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

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First draft: April 23, 2025
This draft: June 12, 2026

Abstract

We explain how the "Tariff War" shock of April 2025 affected the safe-asset status of US Treasuries. We document the erosion of convenience yield for long bonds, consistent with a reduction in the hedging property as reflected in a rising stock-bond covariance. Decomposing the Treasury yield into risk-free rate, credit spread, and convenience yield components reveals that it was the covariance due to the convenience yield component that increased for long bonds. These effects are consistent with a withdrawal of foreign safe-asset investors and a rotation towards shorter-term Treasuries, which continued to exhibit the safe-asset hedging property, and gold.

Keywords: Stock-bond covariance, safety premium, liquidity premium, money premium, exorbitant privilege, safe assets, bubble, inflation

JEL: G11, G12, G15, E4, E5, F3

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On April 2, 2025, the US government initiated a global "Tariff War", levying the highest level in a century of duties on goods imported into the US. China retaliated, and by April 9 reciprocal tariff announcements were ratcheting up among China, Canada, and the EU. Over the subsequent weeks and months, many of the initial demands were walked back by all sides, but a higher level of tariffs remains as of May 2026. According to the Yale Budget Lab estimates, the effective tariff rate as of April 2026 was 11.8%, up from 2.4% in January 2025, and according to the Treasury Department, tariff revenue in April 2026 amounted to 24 billion USD, compared to just over 8 billion USD a year ago. Note too that some of the tariffs have been found unlawful and may be reimbursed.[1]

The early days of the Tariff War saw a substantial sell-off in global equity markets. At the trough on April 8, the S&P500 had lost over 11% relative to its value at market close on April 1. Long-term Treasury yields saw considerable increases with the 30-year zero-coupon yield peaking at 5.2% in late May, up from its pre–Tariff War level of 4.7% and representing the highest level since before the Global Financial Crisis of 2007-08. Correspondingly, the term premium opened up in this period, with the gap between 10- and 2-year yields increasing by close to 50bps. Over the summer, the stock market recovered and obtained new highs while Treasury yields gradually declined with the 30-year yield returning to the pre–Tariff War level by October 2025.[2]

Much of the early Tariff War run-up in long-maturity Treasury yields traces to a decrease in *convenience yields*. Convenience yields capture the value that arises from the "service flow" aspect of Treasury securities: benefits stemming from their liquidity, safety, or use as collateral.[3] A long literature has established that the prices of nominal Treasuries are elevated on account of such service flows; for instance, see Krishnamurthy and Vissing-Jorgensen (2012) for a historical perspective and Du et al. (2018) and Jiang et al. (2021) for an international perspective. While exact magnitudes differ, estimates of the convenience yield are often in the range of 10-40bps on long-term bonds, representing a substantial interest rate savings to the US taxpayer. Our principal finding is that such convenience

[1] See `https://fiscaldata.treasury.gov/static-data/published-reports/mts/MonthlyTreasuryStatement_202604.pdf`. Tariffs set under International Emergency Economic Powers Act have been found unlawful, while others remain in place or under ongoing litigation.

[2] Yield data is from the Gürkaynak et al. (2007) fitted yield curve.

[3] We borrow the "service flow" terminology from the safe assets perspective theorized in Brunnermeier et al. (2024).

yields of long-term bonds saw marked decreases at the onset of the Tariff War, in contrast to short-term convenience yields that appreciated with heightened uncertainty brought on by tariff news. Furthermore, this rotation of convenience yield from the long end of the Treasury curve to the short end has been both persistent and represents a departure from the historical data.

Our preferred proxy of the Treasury convenience yield, the TIPS-Treasury premium, compares the yields of nominal Treasuries with synthetic nominal Treasuries constructed out of less liquid Treasury Inflation Protected Securities (TIPS) and traded inflation swaps, following Fleckenstein et al. (2014). In the sample since 2005, this measure of the convenience yield averages about 24bps at the 10-year maturity. The onset of the Tariff War saw a decline of close to 10 basis points from its value at the end of March to the trough on April 10. In the historical sample, the 10-year TIPS-Treasury spread is close to the 2-year counterpart with an average spread of 2 basis points; in April 2025, the 2-year was on average 7 basis points higher than the 10-year premium.

We argue that the drop in long-term convenience yield in the Tariff War era corresponds to concerns about the long-term safe-asset premium or hedging properties of these bonds. To do so, we build on the results and analytical framework of our prior work in Acharya and Laarits (Forthcoming). There, we show this relationship obtains in large part because of the covariance arising from convenience yield innovations: the implicit service flows themselves carry a negative beta, raising their present value. We establish this with a variety of convenience yield proxies in daily data back to 1972.

In this paper, we show that the evidence from April 2025 stands at odds with the historical data in that the covariance between convenience yield innovations and stock returns was positive. Applying estimates from the 2005-2024 sample, this shift in the hedging property of the long-term bond can account for an approximately 12 bps drop in convenience yields in April 2025.

To capture the substantial shifts in stock-bond covariance during the Tariff War period, we employ a novel measurement approach: we use *intraday* data to calculate a daily proxy of the stock-bond covariance. This calculation, using 5-minute returns on liquid exchange traded funds, reveals a number of days where substantial tariff news coincided with large positive stock-bond comovements. The lack of intraday proxies of convenience yields precludes us from repeating this analysis for the convenience yield, but a calculation with daily data in

short lookback windows indicates that the 10-year Treasury bond convenience yield comoves positively with equity returns, cutting against the hedge provided by the bond, in effect rendering the long bond a "risk" asset rather than a "safe" asset. We document the mechanisms driving this breakdown in long-term Treasuries' hedging properties by examining how different components of Treasury yields behaved across the term structure. A decomposition of the Treasury yield into risk-free rate, credit spread, and convenience yield components shows that it is covariance due to the convenience yield component that increased for long bonds.

To explain this erosion of long-bond convenience yield at the onset of the Tariff War, we examine a number of potential channels. First, Treasury International Capital (TIC) System data show April 2025 is unique with respect to flows from international investors: it saw a USD 47 billion outflow from long-term Treasuries, against a typical inflow of the same magnitude. This finding is particularly striking as it occurred at a time of market stress, when foreign official investors typically buy. Secondly, and in contrast, we find little role for inflation expectations as drivers of reduced convenience yields on long maturity bonds. While prior work in Cieslak et al. (2023) and Fu et al. (2025) has emphasized inflation expectations as a key driver of convenience yields, the data reveals only a small uptick in measures of expected inflation in April 2025.

Finally, two other channels find support in the data. We find that short-term Treasuries behaved more in line with the historical experience and short-maturity convenience yields increased with poor stock market realizations. We estimate that a 10-year convenience yield, behaving in the counterfactual like the 5-year counterpart, would have been higher by 12bps, a sizeable amount, keeping in mind there is close to 8 trillion USD of Treasuries with remaining maturity above five years.[4] In addition to short-maturity Treasuries, we document that gold seems to have emerged as an alternative target for flight-to-safety flows. In intraday data, we find that days when long-term Treasuries were a risk asset saw gold act as a hedge; the US Dollar showed no such pattern, suggesting no safe-haven inflows to the Dollar in response to the tariff shock.

In summary, the Tariff War marked a turning point in the convenience yield enjoyed by the US Treasuries as a safe asset, notably its rotation away from the long end to the short end of the term structure. Was the Tariff War a one-off in producing these effects? No, the Iran

[4]Data from Table FD-5 of the March 2026 Treasury Bulletin.

Conflict in March and April of 2026 witnessed strikingly similar dynamics of convenience yields: with increased market-level uncertainty the 2-year TIPS-Treasury premium rallied, while the 10-year counterpart dipped below zero, reflecting the dynamics during early days of the Tariff War. We conclude the paper by revisiting the main pieces of data from this recent episode, finding again that the erosion in convenience yields can be traced to a drop in the hedging property of the bond. In Spring 2026 we also find a stronger role for inflation expectations. Overall, that a distinct underlying shock saw a similar Treasury convenience yield response suggests a new type of regime in Treasury pricing where long-term convenience is not a given. The stock-bond comovements point in that direction: intraday data reveals that 65% of the trading days from January to May 2026 have seen positive stock-bond correlations, higher than any year since before 2000.

1 Background and Analytical Framework

The analysis in Acharya and Laarits (Forthcoming) relies on decomposing Treasury yields into three constituent elements: a term corresponding to the convenience yield, a term corresponding to the default risk, and a residual term corresponding to a "frictionless" risk-free rate. Specifically, we express the time t maturity n nominal Treasury yield, denoted $\text{Yield}_{t,n}$, using the corresponding maturity credit default swap rate, the corresponding maturity proxy for the convenience yield, and the residual term, the maturity n frictionless rate:

$$\text{Yield}_{t,n} = \text{Frictionless}_{t,n} + \text{CDS}_{t,n} - \text{Convenience}_{t,n}. \tag{1}$$

This yield decomposition implies a closely related decomposition of Treasury returns into components arising from innovations to each of the three constituent elements. Specifically, for maturity n we calculate:

$$\begin{aligned} \widehat{R}^{\text{Yield}}_{t,n} &= -\,n \times \Delta\text{Yield}_{t,n} \\ \widehat{R}^{\text{Frictionless}}_{t,n} &= -\,n \times \Delta\text{Frictionless}_{t,n} \\ \widehat{R}^{\text{CDS}}_{t,n} &= -\,n \times \Delta\text{CDS}_{t,n} \\ \widehat{R}^{\text{Convenience}}_{t,n} &= \quad n \times \Delta\text{Convenience}_{t,n}. \end{aligned} \tag{2}$$

The last row does not contain a minus sign as a reflection of our convention that high convenience indicates low yields. Using the return decomposition implied by Equation (2), we calculate conditional covariances between equity and bond returns.

The baseline results in Acharya and Laarits (Forthcoming) use covariances calculated in a short lookback window of 30 trading days, while also showing robustness using 90 or 252 day calculations. The baseline results additionally use the sum of three most recent daily returns in order to mitigate the potential importance of price pressure in either the stock or the bond market

$$R^i_{t,n} = \left(1/\sqrt{3}\right)\left(\widehat{R}^i_{t,n} + \widehat{R}^i_{t-1,n} + \widehat{R}^i_{t-2,n}\right), \tag{3}$$

where the adjustment factor of one over square root three ensures that the volatility of returns remains unaltered.[5] We follow both choices here. With the three-day returns, we calculate the stock-bond covariance and the constituent elements:

$$\begin{aligned}\mathrm{Cov}_t(R^{\text{Yield}}, R^{\text{Stocks}}) = \mathrm{Cov}_t(R^{\text{Frictionless}}, R^{\text{Stocks}}) &+ \mathrm{Cov}_t(R^{\text{CDS}}, R^{\text{Stocks}}) \\ &+ \mathrm{Cov}_t(R^{\text{Convenience}}, R^{\text{Stocks}})\end{aligned} \tag{4}$$

where we omit time and maturity subscripts from returns for ease of reading. Our convention in constructing returns ensures that negative covariance values always mean that returns arising from that piece of the yield reflect a hedge with respect to stock market returns.

