Trade Policy Surprises and U.S. Convenience Yields: Evidence from Prediction Markets*

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Abstract

We show that U.S. trade policy surprises account for a large share of the variation in U.S. Treasury convenience yields during 2025. Using transaction-level data from Polymarket's tariff-related prediction markets, we construct a novel high-frequency measure of trade policy surprises. Leveraging narrow event windows around unscheduled trade announcements, we provide the first causal evidence that unexpected U.S. tariff increases weaken the convenience yield of U.S. Treasuries. Positive tariff surprises persistently reduce convenience yields across all maturities, with the underlying mechanisms differing by maturity through distinct safety and liquidity channels. Beyond Treasury markets, trade policy surprises also induce a persistent decline in equity prices, sustained increases in the VIX and text-based trade policy uncertainty, higher short-term inflation expectations, and a higher perceived probability of recession.

Keywords: Convenience yield; tariff announcements; prediction markets; high-frequency identification

JEL codes: E30; F13; G12; G13

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1 Introduction

Since the start of 2025, the U.S. government has initiated a "global trade war," marked by an abrupt and widespread re-escalation of trade tensions with many major trade partners. Unlike the more structured disputes of 2018–2019, the 2025 episode consisted of a rapid sequence of tariff announcements, reversals, pauses, and court interventions. These policy actions were communicated through irregular and often unscheduled channels—including late-evening website releases, brief press remarks, and Truth Social posts—and targeted a wider set of countries and sectors. These announcements triggered sharp and frequent revisions to market participants' expectations about the trajectory of U.S. trade relations, as evidenced by pronounced movements in Polymarket's U.S. tariff-related prediction contracts (see Figure 1). Trade policy therefore emerged as one of the dominant macroeconomic forces shaping asset-price dynamics during this period.

These new developments raise important questions about the resilience of the U.S. safe-asset system and the durability of the privilege benefits historically associated with U.S. Treasuries. These benefits are commonly captured by the convenience yield: the yield discount investors accept for holding Treasuries due to their liquidity and safety. Recent work warns that geopolitical fragmentation and rising trade-related frictions may erode this privilege (e.g., Acharya and Laarits, 2025*a*; Du, Keerati and Schreger, 2025; Jiang, Krishnamurthy, Lustig, Richmond and Xu, 2025). Yet causal evidence on how trade policy shocks affect convenience yields remains limited. Identifying whether trade policy surprises diminish the convenience yield is therefore essential for understanding how geopolitical shocks can undermine the attractiveness of U.S. assets.

Our paper fills this gap by providing causal evidence on how trade policy surprises affect Treasury convenience yields, using a novel dataset from Polymarket, the most liquid global prediction market. A key challenge in quantifying such effects is measurement. Traditional approaches rely on text-based indices or low-frequency indicators that confound trade policy news with broader economic news and are hard to isolate true surprises, as well as the direction of surprises. We address this limitation by exploiting prediction contracts on Polymarket that are tied explicitly to tariff outcomes for specific countries. The prices of these contracts reflect real-time, risk-neutral perceived probabilities of certain tariff actions; see a few examples in Figure 1. It allows us to construct a forward-looking, high-frequency measure of trade policy surprises (TPS) with clear directional interpretations.

We begin by leveraging high-frequency identification to conduct event studies around major U.S. trade policy announcements from January through July 2025. Using narrow 30-minute windows around each announcement, we measure TPS from changes in Polymarket tariff-related contract prices, following the high-frequency identification strategies commonly used in the monetary policy literature (e.g., Gertler and Karadi, 2015; Nakamura and Steinsson, 2018). We show that a positive trade policy surprise, that is, an announcement increasing U.S. tariffs to other countries, reduces convenience yields across all maturities. These effects are statistically

significant and persist for at least one month following the shock. Beyond Treasury markets, trade policy surprises also generate a persistent decline in the S&P 500 index and sustained increases in both the CBOE volatility index (VIX) and a text-based measure of trade policy uncertainty, underscoring the broad macro-financial consequences of trade policy shocks.

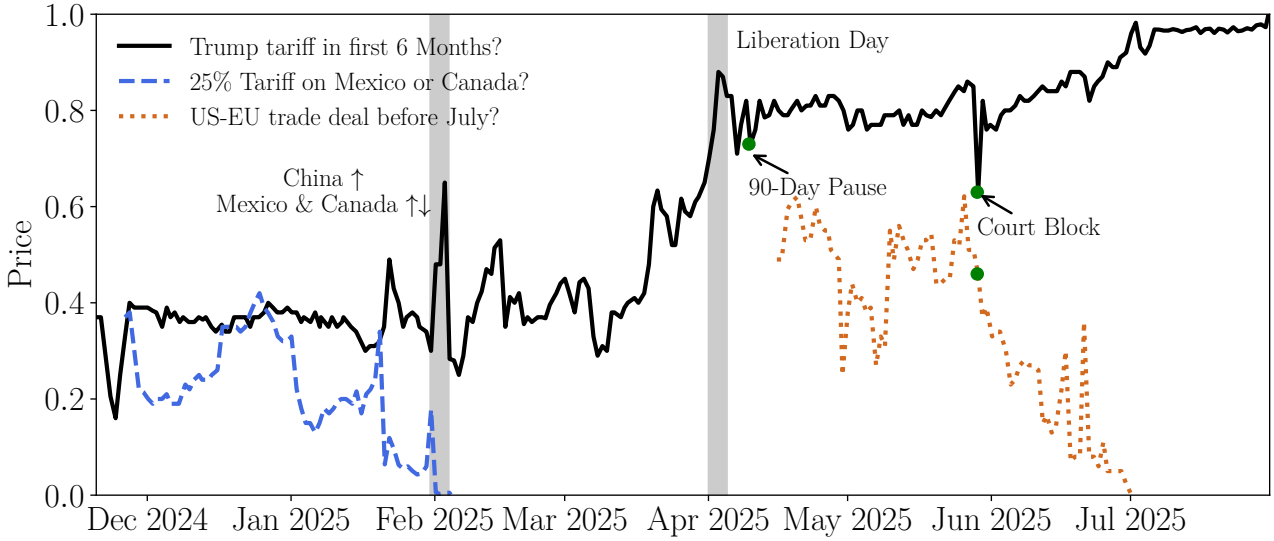


Figure 1: Polymarket Price Changes and Major Trade Policy Events

Notes: This figure shows market price movements on Polymarket alongside major U.S. trade policy events. The solid line reports prices from the market "Trump tariff in first 6 months?"; the dashed line reports prices from "25% Tariff on Mexico or Canada?"; and the dotted line corresponds to "US–EU trade deal before July [2025]?". In each market, participants trade binary options on whether the stated outcome will occur. The market price reflects the risk-neutral probability that the outcome will be realized. Additional details on Polymarket's structure are provided in Section 2. The two shaded areas correspond to early February and early April of 2025. During each period, there were multiple trade policy announcements on consecutive days.

We next construct a daily TPS index from the same Polymarket tariff-related contract prices. Combining this index with the regression coefficients from our high-frequency event study allows us to trace out the cumulative effect of trade policy news on convenience yields. We find that variations in this daily index account for a substantial share of the movements in U.S. Treasury convenience yields during the first half of 2025, indicating that trade policy developments were a major driver of Treasury pricing in this period.

To shed light on the underlying mechanisms, we further decompose Treasury convenience yields into their liquidity and safety components. Although aggregate convenience yields decline at all maturities following a tariff-increase announcement, the drivers differ across the maturity spectrum. For long-term maturities, the decline is driven primarily by a reduction in liquidity benefits. In contrast, for short-term maturities, the decline is largely attributable to a deterioration in safety benefits, with only a modest offset from an increase in liquidity premia. This heterogeneity highlights that trade policy shocks affect distinct dimensions of Treasury demand at different horizons.

