Alternative Scenarios at the Federal Reserve from 1968 to 2020: Data, Interpretation, and Evaluation

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Abstract

We comprehensively document 1,265 Federal Reserve staff alternative scenarios presented to the Federal Open Market Committee from 1968 to 2020. Scenarios have grown in frequency and sophistication, typically spanning a range of outcomes around the baseline. We construct a taxonomy with six categories: aggregate demand, aggregate supply, external risks, financial conditions, fiscal policy, and expectation shifts. Staff qualitative risk assessments complement rather than determine scenario composition. Comparing scenario forecasts to realized outcomes, the most accurate scenarios often anticipated major macroeconomic developments even when magnitudes were missed, revealing the value and limits of scenario analysis for central bank risk management.

1 Introduction

Central banks rely heavily on forecasts in their internal deliberations, often emphasizing a single "baseline" projection for key macroeconomic variables. Yet monetary policy is ultimately an exercise in risk management, in which the challenge is not only to forecast the most likely path of the economy but also to take into account the possibility of less likely

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outcomes. Robust policymaking requires careful consideration of uncertainty and the range of risks surrounding the baseline projection. Against this backdrop, "alternative scenarios" have become an increasingly important tool in both policy deliberations and communications. Alternative scenarios are structured point forecasts constructed under different assumptions about the evolution of the economy—for example, a sharp slowdown in productivity growth or a sudden rise in energy prices. They provide policymakers with concrete illustrations of how key risks might unfold—unlike purely statistical tools for describing uncertainty such as fan charts—thereby complementing the baseline by highlighting vulnerabilities and possible trade-offs.[1] Indeed, recent research, including Bernanke (2024), Wessel (2024), and Bordo, Levin, and Levy (2020), has advocated a more prominent role for alternative scenarios in monetary policy deliberations and communications.

Recent FOMC communications illustrate the current practical relevance of scenario analysis. In December 2024, when asked about tariff policy, Chair Powell referred to staff scenarios prepared years earlier; a month later, he described the alternative scenarios as "one of the best things" the staff does because they help policymakers think through uncertainty.[2] These remarks motivate the historical questions addressed in this paper: how has the Federal Reserve used alternative scenarios, what risks have those scenarios emphasized, and how informative have they been in light of subsequent outcomes?

Alternative scenarios have a long history at the Federal Reserve and other central banks.[3] The first known mention of "alternative scenarios" in the FOMC historical materials came at the April 1968 meeting, immediately following the collapse of the Gold Pool and arrangements to manage the private-sector world gold price—a pivotal event in the unraveling of the Bretton Woods System.[4] Robert Solomon, director of the Division of International Finance, laid out the monetary policy implications for the FOMC:[5]

> What I shall try to do this morning is to place these meetings in perspective and sketch out for the Committee two alternative scenarios for the period ahead. One scenario involves a return to international monetary stability based on returning confidence that the existing price of gold will be maintained; the other scenario

[1] Bauer and others (2025) lay out a taxonomy of uncertainty and risks relevant for monetary policy analysis and discuss tools, including alternative scenarios, that can be used to assess and quantify uncertainty and risks. Garga and others (2025) discuss advantages and disadvantages of alternative scenarios in monetary policy deliberation and communications. Cairó and others (2025) propose a framework to incorporate alternative scenarios into the assessment of monetary policy strategies. Adrian and others (2025) describe a statistical framework for inferring the likelihoods of alternative scenarios.

[2] See Powell (2024) and Powell (2025).

[3] See Koch and Crawford (2019) for an earlier analysis of alternative scenarios at the Federal Reserve and Ciccarelli and others (2025) for a discussion of scenario analysis at the European Central Bank.

[4] For background on the Gold Pool see Solomon (1977) and Bordo, Monnet, and Naef (2019).

[5] Memorandum of Discussion of the Federal Open Market Committee Meeting on April 2, 1968, p. 13.

involves a recurrence of instability based on a failure to correct the U.S. balance of payments problem.

From such crisis-motivated beginnings, alternative scenarios evolved into a regular feature of monetary policy analysis, expanding in both frequency and analytical sophistication. In this paper, we document the evolving use of alternative scenarios at the Federal Reserve as presented in staff briefing materials submitted to the Federal Open Market Committee (FOMC). We examine the complete set of FOMC historical materials to identify alternative scenarios presented by the staff in advance written briefing materials (the Greenbook, Bluebook, and Tealbook) as well as during the FOMC meetings (as documented in the transcripts, memoranda of discussion [the predecessor of the transcripts], and presentation materials). We analyze the period from 1968 through 2020, capturing all years for which relevant FOMC historical materials are publicly available.

We compile a dataset covering the alternative scenarios presented to the FOMC from 1968 to 2020—1,265 in all—including each scenario's name, narrative description, and model used, if available.[6] For the 1,132 more structured tabular presentations in the Greenbook and Tealbook A from 1989 to 2020, we record the numerical forecasts for a selected set of macroeconomic variables. In addition, we record the narrative balance-of-risks statements presented just prior to the presentation of scenarios: these risk statements begin appearing in the January 2008 Greenbook and are available continuously starting with the March 2013 Tealbook. These texts provide qualitative assessments of upside and downside risks around the baseline forecast, complementing the quantitative alternative scenarios. Our analysis reveals a systematic expansion over time in both the types of risks considered and the analytical sophistication with which they are modeled.

Our paper makes three contributions. First, we provide a descriptive overview of the historical record, documenting the number of alternative scenarios presented to the FOMC over time, the models used to construct them, and the Board staff's overall assessment of forecast uncertainty and the balance of risks. Second, we categorize the scenarios according to the nature of their shocks, providing a taxonomy of risks emphasized in the scenarios. Using the quantitative information, we examine the joint distribution of output and inflation expressed as deviations from the baseline forecast. This allows us to characterize the risks captured by the scenarios and their co-movements, without reference to subsequent economic outcomes. Third, we informally evaluate the performance of the alternative scenarios relative

[6] We exclude scenarios that differ from the baseline only in the setting of the federal funds rate or balance sheet policy. Additionally, when a scenario is presented both with and without a monetary policy response, we keep only the version that includes a monetary policy response. In the case of some Greenbook scenarios, information on the numerical values is incomplete.

to realized macroeconomic outcomes, providing illustrative examples of scenarios that shed light on key turning points.

2 Data

The documents available on FOMC meetings through 2020 indicate that a typical 21st-century Greenbook or Tealbook A contains around six or seven alternative scenarios, also known as alternative simulations. Staff briefings given at FOMC meetings and Bluebooks (later Tealbook B) may refer to these scenarios or introduce additional scenarios, up to a maximum of 10 total scenarios during an FOMC round. Each alternative scenario represents a potential alternative trajectory for the economy, relative to the main "baseline" forecast, which has been communicated as the modal or most likely projection.[7] The baseline forecast represents the collective judgment of a large team, informed by a variety of models and supported by substantial resources. It is accompanied by a comprehensive write-up that provides detailed analysis and context. By contrast, each alternative scenario is typically built using a single model, supplemented by judgment, and developed with more limited resources. Their narratives are shorter, less detailed, and intended to illustrate risks associated with the baseline rather than to provide a full-fledged parallel forecast.

