STATE STREET

THE COST OF CLEARING

Evidence from an analysis of cleared and uncleared repo

Identifying key drivers of the cost of clearing from cleared vs. uncleared US Treasury repurchase agreement (repo) transactions, 2020 – 2025

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Abstract

The forthcoming United States Securities and Exchange Commission (SEC) mandate requiring central clearing for US Treasury (UST) repo transactions by 2027 will fundamentally reshape market structure, especially for buy-side participants like money market funds (MMFs) that dominate cash lending in the cleared repo space. Using a month-end panel of MMF holdings from 2020 to 2025, we estimate the "cost of clearing," defined as the spread between uncleared and cleared repo rates and analyze its drivers through a regression framework.

Our results suggest higher Fixed Income Clearing Corporation (FICC) Sponsored volumes reduce the cost of clearing, indicating that netting efficiencies and economies of scale improve as the cleared market grows. Conversely, larger MMF assets tend to widen the spread, while increased MMF repo volumes partially offset this effect. Collateral and macro liquidity conditions — such as System Open Market Account (SOMA) coupon holdings, net UST coupon issuance and dealer balance-sheet stress — also influence the cost of clearing in asymmetric ways.

These findings demonstrate that the cost of clearing is not a fixed wedge but a macro-sensitive spread, and as volumes migrate to central clearing under the mandate, economies of scale and new clearing models are likely to structurally compress clearing costs for MMFs. This has implications on pricing, venue selection and liquidity planning for buy-side lenders and their clearing providers.

Background

The market for UST repo is set for fundamental evolution as the SEC's UST Clearing Mandate (originally announced in December 2023 and fully effective for repo in mid-2027) unfolds.[1]

The mandate will drive a significantly larger portion of UST repo activity to be cleared through a covered clearing agency (CCA). The main motivation behind the central clearing mandate is to strengthen market resilience by bringing more market activity under the standardized risk guidelines and loss mutualization practices of CCAs.

The FICC currently serves as the only CCA for UST repo transactions — although additional players are looking to enter the space. Under the mandate, CCAs (e.g., FICC) must establish policies to ensure their direct members clear repo and reverse repo transactions collateralized by USTs in which they are a counterparty, with limited exceptions for government, sovereign and inter-affiliate activity. Buy-side firms and other indirect participants engaging in transactions with these direct members will no longer be able to transact on an uncleared basis and will need to confirm outlets for clearing their eligible trades.[2]

In preparation for the mandate, firms can become FICC direct members to clear their own proprietary trades, but terms for eligibility are strict and not all firms may qualify.

Direct members are generally sell-side firms (e.g., banks, brokers and dealers) that meet certain capital and risk criteria. As a streamlined alternative to direct membership, buy-side firms can access cleared repo via indirect models (e.g., Sponsored model), whereby a direct member facilitates the clearing of their trades. As a result, buy-side firms can ensure their trades comply with the clearing mandate without having to satisfy the full extent of direct member requirements.

Even before the mandate was announced, the vast FICC Sponsored repo market was experiencing rapid growth. Dealers and other sell-side repo intermediaries derive benefit from moving their customer trades into Sponsored because of the netting benefits it can provide. By clearing their client trades through the Sponsored model, sell-side intermediaries can net trades against other direct members, thereby freeing up the balance sheet — something that was not possible prior to the Sponsored program.

Buy-side firms transacting in UST repo also find value in the deep and growing liquidity present in the Sponsored space and the relative security of cleared repo. Cleared repo trades novate to FICC, which then becomes the counterparty to all trades.

As a result, the buy side's ultimate exposure is to FICC — a highly-rated CCA. Furthermore, FICC manages a default fund of member contributions that is designed to minimize the risk of cascading market stress in the event of a member default. The requirement for direct members to submit margin associated with their client activity to support FICC's default fund drives incremental cost, which the direct member may pass along to their client. However, this incremental cost can be offset through balance sheet netting benefits that direct members are able to realize by moving activity into Sponsored.

In practice, repo rates in the cleared (Sponsored) and uncleared space generally trade closely in line and share many of the same drivers, but the impact of these drivers differs and the relationship between the two is not fixed, as we will explore later in this piece.

At the time of this writing, the total FICC Sponsored (dealer/bank-to-client) cash investor volumes and cash borrower volumes total more than US$2.5 trillion.