Here, we use the TIPS-Treasury premium at different maturities as the proxy of Treasury convenience yield. This proxy, first constructed by Fleckenstein et al. (2014), represents the yield differential between a synthetic nominal Treasury—constructed out of Treasury Inflation Protected Security (TIPS) and inflation swaps—and a traded nominal Treasury. Using fitted zero-coupon yield curves and fitted inflation swap data, we are able to reliably calculate daily convenience yield proxies at specific maturities, allowing for the calculation of conditional covariances with a 30 trading day lookback window. We construct the TIPS-Treasury premium at the 2-, 5-, and 10-year horizons using the nominal and real fitted yield curves from Gürkaynak et al. (2007) and Gürkaynak et al. (2010).

In order to reflect the pace of news arriving in the early days of the Tariff War, we augment

[5] We discuss robustness issues related to market functioning during the Tariff War in Appendix A.1.

the approach with an even higher frequency stock-bond covariance calculation. To capture the daily changes in stock-bond covariance, we use intraday data on the prices of two actively traded Exchange Traded Funds (ETFs): SPY, an S&P500 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 and use the end-of-period prices on the two securities to calculate intraday returns.[6] The resulting covariance calculations are reported on an annualized basis in percent units. For magnitudes: daily stock volatility of 2%, bond volatility of .5%, and correlation of -.6 imply a reported covariance of $-.6 \times .02 \times .005 \times 252 = -1.512\%$. The correlation calculation is unitless and does not require any adjustment.

The analytical setup in Acharya and Laarits (Forthcoming) models the service flow of a security as an (unobservable) cash flow accruing to the holder of the security. The present values of these implicit cash flows are elevated if they are heightened in bad states of the world, as captured by poor equity returns. The main prediction that arises from the framework, and in a richer model of the underlying hedging demand for safe assets in Brunnermeier et al. (2024), is that the conditional covariance between service flow innovations and stock returns is proportional to the level of convenience yields, as it captures the risk adjustment that contributes to the present value of these service flows. Letting $sr_t - sr_t^f$ denote the time t return gap between a bond that earns such convenience yields, and one that does not, the framework predicts that

$$\text{Convenience}_t \approx -\Lambda \, \text{Cov}_t \left(sr_{t+1} - sr_{t+1}^f, r_{t+1}^M \right) \tag{5}$$

where r_t^M denotes the market return. We follow the same framework in this paper, examining this relationship in the most recent data, and especially investigating the relative movements in the convenience yield along the term structure of the Treasury curve.

2 Empirical Results

We apply this framework to the Tariff War episode and document five empirical results.

[6] In order to rule out the role of potentially stale prices, for the period of April-July 2025 we use the National Best Bid and Offer at the end of each five-minute interval, constructed using the replication code from Holden and Jacobsen (2014).

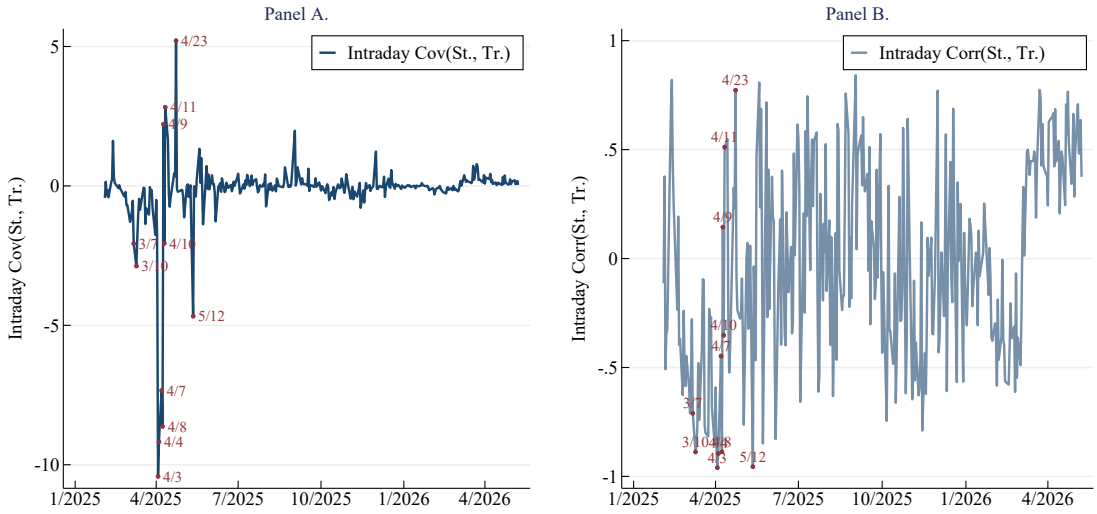

Figure 1: Stock-bond covariance and stock-bond correlation. Stock-bond comovements estimated from intraday data at the five minute frequency using returns on two ETFs: SPY for stocks and IEF for 7-10 year Treasury bonds. Daily data February 2025 to April 2026.

Result 1: Onset of the Tariff War saw substantial positive stock-bond comovements.

Panel A of Figure 1 shows the day-by-day stock-bond covariance around the onset of the Tariff War. After negative values in the early days of April, the stock-bond covariance reversed sharply into positive territory. On April 3-4 and 7-8, bonds were a substantial hedge against equity returns in the intraday data, consistent with their role in prior sharp downturns such as the Global Financial Crisis of 2007-08 and the onset of the COVID-19 pandemic. The annualized covariance reached values as low as -10%, comparable in magnitude to Spring 2020, barring a brief period until the middle of March 2020, see He et al. (2022). In sharp contrast, bonds were a "risk" asset on April 9, April 11, and April 23, seeing substantial positive stock-bond covariance.

As detailed in Appendix A.2, the three largest positive covariance days all witnessed substantial tariff-related news. April 9 saw President Trump announce a pause on new tariffs save for an increase to 125% on China, while China announced retaliatory tariffs as well. This action raised the goods imports weighted average tariff by 4.5 percentage points, ac-

cording to calculations by the Yale Budget Lab.[7] April 11 saw renewed retaliatory tariff announcements from China, while on April 23 talk about a potential off-ramp for the trade war with China saw rallies in both stocks and bonds. The positive spikes evident in Panel A of Figure 1 stand out with respect to the historical record. In over 5,000 days of trading data since 2005 (a period when bonds have typically been good hedges to equity risk), fewer than 0.25% of trading days show stock-bond covariance higher than on April 23.

The day-by-day stock-bond correlation reported in Panel B of Figure 1 reflects similar dynamics, with the stock-bond correlation reaching values close to -1 on April 3 but rising to .5 on April 11 and April 23. The correlation figure further highlights the overall shift to positive stock-bond covariance in the data since May. The large shifts from negative to positive stock-bond covariance apparent in the daily data are reflected in lower-frequency calculations, but such lower-frequency calculations do not capture the substantial range of outcomes evident in Panel A of Figure 1. In Appendix Figure A1, 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.[8]

Result 2: April 2025 saw a drop in long-term convenience yields; the drop corresponded to a loss of hedging property.

In Panel A of Figure 2, we document the evolution of the TIPS-Treasury premium at the 2-, 5-, and 10-year maturities from April 2024 to the present. In the first year of this sample, convenience yields at these three maturities tend to move together. The onset of the Tariff War in April 2025, however, saw a divergence between the short-term and long-term measures. The 10-year TIPS-Treasury premium dropped below zero for the first time in the sample available since 2005, while the 2- and 5-year convenience yield measures rallied by over 10 bps relative to their value prior to April 2025. A similar conclusion regarding a drop in long-term convenience yields arises from other measures, such as the OIS spread (see Appendix Figure A4) or the Treasury to German Bund spread (see Jiang et al. (2025)).

[7] See `https://budgetlab.yale.edu/research/state-us-tariffs-july-28-2025`.

[8] Appendix Figure A2 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 Figure A3 reports the intraday prices of SPY and IEF for all the days in April 2025.

The "rotation" between long- and short-maturity convenience yields stands out with respect to the historical record. In Acharya and Laarits (Forthcoming), we document that the first principal component (PC1) of a variety of convenience yields beyond the TIPS-Treasury premium at maturities from 3 months to 30 years explains 15-65% of the variance in the individual proxies. The 10- and 2-year TIPS-Treasury premiums have a correlation of .55 and an average gap of less than two basis points. Such comovement is to be expected: investor substitution across nearby maturities spreads convenience shocks along the entire curve. Yet the seven-day period starting with April 2 saw a gap of over 15 basis points opening up between the 5- and 10-year TIPS-Treasury premiums—a relative increase that ranks in the top 10 of more than a thousand weeks of data. The stark divergence between short- and long-term convenience yields thus highlights the special nature of the shock in April 2025.

Panel B of Figure 2 reports the full breakdown of the 10-year nominal bond covariance with stock returns. The purple dashed line shows that the contributions of innovations to the default risk of Treasuries played at best a minor role in explaining the covariance with stock returns. There is a slight positive blip early on in the Tariff War, followed by a small negative covariance with stock returns. In the historical record, this term is usually positive but accounts for a minor amount of the overall stock-bond covariance. Panel B also highlights that the covariance arising from the "frictionless" risk-free rate with stock returns is mostly responsible for the hedge provided by the long bond in April and May 2025. The solid blue line shows the contribution of convenience yield innovations. Historically, the covariance component arising from convenience yield innovations shows substantially negative values when overall volatility is high. In the quintile of months with the highest level of VIX (meaning VIX above 32), this covariance term averaged -.70. In early April 2025, VIX breached levels above 50, yet the covariance was positive, as shown in Panel B of Figure 2. The positive covariance at the 10-year maturity is unprecedented: the values reached in May 2025 are the highest in the available sample starting in 2005.

