Tariff War Shock and the Convenience Yield of US Treasuries – A Hedging Perspective

Viral V Acharya and Toomas Laarits, Department of Finance, New York University Stern School of Business[1]

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Abstract. This note explains how the "tariff war" shock of early April 2025 affected the convenience yield of US Treasuries. Its erosion at the long end is consistent with a reduction in the safe-asset hedging property of long bonds, reflected in a rising stock-bond covariance computed using intraday data. Decomposing the Treasury yield into the risk-free rate, credit spread, and the convenience yield components reveals that it is covariance due to the convenience yield component that rose for long bonds. The same decomposition reveals that the short end of the Treasury curve continued to exhibit the safe-asset hedging property both due to a lowering of the (expected) risk-free rates as well as an increase in the convenience yield component. These effects are consistent with stagflation risk, withdrawal of safe-asset investors, rotation towards shorter-term Treasuries and gold, and unwinding of cash-futures basis trades.

I. Tariff War Backdrop

In early April 2025, the United States (US) government initiated a global "tariff war", levying the highest level in a century of duties on goods imported into the US. The unanticipated move was then met with retaliation by China in the form of high tariffs on US goods. The situation then escalated into a ratcheting of reciprocal tariff announcements by the US and China. While there was a 90-day pause starting April 9th on the new tariffs of the US government, tariffs on Chinese goods were not exempted and were raised even higher with a further hike in response by China on the US goods.

Timestamped news announcements chronicling these events are provided in Appendix I.[2]

While the tariff war announcements caused financial markets to convulse globally, the focus of this note is on (i) their impact on the US Treasury markets, notably the term structure of the "convenience yield" of Treasuries (or equivalently, their specialness, moneyness, exorbitant privilege, bubble, etc.), and (ii) understanding the impact through the lens of Treasury markets' safe-asset hedging property, in particular, whether the Treasuries provide a good hedge against stock market (aggregate) risks.

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[1] e-mail: vva1@stern.nyu.edu and tl1221@stern.nyu.edu. Authors are grateful to Xinlin Yuan for excellent research assistance.

[2] For accounts of the trade war more generally, see for example IMF GFSR (April 2025). Note also that while our data do not yet cover the period of announcements relating to the Federal Reserve independence and their effect on stock-bond covariance and Treasury convenience yields, the relevant timestamped news announcements are provided in Appendix II as they will be analyzed in an updated draft in the near future.

II. Tariff War Shock and the Safe Haven Status of US Treasuries

We explain below how the "tariff war" shock of early April 2025 affected the convenience yield of US Treasuries. Our observations are based on the following five salient empirical facts:[3]

(1) Stock-bond covariance, after declining in early days of the tariff war, reversed sharply into the positive territory, especially at the long end of the term structure, eroding the safe-asset hedging property of long bonds against aggregate economic risks.

In order to obtain "real time" tracking of the stock-bond correlation and covariance, we use intraday data on the returns on two actively traded Exchange Traded Funds (ETFs): SPY, an SP500 fund, and IEF, a fund of 7-10 year maturity nominal Treasuries. To calculate a stock-bond correlation we split the trading day from 9:30am to 4:00pm into 78 five-minute periods. We use the end-of-period prices on the two securities to calculate intraday returns. The resulting covariance calculations are reported on an annualized basis in percent units. (To get a sense of the magnitudes, if the daily stock return volatility is 2%, daily bond return volatility is .5% and the correlation between the two return series is -.6, the covariance would be reported as -.6 x.02 x.005 x 252 =-1.512%.) The correlation calculation is unitless and does not require any adjustment to account for intraday data.

This intraday calculation allows us to document the day-to-day changes in the stock market exposure of Treasuries. As Figure 1 shows, the intraday covariance calculation reveals both substantial negative and positive covariance days. On April 3-4 and 7-8 bonds were a substantial hedge to equity returns in the intraday data, consistent with their role in prior sharp downturns such as at the Global Financial Crisis of 2007-08 and the onset of the COVID-19 pandemic (post stabilization policies). The annualized covariance reached values as low as -10%, comparable in magnitude to Spring 2020. In sharp contrast, bonds were a "risk" asset on April 9 and April 11 seeing substantial positive stock-bond covariance.[4,5]

The stock-bond correlation results on the right panel of Figure 1 reflect similar dynamics, with the stock-bond correlation reaching values close to -1 on April 3 but rising to .5 on April 11.

[3] Appendix III provides some descriptive time-series plots and robustness checks.

[4] Appendix III Figure A1 reports the intraday prices of SPY and IEF for all the days in April 2025. These graphs illustrate the striking day-to-day changes in the co-movement of stocks and bonds. Note too that without intraday data such variation would not be detectable. In Appendix III Figure A2 we contrast the day-to-day stock-bond covariance with a more standard, 30 trading day lookback window calculation using daily returns. As the figure shows, the days with substantial positive stock-bond covariance are not evident in this calculation.

[5] For reference, Appendix III Figure A3 reports the same calculation for a longer time series. See Hu et al. (2023) for a detailed study of market dynamics across trading days with different values of intraday stock-bond correlation. Appendix III Figure A4 reports a longer history of the stock-bond covariance. Note the large negative spikes at the onset of Covid, during the Eurozone crisis, and during the Global Financial Crisis.

