Mapping monetary transmission through funding markets

Players, horizons, frictions — from Pozsar's Global Money Notes #20–26 (2019) to the June 2026 landscape, with an estimation agenda

Working document · 5 June 2026 · companion interactive map: the transmission map · results: estimation results

> This is the written companion to the interactive map on the front page. Section 7 sets the estimation agenda; the seven estimations it calls for were run and are reported in the estimation results note.

01

Purpose and approach

Goal: build a usable map of how changes in the policy rate actually propagate through US dollar funding markets — who the players are, on what clock they act, where the chain can jam — as the foundation for a trading/market framework that anticipates funding stress and rate dynamics. The map is built in three layers: (i) Pozsar's 2019 micro-plumbing baseline (GMN #20–26, the seven notes in the Funding folder); (ii) everything that changed institutionally between 2019 and mid-2026; (iii) for each mechanism, the quantity we could estimate once we go get data. Data work is deliberately deferred; every estimation row names its likely sources.

02

The 2019 baseline: the causal arc of GMN #20–26

The seven notes form one argument. The Fed's 2017–18 hikes pushed 3-month FX-hedging costs above the entire Treasury curve, so the marginal buyer — FX-hedged foreign real money rolling 3-month swaps — went on strike (#20). Carry traders exited in sequence (FX-hedged Oct-18, Libor-funded Jan-19, classic May-19), leaving primary dealers as forced residual buyers with record inventories financed overnight (#23). Meanwhile taper, TGA rebuilds and the uncapped foreign repo pool destroyed or sterilized reserves (#21, #24), until the lendable “free float” of reserves was roughly zero against the pace of collateral supply (#22). The system's shock absorber — a few G-SIBs, above all JPMorgan, toggling HQLA between reserves and repo — hit intraday-liquidity and G-SIB-score limits (#22, #26). September 17, 2019 (SOFR 5.25%, EFFR outside the band) was the predicted collision; the proposed fixes were a standing o/n repo facility priced at the top of the band, open to banks without stigma (#25), and ultimately outright purchases (#26).

Note	Title / date	One-line thesis
#20	Lost in Transmission · Feb 2019	Hedging costs > 10y yield: FX-hedged foreigners strike; ~100bp of adjustment needed via bases, Libor-OIS, bills, or cuts.
#21	Exorbitant Privilege · Mar 2019	Re-cap the foreign RRP pool: “reverse-sterilization” injects ~$200bn reserves and buys time to build the repo facility.
#22	Collateral Supply and o/n Rates · May 2019	Settlement-day mechanics: free float of reserves ≈ $200bn ≈ 0 margin; dealer of last resort “better be ready by Q4.”

Note	Title / date	One-line thesis
#23	The Revenge of the Plumbing · Aug 2019	$800bn+ of post-debt-ceiling supply into a market with $300bn of dealer SLR headroom: o/n rates will breach the band.
#24	Sagittarius A* · Aug 2019	The uncapped foreign RRP pool sterilizes reserves pro-cyclically — taper continues by other means.
#25	Design Options for an o/n Repo Facility · Sep 2019	The full repo-market hierarchy; SRF at ON RRP+25bp, G-SIBs, no stigma — the “equalizer” frees ~$500bn of precautionary reserves.
#26	Countdown to QE4? · Dec 2019	No true excess reserves; G-SIB scores bind into year-end; RV hedge funds are the marginal financiers of the safe asset; QE4 is forced.

03

The players: role, clock, constraint

Transmission is a relay race between balance sheets. Each runner has a different clock and a different reason to drop the baton.

