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THE BETTER POLICY
PROJECT

Beyond Faith-Based Monetary Policy

Bottom Line Part 1

Central banks often (usually) face many possible futures

- Early Covid – exceptionally strong illustration
- Current Fed/ECB/others situations provide more examples

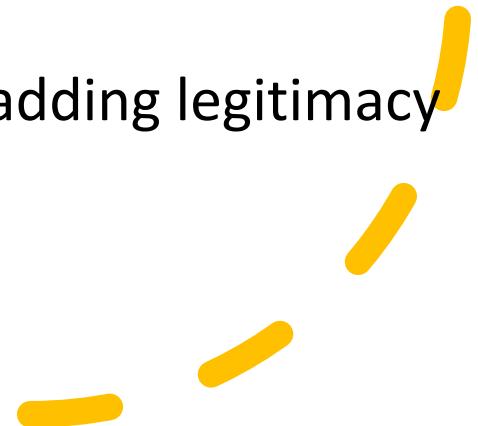
Basing policy analysis and communications on forecasts is a problem

- Forward-looking \equiv thinking through dynamics \neq forecasting
- Forecasts (and FG) create credibility issues

Bottom Line Part 2

Scenario analysis and presentation better

- Consistent with policy risk analysis job of decision-makers
- Especially useful when prominent risks are non-linear
- Refocuses discussion (internal, external) on policy objectives, reaction function
- Allows early public discussion of need to change course
- Allows markets, price setters to anticipate course changes
- ... while avoiding credibility losses, adding legitimacy



Bottom Line

Part 3

Subtle but important shift in role of staff

- Facility with modelling of alternative dynamics more to the fore

Objectives

1

Use small model(s) with Loss function minimization to provide an illustration of how models can be used to focus on the key issues confronting policy-makers in the United States.

2

Explain how this framework could be useful as a basis for both policy formulation and more consistent communications.

3

Show how this type of framework does not require massive resources. Actually, most of what would be required has already been done in some successful Flexible-Inflation-Targeting (FIT) countries.

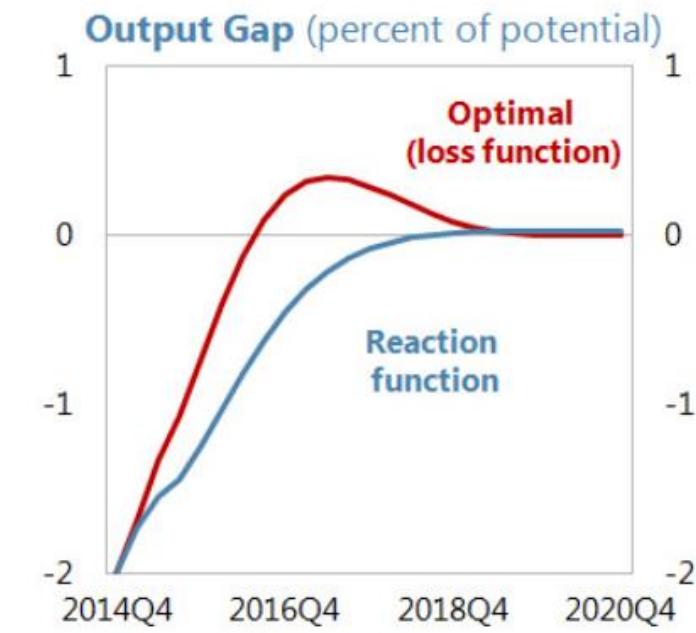
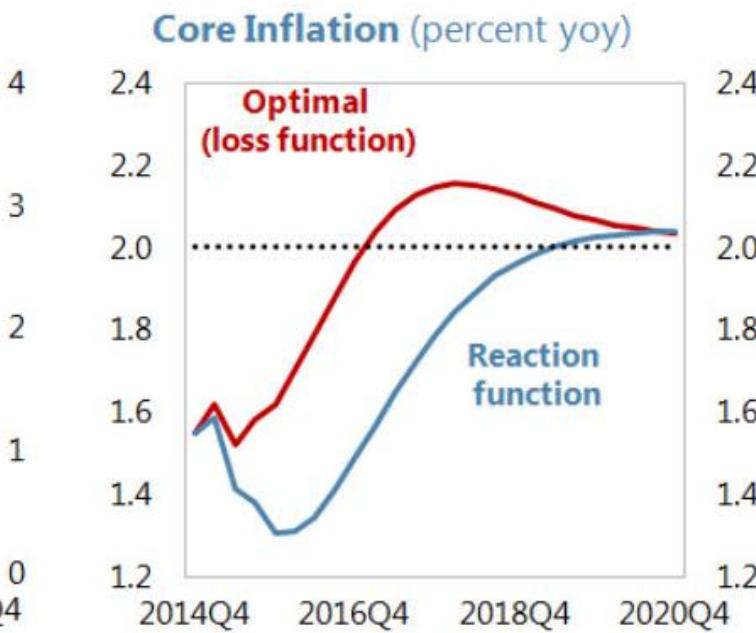
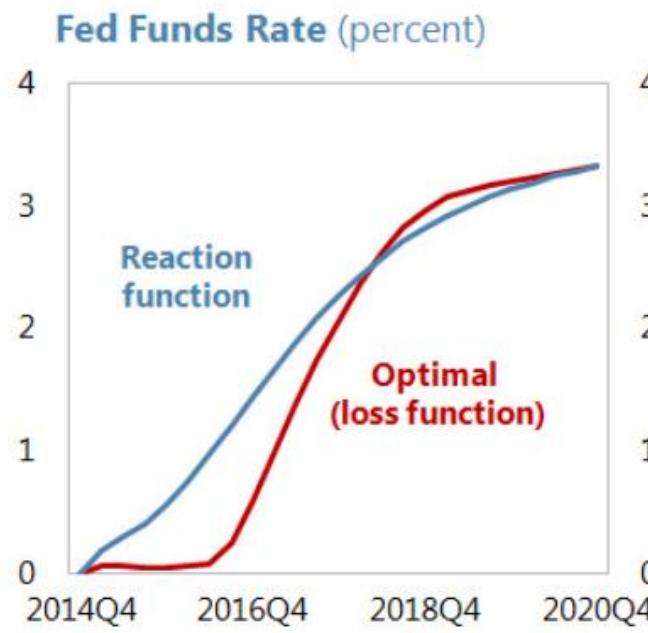
Closed Economy Model Equations

Model-Based Illustration of 2 Potential Policy Paths

Deferring rate increases, would mean a subsequently steeper path for policy rates.

The cost would be a path for inflation that temporarily, but modestly, exceeds the Fed's objective.

But this would facilitate a faster return to full employment and provide insurance against ending back at zero policy rates.



Source: Aliche, A., K. Clinton, C. Freedman, M. Juillard, O. Kamenik, D. Laxton, J. Turunen, H. Wang, 2015, "Avoiding Dark Corners: A Robust Monetary Policy Framework for the United States" Blog.

Loss Minimization

$$L_{t+i} = 1.0(\pi4_{t+i} - \pi^*)^2 + 1.0\widehat{yneg}_{t+i}^2 + 0.5(rs_{t+i} - rs_{t+i-1})^2 + 1.0(p_{t+i} - p_{t+1}^*)^2$$