We now describe our approach and data in more detail. We construct our measure of U.S. trade policy surprises from price changes in tariff-related contracts traded on Polymarket.

Investors on this platform trade binary "Yes" or "No" options in these contracts tied to real-world events, and we identify the subset linked to U.S. tariff actions. Each option, also called "token" on Polymarket, pays \$1 if the corresponding outcome is realized and zero otherwise. By construction, the time-t price of a "Yes" token equals the time-t risk-neutral market-perceived probability that the event will occur; the price of the "No" token reflects the complementary probability.[1] Following the literature that identifies high-frequency monetary policy shocks, we extract the first principle component of price movements across all tariff-related Polymarket contracts. This procedure yields a unified TPS measure that aggregates information from the cross-section of event-linked contracts.

To measure the convenience yield on U.S. Treasuries, we use the spread between maturity-matched interest rate swap (IRS) rates and Treasury yields as our baseline measure (e.g., Jiang, Richmond and Zhang, 2025). We also construct an alternative, cross-country measure of the U.S. convenience yield based on covered interest parity deviations between U.S. Treasuries and sovereign bonds issued by other G10 economies (e.g., Du and Schreger, 2016; Du, Im and Schreger, 2018). This Treasury basis spread captures investors' relative preference for U.S. Treasuries over G10 sovereign bonds and provides a complementary measure of convenience benefits from a cross-country perspective.

We first conduct an event study of major U.S. trade-policy announcements issued in 2025 and examine the effect of TPS on Treasury convenience yields using a high-frequency identification strategy. Trade-policy communications during this period were often disseminated through President Trump's Truth Social account, and their release times were largely unanticipated by markets. We compile a comprehensive list of trade-related announcements from January 20, 2025 (Inauguration Day), through July 31, 2025. For each announcement, we construct high-frequency identified TPS from changes in Polymarket tariff-linked contract prices within a 30-minute window surrounding the announcement.[2]

We estimate the dynamic response of Treasury convenience yields by regressing changes in our baseline convenience-yield measure on the high-frequency identified TPS. A positive trade policy surprise, i.e., an announcement that increases U.S. tariffs, induces a persistent and statistically significant decline in convenience yields across all maturities. For short-term maturities, convenience yields continue to drift downward for several weeks following the announcement, while for longer maturities most of the decline occurs immediately on impact.

We also examine how TPS affects the relative convenience benefits of U.S. Treasuries compared with sovereign bonds issued by G10 economies. To do so, we focus on Polymarket contracts whose outcomes pertain to tariff actions involving specific countries, allowing us to construct a country-specific measure of TPS. A panel regression across G10 country pairs shows that U.S. convenience yields decline relative to their foreign counterparts following a tariff-increase announcement. These effects persist for at least one month, indicating a durable

[1] For each transaction, we compute an adjusted price that aligns the sign of the contract with the direction of the tariff outcome, so that higher (lower) values correspond to a higher (lower) implied probability of a U.S. tariff increase.

[2] Our results are also robust to alternative lengths of event windows.

reassessment of the privilege benefits traditionally associated with U.S. Treasuries.

To shed light on the mechanisms behind these responses, we decompose the baseline convenience yield into liquidity and safety components. Following the literature (Longstaff, 2004), we use Refcorp bonds, whose payments are fully backed by the U.S. Treasury and share the same tax treatment, to isolate a default-risk-free benchmark. The Refcorp–Treasury spread captures the liquidity premium embedded in Treasuries, while we regard the residual IRS–Refcorp spread as the safety premium. We find that the forces driving the decline in aggregate convenience yields differ across maturities during this period: for long-term Treasuries, the decline is driven primarily by reduced liquidity benefits, whereas for short-term Treasuries, the decline mainly comes from a deterioration in safety benefits.

In addition to Treasury markets, we analyze the broader market implications of TPS. We find a persistent decline in the S&P 500 index following a positive trade policy surprise, together with sustained increases in both the VIX and the text-based trade policy uncertainty index constructed by Caldara et al. (2020). These responses indicate heightened perceived uncertainty and increased media attention surrounding trade policy developments.

Higher tariffs may also raise concerns about future price levels by increasing the cost of imported goods, potentially putting upward pressure on inflation expectations. Consistent with this mechanism, we find that short-term inflation expectations measured from inflation swaps rise persistently and significantly following positive TPS, while long-term inflation expectations remain stable or turn slightly negative.

Finally, we explore whether trade policy shocks influence recession risk. Using prices from the Polymarket contract "US recession in 2025?", we find that TPS lead to a significant and persistent rise in the perceived probability of a U.S. recession. This pattern aligns with the safety-channel interpretation of convenience-yield movements: tariff-increase announcements heighten concerns about economic downturns, thereby weakening the safety premium on U.S. Treasuries.

Literature Our paper contributes to the literature on the U.S. safe-asset status and convenience yields (e.g., Gorton, Lewellen and Metrick, 2012; Krishnamurthy and Vissing-Jorgensen, 2012; Nagel, 2016; Du, Im and Schreger, 2018; He, Nagel and Song, 2021; Li and Krishnamurthy, 2024; Acharya and Laarits, 2025*b*; Fu, Li and Xie, 2025). A recent strand of this literature emphasizes the potential erosion of dollar privilege and the decline in convenience yields. Acharya and Laarits (2025*a*) study the movements in convenience yields around the tariff war shock of early April 2025 through a hedging mechanism. Du, Keerati and Schreger (2025) document a decoupling between the convenience yield on the U.S. dollar and on U.S. Treasuries. Jiang, Krishnamurthy, Lustig, Richmond and Xu (2025) show that foreign investors' willingness to pay for the safety of dollar-denominated assets has declined, while Jiang, Krishnamurthy, Lustig and Richmond (2025) argue that these movements are consistent with rising perceptions that the U.S. may lose its reserve-currency status. Hassan et al. (2025) develop a general-equilibrium model featuring endogenous exchange-rate regime choice and a safety premium on a country's currency. We contribute to this literature by providing the first causal

evidence on how trade policy surprises affect convenience yields, capturing both the immediate impact and the dynamic responses over time. Our high-frequency identification strategy isolates exogenous shifts in investor beliefs about U.S. tariff policy, allowing us to quantify how changes in perceived trade policy translate into movements in convenience yields. We further show that the mechanisms underlying these movements differ across maturities, highlighting distinct channels through which geopolitical shocks shape Treasury demand.

Our work also contributes to the growing literature studying the implications of trade war and geopolitical risks. A large body of this literature examines how tariffs affect the real economy, trade flows, and welfare (e.g., Amiti, Redding and Weinstein, 2019; Fajgelbaum et al., 2020; Lashkaripour, 2021; Ignatenko et al., 2025; Rodríguez-Clare, Ulate and Vasquez, 2025). In contrast, we study how investors' perceptions of U.S. tariff policies and trade relations since 2025 shape the resilience of the privilege benefits historically associated with U.S. Treasuries. Our focus is on the asset-pricing consequences of trade policy; specifically, how geopolitical shocks transmit to Treasury demand and convenience yields.

We further contribute to both literature by developing a new high-frequency measure of TPS using prediction-market data. To the best of our knowledge, ours is the first direct high-frequency measure regarding trade policy news. The closest benchmark is the newspaper-based trade policy uncertainty index of Caldara et al. (2020), which captures the share of newspaper coverage related to trade policy uncertainty. This measure has been used, for example, by Khalil and Strobel (2024) to study the effects of U.S. trade policy on the dollar strength. In contrast, our Polymarket-based measure exploits real-time movements in binary contracts tied to specific tariff outcomes, providing a forward-looking, high-frequency assessment of the probability investors assign to trade-policy actions. Moreover, our measure contains directional information, allowing us to distinguish between news indicating tariff increases versus decreases.

