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Repo Market Volatility and the U.S. Debt Ceiling

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ABSTRACT: Recurring debt ceiling standoffs cause political disruptions and economic costs. We quantify one type of cost which is receiving growing attention: the spillover to short-term funding markets. Using high-frequency aggregate as well as granular money market fund specific data, we find that flows in and out of the Treasury General Account triggered by the debt ceiling mechanism can create large swings in the repo spread and distort the supply of repo funding for the Treasury market. Applying our estimates to the expected debt ceiling lift-off in summer 2025 implies that the repo spread could fluctuate by 20-30 basis points around the lift-off date. A higher level of aggregate bank reserves and overnight reverse repo balance at the Fed can dampen the impact on funding spreads appreciably.

JEL Classification Numbers: G1, E4, H6

Keywords: Repo; Reserves; Treasury General Account; Debt Ceiling

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WORKING PAPERS

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Prepared by Mai Chi Dao, Brandon Tan, Jing Zhou[1]

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1 Introduction

A peculiar feature of the US fiscal institution is that borrowing by the federal government periodically approaches a self-imposed debt ceiling before political negotiations temporarily suspend or lift it again. At the time of writing, the federal debt ceiling again looms large, with Congress working on a budget bill that will allow the debt ceiling to be lifted by the impending X-date (that is, when Treasury will run out of cash to meet its daily obligations) around August 2025. These periodic debt ceiling standoffs create political and economic uncertainties, with risks to delay in government spending if the debt limit is not raised on time. They also cause indirect cost of increasing perceived sovereign risk, threatening the Treasury's safe haven status and raising borrowing costs down the road.

In this paper, we highlight yet another unintended consequence of the debt ceiling stand-off, namely the increased costs to short-term dollar funding arising from amplified volatilities in reserve flows between the Treasury General Account (TGA) and the financial system. When the TGA balance is run down as the debt ceiling is triggered, reserves are injected into the financial system. Conversely, when the debt ceiling is lifted or suspended, pent-up borrowing sharply increases the TGA balance and thereby withdraws liquidity from the system rapidly. These large swings stemming from liquidity injection and withdrawal into the the short-term funding market can create excess volatility for the cost of funding and result in dislocations in the repo and other money markets. The fallouts can be severe for the functioning of the Treasury market and can spill over to funding conditions and asset prices beyond the repo and Treasury market, as exemplified by the repo crisis of September 2019, when large inflows into the TGA occurred amid rapidly declining levels of reserves.

Our paper is the first to provide an estimate for this link. We quantify the fluctuations coming from the TGA balance around debt-ceiling episodes and estimate the resulting impact on funding conditions in the repo and interbank markets. We trace the impact of TGA balance volatility on the short-term funding rates through demand and supply channels in the repo funding market and show how the resulting impact varies with the level of overall reserves in the system and the balance in the overnight reverso repo facility, both acting as mitigating factors that dampen movements in repo spreads. Assuming the projected path for bank reserves, the predicted in and outflows from the TGA and the expected future level of the overnight reverse repo facility, we estimate that the expected lift-off of the ceiling in summer 2025 could increase the repo spread by around 20-30 basis points within a month after the X-date. Compared with a monthly standard deviation in the repo spread of less than 10 bps during the post-COVID period, the potential impact is economically large.

As the Fed is currently implementing Quantitative Tightening and gradually withdrawing reserves from the system, any given surge in TGA balance can have a larger impact on repo spreads

compared to when reserves are more ample. In addition, with the fiscal deficit set to widen as Congress passes the "One Big Beautiful Bill", additional Treasury supply in the coming years will also intensify liquidity pressure for the next debt-ceiling episode. Speaking at the Federal Open Market Committee (FOMC) press conference in March 2025, Chair Powell explicitly mentioned the upcoming debt-ceiling event as a reason to slow down QT.[1] Our paper gives a timely assessment of the repo funding impact that could result once the debt-ceiling is lifted, serving also as a guide for the future when the Treasury hits the next debt ceiling, barring any legislative changes by Congress regarding the institution of the debt ceiling.

We contribute to the literature on Treasury market functioning and dealer-bank balance sheet constraints. A large literature has shown how short-term Dollar funding conditions can affect financial conditions around the world, given the central role of the Dollar in international finance and trade (Gopinath and Stein, 2021). The origin of the global financial cycle has been documented to often emanate from the policy rate and liquidity conditions in the US (Miranda-Agrippino and Rey, 2020) and the strength of the Dollar, historically a barometer for Dollar intermediary capacity, is a key factor in pricing the cost of offshore dollar borrowing in the FX swap and eurodollar markets, see Avdjiev et al. (2022), Du (2019). We build on the methodology in Correa, Du and Liao (2020) to estimate the impact of variation in TGA balance on various measures of repo spreads, and sharpen the identification by exploiting more granular money market fund-level data that allows us to control for a host of fixed effects and aggregate characteristics. In addition, we distinguish between the reserve-draining effect of tax-related increase in TGA (negative supply in reserves) from the demand effect on repo borrowing to absorb increased Treasury issuances that drive the issuance-related increase in the TGA. We show that the response in intermediated repo volumes are consistent with our supply and demand identification. Our paper also relates to the literature on the disruptive impact of debt ceiling events. Benzoni et al. (2023) document how the 2023 debt ceiling episode led to an increase in US sovereign credit default swap (CDS) spreads driven by valuation of Treasury bonds which were set to mature around the 2023 X-date. (Cassidy and Mirani, 2024) show how debt-ceiling events indirectly affect the pricing of corporate bonds at short maturities. We complement this literature by focusing on the reserve-draining channel in repo markets emanating from TGA movements that are set in motion by debt ceiling events. With the repo market being the main funding source for Treasuries and the Treasury market in turn being the most important safe asset globally, disruptions from political brinkmanship over the debt ceiling can have far-reaching consequences.

The rest of the paper is structured as follows. Section 2 reviews the historical background for the congressional debt-ceiling, its rationale and mechanisms. We also illustrate how different type of inflows into the TGA propagate throughout the balance sheets of different agents in the repo market to set the stage for our empirical exercise. Section 3 describes the various data sources used. Section

[1] See Chair Powell's March 2025 Press Conference Transcript and the March 2025 FOMC Minutes.

4 reports the empirical results using aggregate and money market fund level regression. In section 5, we conduct an event study by providing an estimate for the trajectory of the repo spread leading up to and in the aftermath of the debt-ceiling lift-off in the coming summer, around August 2025, assuming bank reserves and other relevant financial variables evolve as expected by the market. Section 6 concludes with the main results and policy implications.

2 Debt ceiling events and the reserve draining channel through the TGA

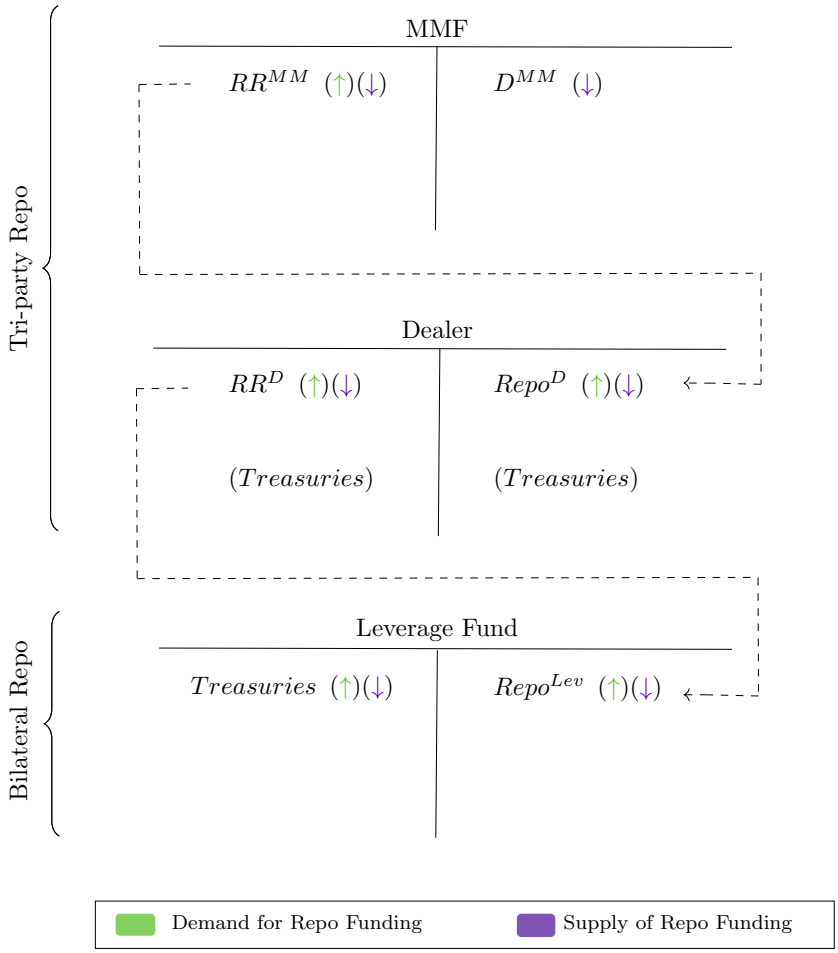
The debt ceiling is a legislative limit on the amount of national debt that can be incurred by the U.S. Treasury. It was first established in 1917 during World War I through the Second Liberty Bond Act, which allowed the Treasury to borrow up to a set aggregate amount without seeking Congressional approval for each individual issuance. Prior to this, Congress authorized each borrowing measure separately. Over time, however, what began as a tool to improve borrowing efficiency has become a recurring flashpoint in U.S. politics. Since the 1990s in particular, debates over raising the debt limit have triggered fiscal standoffs, government shutdowns, and—in 2011—a historic downgrade of the U.S. credit rating.[2] In some recent episodes, Congress has opted to suspend the ceiling for a fixed period rather than increase it by a specific dollar amount. While this temporarily averts crisis, it does not resolve the underlying structural and political tensions surrounding fiscal policy and public debt.