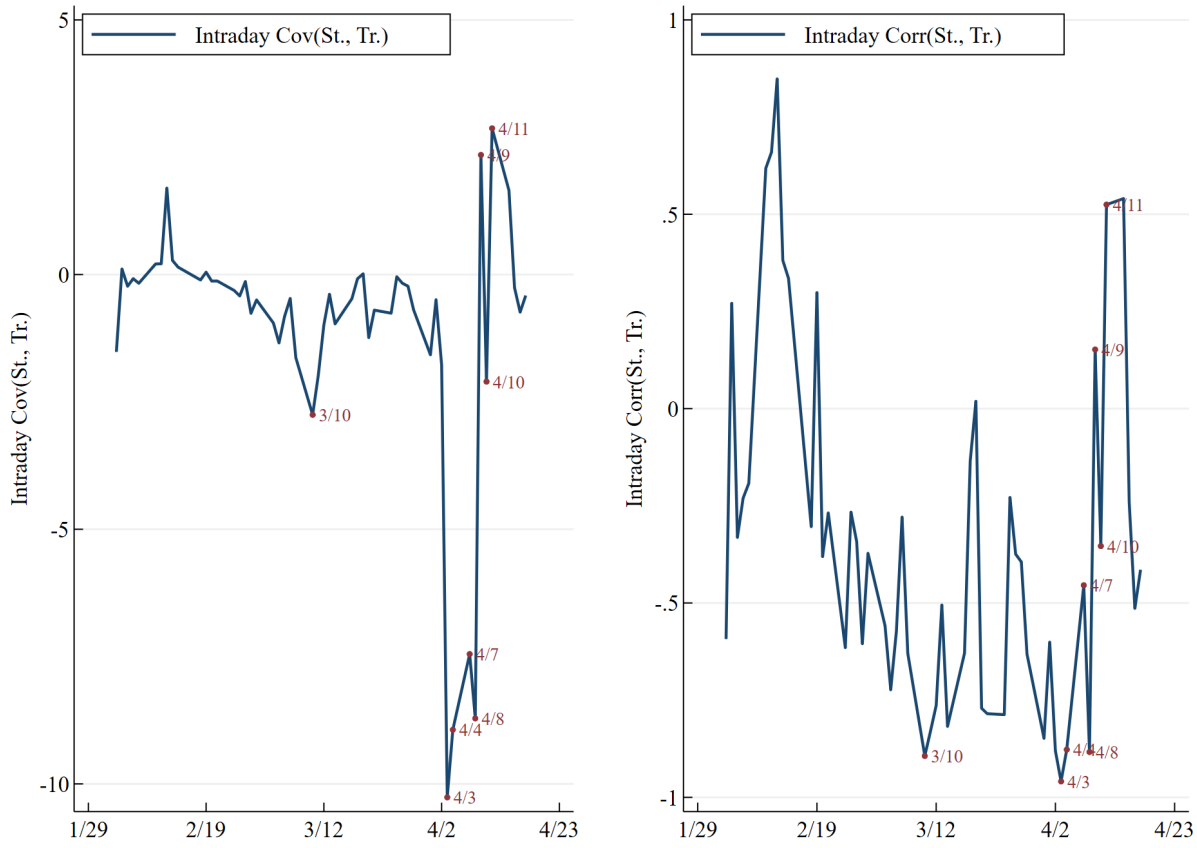

Figure 1. Stock-bond covariance and stock-bond correlation. Daily values estimated from intraday data for February to April 2025.

(2) The convenience yield of long-term US Treasuries, measured for instance by the TIPS-Treasury premium, also deteriorated during the tariff war shock.

Prior work has established numerous measures that seek to capture the "service flow" benefits of Treasury securities: benefits stemming from their liquidity, safety, or use as collateral.[6] We proxy for such convenience yields in Treasuries by studying the relative pricing of nominal and real Treasury bonds. As shown in Fleckenstein et al. (2014), the prices of nominal Treasuries are consistently above the prices of matched maturity Treasury Inflation Protected Security (TIPS) prices, accounting for the variable inflation coupon payment via traded inflation swaps. Specifically, combining TIPS, inflation swaps, and Treasury STRIPS (zero-coupon bonds) allows these authors to construct ``synthetic" nominal Treasury bonds with cash-flows identical to traded nominal Treasuries, but at lower prices than the traded counterparts. Because two such securities — a nominal bond, and a maturity-matched synthetic nominal bond — have identical

[6] We borrow the "service flow" terminology from the safe assets perspective theorized in Brunnermeier et al. (2022).

cash-flows we interpret the gap in their prices as a proxy for the convenience flows afforded by the nominal Treasury.

We construct the TIPS-Treasury premium at the 2-, 5-, and 10-year horizons by combining the nominal and real fitted yield curves from Gürkaynak et al. (2007, 2010) with inflation swap data. Specifically, the TIPS-Treasury premium at maturity *n* is equal to the TIPS yield plus the inflation swap, minus the nominal yield:

$$\text{Premium}_{n,t} = \text{TIPS Yield}_{n,t} + \text{Inflation Swap}_{n,t} - \text{Treasury Yield}_{n,t}$$

In the left panel of Figure 2, we document the evolution of the TIPS-Treasury premium in 2025. Both the 2- and 5-year TIPS-Treasury premium increased with tariff news (albeit from a low or even negative level prior to April 2025) while the convenience yield on the 10-year nominal Treasury dropped substantially.