The total FICC Sponsored market is up over 85 percent since the clearing mandate was announced at the end of 2023, and by more than 800 percent since the COVID era of near-negative short-term rates. A July 2025 Federal Reserve piece analyzing the size of the US repo market suggests that the overall centrally cleared market (dealer/bank-to-all intermediaries) stood at around US$3.5 trillion in 2024, while the non-centrally cleared space was almost US$7 trillion.[3] With a significant swath of volumes yet to move into clearing in alignment with the mandate, the overall size of the US repo market is only expected to increase, as total UST debt issuance is projected to almost double by 2035.[4]

As volumes move into the cleared space, the ultimate effect on UST repo rates remains to be seen. Transactions moving into clearing will incur incremental costs associated with clearing trades to FICC. However, these costs could potentially be offset by enhanced netting benefits to the clearing provider and by the greater liquidity offered in the cleared space as overall volumes grow.

Overview of dataset and expected drivers of clearing costs

As the clearing mandate is poised to structurally change the UST repo market, this paper looks to identify the key factors in determining UST repo rates and the cost of clearing.

We then examine what this means for the buy side. To start, we focus on the largest buy-side player in the UST repo space: MMFs, which act as cash lenders in UST repo, earning a short-term rate on their cash investment and receiving UST securities as collateral. MMFs contribute to the vast majority of cash lender activity in the Sponsored repo space.

As of June 2025 month end, MMFs parked close to US$1 trillion of cash in FICC Sponsored UST repo, constituting over 70 percent of the total FICC cash lender market. Outside of the cleared space, MMFs invested another US$800 billion of cash in uncleared UST repo. Given the vast amount of cash that MMFs invest in UST repo and the overwhelming majority of cleared buy-side cash lender activity that they represent, they are a fitting proxy to analyze cost and return for buy-side cash lenders in the UST repo space.

Drawing on Crane Data's holdings reports, we assembled a dataset of month-end MMF holdings and returns, from September 2025 and extending back to 2020. We calculated the volume-weighted average rates that MMFs received in uncleared UST repo ("uncleared rate") and Sponsored UST repo ("cleared rate").

Several filters were applied in constructing the dataset to isolate uncleared and cleared repo rates, looking only at "US Treasury Repurchase Agreements" with overnight maturity. We excluded bespoke arrangements by filtering out holdings in which the coupon is more than 50 basis points below Secured Overnight Financing Rate (SOFR). This allowed us to closely focus on active cash management transactions.

We define the “cost of clearing” as the uncleared rate of return less the cleared rate of return. A positive cost of clearing means that MMFs earn a higher rate in uncleared relative to cleared. Conceptually, this could be driven by one or more of the following factors:

1

The clearing provider (sponsor) is passing along incremental costs to the buy side that do not exist in the uncleared space (e.g., requirement to submit margin to FICC, transaction processing costs to FICC).

2

The potential benefits (e.g., netting efficiencies) that intermediaries (sponsors) can recognize in cleared repo are relatively modest compared to uncleared, or do not sufficiently offset the other incremental costs of clearing, as noted in the previous item.