Player	Role in transmission	Horizon / when they act	Binding constraint	2026 status
Fed: FOMC	Sets target range, IORB/ON RRP/SRF rates, balance-sheet path	Meeting-to-meeting; framework over years; facility design has multi-year lead times	Politics of balance sheet; LCLoR uncertainty	QT ended Dec-25; RMPs ~$40bn/mo bills; RDE telemetry
Fed: NY Fed desk	Operates SRF (8:15am & 1:30pm), ON RRP, FIMA, RMPs; publishes reference rates	Daily / intraday	Counterparty list; SRF trades don't net for dealers	SRF full allotment since Dec-25; FICC settlement discussed
Primary dealers (~25)	Underwrite all Treasury supply; matched repo books connect every segment	Intraday (9am takedown → 3:30pm refill); daily inventory funding	SLR/G-SIB capacity; daily vs quarter-end reporting split (US vs EU/JP)	eSLR relief Apr-26; clearing mandate reshapes books by 2027
G-SIB banks (HQLA desks)	Lenders of next-to-last resort: toggle reserves repo when GC > IORB; fund dealers	Daily toggle; quarter/year-end score management	Internal liquidity stress tests (intraday + resolution); G-SIB score window	Score recalibration only proposed (Mar-26); year-end turn intact
BNY (tri-party agent)	Sole settlement venue for tri-party; daylight credit to dealers; the system's hourglass neck	Intraday; sunset deadline for Fed overdrafts	Its own intraday liquidity & RLAP needs	Unchanged single point of failure; Fedwire hours expanding

Player	Role in transmission	Horizon / when they act	Binding constraint	2026 status
MMFs (~$8.3T)	Marginal cash lenders: allocate across ON RRP / bills / tri-party / FICC sponsored daily	Daily, purely rate-driven	ON RRP as outside option; curve slope for extension	Post-2023 reform: almost all govt/repo money; 37% of repo FICC-cleared
Hedge funds (RV / basis)	Marginal financiers of Treasuries: cash-futures basis, ~$1T+ short futures, Cayman $1.85T UST	Daily repo rolls; futures expiry cycle; deleverage in hours under stress	Repo availability & margin; dealer sponsorship; no Fed backstop	Bigger than Feb-2020; Apr-25 near-miss; CCP margin from Jun-27
FX-hedged real money (JP/TW lifers)	2019's marginal buyer; rolls 3m hedges; compares hedged UST carry vs home bogey	Quarterly rolls; annual plan changes	Mandates forbid FX risk; hedging cost vs curve	Hedge ratios at lows (JP <30%, TW ~47%); JGBs dominate; panics replace flows
Foreign officials (FIMA/pool)	Custody UST holders; foreign repo pool ~$320bn; FIMA repo since 2021	Structural; episodic in crises	Reserve-manageme nt policy	Pool repriced/defanged; FIMA used $60bn Mar-23
FHLBs	Only consistent fed-funds lenders (pre-9am); quasi-LOLR to banks (SVB)	Daily; early morning	No FICC access; mission debate	FHFA reform push stalled; pecking order unresolved
US Treasury	Supply (bills vs coupons), TGA management, buybacks — the largest single driver of reserve and collateral supply	Quarterly refunding; daily TGA; debt-ceiling episodes	Debt ceiling; deficit path; TBAC guidance	ATI bill-heavy issuance persists; buybacks since 2024
Stablecoin issuers (~$300bn)	New front-end buyer: bills ≤93d, repo, govt MMFs (GENIUS Act)	Continuous mint/redeem; run-speed in hours	No Fed access; 1:1 redemption promise	Tether > $100bn bills; projections to $2T by 2028
FICC / CCPs	Netting hub: sponsored repo connects MMF cash to HF leverage off dealer balance sheets	Daily margin cycles; intraday calls in stress	Concentration; margin procyclicality	Cash clearing Dec-26, repo Jun-27; CME/ICE entering
Regulators (Fed/OCC/FDIC/SEC)	Set the shadow prices: SLR, G-SIB, LCR, internal stress tests, clearing mandate	Multi-year rulemaking; snapshot dates create the calendar	Inter-agency politics	eSLR final; Basel endgame reproposed capital-neutral Mar-26

04

The transmission chains

Five chains carry the policy rate outward. Each is listed with its weak link.