As shown in Figure 1, most alternative scenarios since the late 1990s use FRB/US, a large-scale econometric model for the United States introduced in Brayton and Tinsley (1996),[8] but a variety of models have been used over time. The debut of alternative scenario analysis in 1968 coincided with the development of the Federal Reserve's first large-scale econometric model, MIT-Penn-SSRC (MPS),[9] which enabled periodic briefings to the FOMC on alternative fiscal scenarios throughout the 1970s. The addition of the FRB Multicountry Model[10] in the late 1970s allowed for a broader range of scenarios, notably exchange rate scenarios, and the two models were frequently used together as the "Board model" in the 1980s and early 1990s.[11] The limitations of the MPS model prompted frequent complaints on the part of the staff and FOMC participants alike, but it was used out of necessity, with Governor Alan Blinder remarking, "Nobody has to believe these numbers, but I don't know where else to get numbers other than trying to put this policy through an econometric

[7] See, for example, the January 1985 comment by James Kichline, director of the Board's Division of Research and Statistics, "We have alleged for years that we have a modal forecast." Transcript of the Federal Open Market Committee Meeting on February 12–13, 1985, p. 13.

[8] See also Brayton, Laubach, and Reifschneider (2014).

[9] See Brayton and Mauskopf (1985).

[10] See Edison, Marquez, and Tryon (1987).

[11] See Brayton and others (1997) regarding the evolution of macro models at the Federal Reserve.

model."[12] It was the July 1996 launch of FRB/US, featuring an improved treatment of expectations, that enabled a rapid expansion in the number of scenarios presented to the FOMC.

In recent years, alternative scenarios have increasingly been constructed using a range of New Keynesian dynamic stochastic general equilibrium (DSGE) models. The most commonly used in our sample is SIGMA,[13] with others including EDO,[14] DGS,[15] GST,[16] GEMUS,[17] Gertler-Karadi,[18] and Smets-Wouters.[19] In addition, scenarios have been developed using event-driven extensions of baseline models or using a composition of multiple models. For example, a December 2020 alternative simulation was constructed with "a small-scale New Keynesian model with a SIR (susceptible, infected, recovered) model of viral propagation to capture the endogenous response of consumption and production to the progression of the pandemic."[20]

We record the alternative trajectories of the key macroeconomic variables reported in tables accompanying the Greenbook and Tealbook A alternative scenarios. Both the forecast horizons and the set of variables vary across time, with earlier briefing materials typically presenting fewer scenarios, shorter projection horizons, and a more limited set of variables. Figure 2 illustrates this evolution: the March 1995 Greenbook shows only a couple of exchange-rate scenarios affecting a handful of variables, while later vintages (such as 1999, 2006, and 2018) feature a richer set of scenarios, longer horizons, and more detailed projections. For most of the sample period from 1989 to 2020, real GDP growth, the unemployment rate, and a measure of core inflation (CPI before 2000 and PCE after) are available. Coverage of additional variables expands over time, with the federal funds rate added in 2006, followed later by total PCE inflation in 2011.

The evolution of the alternative simulations tables reflects how the staff gradually expanded and formalized the use of alternative scenarios to give policymakers a fuller picture of the risks to the baseline forecast. A key milestone in this formalization was the launch of the Risks & Uncertainty chapter in the inaugural Tealbook in June 2010. This new chapter consolidated alternative simulations that had been presented separately in the domestic and

[12] Transcript of the Federal Open Market Committee Meeting on November 19, 1994, p. 32.

[13] First used in June 2010 to consider international risk scenarios. See Erceg, Guerrieri, and Gust (2005).

[14] A domestic DSGE model first introduced in April 2011. See Edge, Kiley, and Laforte (2008).

[15] See Del Negro, Giannoni, and Schorfheide (2015).

[16] See Gertler, Sala, and Trigari (2008).

[17] Beginning August 2018, GEMUS is a "two-country open economy DSGE model with relatively standard New Keynesian features." See Bodenstein and others (2021).

[18] See Gertler and Karadi (2011).

[19] See Smets and Wouters (2007).

[20] Tealbook A from December 4, 2020, p. 109. For details on the SIR model, see Lepetit and Fuentes-Albero (2022).

international forecast sections of the Greenbook. The introduction to the Risks & Uncertainty chapter highlighted a standardized and recurring assessment of forecast uncertainty and balance of risks, which had appeared quarterly alongside the Greenbook's domestic forecast since 2008. (Similar assessments were introduced in the FOMC Summary of Economic Projections (SEP) associated with the October 2007 meeting.)

The assessment of forecast uncertainty and balance of risks serves as a complement to the scenario analysis, providing a consistent summary of how the staff view the degree and asymmetry of uncertainty surrounding the baseline projection. Specifically, the staff evaluate overall forecast uncertainty relative to a historical benchmark—typically defined as the average magnitude of forecast errors over the previous 20 years—and classify it as being the same or higher than this benchmark (they have never classified it as lower). In most cases, the horizon for these judgments is not explicitly stated, though they appear to reflect one- to two-year-ahead projections. We used AI methods to extract staff risk and uncertainty assessments from 2008–2020 as documented in the appendix.

Figure 3 displays these assessments in two panels, with each panel showing bars for both real GDP growth and inflation. The figure includes staff judgments given in Tealbook A as well as FOMC participant assessments in the Summary of Economic Projections.

The top panel shows assessments of forecast uncertainty (elevated, typical, or diminished). Both the staff and participants judged uncertainty to be elevated for both variables from spring 2008 through 2011. Thereafter, the staff returned its assessment of uncertainty about inflation to "typical" in January 2012, while the SEP did so in September 2012. Uncertainty about real GDP returned to typical levels in both the staff's and SEP participants' assessments in 2013. From 2013 through early 2020, uncertainty was predominantly assessed as typical, before spiking to elevated again with the onset of the COVID-19 pandemic in March 2020.

The bottom panel shows the balance of risks (downside, balanced, or upside)—whether the distribution of possible outcomes is viewed as asymmetric or skewed. The staff and participant assessments often diverged during the recovery period. For real GDP, staff judgments were predominantly skewed to the downside from 2008 through mid-2017, but the SEP's risk assessment was balanced from 2013 onward. With respect to inflation, staff assessments were balanced throughout most of the post–Global Financial Crisis period, with a downside tilt from late 2014 until late 2016. Participant assessments of inflation risks evolved differently, underscoring how the staff dataset provides complementary information to the SEP assessments.

Taken together, these two sets of judgments—about uncertainty and skewness—form the backbone of the Tealbook's formal treatment of forecast risk in the later part of the sample. They offer a compact, qualitative summary that complements the richer narrative content of the alternative scenarios, providing policymakers with both structured (what-if) and probabilistic (how likely) perspectives on the risks surrounding the baseline outlook. These qualitative assessments complement the alternative scenarios rather than determine their composition. For example, a staff judgment that real GDP risks are skewed to the downside is not associated in the sample with a larger number of downside scenarios. And although, in the case of real GDP, elevated uncertainty is associated with a larger number of scenarios (in addition to a larger range of outcomes), this relationship does not hold for inflation. Overall, this weak association underscores the fact that alternative scenarios are illustrative narratives of specific risks rather than probabilistic statements about the likelihood of different outcomes, a point emphasized by both Bauer and others (2025) and Garga and others (2025).