3

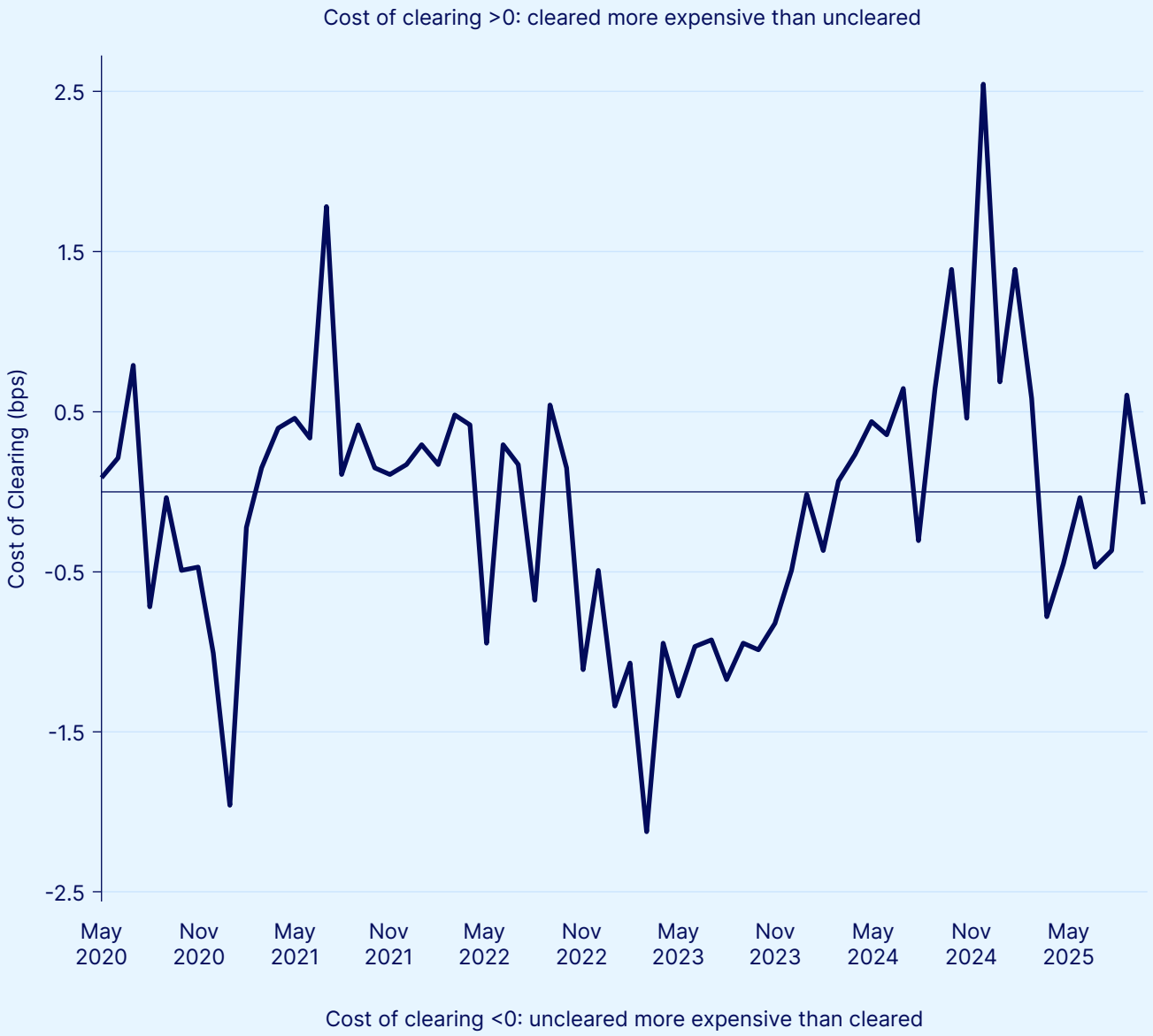
Macroeconomic drivers affecting the repo market (e.g., supply of UST collateral) have different magnitudes of impact on cleared versus uncleared.

4

Broader business relationships between clients and providers may also influence repo pricing. For example, sponsors or dealers might offer more favorable rates to clients who provide significant volumes or engage in other business lines. This can affect cleared and uncleared transactions.

In Figure 1, we plot the cost of clearing over time. Note that cleared and uncleared rates traded roughly within a two basis point range of each other throughout the time period, though the relationship changed over time.

Figure 1: The cost of clearing through time



Source: State Street Markets and Crane Data

Analysis: Objective and approach

Our goal was to empirically identify the drivers of the cost of clearing — defined as the spread between returns on cleared and uncleared transactions, value-weighted by holdings — across macroeconomic and non-macroeconomic. We began by assembling a set of 17 macroeconomic and funding-related variables that plausibly influence UST repo markets, listed in Table 1.

These include measures of collateral supply (e.g., net UST issuance and dealer positions), cash availability (e.g., MMF assets and bank reserves), policy-related balances (e.g., RRP and SRF) and indicators of market stress (e.g., GCF-TGCR spread).

While these factors should intuitively affect overall repo conditions, their differential impact on cleared versus uncleared markets is conceptually ambiguous. Our regression analysis looked to empirically address this gap.