Our measurement approach relates to recent studies using prediction markets to extract market expectations about macroeconomic policy (e.g., Eichengreen et al., 2025; Swanson, Renxuan and Wu, 2025; Taillard and Zeng, 2025) and election outcomes (e.g., Chernov, Elenev and Song, 2025; Ng et al., 2025). Earlier work in this literature (e.g., Gürkaynak et al., 2005; Wolfers and Zitzewitz, 2006; Snowberg, Wolfers and Zitzewitz, 2013) established that prediction markets are informative beyond traditional polls. We contribute to this literature by utilizing the novel transaction-level data from Polymarket with a high-frequency identification strategy. This approach enables us to identify the causal impact of prediction market expectations on economic outcomes.

The rest of the paper is organized as follows. Section 2 explains the data we use in detail and presents summary statistics. Section 3 examines the effects of trade policy announcements using event studies. Section 4 constructs an aggregate trade policy surprise index and analyzes its implications for the cumulative evolution of convenience yields. Section 5 examines the underlying mechanism, and Section 6 concludes.

2 Data

We begin by introducing the novel prediction market data we use to measure trade policy surprises, followed by the conventional financial-market data employed in our empirical analyses.

2.1 Prediction Market: Polymarket

The prediction-market data we use come from Polymarket, a blockchain-based platform where users trade binary options tied to real-world events.[3] Polymarket experienced substantial growth during the 2024 U.S. presidential election and continued to expand thereafter. By October 2025, the monthly trading volume peaked at approximately $3 billion, with 0.5 million monthly active traders, establishing Polymarket as the world's largest prediction market.

We first describe the structure of Polymarket's prediction markets and identify the subset related to trade policy. Our measures of trade-policy surprises are derived from binary options traded on these markets. The prices of these contracts embed investors' beliefs about future policy outcomes, and changes in these prices therefore reflect revisions in those beliefs. Sections 3 and 4 detail how we construct trade-policy-surprise measures from these price changes.

Market structure and payoffs Polymarket is organized into a three-tier structure: *events*, *markets*, and *tokens*. Each *event* corresponds to a real-world outcome of interest. Within each event, one or more *markets* represent mutually exclusive outcomes. In each market, users trade two types of *tokens*—"Yes" and "No"—which pay out $1 (per token) if the corresponding market outcome is realized or not, respectively.

Table 1 illustrates this structure. We classify Polymarket events into three categories and provide an example of each. Type-1 events contain a single market; Type-2 events contain multiple markets tied to distinct non-numerical outcomes; and Type-3 events contain multiple markets tied to numerical outcomes (e.g., strike values).

The Type-1 example in Table 1 concerns the question "Will Trump impose large tariffs in his first 6 months?"[4] The market resolves to "Yes" if the U.S. weighted-average tariff, as reported in the Federal Reserve Economic Data (FRED) by the Federal Reserve Bank of St. Louis, reaches at least 5% in either Q1 or Q2 of 2025. This market opened up for trading on November 18, 2024. On July 30, 2025 at 7:30 a.m., FRED released the Q2 tariff of 8.16%, triggering resolution to "Yes." A holder of a "Yes" ("No") token therefore received $1 ($0).

The Type-2 example in Table 1 contains multiple markets, each associated with a specific country.[5] The underlying event is "Which countries will the U.S. agree to trade deals with

[3] See https://polymarket.com.

[4] See https://polymarket.com/event/will-trump-impose-large-tariffs-in-first-6-months.

[5] See https://polymarket.com/event/which-countries-will-the-us-agree-to-trade-deals-with-before-july.

before July?" For instance, the market "Canada" pays $1 if the U.S. reaches a trade agreement with Canada before July 2025. No such agreement occurred, and the market resolved to "No" on June 30, 2025.

Type-3 events are traded similarly to Types 1 and 2 but are less common on Polymarket. The Type-3 example in Table 1 exhibits substantially lower trading volume than the other categories. We therefore include this category only for completeness in describing the platform's market structure and exclude it from our empirical analyses.

In summary, under this market and payoff structure, the time-t price of a "Yes" token equals the time-t risk-neutral probability that the market outcome will be realized, and the price of the "No" token equals the corresponding probability that the outcome will not occur. By construction, in any given market and at any point in time, the two prices sum to one.

Table 1: Examples of Polymarket Events, Markets, and Tokens

Type	Event	Start	Market	Close	Resolution	Token	Payoff
1	Will Trump impose large tariffs in his first 6 months?	Nov 18, 2024	–	Jul 30, 2025	Yes	Yes	$1
						No	$0
2	Which countries will the U.S. agree to trade deals with before July?	Apr 14, 2025	China	May 12, 2025	Yes	Yes	$1
						No	$0
			EU	Jul 1, 2025	No	Yes	$0
						No	$1
			Canada	Jul 1, 2025	No	Yes	$0
						No	$1
			⋮				
3	How large will Trump's EU tariffs be?	Feb 2, 2025	<10%	Apr 3, 2025	No	Yes	$0
						No	$1
			10%-20%	Apr 3, 2025	No	Yes	$0
						No	$1
			20%-30%	Apr 3, 2025	Yes	Yes	$1
						No	$0
			⋮				

Cross-validity check for Polymarket To assess whether Polymarket prices convey meaningful information, we compare Polymarket's Fed interest rate markets with federal funds futures traded on the Chicago Mercantile Exchange.[6] In these markets, participants trade on the Federal Reserve's target federal funds rate for a specific Federal Open Market Committee (FOMC) meeting. These contracts—among the largest and most liquid on Polymarket—bet directly on the policy rate decision and therefore reflect market expectations about future interest rate movements. Their role is analogous to federal funds futures, though Polymarket operates outside traditional financial markets. Eichengreen et al. (2025) document that prices in Polymarket's Fed interest rate markets closely track those of federal funds futures, indicating that Polymarket provides an alternative, yet informative, venue for obtaining policy expectations.

[6]For an example of Polymarket's Fed interest rate markets, see https://polymarket.com/event/fed-decision-in-december?tid=1763223603737.

Trade-related markets on Polymarket We identify trade-policy-related markets using the following procedure. First, we collect all Polymarket events tagged with any of the keywords *trade*, *trades*, *trade-war*, *tariff*, or *tariffs*. We then retain events whose descriptions contain at least one of these terms and manually review them to remove those unrelated to trade policy. To ensure sufficient trading activity, we exclude markets with total dollar volume (over the sample period) below $100,000.

Next, we keep all Type-1 markets and retain only the subset of Type-2 markets corresponding to G10 countries, following the definition in Du and Schreger (2016) and Du, Im and Schreger (2018). Finally, we restrict attention to markets whose outcomes imply a clear direction of tariff increases or decreases.

This process yields a final sample of 44 trade-related Polymarket events covering 56 distinct markets. The earliest of these markets began trading on November 18, 2024, and our sample period spans November 18, 2024 through July 31, 2025.

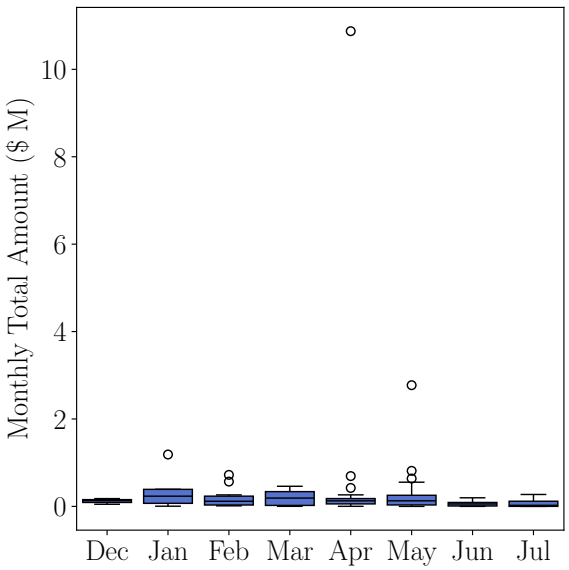


Figure 2: Trade-related Markets Trading Volume on Polymarket

Notes: This figure reports the monthly trading volume of tariff-related markets on Polymarket, measured in millions of dollars. Box: 1st and 3rd quartiles and median; whiskers: range within 1.5 times interquartile range; cycles: observations outside whiskers.