3 Interpretation

What types of scenarios does the Federal Reserve staff present to policymakers? We categorized each scenario using the narrative descriptions provided in the Greenbook and Tealbook. We developed a detailed classification schema with six main categories and used a large language model to provide initial classifications, which we then systematically reviewed and adjusted. The final categories in our dataset reflect the judgments that we reached after this review process. In doing so, we contribute to a growing literature on the use of LLM-based classifiers in macroeconomic research—see Dunn and others (2024) and Kwon and others (2025) for recent examples—though we emphasize the role of human judgment in our exercise. The appendix provides details on the classification exercise. We identify six main classes of scenarios:

- **Aggregate Demand:** Scenarios primarily related to changes in overall spending, consumption, investment, or economic activity levels. Example scenario titles: Faster Recovery, Housing Slump, Stronger Investment.
- **Aggregate Supply:** Scenarios primarily related to the economy's productive capacity, structural factors, or long-term economic potential. Example scenario titles: Faster Productivity Growth, Greater Supply-Side Damage, Lower Natural Rate of Unemployment.
- **External/Global Risks:** Scenarios primarily related to international economic conditions, global shocks, or external factors affecting the domestic economy. Example scenario titles: European Crisis with Severe Spillovers, Higher Oil Prices, Stronger Dollar.

- **Financial Markets and Stability:** Scenarios primarily related to conditions in financial markets (including equity prices), systemic financial risks, or the stability of the financial system. Example scenario titles: Higher Bond Premiums, Stock Market Correction, Recession with Financial Amplification.

- **Fiscal and Regulatory:** Scenarios primarily related to uncertainty about future non-monetary government policies or their effects. Example scenario titles: Fiscal Cliff, Larger Fiscal Stimulus, Political Gridlock.

- **Public Expectations:** Scenarios primarily related to how economic agents (consumers, businesses, investors) form expectations about future economic conditions. Example scenario titles: Lower Inflation Expectations, Unanchored Inflation Expectations, Brighter Expectations.

Figure 4 shows the volume of scenarios of each category over time. Since 2000, Aggregate Demand, Aggregate Supply, External/Global Risks, and Public Expectations scenarios appear regularly. In contrast, Fiscal and Regulatory scenarios appear somewhat infrequently, concentrated around large fiscal debates in Congress.

What are the forecasted effects of these scenarios? Figure 5 shows the outcomes for GDP and inflation in deviations from the baseline projection for each category at a horizon of one year after the Tealbook. As expected, real GDP and inflation generally move in the same direction in Aggregate Demand scenarios and in opposite directions in Aggregate Supply scenarios. External/Global Risks scenarios feature a wide spread of inflation and output outcomes. Public Expectations scenarios, which most frequently reflect changes to inflation expectations, primarily affect inflation. Both Financial Markets and Stability scenarios and Fiscal and Regulatory scenarios primarily affect real GDP but with a smaller dispersion than Aggregate Demand scenarios.

Alternative scenarios are chosen to present a range of distinct risks to the baseline outlook. We categorize each scenario into four quadrants reflecting upside or downside risks to inflation and output relative to the baseline.[21] Since 2000, 42 percent of the 168 Greenbooks and Tealbooks feature scenarios in all four quadrants, and 88 percent feature scenarios in three or more quadrants.

How have these scenarios evolved? Alternative scenarios have become more analytically sophisticated over time. An August 1995 scenario mechanically shifted the natural rate

[21] We first characterize the scenarios in terms of outcomes for GDP and core PCE inflation at a one-year horizon relative to the baseline. If this is not determinative, we break ties by the number of forecast horizons in which the variable is higher or lower than the baseline, by related variables (total PCE inflation or the unemployment rate), and by the overall trend of the variable (or a related variable) over the forecast horizon.

of unemployment up or down 0.5 percentage points, assuming policymakers knew the true value and producing symmetric results. By January 2016, natural rate scenarios incorporated learning and misperception: policymakers observe noisy signals and discover the true natural rate only gradually, leading to persistent policy errors. Financial scenarios show similar evolution. The November 1999 "20 Percent Stock Price Decline" scenario presented a simple wealth effect. The June 2018 "Financial Correction with Return to Effective Lower Bound" scenario modeled multiple transmission mechanisms—higher risk premiums, credit curtailment, sentiment shocks—and specified the policy response, including a return to the effective lower bound. Scenarios increasingly modeled uncertainty about economic structure itself. A June 2002 scenario simply posited a different value for the long-run equilibrium real federal funds rate (r^*), but scenarios starting in March 2015 modeled gradual recognition of a change in r^*.

4 Evaluation

Evaluating scenario performance is inherently challenging. Scenarios are not predictions but rather illustrations of plausible alternatives. Nonetheless, retrospective analysis sheds valuable light. We consider the period between 2000, when alternative simulations became more numerous, and the onset of the pandemic. Figure 6 shows a scatterplot of alternative scenarios at a one-year horizon in deviations from the baseline, overlaid with realized values. Realized values incorporate all subsequent data revisions in order to compare forecasts with the best understanding of what happened.[22] The spread of scenario and realized values is comparable, suggesting that the alternative scenarios present a range of empirically plausible outcomes.

For each meeting, we identify which scenario (including the baseline) came closest to actual outcomes over the subsequent year, using a distance metric based on equally weighted squared deviations in GDP growth and core inflation using current-vintage data. Figure 7 shows a time series of the most accurate scenarios and their associated forecast errors. In light of the ad hoc nature of our loss function and the horizon chosen, this measure should be interpreted as a heuristic measure of ex post plausibility rather than the result of a statistical horse race among competing forecasts. The figure shows that even the most accurate scenario is associated with large prediction errors during periods of economic disruption. The Global Financial Crisis and COVID-19 pandemic produced forecast errors exceeding 2.5,

[22] Realized values are measured as of the fourth subsequent quarter for meetings in the first half of the quarter, and as of the fifth subsequent quarter for meetings in the second half of the quarter. This ensures comparable data maturity by recognizing the lag in economic data availability.

underscoring the inherent difficulty of forecasting during major turning points or structural breaks, consistent with findings in Bauer and others (2025). However, during the relatively stable period between 2012 and 2017, forecast errors compressed dramatically, even as the number of alternative scenarios fell slightly from earlier in the sample.

That said, the alternative scenarios demonstrated meaningful value in identifying the direction of economic risks, even when they failed to capture their magnitude. The baseline forecast proved closest to actual outcomes only 16 percent of the time—barely above the 14 percent success rate expected from random selection among the typical six or seven scenarios per meeting.[23] This result indicates that alternative scenarios represent genuinely plausible paths for the macroeconomy.

