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THE TREASURY CASH-FUTURES BASIS TRADE AND EFFECTIVE RISK MANAGEMENT PRACTICES

Report of the Market Structure Subcommittee, Market Risk Advisory Committee of the U.S. Commodity Futures Trading Commission (the "MRAC" or the "Committee")

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The introductory report and the effective practices outlined in the report were approved on November 22, 2024 by the Market Structure Subcommittee of the MRAC. On December 10, 2024, the MRAC voted to approve distribution of the report and the effective practices outlined herein to the U.S. Commodity Futures Trading Commission ("Commission" or "CFTC"). The views, analyses, and conclusions expressed herein reflect the work of Market Structure Subcommittee of the MRAC, and do not necessarily reflect the views of the MRAC Subcommittee members or MRAC Committee members or the institutions that either Subcommittee or Committee members represent, the Commission or its staff, the Federal Reserve System, or the U.S. government. Reference to any products, services, websites, organizations, or enterprises, or the use of any organization, trade, firm, or corporation name is for informational purposes only and does not constitute endorsement, recommendation, or favoring by the U.S. government.

The Treasury Cash-Futures Basis Trade and Effective Risk Management Practices

Executive Summary

- The U.S. Treasury market (the "Treasury market") serves as the benchmark risk-free yield curve and as a source of safe and liquid assets globally. It is used to finance the government and implement monetary policy and supports the role of the U.S. dollar as the global reserve currency. Its liquidity is therefore key to financial stability.
- Treasury cash, futures, and repo markets are part of a broad Treasury ecosystem that is crucial to price discovery and liquidity provision across the financial system.
- The cash-futures basis trade ("basis trade") supports the Treasury ecosystem by enhancing market liquidity and efficiency, lowering government funding costs, and improving capital formation and optimization.
- The basis trade is a convergence trade where market participants arbitrage the price difference—or basis—between a Treasury security and a related Treasury futures contract, generally by buying the deliverable security and selling the futures.
- The basis trade has garnered significant attention recently, with elevated Treasury futures activity driving speculation that the strategy has grown amongst leveraged fund managers.
- The demand for futures among institutional investors appears to be an important structural factor driving the basis.
- Participants in trades tied to the cash-futures basis—including the short futures position, long cash position, and repo financing—are exposed to various risks including market, liquidity, and counterparty credit risks.
- The return in the basis trade is small, so leverage is used to increase returns. Stress on these trades therefore could present a potential financial stability risk if unwound rapidly and in large scale.
- The basis trade contributes to market function in normal times but could amplify market stress that originates from other sources, as some evidence suggests it did in March 2020.
- Effectively managing risks associated with the basis trade can reduce market, liquidity, and counterparty credit risks and can improve financial stability.

In this paper, building off the MRAC presentation in April 2024, we provide background on Treasury securities and futures markets and analyze the mechanics of the basis trade. We then examine who engages in the basis trade, the benefits and risks of the basis trade, as well as leverage-related risk considerations. Finally, we address effective risk management practices for trades associated with the cash-futures basis.[1]

I. Background

The Treasury market is the largest and most liquid government bond market globally. Treasuries are both the primary debt instrument for the U.S. government and a foundation of the global financial system. The market's liquidity and depth limit price volatility and strengthen financial stability. The Treasury market is supported by diverse interconnected global market

[1] Thanks to Richard Berner, David Bowman, Alessandro Cocco, Timothy Cuddihy, Conor Sari, Samuel Schulhofer-Wohl, and Nathaniel Wuerffel for their assistance in preparing this report.

participants. It also finances the U.S. government and serves as an important vehicle for the Federal Reserve's implementation of monetary policy.

On-the-run Treasury securities are newly issued by the U.S. Department of the Treasury and, even with increased Treasury issuance, have high demand in the market—resulting in lower interest rates and higher prices. In contrast, off-the-run Treasuries, which have not been recently auctioned, typically have lower prices and higher yields. This is an attractive benefit relative to on-the-run Treasuries. However, lower demand for off-the-run Treasuries is generally associated with lower liquidity and higher price volatility.

Treasury futures are standardized contracts for the purchase and sale of Treasury securities at a specific price for future delivery. Each futures contract has a delivery basket that delineates the range of eligible Treasury securities by maturity that can be delivered in the delivery month. Because of the strong demand for, and liquidity of, Treasury futures, futures prices will generally trade at a premium to corresponding Treasury securities.

The Treasury cash-futures basis trade, which enables market participants to express a market view efficiently, supports the Treasury ecosystem by enhancing market liquidity and efficiency, lowering government funding costs, improving capital formation, and optimally allocating portfolio risk. The basis trade is a convergence trade where market participants arbitrage the price difference—or basis—between a Treasury security and a related Treasury futures contract by buying the deliverable security and selling the futures contract (or vice versa in the event the deliverable security were overvalued in comparison to the futures contract).

The basis trade has garnered significant attention recently, with elevated Treasury futures activity driving speculation that the strategy has grown amongst leveraged fund managers and that it has the potential to amplify market stress.