When the debt ceiling is reached, the Treasury is prohibited from issuing net new debt to finance government operations, though it may still issue debt to roll over maturing obligations. In such situations, the Treasury must rely on incoming revenues and its cash reserves held in the Treasury General Account. To buy time and manage cash flow when the debt ceiling is reached, the Treasury may initiate "extraordinary measures," such as suspending or redeeming investments in certain government trust funds and engaging in transactions through the Federal Financing Bank that provide financing without increasing the debt counted against the statutory limit. These tactics temporarily free up cash or borrowing capacity under the debt ceiling, allowing the Treasury to finance ongoing obligations without technically increasing debt subject to the limit. However, these measures are limited in scope and duration. To meet its obligations while operating under the debt ceiling, the Treasury typically relies on a combination of extraordinary measures and drawing down the TGA. If the TGA falls too low to meet the government's daily payments, the risk of delayed obligations—or even a default—rises sharply, increasing financial market uncertainty and intensifying pressure on Congress to act. The point at which the Treasury fully exhausts both extraordinary measures and its cash balance is known as the "X-date"—the day the government no longer has sufficient funds to meet all of its obligations, including both debt payments and other federal spending, in full and on time.

[2] In Appendix Section B, we describe each debt ceiling episode since 2011.

To summarize the main transmission channels for our empirical exercise by illustrating the reserve-draining mechanism originating from different types of inflows into the TGA in Figure 1.

Figure 1: TGA-induced reserve flows across the repo funding market



Notes: MMF stands for Money Market Fund and RR^{MM}, RR^{D} are the reverse repo positions held by the Money Market Fund and the Dealer respectively. D^{MM} are deposits issued by Money Market Funds and $Repo^{D}$, $Repo^{Lev}$ are repo borrowing by the dealer and the leveraged fund respectively.

The repo market can be largely summarized into two main segments: the tri-party repo market between cash rich investors like money market funds (MMFs) on one side and dealer banks on the other, and the bilateral repo market between dealer banks and leveraged funds (such as hedge funds) who cannot borrow directly from MMFs. Dealer banks therefore play a central role in intermediating short-term funding between real money lenders and leveraged funds who have become key investors in long-term Treasury bonds (see Kashyap et al. (2025)).[3]

[3]MMFs mostly hold short-term Treasury bills (together with other cash-like assets and reverse repo with banks) while dealer banks use their balance sheets to hold matched-book Treasury inventories for collateral purposes.

As we describe below, inflows into the TGA are of mainly two types: fiscal flows related to tax payments net of transfer outlays and issuance flows resulting from proceeds from Treasury bond auctions. Fiscal inflows result from tax payments which represent a transfer of deposits with banks and MMFs out of the private financial system into the TGA. This in effect amounts to a reduction in the supply of funds available for MMF lending and hence a lower *supply* of repo lending to dealer banks. As the purple arrows in Figure 1 indicate, this negative supply shock is transmitted from a lower reverse repo position held by the MMF, through lower matched repo positions of the dealer, to lower repo borrowing by the leveraged Treasury investor, resulting all else equal in a higher price for repo funding (repo spread) and higher Treasury yields necessary to compensate the leveraged investor (and other repo-financed investors) for the higher funding costs.

Issuance inflows, on the other hand, although also increasing the TGA balance, result from proceeds from Treasury issuances to primary dealers or leveraged funds, who in turn need repo funds to finance these purchases. Issuance inflows therefore represent an increase in *demand* for repo funding, as indicated by the green arrows in the chart. The positive demand emanates from the increased Treasury positions that need to be absorbed by dealers and leveraged funds, requiring in turn higher repo funding and reverse repo holdings by MMFs, which must be compensated by higher repo spreads.

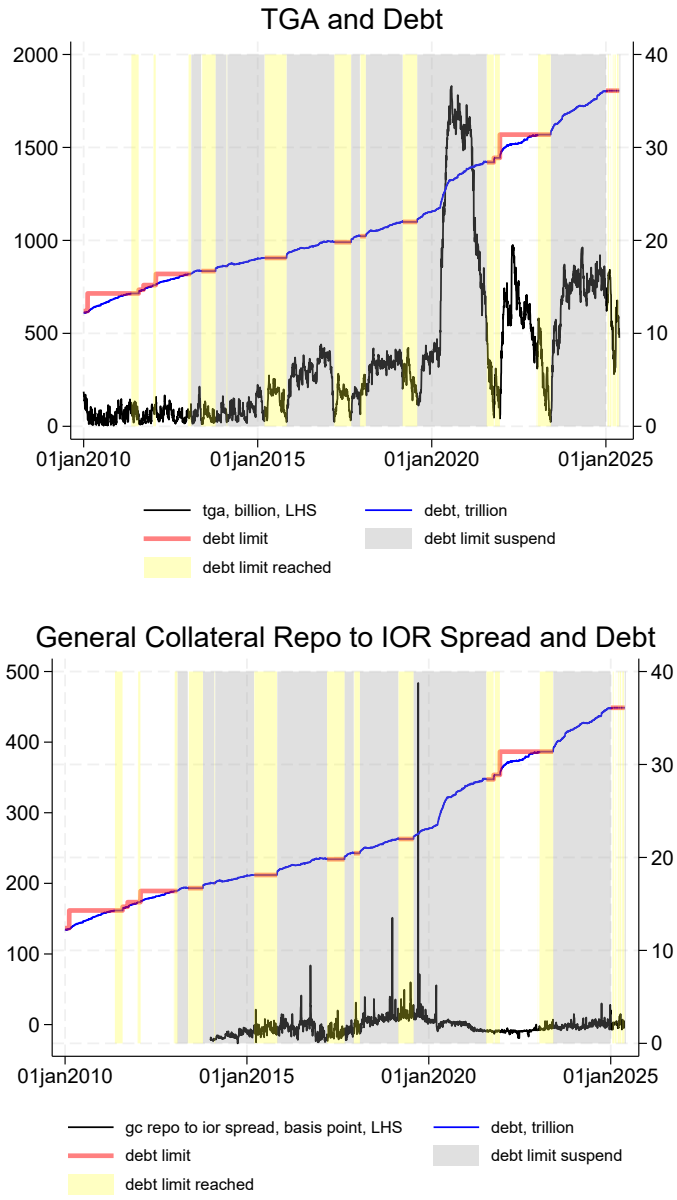
Our aim is to empirically test for these supply and demand effects using high-frequency data on TGA flows, both in normal times and around debt-ceiling episodes, as well as the implications for repo spreads and intermediated repo volumes.

To gain an overview of the stylized facts, the upper panel of Figure 2 shows the evolution of the TGA balance and the federal debt level, including the episodic debt ceilings, over time. As is clear from the chart, TGA balances are run down sharply soon after the debt ceiling is reached/triggered, typically by a declaration of extraordinary measures by the Treasury Secretary (the latest of which was pronounced in January 2025). This is the period during which the Treasury cannot have any net new debt issuance and thus has to rely on the TGA cash balance and other fiscal maneuvers to meet its obligations. As soon as the debt limit is either suspended or lifted (shift in red line), we observe a sharp surge in TGA balances as the Treasury restarts its borrowing to replenish the TGA to its target level. The surge has been particularly pronounced in the last two debt ceiling episodes of 2023 and 2021 as the subsequent 30-day pent-up borrowing by the Treasury amounted to 530 billion on average (compared with about 60 billion prior to COVID).

The lower panel of Figure 2 depicts the one of the most common measures for the price of repo funding, namely the spread of the general collateral repo rate (GC) over the overnight interest rate on reserves (IOR). The spread represents the additional compensation lenders require to lend out liquidity in the secured funding market instead of depositing it with the Fed. Consistent with the TGA dynamics around debt-ceiling time windows and our prior on the implied repo spread response

outlined above, we observe an increase in the GC spread each time the debt ceiling was suspended or lifted (grey-shaded zone), with the spike most visible during the pre-COVID years, especially the dramatic surge during the repo crisis in September 2019. Another salient fact is that the GC spread has become much more stable since mid-2020, in line with the Fed's commitment to the ample reserve regime. We test more formally our main hypotheses and explore various interaction effects with the reserve regime in the next section.

Figure 2



3 Data and the Evolution of Treasury General Account

We utilize both aggregate-level and MMF-level data to estimate the impact of the Treasury General Account (TGA) balance on the repo market. Most regressions are conducted using post-GFC data, starting from the third quarter of 2009. We describe the main variables and their sources in the following.

Repo spread. Daily general collateral repo rates are sourced from LSEG Datastream. General collateral repo rates are selected due to their longer historical time series compared to SOFR rates, which have only been available since 2018. To account for macroeconomic and monetary policy changes, we analyze the spread between the repo rate and the overnight interest rate on reserves.