The categorical patterns are also informative. During the financial crisis period (2006–2009), scenarios related to financial markets and stability consistently outperformed the baseline. In contrast, the early COVID period (2020–2021) saw scenarios emphasizing external or global risks proving to be the most accurate. By contrast, during the relatively stable 2012–2017 period, the baseline forecast frequently proved the most accurate.

Table 1 further distills the information provided in Figure 7 by displaying the scenario (or baseline) that proved to have the lowest forecast error in any given year. In retrospect, the scenarios that came closest to the actual outcomes often featured narratives that align with conventional readings of economic developments in the first two decades of the 21$^{\text{st}}$ century, even if these scenarios still failed to capture the magnitudes of changes. For example, the "11,000 Wilshire" scenario of February 2000 anticipated the equity market crash one year ahead, while in June 2006 "Housing Slump" identified the peak of the housing cycle. During the financial crisis period, "Business Pessimism" (March 2007) and "Labor Market Damage" (September 2009) captured the downturn and its persistent effects. More recently, "Lower Long-Term Inflation Expectations" (October 2014) correctly identified the low inflation of the mid-2010s, while "Early Moderation" (April 2020) proved more accurate than baseline pessimism about the pandemic recovery trajectory. These examples demonstrate that the scenario framework successfully captured directional risks even when the baseline forecast proved too optimistic or pessimistic. The varied results highlight both the usefulness and inherent limitations of alternative scenarios: they excel at identifying plausible risks and directional changes but struggle—like all forecasting approaches—to anticipate the magnitude of major disruptions.

[23] This is meant only as a very rough reference; a comprehensive statistical analysis depends on the range of outcomes in the scenario set.

Table 1: Scenario with the Lowest Forecast Error by Year

Year	Meeting	Scenario	Root Squared Error
2000	February	11,000 Wilshire	0.70
2001	November	Stronger Sentiment, Policy Tightening	0.10
2002	September	Baseline	0.12
2003	January	Faster Productivity Growth	0.51
2004	August	Less-Favorable Supply Conditions	0.05
2005	November	Stagflation with Monetary Policy Response	0.10
2006	June	Housing Slump	0.08
2007	March	Business Pessimism	0.04
2008	December	Bigger Fiscal Package	0.32
2009	September	Labor Market Damage	0.26
2010	March	Persistent Caution	0.25
2011	December	Greater Supply-Side Damage	0.25
2012	October	Baseline	0.07
2013	July	Baseline	0.04
2014	October	Lower Long-Term Inflation Expectations	0.14
2015	July	Weaker Labor Productivity, Slower Output Growth	0.12
2016	April	Stronger Foreign Growth and Weaker Dollar	0.09
2017	September	Baseline	0.09
2018	March	Recession	0.17
2019	October	Recession	0.15
2020	April	Early Moderation	0.94

5 Conclusion

This paper constructs and analyzes a new historical dataset of alternative scenarios presented to the FOMC from 1968 through 2020. From sporadic beginnings, scenarios have become more frequent and standardized, and are constructed using an increasingly diverse set of models. The risks considered have broadened from fiscal, exchange-rate, and financial market uncertainties to a wider set of demand and supply shocks and structural changes in the economy, including changes in expectations formation.

Three main findings emerge from our analysis. First, in a typical recent Tealbook, alternative scenarios collectively represent a broad range of risks and typically span multiple quadrants in the output-inflation risk space. Second, the staff's qualitative assessments of uncertainty and the balance of risks complement, rather than mechanically reflect, the information in the alternative scenarios. Third, the ex post performance of alternative scenarios is informative: the baseline forecast is typically not the closest path to the realized outcomes, and the narratives of the closest alternative scenarios often anticipate conventional accounts of macroeconomic developments. That said, the exercise also highlights the limits of scenario analysis. Even the most accurate scenarios often fail to capture the magnitude of changes.

The dataset also opens several avenues for future research: whether scenarios have a measurable impact on FOMC deliberations, how scenario design changed after major macroeconomic events, and how these scenarios might be combined with probabilistic assessments.