Various public and private sector studies have explored the role of the basis trade in the market stresses experienced in March 2020. Some studies have suggested that sales by hedge funds and other levered investors engaged in the basis trade amplified (but did not cause) market stresses in March 2020; those studies instead identify broad sales of Treasury securities in the March 2020 "dash for cash" as the cause (*see, e.g.,* Barth and Khan, 2020 and 2021; Banegas et al., 2021). Federal Reserve studies have highlighted large sales by a range of investors including $400 billion of sales by foreign institutions, sales by bond funds, and forced unwinding by mortgage REITS (*see, e.g.*, Financial Stability Report, 2020). Direct measures of Treasury sales tied to the exit from the basis trade are not available, but there are estimates ranging from $35-$173 billion in Treasury sales by hedge funds and other leveraged investors. Other amplification factors, such as margin increases, have also been cited as factors in the dysfunction (*see, e.g.,* Schrimpf et al., 2020).

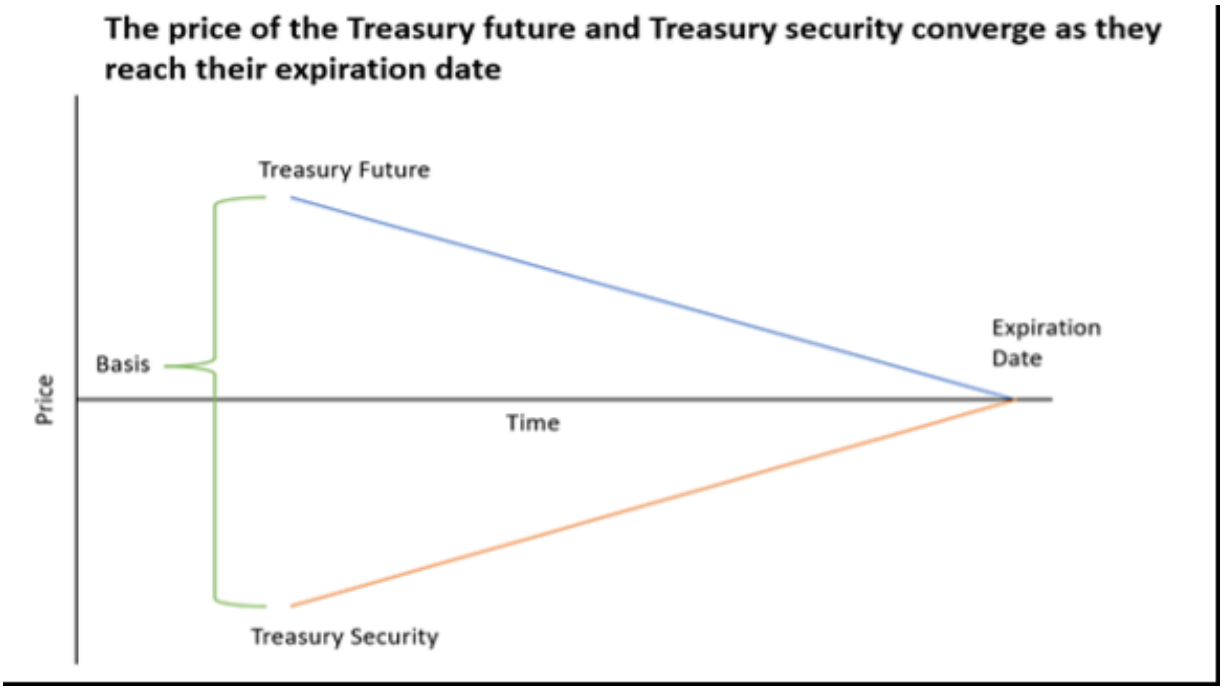
In contrast, other studies have highlighted the benefits of the basis trade, including better market liquidity, efficiency, and funding. For example, the Office of Financial Research noted that the continuation of the basis trade may have supported market liquidity in 2020.

The Inter-Agency Working Group on Treasury Market Surveillance (IAWG), which is composed of staff from the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, the Federal Reserve Bank of New York, the U.S. Securities and Exchange Commission, and the U.S. Commodity Futures Trading Commission, laid out five workstreams to improve Treasury market resiliency, including a review of the effects of leverage and fund liquidity risk management practices (*see* IAWG, 2024; Liang 2024).

II. Mechanics of the Trade

The expression “basis trade” refers to a position established by a basis trader through the purchase of a Treasury security, financed in the repo markets, along with the simultaneous sale of a Treasury futures contract. The supply and demand for futures is what determines their price. High demand for Treasury futures relative to supply leads to price differences between Treasury futures and Treasury securities, with the Treasury futures contract trading at a premium to the underlying security. An increase in the supply of Treasury securities relative to that of Treasury futures could also contribute to the basis. Another possible cause for Treasury futures trading at a premium compared to the underlying Treasury security is that material segments of institutional investors have a preference for Treasury futures over Treasury securities.

Figure 1



Source: Managed Funds Association (MFA)

The pricing discrepancy—or basis as seen in Figure 1 (MFA 2023)—between the Treasury futures price and the Treasury security price provides an opportunity for basis traders to profit by selling the Treasury future and buying an underlying deliverable Treasury security. At the expiry date of the futures contract, the prices converge, providing the seller of the futures contract, the basis trader, with a profit, after accounting for any carry or financing costs. Here is a breakdown of the building blocks of the basis trade:

Step 1 – Long Treasury security position: the basis trader purchases a Treasury security with cash. The basis trader will source the cash from lending the Treasury Security in the repo market.

Step 2 – Short Treasury futures position: the basis trader sells a futures contract that is traded on a regulated exchange and cleared at a clearing house. Under the terms of

the futures contract, the basis trader agrees to deliver a Treasury security at a future date.

