Remarks for Fed panel: How Economists Can Help Inform Monetary Policymaking

Annette Vissing-Jorgensen, Federal Reserve Board

January 3, 2026

What do I do at the Fed?

Senior Adviser for Research & Policy, Division of Monetary Affairs

- Help guide and edit Tealbook, FOMC memos
  Write part of the FOMC minutes
  Framework review
- Think ahead, do research on policy relevant topics
  Serve as link to academia to make sure you help out!

So, what do we need help with?

- Classic monetary policy research questions: Still not settled and very important
- A current topic of focus at the Fed: Balance sheet issues

The classic questions never go out of style: Still not settled and very important

1. How do we best measure and predict labor market slack?
   - What are the most relevant indicators for whether we are at maximum employment? Unemployment rate (relative to u*?), vacancy-to-unemployment (V/U) ratio, employment ratio, labor force participation rate, payroll, jobless claims, hires, quits, layoffs? Others?

   How does labor market slack feed into wage inflation? How much? Non-linearly?

2. What are the drivers of price inflation?
   - What is the dynamics of wages affecting prices and conversely? Role of markups?
   - What are the dynamics of inflation expectations and what is their role in understanding inflation, wages, and employment dynamics?

The classic questions never go out of style: Still not settled and very important

3. How much aggregate demand stimulus/restraint is optimal given the outlook and the tradeoff between its employment and inflation goals?

   What setting of the monetary policy tools achieves the desired stimulus/restraint?

   - What is *r**?
   - What are the impulse response functions of employment and inflation to rate changes?
   - How much should rate-setting rely on observable data versus forecasts (given lags)? Baseline forecast versus risks: What is the role of risk management?
   - How important is the ELB? How should it affect policy?
     - React more aggressively to avoid hitting it? Rely on FG/QE?
     - Make-up strategies? No, in 2025 Consensus Statement

The classic questions never go out of style: Active debate

On 1, labor market slack: The Fed often talks about V/U as a good indicator of labor market tightness.

Others disagree. Erik Hurst's discussion of Eusepi & Sahin (2025), framework review conference

Inflation and Labor Market Flows: An Identification Problem

- **Common narrative**: Labor market flows predict upward pressure on wages and prices. ($\uparrow V/U \rightarrow \uparrow \pi$)
- **Reverse causality**: Inflation causes upward pressure on labor market flows. ($\uparrow \pi \rightarrow \uparrow V/U$)
- **Intuition for the latter**: Endogenous worker flows with sticky wages. Inflation lowers real wages incentivizing workers to search for a new job.

Shifts in "Price Phillips Curve" and Shifts in Beveridge Curve

- Estimate the following two simple regressions on data from a given period:

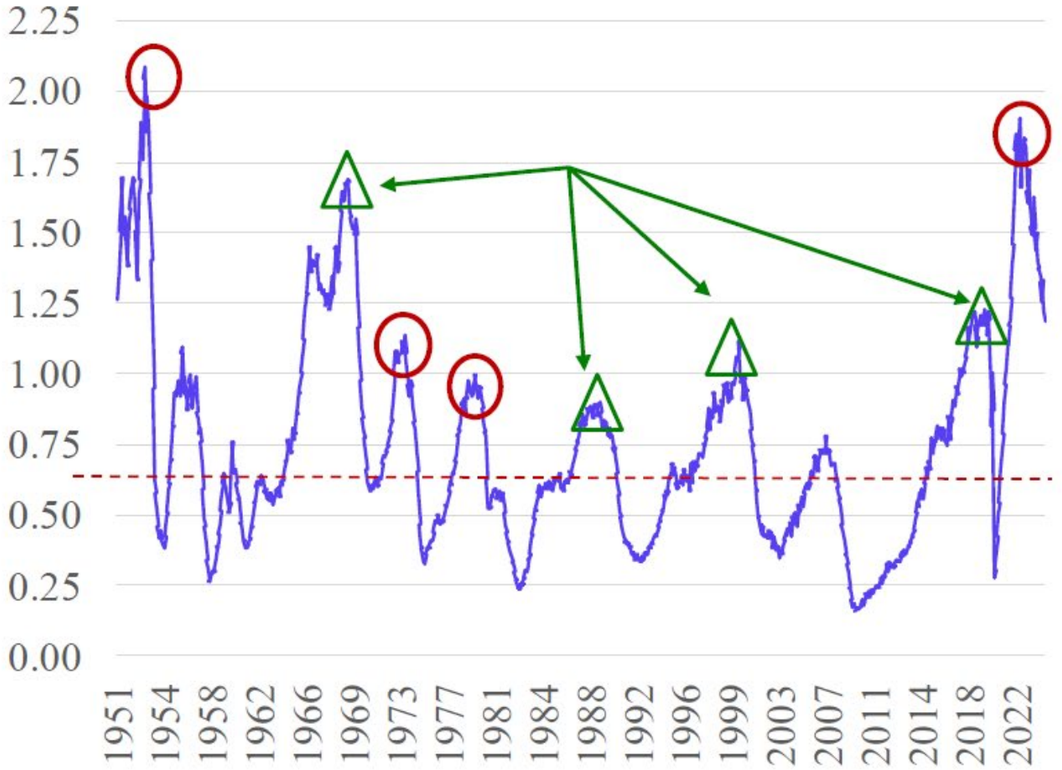
1. $\pi_t = \alpha_\pi + \beta_1 u_t + \beta_2 u_t^2 + \varepsilon_\pi$ (Simple "Phillips Curve")
2. $v/u = \alpha_{v/u} + \gamma_1 u_t + \gamma_2 u_t^2 + \varepsilon_{v/u}$ (Beveridge Curve)

	1950-1989		1950-2024	
	OLS	IV	OLS	IV
Inflation Residual	0.028 (0.002)	0.015 (0.004)	0.035 (0.002)	0.021 (0.005)

Regress: $\varepsilon_{v/u} = \psi_0 + \psi_1 \varepsilon_\pi + \eta$

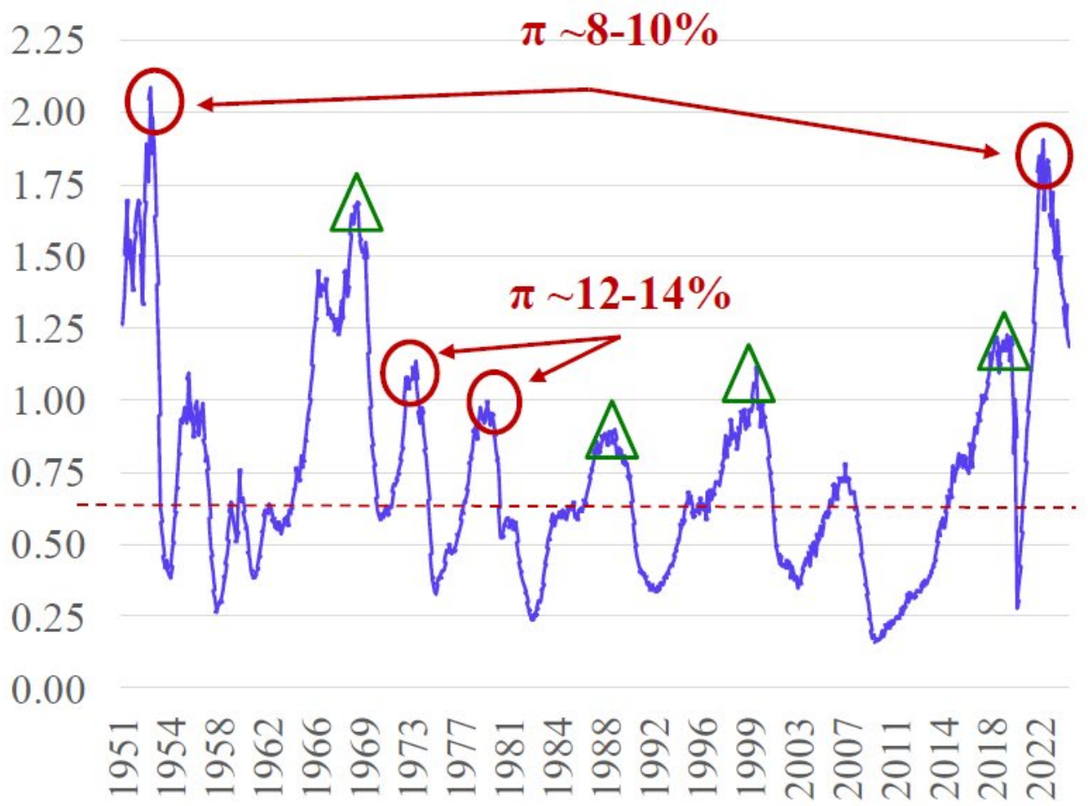
Instrument: *Use oil price movements to instrument for* ε_π

Vacancy-to-Unemployment Rate Over Time



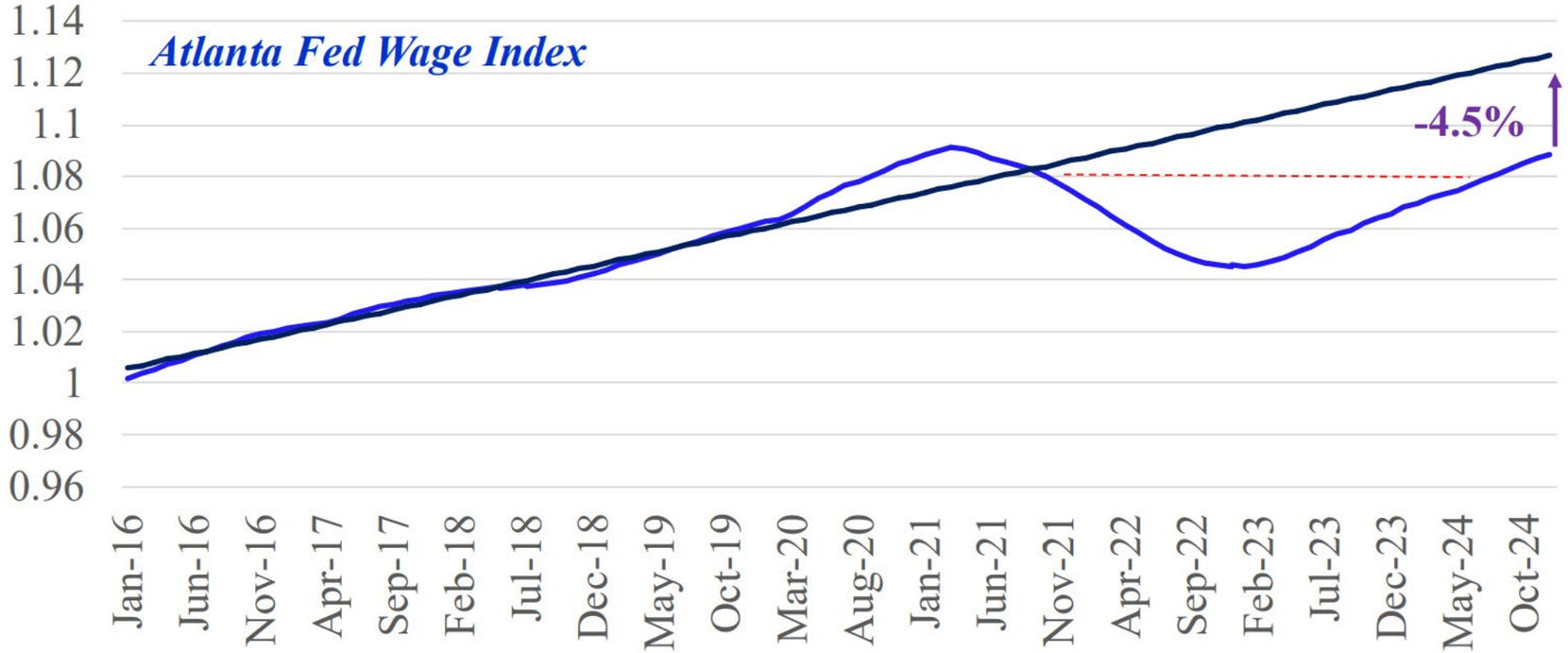
- **Green triangles**: Periods where the economy:
  - **Is moving along a relatively stable Beveridge curve.**
  - Has a sharply declining unemployment rate as the V/U rate increased sharply.
  - Has low and relatively stable inflation throughout the period when V/U was increasing.