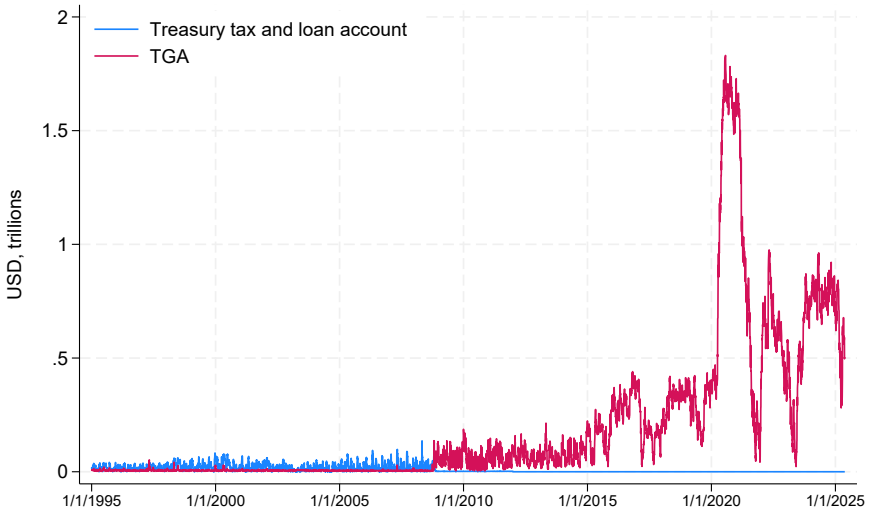
TGA and related macro variables. Data on daily TGA balances, as well as associated Treasury debt issuance, redemption, and fiscal operations, are obtained from the U.S. Treasury. Variables related to the Federal Reserve's balance sheet—such as banking sector reserves and overnight reverse repo facilities (ONRRP)—are obtained from the Federal Reserve.

An important institutional change concerning the TGA balance is the role of the Treasury Tax and Loan (TT&L) account. Before the GFC, the Treasury managed its cash balance through both the TGA at the Federal Reserve and TT&L accounts held at private depository institutions. A key function of the TT&L accounts was to receive tax revenues, which were often deposited into these accounts rather than directly into the TGA. For example, prior to the GFC, the Treasury targeted a TGA balance of approximately $5 billion, adjusting excess funds by withdrawing or depositing them into TT&L accounts (Figure 3). Notably, when funds were held in TT&L accounts, the Treasury earned interest at a rate equal to the federal funds rate minus 25 basis points.

However, after the GFC, significant changes occurred. As the federal funds rate fell below 25 basis points, the TT&L deposit rate dropped to zero. Simultaneously, the Federal Reserve began paying interest on reserve balances held by private depository institutions. In this new environment, it became more advantageous for the Treasury to maintain its funds in the TGA. Shifting funds to private depositories would have increased their reserve balances, compelling the Federal Reserve to pay interest on those reserves. This shift would have reduced the Federal Reserve's remittances to the Treasury (excess earnings after covering expenses) by more than the Treasury could earn from the private depositories. For further discussion on this dynamic, see Santoro (2012).

MMF. Monthly MMF balance sheet data is from the Securities and Exchange Commission (SEC) N-MFP filings dataset. All money market funds (MMFs) domiciled in the United States are required to report detailed portfolio holdings as of the last business day of each month. For repo transactions, the N-MFP filings provide comprehensive details, including the borrower, the value and type of collateral (e.g., Treasury securities, Agency debt), haircut rate, maturity, repo rate, and transaction

Figure 3: Treasury General Account and Treasury Tax and Loan Account



Source: US Treasury.

amount. Following Huber (2023), we aggregate the data at the MMF family and dealer levels.[4] We focus on the top 20 MMF families and 18 dealers, which collectively account for more than 90% of total repo transactions. Due to the highly clustered nature of haircut rates, we categorize them into five baskets: 2% (haircuts between 1.8% and 2.1%, representing 70% of all repo transactions), 3% (2.1% to 3.1%), 4% (3.1% to 4.1%), 5% (4.1% to 5.1%), and greater than 5.1%. Additionally, we limit the sample to repos with maturities between 1 and 5 days, as these transactions constitute the majority of the dataset and are most representative of the short-term funding market. The resulting dataset is a panel of MMF family-dealer-month observations of repo transactions, spanning from September 2010 to May 2024 and based on month-end filings.[5]

4 Spillover of TGA to Short-Term Funding Markets

We now turn to the empirical results, presenting estimates of the impact of TGA balance changes on the repo market, the main short-term funding market for banks and non-banks. The analysis employs two identification strategies: at the aggregate level, the identifying assumption is that, at a daily frequency, financial markets treat the TGA—a tool for fiscal operations—as exogenous. At the

[4]In practice, the sponsor of each MMF family—e.g., Fidelity is the sponsor of all MMF that it runs, such as Fidelity government cash reserves, Fidelity government money market fund—enters into repo contracts on behalf of all the funds in the family and then distributes the investment across funds.

[5]The Form N-MFP Datasets are being updated to include data from N-MFP3 submissions. Publication of the data after May 2024 is not available yet.

disaggregated level (MMF), the assumption is that individual MMFs and dealers similarly regard TGA changes as exogenous. As noted by Correa, Du and Liao (2020) and Diamond, Jiang and Ma (2024), the day-to-day or month-to-month operations of the Treasury are generally unrelated to market conditions, with fiscal policy showing minimal responsiveness to macroeconomic conditions at a daily or monthly frequency.

4.1 Aggregate Repo Market

Following Correa, Du and Liao (2020), we estimate the aggregate-level regression using the specification in Equation 1. The dependent variable is the spread between the general collateral repo rate and the interest rate on excess reserves (IOR), while the coefficient β on the TGA balance captures the effect of TGA changes on the repo spread. To account for seasonality in the repo market, we include dummy variables for the beginning, middle, and end of the month (in S_t), as these periods often coincide with Treasury payment days and banks' regulatory reporting dates. Additional variables (X_t) are included as controls in robustness checks. All variables are first-differenced to address nonstationarity.

$$\Delta y_t = \alpha + \beta \Delta tga_t + \Gamma X_t + \Theta S_t + \epsilon_t \tag{1}$$

Table 1 presents the estimation results. Column (1) reports the baseline regression, where the point estimate of 0.2 indicates that a $100 billion increase in the TGA balance is associated with a 2 basis point rise in the repo spread. This estimate is slightly lower than the 4–7 basis points reported by Correa, Du and Liao (2020). However, restricting the sample to the pre-COVID period yields similar results, as further discussed in Figure 5 later. Column (2) excludes 2009 data points—as repo rates spiked in September of 2009, which could have a disproportionally large impact on the estimates, and the estimates remain close to 0.2.

We further assess whether different factors contributing to TGA balance changes vary in their impact on repo spread. In general, the TGA balance changes as a result of Treasury issuance/redemption and fiscal operations such as tax revenue or social security payment. As outlined above, although both factors would affect the liquidity level in the system, net debt issuance from the Treasury would also trigger repo demand from primary dealers who need to warehouse the newly issued Treasuries (more on these distinctions of the supply and demand side of repo market in subsection 4.2). Consequently, we would expect the impact from net debt issuance side of TGA balance change—which pushes up demand while curtails supply—would have a larger impact on repo spread, compared with the net fiscal expenses side—which only constrains repo funding supply. Indeed, as shown in column (3), a $ billion increase in TGA balance due to net debt issuance is associated with about 1 basis point larger widening in repo spread, than that due to net fiscal expenses. In column (4), we

include 8 lags of repo spread on top of the baseline regression in column (1), to control for potential omitted variables, and the estimates don't change much. In column (5), we add 4 lags of TGA balance changes (to control for the expected components in TGA changes), and the coefficient for the contemporaneous TGA changes remains at 0.2.

To assess the impact of TGA balance on the overall repo market, we use SOFR spread in column (6), and estimates show that $100 billion increase in the TGA balance is associated with just shy of 1 basis point rise in the SOFR spread. The larger magnitude of general collateral repo spread than SOFR (column (1) vs. (6)) could be due to the dominant role of primary dealers—who are more sensitive to balance sheet constraints—in general collateral repo. As repo is usually used by primary dealers in financing their purchase of Treasury coupons, higher repo cost could be associated with higher Treasury yield. This is tested in column (7), where the 10-year on-the-run Treasury yield to IOR spread[6] is used as the dependent variable. The estimates show that a $100 billion increase in the TGA balance is associated with about 1 basis point rise in the 10-year Treasury spread, almost the same size as the rise in SOFR, which could indicate a high passthrough from repo financing cost to Treasury yield.