The striking behavior of convenience yields in the Tariff War period could be indicative of market dislocations or the importance of TIPS-specific factors. Three pieces of evidence in Appendix A.1 cut against this view: Treasury market liquidity did not deteriorate as much as in prior stress periods in March 2020 and during the March 2023 regional banking crisis; TIPS-swap pricing remained relatively consistent through the episode; and the deflation put embedded in TIPS would bias our measure in the opposite direction. We also document a

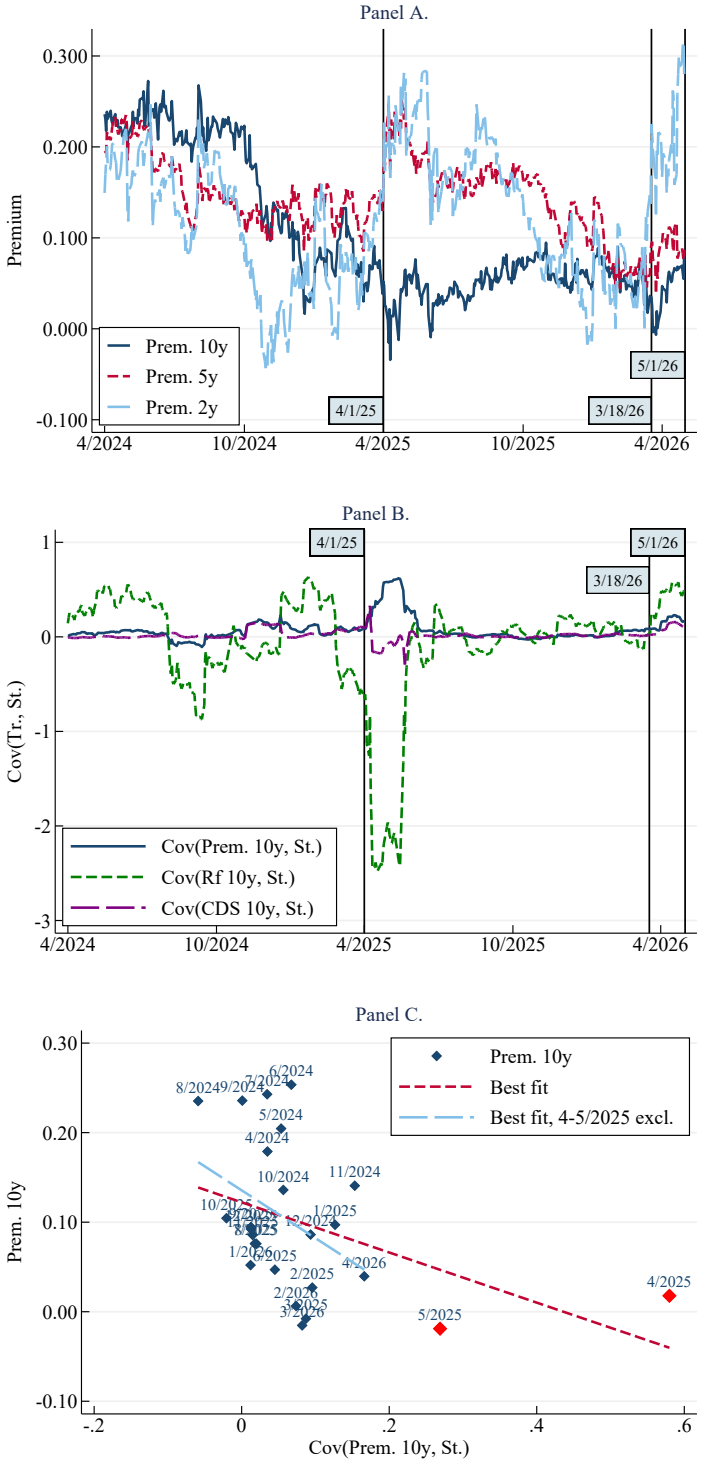

Figure 2: Convenience yields and components of the stock-bond covariance. Panel A: 10-, 5-, and 2-year TIPS-Treasury Premium. Panel B: decomposition of the 10-year bond covariance with stock returns, following Equation (4). Panel C: relationship between the 10-year convenience yield and the stock-bond covariance arising from convenience yield innovations. Data from April 2024 to April 2026.

drop in the OIS-Treasury spreads, though without a rotation to short-maturity convenience yields, consistent with intermediation frictions driving the OIS spread.

The theoretical link we posit between stock-bond covariance terms and the level of the convenience yield is borne out in the data. In Panel C of Figure 2 we plot monthly data from April 2024 to April 2026 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 yields in April and May 2025 correspond to a large and positive covariance between the 10-year convenience yield innovations and the stock market returns, consistent with the relationship documented in Acharya and Laarits (Forthcoming) over a longer period and for a range of convenience yield measures.

Result 3: International investors sold Treasuries in the first month of the Tariff War.

One explanation for the shift in convenience yields is that the Tariff War was a "turning point" for US Treasuries, in that the flight-to-safety demand in bad states is now seen as less reliable. We explore this possibility using TIC data that captures foreign holdings of US Treasuries. The most recent iteration of this data, available since February 2023, contains information both on holdings and valuation changes, allowing the measurement of trade amounts. We find suggestive evidence of a retreat of international investors at the onset of the Tariff War. In the February 2023–March 2025 sample, the typical month saw 47 billion USD flow into US long-term Treasuries, a nearly 600 billion USD annual flow (long-term refers to maturity of 1 year and above). April 2025, however, saw a 47 billion USD *outflow* from long-term Treasuries, representing about a two standard deviation shift from the baseline. The total outflow in that month was close to 62 billion USD, and it is one of only four months since February 2023 that saw an outflow.

In Panel A of Figure 3 we report this data disaggregated across major foreign holders, both individual countries as well as major groupings. We report on the x axis the average monthly flow in the February 2023 to March 2025 sample while the y axis shows the realized flow. To better contextualize the behavior in April, in Panel B of Figure 3 we account for the sensitivity of country- or grouping-level flows to the aggregate stock-bond covariance. Focusing on the February 2023 to March 2025 sample, we estimate the stock-bond covariance

betas for each of the country flows, controlling for the level of the risk-free interest rate.

$$\text{Flow}_{i,t} = \alpha + \beta \times \text{Cov(St., Tr.)}_t + \gamma \times \text{Fed Funds}_t + \epsilon_{i,t} \tag{6}$$

We then report the model-predicted change and compare it with the realized values. For instance, China is on the far left of the graph, having slowly sold Treasuries in this period and their small net sale in April was in line with that recent trend. The Euro Area, Canada, and Total Asia all sold long-term Treasuries, opposite of their usual behavior in the recent sample. For reference, the Euro Area had been buying at 12 billion USD per month, and Canada and Total Asia about 5 billion USD per month. Only the 40 billion USD net buy by the United Kingdom stands out on the positive side. Most other countries or groupings that typically increase long-term Treasury demand in market stress times were no longer present as flight-to-safety investors. Overall, the findings from TIC suggest that foreign investors who typically have strong precautionary demand for Treasuries—foreign central banks, finance ministries, sovereign wealth funds—were second-guessing that behavior.[9]

Intriguingly, the large flows from Euro Area and Canada investors are reflected in the relative pricing of EUR and CAD denominated safe assets. In Panel A of Appendix Figure A5 we document that the US Treasury Premium, calculated following Du et al. (2018), shows decreases in April 2025. In Panel B we show that the relative convenience yields for the 10-year for EUR-denominated German bonds and CAD-denominated Canadian bonds opened up relative to US Treasuries. In other words, some of the premium previously priced in US Treasuries may have been priced into the local safe debt.

Result 4: Higher inflation expectations can lower long-term convenience yields, but expected inflation barely moved in April 2025.

One potential channel for the change in the convenience yield dynamics could arise from the role of inflation. Prior literature identifies both expected and surprise inflation as potential drivers of the convenience yield. In particular, Fu et al. (2025) show that, within a model of fiscal policy, deficit shocks lead to both lower convenience yields and higher expected

[9]See Ahmed and Rebucci (2024) for more detail on pre–Tariff War foreign official demand and its yield impact. In 2024 foreign investors as a group had an average maturity of 6.3 years; the corresponding number for foreign official investors is 5.2 years, see U.S. Department of the Treasury et al. (2025), Table 14.

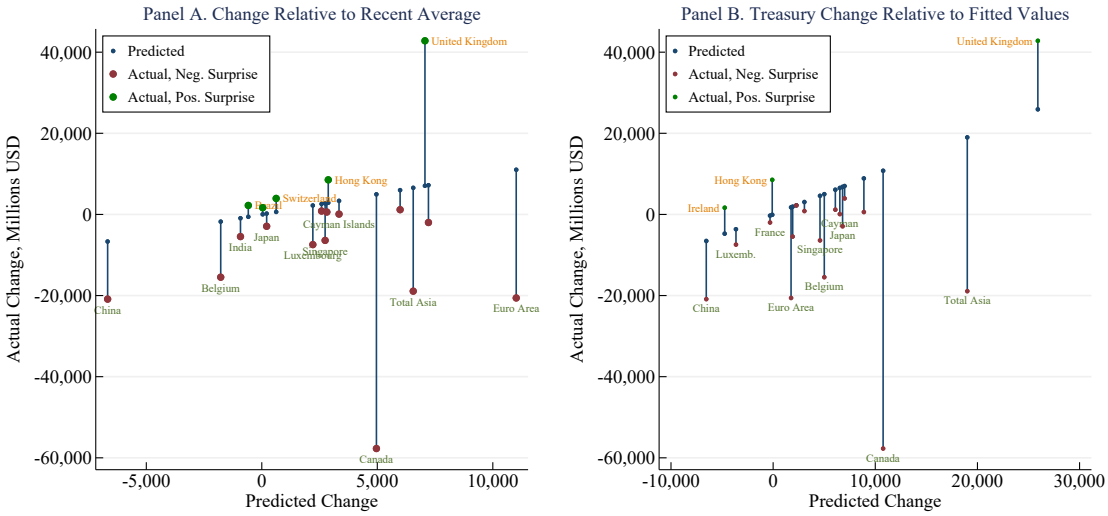

Figure 3: Net international flows in long-term Treasuries. Treasury International Capital System data. Partially overlapping data on individual countries and country groupings. Panel A: flows in April 2025 compared to averages in the 2/2023 to 3/2025 sample. Panel B: flows in April 2025 compared to forecasts from a regression model using stock-bond covariance and the risk-free rate as explanatory variables. Regression estimated country-by-country in the 2/2023 to 3/2025 sample.

inflation. Relatedly, Cieslak et al. (2023) document two distinct regimes in the inflation-convenience yield relationship: one in which high inflation corresponds to high convenience, and another in which high inflation corresponds to low convenience.

This latter mechanism, dubbed the "New Keynesian" regime, finds support in the data since 2000. As Cieslak et al. (2023) report, high expected inflation in that sample tends to coincide with lower convenience yields. Moreover, we find that long-term convenience is more sensitive to inflation expectations than short-term convenience. In Panel A of Table 1, we report regressions of the *slope* of convenience yields—the 10-year minus the 2-year TIPS-Treasury premium—on different proxies for expected inflation. The first three columns show that the monthly expected inflation series constructed by the Cleveland Fed has a negative relationship with the slope of the TIPS-Treasury premium, with similar effect magnitudes across all three maturities.