- Administered-rate chain. Target range → IORB / ON RRP / SRF → EFFR and SOFR. Pass-through is mechanical while reserves are ample; when scarce, SOFR detaches upward from IORB (late 2025). Weak link: reserve distribution — averages mislead, the marginal bank matters.
- Collateral chain. Treasury supply (settlement days, bill share, TGA swings) → dealer inventories → repo rates → SOFR → everything indexed to it. Weak link: dealer balance-sheet capacity at reporting dates; nonlinear once utilization is high (Duffie et al.).
- Leverage chain. MMF cash → FICC sponsored repo → hedge-fund basis books → cash Treasuries vs futures → term yields and swap spreads. Weak link: margin spirals and the absence of any backstop for a forced unwind.
- Global dollar chain. o/n rates → t/n and 3m FX swap implied yields (OIS + XCCY basis) → hedged UST carry vs home bogeys → foreign participation → spot/forward FX. Weak link: the year-end turn premium and episodic re-hedging panics; Pozsar's 3FXs/10s gauge still organizes this chain.
- Credit chain (new since 2023). SOFR → floating-rate loans, FRNs, securitizations. LIBOR's death means policy and repo squeezes now pass directly into borrowing costs through collateral markets, and bank credit stress no longer shows in the benchmark. This raises the stakes of ceiling integrity — a key reason the SRF went to full allotment.

05

Frictions catalogue

Friction	Mechanism	Calendar signature	Status mid-2026
F1 Reserve scarcity & distribution	LCR, internal stress tests, resolution liquidity lock reserves down; no true “excess”; marginal holder matters, not the average	Builds slowly with QT/TGA; breaks on tax+settlement days	Live. SOFR>IORB at ~$2.9T reserves (Nov-25); RMPs growing reserves since Dec-25
F2 Dealer balance sheet (SLR, G-SIB)	Leverage capacity caps matched books and inventories; score snapshot drives year-end retreat from repo/FX swaps	Quarter-ends (EU/JP), Dec 31 (US G-SIB)	eSLR buffer recalibrated (eff. Apr-26), no UST carve-out; G-SIB fix proposed only
F3 Basis-trade fragility	>$1T leveraged long-cash/short-futures funded o/n; unwind = simultaneous UST selling and repo stress	Vol shocks, margin events, futures rolls	No backstop; Apr-25 partial unwind absorbed; CCP margin from Jun-27 untested
F4 Intraday liquidity & payment timing	Low reserves → delayed payments → repo dispersion (Copeland–Duffie–Yang); settlement mornings destroy dealer cash until 3:30pm	9am settlement, >3pm payment bunching, sunset	Morning SRF op (Jun-25) targets it; Fedwire hours expansion raises reserve demand
F5 CCP margin procyclicality & concentration	Clearing mandate moves the system's stress point from dealer balance sheets to FICC/CME/ICE margin models	Stress episodes; implementation deadlines Dec-26 / Jun-27	New, building; OFR: cleared share 45% → ~77% under mandate
F6 Stablecoin run risk	Bill-backed redeemable-at-par money with no Fed access; run = forced bill/repo liquidation at the front end	Crypto-market events; continuous	Untested at scale; $300bn now, projections to $2T

Friction	Mechanism	Calendar signature	Status mid-2026
F7 Fiscal–monetary entanglement	Bill-share policy (ATI), TGA/debt-ceiling swings, Fed RMPs and stablecoin demand all manage the same front end	Refunding dates; X-dates; tax dates	Bill share above guideline; three actors, one steering wheel
F8 Discount-window stigma	Banks won't use the window (SVB); SRF substitutes only for repo-collateral counterparties	Acute stress	Uncured per NY Fed research; reform bills pending; LCR credit unbuilt
F9 Hedging-flow discontinuities	Marginal foreign holders unhedged; re-hedging arrives as a panic, not a flow (TWD May-25)	FX shocks; year-end turn from Oct 1	Hedge ratios at multi-year lows — the option to panic is large