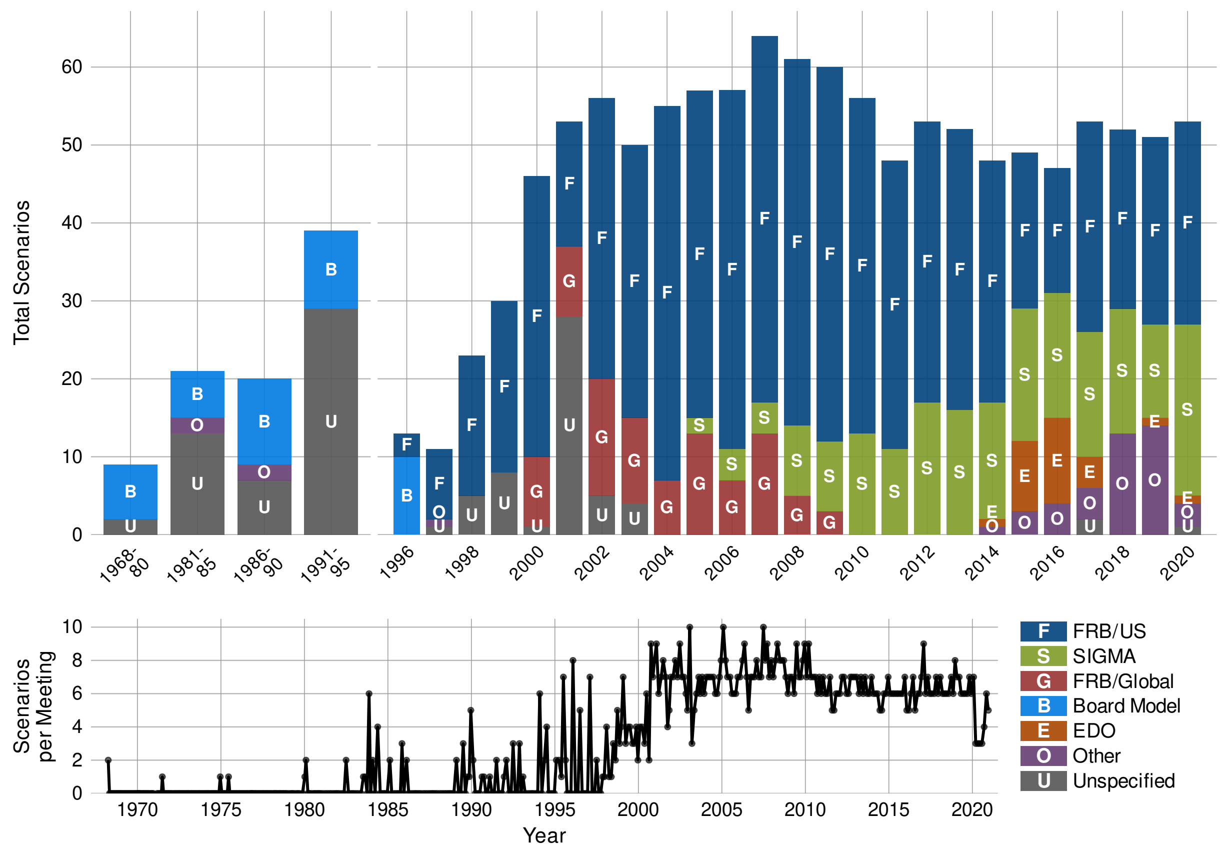

Figure 1: Macro Model Usage in Alternative Scenarios Over Time

Note: Alternative scenarios exclude baseline projections. Models with fewer than 15 total uses across all years are grouped into "Other." "Unspecified" represents scenarios in which model attribution was not documented in the source materials. "Board Model" includes MPS (MIT-Penn-SSRC model) and the Multi-Country Model, the Federal Reserve's primary staff macroeconomic models before FRB/US. The top panel shows annual counts of scenarios by model. The bottom panel shows the number of scenarios presented per FOMC meeting. Letters within bar segments identify models. Bars are stacked in the same order as the legend, though not all models appear in every year.
Source: Authors' calculations using Federal Reserve Greenbooks, Bluebooks, Tealbooks, and other historical materials.

ALTERNATIVE EXCHANGE RATE SIMULATIONS
(Percent change, Q4 to Q4, unless otherwise noted)

	1994	1995	1996
Real GDP			
Baseline	4.0	2.1	2.3
Stronger dollar	...	1.8	1.6
Weaker dollar	...	2.4	3.1
Civilian unemployment rate[1]			
Baseline	5.6	5.7	5.8
Stronger dollar	...	5.8	6.2
Weaker dollar	...	5.6	5.4
CPI			
Baseline	2.6	3.2	3.2
Stronger dollar	...	2.7	2.6
Weaker dollar	...	3.7	3.9

1. Average for the fourth quarter.

(a) March 1995

Alternative Federal Funds Rate and Stock Market Assumptions
(Percent change, Q4 to Q4, except as noted)

Measure	1999	2000	2001
Real GDP			
Baseline	3.8	3.5	3.5
Faster productivity growth	3.8	4.2	5.6
Slower productivity growth	3.8	2.8	1.6
Flat funds rate	3.8	3.6	4.1
Tighter policy	3.8	3.2	2.7
15,000 Wilshire	3.8	3.7	4.1
20 percent stock price decline	3.8	2.4	2.4
Civilian unemployment rate[1]			

(b) November 1999

Alternative Scenarios
(Percent change, annual rate, from end of preceding period except as noted)

Measure and scenario	2006		2007		2008
	H1	H2	H1	H2	
Real GDP					
Greenbook baseline	4.1	1.7	2.0	2.4	2.5
Faster labor force growth	4.1	1.7	2.2	2.8	2.9
Lower NAIRU	4.1	1.7	1.9	2.4	2.8
Greater wage acceleration	4.1	1.7	1.8	2.1	2.1
Stronger growth	4.1	2.1	2.9	3.1	2.9
Extended housing decline	4.1	1.7	1.6	1.8	2.3
Tighter financial conditions	4.1	1.7	1.8	1.7	1.9
Market-based federal funds rate	4.1	1.7	2.0	2.6	3.1
Unemployment rate[1]					

(c) December 2006

Alternative Scenarios
(Percent change, annual rate, from end of preceding period except as noted)

Measure and scenario	2018	2019	2020	2021	2022	2023-24
	H2					
Real GDP						
Tealbook baseline and extension	2.8	2.5	1.9	1.5	1.2	1.1
Recession	2.8	2.5	1.9	.1	-.8	2.0
Inflation fears	2.8	1.5	1.3	1.2	1.1	1.1
Faster wage growth, supply constraints	2.9	2.5	1.7	1.3	1.1	1.1
Faster wage growth, higher productivity	3.5	4.0	1.8	.8	.5	.9
EME turbulence and stronger dollar	2.8	2.0	1.4	1.4	1.3	1.3
Higher trade barriers	1.8	-.3	1.1	1.3	1.1	1.0
Higher trade barriers--see through	2.2	.4	.9	1.0	.8	.9
Unemployment rate[1]						

(d) September 2018

Figure 2: Evolution of Alternative Scenario Table Presentations

Note: The figure shows excerpts from alternative scenario tables at four different time periods, illustrating changes in presentation format, number of scenarios, and projection horizons over nearly two and a half decades. Panel (a) March 1995 shows the complete table. Panels (b) November 1999, (c) December 2006, and (d) September 2018 show clipped excerpts displaying only Real GDP projections as given in larger tables. Panel (a) March 1995: The original Greenbook table incorrectly labeled one variable as "CPI" when it should have read "CPI excluding food and energy," which was corrected in an attached erratum to that Greenbook.
Source: Federal Reserve Greenbooks and Tealbooks.