In the second set of three columns of Panel A, we repeat these regressions but instead use 1-year forward breakeven inflation rates at different maturities, as estimated by Gürkaynak et al. (2010) using fitted TIPS and Treasury yield curves. With forward inflation rates, we again find a negative relationship between expected inflation and the slope of convenience yields for the 5- and 10-year rates. Overall, the results in Panel A of Table 1 suggest that heightened inflation expectations could give rise to a decoupling of long and short-maturity convenience yields.

At the same time, as shown in Panel B of Table 1, increases in inflation expectations were quite muted in April 2025. The 2-year inflation expectation series showed the largest bump with a 36bps increase, corresponding to about a 7bps change in the slope of the convenience premia. The other two maturities, 5- and 10-year inflation expectations, showed smaller increases of 13 and 5 bps respectively, indicating a quantitatively minor effect. Breakeven inflation data in fact suggest *declining* inflation expectations in April 2025. In sum, while expected inflation can explain variation in the term structure of convenience yields, we find that it did not play a large role in April 2025.

Panel A.

	RHS: Expected Inflation			RHS: Breakeven Inflation		
	Prem. 10y-2y	Prem. 10y-2y	Prem. 10y-2y	Prem. 10y-2y	Prem. 10y-2y	Prem. 10y-2y
2-year	-0.205***			0.066		
	(-4.49)			(0.86)		
5-year		-0.249***			-0.140***	
		(-3.29)			(-3.05)	
10-year			-0.244***			-0.115***
			(-2.64)			(-2.79)
Eff. Fed Funds	0.044***	0.044***	0.036**	-0.007	0.005	0.006
	(3.74)	(2.87)	(2.30)	(-0.67)	(0.64)	(0.71)
Constant	0.327***	0.404***	0.428***	-0.099	0.315***	0.275***
	(4.70)	(3.64)	(2.91)	(-0.69)	(2.95)	(3.29)
Observations	256	256	256	256	256	256
R^2	0.122	0.095	0.072	0.037	0.060	0.084

Panel B.

	Expected Inflation			Breakeven Inflation		
Date	2y	5y	10y	2y	5y	10y
2025/2	2.61	2.49	2.47	2.36	2.25	2.34
2025/3	2.26	2.27	2.30	2.31	2.26	2.35
2025/4	2.62	2.40	2.35	1.95	2.09	2.33
2025/5	2.50	2.34	2.31	2.24	2.27	2.53
2025/6	2.38	2.34	2.35	2.14	2.28	2.38
2026/1	2.45	2.34	2.33	2.44	2.39	2.28
2026/2	2.47	2.37	2.37	2.26	2.25	2.31
2026/3	2.26	2.18	2.19	2.30	2.24	2.21
2026/4	2.81	2.48	2.40	2.55	2.37	2.22

Table 1: The role of inflation expectations. Panel A: inflation expectations at different maturities and the slope of convenience yields. Monthly data 2005 to 2026/4. Panel B: monthly inflation expectations around the onset of the Tariff War and the Iran Conflict.

Result 5: Short-term Treasuries and gold have emerged as potential substitutes for flight-to-safety flows.

With flight-to-safety inflows absent (Result 3) and inflation playing a minor role (Result 4), investor dynamics appear to be the key contributor to the drop in long-term convenience

yields. Where could the flight-to-safety flows have ended up instead? In Figure 4 we provide evidence in favor of two targets: short-term Treasuries and gold. In Panel A of Figure 4, we plot the stock-bond covariance arising from innovations to the convenience yield at the indicated maturity. As the dashed blue and red lines show, the 2- and 5-year convenience yields comoved negatively with stock market returns, meaning that convenience yields at those maturities represented hedges to equity risk. These calculations stand in contrast with the positive covariance arising from innovations to the 10-year convenience yield, plotted in solid blue and repeated from Panel B of Figure 2.

To put the hedge provided by the shorter-term bonds into context, note that in Acharya and Laarits (Forthcoming) we estimate a strong negative link between the 10-year convenience yield level and the covariance term arising from its innovations: in monthly data 2005-2024 we find a regression coefficient of -.10, statistically significant at the 1% level. Further, in the historical data, the covariance terms arising from the 5- and 10-year convenience yields move in lock-step, with the 10-year value being approximately twice the 5-year value. With the 5-year covariance at -.3 and the 10-year at .6, the counterfactual implied by the 5-year calculation puts the April 2025 convenience yield higher by $-.10(2(-.3) - .6) = 12$bps. Put differently, the gap of approximately 20 bps that opened up in April 2025 between the 10- and 5-year convenience yields is in large part explained by the hedging property of these two convenience yields.[10]

In Panel B of Figure 4, we document evidence that gold emerged as a potential alternative to Treasuries early in the Tariff War. We again exploit intraday data and calculate the day-by-day covariance of stocks with gold returns, proxied by the 5-minute changes in gold prices (Bloomberg ticker: XAU Curncy). The diamond shapes on the scatterplot show that days where bonds are a good hedge against stock risk, that is, negative y-axis values, see positive covariance between gold and stocks on the x-axis. In contrast, days where bonds are risky, meaning positive covariance with stocks, instead see negative covariance between stocks and gold. The pattern suggests a tug-of-war between Treasuries and gold with respect to attracting flight-to-safety investors. We find a negative relationship between the two daily covariance series in April and May 2025. The negative relationship continues to hold if we

[10]Unfortunately, we do not have detailed maturity-based holdings data to document the source of these flows. Note, though, that under Result 3 we found some evidence in favor of flight-to-safety investors going to their home country safe debt.

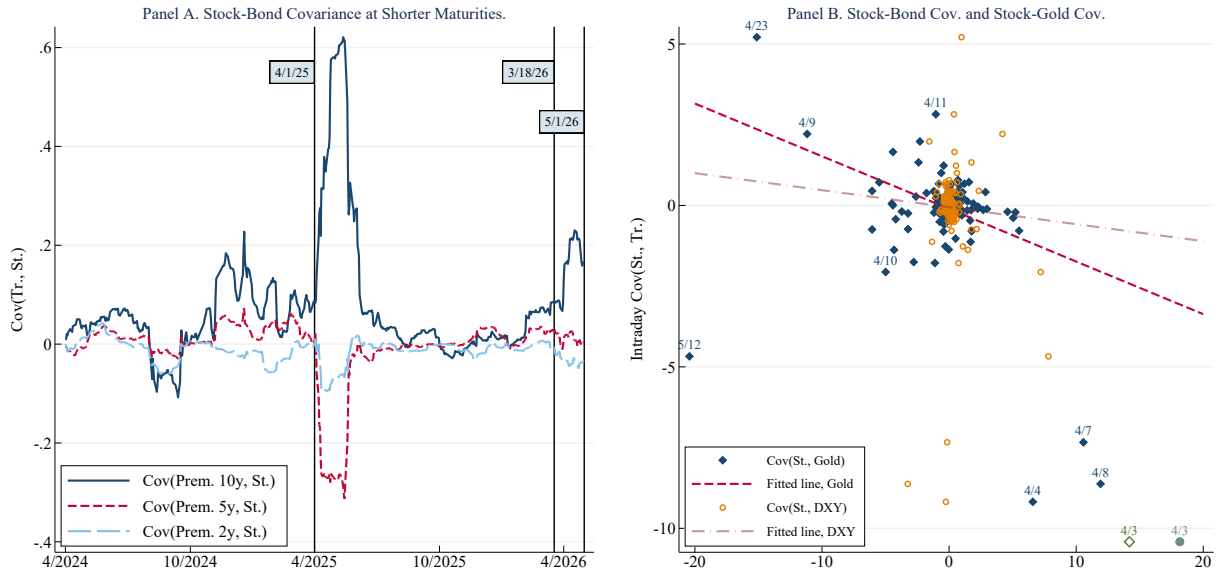

Figure 4: Stock-bond covariance at different maturities. Stock-bond, stock-dollar, and stock-gold covariance. Panel A: Stock-bond covariance arising from convenience yield innovations, estimated at the 10-, 5-, and 2-year maturity. Daily data April 2024 to April 2026. Panel B: day-by-day values of intraday stock-bond covariance and intraday stock-gold covariance, indicated with diamond shapes. The 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 from April 2025 to April 2026. The fitted lines exclude the returns from April 3, indicated with a hollow diamond and a filled circle.

exclude April 3, a day of extreme movements in both stock and bond prices and the largest negative stock-bond covariance day in this recent sample (as shown in Panel A of Figure 1). Gold has continued to show negative covariance days with stock returns, see Appendix Figure A6.

The hollow circle dots in Panel B of Figure 4 repeat this analysis but consider the hedging property of the US Dollar. Here we use the intraday values of the DXY index to measure the value of the dollar against a basket of hard currencies. In the case of the dollar, we find a strong positive covariance on April 3 when Treasuries were a hedge asset, but no relationship with the stock-bond covariance outside of that one day. The pattern seen for gold as a substitute for Treasuries as a safe asset is not convincingly evident for the US Dollar. The lack of this regularity for the US Dollar as a safe haven, unlike in prior crisis episodes

such as the Global Financial Crisis, the Eurozone debt crisis, and the onset of COVID-19, is consistent with the findings of Jiang et al. (2025) and their inference that the Tariff War outbreak can be characterized as "this time is different" for the USD. Together, the findings from shorter-term Treasuries, gold and FX markets provide support for our contention that April 2025 was a harbinger of a shift in the dynamics of long-term convenience yields.

3 Dynamics since the Tariff War

After a flurry of action in the opening phase of the Tariff War, asset markets calmed though considerable uncertainty regarding global trade policy remains even a year later. The relatively quiet period in trade news and recovery of stock markets has been accompanied in Treasury markets by a partial recovery of long-term convenience yields. By early 2026 the TIPS-Treasury premium at all maturities had converged to values similar to those seen in early 2025.

However, the Iran Conflict, starting in late February 2026, brought renewed market volatility and Treasury yield dynamics reminiscent of spring 2025. In particular, we document that a convenience yield rotation emerges again, suggesting that it was not specific to the Tariff War shock but indicative of a regime change in Treasury pricing.

From the start of the Iran Conflict at the end of February, the S&P500 lost close to 10% by April, while 10-year yields rallied from close to 4% to nearly 4.5%.[11] Panel A of Figure 2 shows that the 10-year convenience yield dropped sharply on March 18 when Iran attacked Qatar's energy facilities, a key moment in the conflict. The 2-year convenience yield rallied, resulting in a "rotation" of the convenience yield strongly reminiscent of the Tariff War event.