Vacancy-to-Unemployment Rate Over Time



- **Red Circles**: Periods where:
  - **The Beveridge curve shifted upward**
  - Unemployment declined only slightly while the V/U rate was increasing sharply.
  - Inflation was rising sharply at the same time that V/U was increasing. (Inflation rates in all these periods exceeded 8% at some point)

Real Wage Index 2016M1-2024M12



- **"Hot Labor Market"? Real wages fell sharply as V/U rate spiked!**

The classic questions never go out of style: Active debate

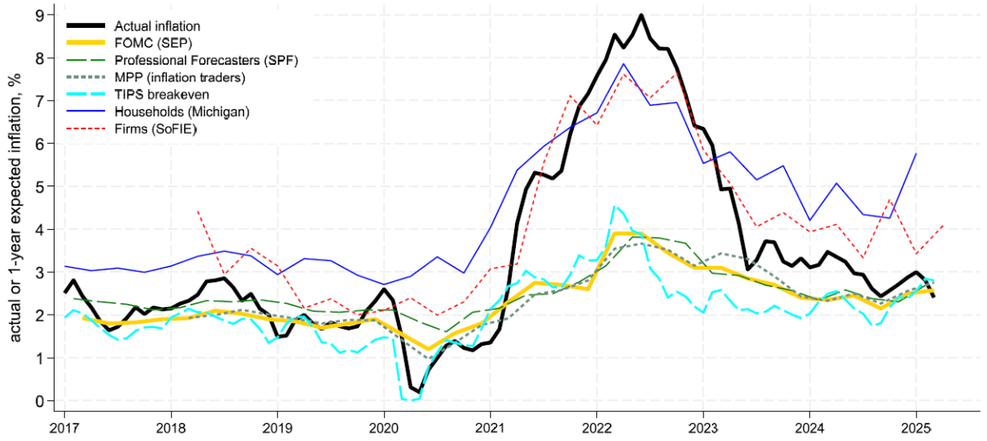
On 2, the role of inflation expectations: The Fed often talks about the importance of longer-run inflation expectations and emphasizes that they are well anchored.

- Often focuses on market expectations and expectations of professional forecasters
- If anchored, it can be optimal to look through transitory supply shocks, tariff increases

Others disagree. Coibion & Gorodnichenko (2025), framework review conference

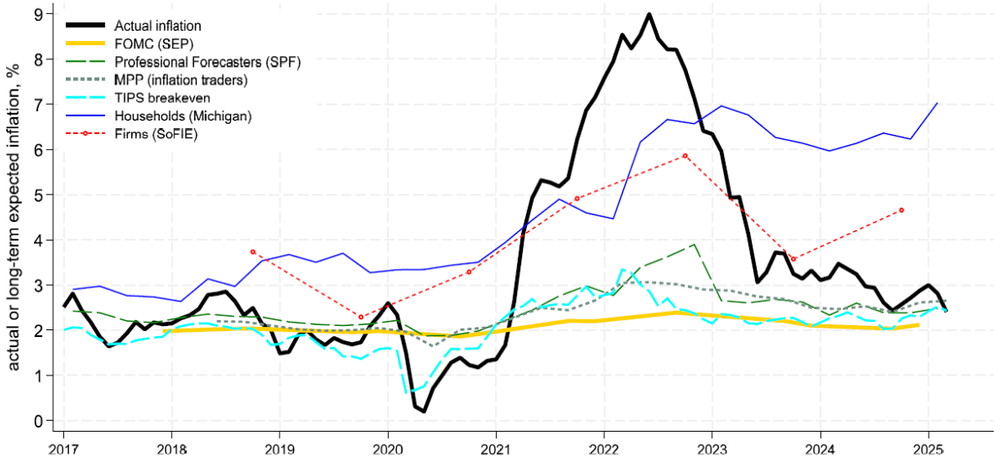
- Households and firms are what matter for future inflation not professional forecasters
- Neither short nor long-run inflation expectations of households and firms are well anchored
- Therefore, policy should *not* look through one-time supply-side shocks

ANCHORED EXPECTATIONS? THE "EYEBALL" TEST



Firms are similar to households: Short-run inflation expectations after the surge are significantly higher than prior to the surge.

ANCHORED LONG-RUN EXPECTATIONS? THE "EYEBALL" TEST



Long-run expectations: Firms/Households' expectations appear *increasingly* unanchored.

$$\pi_t \approx \underbrace{\pi^e_{t+1}}_{expected\ inflation} - \alpha \underbrace{(U_t - U^*_t)}_{unemployment\ gap} + \underbrace{\varepsilon_t}_{cost-push\ shocks}$$

WHOSE EXPECTATIONS MATTER IN THE PHILLIPS CURVE?

	Dependent variable: CPI inflation π_t		
	(1)	(2)	(3)
MSC: $E^{1yr}\pi$	1.504***		1.264***
	(0.088)		(0.238)
SPF: $E^{1yr}\pi$		0.958***	0.279*
		(0.133)	(0.169)
Unemployment gap, $U - U^*$	-0.193**	-0.231**	-0.207**
	(0.079)	(0.105)	(0.081)
Sample	1978-2025	1981-2025	1981-2025
Observations	189	175	175
R-squared	0.716	0.268	0.485

As prior to the surge, household expectations are best proxy.

WHAT HORIZON OF EXPECTATIONS MATTERS IN THE PHILLIPS CURVE?

	Dependent variable: CPI inflation π_t		
	(1)	(2)	(3)
$E^{1yr}\pi$	1.425***	1.476***	
	(0.187)	(0.135)	
$E^{5yr}\pi$	0.077		1.067***
	(0.162)		(0.221)
Unemployment gap, $U - U^*$	-0.202**	-0.197**	-0.315***
	(0.085)	(0.086)	(0.119)
Observations	161	161	161
R-squared	0.588	0.587	0.304

As prior to the surge, it is short-run expectations that fit the Phillips curve best.

The classic questions never go out of style: Active debate

On 3, setting of the monetary policy tools to achieve the desired stimulus/restraint:

We do not have a full understanding of each link in the monetary policy transmission mechanism, nor the overall effects on employment, inflation

Monetary policy (short rate, QE, forward guidance)

→ Financial conditions

(yields, asset prices, exchange rates → borrowing costs, wealth effects, collateral effects)

Expectations of households and firms

→ Aggregate demand (consumption, investment, government spending)

Price and wage formation

→ Employment, inflation

The classic questions never go out of style: Active debate

Even narrow issues such as "how does the Fed affect the stock market" are still not fully understood (Knox and Vissing-Jorgensen (2025), *Annual Review of Financial Economics*)

(1) How large is the monetary policy shock multiplier on the stock market?

$$r_t^m = a + b\Delta i_t \ + \varepsilon_t$$

(2) What are the monetary policy shocks? Consider a standard Taylor rule framework:

$$i_t = r_t^* + \pi_t^* + \gamma_t x_t + \beta_t(\pi_t - \pi_t^*) + u_t,$$

- Pure monetary policy shocks, $\boldsymbol{u_t}$
- Reaction function news regarding $\boldsymbol{\pi_t^*}$, $\boldsymbol{\gamma_t}$, $\boldsymbol{\beta_t}$
- News about Fed's view of $\boldsymbol{r_t^*}$, $\boldsymbol{x_t}$, $\boldsymbol{\pi_t}$ (Fed information effects/Fed belief surprises)

The classic questions never go out of style: Active debate

(3) Through which asset pricing channels do monetary policy affect the stock market:

- The real yield curve?
- The equity premium?
- Expected cash flows?

(4) Through which information channels does monetary policy news reach the stock market?

- Formal channels: Post-FOMC statement and press conference, FOMC minutes, or policy maker speeches
- Informal communications channels, such as newspaper articles written by reporters with access to Fed sources

Current topic in focus: The Fed's balance sheet

Federal Reserve balance sheet, December 24, 2025 (H.4.1 release)

Assets		Liabilities	
Securities		Autonomous factors	
Treasuries	4,228	Currency	2,439
MBS (incl. agency debt)	2,051	Treasury general account	802
Lending		Other autonomous factors	593
Loans, repo and facilities	12	Reserves	2,981
Central bank liquidity swaps	0	Overnight reverse repo balances	5
Other	339	Other (not autonomous factors)	-186
	6,632		6,632

Securities + Lending = Autonomous factors (Currency, TGA, other) + [Reserves+ON RRP balances]

The Fed's balance sheet serves three purposes

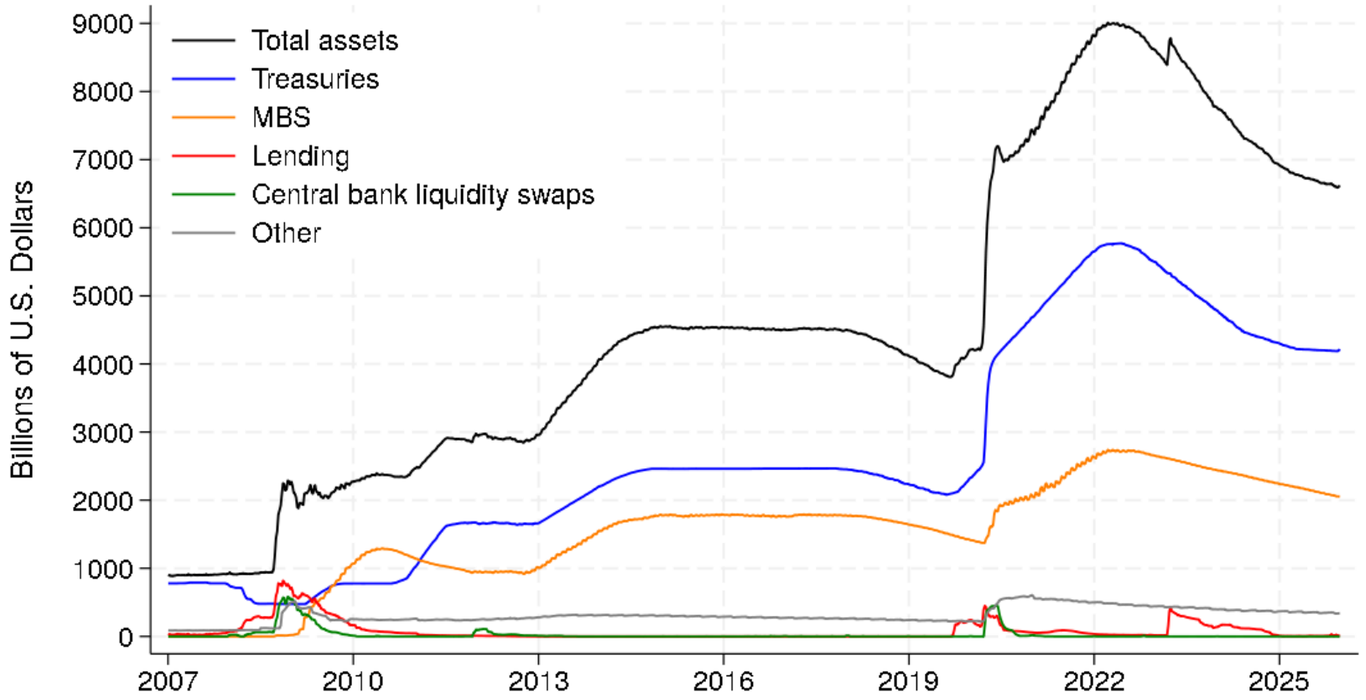
1. Monetary policy:
   - Hit desired value/range for short market rates
   - Use QE to affect longer rates at effective lower bound