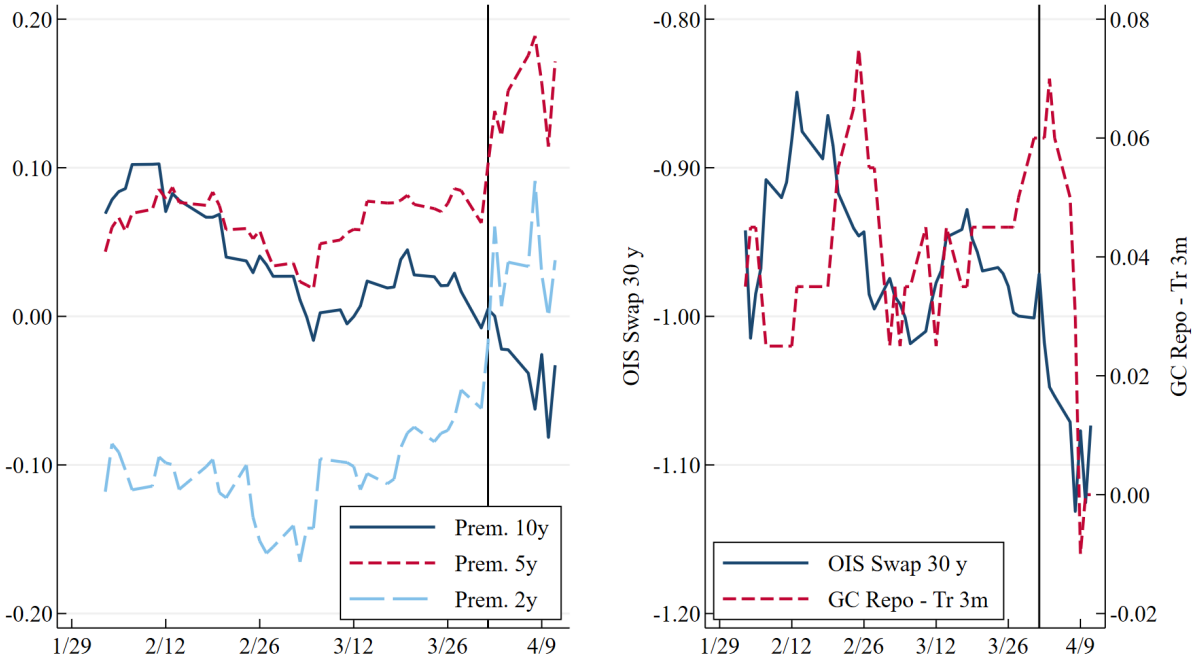

Figure 2. 10-, 5-, and 2-year TIPS-Treasury Premium. 30-year OIS Swap Spread and the GC Repo 3 month T-bill spread. Daily data February-April 2025. Vertical line on both panels indicates April 1.

In the right panel of Figure 2, we document two further proxies for the convenience yield, the 30-year Overnight Indexed Swap (OIS) swap spread and the General Collateral – three month Treasury Bill spread, denoted GC Repo – Tr. In recent data swap spreads have been negative,

suggesting potential Treasury "inconvenience", for instance see Du et al. (2023). To the backdrop of this negative level, the OIS swap spreads dropped further upon tariff news, by over 10 basis points. The changes in the GC Repo - Tr. spread, a short-term measure of convenience, were less striking, consistent with the erosion of nominal Treasury convenience yield being at the long end of the term structure. The same conclusion is reached using other measures of convenience yield such as the USD to German Bund spread, see Jiang et al. (2025).

(3) To understand the erosion further, we employ the decomposition of Treasury yields employed in Acharya and Laarits (2023) into risk-free rate, credit spread, and convenience yield. The decomposition reveals that the rise of stock-bond covariance at the long end of Treasuries is driven by a fall in the convenience yield of long bonds. The same decomposition also helps understand why the short end of Treasury bonds (e.g., 2-year or 5-year) maintained the convenience yield and safe-asset hedging properties. In particular, this feature was driven by (i) the reduction in the (expected) risk-free rates, consistent with a rise in the risk of a US or global recession, as well as (ii) an improvement in the short-term convenience yield component, consistent with a "flight to quality" rotation within Treasuries towards shorter maturities.

With our estimates of the convenience yield we decompose the nominal yields into a component reflecting a "frictionless" risk-free rate, a component reflecting default risk, and a component reflecting the convenience yield:

$$\text{Treasury Yield}_{t,n} = \text{Frictionless Risk-free}_{t,n} + \text{CDS}_{t,n} - \text{Premium}_{t,n}.$$

The decomposition, in turn, suggests that Treasury returns can be thought of as stemming from any of these three sources. For instance, the 10-year Treasury returns can be approximated as the sum of the following three terms:

$$\begin{aligned} R_{t,10}^{\text{Frictionless Risk-free}} &= -10 \times \Delta\text{Frictionless Risk-free}_{t,10} \\ R_{t,10}^{\text{CDS}} &= -10 \times \Delta\text{CDS}_{t,10} \\ R_{t,10}^{\text{Premium}} &= \quad 10 \times \Delta\text{Premium}_{t,10}. \end{aligned}$$

In Figure 3 we report results from calculating the stock-bond covariance separately with each of these three terms. In the top panel we show the aggregate stock-bond covariance for the 2-, 5- and 10-year nominal Treasury bond. For ease of comparison with the 10-year calculation, the 2-year Treasury return is multiplied by 5 and the 5-year Treasury return is multiplied by 2 (so as to scale the bond returns similarly). As the panel shows, Treasuries at all maturities provided some hedge against the tariff shock, though the 10-year Treasury provided a relatively weaker hedge.