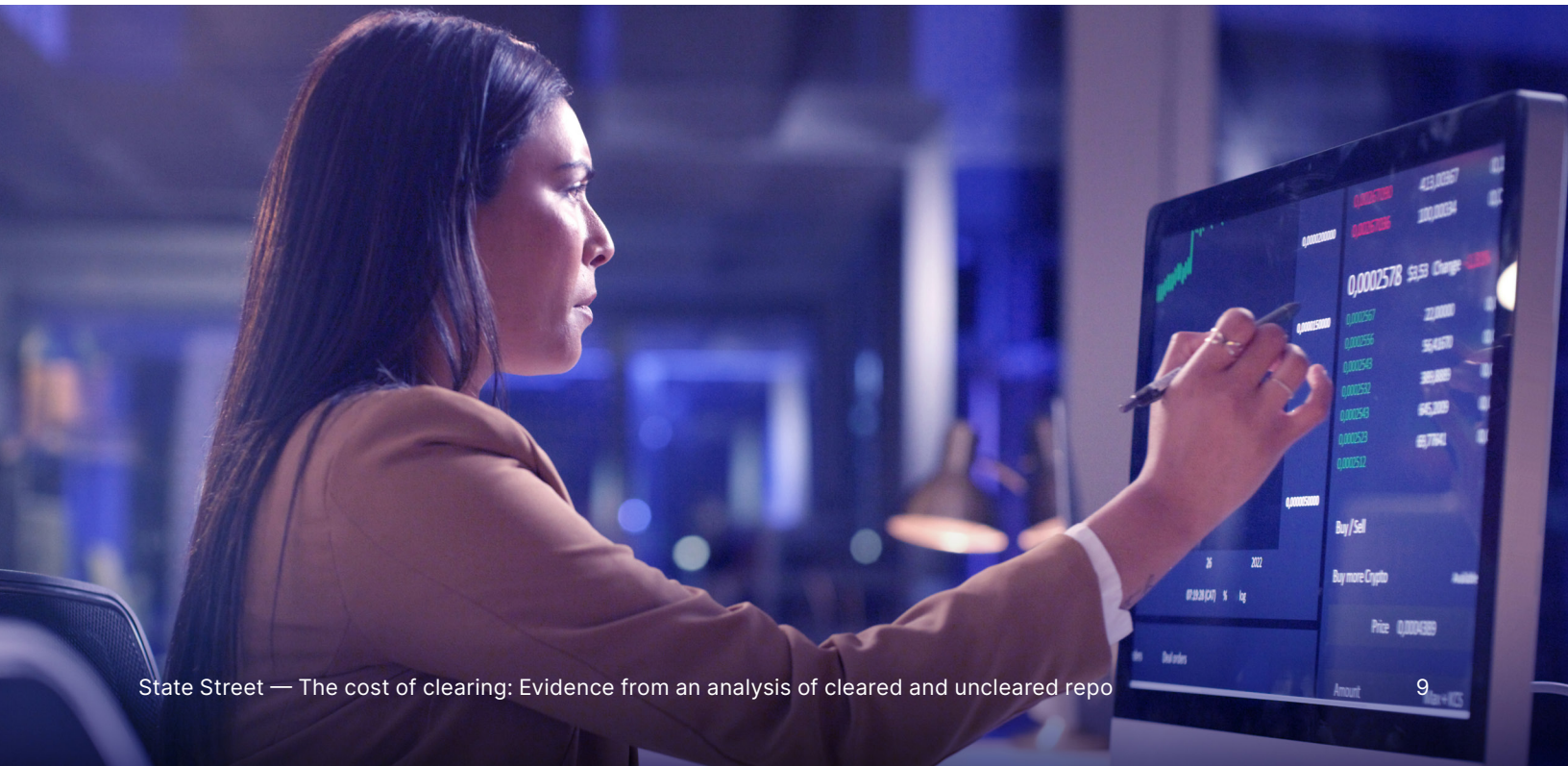


Table 1: Potential factors influencing UST repo markets and the cost of clearing

Variable	Intuition on impact to UST repo rates
SOFR — Fed funds	Higher SOFR implies that active investors should expect to receive higher rates in UST repo.
Net UST bill issuance	Higher UST issuance is generally associated with higher repo rates as more collateral supply enters the repo market. Bills may be less impactful than coupons given that a lower portion of the issuance might find its way into repo markets since bills can be purchased outright by short-end investors.
Net UST coupon issuance	
Dealer UST bill positions	Higher dealer UST positions are associated with higher repo rates as more collateral supply is available for potential financing in the UST repo market.
Dealer UST coupon positions	
Total FICC Sponsored volumes	Total client cleared (FICC Sponsored) volumes have an uncertain impact on UST repo rates. One of the goals of this piece is to understand this relationship and how it impacts cleared versus uncleared rates distinctly.
MMF assets	Higher MMF volumes are associated with lower UST repo rates as more cash enters UST repo markets.
MMF repo volumes	Higher MMF repo volumes are associated with lower UST repo rates as more cash enters UST repo markets.
Bank reserves	Higher bank reserves imply more overall liquidity in the front end and are associated with lower UST repo market rates.
Bank reserves as % of total bank assets	