Liquidity of trade-related markets Figure 2 shows the liquidity of the trade-policy prediction markets in terms of the monthly dollar trading volume. The average monthly trading volume across these markets is $246,074. The most active market reaches a peak monthly volume exceeding $10 million in April 2025. This level of activity is comparable to that of the largest Polymarket Fed interest rate market, though on average the trade-policy markets trade at roughly one-tenth the volume of the Fed interest rate markets. In April 2025, the top ten markets (by total series volume) have bid-ask spreads between 0.1 and 1 cent. Since Polymarket's minimum tick size is 0.1 cent, these markets are highly liquid.

Transaction prices and economic interpretations We retrieve all transactions in the selected markets using Polymarket's Subgraph API and adjust transaction prices so that higher prices correspond to a higher implied probability of a U.S. tariff increase over other countries.

Specifically, consider a transaction k in which a user buys a token $i \in \{\text{Yes}, \text{No}\}$ at price $p_{i,k}$ (an identical description applies to sellers), where token i belongs to market $m(i)$ within event $e(i)$. We assign each token i a tariff-direction label $o(i) \in \{\text{Tariff Increase}, \text{Tariff Decrease}\}$. For markets that resolve to "Yes" when the U.S. increases its tariff, the "Yes" token is labeled $o(i) = \text{Tariff Increase}$ and the corresponding "No" token is labeled $o(i) = \text{Tariff Decrease}$. Thus, the label $o(i)$ reflects the direction of the tariff change associated with the token's payoff if its outcome is realized. As a reminder, any token whose outcome is realized pays \$1 at settlement.

We compute an adjusted transaction price that aligns the price with the direction of the tariff outcome, so that higher (lower) values correspond to a higher (lower) implied probability of a tariff increase. Formally, we define

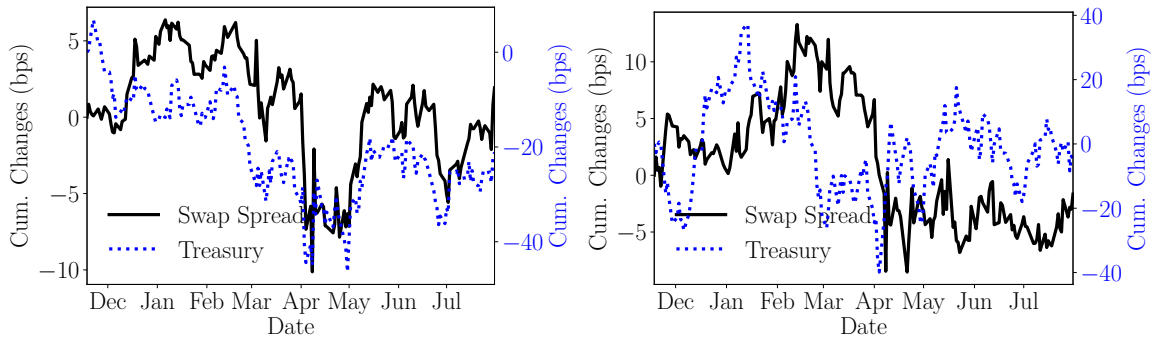
$$\hat{p}_k = \begin{cases} p_{i,k}, & \text{if } o(i) = \text{Tariff Increase} \\ 1 - p_{i,k}, & \text{if } o(i) = \text{Tariff Decrease} \end{cases}. \tag{1}$$

In Section 3, we use these adjusted prices to construct our measures of trade-policy surprises.

2.2 Financial Market Data

Measures of convenience yield We use the spread between maturity-matched interest rate swap (IRS) rates and Treasury yields as our baseline measure of the U.S. convenience yield (e.g., Jiang, Richmond and Zhang, 2025). Specifically, for maturities from one to thirty years, we use U.S. interest rate swaps linked to the Secured Overnight Financing Rate (SOFR) and compute the convenience yield as the difference between the swap rate and the Treasury yield of the same maturity. In these interest rate swap contracts, the swap rate is the fixed interest rate received in exchange for paying the SOFR-based floating interest rate. For maturities under one year, we use interest rate swaps with two floating legs where one leg is indexed to the USD OIS SOFR rate and the other is indexed to the Fed Funds rate of the same maturity.

Figure 3 plots the above convenience yield measures and the corresponding Treasury yields at 1-year (Panel (a)) and 10-year (Panel (b)) maturities. From January to July 2025, the 10-year interest rate swap rate and the 10-year Treasury yield declined by 24 and 17.4 basis points, respectively, resulting in a 6.6-basis-point decline in the 10-year convenience yield.



(a) 1-Year (b) 10-Year

Figure 3: Cumulative Changes in Convenience Yields and Treasury Yields

Notes: This figure plots the cumulative changes in the U.S. convenience yields and Treasury yields for 1-year (Panel (a)) and 10-year (Panel (b)) maturities, respectively. In each panel, the solid black line is the cumulative changes in U.S. convenience yield in basis points (defined as the interest rate swap spread), and the dotted blue line is the cumulative changes in U.S. Treasury yield in basis points. The sample period is from November 18, 2025 to July 31, 2025.

We also construct an alternative measure of the U.S. convenience yield, often referred to as the Treasury basis, by examining investors' preference for U.S. Treasuries relative to sovereign bonds issued by other advanced economies (e.g., Du and Schreger, 2016; Du, Im and Schreger, 2018). The Treasury basis is derived from covered interest parity (CIP) deviations for G10 currencies and corresponds to the yield spread between U.S. Treasuries and currency-hedged foreign government debt.[7] Specifically, the Treasury basis of country c at maturity n on date t is

$$\Phi_{c,n,t} = y^{Govt}_{c,n,t} - \rho_{c,n,t} - y^{Govt}_{USD,n,t},$$

where $y^{Govt}_{c,n,t}$ and $y^{Govt}_{USD,n,t}$ are the government bond yields of country c and the U.S. at maturity n on date t, respectively, and $\rho_{c,n,t}$ is the forward premium. We focus on maturity $n = 3$ months in our analysis. The 3-month forward premium is defined as $\rho_{c,n,t} = \frac{1}{n}(f_{c,n,t} - s_{c,t})$, where $f_{c,n,t}$ and $s_{c,t}$ are the log forward exchange rate and the log spot exchange rate of country c's currency, respectively.[8]

In Section 5, where we examine the mechanism underlying movements in the convenience yield, we employ an additional measure that isolates the liquidity premium. This measure is the Refcorp–Treasury spread, where Refcorp refers to the Resolution Funding Corporation, a government entity created under the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA). Unlike other agency securities, Refcorp bonds are explicitly backed by the U.S. Treasury and are subject to the same tax treatment as Treasury securities. As a result, the Refcorp–Treasury spread is free of default risk and reflects the liquidity benefits embedded

[7]The G10 currencies are the Australian dollar (AUD), Canadian dollar (CAD), Swiss franc (CHF), Danish krone (DKK), euro (EUR), British pound (GBP), Japanese yen (JPY), Norwegian krone (NOK), New Zealand dollar (NZD), Swedish krona (SEK), and US dollar (USD).

[8]We also take into account the actual days to maturity of the forward contracts, following Cerutti and Zhou (2024) and De Leo, Keller and Zou (2024).

in Treasury bonds.

The variables used to construct the convenience yield measures are obtained from Bloomberg.

Other economic variables We obtain the S&P 500 index and the VIX from Bloomberg. To assess how trade-policy perceptions reflected in Polymarket influence expectations of broader economic variables, we also use 1-year, 2-year, and 10-year inflation expectations implied by inflation swaps. An inflation swap is a financial derivative in which one party pays a predetermined fixed rate while the other pays a floating rate linked to the consumer price index (CPI). These contracts provide a market-based measure of the average expected inflation rate over the swap's maturity.