Table 1: Repo Spreads and TGA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Δ gc repo spread					Δ SOFR spread	Δ 10yr Treasury spread
Δ tga	0.2032***	0.2072***		0.1312***	0.1962***	0.0840**	0.0905*
	(0.047)	(0.048)		(0.035)	(0.047)	(0.036)	(0.046)
month start	-0.0140**	-0.0158**	-0.0163**	0.0232**	-0.0166**	-0.0232***	0.0081
	(0.006)	(0.006)	(0.007)	(0.010)	(0.007)	(0.006)	(0.005)
month end	0.0628***	0.0641***	0.0594***	0.0631***	0.0617***	0.0537***	-0.0144***
	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.007)	(0.004)
month mid	0.0319***	0.0317***	0.0311***	0.0327***	0.0303***	0.0237***	-0.0080
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)
Δ tga, net debt issuance			0.2654***				
			(0.045)				
Δ tga, fiscal			0.1423**				
			(0.072)				
Observations	4,143	4,011	4,143	4,143	4,143	2,800	3,801
Sample	01jul2009	01jan2010	01jul2009	01jul2009	01jul2009	25aug2014	01jul2009
	-16may2025	-16may2025	-16may2025	-16may2025	-16may2025	-16may2025	-16may2025
R2	0.0275	0.0277	0.0278	0.288	0.0297	0.0297	0.00320

Note: This table reports the regression results of general collateral repo and SOFR to IOR spread and TGA (both in first difference) and other control variables. TGA and ONRRP are in trillions of USD. Repo spreads are in percentage points. Column (1) is the estimates by only including month begin/end or mid-month dummies—i.e., seasonality factors and TGA. Column (2) excludes 2019, where repo rate spiked in September of the year. Column (3) explores the net debt issuance part of TGA changes and the rest. Column (4) controls 8 lags of y variable to control for other omitted variables, and column (5) controls for 4 lags of Δ tga. Column (6) and (7) have the same specification as column (1) but with SOFR spread and 10-year Treasury spread as dependent variable, respectively. Newey West standard errors are calculated using 10 lags. *, ** and *** represent significance level at 10, 5 and 1%, respectively.

In Table 2, we investigate potential state-dependence and nonlinearity of the impact of TGA balance changes on repo spreads. Column (1) examines the role of banking system reserves and ONRRP in mitigating the impact of TGA balance changes. When reserves are abundant or ONRRP levels are high, the liquidity-draining effect of a TGA increase on the repo market is reduced. This is evidenced by the significant negative coefficient on the interaction term between TGA and reserves/ONRRP.

[6]The regression works for other Treasury coupons such as 2 year, 5 year, etc. as well.

To interpret the magnitude of the coefficients, as of the first quarter of 2025, banking sector reserves amounted to approximately 11% of GDP. In comparison, during the third quarter of 2019—when the repo spread surged—reserves were lower, at 7% of GDP. The estimates suggest that for a $100 billion TGA increase, the repo spread would rise by 4.3 basis points with current reserve levels, which is about half of that in 2019. In a similar vein, ONRRP stood at approximately 1.8% of GDP in the first quarter of 2025. This mitigated about a quarter of the 1.4 basis point increase in repo spread caused by a $100 billion TGA balance rise, compared to a scenario with no ONRRP usage.

Table 2: Repo Spreads and TGA, State-Dependence and Nonlinearity

VARIABLES	(1) Δ gc repo spread	(2) Δ gc repo spread	(3) Δ gc repo spread	(4) Δ sofr repo spread, 75^{th}
Δ tga	1.3829***	1.4255***	0.1621***	0.0387
	(0.373)	(0.384)	(0.039)	(0.036)
Δ tga × ONRRP as percent of GDP, lag	-0.0233***	0.0155		
	(0.008)	(0.018)		
Δ tga × reserves as percent of GDP, lag	-0.0880***	-0.0914***		
	(0.027)	(0.028)		
Δ tga × post SRF dummy		-0.3016**		
		(0.131)		
Δ tga × large Δ tga dummy			0.1000	0.2156*
			(0.166)	(0.115)
Δ ONRRP	0.0828	0.0726		
	(0.055)	(0.053)		
Δ reserves	0.0145	0.0075		
	(0.040)	(0.041)		
post SRF dummy		0.0003		
		(0.001)		
month start	-0.0122**	-0.0117*	0.0077	-0.0108
	(0.006)	(0.006)	(0.008)	(0.011)
month end	0.0606***	0.0600***	0.0657***	0.0705***
	(0.009)	(0.009)	(0.009)	(0.016)
month mid	0.0271***	0.0266***	0.0349***	0.0302***
	(0.003)	(0.003)	(0.003)	(0.004)
Observations	4,110	4,110	4,142	1,614
Sample	01jul2009	01jul2009	01jul2009	04apr2018
S	-01apr2025	-01apr2025	-15may2025	-15may2025
R2	0.0329	0.0334	0.140	0.123

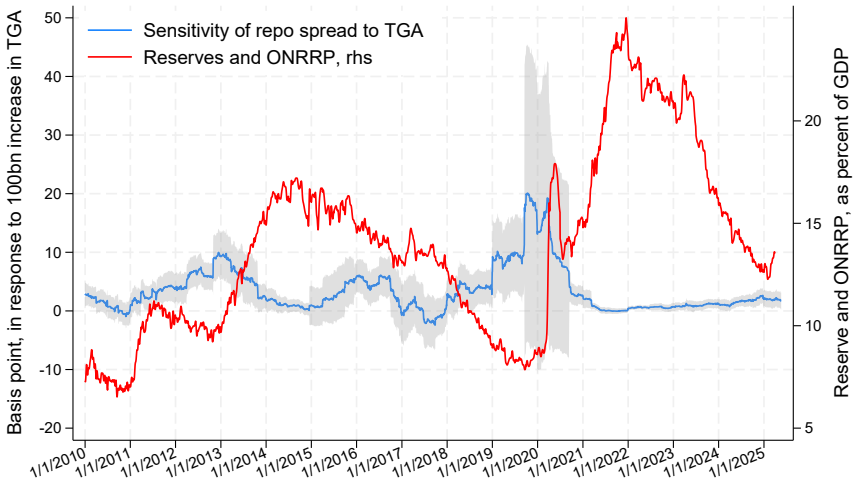
Note: This table reports the regression results of general collateral repo and the 75th percentile of SOFR rate to IOR spread and TGA (both in first difference) and other control variables. TGA, reserves, ONRRP, and SRF are in trillions of USD. Repo spreads are in percentage points. Column (1) explores the interaction between reserves/ONRRP and changes in TGA. Column (2) adds the interaction between dummy for the period after the introduction of SRF and changes in TGA. Column (3) and (4) investigate potential nonlinearity of the impact of TGA balance changes on repo spread, by adding interaction term of TGA balance changes and dummy variable for TGA balance change (as share of the sum of ONRRP and reserves) in the 99th percentile and above, with general collateral repo and the 75th percentile of SOFR rate to IOR spread as dependent variable, respectively. Column (3) and (4) also include 1 lag of dependent variable. Newey West standard errors are calculated using 10 lags. *, ** and *** represent significance level at 10, 5 and 1%, respectively.

To further demonstrate the cushioning role of reserves and ONRRP, we run the baseline regression of column (1) using a one-year rolling window and plot β against the sum of reserves and ONRRP. As shown in Figure 4, the impact of TGA balance changes on repo spread, β, is negatively correlated

with the sum of reserves and ONRRP levels in the system. This is also consistent with the time-varying reserve demand elasticity estimated by Afonso et al. (2022), who find that the elasticity of federal funds-IOR spread sharpened during 2018-19 as reserves declined and moves back towards zero after the Fed started quantitative easing post-COVID.

In column (2), we also examine the role of the Federal Reserve's Standing Repo Facility (SRF). We test whether this facility can further mitigate the response of the repo spread resulting from increases in the TGA balance, beyond and above the accommodating effect of overall reserves and ONRRP levels. The coefficient associated with the interaction term between a dummy variable for post-SRF days and TGA balance changes is negative. This suggests that after the SRF is established, the belief that SRF would inject additional liquidity into the financial system when stress emerges provides insurance to the market and contributes to a reduction in the repo spread.

Figure 4: Sensitivity of Repo Spread to TGA

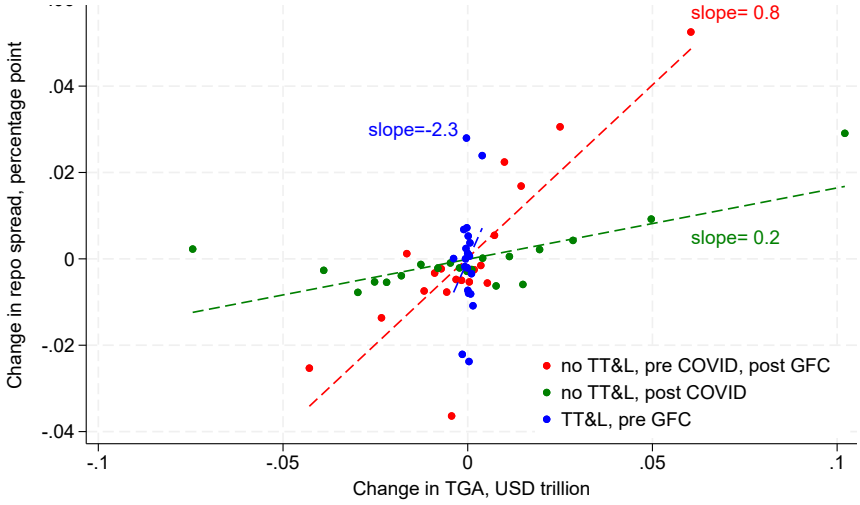


Note: Sensitivity is estimated by 1-year rolling window regression, as specified in column (1) in Table 1. The shaded area denotes 95% confidence interval.