06

What changed, 2019 → 2026

Area	2019 (per GMN #20-26)	Mid-2026
Rate ceiling	None — band policed only at the bottom; Sept-19 spike to 5.25%	SRF (Jul-21), morning op Jun-25, cap removed Dec-25 (full allotment); leaks limited to ~20bp on month-ends
Foreign officials	Uncapped foreign RRP pool, paying above bills — the "black hole"	Pool repriced toward ON RRP; standing FIMA repo (cap $60bn/cpty) used in Mar-23
Reserve regime	Taper into scarcity; no telemetry; free float ≈ 0	Ample-reserves framework with published RDE (Oct-24); QT stopped on indicators (Dec-25); RMP bill purchases
ON RRP	Near zero usage (bills absorbed cash)	$2.55T peak (Dec-22) → ~$0 (mid-25): the buffer that made QT2 safe is spent
Leverage rules	SLR + 2% eSLR flat add-on; G-SIB Method-2 fixed coefficients	eSLR = 50% of Method-1 surcharge (eff. Apr-26); no UST/reserve exclusion; Basel endgame reproposed capital-neutral (Mar-26)
Repo structure	Segmented; sponsored repo nascent (~$250bn); ~45% cleared much later	$12.6T daily exposures; sponsored +90% since 2023; mandatory clearing Dec-26 (cash) / Jun-27 (repo); CME & ICE entering
Benchmark	Libor — unsecured, credit-sensitive, dying	SOFR everywhere (Jun-23): policy transmits through collateral markets into the credit stack
Marginal UST buyer/financier	FX-hedged foreign real money (on strike) → dealers by default	Leveraged funds (basis), MMFs, stablecoins; foreign books increasingly unhedged
Treasury tools	Bills-vs-coupons debate; no buybacks	Buybacks since 2024 (~$30bn/q liquidity support); ATI: bill share as quasi-monetary tool

Area	2019 (per GMN #20-26)	Mid-2026
Settlement	T+2; no early SRF settlement	T+1 (May-24); SRF morning op with same-day early settlement

07

Estimation agenda — how to measure transmission

Each row turns a piece of the map into something estimable. Methods favor what a trading framework needs: real-time, spread-based, event-driven. Data column names sources to be collected later.

Question	Estimable object	Method	Data
Where is the reserve demand curve?	Elasticity of SOFR−IORB / EFFR−IORB to reserve changes; time-varying LCLoR	Replicate/extend NY Fed RDE: rolling IV regressions of rate spreads on reserve shocks (TGA, RRP as instruments); regime-switch detection	H.4.1, FRED, NY Fed RDE, DTS (daily TGA)
How leaky is the ceiling?	P(SOFR > SRF rate) and the spread, conditional on month-end, reserves, SRF usage	Event studies of Oct/Nov/Dec-25 episodes; counterparty-coverage gap as explanatory variable; compare pre/post full-allotment	NY Fed SRF ops & reference rates, OFR repo data
What do settlement days cost?	SOFR right-tail (99th–50th pct) response to chunky supply (> $25/50bn) × tax dates × reserve level	Pozsar's chunky-day rule as a testable interaction regression; daily panel 2018–2026 spanning both scarcity episodes	TreasuryDirect auctions, FRBNY percentiles, DTS
Is intraday the binding constraint?	Payment-delay share (>3pm) and morning repo dispersion vs reserves; effect of Jun-25 morning SRF op	Diff-in-diff around the morning-op launch; CDY (QJE 2025) replication on public proxies; daylight-overdraft stats	Fed payment studies, daylight overdraft releases, BNY data
How big is the balance-sheet tax?	Turn premia term structure: quarter/year-end spikes in repo forwards & FX forward points; cross-segment spreads (cleared vs tri-party)	Extract turn premia from SOFR futures/FX points; test compression after eSLR (Apr-26) — the live natural experiment; EU vs US dealer books at quarter-ends	CME SOFR futures, FX forwards, OFR NCCBR, BIS
How fragile is the basis trade?	Positioning (HF short futures, Cayman holdings, sponsored volumes) vs repo spreads & swap spreads; stress elasticities	April-2025 event study; threshold/nonlinear models of liquidity vs dealer utilization (Duffie SR1070 spec); margin-shock simulations	CFTC CoT, OFR Hedge Fund Monitor, TIC, FICC volumes
Who is the marginal bill buyer?	Substitution elasticities: MMF allocation (RRP/bills/repo), stablecoin AUM, foreign pool vs spreads	Monthly N-MFP portfolio shares regressions; stablecoin attestations vs bill yields at issuance points	SEC N-MFP, Crane, H.4.1, issuer attestations

Question	Estimable object	Method	Data
Does foreign hedged demand still matter?	Reconstructed 3FXs/10s (¥/€/TWD): hedged 10y UST carry vs home bogeys; flow response	Pozsar's gauge as a switching variable for foreign participation; hedge-ratio panels; TWD May-25 panic event study	Bloomberg FX points, MoF weekly flows, Taiwan FSC, TIC
What does the TGA do to reserves?	Pass-through of TGA changes to reserves and SOFR–IORB; debt-ceiling cycle asymmetry	Daily identities from H.4.1/DTS; local projections around X-date resolutions (2021, 2023, 2025)	DTS, H.4.1, CBO/BPC X-date estimates
Is the credit chain faster now?	Pass-through speed of SOFR shocks into loan/FRN resets vs the Libor era	Pre/post-2023 comparison of repo-squeeze episodes propagating into credit pricing	Loan indices, FRN data, securitization resets