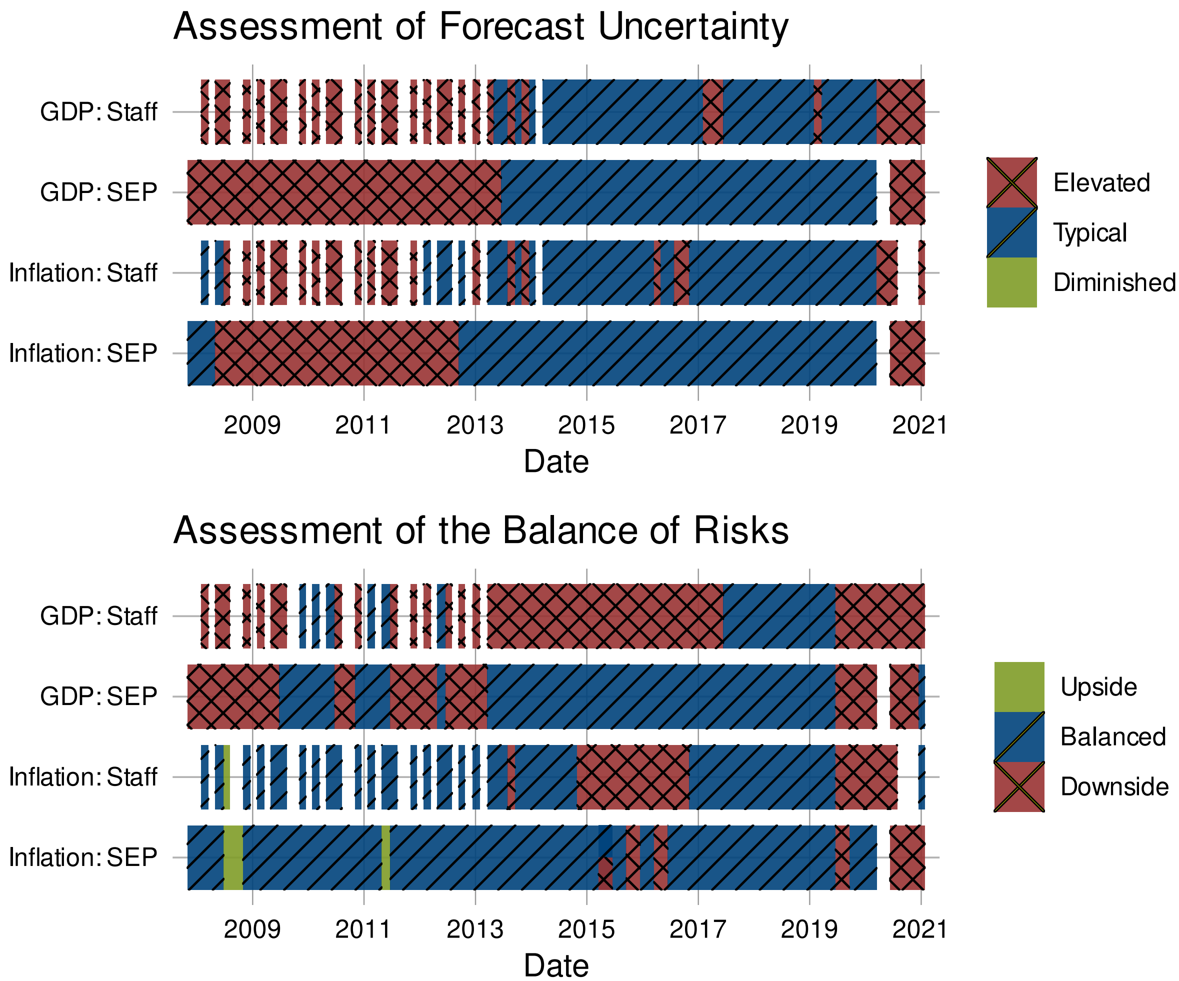

Figure 3: Assessment of Forecast Uncertainty and the Balance of Risks

Note: The figure contains two separate panels showing qualitative assessments over time, including both staff assessments and FOMC participant assessments, the latter given in the Summary of Economic Projections (SEP). Within each panel, bars are shown for both GDP and inflation, with the staff and participant (SEP) assessments displayed separately. The top panel shows the forecast uncertainty assessment: elevated uncertainty (red with crosshatch pattern), typical uncertainty (blue with diagonal stripes), and diminished uncertainty (green solid). The bottom panel shows the balance-of-risks assessment: downside risks (red with crosshatch pattern), balanced risks (blue with diagonal stripes), and upside risks (green solid). Each vertical bar represents one FOMC meeting, with SEP participant assessments submitted quarterly and carried forward to subsequent meeting dates. Staff assessments began in 2008; FOMC participant assessments began with the start of the SEP in the fourth quarter of 2007 and are submitted four times per year. SEP values are carried forward to subsequent meeting dates until the next SEP submission. The color and pattern combinations differ between the two panels.
Source: Authors' calculations using Federal Reserve Greenbooks, Tealbooks, and the Summary of Economic Projections.

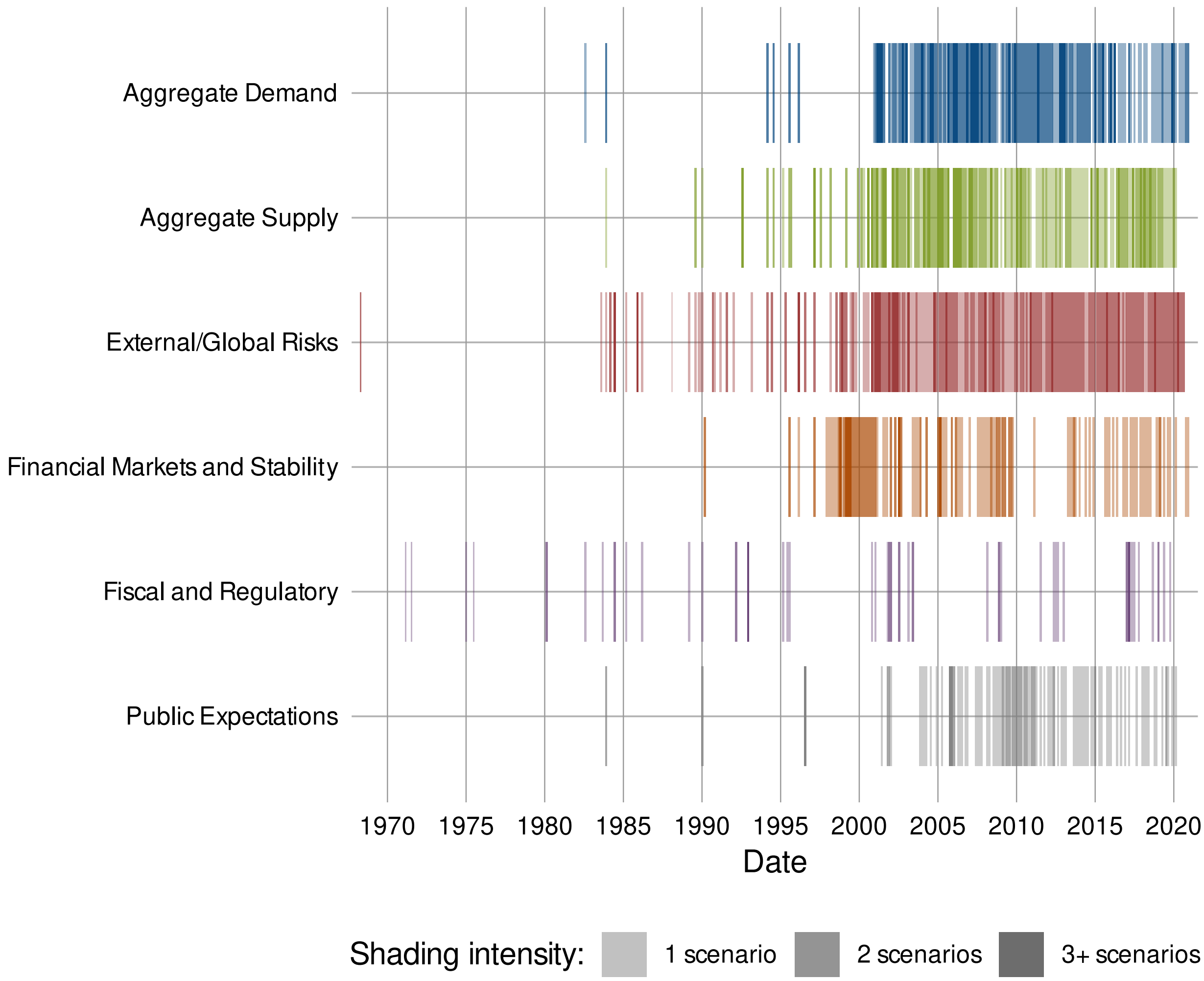

Figure 4: Alternative Scenarios Presented to the FOMC by Risk Category, 1968-2020

Note: Each horizontal band represents a scenario category. Shading intensity indicates the number of scenarios in that category at each FOMC meeting: solid shading represents 3 or more scenarios, medium shading represents 2 scenarios, and faint shading represents 1 scenario. No shading indicates zero scenarios in that category at the meeting.
Source: Authors' calculations using Federal Reserve Greenbooks, Bluebooks, Tealbooks, and other historical materials.