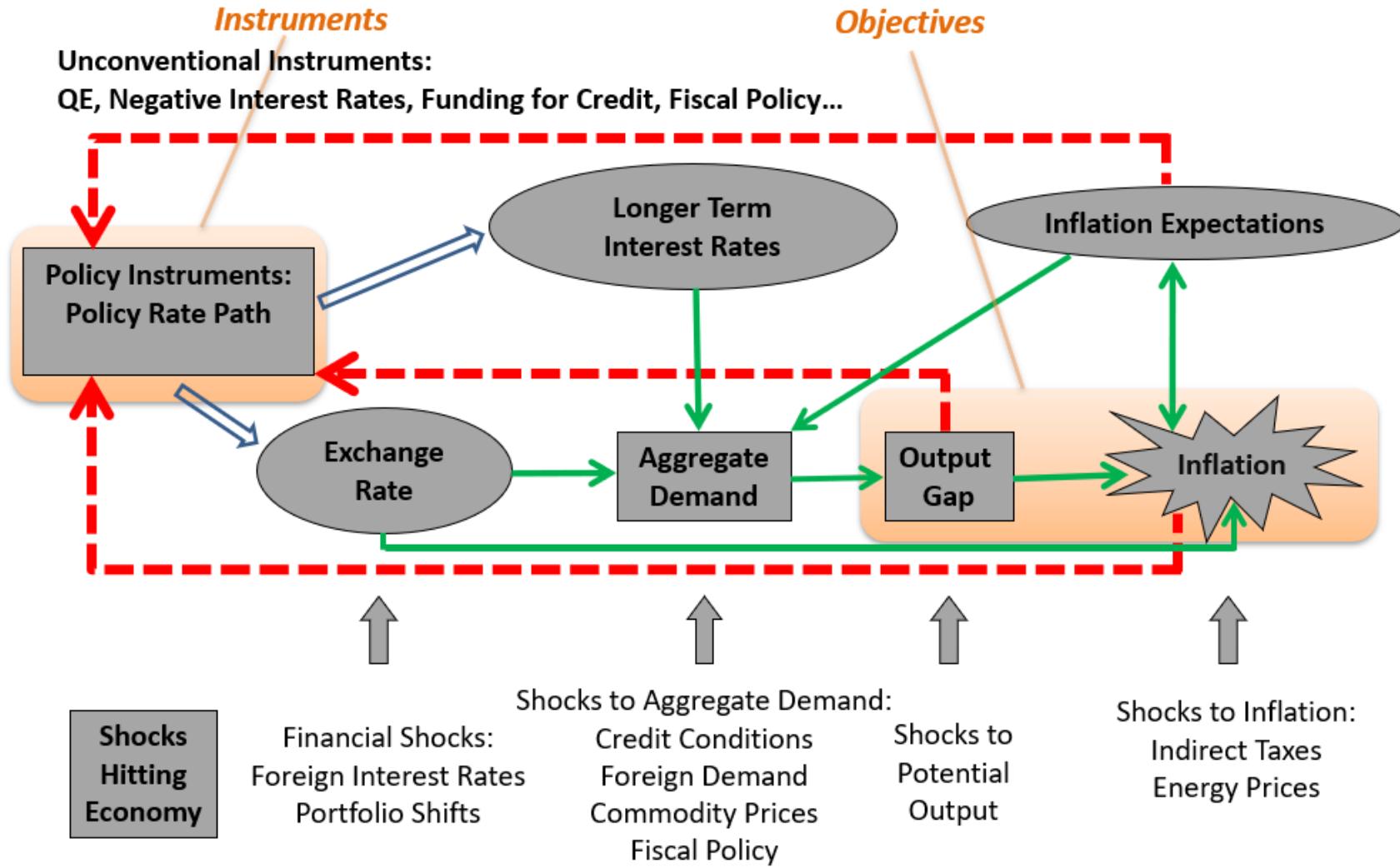
$\pi4_{t+i} - \pi^*$: Inflation Gap

$p_{t+i} - p_{t+1}^*$: Price Level Gap

$rs_{t+i} - rs_{t+i-1}$: Change in Fed Funds Rate

\widehat{yneg}_{t+i} : Negative Output Gaps

Monetary Transmission Mechanism



Mixed Complementarity Problem (MCP) Ingredients

Loss function minimization for monetary policy

Economy consists of a collection of linear and nonlinear equations (convex Phillips curve) and endogenous policy credibility

Nasty, occasionally-binding constraints such as the effective lower bound on interest rates



BPP Courses
Based on
MCPs

Computing Better Paths for the
Policy Rate than Backward-Looking
Taylor Rules

Unconventional Monetary Policies:
FX Intervention Strategies (FXIS)
and Yield Curve Control (YCC)

Projection and Policy Analysis
Systems (PPAS) to Support
Forward-Looking Monetary Policies

Output Gap Equation

$$\hat{y}_t = 0.57\hat{y}_{t-1} + 0.23\hat{y}_{t+1} - 0.23\hat{l}r_{t-1} + \epsilon_{\hat{y},t}$$

\hat{y}_t : Output Gap

$\hat{l}r_t$: Longer-Term Weighted Real Interest Rate Gap

$\epsilon_{\hat{y},t}$: Shock to Output Gap

Non-Linear Phillips Curve

$$\pi_t = 0.70E_t\pi4_{t+4} + (1 - 0.70)\pi4_{t-1} + 0.10 \frac{\hat{y}_{t-1}}{5 - \hat{y}_{t-1}} - \epsilon_{\pi,t}$$

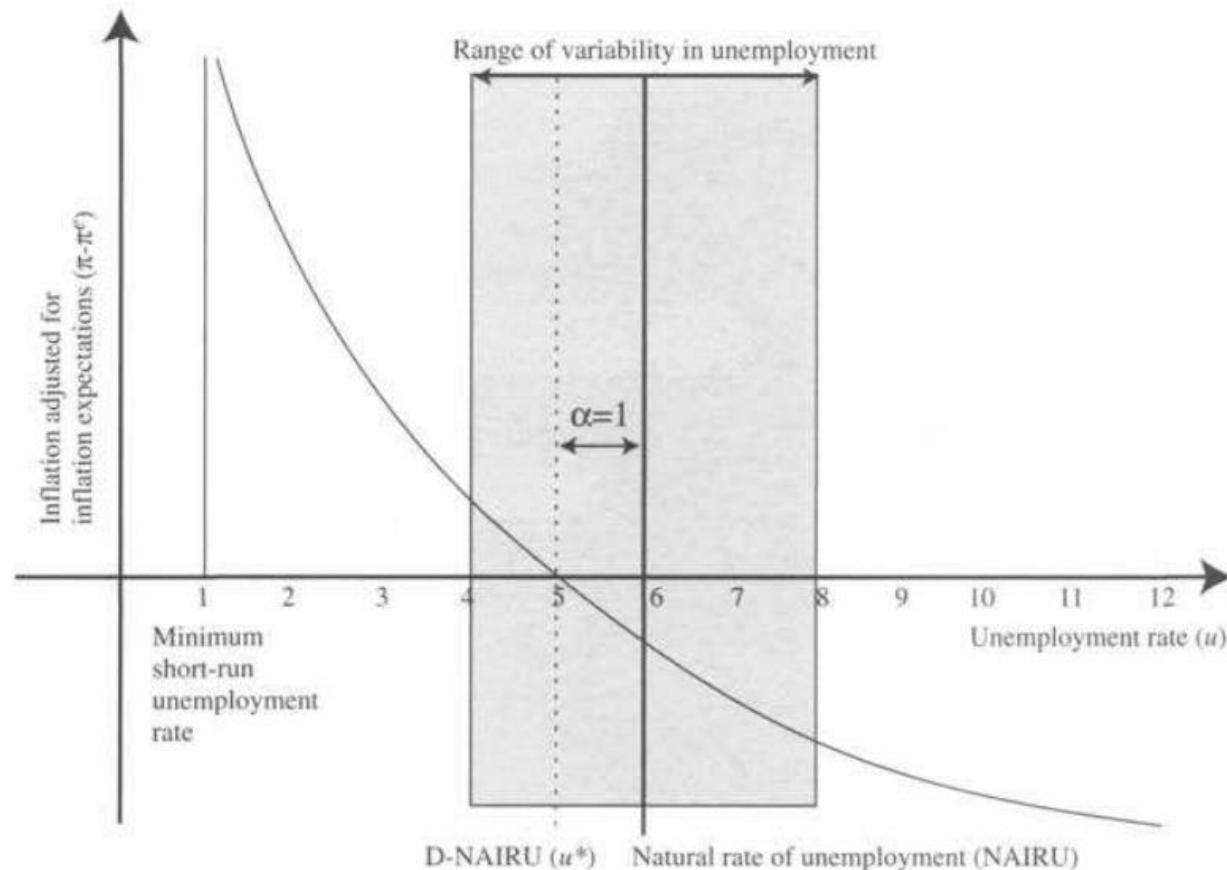
π_t : QoQ Annualized Inflation

$\pi4_t$: YoY Inflation

$\frac{\hat{y}_{t-1}}{5 - \hat{y}_{t-1}}$: Convex Phillips Curve

$\epsilon_{\pi,t}$: Shock to Inflation

Phillips Curve, the D-NAIRU, and the Natural Rate of Unemployment (In percent)



Source: Debelle, Guy, and Douglas Laxton, 1997, "Is the Phillips Curve Really a Curve? Some Evidence for Canada, The United Kingdom and the United States," Staff Papers, International Monetary Fund, Vol. 44, No. 2, June, pp. 249–82.

Central Bank Credibility

$$C_t = 0.3C_{ss} + (1 - 0.3) C_{t-1} + \epsilon_{C,t}$$

$$E_t \pi_4_{t+4} = C_t * \pi_4_{t+4} + (1 - C_t)^* \pi_4_{t-1} + \epsilon_{E_t \pi_4_{t+4}} + (1 - C_t)$$

C_t : Central Bank Credibility

When $C_t = 1$ as in benchmark model, then $E_t \pi_4_{t+4} = \pi_4_{t+4} + \epsilon_{E_t \pi_4_{t+4}}$