Variable	Intuition on impact to UST repo rates
RRP balances	Higher RRP balances suggest that investors can earn a better rate via the Fed RRP facility as compared to private UST repo (SOFR) and thus are associated with lower UST repo market rates.
SRF balances	Higher SRF balances imply that liquidity has dried up and private market financing rates (SOFR) have become prohibitive — hence UST repo rates are expected to be higher.
TGA balances	Higher TGA balances are associated with less cash in UST repo markets and therefore imply higher UST repo rates.
Hedge fund (HF) short UST futures interest	Higher HF short UST futures interest implies higher UST collateral financing in repo markets as HFs look to finance more USTs to fund their basis trades. More collateral supply in repo markets is associated with higher UST repo rates.
SOMA UST bill holdings **SOMA UST coupon holdings**	Higher SOMA UST holdings are associated with the Fed buying more securities for SOMA (quantitative easing) and less UST securities in private repo markets, resulting in lower UST repo rates.
GCF repo rate — TGCR	GCF — TGCR spread is a proxy for dealer balance sheet pressure. A more positive spread implies greater inter-dealer funding constraints and balance sheet capacity.
Quarter-end indicator	Binary indicator to reflect quarter-end dates versus normal month-ends. Quarter ends are generally associated with more funding pressure than typical month ends, thus driving higher UST repo rates.