In columns (3) and (4), we investigate the presence of nonlinear patterns in the relationship between changes in the TGA balance and the repo spread. The intuition is that the impact of TGA balance changes on the repo spread may be more pronounced when the magnitude of the changes is larger. To assess this hypothesis, we define "large change in TGA" as being the top percentile of Δ TGA, measured as percent of previous day's sum of reserves and ONRRP. This dummy variable would indicate the days when the increase in TGA balance is significant, even with potential cushioning from reserves and ONRRP. We include an interaction term of TGA balance changes and this dummy variable on the right-hand side. While the coefficient for the interaction term is not significant for the general collateral repo spread (column 3), it is positively significant for the SOFR spread at

75^{th} percentile. This points to some heterogeneity in the passthrough from reserve supply to repo spreads across borrowers, and suggests that the repo transactions charging higher rates are more sensitive to liquidity stress than average repo transactions.

Figure 5: The Role of Treasury Tax and Loan Account

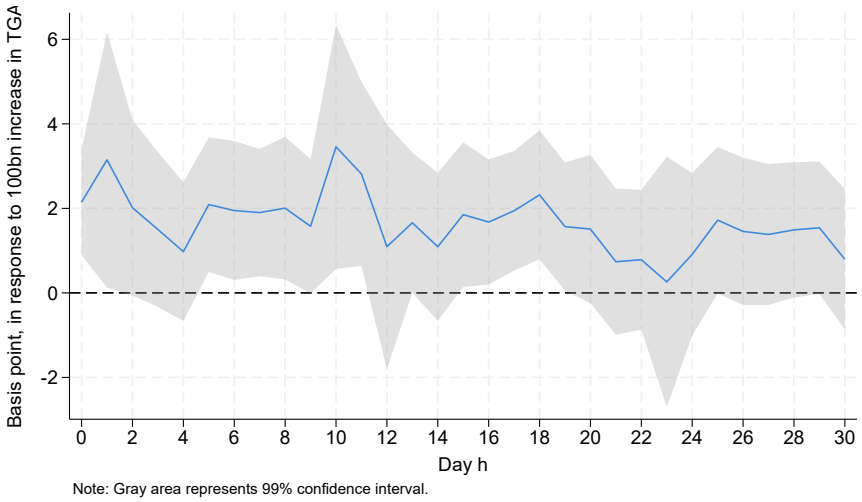


Note: This figure shows the bin scatter plots of repo spread on TGA balance, controlling for seasonal factors. The blue, red, and green represents the pre-GFC and TT&L period up to the third quarter of 2007, the post-GFC and pre-COVID period from the third quarter of 2009 to the end of 2019, and the post-COVID period from the beginning of 2020 to Dec 2024, respectively.

As discussed in section 3, the way that the Treasury manages TGA balance and the Fed manages its balance sheet could influence how TGA balance changes spillover to the financial system. Intuitively, when TT&L accounts were actively operated, the changes in TGA balance were largely muted by TT&L, therefore limiting spillover to repo spread (blue dots in Figure 5). Following the monetary easing policies in response to the pandemic, the Fed's balance sheet has increased notably compared with the pre-COVID period, and liquidity has been abundant in the market. This is reflected in how repo spread absorbs changes in the TGA balance: associated with a $100 billion increase in the TGA balance, repo spread would rise by 8 basis points in the post-GFC and pre-COVID period (red dots in Figure 5), while the rise would be much lower at 2 basis points in post-COVID period (green dots in Figure 5).

Finally, we assess the persistence of TGA balance changes using a standard local projection method to extend the baseline regression in column (1) of Table 1. We estimate the impact of TGA balance change up to 30 days after the initial change. The effects are relatively long lasting, fluctuating between 1 to 3 basis points corresponding to a $100 billion increase in TGA balance, before fading away after 20 days (Figure 6).

Figure 6: Impact of TGA increase on the repo spread: propagation dynamics



Note: This figure plots the local projection estimates of the impact of TGA balance change, using column (1) of Table 1. The solid line represents the response in repo spread on day $t+h$ relative to $t-1$ (in basis points) associated with a \$100 billion increase in TGA balance at day t. The shaded area represents the 99% confidence interval.

4.2 Money Market Fund Repo Lending

In addition to analyzing the spreads in the aggregate repo market, a complementary approach to examining the impact of TGA on repo transactions is through a granular analysis of MMF repo lending. The identification strategy is based on the assumption that individual MMFs and dealers treat TGA fluctuations as exogenous, and that fiscal policy (and thus TGA) responds to macroeconomic conditions at a frequency higher than monthly. This assumption is well-supported by the literature on fiscal shocks, such as the seminal work of Blanchard and Perotti (2002).

There are two key advantages to focusing on MMF repo transactions. First, the detailed data on repo transactions—including the underlying collateral, haircut rates, and maturities—allow for more precise control of factors that could influence repo transactions, improving our ability to identify the role of the TGA. Second, by analyzing both repo rates and volumes, we can assess the impact of TGA changes on both the price and quantity dimensions of the repo market.

The regression specification follows a structure similar to Equation 1. The y variable is either repo spreads relative to IOR or repo lending volume in billions of USD of MMF family i to dealer j at maturity m using collateral c and subject to haircut rate h. β is the coefficient of interest, which represents the impact of TGA on repo spreads or volume. Additionally, we control for the amount of ONRRP usage $ONRRP_{it}$ and short-term (1-month) Treasury rate (in X_t), which are close substitutions to repo lending. The variables are in first difference, i.e., the change of this

month end relative to the last month end. We include fixed effects for MMF family, dealer, maturity, collateral type, and haircut, to control for any non-time-varying factors to repo transactions. To account for quarter-end effects—such as window dressing by foreign banks and other aggregate-level factors at a quarterly frequency—we include a quarter-end dummy (in X_t) and quarter fixed effects $\alpha_{t=q}$.

$$\Delta y_{ijmhct} = \beta \Delta tga_t + \gamma \Delta ONRRP_{it} + \Gamma X_t + \alpha_i + \alpha_j + \alpha_m + \alpha_h + \alpha_c + \alpha_{t=q} + \epsilon_{ijmhct} \quad (2)$$

The estimates of the impact of the TGA on repo spreads align closely with the findings in subsection 4.1. The baseline results, as in column (1) of Table 3, indicate that a $100 billion increase in the TGA balance is associated with a 1.6 basis point increase in repo spreads. In column (2), we examine whether MMFs can offset the liquidity drain caused by TGA changes by withdrawing funds from ONRRP. The interaction term between the previous month's ONRRP and TGA changes yields a significant negative coefficient, confirming that ONRRP helps cushion the impact of TGA changes on repo spreads. In terms of magnitude, if an MMF family holds approximately $120 billion in ONRRP (the average of the top 10 MMF families in 2022-2023), these ONRRP holdings could offset about half a basis point ($= 0.12 \times 0.0318 \times 10$) of the 1.8 basis point increase in repo spreads following a $100 billion rise in TGA balance.

The impact of the TGA on repo volume reveals that TGA increases not only reduce the available funding supply for repo transactions but also, through Treasury issuance, boost repo demand. Column (3) of Table 3 replaces repo spread with repo volume in the baseline regression, and the results show that a $100 billion increase in the TGA is associated with a $41 million (approximately one-quarter of a standard deviation) increase in repo volume between a single MMF family and a single dealer. This suggests that, in addition to reducing funding for the repo market—acting as a negative supply shock—an increase in TGA balance also acts as a positive demand shock, driving up repo volumes. One possible channel for this effect is Treasury issuance, which requires primary dealers to fund their Treasury purchases, potentially by sourcing funds through the repo market (as also discussed in Correa, Du and Liao (2020)).

To formally test the debt issuance channel, we distinguish three elements that constitute to the change in month-end TGA. For instance, say the change in TGA at month t is equal to the TGA balance at day 30 of month t minus the TGA balance at day 30 of month $t-1$, and is equal to net debt issuance and net fiscal expenses at day 29 of month t, plus the change in TGA at day 29 of month t relative to that at day 30 of month $t-1$.

$$\Delta tga_t = tga_{30}^{t} - tga_{30}^{t-1} = net\ debt\ issuance_{30}^{t} + net\ fiscal\ expenses_{30}^{t} + tga_{29}^{t} - tga_{30}^{t-1} \quad (3)$$

If the debt issuance channel is at work, we expect a positive coefficient for $net\ debt\ issuance_{30}^{t}$ but not for $net\ fiscal\ expenses_{30}^{t}$. Column (4) confirms this hypothesis, showing that changes in net debt issuance is almost associated with one-to-one increase in repo volume, while the changes in net fiscal expenses is not significantly associated with repo volume. This contrasts with the results for repo spreads (shown in Column (5)), where both net debt issuance and net fiscal expenses are associated with increases in repo spreads. Taken together, these findings suggest that TGA balance changes stemming from net debt issuance simultaneously act as both a positive demand shock and a negative supply shock in the repo market, while changes resulting from net fiscal expenses primarily function as a negative supply shock.