Step 3 – Repo financing: in a repo transaction, the basis trader lends the Treasury security it purchased in the long cash Treasury leg (as seen in step one) and receives cash, which it uses to pay for the purchase of the Treasury security.

Step 4 – Settlement of the futures contract: the basis trader delivers the Treasury security under the futures contract and receives cash.

Step 5 – Unwinding the repo: the basis trader receives the Treasury security from the repo counterparty so that they can deliver the Treasury security in settlement of the futures leg. The basis trader takes the cash from the futures leg and delivers the cash to the repo counterparty.

Carry cost of the repo: The basis trader pays interest to the repo counterparty for borrowing cash against the Treasury security as collateral. The rate of interest paid in the repo leg is referred to as the repo rate. The cheapest repo rate is usually found in the overnight repo markets, which the basis trader renews every day for the duration of the basis trade (*see* CCMR, 2023). As a result of entering a series of overnight repos, the repo rate, and hence the carry cost of the repo, fluctuates daily for the basis trader. The repo counterparty lending the cash against the Treasury security will take the Treasury security as collateral. Depending on the terms of the trade, in some cases the value of the cash lent will be less than the value of the Treasury security, providing the repo counterparty with security against potential variations in the market value of the collateral.

Initial margin on the futures contract: The basis trader will post to the clearing house initial margin and make daily mark-to-market ("MtM") variation margin payments. Margin requirements from the clearing house will fluctuate as the value of the futures contract fluctuates.

Profitability of the basis trade: The basis trade is profitable to the basis trader if the repo rate and the carry cost of posting initial and variation margin on the futures contract is lower than the basis between the Treasury futures contract and the price of the Treasury security.

The type of basis trade described above is also referred to as "buying the basis". If the basis trader believes that the repo rate is higher than the basis between the Treasury futures contract and the price of the Treasury security, the basis trader will enter into a series of transactions that is the opposite of those described above, selling the Treasury security in the cash market and opening a long Treasury futures contract, while lending cash against delivery of Treasury securities in a reverse repo. That is referred to as "selling the basis" (see Barth and Khan, 2020).

Typically, the profit in the basis trade is small relative to the size of the trade. However, the structure requires a relatively low investment of capital, due to the feature of financing the purchase price of the Treasury security through borrowing in the repo markets against the Treasury security itself, which will later be delivered into the futures contract. Studies have assumed that leveraged funds will typically use a leverage ratio of 20x to enhance their returns (*see, e.g.*, TBAC, 2024). This enables basis traders to trade in a size large enough to generate sufficient returns to make the trade profitable. For these reasons, the basis trade typically involves very large notional amounts. A 2024 study estimates that hedge funds and other

leveraged investors hold approximately $317 billion in Treasuries related to basis trades since the first quarter of 2022 (*see* Gilcoes et al., 2024).

III. Supply and demand: who engages in the basis trade?

Various market participants, including some hedge funds, engage in the arbitrage of the basis. Institutional investors contribute to the basis through their demand for long futures positions.

Long Treasury security position financed in repo:

Hedge funds and other leveraged investors use the noncentrally-cleared bilateral repo ("NCCBR") market and centrally cleared (sponsored) repo market, as seen in Figure 2 (DTCC), for financing from dealers as seen in Figure 3 (Gilcoes et al., 2024). Most of these trades are structured to net against other trades with the dealer on a portfolio basis, but the maturities of the netting securities can vary. An Office of Financial Research ("OFR") pilot study shows that a sizeable portion of NCCBR activity is conducted with zero haircut (OFR, 2023). However, the OFR study does not capture other sources of collateralization to the dealer, such as margin posted with respect to Treasury futures positions, which may be held under the same Global Netting Agreement. Sponsored repo trades are subject to the Fixed Income Clearing Corporation ("FICC")'s margin regime, but it is a common market practice for dealers to post their own funds (rather than client funds) as margin to FICC on sponsored trades on behalf of their clients.