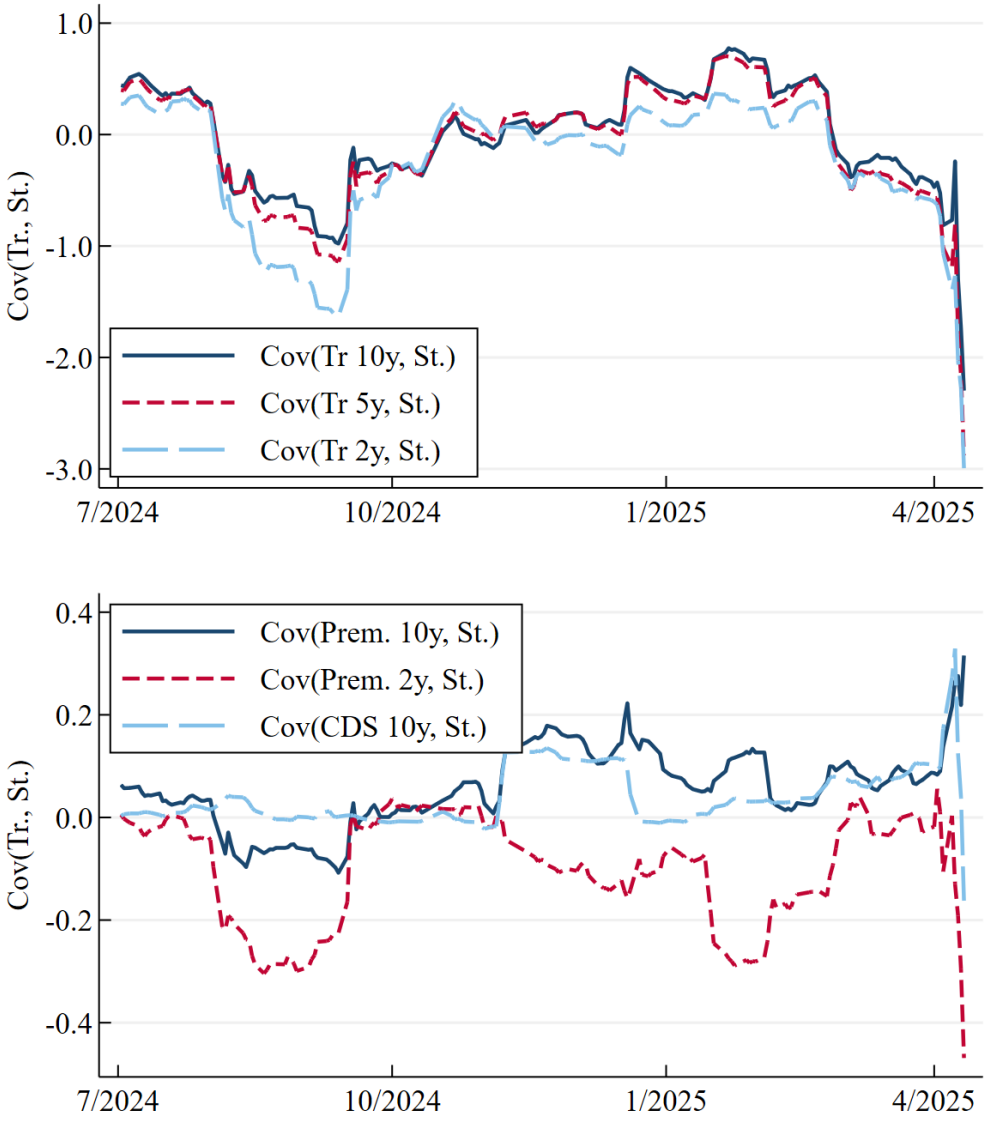

Figure 3. Stock-bond covariance. The top panel shows covariances estimated in a 30-trading day lookback window using the return on the aggregate equity market, captured by the CRSP value-weighted index and the returns on 10-, 5-, and 2-year zero-coupon Treasury bonds. 5-year calculations scaled by 2 and 2-year calculations scaled by 5 for ease of comparability with the 10-year calculation. The bottom panel breaks out specific components of the aggregate stock-bond covariance corresponding to innovations in the convenience yield and innovations on the CDS rate.

In the bottom panel of Figure 3 we report the 2- and 10-year covariance stemming from covariance between stocks and convenience yield innovations as well as the covariance stemming from innovations to default risk. Here the 2- and 10-year bond show strikingly different behavior. The convenience yield in the 2-year bond provided a hedge, co-moving

negatively with the aggregate stock market. In contrast, for the 10-year bond the convenience yield innovations were a source of risk, meaning positive covariance with stock market returns. Somewhat surprisingly, the 10-year CDS premium on the US exhibited a hedging property too. In essence, the loss of hedging property of long-term Treasuries relative to the short-term Treasuries is explained mostly by the (relative) erosion of long-term convenience yield.

(4) These facts are intimately related in that the erosion of convenience yield is consistent with a loss of safe-asset hedging property of long bonds, as it is in line with the historical negative relationship between convenience yield and stock-bond covariance.

In Figure 4 we plot monthly data from 2024 to 2024/4 on the 10-year TIPS-Treasury premium and the contemporaneous stock-bond covariance arising from convenience yield innovations. As the figure shows, the low convenience yield in April 2025 corresponds to a large and positive covariance between the 10-year convenience yield innovations.