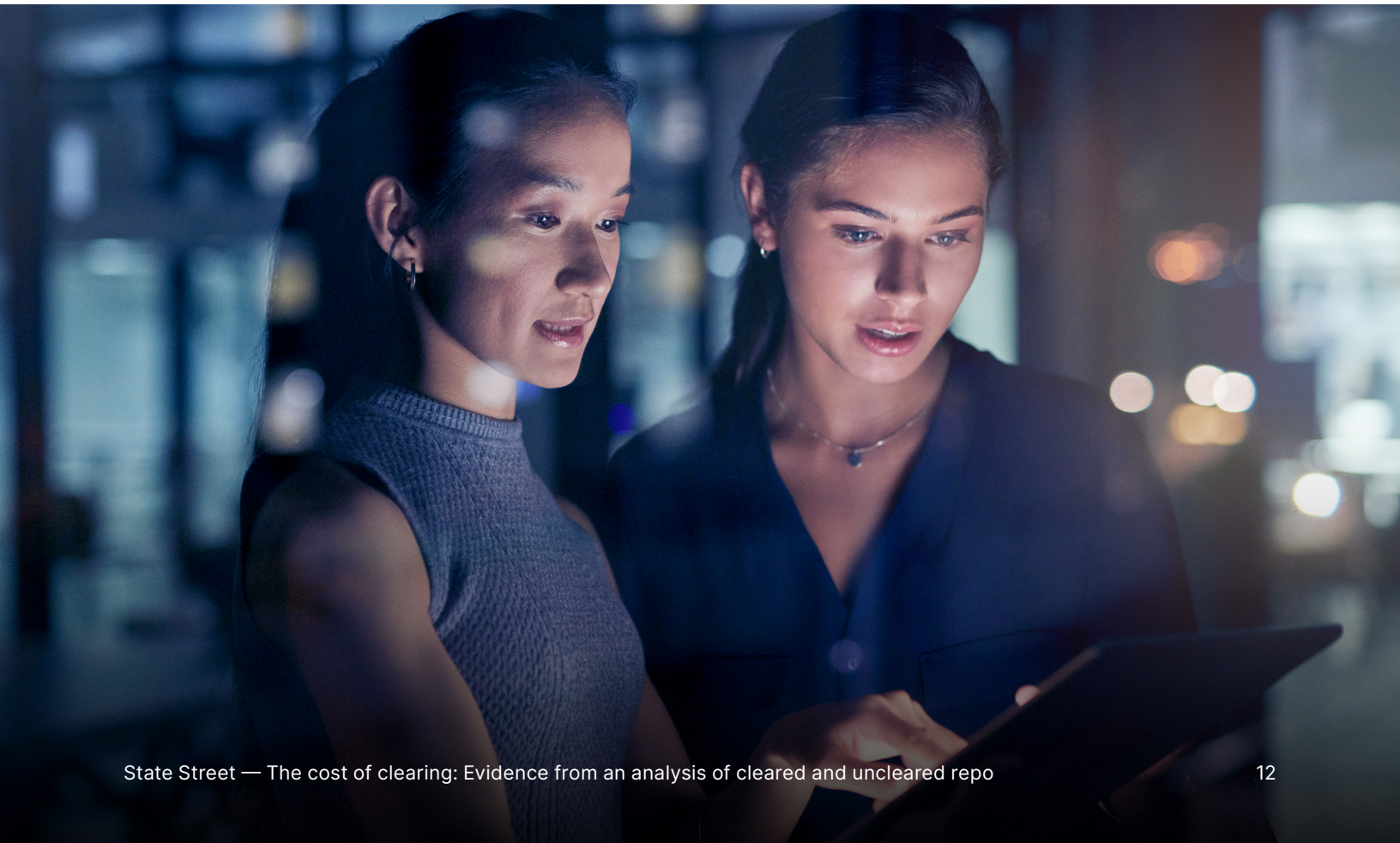
Source: State Street Markets

Analysis: Empirical framework

To identify which factors most strongly influence the cost of clearing, we used a data-driven approach that tests many possible combinations of market variables.

Our goal was to find the mix of factors that best explain changes in clearing costs, while keeping the regression as simple as possible. The resulting model identified nine key drivers, shown in Table 2.

For compatibility, we standardized all results so that each number reflects the change in clearing cost associated with a typical shift in each variable. This allowed us to identify factors with the largest impact on the cost of clearing.[5]



Analysis: Regression results and interpretation

Table 2 reports the estimated coefficients, their statistical significance and the standard deviation of each variable. The regression yields a relatively high adjusted r-squared of 66 percent, indicating that approximately two-thirds of the variation in the cost of clearing is explained by the included factors.

The independent variables were sorted by most impactful, with MMF assets having the largest impact on the cost of clearing. For example, a one-standard-deviation increase in MMF assets (equal to approximately US$973 billion) is associated with a 3.9 bps increase in the cost of clearing. However, this impact can be offset by increases in MMF repo volumes, which corresponds to a 0.99 bps decrease in cost of clearing per approximately US$656 billion.

The second most influential factor is FICC Sponsored volumes, which exhibit a negative relationship with the cost of clearing. As Sponsored volumes increase, the cost of clearing declines. This finding is intuitive: Greater participation likely enables providers to optimize margin management and realize netting efficiencies across their books as scale and operational sophistication improve. The notion that economies of scale and netting benefits reduce marginal clearing costs has been a recurring theme in qualitative discussions surrounding the central clearing mandate.

Our empirical evidence supports this view, indicating that as market participation expands, incremental clearing costs fall. In other words, a more mature cleared market appears to deliver structural cost efficiencies over time. While our dataset of more than 60 total month-end observations provides robust analytical results, it is important to note that the relatively nascent FICC Sponsored market is rapidly growing, so it will be interesting to see how these relationships evolve over time.

Notably, the key drivers identified in our cost of clearing model align with previous literature. Copeland and Kahn (2024) found four statistically significant drivers of repo rates — changes in MMF assets, hedge fund short futures, net coupon net issuance and SOMA net coupon holdings.[6] We extend the analysis by disaggregating the impact on cleared versus uncleared segments, thereby isolating the determinants of the cost of clearing and revealing how these key variables directionally influence clearing costs.

Our findings reveal that macroeconomic and structural factors exert different effects on cleared versus uncleared repo rates. For example, both net UST coupon issuance and dealer UST bill positions increase collateral supply and are associated with higher repo rates overall; however, their impacts on the cost of clearing differ in sign and magnitude. This underscores that the cost of clearing is not a fixed structural spread, as one might initially expect, but rather a dynamic function of market conditions.

The month-end focus of our analysis brings with it important considerations, as there tends to be tighter funding conditions around these periods. Dealers looking to shore up their balance sheet at month end may step away from repo, decreasing dealer balance sheet capacity and funneling buy-side flow to large Sponsored providers. As a result, investors may accept slightly worse cleared repo rates to ensure execution.