We measure the default risk of U.S. Treasuries from the sovereign credit default swap (CDS) premium. In a sovereign CDS contract, the buyer pays the CDS premium to the seller in exchange for compensation in the event of a sovereign default (Longstaff et al., 2011; Augustin et al., 2022). U.S. sovereign CDS contracts are available in both USD and EUR denominations. Following Engel and Wu (2023), we use the USD-denominated U.S. sovereign CDS contract.

In addition, we obtain the text-based trade policy uncertainty (TPU) index from Caldara et al. (2020), who construct the measure by counting the number of newspaper articles that mention terms related to both "trade policy" and "uncertainty."

Summary statistics Tables 2-3 present the summary statistics of the key financial and economic variables mentioned in this section. Appendix A.2 includes the details of all variables and data sources mentioned.

Table 2: Summary Statistics of Time Series Dataset

Panel A: Daily Changes in S&P 500 and VIX (%)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
S&P 500	173	0.04	1.33	−6.16	−0.39	0.10	0.58	9.09
VIX	173	−0.03	9.88	−44.24	−4.45	−0.79	3.29	55.41

Panel B: Inflation Expectations (%)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
1-Year	173	3.02	0.31	2.50	2.74	3.05	3.29	3.61
2-Year	173	2.76	0.13	2.51	2.67	2.75	2.85	3.03
10-Year	173	2.50	0.07	2.30	2.45	2.49	2.55	2.63

Panel C: Interest Rate Expectations (%)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
1-Year	173	3.61	0.25	3.08	3.42	3.56	3.86	4.07
2-Year	173	3.45	0.24	2.98	3.27	3.40	3.69	3.92
4-Year	173	3.99	0.23	3.54	3.82	3.96	4.19	4.46

Panel D: Daily Changes in Convenience Yields (bps)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
3-Month	173	−0.11	1.92	−3.94	−1.59	0.12	1.50	3.08
1-Year	173	0.02	1.32	−4.30	−0.55	−0.06	0.61	8.04
2-Year	173	0.01	1.77	−6.56	−0.71	−0.10	0.74	12.59
5-Year	173	0.02	1.82	−7.28	−0.90	0.05	0.76	10.35
10-Year	173	0.01	1.85	−6.86	−0.94	−0.03	1.11	8.70
30-Year	173	0.02	2.25	−7.70	−1.25	0.05	1.35	9.13

Panel E: Interest Rate Swap Rates (%)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
1-Year	173	4.07	0.14	3.72	3.98	4.07	4.18	4.34
2-Year	173	3.83	0.22	3.37	3.65	3.79	4.06	4.24
5-Year	173	3.77	0.22	3.35	3.60	3.74	3.96	4.29
10-Year	173	3.90	0.15	3.51	3.80	3.87	4.00	4.32

Panel F: Refcorp STRIP Yields (%)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
1-Year	173	4.62	0.11	4.40	4.55	4.59	4.73	4.91
2-Year	173	4.43	0.19	4.05	4.28	4.38	4.62	4.81
5-Year	173	4.48	0.20	4.09	4.33	4.44	4.64	5.00
10-Year	173	4.85	0.15	4.48	4.74	4.84	4.95	5.27

Panel G: U.S. Sovereign CDS Premium (bps)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
1-Year	173	14.54	1.79	12.01	13.17	14.15	15.48	19.45
2-Year	173	19.59	2.23	16.54	17.97	18.99	20.59	26.13
5-Year	173	39.99	3.33	35.61	37.83	38.71	41.38	50.52
10-Year	173	65.92	3.25	61.48	63.61	65.12	67.02	78.24

Table 3: Summary Statistics of 3-Month CIP Deviations Relative to the U.S. (bps)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
AUD	168	−67.60	45.51	−153.76	−117.33	−50.58	−33.36	4.86
CAD	170	19.36	6.05	7.63	15.17	18.42	22.47	43.19
EUR	170	−415.77	54.66	−495.12	−473.71	−410.60	−359.41	−333.07
GBP	170	−23.46	38.39	−85.26	−56.08	−17.91	4.43	47.28
JPY	162	15.20	7.47	−1.83	10.45	15.28	19.21	42.43

3 Event Study

This section examines the effects of trade-policy surprises on convenience yields of Treasuries and other financial market variables using high-frequency event studies. The trade-policy surprises are measured using price changes in the trade-related Polymarket markets introduced in Section 2.1, computed over narrow windows surrounding the U.S. trade-related announcements occurring since 2025.

3.1 Trade Announcements and Trade Policy Surprises

3.1.1 Trade Policy Announcements

We compile a comprehensive list of U.S. trade-policy announcements issued between January 20, 2025 (the date of President Trump's inauguration) and July 31, 2025. Table 4 reports the dates, times, and communication venues for each announcement. Unlike FOMC announcements—which follow a prescheduled calendar and are released through a fixed venue—trade-policy communications during this period were primarily disseminated through President Trump's Truth Social account, and their release times were largely unanticipated by the market. Our sample includes all U.S. tariff-related announcements within this window. The first such announcement occurred on January 20, 2025, when President Trump issued a presidential memorandum outlining the "America First Trade Policy."[9] We treat each announcement as a distinct event in our analysis.

3.1.2 Measurement of Trade Policy Surprise

We measure trade-policy surprises using price changes in the relevant prediction markets around each announcement. Each announcement s corresponds to a unique timestamp t. For an announcement s, we consider a 30-minute window $[t-u, t+v]$, where $u = 10$ minutes and $v = 20$ minutes. For each market m in the Polymarket sample, we identify the last transaction before the start of the event window, denoted as $k\,(m, t-u)$, and the first transaction after

[9]See details at https://www.whitehouse.gov/presidential-actions/2025/01/america-first-trade-policy/.

Table 4: Trade Policy Announcements

Date	Time	Venue	Description	Tariff Direction
Jan 20, 2025	8:31pm	White House website	America First Trade Policy	Increase
Jan 31, 2025	1:19pm	White House daily briefing	CAN, CHN, & MEX	Increase
Feb 1, 2025	8:03pm	White House website	Executive order: Jan 31 tariff	Increase
Feb 3, 2025	10:41am	Trump's Truth Social post	Tariff pause on MEX	Decrease
Feb 3, 2025	7:27pm	White House website	Tariff pause on CAN	Decrease
Feb 4, 2025	12:01am		Feb 1 executive order took effect	Increase
Feb 10, 2025	6:19pm	Trump's oval office remarks	Steel & aluminum	Increase
Mar 4, 2025	12:01am		Feb 3 announcement took effect	Increase
Mar 12, 2025	12:01am		Feb 10 executive order took effect	Increase
Mar 13, 2025	7:58am	Trump's Truth Social post	EU wine	Increase
Mar 24, 2025	10:37am	Trump's Truth Social post	Countries importing venezuelan oil	Increase
Apr 1, 2025	12:29pm	White House daily briefing	Upcoming announcement on Apr 2	Increase
Apr 2, 2025	4:07pm	"Make America Wealthy Again"	Reciprocal tariff	Increase
Apr 3, 2025	12:01am	Executive Office of the President	Automobiles	Increase
Apr 5, 2025	12:01am		Apr 2 Reciprocal tariff tool effect	Increase
Apr 9, 2025	1:18pm	Trump's Truth Social post	90-day tariff pause	Ambiguous
May 3, 2025	12:01am		Tariffs on automobiles took effect	Increase
May 4, 2025	7:18pm	Trump's Truth Social post	Movies	Increase
May 12, 2025	3:01am	White House website	US-China trade talk in Geneva	Decrease
May 23, 2025	7:43am	Trump's Truth Social post	EU	Increase
May 25, 2025	6:06pm	FOX News	Tariff pause on EU	Decrease
May 28, 2025	6:54pm		Court blocked Trump tariff	Decrease
May 29, 2025	3:00pm		Appeals court reinstated Trump tariff	Increase
Jun 4, 2025	12:01am	Executive Office of the President	Tariff on aluminum and steel	Increase
Jul 2, 2025	10:44am	Trump's Truth Social post	Vietnam	Decrease
Jul 7, 2025	12:18pm	Trump's Truth Social post	KOR, JPN, ZAF, etc.	Ambiguous
Jul 7, 2025	1:33pm	White House daily briefing	Further delay of reciprocal tariffs	Ambiguous
Jul 10, 2025	8:15pm	Trump's Truth Social post	CAN	Increase
Jul 12, 2025	8:29am	Trump's Truth Social post	MEX & EU	Increase
Jul 22, 2025	1:30pm	Trump's Truth Social post	PHL	Decrease
Jul 22, 2025	3:21pm	Trump's Truth Social post	IDN	Decrease
Jul 27, 2025	1:26pm		EU	Decrease
Jul 30, 2025	4:00pm	White House website	Duty-free de minimis treatment	Increase
Jul 30, 2025	6:16pm	Trump's Truth Social post	KOR	Decrease
Jul 31, 2025	11:03am	Trump's Truth Social post	MEX	Decrease
Jul 31, 2025	7:08pm	White House website	Modifications of reciprocal tariffs	Decrease