Figure 2

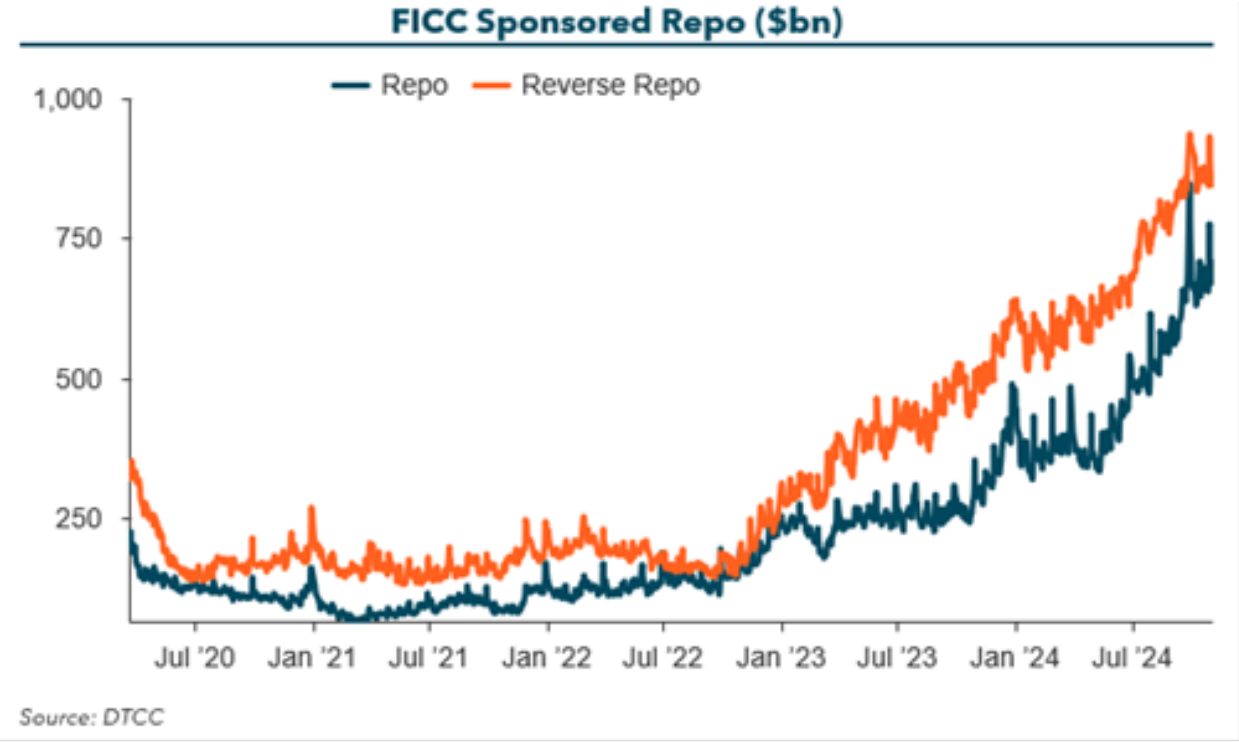
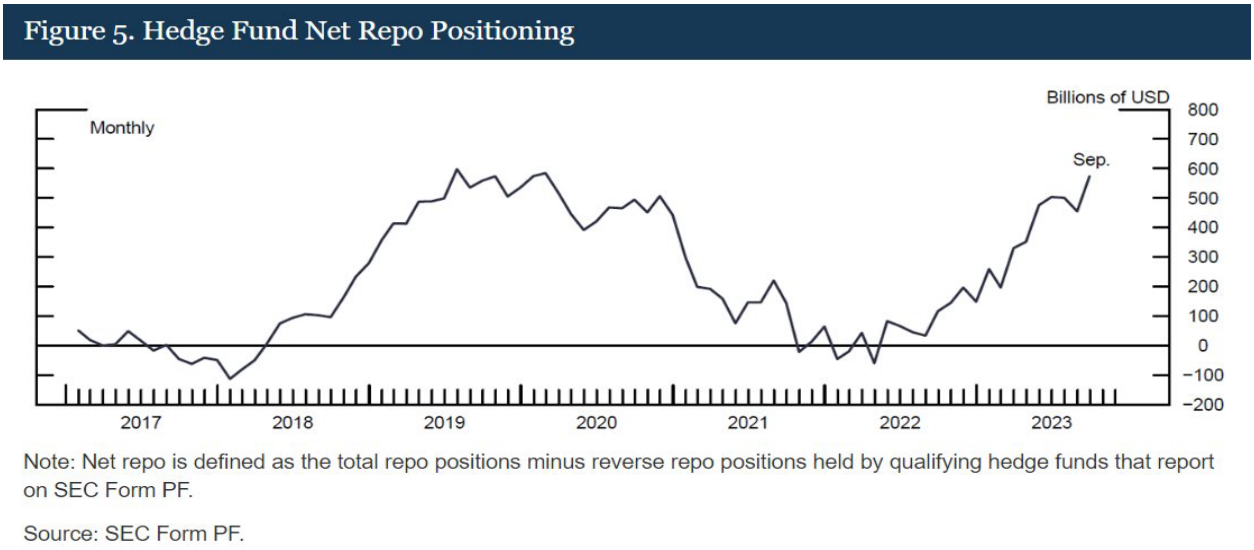


Figure 3



Note: Net repo is defined as the total repo positions minus reverse repo positions held by qualifying hedge funds that report on SEC Form PF.

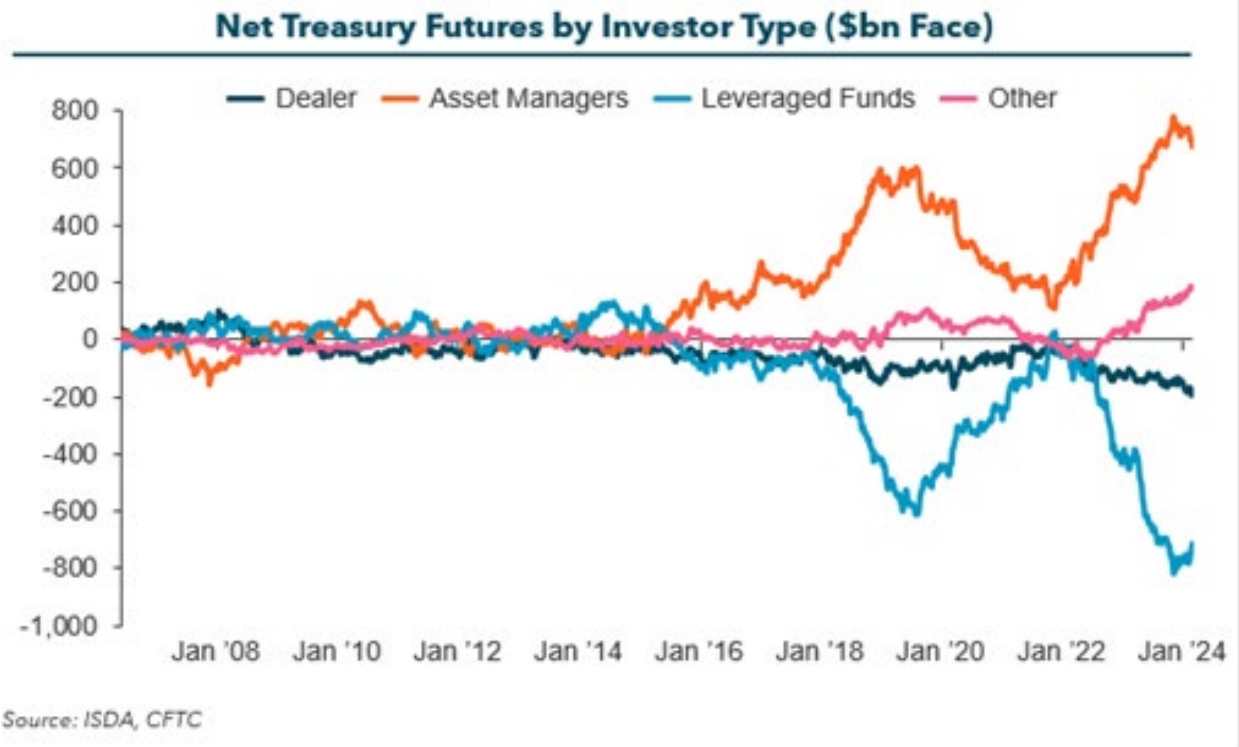
Source: SEC Form PF.