The decomposition of covariance into constituent elements reported in Panel B of Figure 2 shows the covariance arising from convenience yield innovations was positive, just as in April 2025, indicating that the hedging property of long-term convenience yields came to be questioned. Moreover, even the frictionless rates had positive covariance with stock market returns. Indeed, as Panel B of Figure 1 shows, stock-bond correlations have been strongly positive all of 2026.

Of the channels explored for the Tariff War, inflation appears to be a substantial driver of the convenience yield dynamics as inflation expectations showed a marked increase. As

[11] As shown in Appendix Figure A4, the OIS spread saw drops at the long end.

reported in Panel B of Table 1, 2-year inflation expectations increased by 55 bps in April 2026; the 10-year expectations saw a 21 bps increase. In light of the estimates in Panel A of the same table, this shift in inflation expectations could account for a 10 bps gap opening up between 10- and 2-year convenience yields, with the long-term convenience dropping. We do not find strong evidence regarding foreign flows and stock-gold covariances in spring 2026.[12]

In all, even as the Iran Conflict represents a different underlying economic shock, it is informative about the new dynamics in Treasury markets. Fundamental shocks increase worries about the long-term hedging properties of Treasuries, and shift convenience yields to the near term.

4 Conclusion

We have documented a substantial shift in convenience yields around the Tariff War of April 2025, and similar dynamics in the subsequent Iran Conflict of 2026. Both episodes saw a "rotation" in the TIPS-Treasury premium with short-term convenience yields gaining, and 10-year convenience yields dropping to essentially zero. Interpreted via our theory and evidence, the suppression of convenience at the long end suggests that the service flows are no longer seen as reliably increasing in future bad times. In the Tariff War episode we find evidence in favor of the potential withdrawal of international safe-asset investors and a rebalancing towards shorter-term Treasuries and towards gold, while the Iran Conflict episode highlights the role of inflation.

Looking ahead, our results suggest that the dynamics of convenience yields reflect substantial worry about the long-term safety and liquidity of US Treasuries, and a potential shift to a new safe asset. Even retaining the global safe asset status, a shift of the convenience yield toward the near end of the yield curve could induce the Treasury to focus supply in T-bills, potentially creating fiscal rollover risk amid a high-uncertainty environment. Equally importantly, future research should tease out the precise drivers of shifts in investor demand (foreign safe asset demand, arbitrage function of broker-dealers and hedge funds, etc.) that explain the rotation of convenience yield to the short end when the covariance of stocks with long bond returns moves decisively—both in magnitude and persistence—to a positive level.

[12]The recent data regarding gold is included in Panel B of Figure 4. March 2026, the most recent month in the TIC data, saw USD 12 billion inflow to long-term Treasuries and an outflow of USD 14 billion from short-term Treasuries.

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U.S. House Committee on Financial Services, "Hearing Entitled: U.S. Treasury Debt in the Monetary System," Congressional Hearing 2025.

A Internet Appendix

A.1 Convenience Yield Robustness

A key finding, reported in Results 2 and 5, is the rotation of convenience yields across the term structure in April 2025. A potential concern is that this shift reflects issues with market functioning. In this section we address three such concerns.

Robustness I: The unprecedented convenience yield rotation could be indicative of issues with market functioning. However, recent estimates by Dyer and Fleming (2026) suggest that the drop in Treasury market liquidity, while material, was not as substantial as during the regional banking crisis of 2023 and the COVID "dash for cash." The evidence from these two prior crisis events suggests that market illiquidity is unlikely to have been the sole factor driving down long-term convenience yields.[13] A potentially more direct look at market functioning issues is reported in Appendix Figure A7 where we show that the average absolute error between inflation breakeven rates from the TIPS yield curve and the corresponding swap rates was stable through this period. A relative mispricing in these two measures of expected inflation would be indicative of market dislocations, see Hu et al. (2013) for a related argument regarding nominal Treasuries. However, as the figure shows, the average absolute errors across the term structure were relatively low in April 2025 and did not see a sudden spike, in line with inflation being priced consistently across the two venues.

Robustness II: A separate aspect of TIPS that could play a role in times of large economic dislocations arises from the treatment of deflationary outcomes: in the case of a price level drop the TIPS variable payout is floored at zero. In other words, the prices of TIPS reflect a deflation put. The onset of the Tariff War was widely seen as inflationary (we report inflation breakevens and expectations in Table 1), which would shift the distribution of future price levels away from the deflationary range, and thus decrease the prices of TIPS. The direct impact of a shift in inflation expectations therefore increases TIPS yields which would put upward pressure on the TIPS-Treasury measure of convenience yields, working against our finding of reduced convenience yield.

Robustness III: The TIPS-Treasury premium is a unique convenience yield proxy in that it uses two securities that have essentially the same balance sheet treatment, and is available

[13]For further discussion of market functioning during the Tariff War, see Liang (2025) and the expert witness testimonies to the US House Committee on Financial Services (U.S. House Committee on Financial Services (2025)). Liang (2025), in particular, documents – based on the relationship between Treasury "market depth" and MOVE index – that Treasury markets had orderly functioning in April 2025 relative to the stresses of March 2020 and March 2023.

at a variety of maturities, making it well suited to study the term structure of convenience yields. The Overnight Indexed Swap – Treasury is also available across the term structure and in Appendix Figure A4 we show that the onset of the Tariff War saw a decrease in the OIS-Treasury spreads, though the drop was evident at all maturities with only a slightly larger effect at long maturities. In a statistical sense, the absence of a "rotation" in the OIS spread is in line with historical data. In Panel A of Appendix Table A1 we document that the first principal component of OIS spreads explains over 90% of the total variation, compared to just 66% for the TIPS-Treasury premium. As shown in Panel B, in the recent data, i.e. from April 2024 to April 2026, the effect is even stronger: the first PC explains 96% of the OIS spread variation but only 43% of the TIPS-Treasury spread variation. In words, the TIPS-Treasury premium tends to have both a "level" and "slope" component, while the OIS spread is characterized by just a single factor.[14] Our findings of a single-factor structure in the OIS spread are consistent with an intermediation friction contributing substantially to the level of the spread. Overall, we view the evidence from OIS spreads as broadly consistent with the finding of lowered convenience at the onset of the Tariff War, even though the TIPS-Treasury premium implies a rotation of convenience from the long end to the short end of the Treasury curve not seen in the OIS spreads.

A.2 Timelines of Tariff War and Iran Conflict

Tariff War.

- **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.

[14] Recent literature has emphasized the importance of balance sheet constraints in determining the OIS spread, see Jermann (2020) and Du et al. (2023).

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%. https://www.cnn.com/2025/04/09/business/reciprocal-tariff-pause-trump
- **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
- **April 12, 11:26 am ET:** Smartphones, computers and some other electronics now exempt from Trump tariffs.
  https://www.cnn.com/politics/live-news/trump-presidency-tariffs-iran-04-12-25/index.html?t=1744466177899
- **April 13, 11:20 pm ET:** Trump says semiconductor tariffs will be announced in the "near future".
  https://www.cnn.com/politics/live-news/trump-presidency-tariffs-04-13-25/index.html?t=1744551119114
- **April 14, 8:41 am ET:** Trump says tariffs on electronics are coming soon.
  https://www.cnn.com/politics/live-news/trump-presidency-tarrifs-bukele-visit-04-14-25/index.html
- **April 17, 12:11 am ET:** Trump touts "progress" in Japan trade talks.
  https://edition.cnn.com/politics/live-news/trump-presidency-news-4-16-25/index.html
- **April 22, 5:56 pm ET:** Trump says he won't play "hard ball" with China and tariffs won't be as high as 145%.
  https://www.cnn.com/politics/live-news/trump-presidency-news-04-22-25/index.html
- **April 23, 7:56 am ET:** Trump signals an off-ramp for the US-China trade war.
  https://edition.cnn.com/politics/live-news/trump-presidency-news-04-23-25/index.html

- **April 24, 1:05 pm ET:** China has denied it's talking to the US on trade. Trump says his admin met with China this morning.
https://edition.cnn.com/politics/live-news/trump-presidency-news-04-24-25

- **April 25, 9:33 am ET:** China again rebuts Trump's claim that the US is talking to Beijing about tariffs.
https://edition.cnn.com/politics/live-news/trump-presidency-news-04-25-2025

- **May 12, 4:15 am ET:** Global Markets Rise as U.S., China Agree on Temporary Tariff Cuts.
https://www.wsj.com/finance/global-markets-rise-as-u-s-china-agree-on-temporary-tariff-cuts-1297b865

- **May 15, 4:35 am ET:** Global Markets Lower as Trade Deal Optimism Loses Steam; U.S. Data Eyed.
https://www.wsj.com/finance/stocks/global-markets-lower-as-trade-deal-optimism-loses-steam-u-s-data-eyed-5d3c1912

- **May 23, 7:43 am ET:** Trump recommends a straight 50% Tariff on the European Union, starting on June 1, 2025.
https://truthsocial.com/@realDonaldTrump/posts/114556968834547173

- **July 30:** Trump Executive Order Ends Tariff Exemption on Imports Less Than $800.
https://www.nytimes.com/2025/07/30/us/politics/trump-tariffs-de-minimis-exemption.html

- **September 26, 4:38 pm ET:** Trump to Impose New Tariffs on Pharma, Big Trucks.
https://www.wsj.com/economy/trade/trump-to-slap-new-tariffs-on-pharma-big-trucks-ab37416e

- **October 10, 2:14 pm ET:** Trump Threatens Higher Tariffs on China, Citing Restrictions on Rare-Earth Elements.
https://www.wsj.com/politics/policy/trump-china-tariffs-rare-earths-xi-meeting-8053c81a?mod=hp_lead_pos1