Table 3: Money Market Fund Repo Transactions and TGA

VARIABLES	(1) Δrepo spread	(2) Δrepo spread	(3) Δrepo volume (bn)	(4) Δrepo volume (bn)	(5) Δrepo spread
Δtga, month end	0.1591***	0.1791***	0.4110***		
	(0.008)	(0.008)	(0.079)		
net debt issuance				1.0175***	0.4247***
				(0.386)	(0.032)
net fiscal expenses				-0.5272	0.4788***
				(0.349)	(0.048)
Δtga, one day prior to month end				0.5050***	0.1356***
				(0.091)	(0.009)
ΔONRRP at Fed	0.0134***	0.0142***	0.1035*	0.1038*	0.0116***
	(0.003)	(0.003)	(0.054)	(0.053)	(0.003)
Δtga × last month end ONRRP at Fed		-0.0318***			
		(0.004)			
Δ1-month Treasury yield	0.0458***	0.0435***	0.0495	0.0792	0.0536***
	(0.008)	(0.008)	(0.052)	(0.053)	(0.007)
quarter end dummy	0.0312***	0.0297***	-0.2286***	-0.2322***	0.0289***
	(0.002)	(0.002)	(0.026)	(0.025)	(0.002)
Observations	37,603	37,603	37,603	37,603	37,603
R2	0.163	0.164	0.015	0.016	0.167
Dealer FE	Y	Y	Y	Y	Y
MMF FE	Y	Y	Y	Y	Y
Haircut FE	Y	Y	Y	Y	Y
Maturity FE	Y	Y	Y	Y	Y
Collateral FE	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y

Note: This table reports the regression results of money market fund repo to IOR spreads and repo volumes and TGA (all in first difference) and other control variables. TGA and ONRRP are in trillions of USD. Repo spreads are in percentage points. Repo volumes are in billions of USD. Column (1) is the baseline results by including TGA, ONRRP, short-term Treasury yield and quarter-end dummy, column (2) is similar to column (1) but using repo volumes. Column (3) and (4) distinguish TGA one day prior to month end and the net debt issuance and fiscal expenses on the last day of the month, as in Equation 3. Column (5) adds the interaction term between TGA and ONRRP at the end of last month. All regressions include fixed effects of dealer, money market fund family, repo haircut, maturity, and collateral type. Standard errors are clustered at dealer, money market fund family, repo haircut, maturity, and collateral type level. *, ** and *** represent significance level at 10, 5 and 1%, respectively.

5 Event Study: Debt Ceiling Standoffs

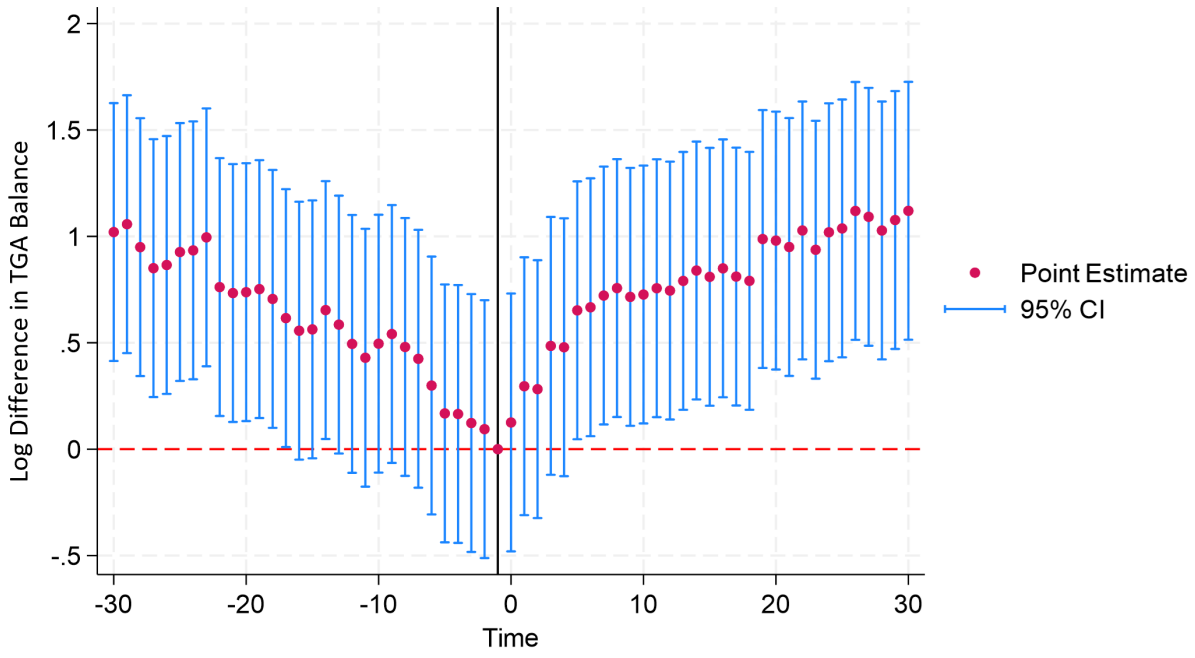
In this section, we study the extent to which the TGA contributes to volatility in the short-term funding market during debt ceiling episodes.

5.1 TGA and Debt Ceiling Standoffs

Typically, during debt ceiling standoffs, there will be a draw down of the TGA as the Treasury implements its "extraordinary measures" to avoid breaching the debt ceiling. After this drawdown period, the Treasury will replenish the TGA immediately when the debt ceiling is suspended or lifted.

Figure 7 presents an event study plot which pools together all debt ceiling standoff events since 2012 to show how the TGA balance fluctuates during these episodes. The TGA shrinks by more than half on average until the debt ceiling is lifted, after which it quickly returns to near its previous level.

Figure 7: Treasury General Account and Debt Ceiling Standoffs

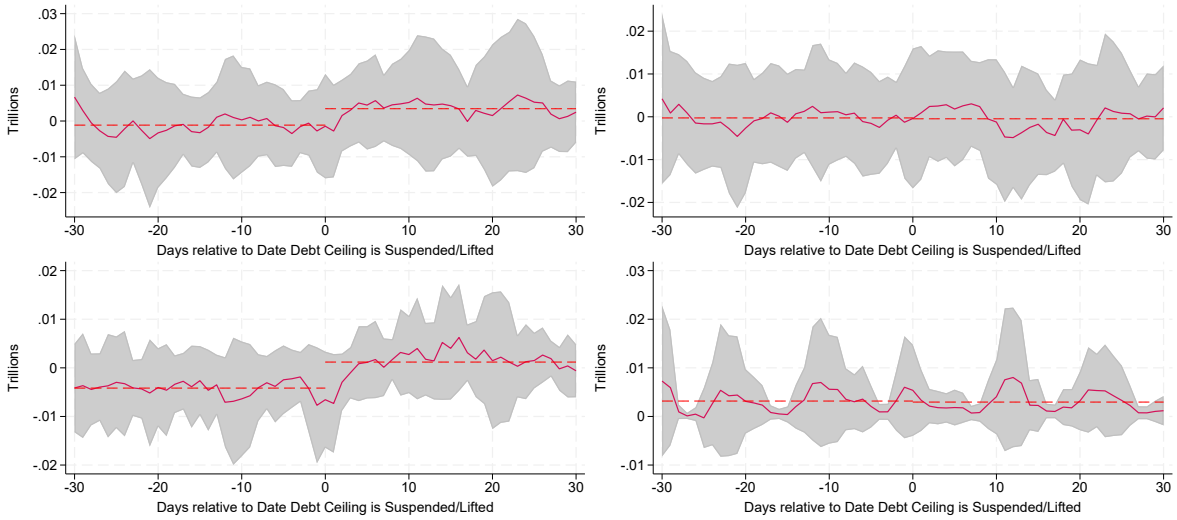


Notes: This figure presents event study estimates where the dependent variable is log TGA balance and event time is in days relative to when the debt ceiling is suspended/lifted.

Net bill issuance is the main driver of the TGA during debt ceiling standoffs. Figure 8 shows that

net bill issuance is negative before the debt ceiling is lifted. After the debt ceiling is lifted, net bill issuance is positive. Net coupon issuance, in contrast, follows a periodic cycle, in line with the Treasury's policy of predictable quarterly refinancing auctions for bonds.

Figure 8: TGA Inflows and Outflows during Debt Ceiling Standoffs



Notes: This figure presents mean net flows of the treasury general account by component in days relative to when the debt ceiling is suspended/lifted, calculated using a 5-day moving window. The dashed red lines indicate the average value between -30 to -1 days or 0 to 30 days relative to when the debt ceiling is suspended/lifted. The shaded area represents the range of ±1 standard deviation around the mean.