2. Lender of last resort/financial stability:
   - Emergency lending to US financial institutions (via the discount window or other facilities) or foreign banks (via central bank liquidity swaps)
   - Market functioning purchases
   - Supply sufficient reserves (liquidity) to avoid short rate volatility

3. Money supply:
   - Supply liquidity to banks (reserves), households & firms (currency), government (Treasury General Account)

Federal Reserve assets

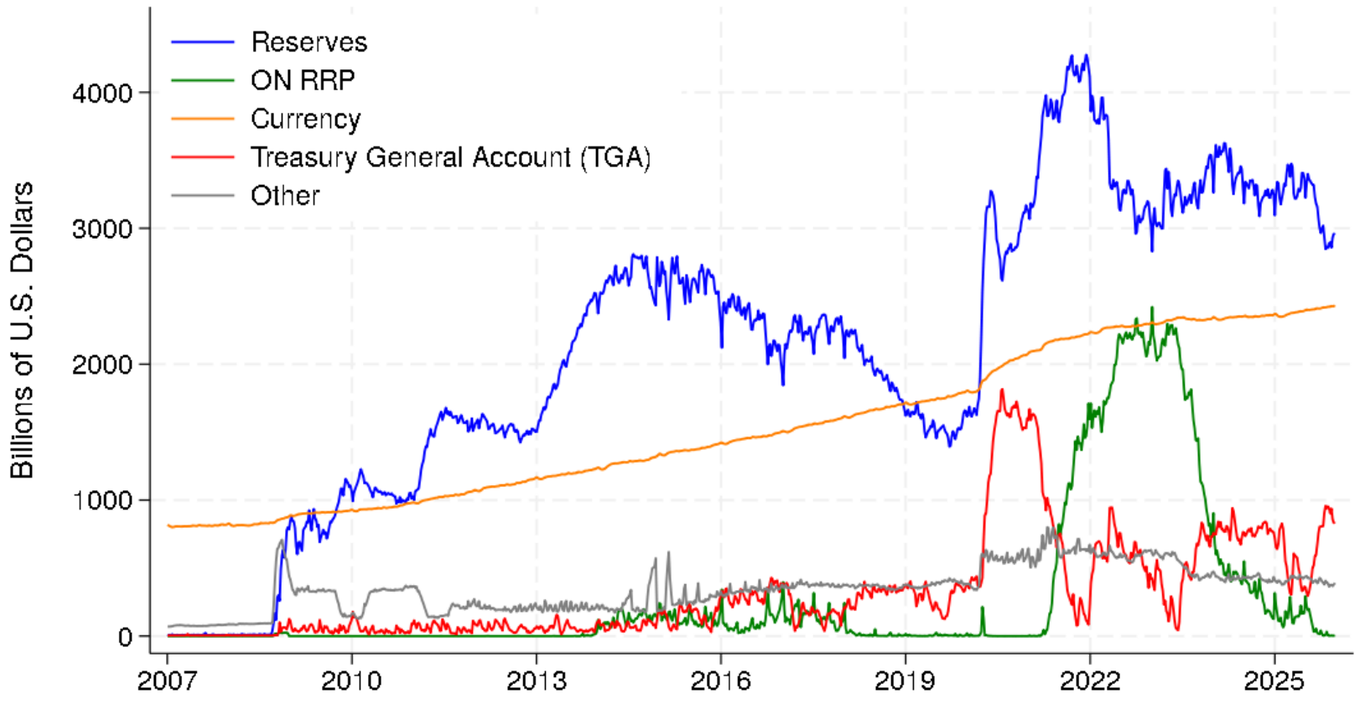
Wednesday levels, January 3, 2007 to December 24, 2025 (H.4.1 release)



- Various rounds of QE and QT are visible in asset total

  QT ended on December 1, 2025
- Large market functioning purchases at the start of the COVID pandemic
- Lending to domestic financial institutions is substantial during crisis, including during SVB crisis in 2023

Federal Reserve liabilities



- Currency and TGA:

  Autonomous (supplied elastically)

- Reserves and ON RRP balances:

  Fluctuate with need fund securites and lending in excess of the autonomous factors

  Also need to satisfy reserve demand

Balance sheet in "normal times" is under-researched

For a long time, the balance sheet was large due to QE/market functioning purchases

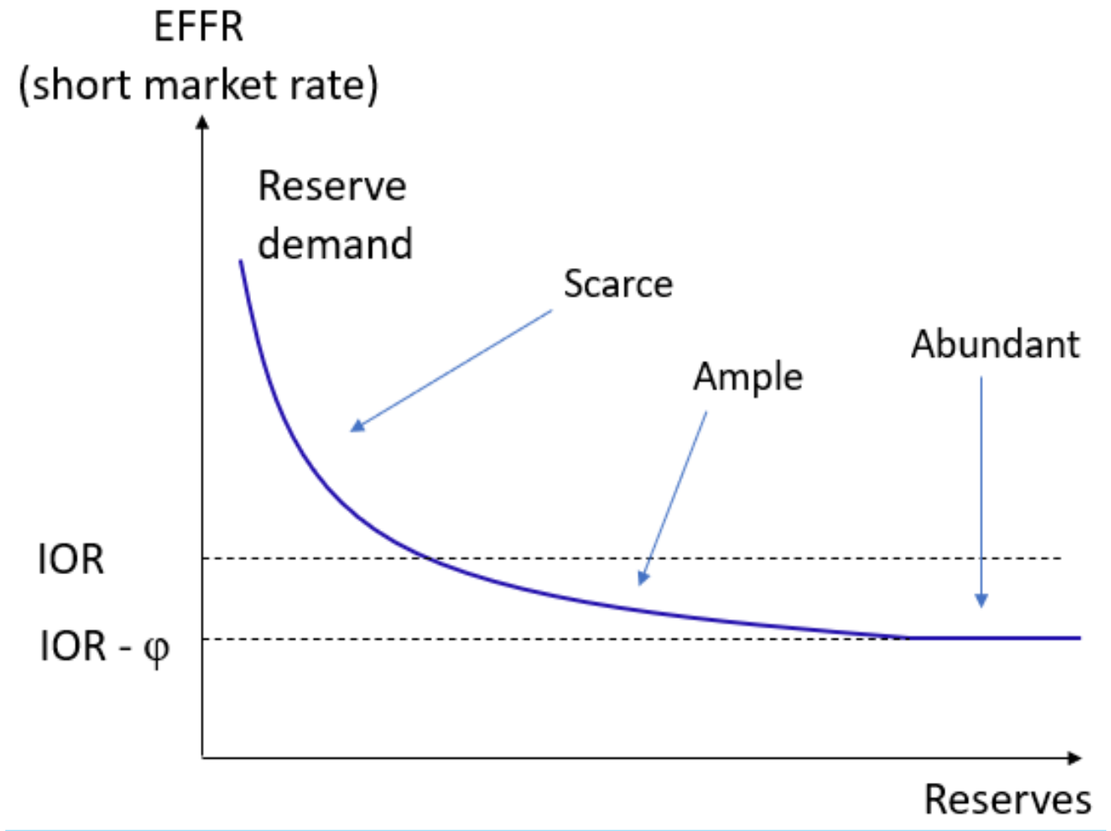
Now those are not needed. Then what determines optimal balance sheet size?

- What does "standard" monetary policy imply for the size of the balance sheet? Nothing

  With interest on reserves (IOR): Can hit desired federal funds rate for any reserve supply, on avg.
- What about financial stability and money supply? How large a balance sheet do they imply?
- Are other considerations important?

And what's the best operating framework to ensure interest rate control and financial stability given shocks to money demand (currency, TGA, reserves)?

Reserve demand



Reserve demand:
(Lopez-Salido and Vissing-Jorgensen, 2025)

$$r = \underbrace{IOR + v_R'(Reserves, Liquid\ Dep) - \varphi}_{\text{Net benefit of additional reserves}}$$

r-IOR: Measures economic scarcity of reserves

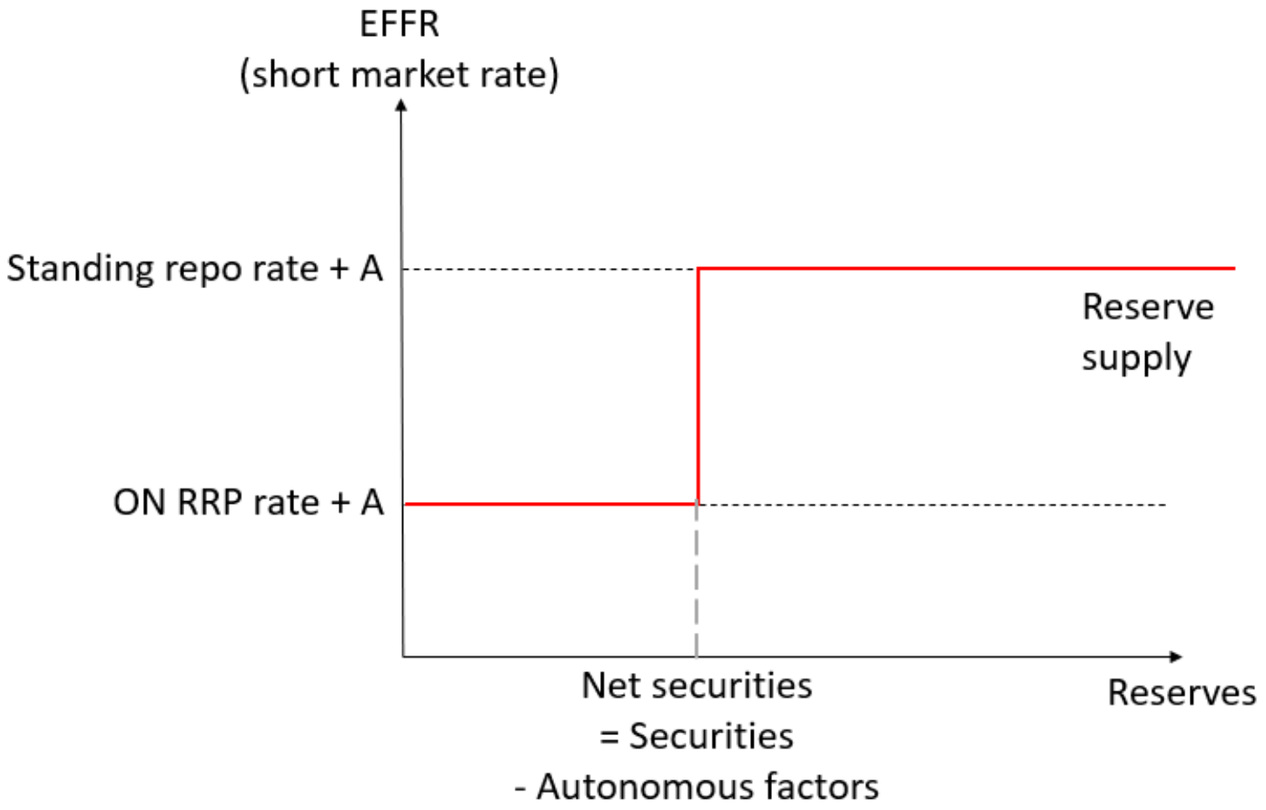
- Value due to their net convenience yield
  i.e., value above and beyond IOR