Notes: The time column in the table reports timestamps in Eastern Time, corresponding to the time zone of Washington, D.C. The abbreviations "CAN," "CHN," "MEX," "KOR," "JPN," "ZAF, " "PHL, " "IDN," and "EU" refer to Canada, China, Mexico, Korea, Japan, South Africa, Philippines, Indonesia, and the European Union, respectively.

the end of the event window, denoted as $\tilde{k}(m, t+v)$. We define the trade-policy surprise in market m for announcement s as

$$\Delta p^{s}_{m,t} = \hat{p}_{k(m,t+v)} - \hat{p}_{\tilde{k}(m,t-u)}, \tag{2}$$

where $\hat{p}_{k(m,t+v)}$ and $\hat{p}_{\tilde{k}(m,t-u)}$ are the adjusted transaction prices defined in equation (1). Of the 56 markets identified in Section 2.1, 52 recorded trading activity on at least one event day. Table 5 includes summary statistics of these market-level surprises and the trading quantity and amount. Panels A and B correspond to the market-event panel and market-day panel, respectively.

Table 5: Summary Statistics of Polymarket Panel of Markets.

Panel A: Market-Event Panel

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Δp	386	−0.01	0.09	−0.96	−0.00	0.00	0.00	0.38
Quantity (Thousand)	368	17.21	82.38	0.00	0.52	1.85	6.90	1,145.07
Amount ($ Thousand)	368	16.61	80.11	0.00	0.47	1.83	6.93	1,230.75

Panel B: Market-Day Panel

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Δp	2,614	0.00	0.08	−0.71	−0.02	0.00	0.02	0.83
Quantity (Thousand)	2,241	4.59	49.75	0.00	0.10	0.41	1.56	2,155.49
Amount ($ Thousand)	2,241	4.53	45.82	0.00	0.08	0.40	1.55	1,921.13

Notes: "Quantity" is the number of tokens traded and "Amount" is the dollar value of the tokens traded.

We aggregate the market-level surprises following Nakamura and Steinsson (2018). Specifically, we extract the first principle component of the cross-sectional vector of price changes $\Delta p^s_{m,t}$ across markets m.[10] Because the sign and scale of a principal component are indeterminant, we choose the sign so that the resulting aggregate surprise Δp^s_t is positively correlated with the maturity-weighted surprise across markets.[11] We then rescale the principal component to have unit variance. We refer to this standardized first principal component as the *trade policy surprise* (TPS) associated with announcement s.

Figure 4 plots the variation in the TPS across the trade announcements in Table 4. The x-axis lists all event dates, and the y-axis reports the TPS associated with the events on each date. Consistent with Table 4, black bars indicate announcements involving increases in U.S. tariffs, white bars indicate tariff reductions, and blue bars correspond to announcements without a clear directional implication. The sign of the TPS aligns with the qualitative direction of the underlying announcements: positive (negative) values correspond to general U.S. tariff increases (decreases) relative to other countries. As expected, black bars align with positive TPS values, and white bars predominantly align with negative values with a few exceptions. These patterns indicate that our TPS measure successfully captures trade-policy surprises during the sample period.

As a further validity check, the largest positive TPS values coincide with the "Liberation Day" tariffs, which were released through a series of announcements between April 1 and April 5. The largest negative value appears on April 9, 2025, when President Trump announced a 90-day pause on reciprocal tariffs for dozens of countries, except China, whose tariff rate was raised to 125%. Notably, this announcement was first disseminated through President Trump's Truth Social account, demonstrating that prediction-market prices respond to information released via social media within narrow event windows.

[10] Appendix C.1 provides the details of the principle component analysis and the variance decomposition associated with different principal components.

[11] The maturity-weighted surprise is defined as $\Delta p^{s,MW}_t = \frac{\sum_m w_{m,t}\Delta p^s_{m,t}}{\sum_m w_{m,t}}$, where $w_{m,t}$ is the maturity of market m at announcement time t.

For a robustness check, we also construct surprises using a 60-minute event window. All results in the remainder of this section remain robust, though the confidence intervals are wider. The details are provided in Appendix B.4.

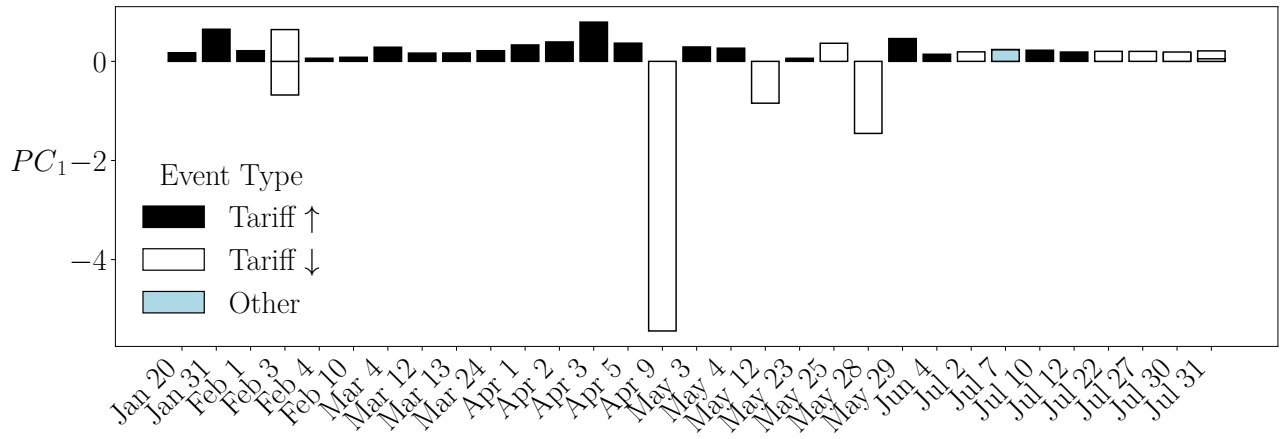


Figure 4: Trade Policy Surprises (TPS) Surrounding Trade Announcements

Notes: This figure plots the trade policy surprise (TPS) surrounding the announcements listed in Table 4.