5.2 Impact on Repo Spreads

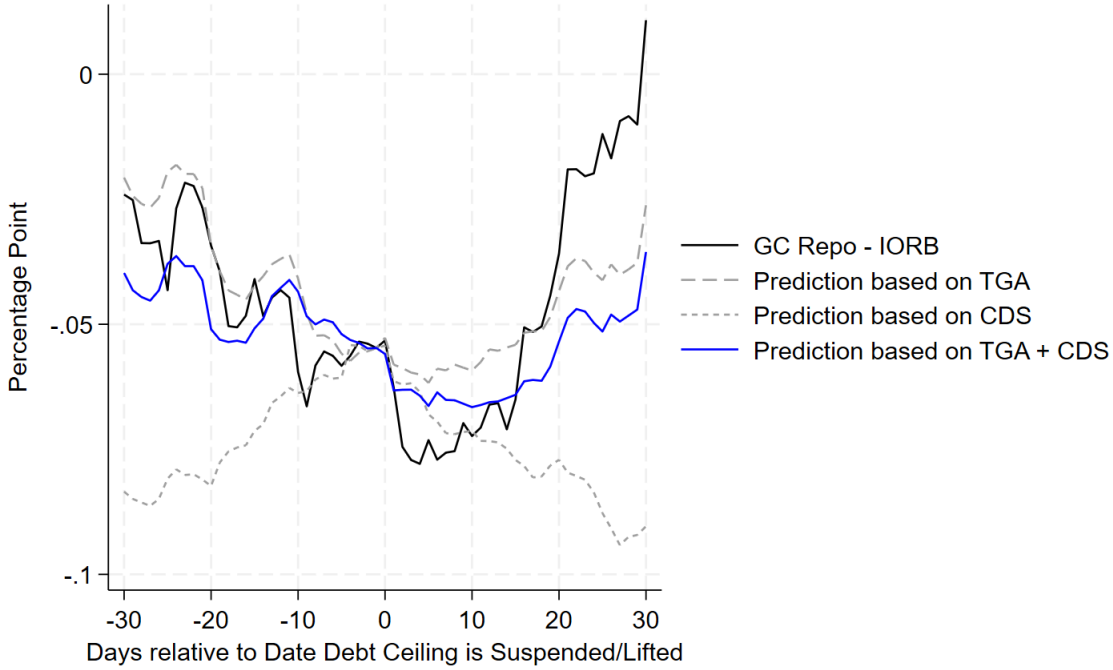
As we have shown, the TGA balance has a significant impact on dollar funding markets. Here, we examine the extent to which fluctuations in the TGA during debt ceiling standoffs explain observed volatility in short-term funding spreads.

We re-estimate Equation 1 where we include an interaction term for changes in the TGA and reserves as a share of GDP (as in Column 1 of Table 2) and lagged terms for changes in the TGA (as in Column 5 of Table 1), excluding observations within 30 days of a debt ceiling suspension or increase. Then, we apply the regression estimates to predict changes in repo spreads through the 30 day window before and after each suspension or increase in the debt ceiling.

In Figure 9, we compare the average spread between the general collateral repo rate and the interest rate on excess reserves (in blue) with the mean of our predicted spreads (in red). We find that the spread does in fact decline until the debt ceiling is lifted and increase after as predicted by changes in the TGA balance. The magnitude of the swing is also similar to that of the predicted spreads.

We find that including the 6-month premium of US sovereign credit default swaps in our estimating regression, to account for sovereign risk, improves somewhat the fit of our prediction with the data (in yellow). In particular, it helps account for the large decline in the spread immediately after the debt ceiling increase. A prediction based on only the CDS premium does not fit the data well (in green) and it remains the case that the pure TGA inflow effect around the debt ceiing suspension drives the bulk of the swing in the repo spread.

Figure 9: Treasury General Account and Repo Spreads During Debt Ceiling Standoffs



Notes: This figure presents the mean GC Repo - IORB spread across all debt ceiling episodes between 2012 and 2020. Event time is in days relative to when the debt ceiling is suspended/lifted.

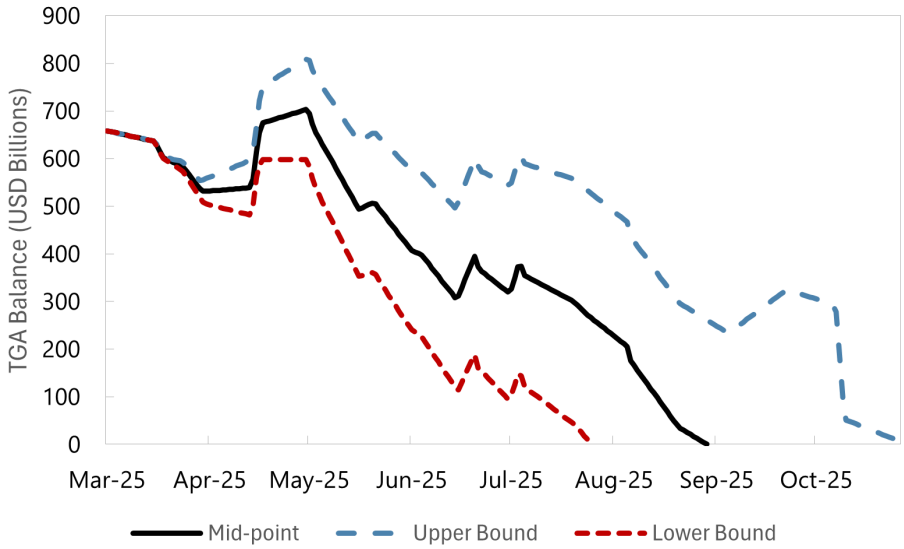
5.3 Expected Impact of 2025 Debt Ceiling Episode

The debt limit was most recently reinstated at $36.1 trillion on January 2, 2025, following its suspension as part of the 2023 Fiscal Responsibility Act. The Bipartisan Policy Center currently projects that the X Date will arrive as soon as late-July.

In this subsection, we apply the same regression estimates as in the last subsection to predict changes in repo spreads from the time of this paper's writing until September 2025, as the TGA is drawn down on its way to approach the X-date.

As inputs, we assume that the TGA balance follows the trajectory projected by the Bipartisan Policy Center until the X-date. Figure 10 presents the mid-point as well as upper and lower bounds of the TGA balance forecast. The lower bound X-date is late-July and the upper bound is late-October, with the mid-point forecast being end-August. Following which, we assume that the TGA is replenished to its pre-debt ceiling level at the average historical pace. We assume that the ONRRP and reserve levels follow the mid-point estimate from the Federal Reserve Bank of New York's Survey of Market Expectations.

Figure 10: Projection of TGA Balance



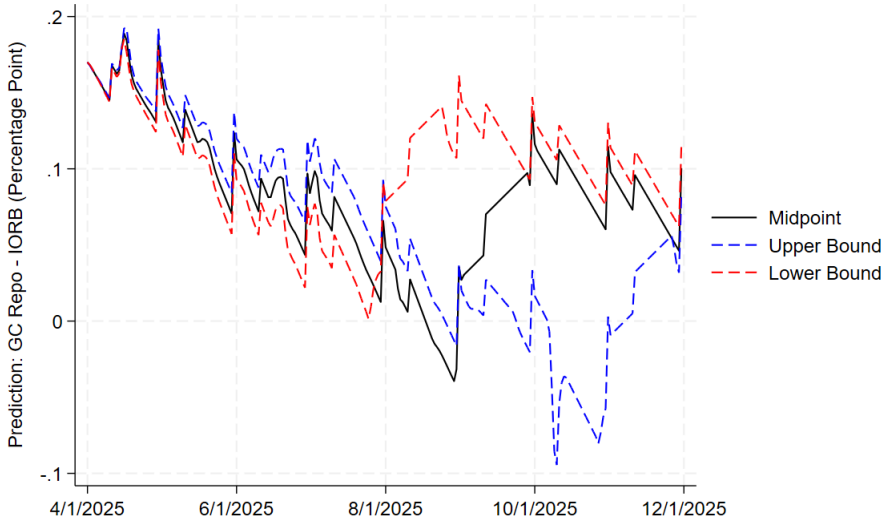
Notes: This figure presents the Bipartisan Policy Center's projections of the TGA balance.

Figure 11 presents the results of this exercise.[7] If the debt ceiling is not lifted until the X-date, the repo spread will decline by between 20 to 30 basis points depending on the speed at which the TGA is drawn down, and then sharply rebound following the eventual debt-ceiling lift-off. The expected swing will be larger if the TGA is drawn down more slowly over time, as declining bank reserves and ONRRP balances from QT increase the sensitivity of spreads to changes in the TGA. The expected magnitude of the swing is somewhat smaller than those associated with the debt ceiling episodes in 2017 ($\sim$ 40 bps) and 2019 ($\sim$ 70 bps), but would amount to an unusually large spike in the repo spread during the post-COVID era. Since mid-2020, the spread has varied in a narrow band of less than 10 basis points around the target level set for the federal funds rate, and only featured larger discreet jumps at quarter end dates and when interest rates were changed by

[7]The prediction model includes an interaction term for changes in the TGA and reserves as a share of GDP (as in Column 1 of Table 2) and lagged terms for changes in the TGA (as in Column 5 of Table 1), excluding observations within 30 days of a debt ceiling suspension or increase.

the FOMC. The declining level of bank reserves as a result of ongoing QT by the Fed, a very low level of ONRRP both contribute toward amplifying the swing in repo spreads in response to the volatility in TGA flows under current conditions.

Figure 11: 2025 Debt Ceiling Impact on Repo Spreads



Notes: This figure presents predicted path of the GC Repo - IORB spread based on the Bipartisan Policy Center's projections of the TGA balance and ONRPP and reserve levels based on the Federal Reserve Bank of New York's Survey of Market Expectations.

6 Conclusion

In this paper, we have shown that political brinkmanship around the federal debt-ceiling can have significant adverse consequences for the repo market and by extension, the stability of the financial system with the Treasury market at its center. In particular, the unintended spillovers to the short-term funding market go beyond the implications of the debt-ceiling on sovereign risk and other risk premia which can tighten financial conditions. Instead, we show that the mechanical reserve injection and draining resulting from volatility in the TGA per se have a significant effect on repo spreads and the volume of repo borrowing intermediated by the market. This channel appears to matter even more than the sovereign risk. Future research could further explore how liqudity flows triggered by the debt-ceiling can reverberate beyond the repo market, possibly in FX swap markets, the eurodollar and other offshore dollar markets.