Scenarios





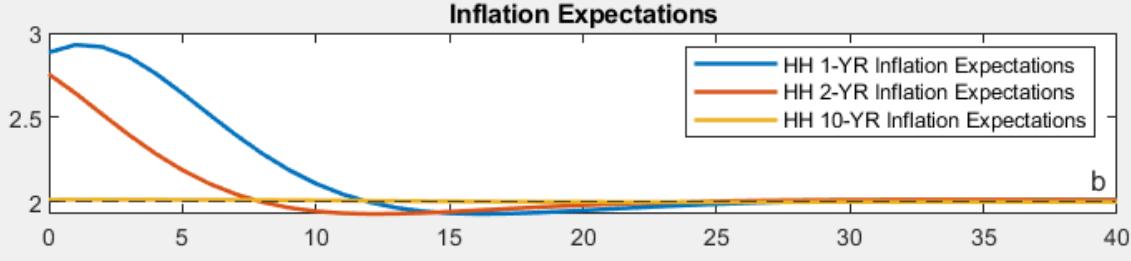
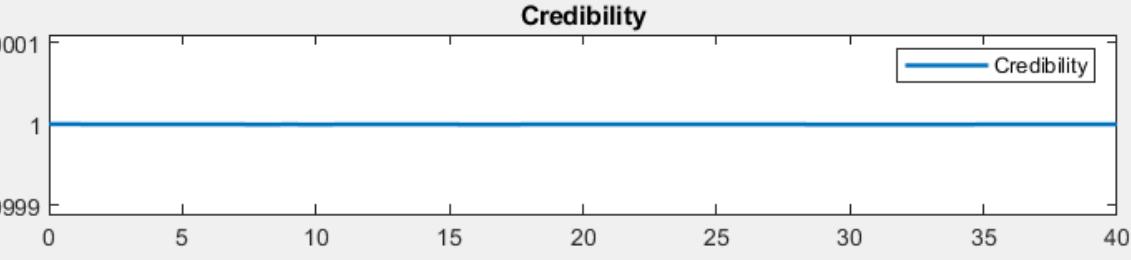
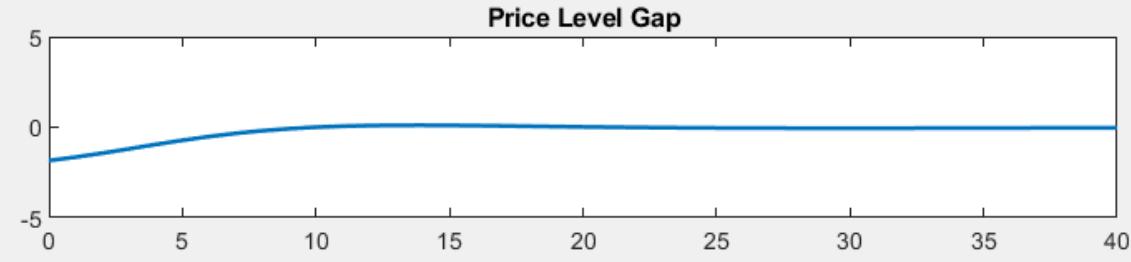
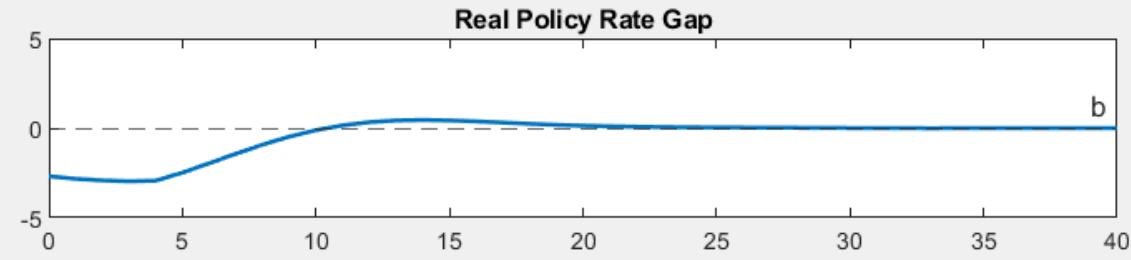
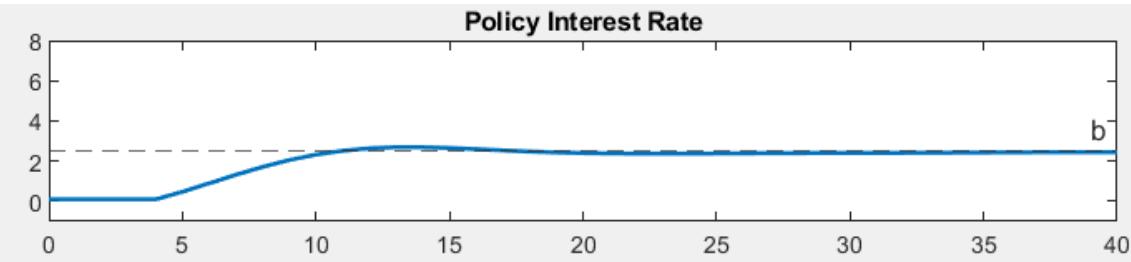
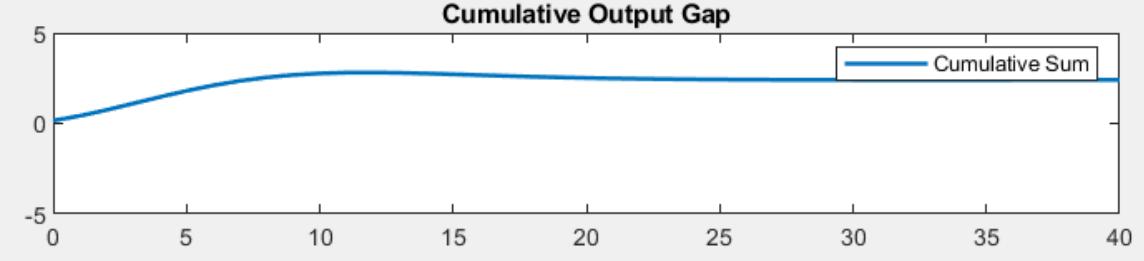
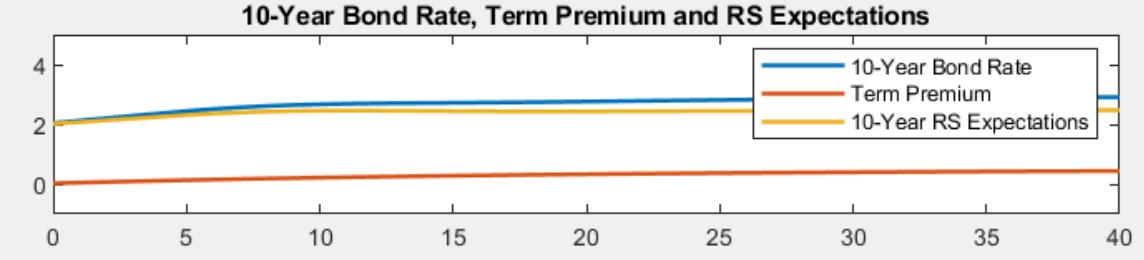
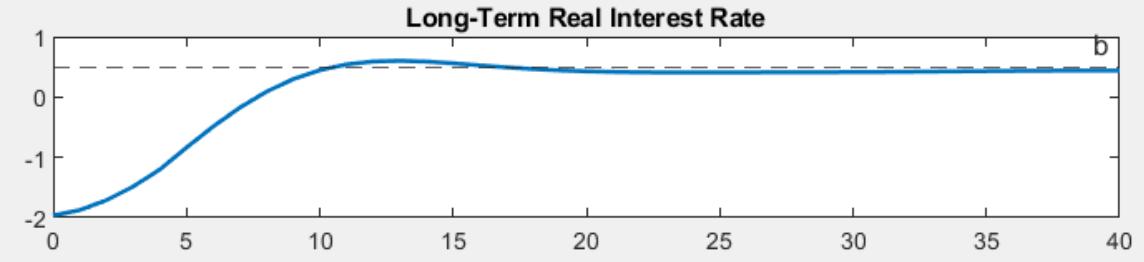
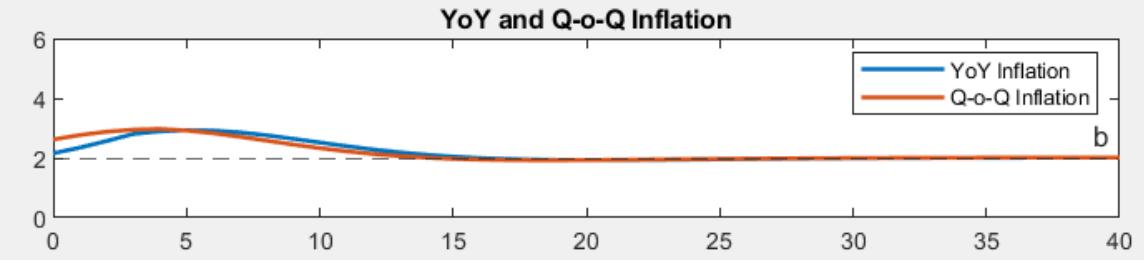
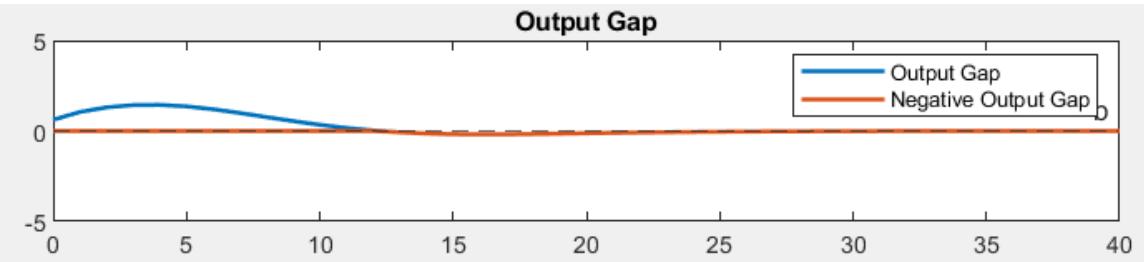
“I'd rather have Bob Solow than an econometric model, but I'd rather have Bob Solow with an econometric model than without one.”