What Drives the Long Futures Position?

Hedge funds and other leveraged investors play a key role in arbitraging the differences in rates on Treasury securities and Treasury futures, helping to reduce or limit the size of the basis between these rates. In doing so, they are responding to differences in the demand for Treasury futures relative to Treasury cash instruments by other market participants. To understand the basis and why it exists, it is necessary to understand what drives the demand for long Treasury futures positions relative to cash Treasury securities.

In addition to helping track the short Treasury futures positions held by hedge funds, the CFTC's Commitment of Traders data can be used to understand which market participants are holding long futures positions. The data, as seen in Figure 4 (CFTC) shows that traditional asset managers are a key segment of market participants holding these positions, and that long positions held by traditional asset managers mirror, nearly one-for-one, the short positions held by hedge funds and other leveraged investors.

Figure 4



Although there has been widespread attention on the basis trade, there has been less focus on the factors behind the demand for Treasury futures that drive the basis. Recently, however, more focus has been placed on asset managers and the reasons they exhibit a demand for futures, including a recent Treasury market conference (IAWG, 2024), a presentation by the Treasury Borrowing Advisory Committee (TBAC, 2024) and research from the Federal Reserve System (Barth et al., 2024). Individual MRAC Subcommittee members have also conducted outreach to several asset managers to better understand the reasons behind their use of Treasury futures.

While there are many reasons why asset managers choose to use Treasury futures, including their relative liquidity and ease of use, research from TBAC and the Federal Reserve System (Barth et al. 2024) attribute a sizeable portion of asset manager's demand for Treasury futures to actively managed mutual funds that employ futures to manage the duration of their portfolios relative to popular bond benchmarks. These managers may choose to invest in higher-yielding assets, such as mortgage-backed securities or collateralized loan obligations, to maximize returns for their clients. Because these investments tend to be shorter duration than the bond benchmark that they are compared to, asset managers often use Treasury futures to adjust the overall duration of their portfolios to meet their desired investment profiles. Moreover, the use of Treasury futures is less cash intensive than hedging through cash Treasury transactions, allowing the managers to increase their allocation in higher yielding assets.

However, these asset managers could also adjust their portfolio duration in an economically comparable manner if they purchased Treasury securities directly and financed the purchase in the repo market. The TBAC presentation, and interviews with a range of asset managers, point to several regulatory, accounting, and reporting issues that incentivize some asset managers to

use Treasury futures rather than to purchase and then finance Treasury securities, even though they are economically similar.

- Investment companies regulated by the Investment Company Act of 1940 ("40 Act Funds") reported two factors that incentivize them to favor Treasury futures over purchasing cash Treasuries and using repo financing:
  - Many funds compete in terms of their reported interest expense, which is often a focus for clients. In certain widely followed measures of interest rate expense, repo financing is counted as an interest expense while futures are not. Some large fund complexes reported that they had previously been much more heavily active in repo markets prior to changes in rules requiring reporting of interest expense measures, but they now use Treasury futures instead.
  - 40 Act Funds have leverage limits and futures do not count toward those leverage limits in the standard reporting forms, even though repos do count toward those limits. The U.S. Securities and Exchange Commission has updated its rules to allow funds to account for repo transactions as a derivative position. These new rules would allow funds to measure leverage in a way that is equivalent to the treatment of futures, but most funds have not adopted this approach yet, perhaps because it would not help with the treatment of repo in their interest expense reporting.
- Life insurers primarily need to hedge a portfolio of very long-dated assets. Where possible, they seek to qualify for hedge accounting treatment. Most life insurer derivatives positions are in swaps or Treasury bond forwards because they quality for hedge accounting, unlike Treasury futures. However, in addition to these long-dated hedges, life insurers do use futures to hedge short-dated or dynamic positions (for example, variable-rate annuities).
  - While liquidity and ease can primarily explain why life insurers would hedge short-dated or dynamic positions with futures, there are also accounting and capital reasons to prefer futures as compared to repo. For example, when measuring leverage, repo transactions are considered on balance sheet whereas futures are off balance sheet. There are also higher capital costs for an insurance company to repoing a cash Treasury security compared to entering a Treasury futures contract. The U.S. Risk-Based Capital ("RBC") framework assigns a noticeable charge on repo transactions.
- Pension funds reported fewer externally imposed accounting and leverage constraints. As a result, larger pension funds with the capabilities to do so often opportunistically use both repo and futures, often using more repo because the basis implies that they can achieve a higher return than by using futures.