In other words, the cost of clearing may increase as investors prioritize liquidity over rate of return. We sought to control for this bias by including the spread between GCF and TGCR (labeled as GCF — TGCR in our regression results). Intuitively, when dealers face more constraints, GCF increases relative to TGCR, causing the spread to widen. According to our model, this widening causes the cost of clearing to increase given that the spread has a statistically positive relationship with the cost of clearing.[7]

Table 2: Regression results

Independent variables	Impact on cost of clearing (regression coefficient in bps)	1 standard deviation unit
MMF assets	+3.90 ***	US$973B
Total FICC Sponsored volumes	-1.72 ***	US$678B
SOMA UST coupon holdings	+1.26 ***	US$485B
MMF repo volumes	-0.99 ***	US$656B
HF short UST futures interest	+0.85 *	US$415B
Net UST coupon issuance	+0.40 ***	US$109B
Bank reserves	-0.36***	US$375B
GCF repo rate — TGCR	+0.32**	6.3 bps
Dealer UST bill positions	-0.24***	US$22B

Notes: *** Denotes significance at the 1 percent level, ** Denotes significance at the 5 percent level, * Denotes significance at the 10 percent level
Source: State Street Markets, Bloomberg, Crane Data

Forward-looking considerations and implications

Our results point to a structural decline in marginal clearing costs as participation scales, a dynamic likely to accelerate with the rollout of new FICC clearing models, such as Agent Clearing Service (ACS) and Collateral-in-Lieu (CiL).

By expanding netting sets (ACS) and, in certain cases, eliminating margin (CiL), these models directly target the largest structural components of clearing cost. Consistent with the negative coefficient on FICC Sponsored volumes, broader adoption should compress the cost of clearing as the market matures into 2026–2027, partially offsetting upward pressures that arise in some macro environments. It also remains to be seen how new clearing models offered by other central counterparty clearing houses (CCPs) (e.g., CME and ICE) will impact the overall cost/return dynamic in cleared repo.

At the same time, the cost of clearing will remain time-varying and sensitive to macro-funding conditions, especially at month end, which is the lens of our estimation.

Increases in MMF assets, shifts in SOMA coupon holdings and bouts of dealer balance sheet strain (proxied by GCF-TGCR) can widen the cost of clearing spread even in a more efficient clearing regime, while growth in Sponsored and MMF repo volumes tends to compress it.

For market participants, actively optimizing across Sponsored and other new FICC clearing models (ACS, and CiL) based on exposure profiles, netting potential and collateral availability can help reduce costs. Providers, on the other hand, should invest in cross-client netting, margin optimization and operational readiness to realize scale benefits and reflect them in pricing.

Conclusion

With the SEC's central clearing mandate poised to reshape the UST repo market, participants stand at a critical juncture in the management of liquidity and risk. The cost of clearing is not a static premium but a dynamic, market-sensitive spread shaped by a shifting market structure, liquidity and macro conditions.

As central clearing expands, economies of scale and new clearing models are set to structurally compress costs for buy-side participants. Yet the spread will remain responsive to shifts in funding pressure, collateral supply and market stress.

For both lenders and providers, the path forward is clear: Those who actively optimize clearing structures and harness operational scale will be best positioned to capture efficiencies and navigate the evolving landscape. The clearing mandate is not just a regulatory shift — it is a catalyst for lasting market transformation.