Stanley Fischer

Scenario A: No Shocks

The Fed Funds rate increases very gradually to the 2.5% neutral rate.

The output gap and inflation overshoot modestly as long-term inflation expectations remain firmly anchored to the 2% long-term target.





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Scenario B: Downside Scenarios

Allowing the virus to mutate results in new variants that are both more infectious and result in higher levels of hospitalization and mortality.

This poses serious risks for financial markets and the real economy as it might require a severe tightening in the stringency of measures designed to contain the spread of the virus.

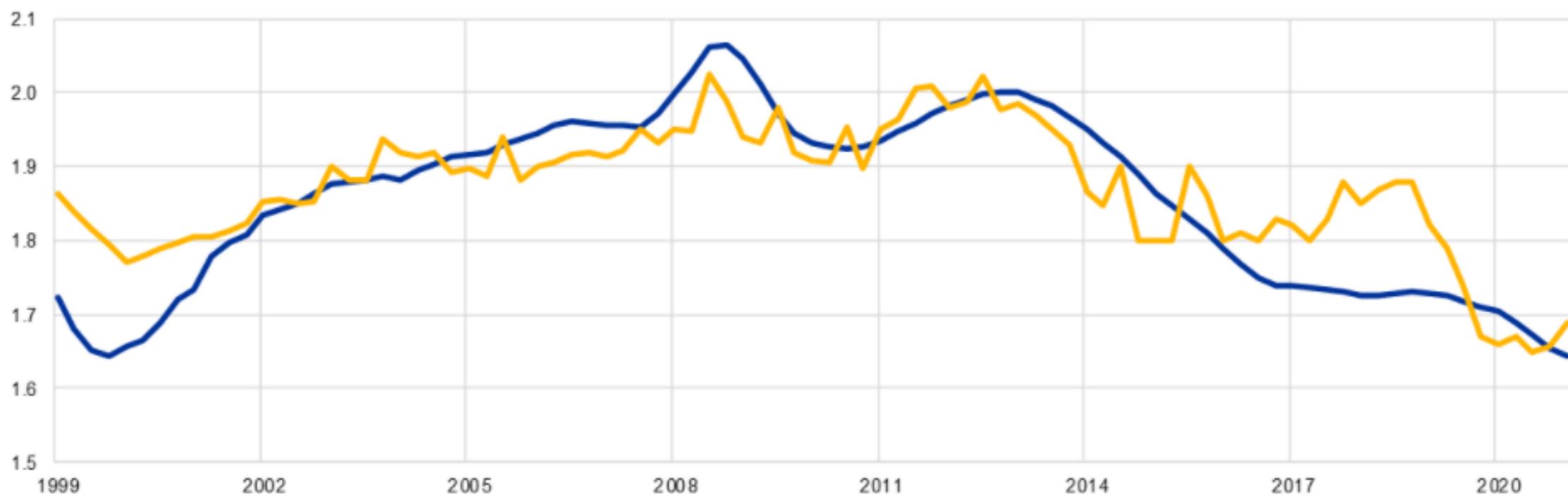
Illustrative scenario with a 5% contraction in the output gap.

Concerns about such a risk could rationalize why the Fed Funds rate could stay low for so long. Trying to buy insurance to escape from a low inflation trap with super-low real interest rates.

Euro area average inflation and longer-term inflation expectations

(percentages per annum)

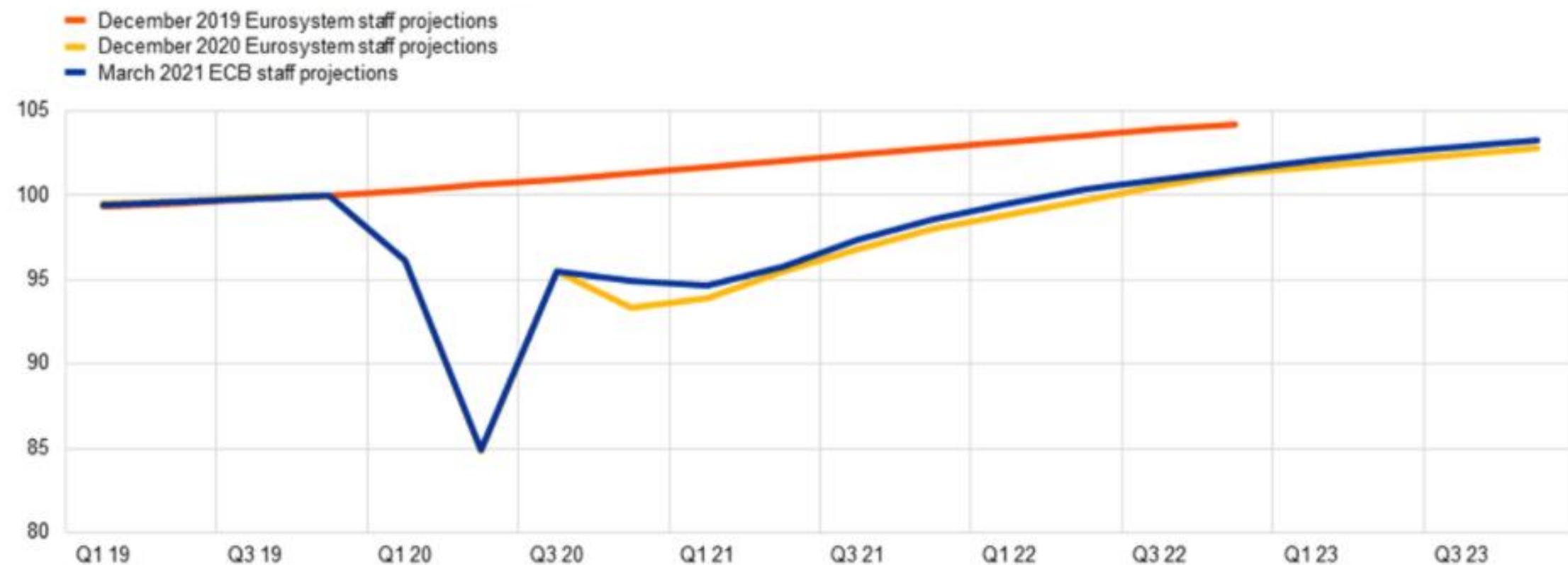
- Expanding inflation average since 1995
- Inflation expectations 5-year ahead (Survey of Professional Forecasters)