Ample reserves:

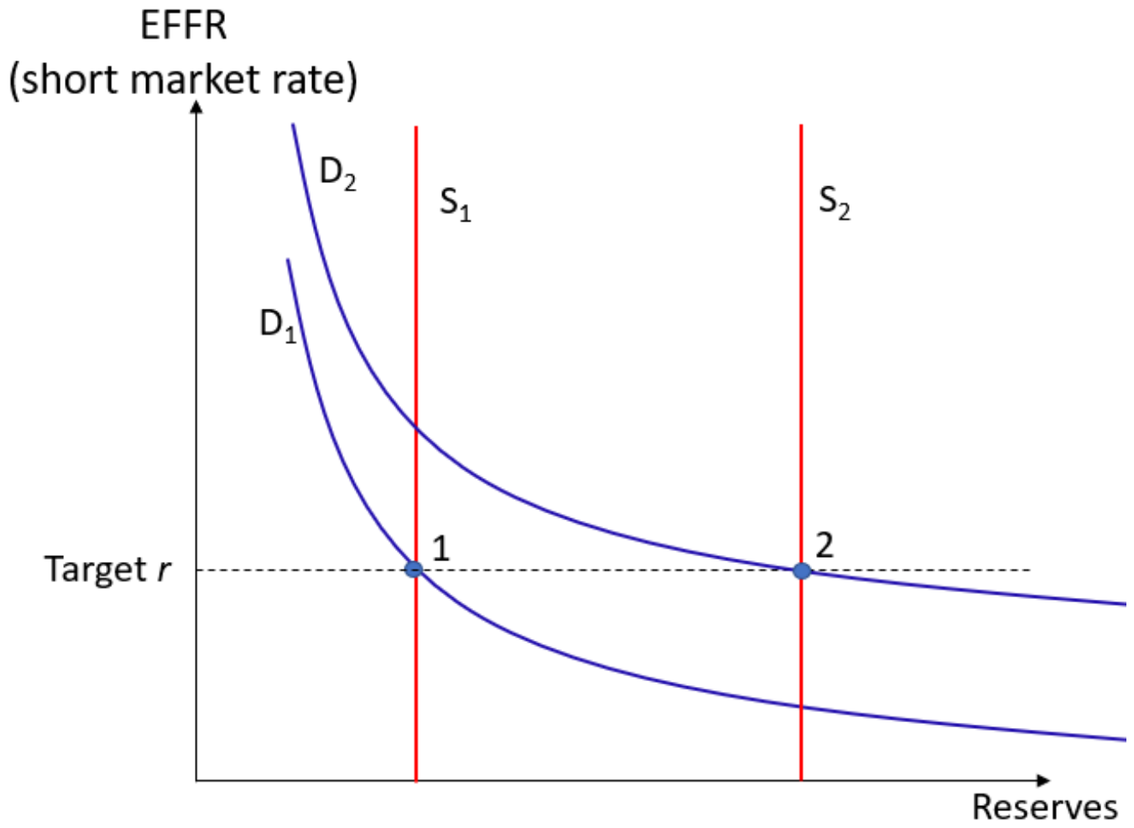
- $r - IOR = v_R'(.) - \varphi \leq 0$
  with $v_R'(.)$ still positive

Reserve supply

$$\text{Reserves} = \underbrace{\text{Securities} - \text{Autonomous factors}}_{\textit{Net securities}} + \underbrace{\text{Lending}}_{\substack{\textit{Reserves borrowed} \\ \textit{from the central bank}}} - \underbrace{\text{ON RRP balances}}_{\substack{\textit{Reserves lent} \\ \textit{to the central bank} \\ \textit{by non-banks}}}$$



Ample or scarce? Can hit target rate with either approach



$$r = IOR + v_R'(Reserves, Liquid\ Dep) - \varphi$$

Point 1: "Scarce reserves" regime
Low IOR, low supply $(v_R'(.) - \varphi > 0)$

Point 2: "Ample reserves" regime
High IOR, high supply $(v_R'(.) - \varphi \leq 0)$

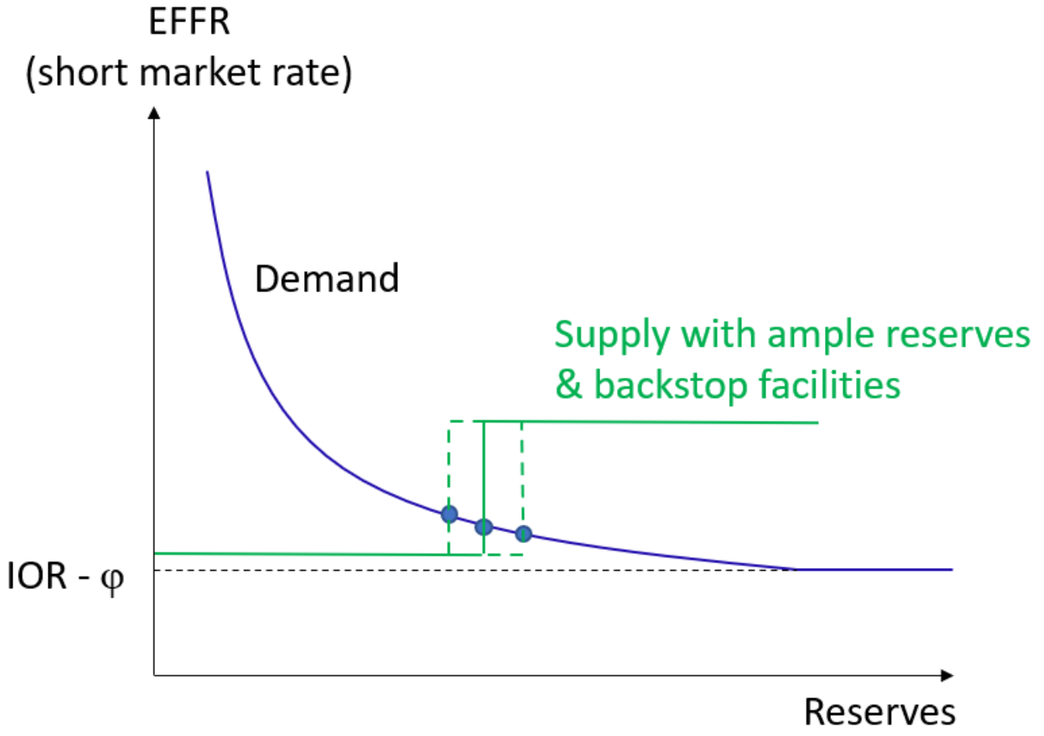
Fed's choice (Jan 2019): "Ample" reserves supply

- But no clear definition. What is ample? How ample? December 2025 FOMC minutes:

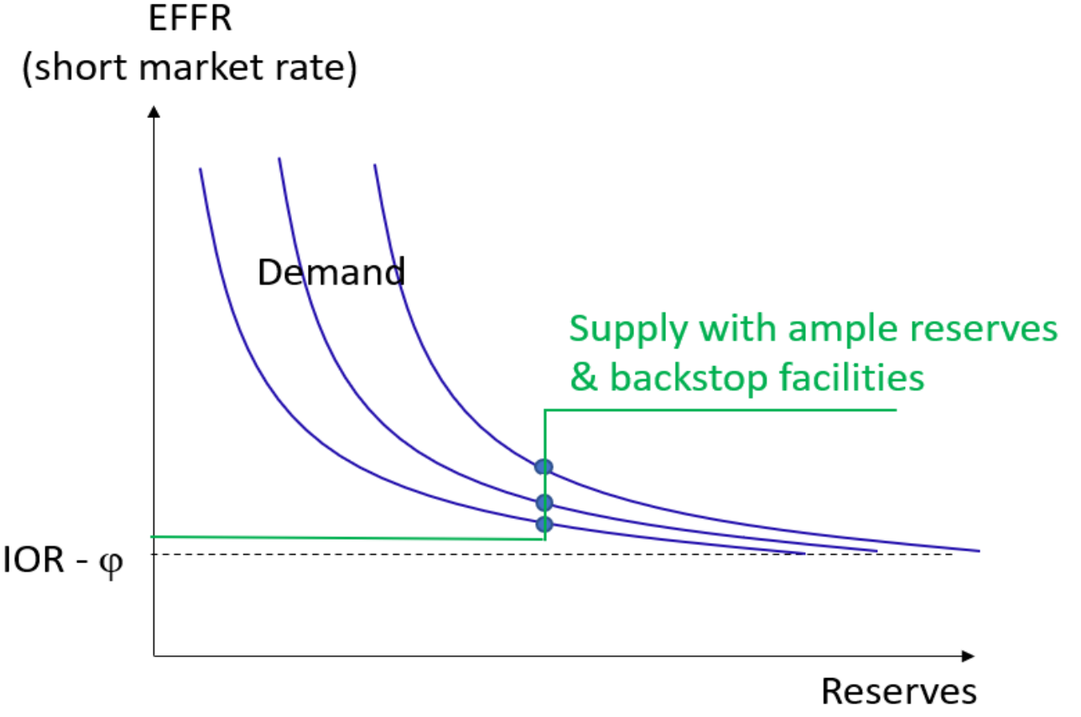
"Various participants noted that a more precise definition of "ample" would help clarify the Committee's intentions in implementing an ample-reserves framework."

Financial stability: Supply enough reserves to avoid interest rate spikes in response to shocks