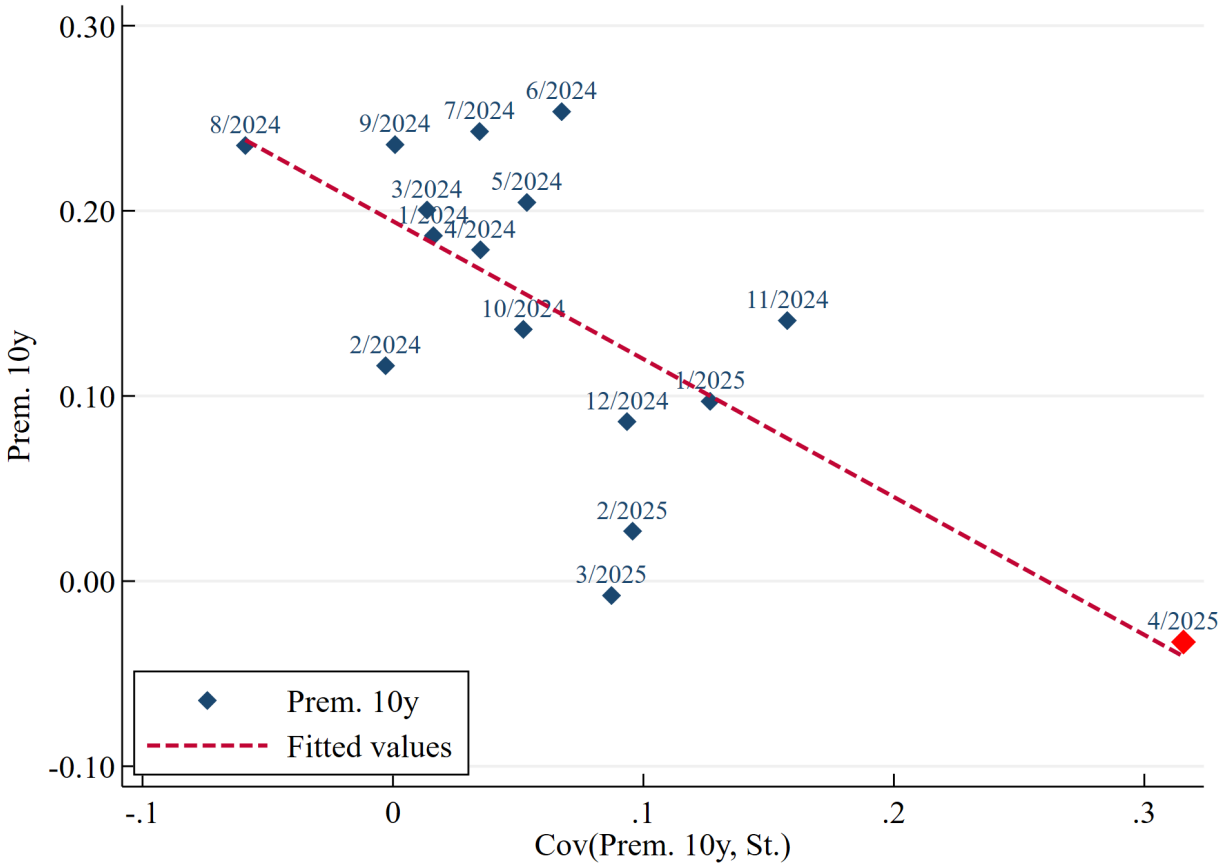

Figure 4. Stock-bond covariance corresponding to convenience yield innovations and the TIPS-Treasury premium at the 10-year maturity. Monthly data 2024-2025/4.

In Acharya and Laarits (2025) we estimate this relationship in monthly data 2005-2024, finding a regression coefficient of -.10, statistically significant at the 1% level. The relationship in the time period depicted in Figure 4 is directionally the same as we estimate in the longer sample, but substantially stronger in magnitude.

(5) Finally, gold appears to have emerged as a substitute for flight-to-quality investors seeking an alternative to the US Treasuries as a safe asset.

In Figure 5 we document the safe-asset hedging property of gold and the US Dollar by exploiting the intraday behavior of gold, captured by price changes in gold futures (XAU), and the U.S. Dollar, captured by changes in the DXY index. We again use intraday data at 5-minute intervals and calculate daily covariances between the stock market—proxied by the SPY ETF—and XAU and DXY. The left panel of the scatterplot shows that in the tariff uncertainty period, days where bonds are a good hedge to stock risk, i.e. negative y-axis values, see positive covariance between gold and stocks on the x-axis. Days where bonds are risky instead see negative covariance between stocks and gold. The pattern suggests frequent changes (between Treasuries and gold) in the asset that is the target of flight-to-safety investors.