3.2 Responses to Trade Policy Surprises

We use a high-frequency identification strategy to quantify the causal effects of trade-policy surprises on the variables of our interest. To study the dynamic effects of the TPS, we estimate local projections following Jordà (2005) and Ramey and Zubairy (2018):

$$\Delta y_{t-1,t+h} = \alpha_h + \beta_h \Delta p_t + \varepsilon_{t+h}, \tag{3}$$

for $h \in \{0, 1, \cdots, 30\}$. The dependent variable $\Delta y_{t-1,t+\tau}$ is the cumulative change in the outcome variable y from the market close on date $t-1$ to the market close on date $t+h$, where $t-1$ is the trading day immediately preceding the start of the event window. The independent variable Δp_t is the trade policy surprise constructed using narrow event windows, as defined in Section 3.1, and aggregated across all events occurring on date t. Following Nakamura and Steinsson (2018), we compute Newey-West standard errors with four lags and construct confidence intervals accordingly.

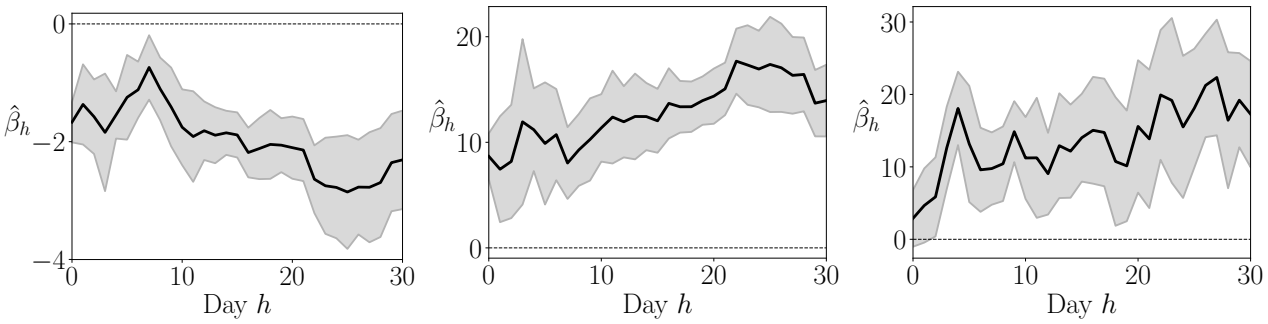
The coefficient of interest is β_h, which measures the effect of the TPS on the outcome variable at horizon h. The identifying assumption is that price changes within the 30-minute window surrounding each trade-policy announcement are driven solely by news about trade policy. Under these assumptions, the coefficient estimates bear a causal interpretation. Moreover, the sequence of estimates $\{\hat{\beta}_h\}_{h=0}^{30}$ traces out the cumulative impulse response of the outcome variable to a trade-policy surprise over a horizon of up to 30 days.

3.2.1 S&P 500 Index, VIX, and TPU

We begin by examining the impact of the TPS on the stock market and the text-based measure of trade policy uncertainty. Figure 5 shows the cumulative impulse responses of S&P 500 index, VIX, and TPU to a one–standard-deviation increase in trade policy surprise, estimated using specification (3). In each panel, we plot the coefficient estimate $\hat{\beta}_h$ on the y-axis, interpreted in percentage points, against the horizon h in days on the x-axis. The shaded areas indicate 95% confidence intervals, and the horizontal dotted line marks zero.

Panel (a) shows that a one–standard-deviation increase in the TPS leads to a persistent decline in the S&P 500 index, with an initial drop of approximately 1.7%. The negative response remains statistically significant for at least up to 30 days following an announcement of a U.S. tariff increase. Panel (b) shows that a positive TPS shock also produces a persistent rise in the VIX, indicating that markets perceive heightened uncertainty. The VIX increases by roughly 9% within a day of the shock. Panel (c) demonstrates that the text-based trade policy uncertainty index responds similarly to the VIX: major news outlets devote more coverage to trade policy and uncertainty following an unexpected announcement of a U.S. tariff increase.

During the Liberation Day event, TPS increased by 1.9 standard deviations over the five days from April 1-5, 2025. This translates into a 3.1% decrease in S&P 500, a 16.3% increase in VIX, and a 5.4% increase in TPU.



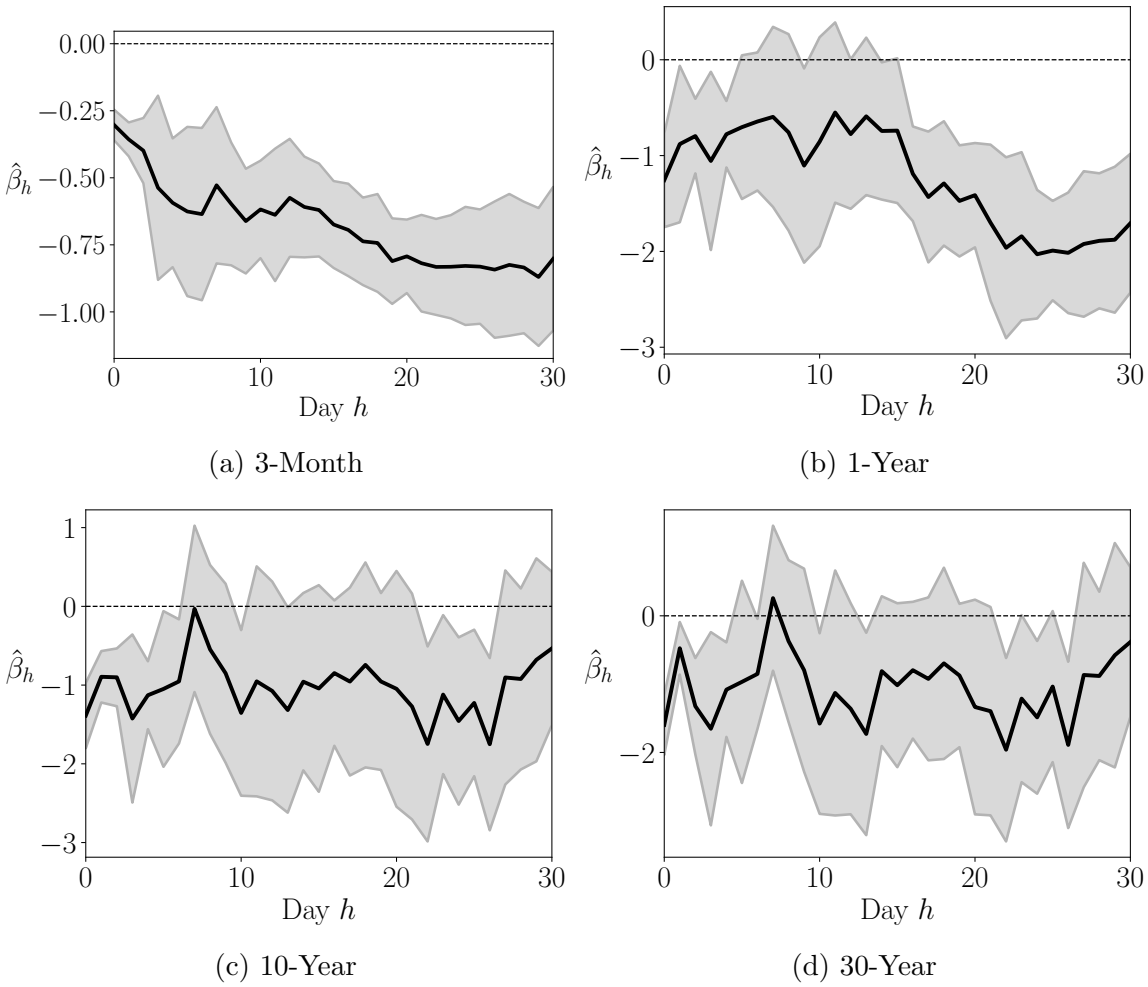
(a) S&P 500 (b) VIX (c) TPU

Figure 5: Cumulative Responses of S&P 500, VIX and TPU to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of S&P 500, VIX, and TPU to a one–standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. Vertical blue bars denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

3.2.2 Convenience Yields of U.S. Treasuries

We now examine the effects of the TPS on the convenience yields of U.S. Treasuries. Using the same specification (3), we estimate the cumulative impulse responses of convenience yields across different maturities. Figure 6 reports the estimated responses, in basis points, to a one–standard-deviation increase in the TPS. Panels (a), (b), (c), and (d) correspond to the 3-month, 1-year, 10-year, and 30-year convenience yields, respectively.