There are options to mitigate the spillover effects to the funding markets, such as re-establishing a version of former Tax and Loan Note accounts that could offset the TGA fluctuations and insulate

the financial system from the associated fiscal flows (Huther, Pettit and Wilkinson (2019)). Finally, without such an arrangement and with recurring debt-ceiling impasses continuing to be part of the political reality, there is a need to maintain a large level of reserves to blunt the impact from TGA volatility. This is an additional benefit of the ample reserve regime currently in place, though it also does not come without its own trade-offs (see the literature on the cost of a large Fed balance sheet).

References

Afonso, Gara, Domenico Giannone, Gabriele La Spada, and John C Williams. 2022. "Scarce, abundant, or ample? A time-varying model of the reserve demand curve." Staff Reports.

Avdjiev, Stefan, Bryan Hardy, Şebnem Kalemli-Özcan, and Luis Servén. 2022. "Gross capital flows by banks, corporates, and sovereigns." *Journal of the European Economic Association*, 20(5): 2098–2135.

Benzoni, Luca, Christian Cabanilla, Alessandro Cocco, and Cullen Kavoussi. 2023. "What does the CDS market imply for a US default?" *Economic Perspectives*, , (4).

Blanchard, Olivier, and Roberto Perotti. 2002. "An empirical characterization of the dynamic effects of changes in government spending and taxes on output." *Quarterly Journal of Economics*, 117(4): 1329–1368.

Cassidy, William, and Shreye Mirani. 2024. "The Debt Ceiling's Disruptive Impact: Evidence from Many Markets." *Working Paper*.

Correa, Ricardo, Wenxin Du, and Gordon Y Liao. 2020. "US banks and global liquidity." National Bureau of Economic Research.

Diamond, William, Zhengyang Jiang, and Yiming Ma. 2024. "The reserve supply channel of unconventional monetary policy." *Journal of Financial Economics*, 159: 103887.

Du, Wenxin. 2019. "Financial intermediation channel in the Global Dollar Cycle." *Jackson Hole Economic Policy Symposium Proceedings 2019*, 509–527.

Gopinath, Gita, and Jeremy C Stein. 2021. "Banking, trade, and the making of a dominant currency." *The Quarterly Journal of Economics*, 136(2): 783–830.

Huber, Amy Wang. 2023. "Market power in wholesale funding: A structural perspective from the triparty repo market." *Journal of Financial Economics*, 149(2): 235–259.

Huther, Jeffrey, Luke Pettit, and Mark Wilkinson. 2019. "Fiscal Flow Volatility and Reserves." *FEDS Notes*.

Kashyap, Anil K, Jeremy C Stein, Jonathan L Wallen, and Joshua Younger. 2025. "Treasury Market Dysfunction and the Role of the Central Bank." *Brookings Papers on Economic Activity*, 1.

Miranda-Agrippino, Silvia, and Hélene Rey. 2020. "US monetary policy and the global financial cycle." *The Review of Economic Studies*, 87(6): 2754–2776.

Santoro, Paul. 2012. "The evolution of treasury cash management during the financial crisis." *Current Issues in Economics and Finance, Federal Reserve Bank of New York*, 18(3).

A. Appendix Figures and Tables

B. Description of Debt Ceiling Episodes[8]

2023 Debt Ceiling: On January 19, 2023, Treasury hits its $31.4 trillion debt limit and deploys extraordinary measures. Projections indicate that extraordinary measures and Treasury's existing cash on hand will allow it to fully fund the government's obligations until some point between early June and early August of 2023, with an elevated risk between June 2 and June 13, 2023. On June 3, 2023—following months of negotiations and a day into the start of the projected X Date range—President Biden signs the Fiscal Responsibility Act of 2023 into law. The bipartisan legislation immediately suspends the debt limit through January 1, 2025, and caps discretionary spending for at least two years.

2021 Debt Ceiling: On August 1, 2021, the debt limit is reinstated at $28.4 trillion. Treasury immediately deploys extraordinary measures to finance the federal government on a temporary basis. Projections indicate that cash on hand and extraordinary measures will allow Treasury to fully fund the government's obligations until sometime in fall 2021. However, the evolution of the COVID-19 pandemic, the unpredictable disbursement of government relief payments, and the subsequent economic recovery inject significant uncertainty into the timing of the "X Date." After weeks of negotiations, Congressional leaders agree on a deal to avoid a Republican filibuster and raise the debt limit by $480 billion, which President Biden signs into law on October 14, 2021. The Treasury Department estimates that this increase will facilitate federal borrowing until December 3, 2021, potentially setting up another debt limit showdown before the end of the calendar year. As the X Date looms, Senate leaders negotiate on a one-time carve-out to the filibuster that allows Senate Democrats to increase the debt limit with a simple majority vote. Congress passes legislation raising the debt limit by $2.5 trillion, which President Biden signs into law on December 16, 2021.

2019 Debt Ceiling: On March 2, 2019, the debt limit is reinstated at $22 trillion. Once again, the Treasury begins to deploy extraordinary measures to finance government operations on a temporary basis. Projections indicate that by using cash on hand and extraordinary measures the Treasury will be able to fully operate the government until October or early November 2019. After months of negotiations, Congress and the White House to agree on a budget deal before the August recess. The Bipartisan Budget Act of 2019 is signed into law on August 2, raising discretionary spending levels for two years and suspending the debt limit through the end of July 2021.

2017-18 Debt Ceilings: The debt limit suspension expires in March 2017 and the debt limit is reinstated at $19.8 trillion. Treasury begins to implement extraordinary measures to finance the federal government on a temporary basis. The "X Date" is expected sometime in the fall of

[8]The descriptions are drawn from the Bipartisan Policy Center.

2017. In the aftermath of Hurricane Harvey, policymakers negotiate a three-month budget deal to keep the government open, also including both a Harvey relief package and a debt limit suspension. The legislation is passed on September 8, suspending the debt limit until December 8, 2017. The brief debt limit suspension authorized in the wake of Hurricane Harvey expires, and the debt limit is reinstated once again, this time at $20.5 trillion. Treasury begins to implement extraordinary measures to finance the federal government on a temporary basis. The "X Date" is projected for sometime in March 2018. Additionally, the "Tax Cuts and Jobs Act," passed late in December, begins to lower government revenues and thus heightens uncertainty surrounding the timing of the "X Date." Following two brief government shutdowns in early 2018, the Bipartisan Budget Act of 2018 is signed into law shortly in advance of the projected March "X Date." The act increases discretionary spending levels for two years and suspends the debt limit through March 1, 2019.

2015 Debt Ceiling: The latest suspension of the statutory debt limit expires in March 2015 and the debt limit is reinstated at $18.1 trillion. Treasury begins implementing extraordinary measures in order to finance the federal government on a temporary basis. The "X Date" is expected in the fall of 2015. Only a few weeks away from the X-Date, policymakers pass the Bipartisan Budget Act of 2015, which suspends the statutory debt limit through March 15, 2017. The act also loosens the spending caps on defense and domestic discretionary spending.

2013 Debt Ceiling: The United States reaches the statutory debt limit of $16.4 trillion, established by the Budget Control Act of 2011 on 31 Dec 2013. The Treasury begins taking extraordinary measures to postpone default, with the "X Date" expected in February 2013. Policymakers pass the No Budget, No Pay Act of 2013, suspending the debt limit through May 18, 2013. The reinstated debt limit on that day is to be set at a level that accounts for all debt incurred to that point. This episode is the first time in the debt limit's history that it is addressed via a temporary suspension rather than a specified numerical increase in the limit. The statutory debt limit, suspended by the No Budget, No Pay Act of 2013, is reinstated at $16.7 trillion in May 2013. The Treasury resumes its extraordinary measures to avoid defaulting on federal obligations. The "X Date" is expected in the fall of 2013. The federal government undergoes a 16-day partial shutdown after Congress fails to enact either appropriations bills or a continuing resolution, the result of disagreements surrounding funding for the Affordable Care Act. The shutdown ends when President Obama signs the Continuing Appropriations Act of 2014 on October 16, just weeks away from the projected "X Date." The act provides a temporary solution to the government funding impasse and also suspends the debt limit until February 7, 2014. The suspension of the statutory debt limit expires, and the debt limit is reinstated at $17.2 trillion. Treasury begins implementing extraordinary measures to finance the federal government on a temporary basis. Due to the large amount of tax refunds that are sent out in February, the "X Date" is expected less than a month from when extraordinary measures are initiated. Shortly after the reinstatement, President Obama signs the Temporary Debt Limit Extension Act, which suspends the debt limit through March 15, 2015.

2011 Debt Ceiling: The United States reaches its statutory debt limit of $14.3 trillion in May 2011. As on several earlier occasions, the Treasury Secretary begins deploying extraordinary measures. The "X Date," when those measures are projected to be exhausted and Treasury runs out of cash to pay its bills in full and on time, is expected in early August 2011. Just days before the projected "X Date," Congress and the president enact the Budget Control Act of 2011, which initiates discretionary spending caps, creates the Joint Select Committee on Deficit Reduction (a.k.a. the super committee), and ends the immediate debt limit impasse by authorizing a two-stage increase in the debt limit to $16.4 trillion via the McConnell Rule. This episode results in a downgrade of the U.S. credit rating by S&P from AAA to AA+. S&P cites political brinkmanship as the reason for the downgrade.

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