Iran Conflict Timeline

- **February 28, 2026:** US and Israel launch "Operation Epic Fury," airstrikes on Iran killing Supreme Leader Ali Khamenei; Iran retaliates with missile and drone barrages on Israel, US bases, and Gulf states.
  https://www.washingtonpost.com/world/2026/02/28/israel-strikes-iran-live-updates/
- **March 2, 4:58 pm ET:** Iran's ferocious retaliation for US-Israeli strikes has rattled its neighbors.
  https://www.cnn.com/2026/03/02/middleeast/iran-war-retaliation-rattles-gulf-neighbors-intl
- **March 10, 11:39 pm ET:** Iran lays mines in the Strait of Hormuz.
  https://www.wsj.com/livecoverage/iran-war-us-israel-trump-2026/card/iran-lays-mines-in-the-strait-of-hormuz-57THxxr9LISh6lvqg8tv
- **March 11, 5:29 pm ET:** IEA will launch largest-ever oil release from global strategic reserves.
  https://www.wsj.com/business/energy-oil/iea-proposes-largest-ever-oil-release-from-strategic-reserves-275f4e5c?mod=livecoverage_web
- **March 18, 12:22 pm ET:** Iran threatens Gulf energy facilities after Israeli attack on its largest gasfield.
  https://www.theguardian.com/world/2026/mar/18/iran-gulf-energy-facilities-israel-south-pars-gas-field-saudi-arabia-uae-qatar
- **March 18, 3:08 pm ET:** World's largest LNG plant suffers extensive damage, Qatar says.
  https://www.bloomberg.com/news/articles/2026-03-18/qatar-reports-extensive-damage-at-site-of-ras-laffan-lng-plant
- **March 20, 4:03 pm ET:** Stocks, bonds and gold slump while Iran war rages.
  https://www.cnn.com/2026/03/20/investing/us-stocks-iran
- **March 23:** Trump delays energy strikes, but Iran's infrastructure is already battered.
  https://www.nytimes.com/2026/03/23/world/middleeast/trump-iran-battered-infrastructure.html?smid=url-share
- **April 8, 1:13 am ET:** Trump agrees to 2-week ceasefire with Iran, delaying threat of large-scale bombing campaign.
  https://www.cbsnews.com/news/trump-2-week-ceasefire-iran-delaying-bombing/

- **April 17, 6:58 pm ET:** Iran declares Strait of Hormuz open to shipping but Trump says U.S. blockade still active.
  https://www.cnbc.com/2026/04/17/iran-war-hormuz-strait-israel-lebanon-ceasefire.html
- **April 23, 5:45 pm ET:** Iran escalates Hormuz 'tit-for-tat,' seizes ship tied to billionaire close to Trump, Macron.
  https://www.foxnews.com/world/iran-escalates-hormuz-tit-for-tat-seizes-ship-tied-billionaire-close-trump-macron

A.3 Additional Tables and Figures

Panel A. Full sample 2005-2026/4.

	TIPS-Tr. Prem. 10y			OIS Spr. 10y		
PC 1	0.06***		0.06***	0.11***		0.11***
	(40.94)		(47.63)	(268.76)		(776.14)
PC 2		0.03***	0.03***		-0.10***	-0.10***
		(6.89)	(15.96)		(-23.46)	(-135.59)
Constant	0.24***	0.24***	0.24***	-0.25***	-0.26***	-0.25***
	(208.26)	(123.01)	(222.50)	(-219.81)	(-74.63)	(-546.44)
Observations	5228	5228	5228	5228	5228	5228
R^2	0.655	0.047	0.703	0.901	0.084	0.984

Panel B. Recent sample 2024/4-2026/4.

	TIPS-Tr. Prem. 10y			OIS Spr. 10y		
PC 1	0.08***		0.03***	0.12***		0.12***
	(26.42)		(8.32)	(134.96)		(157.24)
PC 2		0.13***	0.11***		-0.09***	-0.07***
		(38.97)	(26.95)		(-5.18)	(-22.27)
Constant	0.24***	0.23***	0.26***	-0.22***	-0.59***	-0.23***
	(37.87)	(55.04)	(53.05)	(-76.89)	(-211.38)	(-89.97)
Observations	458	458	458	458	458	458
R^2	0.426	0.694	0.723	0.960	0.045	0.981

Table A1: Factor structure of convenience yields. The left-hand-side variables are proxies of the convenience yield. The right-hand-side variables are the first and second principal components of the corresponding convenience yields, estimated from the 2-, 3-, 5-, 10-, 15-, and 20-year maturity values.

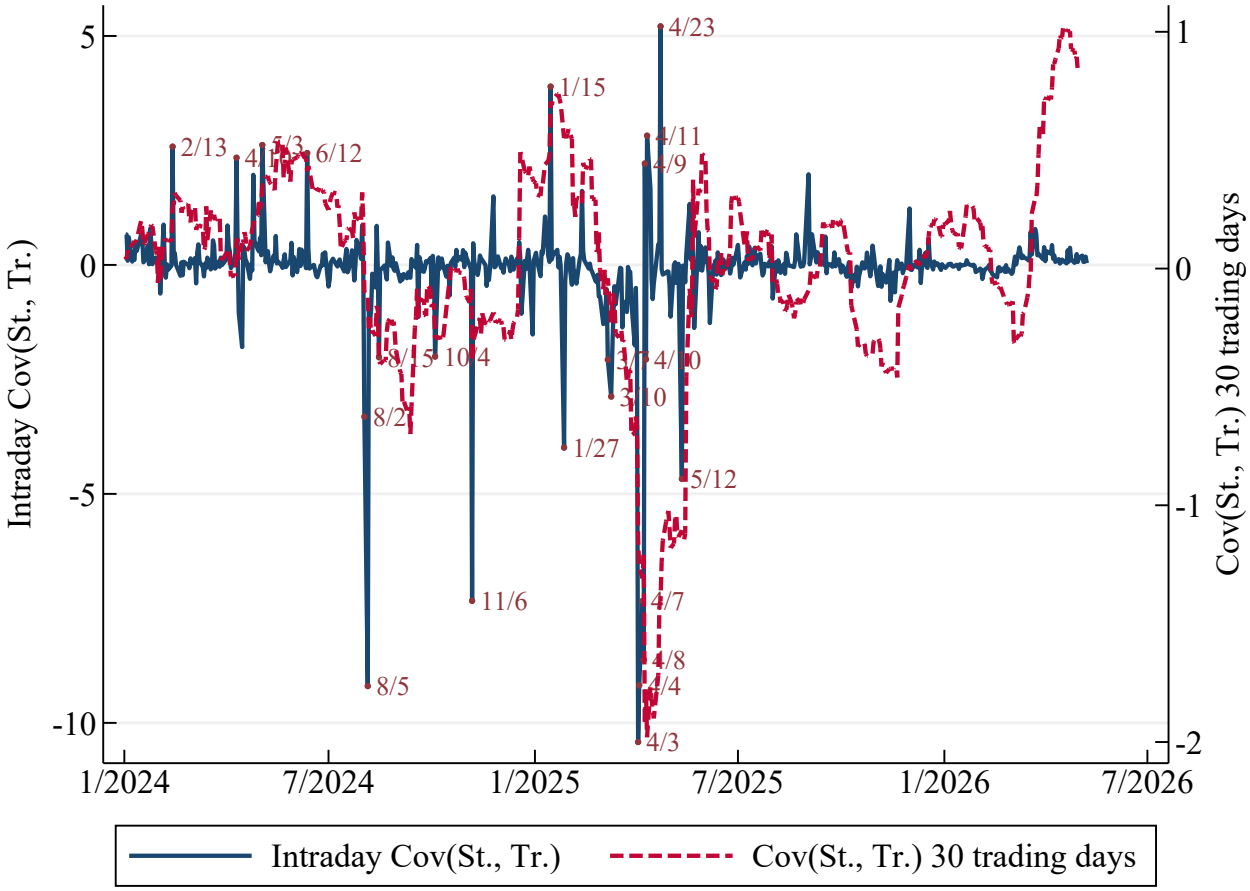

Figure A1: Intraday and daily stock-bond covariance. Intraday stock-bond covariance and daily stock-bond covariance estimated using a 30 trading day lookback window. Intraday stock-bond comovements estimated from return data at the five minute frequency using prices of two ETFs: SPY for stocks and IEF for 7-10 year Treasury bonds. Daily stock-bond covariance calculated using 10-year constant maturity Treasury returns and the CRSP value-weighted stock market return in a 30 trading-day look-back window. Daily data January 2024 to April 2026.

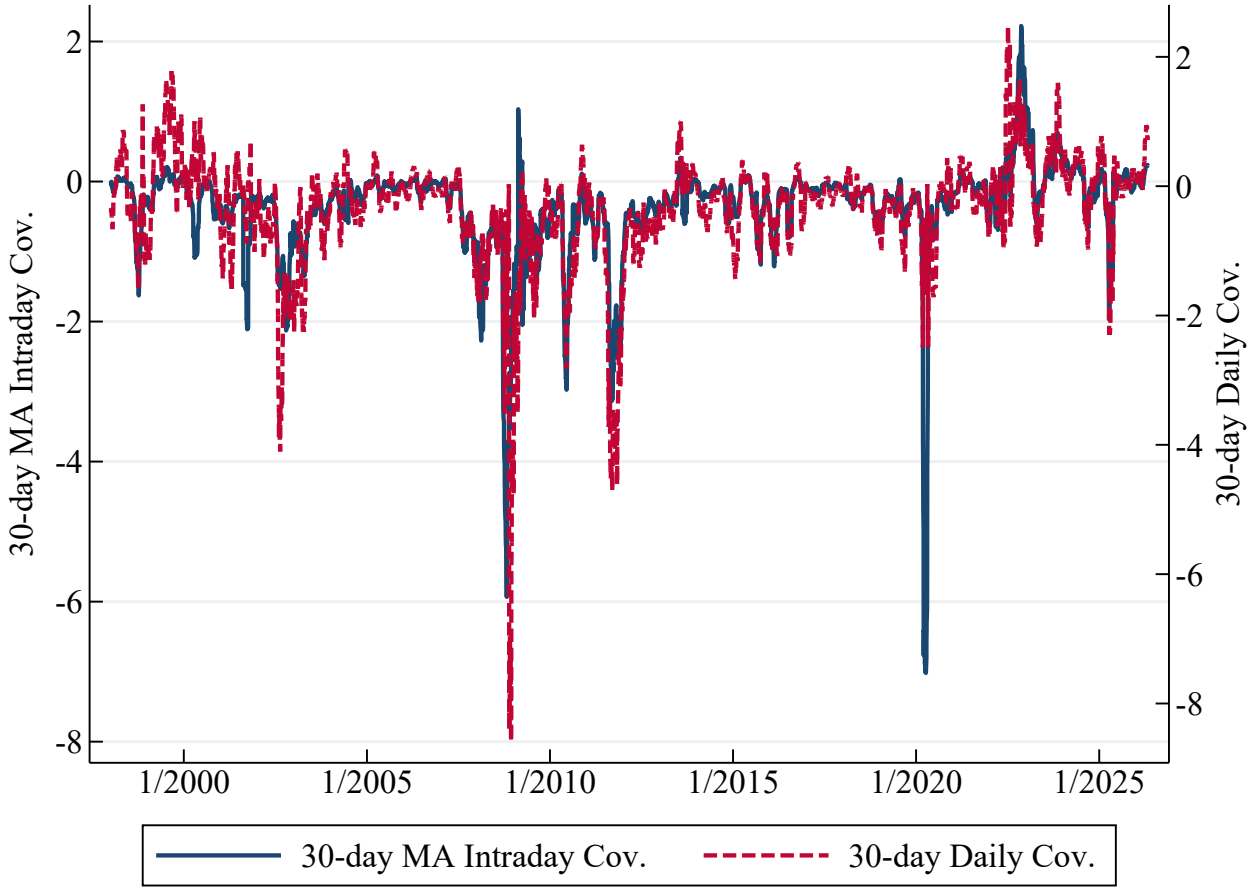

Figure A2: Long sample of intraday and daily stock-bond covariance. Comparison of stock-bond covariance estimated from a 30 trading day moving average of intraday data and covariance estimated from 30 trading days of daily data. Intraday stock-bond comovements estimated from return data at the five minute frequency using prices of two ETFs: SPY for stocks and IEF for 7-10 year Treasury bonds. We use intraday bond prices from GovPX prior to 2015. Daily stock-bond covariance calculated using 10-year constant maturity Treasury returns and the CRSP value-weighted stock market return in a 30 trading-day look-back window. Monthly data from January 1998 to April 2026.