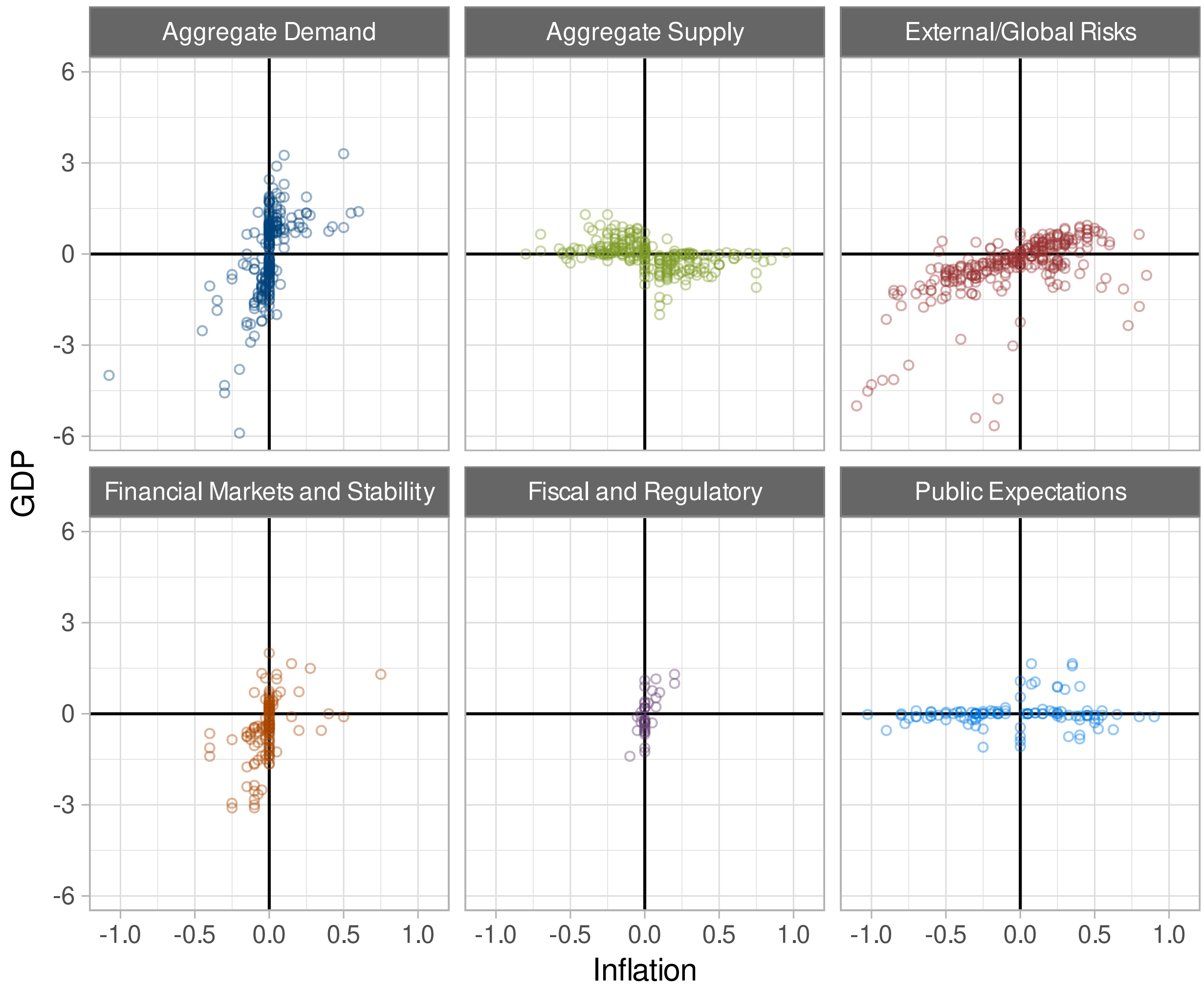

Figure 5: Alternative Scenario Deviations from the Baseline by Category

Note: Values show deviations from the baseline in percentage points. Each circle represents one alternative scenario. The six panels correspond to different scenario categories. Black reference lines mark zero deviation on both axes.

Source: Authors' calculations using Federal Reserve Greenbooks and Tealbooks.