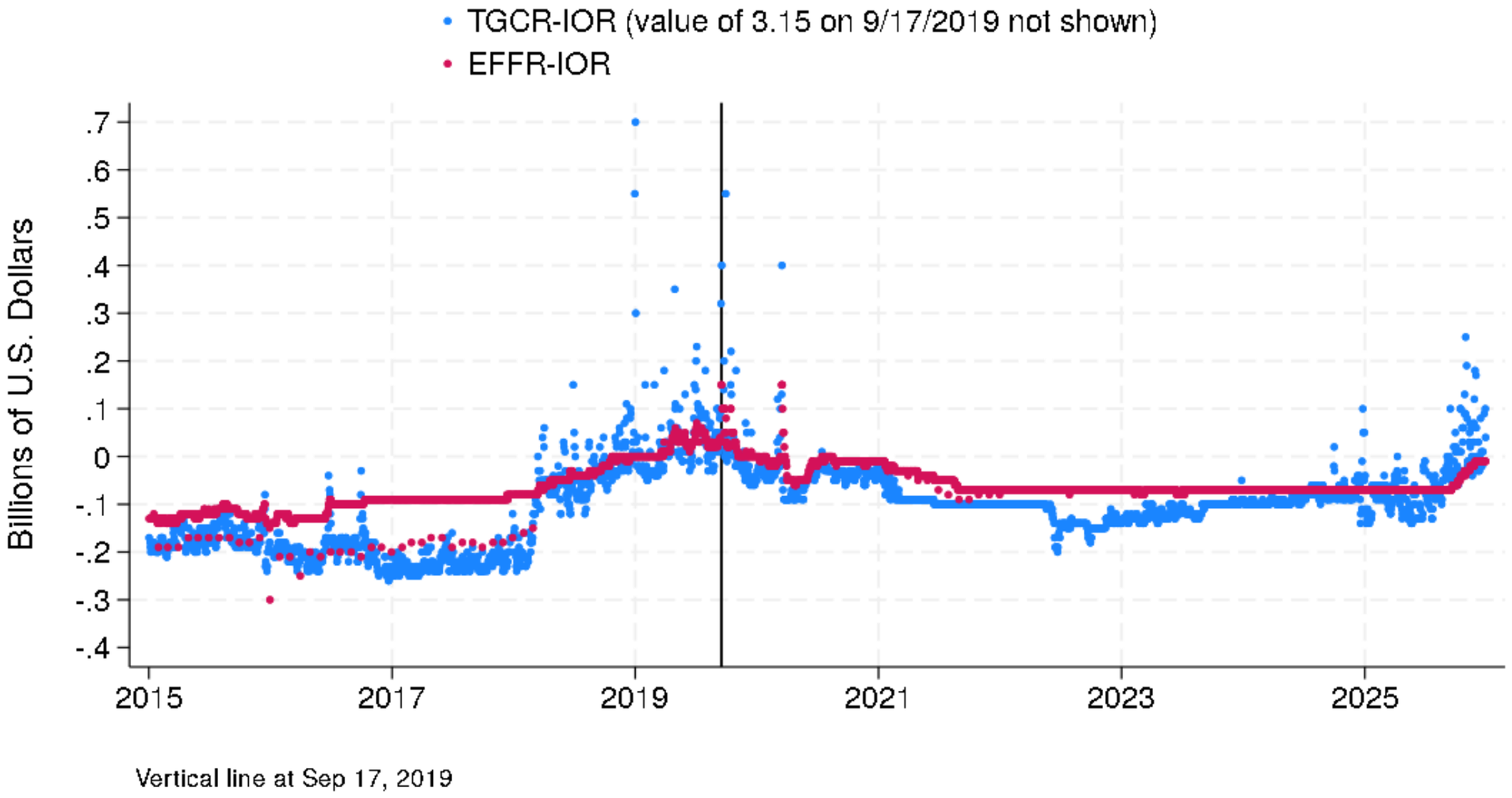
Supply shocks (autonomous factors)



Reserve demand shocks



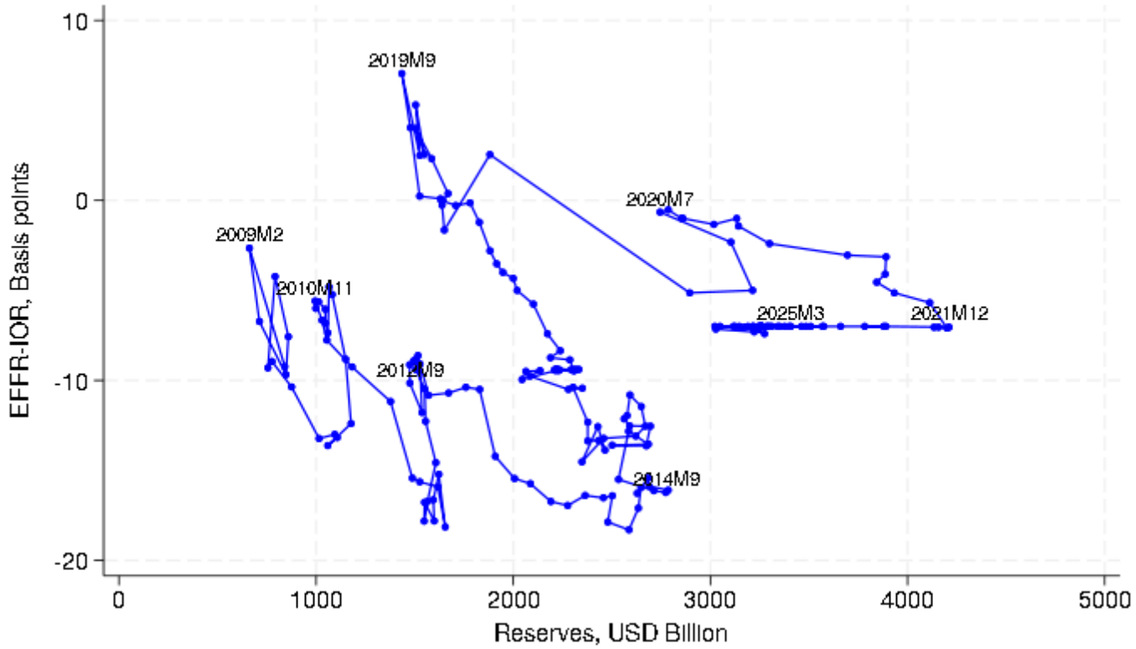
Spikes increase when reserve scarcity (EFFR-IOR) approaches/exceeds zero (on avg.)



What quantity of reserves leads to a zero spread? Can you predict it ahead of time?

If ample means r-IOR=0: Can estimate ample level from the reserve demand curve if we have a good model of reserve demand

- Reserve demand looks unstable

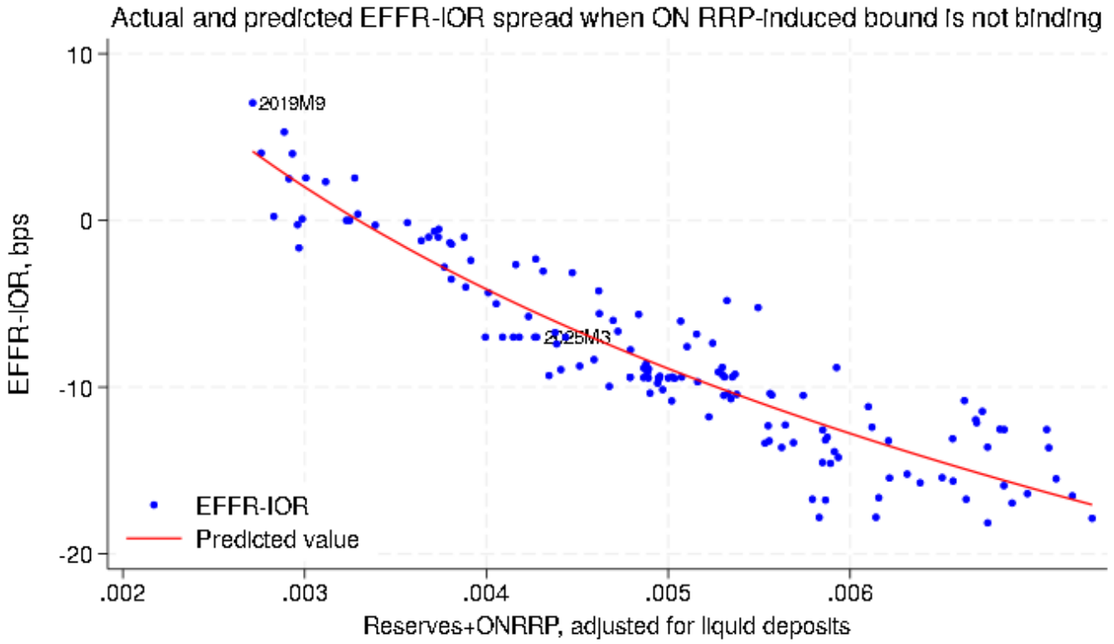


- But much better once you control for a demand shifter: Liquid deposits (Lopez-Salido and Vissing-Jorgensen (2025))

What quantity of reserves leads to a zero spread? Can you predict it ahead of time?

$$v_R'(Reserves, Liquid\ Deposits) - \varphi = B + C * \ln(Reserves) + D * \ln(Liquid\ Deposits) + U$$

$$EFFR - IOR = B + C * \ln(Reserves) + D * \ln(Liquid\ Dep) + U = B + C * ln\underbrace{\left[(Reserves) * (Liquid\ Dep)^{\frac{C}{B}}\right]}_{Deposit-adjusted\ reserves} + U$$



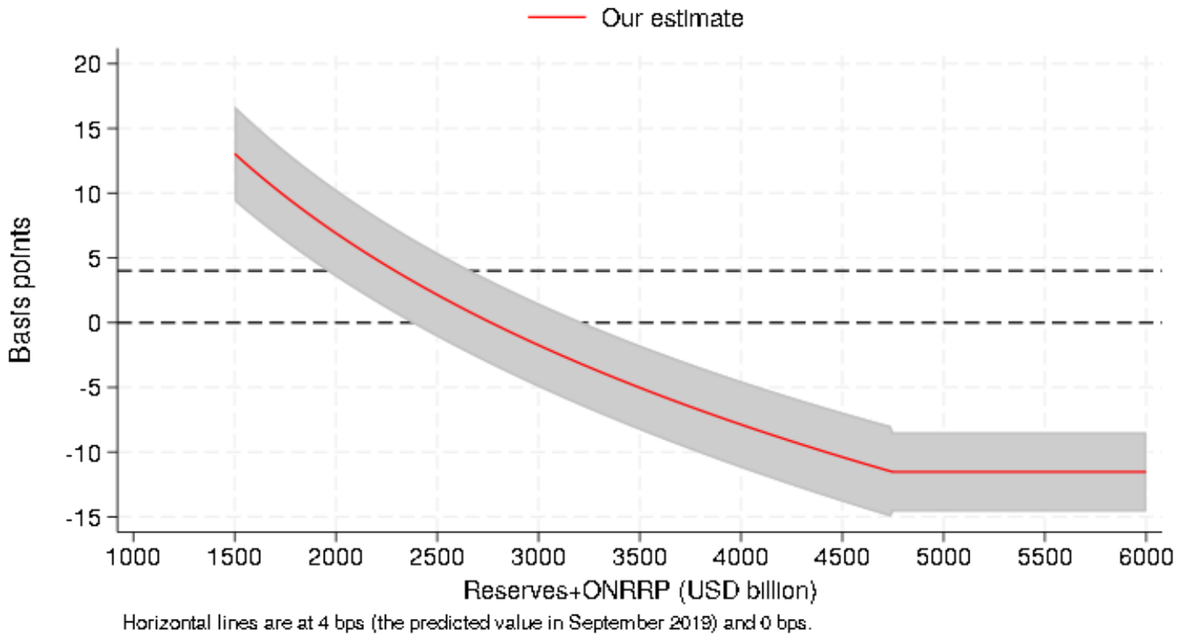
What quantity of reserves leads to a zero spread? Can you predict it ahead of time?

- Ample reserves:

$$0 = B + C * \ln(Reserves) + D * \ln(Liquid\ Deposits)$$

$$\Rightarrow\ Reserves^{Ample} = \exp\left(\frac{-B - D * \ln(Liquid\ Deposits)}{C}\right)$$

- "Ample" evolves over time with banking sector's liquidity needs from liquid deposits etc.