While regulatory, accounting, or reporting rules that treat use of futures differently from repo financing of direct holdings of Treasury securities can account for some of asset manager's use of futures, there are also other, more fundamental, reasons that asset managers may use futures. Treasury futures are often used as an alternative to buying (or selling) Treasury securities to quickly gain or reduce exposure to duration in response to large inflows or outflows. The ability to quickly add duration using futures can allow for additional time to source cash securities to achieve desired weightings relative to a benchmark. Treasury futures are also often simpler to use than repo, especially for smaller managers who may not have the required operational infrastructure or have put the necessary agreements in place to engage in repo transactions. Treasury futures may also be seen as more transparent by clients, leading, in some cases, to client agreements that may allow for use of futures but not repo.

IV. Benefits of the Basis Trade

As described above, basis traders seek to arbitrage the difference in prices between Treasury securities and related Treasury futures contracts by purchasing the positions that are relatively undervalued and selling the others in anticipation that the prices will converge. Market participants will take different views of which of the position pair (securities or futures) is undervalued.

This dynamic makes the basis trade appealing to various market participants and provides several benefits:

- **Greater market depth and liquidity contribute to overall efficiency of the Treasury market:** Participation in the basis trade results in a greater supply of Treasury futures and greater demand for the underlying securities, particularly off-the-run securities. Treasury securities with nearly identical cash flows trade at different prices and with different liquidity profiles, with the most recently issued Treasury securities (or on-the-run securities) generally more expensive and more liquid than previously issued securities (or off-the-run securities) maturing on similar dates. Greater demand for Treasury futures and Treasury securities results in greater market depth, reduced bid-ask spreads, and dampened volatility, which increases the efficiency of the market.
- **Greater price efficiency:** The basis trade drives price efficiency by narrowing price dislocations and aligning pricing between Treasury futures and Treasury securities. As more market participants buy Treasury securities and sell futures (or vice versa), the basis narrows.
- **Lower funding costs for the federal government:** Increased participation in the basis trade results in increased demand for Treasury securities. As a result of greater demand for Treasury securities, the U.S. Department of the Treasury can finance the government at a lower interest rate, lowering the federal government's funding costs.
- **Improvement of portfolio optimization and capital formation**: As analyzed in greater detail above, in the sections covering the rationale for the demand in the long Treasury futures leg as well as the long Treasury securities leg, the basis trade allows market participants to adjust portfolio duration by acquiring the required exposure through Treasury futures, or Treasury securities as appropriate. As a result of improving portfolio optimization, the basis trade allows traditional asset managers to allocate more cash to invest into more productive, higher yielding assets.

V. Specific Risks of the Basis Trade

Market participants in the basis trade are exposed to potential losses that can arise from market, liquidity, and counterparty risks. These risks are dynamic, and in certain market conditions, can quickly impact the economics of the basis trade.

1. Market Risk: Treasury futures and Treasury securities positions are subject to market price risk. When futures prices rise, there will be a MtM variation margin call to cover this change in market prices. When Treasury security prices also rise, if the basis trader has provided margin on the Treasury security leg of the basis trade, the futures margin calls may be offset by a variation margin credit on the long Treasury securities positions in the basis trade. This price correlation relationship can change under market stresses. For example, even where margin is collected by dealers on the securities position, that

collected margin may not be sufficient to meet the variation margin requirement on the futures leg. For highly leveraged investors, small changes in overall correlations could result in large margin calls and/or position liquidations.

Although typically less significant than other forms of market risk, participants in the basis trade are also exposed to market risks associated with the Treasury security that is deliverable into the futures contract.

- Treasury futures contracts are physically settled at maturity by delivering an eligible Treasury security. There are multiple options built into the Treasury futures position relating to when to deliver during the delivery period and the selection from the basket of eligible Treasury securities to deliver. At any given time, the cheapest to deliver Treasury security will be the Treasury security that is within the basket of Treasury securities eligible for delivery for a given Treasury futures contract that has the lowest market value at that time. The delivery premium is determined by the relationship between the market value of the cheapest to deliver Treasury security and the market value of the Treasury futures contract. The value of the delivery premium and profitability of the trade will be driven by the interest rate volatility and the timing of the delivery window.

In addition to the risk that the delivery premium will change over the duration of the basis trade, the delivery premium will decay to zero as the futures contract approaches maturity.

- As a Treasury futures contract approaches expiry, its price generally moves towards the underlying cheapest to deliver Treasury security price. At expiration, Treasury futures contracts require the delivery of an eligible Treasury security versus payment of the contract price—therefore, the basis premium should converge to zero towards expiration as the Treasury futures price and the cheapest to deliver Treasury security price align. The futures price and the price of the cheapest to deliver Treasury security must converge at the end of the futures because at expiration of the futures contract market participants who are short the futures position must deliver to market participants who are long the futures position an eligible Treasury security versus payments of the futures settlement price. The rate of the convergence is assessed by market participants and includes factors such as the size of the delivery premium, interest rates, changes in the cheapest to deliver Treasury security, and potential changes in demand for Treasury securities over the life of the trade.