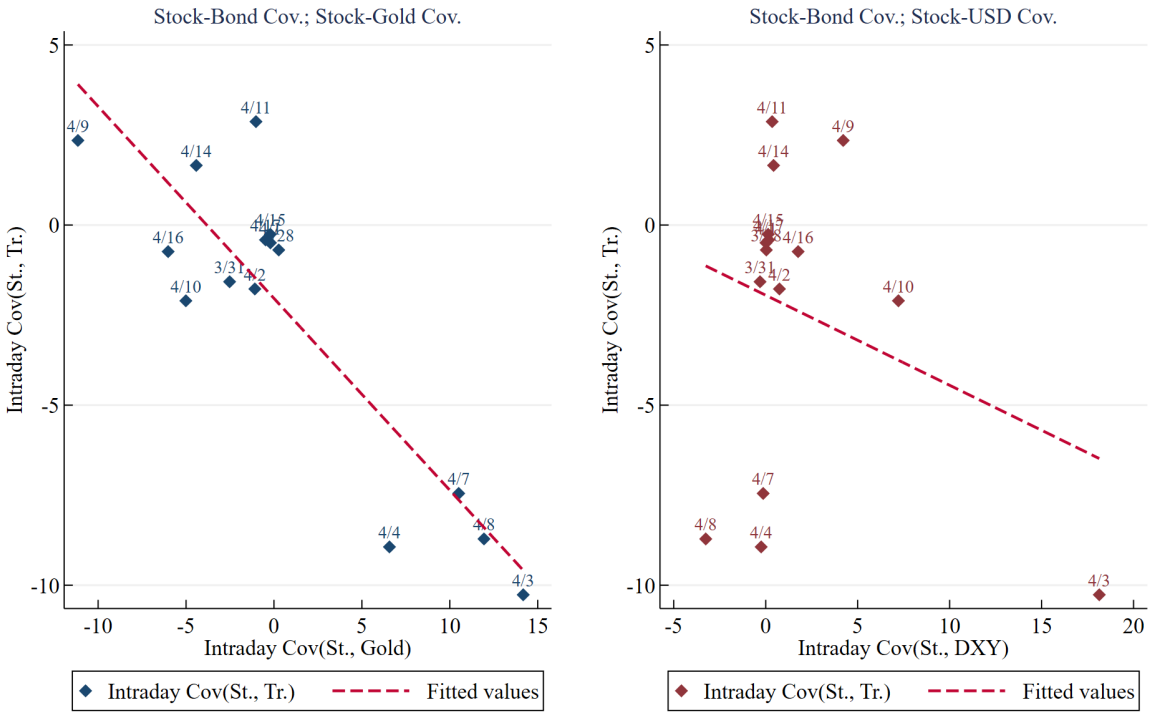

Figure 5. Left panel shows day-by-day values of intraday stock-bond covariance and intraday stock-gold covariance. Right panel shows day-by-day values of intraday stock-bond covariance and stock-USD covariance, where USD returns are proxied by the return on DXY. Daily data in April 2025.

The right panel of Figure 5 repeats the analysis but uses DXY, the dollar index. The pattern seen for gold as substitute for Treasuries as a safe asset is not convincingly seen for US Dollar. The lack of this pattern for US Dollar as a safe haven, unlike in the prior crises episodes such as the Global Financial Crisis, the Eurozone debt crisis and the COVID-19 outbreak, is consistent with the findings of Jiang et al. (2025) and their inference that "this time is different."

III. Concluding Remarks

While the tariff war shock is still playing out in data, early signs suggest that a partial "pause" in the tariff war has also led to a partial reversal in both the erosion of convenience yield and the rise in stock-bond covariance. This observation too suggests a likely causal impact of the tariff war shock on the documented developments concerning the safe haven status of US Treasuries.

What were the mechanisms through which tariff war announcements led to an erosion of the US Treasuries' convenience yield and safe-asset hedging property? While further research is warranted in due course to ferret out the exact mechanisms, stagflation risk, withdrawal of safe-asset investors, rotation towards shorter-term Treasuries, and unwinding of cash-futures basis trades appear likely to have all contributed in some measure to these developments.[7]

Finally, in terms of consequences going forward, if there is a continuing (or escalating) standoff between US and China on reciprocal tariffs, then a sustained erosion of the convenience yield of Treasury long-term bonds with further adverse consequences cannot be ruled out. In particular, if the Treasury convenience yield rotates towards the short-term maturities, there is a risk of the US Treasury supply loading up at the T-bill end, which could create a US fiscal rollover risk in the midst of a high uncertainty environment.

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[7] For a discussion of some of these mechanisms, see Liang (2025) and the expert witness testimonies to the US House Committee on Financial Services (April 8, 2025).

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Appendix I. Timeline of Tariff War Announcements

- April 2, 4:15 pm ET: Trump announced the tariffs plan (Live at White House).

https://www.cnn.com/business/live-news/tariffs-trump-news-04-02-25/index.html

- April 4, 7:51 am ET: China announces a 34% tariff on US goods effective April 10.

https://www.cnn.com/politics/live-news/trump-tariffs-news-04-04-25/index.html

- April 7, 11:59 am ET: Trump counters China's retaliatory tariff, threatening a 50% tariff in addition to the full 34% reciprocal rate if China did not back off.

https://www.cnn.com/politics/live-news/trump-tariffs-netanyahu-news-04-07-25/index.html

- April 9, 8:30 am ET: China announces retaliatory tariffs of 84% on imports of US goods.

https://www.cnn.com/politics/live-news/trump-tariffs-cnn-town-hall-04-09-25/index.html

- April 9, 1:36 pm ET: Trump says he's applying a 90-day pause on new tariffs, except for China, which is being raised to 125%.

- April 10, 12:09 pm ET: Trump raises tariff to at least 145% on Chinese imports effective immediately.

https://www.cnn.com/politics/live-news/trump-tariffs-cnn-town-hall-04-10-25/index.html

- April 11, 4:29 am ET: China raises duties on US goods to 125%, calls Trump tariff hikes a 'joke'.

https://www.cnn.com/politics/live-news/trump-presidency-news-administration-tariffs-04-11-25/index.html

Appendix II. Timeline of Announcements relating to the Federal Reserve Independence

- Feb 11 & 12, 10:00 am ET: Testimony by Powell, semiannual monetary policy report to Congress
https://www.federalreserve.gov/newsevents/calendar.htm

- April 4, 11:25 am ET: Speech by Powell on the economic outlook

- April 16, 1:30 pm ET: Speech by Powell on the economic outlook

- April 17, 6:12 am ET: Trump posts first comments on Powell.
https://truthsocial.com/@realDonaldTrump/posts/114352766082542122

- April 17, 3:22 pm ET: Trump blasts Fed Chair Powell, saying his 'termination cannot come fast enough'.
https://www.cnn.com/2025/04/17/economy/trump-fed-chair-powell-termination/index.html

- April 21, 9;41 am ET: Trump criticized Powell for not lowering the rate.
https://truthsocial.com/@realDonaldTrump/posts/114376239725335883

- April 22, 11:00 am ET: Powell is defiant in the face of Trump's threats.
https://www.ft.com/content/e7140acd-cb22-4b51-8abe-41a251c35d73