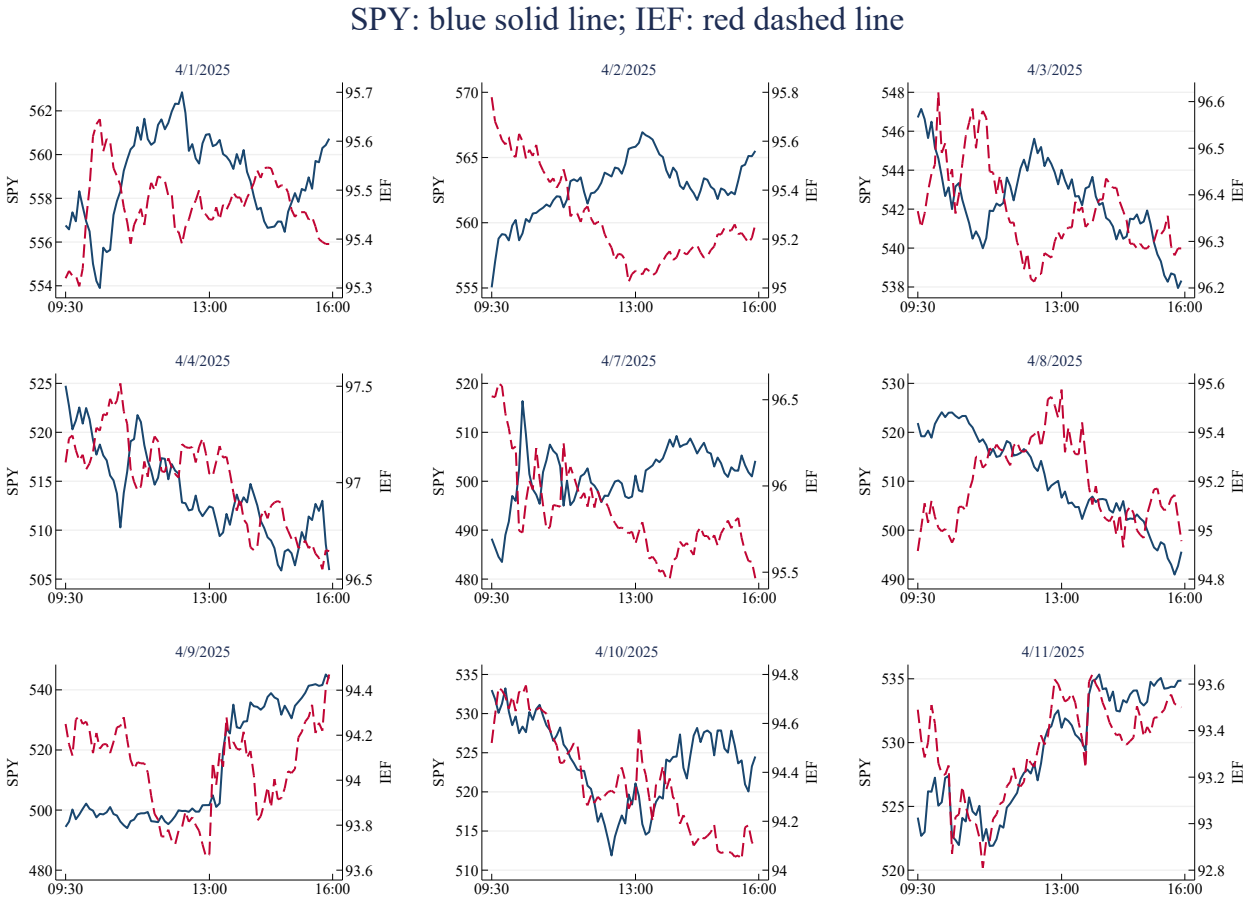

Figure A3: Stock and bond returns during the Tariff War. Day-by-day intraday returns on SPY, an S&P500 ETF, and IEF, a 7-10 year maturity Treasury ETF.

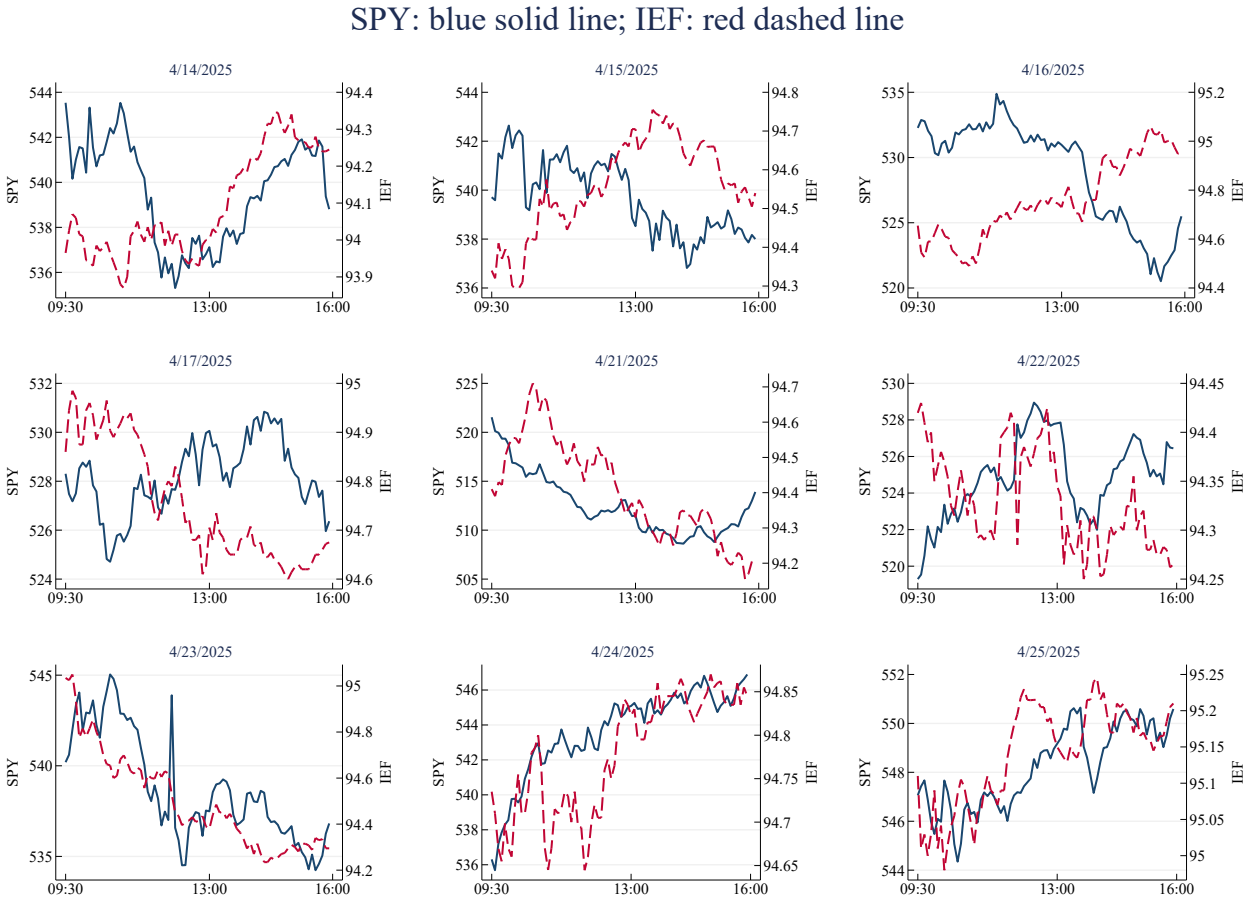

Figure A3, continued. Day-by-day intraday returns on SPY, an S&P500 ETF, and IEF, a 7-10 year maturity Treasury ETF.

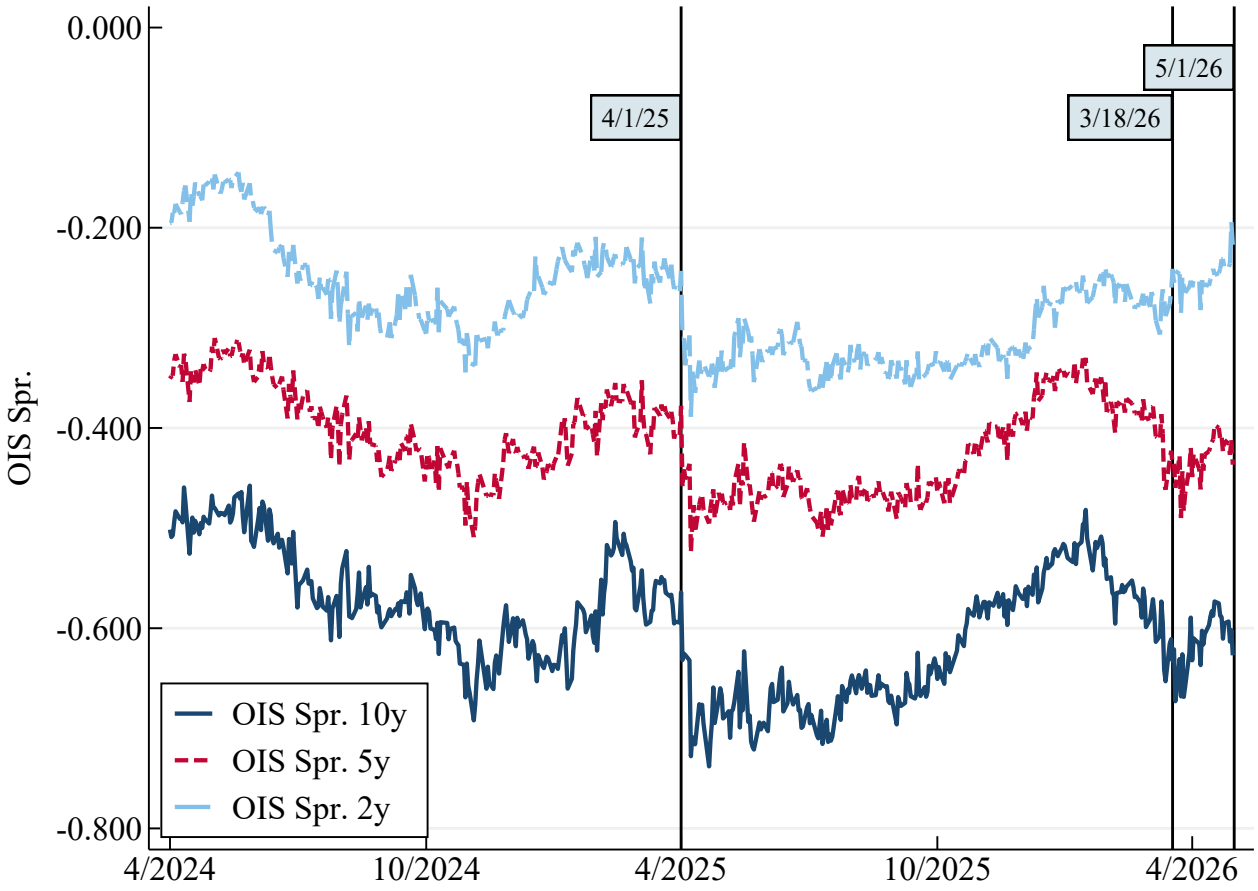

Figure A4: OIS-Treasury spreads. 10-, 5-, and 2-year OIS-Treasury Spread. Data from April 2024 to April 2026.