Appendix

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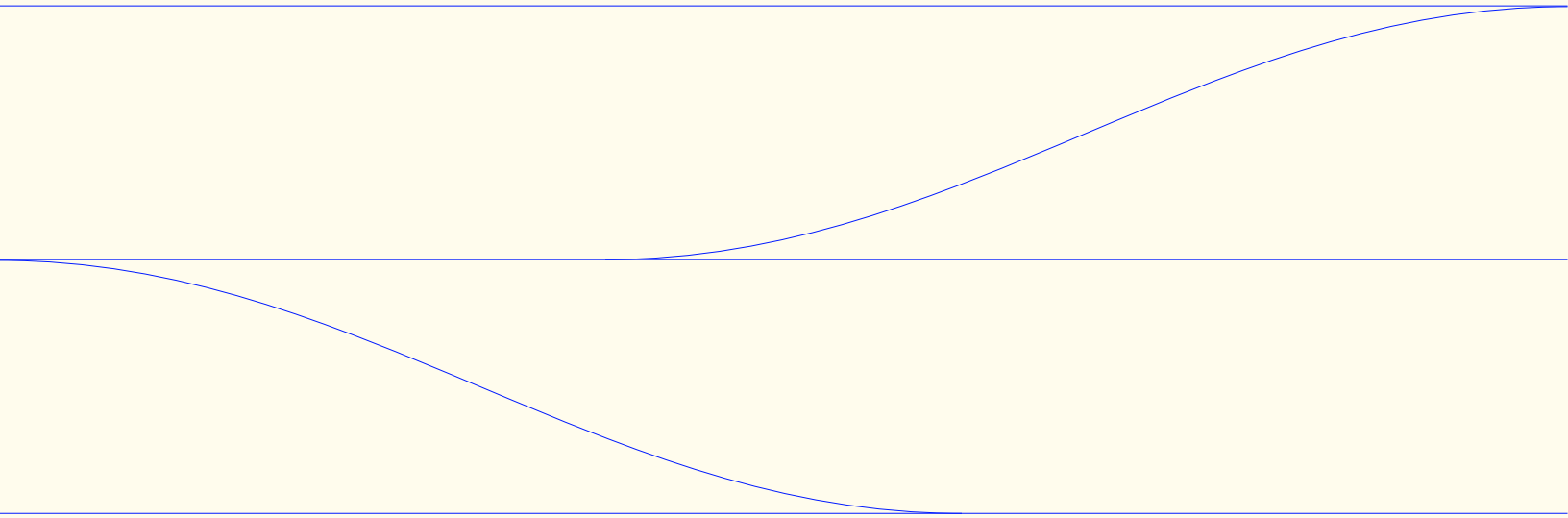
Variable	Definition
Bill holdings and issuance	Refers to US Treasury bills (short-term securities with maturities of one year or less) and their issuance, which impacts short-term funding markets and repo collateral availability.
CCA	**Covered Clearing Agency** — an SEC-designated clearinghouse (e.g., FICC) that provides central clearing for US Treasury repo transactions under regulatory mandates.
Coupon holdings and issuance	Refers to US Treasury securities that pay periodic interest (coupons) and the issuance of such securities, which influences market liquidity and repo dynamics.
FICC Sponsored repo	A centrally cleared repurchase agreement where a sponsor (typically a dealer or bank) facilitates a non-dealer counterparty's access to FICC's clearing services for US Treasury repos.
GCF	**General Collateral Finance repo** — a service offered by FICC allowing dealer-to-dealer general collateral repo trades throughout the day without trade-for-trade settlement, improving liquidity and efficiency.
MMF	**Money Market Fund** — an investment fund that invests in short-term, high-quality debt instruments, often participating in repo markets.
RRP	**Federal Reserve Reverse Repo facility** — a tool where the Fed conducts overnight reverse repos with eligible counterparties at an administered rate, serving to anchor the lower bound for policy rates.

Variable	Definition
SOFR	**Secured Overnight Financing Rate** — a broad measure of overnight borrowing costs collateralized by US Treasuries, capturing tri-party, bilateral and cleared GCF/Sponsored repo transactions.
SOMA	**System Open Market Account** — the Federal Reserve's portfolio of US Treasury securities and agency MBS used for implementing monetary policy.
SRF	**Standing Repo Facility** — a Federal Reserve tool that offers overnight repo funding to primary dealers and banks to support market liquidity.
TGA	**Treasury General Account** — the US Treasury's primary operating account at the Federal Reserve, used for managing government cash flows and payments.
TGCR	**Tri-Party General Collateral Rate** — a benchmark rate for overnight repos collateralized by US Treasuries in tri-party arrangements, serving as a proxy for cash lenders and dealer borrowers.

Endnotes

1. Securities and Exchange Commission. (2025, February 25). SEC Extends Compliance Dates and Provides Temporary Exemption for Rule Related to Clearing of US Treasury Securities (Press Release No. 2025-43).
2. Indirect members are non-FICC members who have their access to clearing facilitated by a direct member (e.g., sponsor). More details regarding the SEC mandate can be found here: https://www.statestreet.com/us/en/insights/central-clearing-mandate-faqs
3. Federal Reserve. Available at: https://www.federalreserve.gov/econres/notes/feds-notes/the-12-trillion-u-s-repo-market-evidence-from-a-novel-panel-of-intermediaries-20250711.html
4. Congressional Budget Office. Available at: https://www.cbo.gov/data/budget-economic-data#4
5. For readers interested in the technical details: We select the best combination of variables using the Akaike Information Criterion (AIC), which balances accuracy and simplicity. The empirical selection process evaluates all 262,144 possible combinations from our initial set of 18 variables for the most optimal AIC value. Regression results use Newey–West standard errors to account for any serial correlation.
6. Copeland, Adam, and R. Jay Kahn. Repo Intermediation and Central Clearing: An Analysis of Sponsored Repo. Staff Report No. 1140, Federal Reserve Bank of New York, 2024. DOI: 10.59576/sr.1140.
7. The month-end widening of spreads is documented in Copeland, A., and Kahn, J. (2024).



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