Appendix III. Additional Tables and Figures

A. Daily Behavior of SPY and IEF during the Tariff War Shock

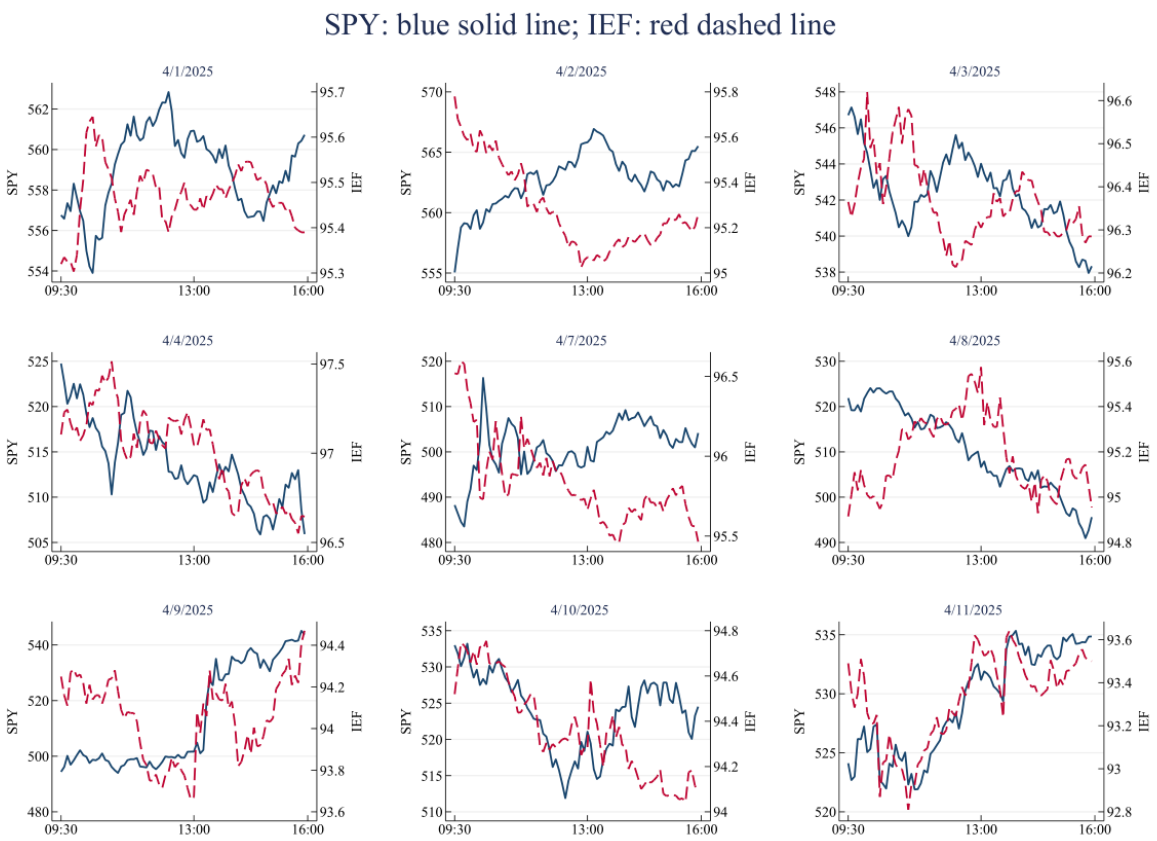

Figure A1. Day-by-day intraday returns on SPY, an SP500 ETF, and IEF, a 7-10 year maturity Treasury ETF.

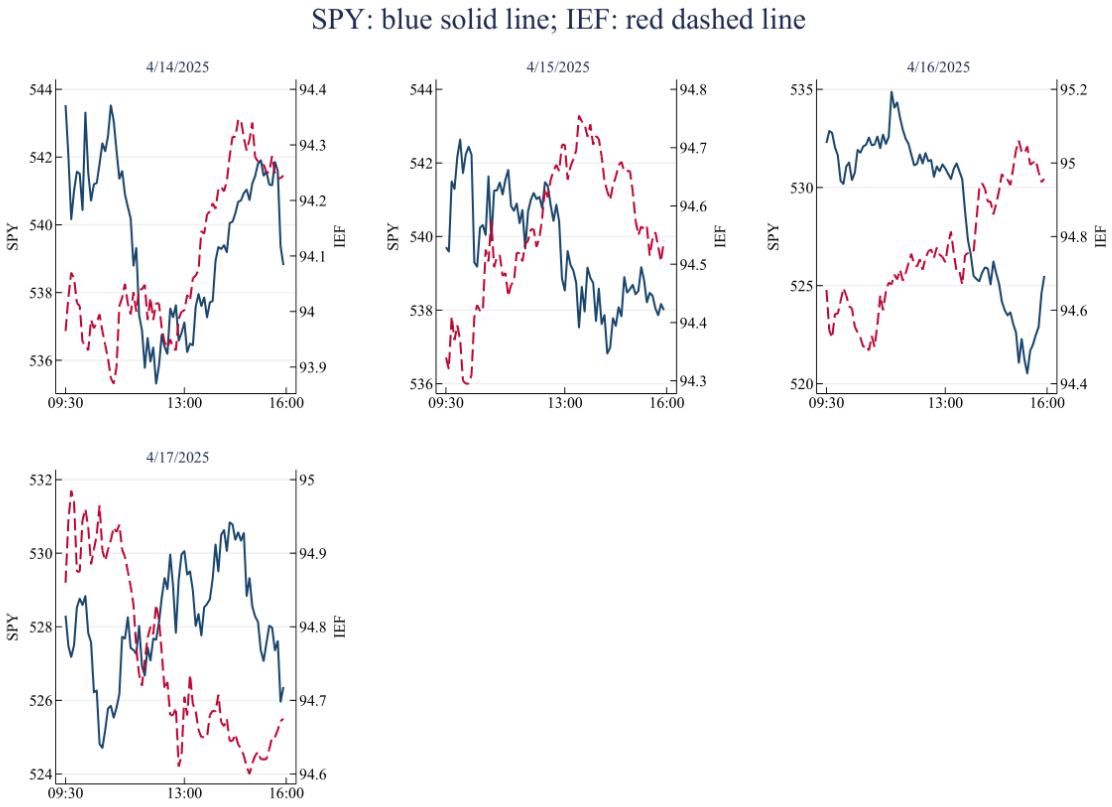

Figure A1, continued. Day-by-day intraday returns on SPY, an SP500 ETF, and IEF, a 7-10 year maturity Treasury ETF.