The risk exposure for a given basis trade arises when the actual rate of convergence for that basis trade is faster or slower than the rate of convergence assumed by the market participant engaging in that basis trade. Treasury security convergence to the futures price generally only holds for the cheapest to deliver Treasury security, not all deliverable Treasury securities, because the long futures position is nearly certain to receive the cheapest to deliver Treasury security. It is important to note that only a small share of Treasury futures held by market participants result in physical delivery—historically around 2.8 percent (CME, 2023). Typically, expiring contracts are rolled with new trades to maintain the basis exposure in contracts for the next delivery month. Therefore, the basis trade is not typically a static (buy and hold) strategy but a dynamic approach (often referred to as a convergence strategy) that arbitrages pricing differences between Treasuries and futures over time.

2. Liquidity Risk: For the basis trade, leveraged participants generally finance Treasury securities positions with repo transactions. The repo financing can be overnight or term, with overnight repo rates generally being lower and increasing the potential basis return. However, when repo duration does not match the maturity of the basis trade, interest rate changes could affect the financing costs and the return of the basis trade. Additionally, there is a possibility at repo maturity that the lender may not offer financing due to liquidity constraints or counterparty concerns. Therefore, prevailing repo market conditions could also require unanticipated funding needs or force an unwind of the basis position.

3. Counterparty Credit Risk: Counterparty credit exposures arise if a counterparty defaults prior to the settlement of all outstanding obligations. Parties to the trade will conduct due diligence at both initial onboarding, as well as on an ongoing basis, to understand their trade counterparty and what mitigation may be necessary based on the current and potential changes in the counterparty risk profile.

Since there are different counterparties and agents that may facilitate the trading and settlement activities in a basis trade, there are several ways that counterparty risk can arise in the basis trade and that exposure can change with market conditions. Parties to the trade may require margin to mitigate counterparty risk. As exposures increase or market prices change, counterparty risk mitigation may include reduction in current or future exposure via increased margin, reduction in capacity or services provided, liquidation of positions or a combination of these risk reducing measures.

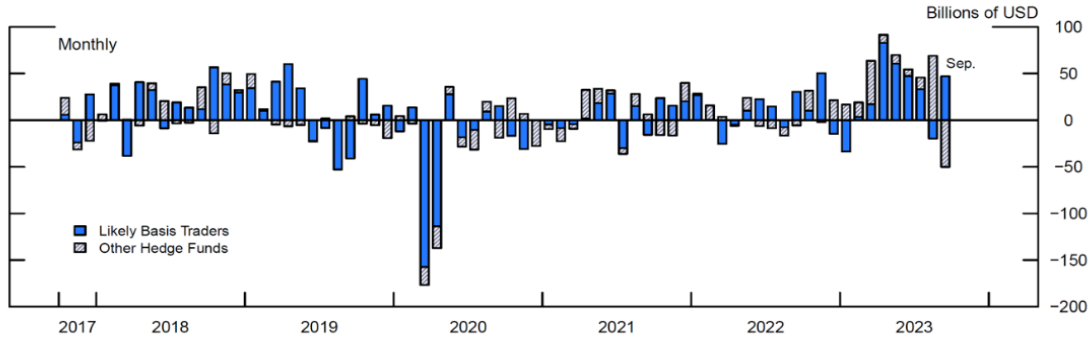
Counterparty credit risk can increase due to combinations of high leverage, maturity mismatches, changes in correlation, or other market shocks that may result in anticipated margin calls and/or a reduction in the availability of repo financing.

4. Leverage Considerations: As noted above in the *Mechanics of the Trade* section, significant leverage is generally required to make the basis trade economically viable. The unwind of that leverage could pose systemic risk considerations given the critical role of the Treasury market and ecosystem.

For example, a stress event could cause dislocations in the price correlation between Treasury securities, futures, and funding markets in a way that can impact the profitability of the trade across multiple market participants. Similar actions by those market participants, for example, to unwind basis positions, could result in fire sales or a cascading feedback loop of increasing basis dislocations or trade unwinds, as some studies suggest occurred in the spring of 2020 (*see* Figure 5 (Gilcoes et al., 2024)). The use of Treasury futures by asset managers could potentially place additional pressure on the basis premium during a stress event in the event of material changes in interest rates or potential de-risking of credit exposures.

Figure 5

Figure 4. Estimated Net Treasury Purchases by Basis Traders and Other Hedge Funds



Note: Net Treasury purchases are monthly changes in valuation-adjusted Treasury holdings, estimated from reported Treasury exposures of qualifying hedge funds on Form PF. Likely basis traders classified based on reported strategy and the co-movement of their long and short Treasury exposures with their net repo exposure between 2018 and 2020. See Banegas, Monin and Petrasek (2021).

Source: SEC Form PF, Haver Analytics, authors' calculations.

VI. Effective Risk Management Practices associated with the Cash-Futures Basis Trade

The MRAC believes that market participants involved in trades associated with the Treasury cash-futures basis should consider the following practices, which are meant to serve as a guide to effective management of the risks of the basis trade. The focus of these practices is on market, liquidity, and counterparty credit risks that could have a broad, systemic impact on markets and market participants associated with the Treasury basis trade. The MRAC recognizes that these practices may be applicable to other markets and types of trading activity. In addition, the Committee recognizes that other risk types—including operational, cyber, resiliency and other risks—could raise significant risk management implications for the Treasury market. While we use the term 'market participants' to refer to the variety of actors involved in transactions associated with the basis trade, each market participant should consider its own unique characteristics and evaluate its own activity to determine the applicability of these practices.