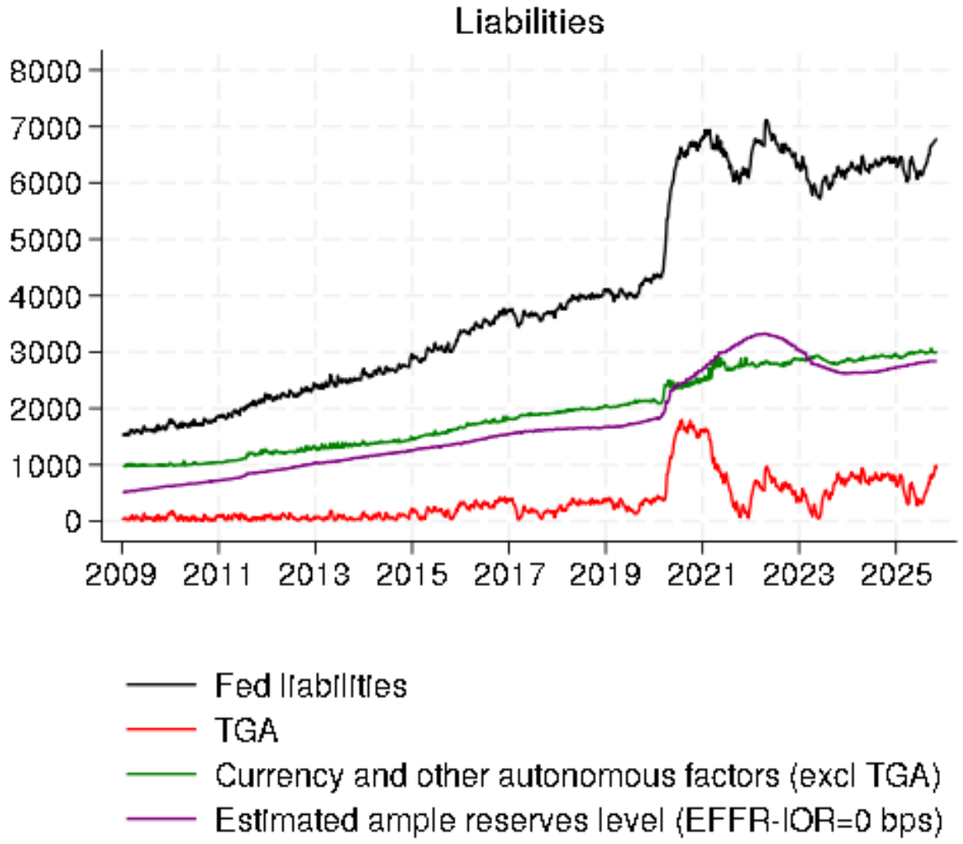


2025M3: Predicted spread, given liquid deposits of $16.3T:

- 0 bps for Res+ON RRP=$2.8T (90% pred int: $2.4T to $3.2T)
- 4 bps for Res.+ON RRP=$2.3T (90% pred int: $2.0T to $2.7T)

Hypothetical “steady state” balance sheet

Supply ample reserves plus the autonomous factors (currency, TGA etc.): Vissing-Jorgensen (2025)



Money supply: Supply the efficient quantity of reserves money supply purposes

- Friedman rule: $v_R'(.) - \varphi = 0$ → $\mathrm{r} = \mathrm{IOR}$
- Vissing-Jorgensen (2023): $v_R'(.) - \varphi = v_{Assets}'(.)$ → $\mathrm{r} > \mathrm{IOR}$ if $v_{Assets}'(.) > 0$

  Size and asset mix interact: If assets have convenience yield, optimal reserve supply is smaller

Other considerations for optimal balance sheet size

A large reserve supply can have welfare costs:

- Reserves may crowd out bank lending (Diamond et al (2024), and Chakraborty et al (2020))
  Reserves may crowd in bank deposits (financial stab risks, if uninsured (Acharya et al (2022))
- Risk of central bank losses from large balance sheets leading to threats to central bank independence and less headroom for future QE (Hauser (2022))
- Politics of paying IOR on a large balance sheet

Operating framework: Fed, ECB, BoE all working on this

What is an operating framework? (*Not* the same as monetary policy framework!)

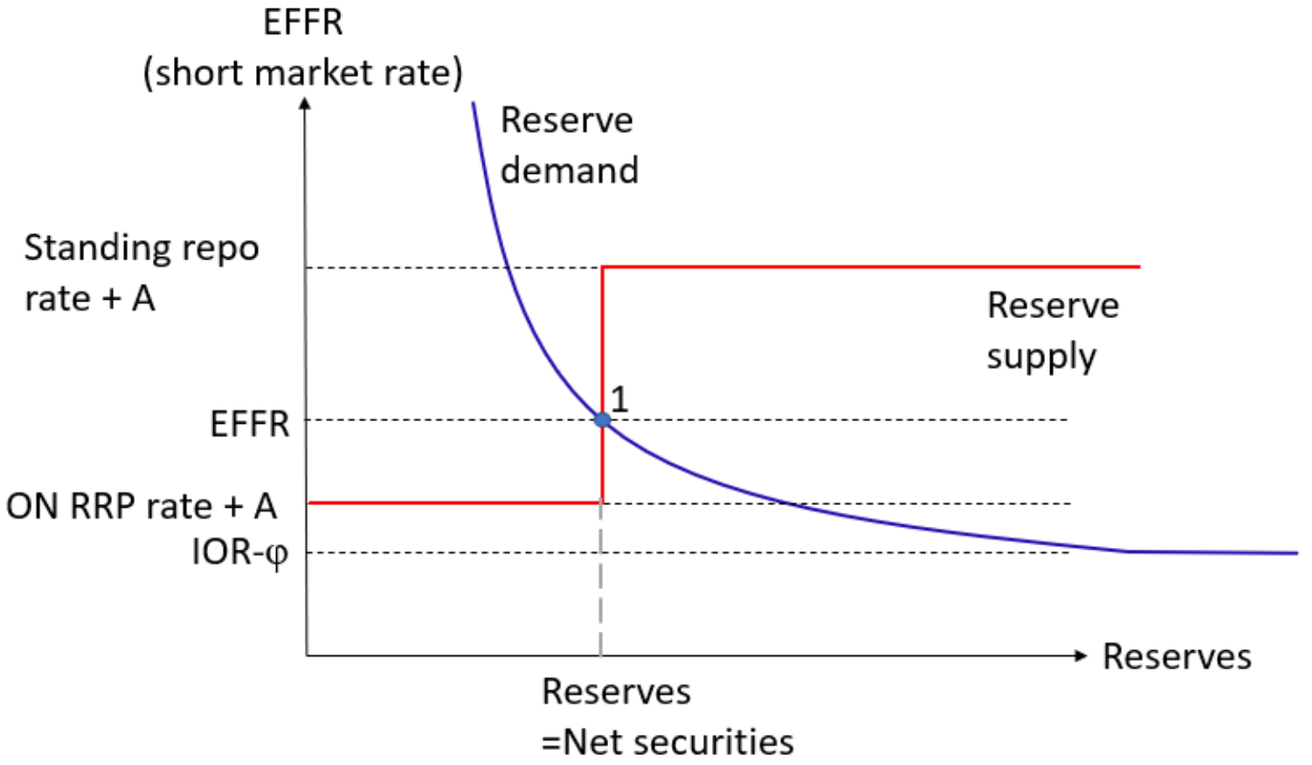
(1) Principles for payment (or not) of interest on reserves (IOR) held by banks at the central bank
➔ Affects the reserve demand curve

(2) Principles for securities holdings, market operations and repo lending and investment facilities
➔ Affect the reserve supply curve

Collectively, (1) and (2) control equilibrium in the market for reserves: Short market interest rates

- How do you design a system that deals with shocks and trends in money demand (reserves, currency, TGA)
- Demand versus supply-based systems. Use of facilities versus securities purchases/sales

SUPPLY-BASED operating framework: Demand crosses supply on vertical part



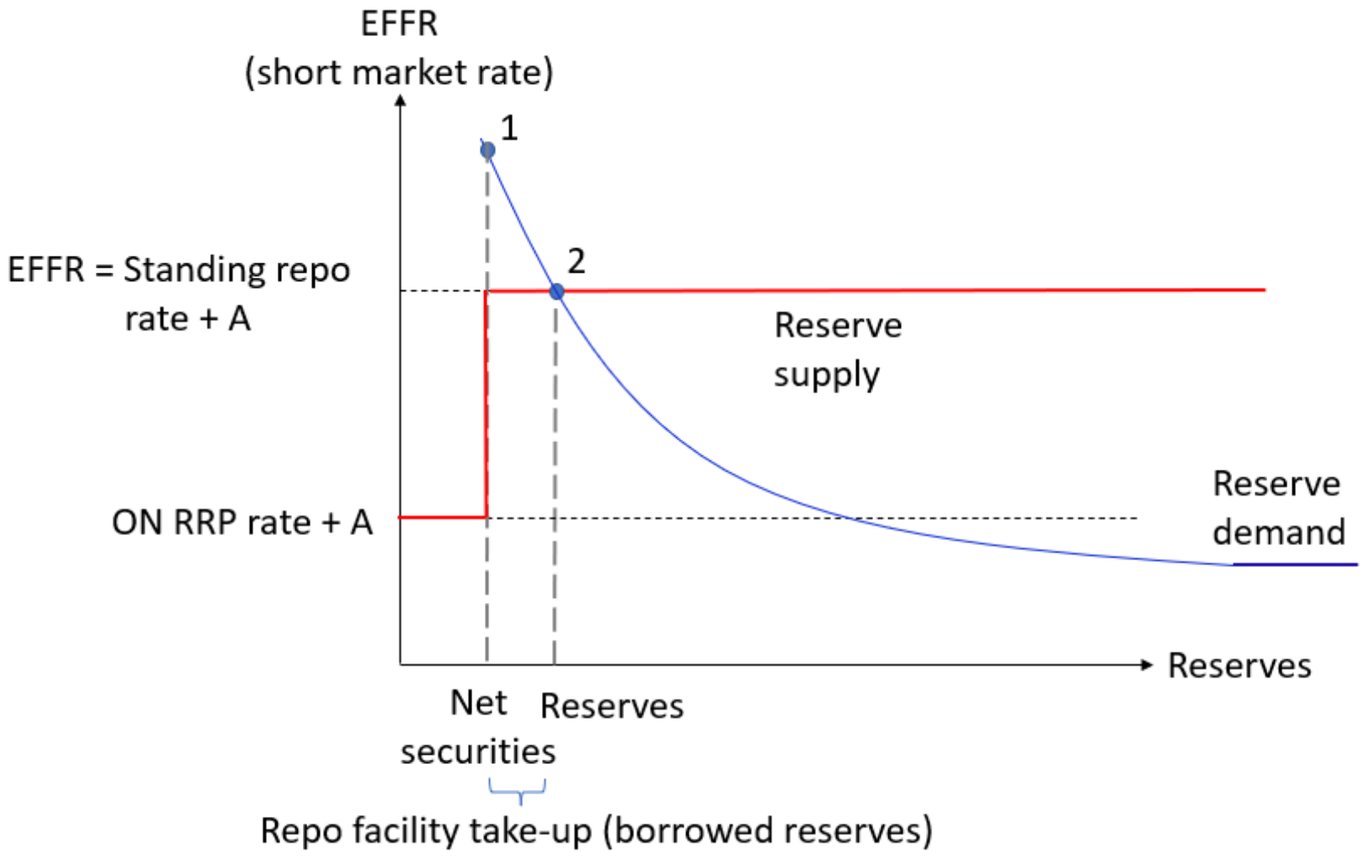
Central bank

- chooses IOR, net securities, facility rates
- such that there is no use of facilities (floor or ceiling) on most days

Facilities are used only occasionally

- Standing repos used on days with unusually high reserve demand or unusually low net securities (e.g., due to a high TGA)

DEMAND-BASED (*ceiling)* operating framework: Demand crosses supply on top flat part