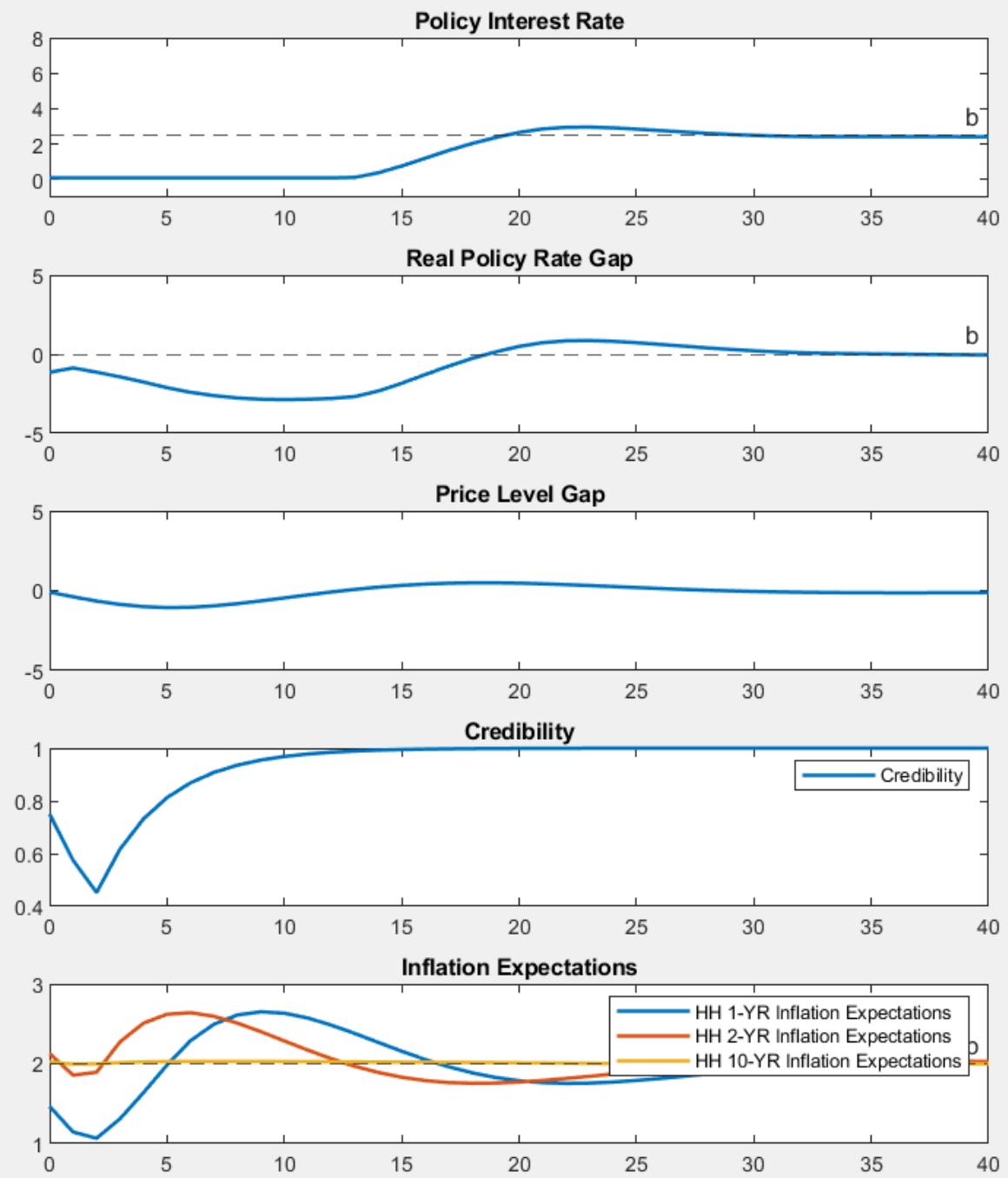
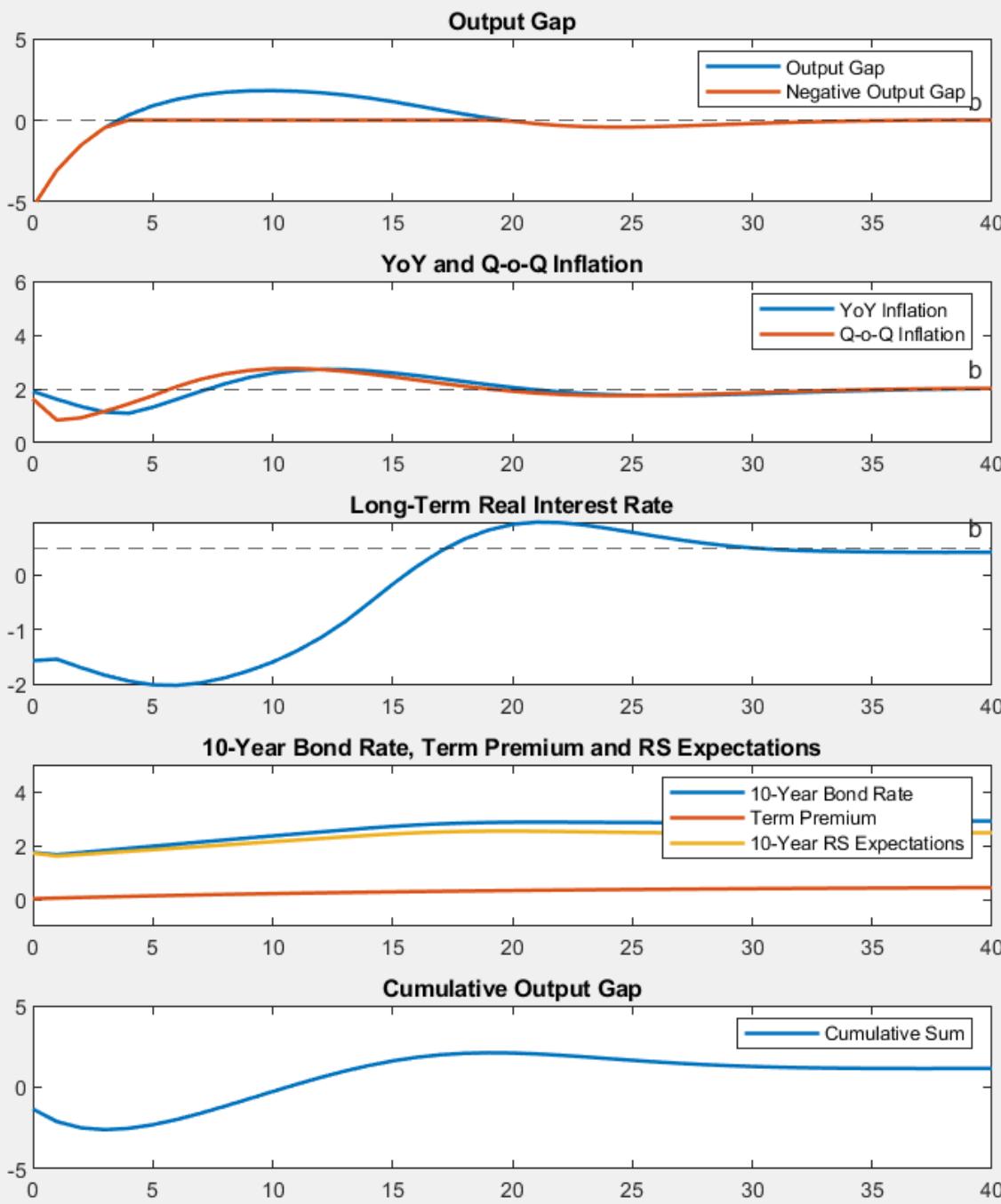
Sources: ECB calculations.

Selected (B)MPE projections for real GDP growth

(chain linked volumes, Q4 2019 = 100))



Sources: ECB and Eurosystem broad macroeconomic projections exercise.

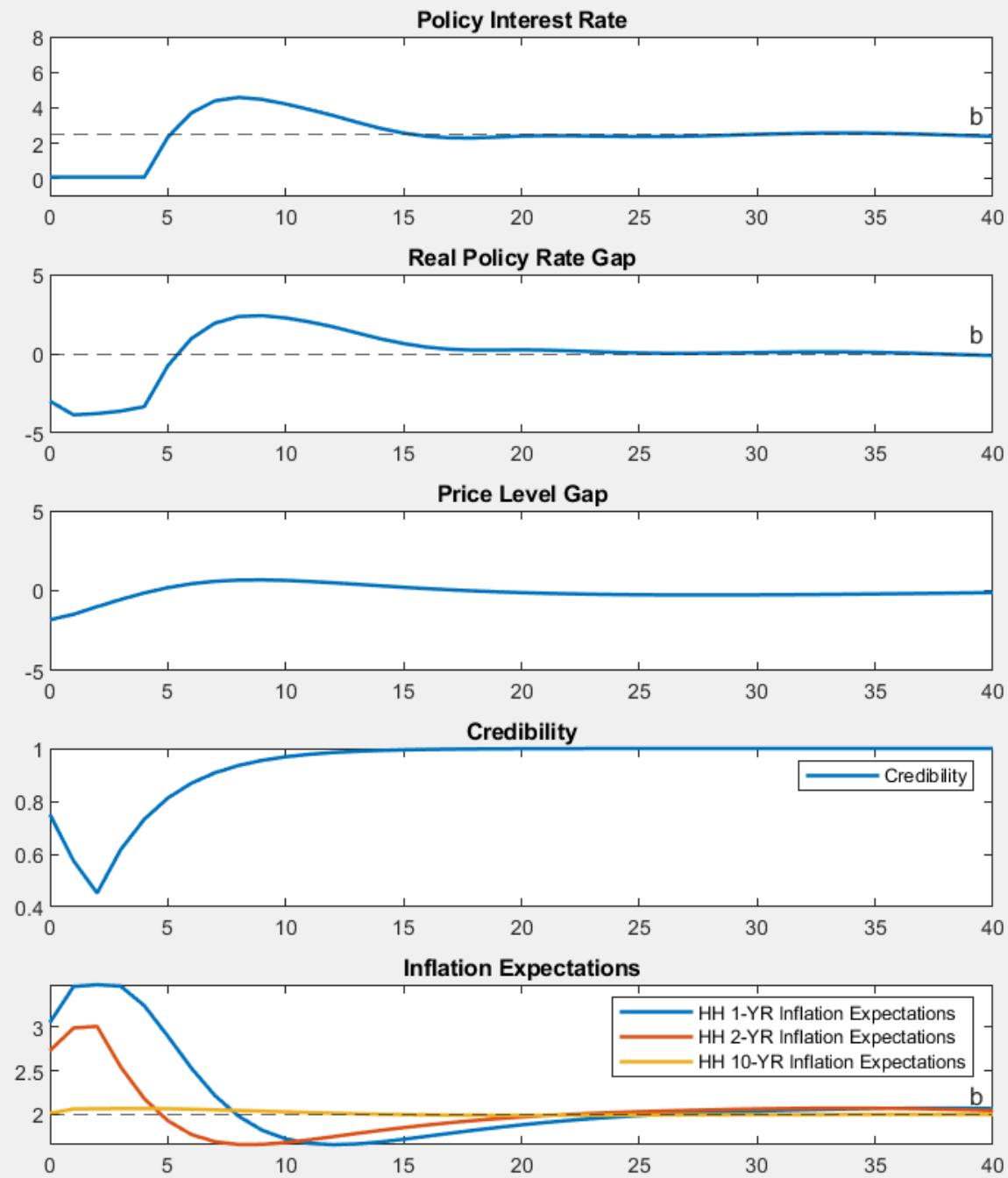
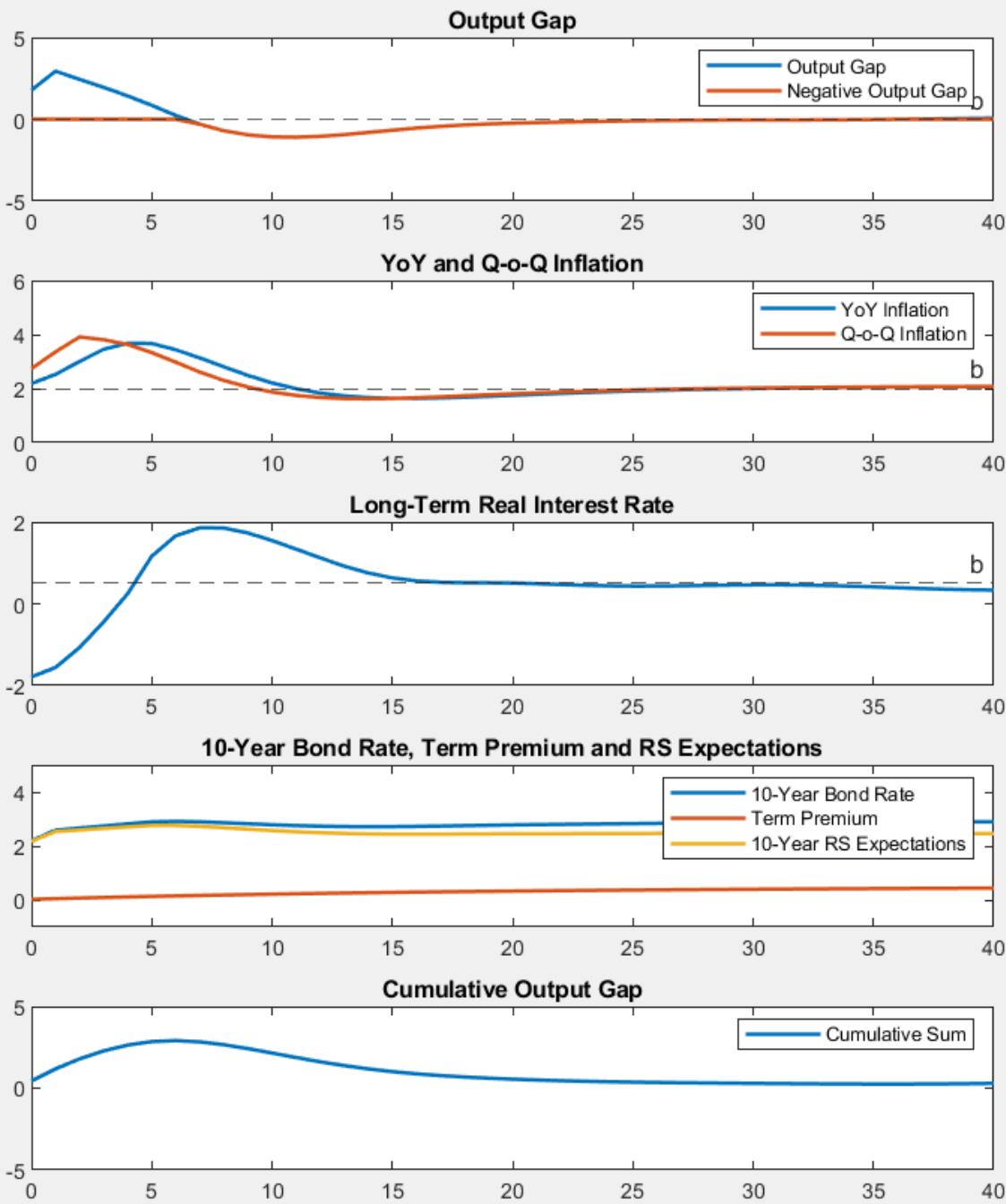