1. **Market participants, including basis traders, futures markets participants, intermediaries, and others engaged in or providing intermediation for trades associated with the cash-futures basis—including the basis, long futures positions, and financing positions—should continuously assess and manage the risks associated with these trades including market, liquidity, counterparty credit, and other risks. These risks should be modeled, and a mark-to-market attribution analysis should be conducted.**

    a. When assessing the potential benefits and specific risks associated with the cash-futures basis trade, market participants should confirm that appropriate policies, procedures, technology, reporting, and internal controls are in place to effectively measure and manage risk at levels consistent with their tolerance level. Risk metrics, cashflow modeling, and stress scenario analysis should be used to understand and manage the specific and portfolio risks associated with Treasury cash, futures, and financing positions. Stress scenarios can be used to estimate potential exposure in

current and foreseeable market conditions. These scenarios should consider historical disruptions in the basis, including during the global pandemic in March 2020 and the Global Financial Crisis in 2008.

b. Mark-to-market attribution should be used to assess the specific and portfolio risks. The link between expected and actual performance can be better understood by analyzing differences between actual MtM changes and risk factor-based MtM changes. Market participants may need to adjust trade components when performance is not as expected. Leveraged fund managers with portfolios concentrated in the basis trade are more exposed to basis dislocations. Market participants should consider strategies to manage portfolio concentration risks, for example, through diversification or liquidity buffers for potential margin calls.

c. Market participants should have contingency plans consisting of strategies for unwinding leveraged exposures in an orderly manner in the event a market participant cannot meet its margin calls or is unable to secure repo financing. These contingency plans should set out strategies to address liquidity shortfalls and minimize forced unwinds of positions. Such strategies are particularly important given the critical role that the Treasury market plays for both the public and private sector.

2. **Market participants should manage market risks that could affect the performance of their portfolios.**

   a. The correlation between markets can change under different market conditions. Using various extreme but plausible stress scenarios can measure the effects of extreme correlation change and potential market risk exposures and liquidity needs under various market conditions.

   b. Market participants should actively manage risks associated with potential changes in the delivery or receipt of Treasury securities for Treasury futures contracts. Under various market conditions, the cheapest to deliver Treasury security for a short position can change, which can result in unexpected losses. Scenario modeling can be done to understand the impact of Treasury market volatility on the value of the deliverable securities.

3. **Market participants should evaluate and manage their liquidity risks, including the risk that margin costs increase rapidly and significantly, and that financing is reduced or becomes unavailable.**

   a. Market participants should model potential repo rates to understand the impact of financing costs over the life of the trade, and the risk that financing is reduced or becomes unavailable. If the cost of financing increases during a trade due to changes in the rate environment, it could require the trader to post additional collateral to secure the same financing. Price volatility scenarios can be generated for the basis trade and funding positions to understand the impact on aggregate margin requirements. Market participants should also consider the risks associated with rolling overnight repos in determining whether to finance the trade on an overnight or term basis.

b. Market participants should manage liquidity risks over the expected duration of the trade recognizing that market conditions and maturity mismatches could lead to liquidity shortfalls or forced position unwinds prior to convergence. Market participants could consider using tools like term funding, diverse funding counterparties, liquidity buffers, and contingent funding sources to assist in the management of market volatility, margin calls, and funding cost increases. Market participants should also hold sufficient cash or highly liquid assets to be able to meet potential intraday liquidity risks. Tolerances should be set and measured regularly for liquidity risks.

4. **Market participants should appropriately monitor and manage counterparty credit risks associated with the basis trade or its intermediation, including through effective due diligence, onboarding, credit risk mitigants, and continuous monitoring processes.**

   a. Market participants should conduct a thorough review of credit risk for counterparties both at the point of onboarding and on an ongoing basis. This will allow them to have a full understanding of the risks they are taking with their counterparties from a credit perspective. The review should include business-as-usual scenarios and stress conditions.

   b. Counterparty credit risk should be effectively managed. For example, trades should be appropriately collateralized to protect against the risk of losses due to counterparty default. The risk associated with each component of the basis trade should be considered, as should the risk of that trade in the context of a broader portfolio of positions. When managing risk on a portfolio basis, market participants should assess and manage the risk that the correlation between positions in the portfolio could change rapidly.

   c. Market participants should measure the range of credit risks they face from counterparties in trades associated with the cash-futures basis. Metrics should be generated frequently across all trades and products that generate counterparty credit risk. These metrics should be comprehensive across the portfolio, counterparty, and risk factor.

Further Considerations for the Cash-Futures Basis Trade

Given the importance of the Treasury cash and futures markets to the financial system, the MRAC encourages regulators, self-regulatory organizations, and accounting bodies to review any regulatory, accounting, or reporting practices that may treat the use of Treasury futures differently than the use of repo financing of Treasury securities in circumstances where their use would be economically similar.

In addition, improving the availability of data to the official sector on the size of long futures positions, basis trade positions, and associated risk management practices could provide insights that lead to further market structure improvements. The official sector could also consider making appropriately anonymized and aggregated data available to the public.

Finally, the basis trade and risk management practices should continue to be evaluated in light of changes in market structure, including Treasury central clearing rules, the growth in cross margining, and changes in available data.

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