08

Identification episodes

The same shock class hit different institutional regimes — the cleanest identification we will get:

- Sep 16–17, 2019: tax date + settlement day, no ceiling, free float ≈ 0 → SOFR 5.25%, EFFR breaks band. The full Pozsar mechanism.
- Mar 2020: dash-for-cash; dealer capacity overwhelmed; basis unwind; Fed restores via QE + temporary facilities (FIMA born).
- Mar 2023: SVB; FHLB-before-window pecking order confirmed; FIMA $60bn draw; stigma intact.
- Apr 2025: tariff shock; 10y ±50bp intraday, swap spreads collapse, partial basis unwind, no Fed intervention — fragility revealed, backstop question unanswered.
- Oct–Dec 2025: scarcity 2.0 with the new toolkit: SOFR > IORB, record SRF use ($50bn Oct 31; $74.6bn year-end), QT stopped, cap removed, RMPs launched. Same shock as 2019, ~20bp of ceiling leak instead of ~300bp of spike.

09

Open questions the framework should trade on

- Redistribution: can full-allotment SRF cash reach non-counterparties fast enough at year-ends, and does FICC settlement of SRF trades (discussed, not done) close the gap?
- Does eSLR recalibration (Apr-26) measurably compress turn premia? First clean read: June and December 2026 turns.
- Where is LCLoR? Waller's 8–9% of GDP vs Logan's lean view; late-2025 says ~$2.9T was already tight. RDE is the live gauge.
- Who eats a forced basis unwind after mandatory repo clearing (Jun-27) — CCP margin, dealers, or a Kashyap–Stein-style facility that doesn't exist yet?
- Stablecoins at $1–2T: does front-end demand become a stabilizer (deep bill bid) or a new run channel with no lender of last resort?
- Fiscal dominance of the front end: with ATI persisting, bills, RMPs and stablecoin demand interact — who controls the bill rate, Treasury or the Fed?

10

Key sources

Primary: Pozsar, *Global Money Notes* #20–26, Credit Suisse (Feb–Dec 2019). The full source register is on the sources page.

- Fed framework & facilities: FOMC/NY Fed operating statements — SRF launch (Jul 28, 2021), morning ops (May 28, 2025), QT end (Oct 29, 2025), full allotment & RMPs (Dec 10, 2025); Perli speeches Nov-25–May-26; Waller (Jul-25); Logan (Oct-25); Williams (Sep-25).
- Regulation: eSLR final rule (Fed/OCC/FDIC, Nov 25, 2025; eff. Apr 1, 2026); Basel III endgame & G-SIB reproposals (Mar 2026); SEC Treasury clearing rule (Dec 2023) and extension (Feb 25, 2025 → cash Dec-26, repo Jun-27); SEC MMF reform (Jul 2023); GENIUS Act (Jul 18, 2025).
- Research: Afonso et al., "Market Events of Mid-September 2019" (SR918); Kahn et al., "Anatomy of the Repo Rate Spikes" (OFR 23-04); Copeland–Duffie–Yang, "Reserves Were Not So Ample After All" (QJE 2025); Afonso et al., Reserve Demand Elasticity (NY Fed, published monthly since Oct-24); Lopez-Salido & Vissing-Jorgensen; Duffie, "Resilience Redux" (Jackson Hole 2023) and SR1070; Barth–Kahn basis-trade papers; Kashyap–Stein–Wallen–Younger basis-purchase facility (BPEA 2025); OFR "Sizing the US Repo Market" (Dec 2025); Fed Notes "Cross-Border Trail of the Treasury Basis Trade" (Oct 2025).
- Market structure & players: OFR Hedge Fund Monitor; Liberty Street Economics on sponsored repo (Oct 2025) and intraday demands (Oct 2024); BIS Quarterly (Dec 2025); CFR on Taiwan lifers; TBAC charges 2025–26; Hudson Bay "Activist Treasury Issuance" (2024).