Scenario C: Large Surge in Demand in Q3 & Q4

- Shocks to output gap in Q3 and Q4 of 1% and 2%.
- Fed allows inflation to overshoot cumulatively by 2 percent.
- The persistent increase in inflation results in lower credibility. Inflation expectations become more backward-looking and ratchet upwards.

A tightening is required at some point to reduce inflation and re-anchor inflation expectations to the target. Still not too bad.

What if the expansion in AD is much larger (smaller)? Any interesting ideas about inflation expectations?



Ingredients of Scenario X and Y

Output gap and potential shocks

Inflation expectations

Monetary policy

Fiscal policy

Financial Markets

Conclusion

Central banks often (usually) face many possible futures

- Basing policy analysis and communications on forecasts is a problem

Scenario analysis and presentation ...

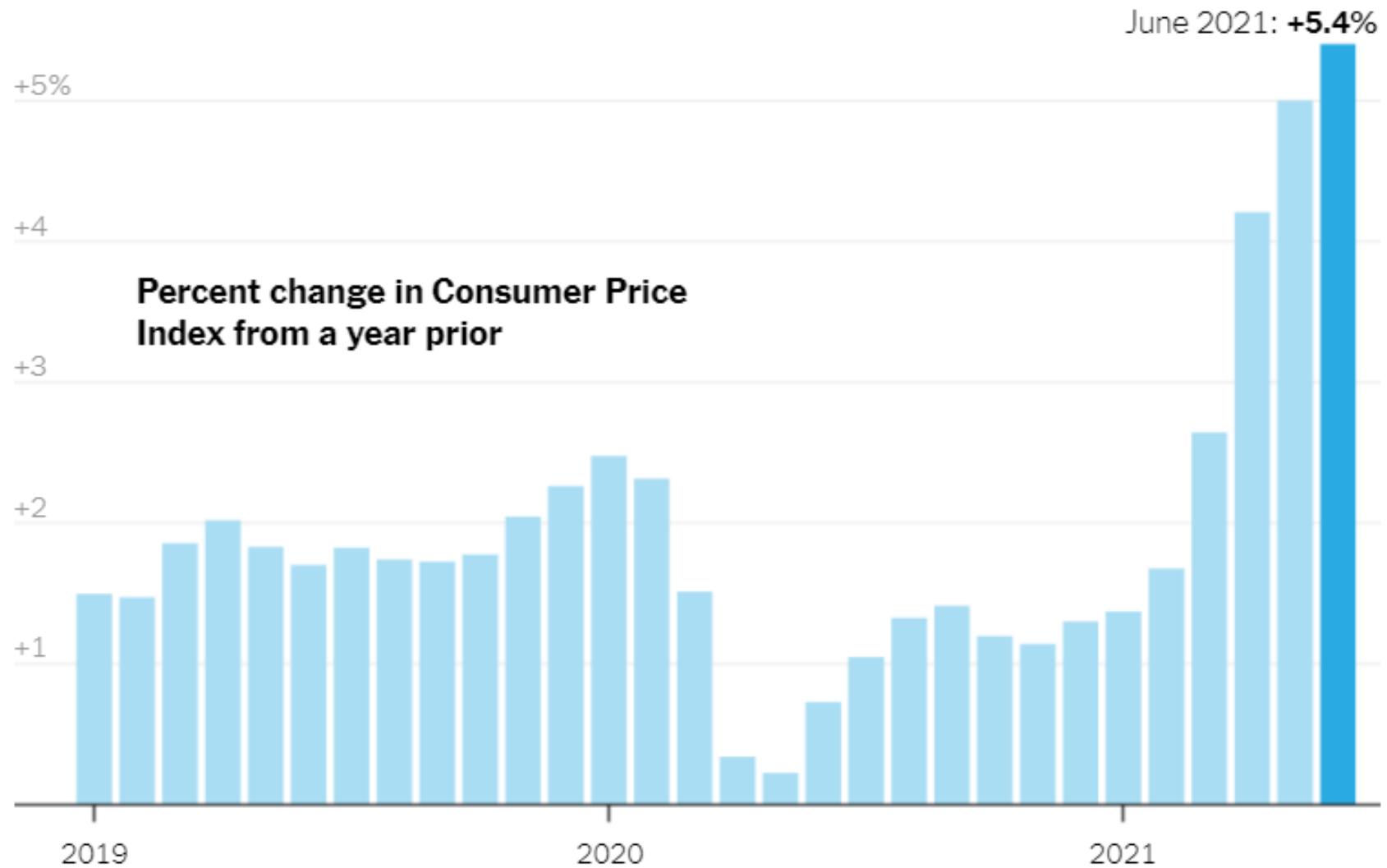
- More consistent with policy risk analysis job
- Especially useful when prominent risks are non-linear
- Legitimises public discussion of possible course change
- Allows markets to initiate tantrum-free course changes

