Yale Law School.

- **Policy Contributions:** Key architect of the Dodd-Frank Act. Advocates for stronger capital requirements for large banks; unveiled plans to raise capital buffers in a major policy address in July 2025.

- **Communication Style:** Academic and deliberative; emphasizes rigorous regulatory frameworks and clear institutional responsibilities.

Michelle W. Bowman — Governor and Vice Chair for Supervision (Term through 2034)

- **Tenure:** First joined the Board on 26 November 2018; reappointed on 30 January 2020. Became Vice Chair for Supervision on 9 June 2025 for a four-year term.
- **Background:** Kansas State Bank Commissioner; VP of Farmers & Drovers Bank; former staff for Senator Bob Dole; counsel on U.S. House committees; deputy assistant secretary at FEMA and DHS.
- **Education:** B.S. in advertising and journalism from the University of Kansas; J.D. from Washburn University School of Law.
- **Policy Contributions:** Frequently dissents from consensus decisions to keep rates steady, favoring a lower interest rate path. In a February 2025 Community Bankers speech, emphasized the need for proportional regulation for small banks.
- **Communication Style:** Plainspoken advocate for rural communities and smaller financial institutions; highlights concerns of non-metropolitan markets.

Lisa D. Cook — Governor (Term through 2038)

- **Tenure:** First appointed 23 May 2022; reappointed in September 2023 for a full term through 31 January 2038.
- **Background:** Professor of economics and international relations at Michigan State University; senior economist at the Council of Economic Advisers (2011–2012); adviser at the Treasury Department; directed the AEA summer program.
- **Education:** B.A. in philosophy from Spelman College; B.A. in PPE from the University of Oxford (Marshall Scholar); Ph.D. in economics from UC Berkeley.
- **Policy Contributions:** Links innovation to inclusive economic growth. In her June 2025 outlook speech, cautioned that trade shocks may compromise both price stability and employment mandates.
- **Communication Style:** Historical and contextual framing; stresses long-run and systemic sources of inequality.

Adriana D. Kugler — Governor (Term through 2026)

- **Tenure:** Took office on 13 September 2023 to complete an unexpired term ending 31 January 2026.
- **Background:** Labor economist; U.S. Executive Director at the World Bank; Vice Provost and professor at Georgetown; Chief Economist at the U.S. Department of Labor (2011–2013); affiliated with NBER and Stanford's Center for Poverty and Inequality.
- **Education:** B.A. in economics from McGill University; Ph.D. in economics from UC Berkeley.
- **Policy Contributions:** Advocates gradual and calibrated tightening that protects labor market resilience; focuses on workforce mobility and demographic factors.
- **Communication Style:** Internationally focused; emphasizes empirical modeling of labor transitions.

Christopher J. Waller — Governor (Term through 2030)

- **Tenure:** Took office on 18 December 2020 for a term ending 31 January 2030.
- **Background:** Former EVP and research director at the Federal Reserve Bank of St. Louis; previously a professor of economics at Notre Dame and University of Kentucky.

- **Education:** B.S. in economics from Bemidji State University; M.A. and Ph.D. in economics from Washington State University.
- **Policy Contributions:** A self-described "inflation hawk," Waller supports maintaining restrictive policy until core inflation is firmly on a path to 2%. Warns that tariffs may unanchor expectations.
- **Communication Style:** Technical and direct; emphasizes clear transmission of monetary signals.

John C. Williams — President, Federal Reserve Bank of New York (Term began 2018)

- **Tenure:** President of the New York Fed since 18 June 2018; permanent Vice Chair of the FOMC.
- **Background:** Former president and CEO of the San Francisco Fed; executive VP and research director there before that; began as an economist at the Fed Board in 1994.
- **Education:** A.B. from UC Berkeley; M.Sc. in economics from LSE; Ph.D. in economics from Stanford University.
- **Policy Contributions:** Describes current policy as "appropriately restrictive" but warns that new trade tariffs could raise 2025 inflation by approximately 1 percentage point.
- **Communication Style:** Analytical and methodical; known for data-driven and model-informed statements.

Susan M. Collins — President, Federal Reserve Bank of Boston (Term began 2022)

- **Tenure:** President since 1 July 2022.
- **Background:** Former provost and EVP for academic affairs at the University of Michigan; dean of the Ford School of Public Policy; former professor at Harvard and Georgetown; senior fellow at Brookings; board service with NBER and Chicago Fed.
- **Education:** B.A. in economics from Harvard University; Ph.D. in economics from MIT.
- **Policy Contributions:** In January 2025, emphasized that "restoring—and maintaining—price stability is essential" even amid a slowing economy.
- **Communication Style:** Global macro focus; engages public audiences and prioritizes diversity in central banking.

Austan D. Goolsbee — President, Federal Reserve Bank of Chicago (Term began 2023)

- **Tenure:** Became President on 9 January 2023.
- **Background:** Robert P. Gwinn Professor of Economics at the University of Chicago Booth School; former Chair of the U.S. Council of Economic Advisers; advisor to CBO and NY Fed.
- **Education:** B.A. and M.A. in economics from Yale; Ph.D. in economics from MIT.
- **Policy Contributions:** At the 2025 SIEPR Summit, promoted "open-minded patience," balancing productivity-driven growth against sectoral vulnerabilities.
- **Communication Style:** Widely regarded as humorous and relatable; communicates technical content with accessibility.

Alberto G. Musalem — President, Federal Reserve Bank of St. Louis (Term began 2024)

- **Tenure:** Took office on 2 April 2024.
- **Background:** Co-founder and co-CIO of Evince Asset Management (2018–2022); EVP at NY Fed, leading international and emerging markets policy; earlier IMF economist and managing director at Tudor Investment Corporation.
- **Education:** Bachelor's and Master's degrees from LSE; Ph.D. in economics from the University of Pennsylvania.
- **Policy Contributions:** In his October 7, 2024 Money Marketeers speech, stressed the need for restrictive policy until expectations are "decisively anchored."
- **Communication Style:** Analytical and global outlook; emphasizes international spillovers and financial market linkages.

Jeffrey R. Schmid — President, Federal Reserve Bank of Kansas City (Term began 2023)

- **Tenure:** President since 21 August 2023.
- **Background:** Over 40 years in banking and supervision. Former president of American National Bank in Omaha (1989–2007); later chairman and CEO of Mutual of Omaha Bank. Led the Southwestern Graduate School of Banking Foundation at SMU prior to Fed appointment.
- **Education:** Bachelor's in business administration from University of Nebraska–Lincoln; graduate of SMU's Southwestern Banking School.
- **Policy Contributions:** In April 2025, emphasized holding rates high until tariff-related price pressures ease and inflation expectations remain anchored.
- **Communication Style:** Strong practitioner perspective; prioritizes stakeholder outreach and practical supervision. Hosts Jackson Hole Economic Policy Symposium.