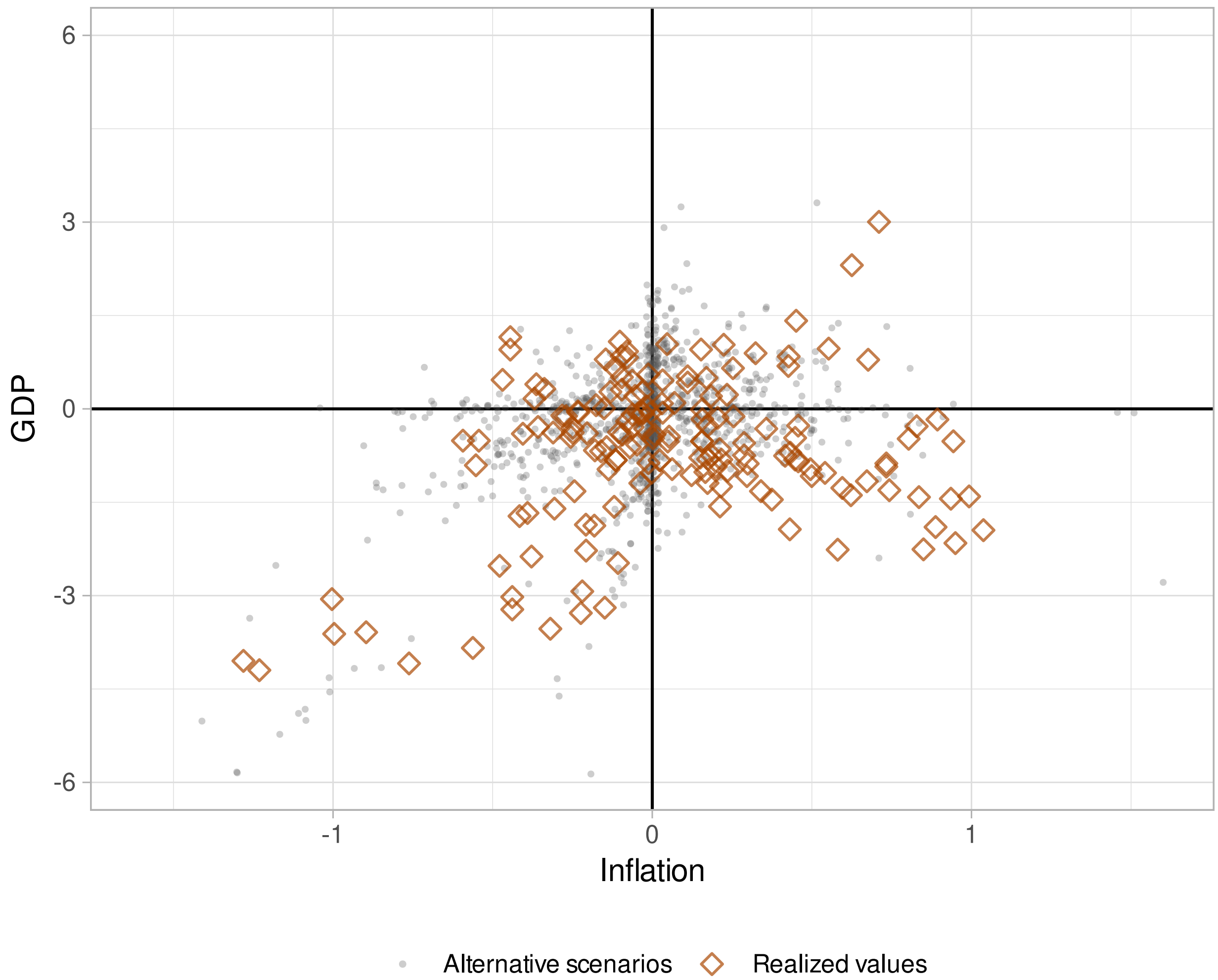

Figure 6: Alternative Scenarios and Realized Values

Note: Values show deviations from the baseline in percentage points. Small gray dots represent alternative scenarios from FOMC meetings between January 2000 and March 2020; positions are slightly jittered for visibility. Hollow orange diamonds represent realized deviations from baseline forecasts. Black reference lines mark zero deviation on both axes. Scenarios developed following the onset of COVID feature a wider range of outcomes than would fit on this chart.

Source: Authors' calculations are based on Federal Reserve Greenbooks and Tealbooks; realized values are obtained from Bureau of Economic Analysis and Bureau of Labor Statistics via FRED.

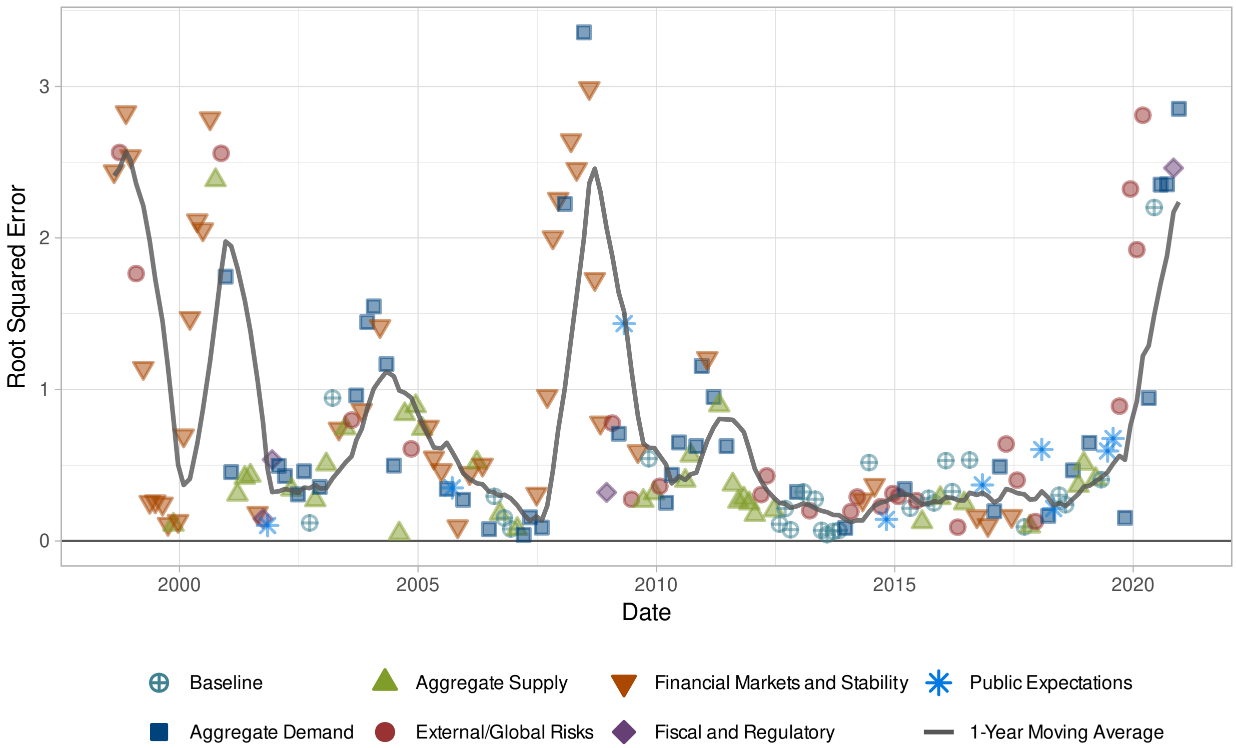

Figure 7: Realized Forecast Error of Most Accurate Scenario by Meeting

Note: Each point represents the most accurate alternative scenario at a given FOMC meeting from 1997 onward, showing the root squared forecast error relative to realized outcomes for GDP and inflation. Colors and shapes indicate the scenario category. The gray line shows the one-year moving average of forecast errors. Only meetings with three or more alternative scenarios are included.

Source: Authors' calculations are based on Federal Reserve Greenbooks and Tealbooks; realized values are obtained from Bureau of Economic Analysis and Bureau of Labor Statistics via FRED.

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Appendix: Classification Methodology

For the staff assessments of forecast uncertainty and balance of risks shown in Figure 3, we used Claude Sonnet 3.5 (Anthropic, 2024) to extract these qualitative judgments from narrative text in the Tealbook across 84 meetings from 2008–2020. To assess reliability, we conducted 9 independent AI coding iterations. Intercoder reliability was very high, with perfect agreement (100 percent) across all iterations for risk assessments to GDP and inflation, and near-perfect agreement (99 percent and 88 percent) for uncertainty assessments. After taking a majority vote across iterations, all AI majority classifications were accepted after human review.

For the classification of scenario types shown in Figures 4, 5, and 7, we developed a classification schema iteratively. We provided Claude Sonnet 3.5 with the full list of scenario titles and asked it to suggest natural groupings based on the economic risks they appeared to address, along with a codebook to assist in classification. We then refined these initial suggestions based on our knowledge of Federal Reserve forecasting practices and macroeconomic theory. We then used Claude Sonnet 3.5 with a detailed prompt (including category definitions and examples) to classify the scenarios based on their narrative descriptions. This initial pass provided a starting point but revealed ambiguities in our category definitions, so we refined the prompt and ran the classification a second time.

We then systematically reviewed the classifications, making corrections when the LLM output did not align with our intended category definitions. Based on this review, we refined our category definitions and applied human judgment to produce the final classifications included in the dataset. Approximately 2 percent of scenarios were reclassified during this review. In addition, categories were manually supplied for an additional 16 percent of scenarios for which AI did not supply a classification, including cases in which multiple scenarios were described in one narrative as well as scenarios laid out in sources other than the Greenbook or Tealbook A that were identified later in the research process.

The categories in our dataset represent our final judgment about the primary focus of each scenario. While the LLM provided a useful first pass for a large corpus, the classification ultimately reflects judgment informed by careful reading of the scenario narratives.