Subtle but important shift in role of staff

- Facility with modelling of alternative dynamics more to the fore

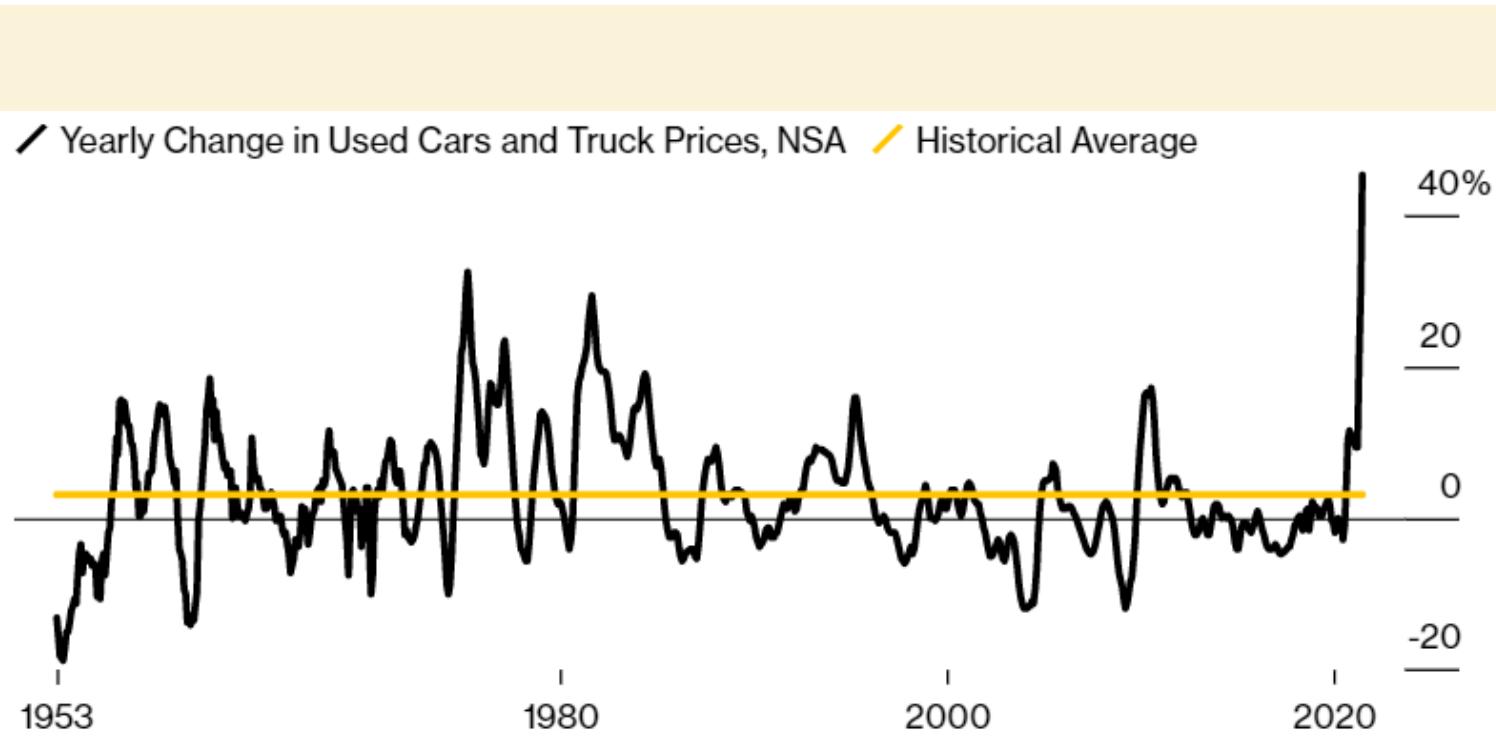


Inflation
Picked up
Steam in
June



Source: The New York Times

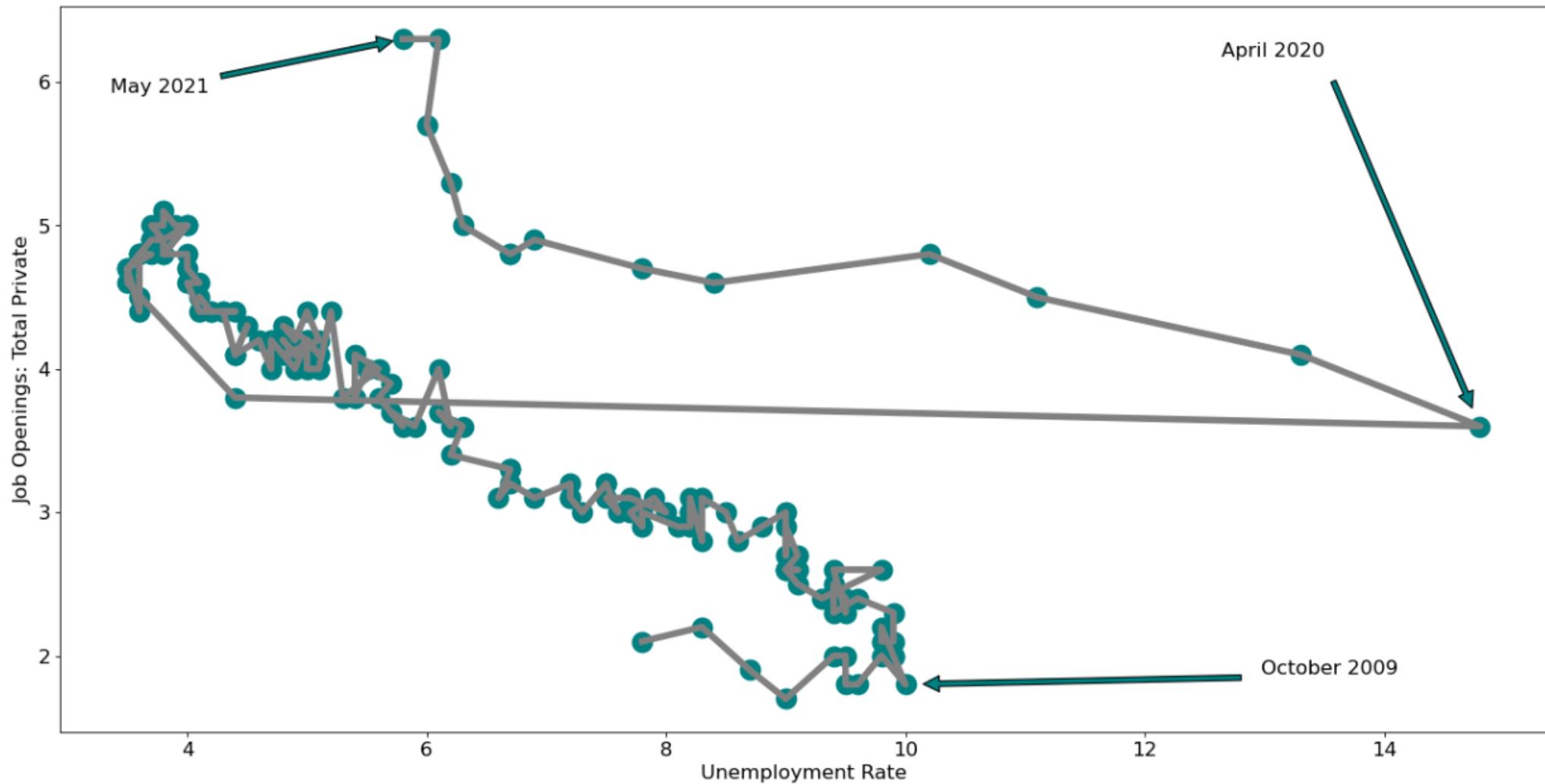
Used Vehicle Prices in the U.S.



Source: Bloomberg

- Vehicle prices rise fastest on record.
- This contributes highly to soaring inflation.
- Car drivers use their savings from stimulus cheques.
- Car loans are cheaper than ever.

US Beveridge Curve



- Make monetary policy choices today consistent with desired outcomes in the future
- Communicate the logic of those choices to markets

What are the
policy goals?

- Focus limited resources on supporting monetary policy choices
- Put policy risk identification and analysis at center
- Coherent integration of current analysis with policy scenarios
- Improve understanding & communication, internally & externally

PPAS design goals?

- Macro models have never been good at forecasting
- Models can help, but people make the forecasts, especially over the near term
- People don't have crystal balls

**Forecasts are
always
judgmental and
error prone**

Forecasts vs Projections



What is your forecast? – *Answer:*
2%.



What is your projection? – *Answer:*
How much time do you have?



“I'd rather have Bob Solow than an econometric model, but I'd rather have Bob Solow with an econometric model than without one.”

Stanley Fischer

- Used to be referred to at the Bank of Canada as the “Staff Economic Projection”
- Important consistency-generating tool to help staff develop, and policymakers discuss, alternative scenarios

Projection and Policy Analysis System

- Designed to describe interaction of key macro variables over medium term
- Provides consistency check on judgment, and dynamics of medium-term scenario
- Provides substantial help dealing with risk and uncertainty
- The model does not produce a forecast

Role of the Core Model

Elements of a Structured PPAS

Databases and reporting packages

Nowcasting system

Monitoring and near-term updates

Core quarterly projection models

Quarterly process: scenario development

Risk analysis

Elements of a Structured PPAS

Databases and reporting packages

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Risk analysis

To detect which of the scenarios is playing out, and which new scenarios are becoming relevant, early recognition is crucial.

Good policy decisions require both good analysis and good information.

Crucial to have a well-maintained and accessible system of databases and reporting packages.

Databases and Reporting Packages

Different databases, different roles.

Make choices, design databases and reporting packages to support policy.

Make them seamless and automatic.

Dedicated support resources extremely useful.

Databases and Reporting Packages

Agreed set of variables, measurement conventions, less time wasted coherence of arguments and evidence standard reporting packages facilitate communication and discussion

Databases and Reporting Packages

Elements of a Structured PPAS

Databases and reporting packages

Nowcasting system

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Quarterly process: scenario development

Risk analysis

Good readings of the current situation are made by people who know the data and what is happening in the economy

Near-Term Forecast

- Nowcasts of the current quarter and assessment of trends into the next quarter are made by staff judgment (increasing aided by bulk data filtering methods)
- The model is tuned to this view and plays no role, except as framework

Nowcast

Integrates skills of sector experts, data miners and macro modelers.