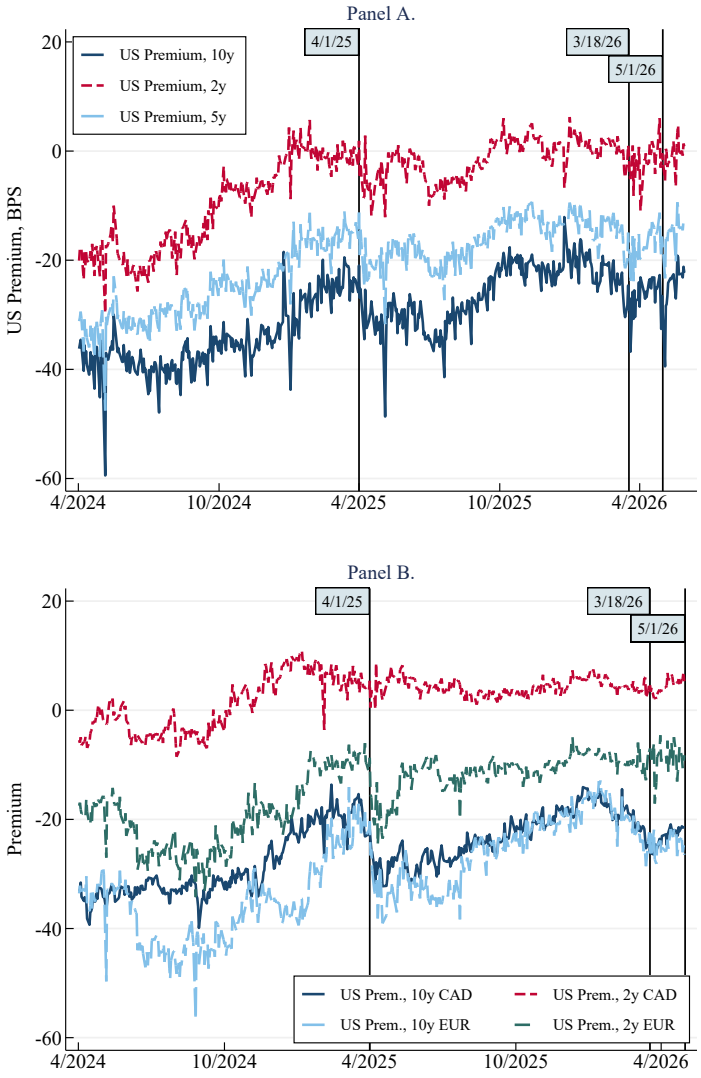

Figure A5: US Treasury Premium. The relative convenience yield of US Treasuries and government bonds denominated in AUD, CAD, CHF, DKK, EUR (German bonds), GBP, JPY, NOK, NZD, SEK, following Du et al. (2018). Panel A shows the average across the ten calculations at the indicated maturities. Panel B shows select currencies as indicated. Daily data 4/2024 to 5/2026.

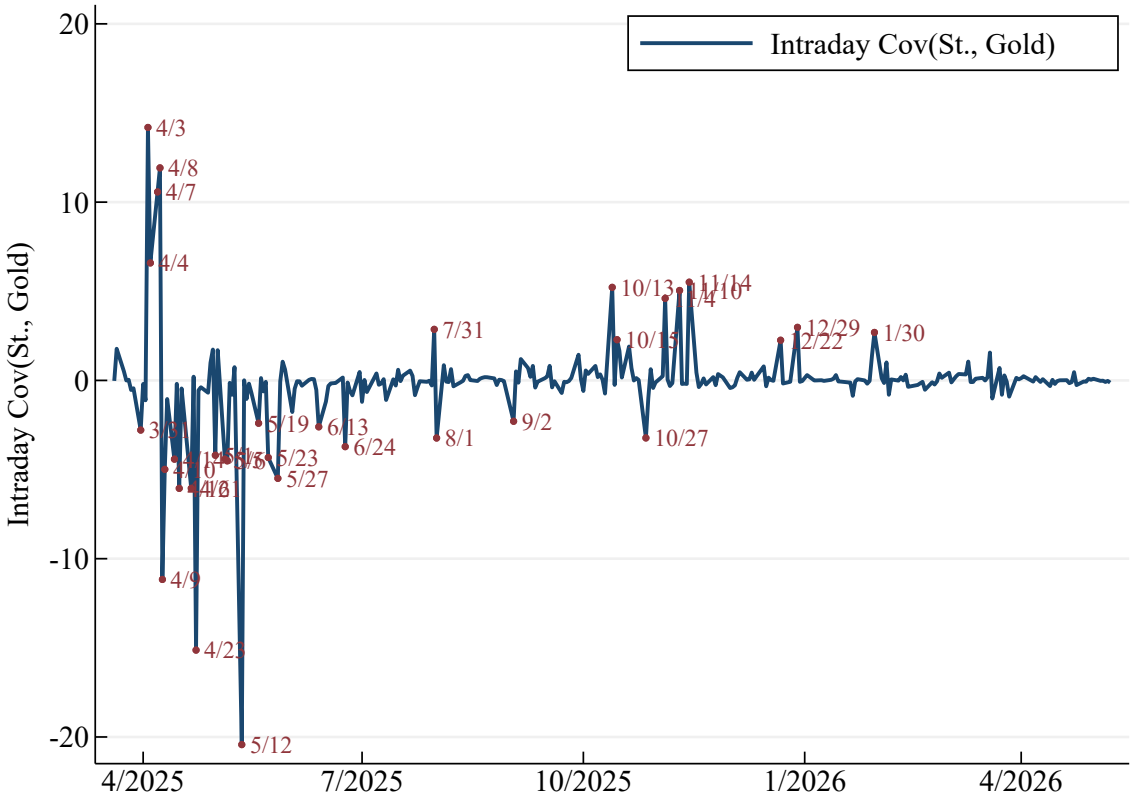

Figure A6: Stock-gold covariance. Intraday stock-gold comovements estimated from return data at the five minute frequency using the SPY ETF for stocks and XAU, the gold spot price at the London OTC market. Daily data March 2025 to April 2026.

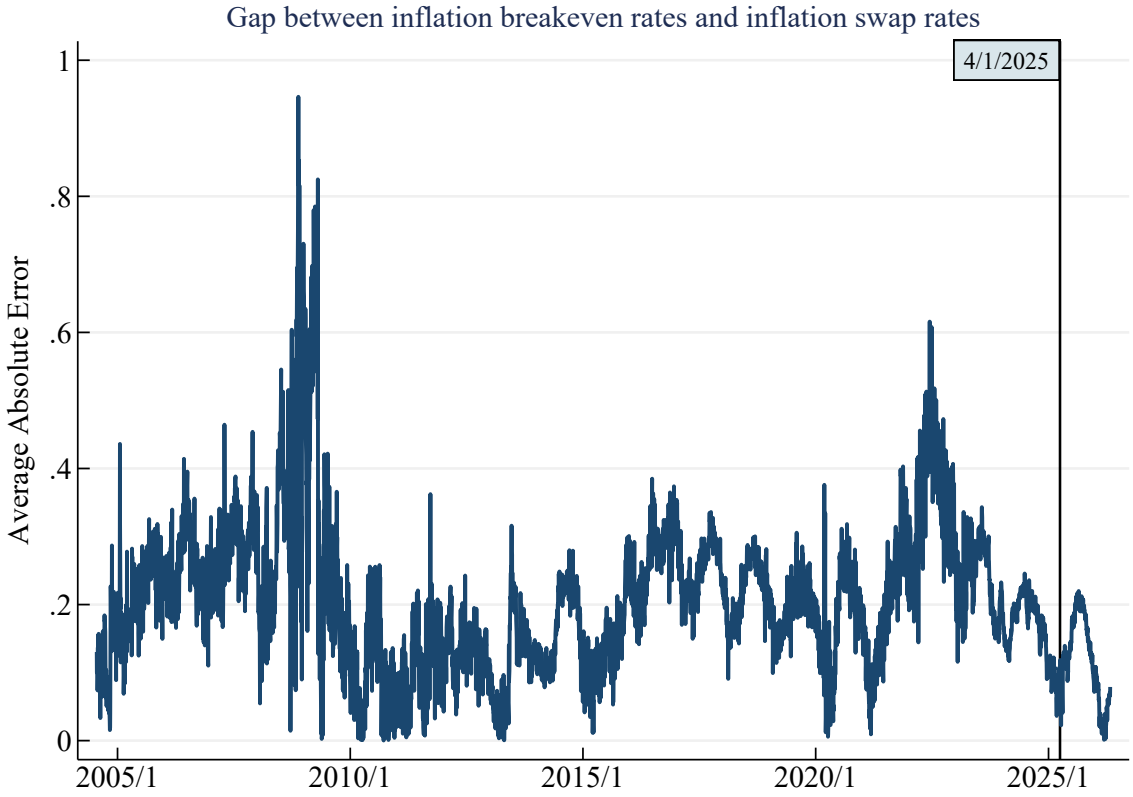

Figure A7: Breakeven inflation rates and inflation swap rates. Plots show mean absolute error across trading days; higher values indicate disagreement between the two yield curves, indicative of market dislocations. Monthly data 2005 to April 2026.