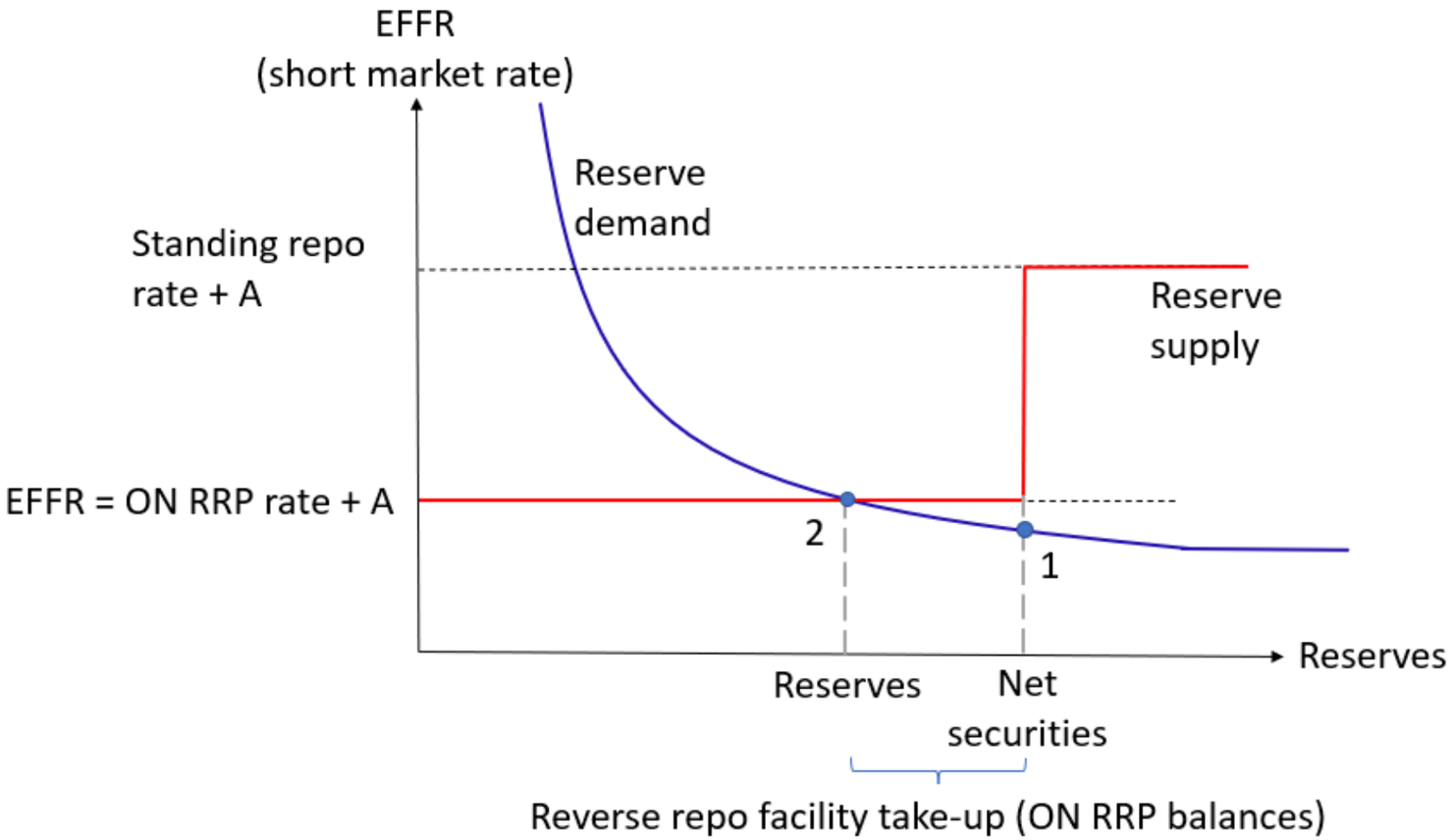
Central bank

- chooses IOR, net securities, facility rates
- such that ceiling facility is used on most days

Ceiling facility is part of banks normal liquidity management

$$\text{Reserves} = \text{Net securities} + \text{Lending}$$
$$= \text{Non-borrowed} + \text{Borrowed}$$

DEMAND-BASED (*floor)* operating framework: Demand crosses supply on bottom flat part



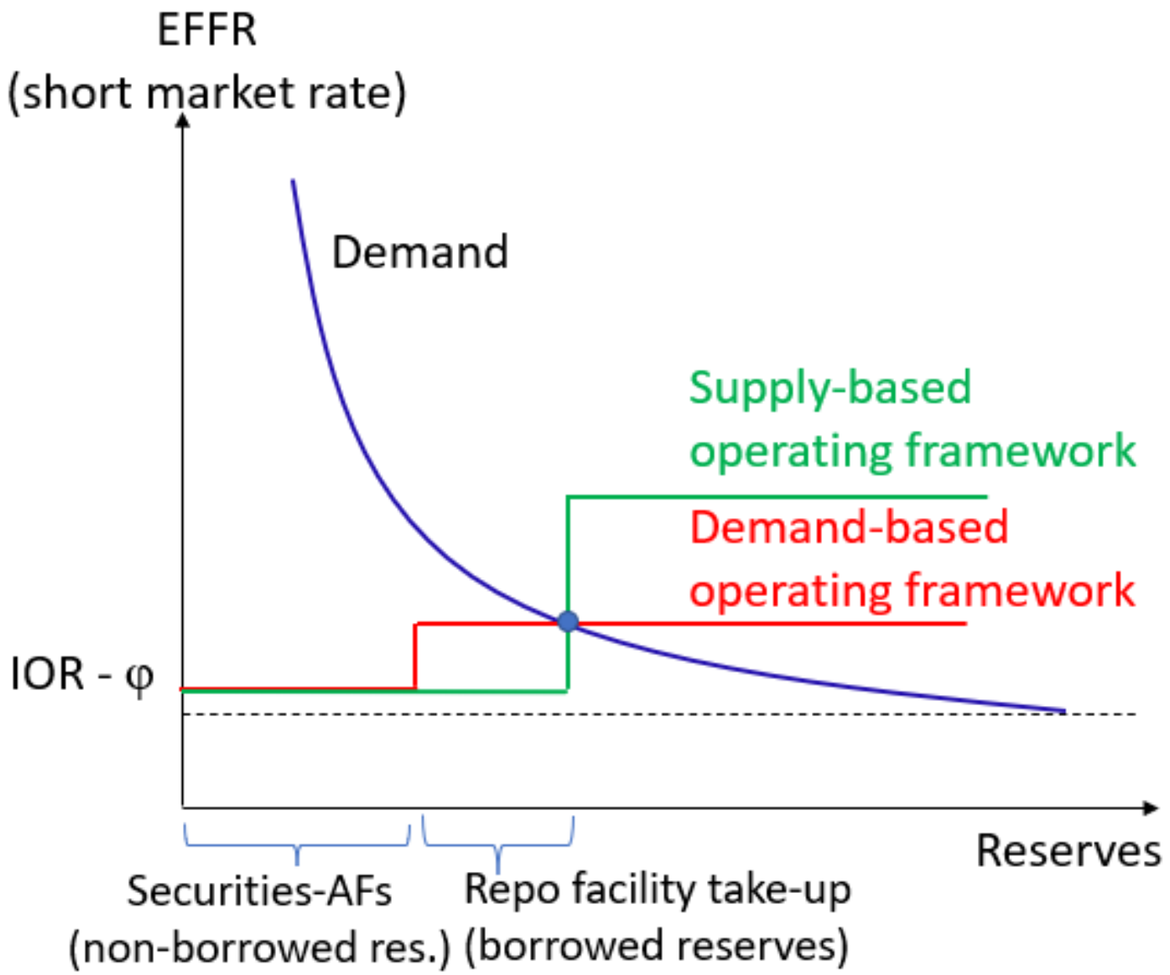
Central bank

- sets IOR, net securities, facility rates
- such that floor facility is used on most days

Floor facility is part of non-banks normal liquidity management

$$\text{Reserves} = \text{Net securities} - \text{ON RRP}$$

You can get to the same point (on average) with either approach



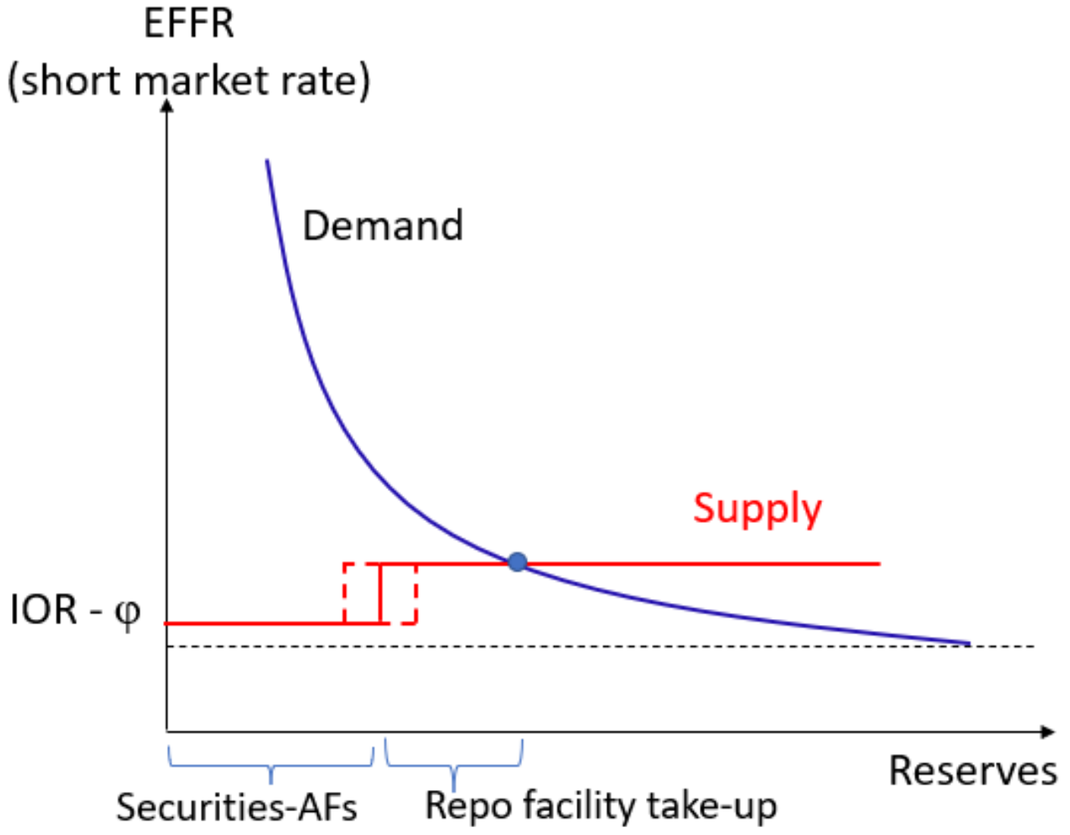
Demand-based approach reaches it with:

- Lower net securities
- Lower repo lending facility rate

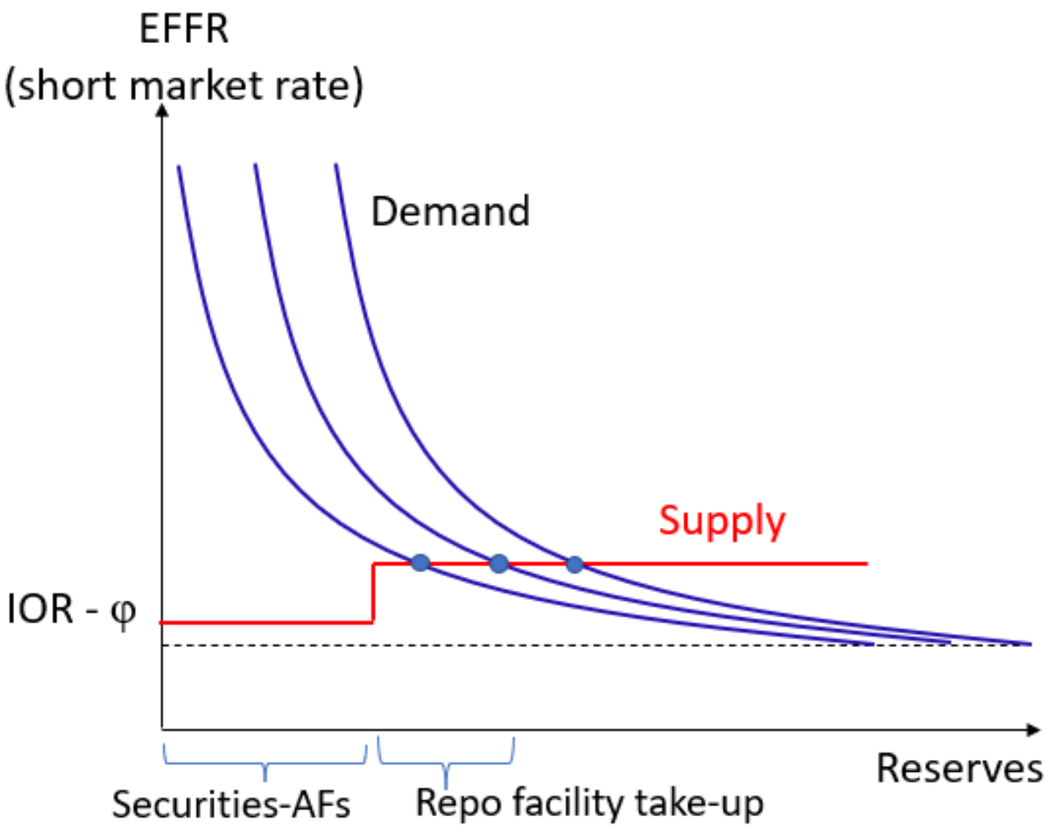
But systems deal with shocks differently

Demand-based system: Reserve supply automatically adjusts via repo lending to ensure interest rate control

Supply (autonomous factor) shocks

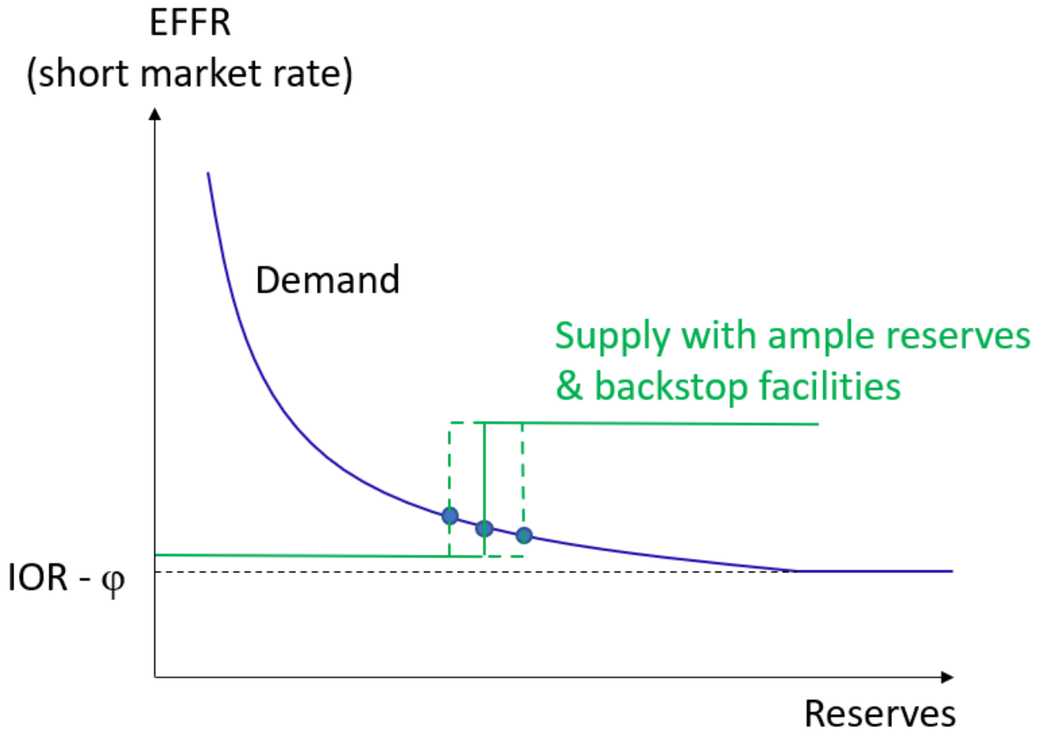


Reserve demand shocks

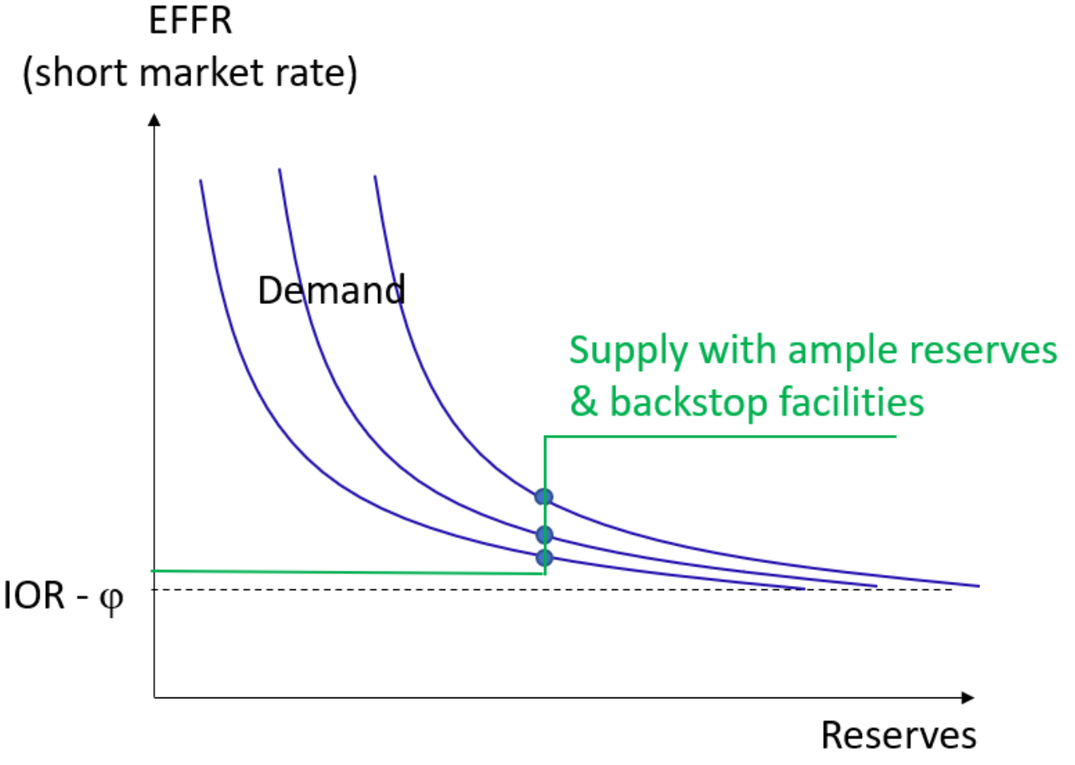


Supply-based system: You get some interest rate volatility if securities are fixed

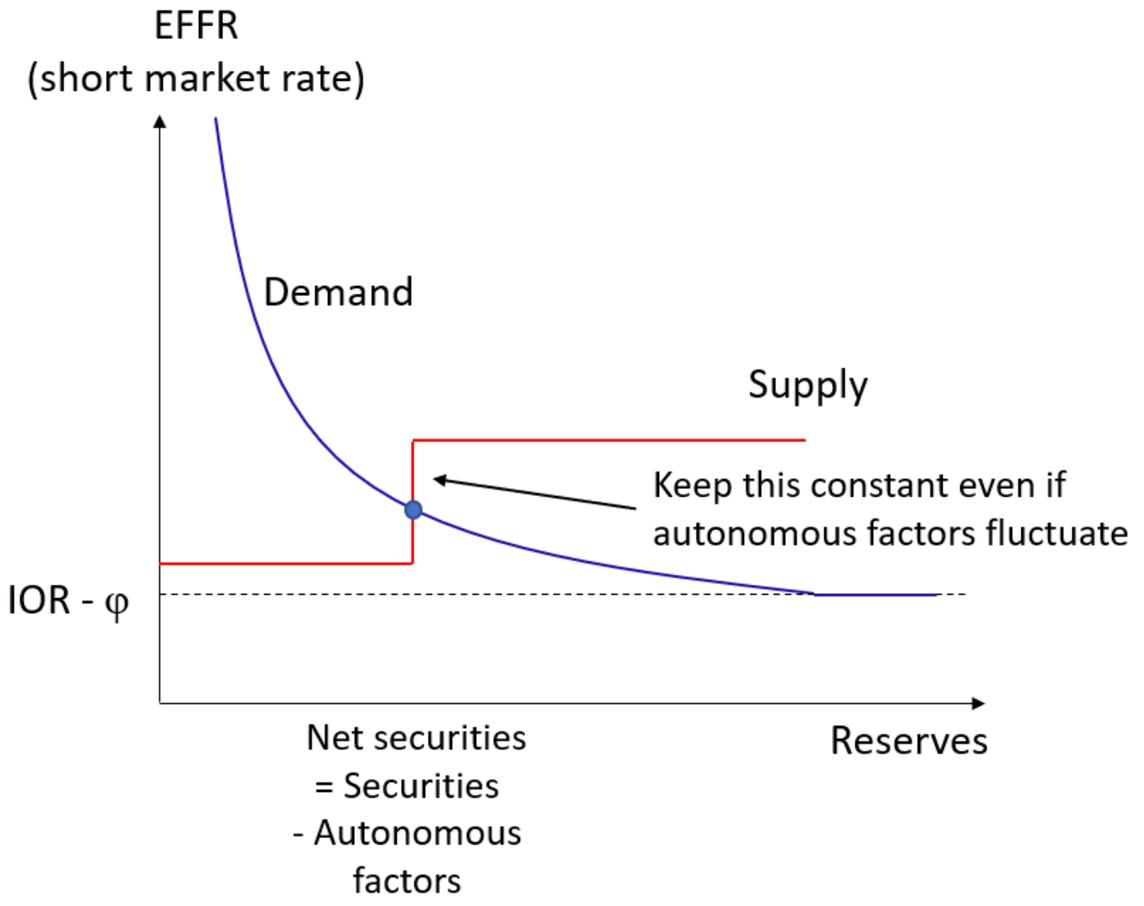
Supply (autonomous factor) shocks



Reserve demand shocks



Supply-based system: But can achieve a similar outcome with active supply



- Changes to Fed securities can serve as a buffer that insulates reserves from TGA and reserve demand fluctuations → Little interest rate volatility
- And if you back the TGA with Treasury bills, you can manage the TGA with no effect on your overall policy stance (Vissing-Jorgensen, 2025)

	Demand-based frameworks	Supply-based frameworks
Interest rate control	Reserve supply automatically adjusts to reserve demand and autonomous factors	Need to actively adjust supply via OMOs • Or accept some interest rate volatility – may be good for keeping hedge fund leverage down
Reserve quantities	Avoids excessive reserve supply Schnabel (2025): "A key advantage of a framework in which the marginal unit of liquidity is provided on demand, rather than through asset purchases, is that liquidity is always available when banks need it, but is never intentionally supplied in excess."	Need to actively adjust supply via OMOs • Or accept higher reserves on average – may be good if there are positive externalities from liquidity
Central bank asset mix	Repo lending leads to a better asset mix: • Central bank profit risk & independence • Supply of conv assets for the private sector	You can achieve low profit risk with Treasury bill holdings