Is basis for evaluation of which scenario might be playing out.

Is basis for evaluation of new possible scenarios.

Encourages learning by all groups.

Leads to a coherent linking of current assessment and scenario discussion.

Nowcast

Leaves model free to focus on essential macro processes.

Model can be clear and understood by policy makers.

Separation (but integration) of trend detection and scenario exploration

- (a) keeps the purpose of each phase clear
- (b) brings the right tools to each task

Nowcast

Elements of a Structured PPAS

Databases and reporting packages

Nowcasting system

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Quarterly process: scenario development

Risk analysis

Term used to describe activity in following developments between releases of data

Example: Using higher frequency data with partial information on economic activity to follow and update the outlook for quarterly measure

What is monitoring?

Typically, full medium-term exercise is done quarterly (National Accounts).

Update done each month following release of key inflation data.

Typically, weekly monitoring and update based on new information, with report to MPC.

Monitoring and Updates

Explaining *why* there were monitoring errors generates very useful information.

Systematic review of data generates insight into:

- which scenario is playing out
- what's not well explained by closest scenario
- so what new scenarios might be relevant
- and questions for research

Makes link to next scenario development round more continuous.

Monitoring and Updates

Elements of a Structured PPAS

Databases and reporting packages

Nowcasting system

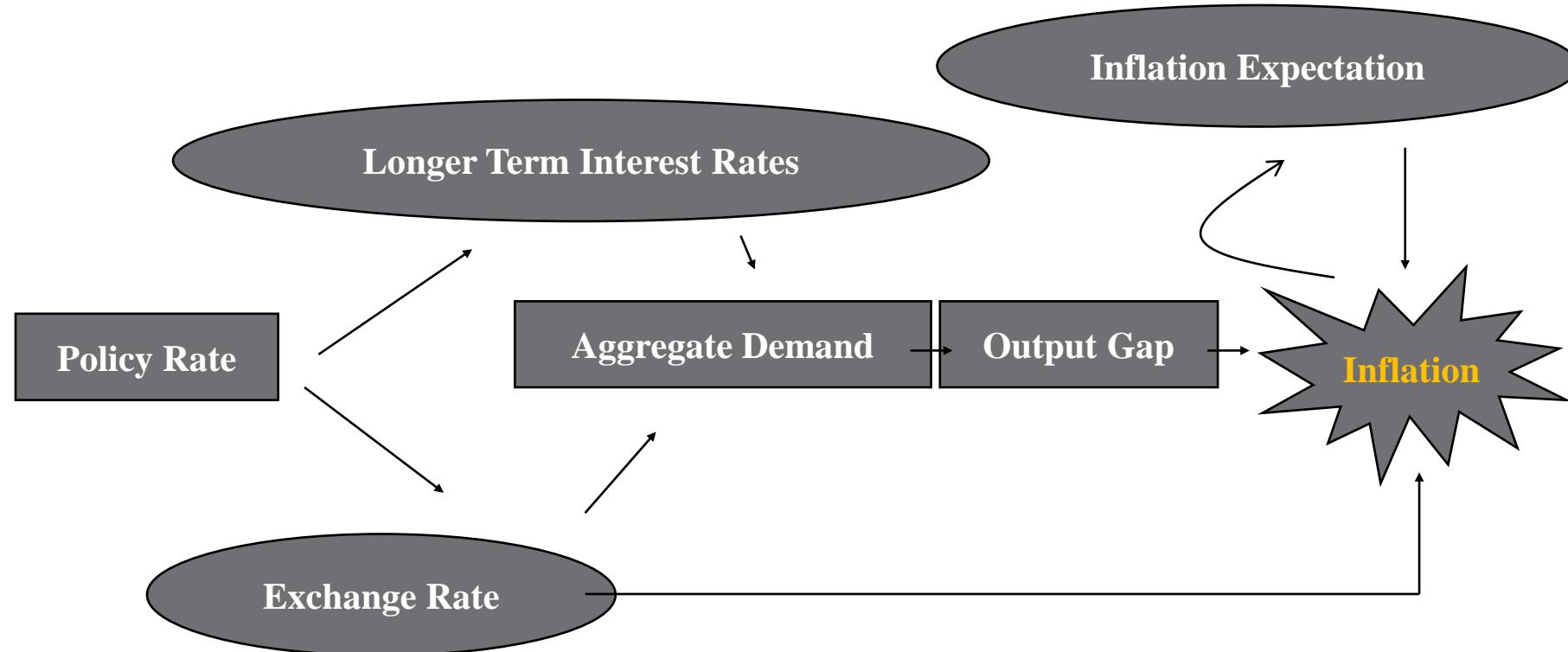
Monitoring and near-term updates

Core quarterly projection models

Quarterly process: scenario development

Risk analysis

Core Model, Simplest Form



Each model embodies a view on the transmission mechanism (how monetary policy works) and how the economy responds to shocks.

- Models serve the policy makers (MPC)
- MPC must see alternative models/ parameterisations as reflecting the possibilities they need to consider
- Comfort leads to confidence and use of the information in communication
- Resulting consistency in communication enhances credibility

Ownership of Models

Elements of a Structured PPAS

Databases and reporting packages

Nowcasting system

Monitoring and near-term updates

Core quarterly projection models

**Quarterly process: scenario
development**

Risk analysis

- Meld of judgmental near-term and model-based medium-term elements
- Scenarios show paths for the policy instrument consistent with bringing inflation to the target path under agreed assumptions

Scenario Development

Elements of a Structured PPAS

Databases and reporting packages

Nowcasting system

Monitoring and near-term updates

Core quarterly projection models

Quarterly process: scenario development

Risk analysis

- Scenarios depict important possible paths for the economy calling for a policy response.
- Example: External environment
- Advice to the policymakers will always include analysis of alternatives, especially where required policy adjustments might not be “measured”.
- Models designed to make this routine

Risk Analysis

- Encourages thinking at macro level
- Institution develops a paradigm for analysis and discussion of alternative paths
- Coherent view on the macro numbers
- More focused debate on issues
- Improved communication and transparency both inside and outside

Summary:

- Development of expertise in staff
- Development of institutional capability
- Research on issues that arise in making monetary choices
- Basis for evaluating institutional performance

Summary:



John C. Williams
October 7, 2020

"September's FOMC statement clearly linked our policy to the key elements of the new policy framework. In particular, it stated that the Committee expects it will be appropriate to maintain the federal funds rate at its current target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time."



Richard H. Clarida
January 13, 2021

Vice chair Clarida talked about Fed's new monetary policy strategy adopted in August 2020: temporary price-level targeting (TPLT):

1. Committee expects to delay liftoff from the ELB (effective lower bound) until PCE (personal consumption expenditures) inflation has risen to 2 percent and other complementary conditions, consistent with achieving this goal on a sustained basis, have also been met.
2. With inflation having run persistently below 2 percent, the Committee will aim to achieve inflation moderately above 2 percent for some time in the service of keeping longer-term inflation expectations well anchored at the 2 percent longer-run goal.
3. The Committee expects that appropriate monetary policy will remain accommodative for some time after the conditions to commence policy normalization have been met.
4. Policy will aim over time to return inflation to its longer-run goal, which remains 2 percent, but not below, once the conditions to commence policy normalization have been met.
5. Inflation that averages 2 percent over time represents an ex ante aspiration of the FOMC, but not a time-inconsistent ex post commitment.



Lael Brainard
February 24, 2021

Fed Governor Lael Brainard said that the U.S. economy remains far from the Federal Reserve's goals for employment and inflation and Fed's monetary policy is going to continue to provide support until further progress has been made in boosting inflation and improving the labor market for all workers. She talked about Fed's new framework. Under the new framework Fed will no longer raise interest rates when the unemployment rate is low in anticipation of higher inflation, allowing more time for the labor market to heal and look beyond nominal unemployment rate numbers.

Fed officials will also plan to keep support in place until average inflation is above 2% and on track to moderately exceed 2% for “some time,” she said.

Source: [Reuters](#).



Jerome Powell
April 28, 2021

“It seems unlikely, frankly, that we would see inflation moving up in a persistent way that would actually move inflation expectations up while there’s still significant slack in the labor market ... For inflation to move up in a persistent way that really starts to move inflation expectations up, that would take some time and you would think it’d be very likely that we would be in very strong labor markets for that to be happening.”

Source: [CNBC](#).



Lawrence Summers

May 18, 2021

"I think the prospects for avoiding turbulence over the next several years, both in the real economy and financial markets, would be substantially greater if there was a sense that monetary policy authorities in the United States were focused on the need to avoid overheating rather than focused on the need to reassure people that they won't focus on overheating," Summers said.

"I would rather see us go back to a Fed that is concerned about preempting inflation, rather than a Fed that is concerned about preempting fears that it will be concerned about inflation," he added.

Source: [MarketWatch](#).



Lawrence Summers
May 18, 2021

“It is not tenable to assert today that in the contemporary American economy labor market slack is a dominant problem. Walk outside. Labor shortage is the pervasive phenomenon.

Everywhere I look there are vacancies, people eager to fill the vacancies.”

Source: [MarketWatch](#).

Conclusion

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Scenario analysis and presentation ...

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- Especially useful when prominent risks are non-linear
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