B. The importance of intraday data in capturing in real time the evolution of stock-bond covariance during the tariff war shock

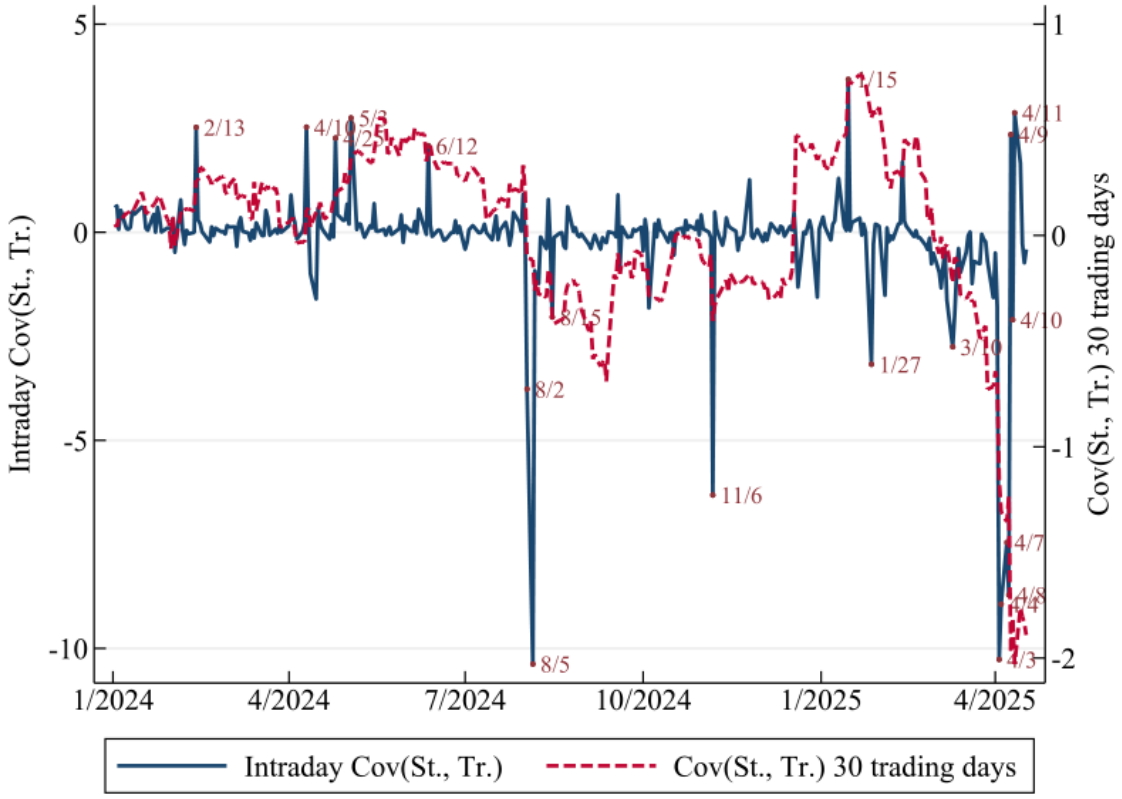

Figure A2. Intraday stock-bond covariance and a daily stock-bond covariance estimated using a 30 trading day lookback window.

C. Longer Time-series of Intraday Data based Stock-Bond Covariance

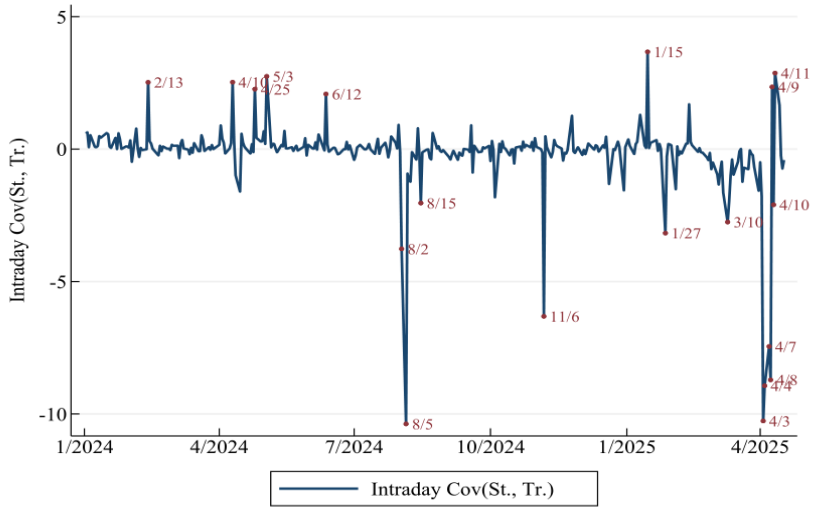

Figure A3. Daily stock-bond covariance. Daily data 2024-2025/1.

Figure A4. Comparison of stock-bond covariance estimated from a 30 trading day moving average of intraday data and covariance estimated from 30 trading days of daily data. Monthly data 1998-2025/4.