(a) 3-Month (b) 1-Year

(c) 10-Year (d) 30-Year

Figure 6: Cumulative Responses of Convenience Yields to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of convenience yields to a one–standard-deviation increase in trade policy surprise across different maturities. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

We find that a positive trade policy surprise—i.e., an announcement of a U.S. tariff increase—reduces U.S. convenience yields at all maturities. Its effects remain statistically negative and persistent for at least one month following the shock. For short-term maturities, shown in Panels (a) and (b), the cumulative responses continue to decline over the 30-day horizon, indicating a sustained negative adjustment in convenience yields. By contrast, for longer-term maturities, shown in Panels (c) and (d), the cumulative responses exhibit an initial drop and then remain relatively stable, suggesting that most of the adjustment occurs on impact.

Quantitatively, a one–standard–deviation increase in trade policy surprise lowers the 3-month convenience yield by 0.3 basis points, while the effect is five times larger for the 10-year or 30-year maturities. For the Liberation Day event from April 1-5, 2025, TPS increased by 1.9 standard deviations. This maps to a 0.6–, 2.6–, and 3–basis–point decrease in convenience yields for 3-month, 10-year, and 30-year maturities within five days.

Additionally, we regress convenience yields on the first three principle components of the

market-level shocks ($\Delta p^s_{m,t}$) and report the results in Table 6. These principle components jointly explain more than 40% of the variations in both short-term and long-term convenience yields around the event dates.

Table 6: Effects of the First Three Principle Components on Convenience Yields

Dep. Var.	3-Month	1-Year	5-Year	10-Year	30-Year
	(1)	(2)	(3)	(4)	(5)
PC_1	-0.297^{***}	-1.266^{***}	-1.490^{***}	-1.284^{***}	-1.472^{***}
	(0.034)	(0.104)	(0.117)	(0.087)	(0.117)
PC_2	0.031	-0.645^{***}	-0.021	0.297^{**}	0.454^{**}
	(0.022)	(0.214)	(0.118)	(0.121)	(0.178)
PC_3	0.040	0.494^{**}	0.654^{***}	0.900^{***}	0.992^{***}
	(0.035)	(0.219)	(0.100)	(0.206)	(0.301)
Constant	-0.048	0.138	0.496^{**}	0.306	0.109
	(0.088)	(0.268)	(0.220)	(0.235)	(0.319)
Observations	31	31	31	31	31
Adjusted R^2	0.269	0.469	0.443	0.451	0.429

Notes: This table reports regression results of convenience yields on the first three principle components. Columns (1)-(5) report results for convenience yields at 3-month, 1-year, 5-year, 10-year, and 30-year maturities, respectively. Convenience yields are expressed in basis points. The three principle components (labeled PC_1, PC_2, and PC_3) have zero mean and a standard deviation of one. Newey standard errors with four lags are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Cross-country measure of convenience yields Trade policy surprises affect not only the convenience yields of U.S. Treasuries measured from domestic asset spreads but also the relative convenience benefits of Treasuries compared with sovereign bonds issued by other advanced economies. To examine these cross-country effects, we focus on the Polymarket Type-2 events defined in Section 2.1, in which each market within an event corresponds to a distinct country. From these events, we select the subset of markets associated with the G10 countries.

To construct a cross-country measure of the convenience yield of U.S. Treasuries, we follow Du, Im and Schreger (2018) and compute country-pair-specific CIP deviations, all defined relative to the U.S. As discussed in Section 2.2, the CIP deviation equals the yield spread between currency-hedged foreign sovereign debt and U.S. Treasuries. A lower CIP deviation implies that U.S. Treasury yields are higher relative to the hedged foreign yield, indicating a lower U.S. convenience yield relative to that of the foreign country.

We estimate the following panel regression across markets m:

$$\Delta y^{c(m)}_{t-1,t+h} = \alpha_h + \beta_h \Delta p_{m,t} + \varepsilon_{m,t+h}, \tag{4}$$

where $\Delta y^{c(m)}_{t-1,t+h}$ is the cumulative change in CIP deviations of country c corresponding to market m, and $\Delta p_{m,t}$ is the high-frequency, market-level trade policy surprise for market m on date t. We focus on the 3-month CIP deviations to avoid fluctuations potentially driven by cross-country differences in term premia. The time window $[t-1, t+h]$ matches that in

regression (3), with t denoting the trade-policy announcement dates listed in Table 4. Standard errors are clustered by date.

Figure 7 plots the coefficient estimates $\hat{\beta}_h$ against the horizon h. We find that a positive trade policy surprises, i.e., an announcement increasing the U.S. tariffs on country c, reduces that country's CIP deviation relative to the U.S. The immediate response is small and statistically insignificant, but the effect becomes increasingly negative over time and remains significantly below zero for at least 30 days following the shock. Thus, relative to the G10 countries, the U.S. convenience yield declines in the aftermath of a tariff-increase announcement. These effects persist over the full month-long horizon, indicating a durable reassessment of the privilege benefits associated with U.S. Treasuries.

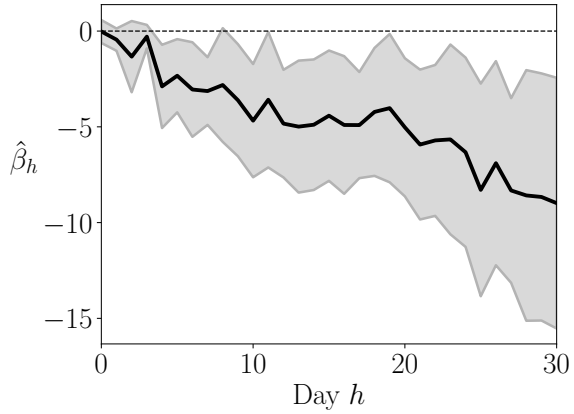


Figure 7: Cumulative Responses of Convenience Yields to A Trade Policy Surprise: Evidence from Treasury Basis against the G10 Countries

Notes: This figure shows the cumulative impulse responses of convenience yields measured by the CIP deviations against the G10 countries to a one–standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

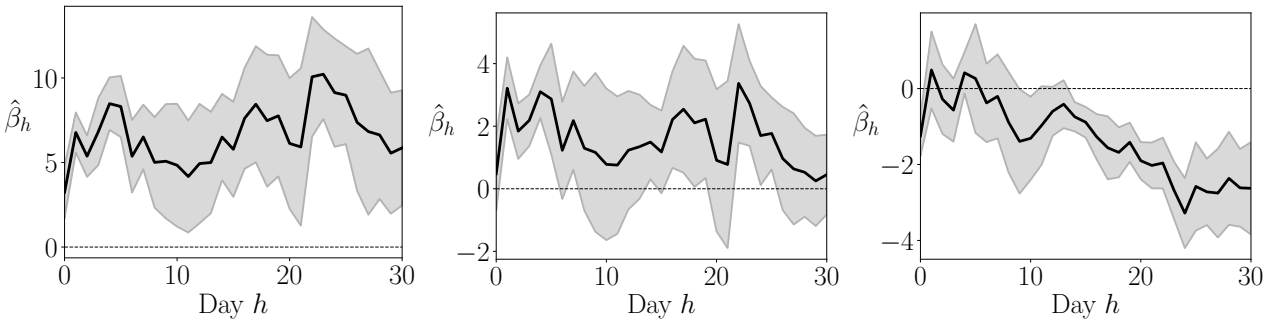
Taken together, our results indicate that trade policy surprises exert large and persistent downward pressure on U.S. convenience yields in 2025. This finding contrasts sharply with the 2018–2019 trade tension episode, during which heightened trade policy uncertainty increased the global demand for U.S. safe assets and strengthened the dollar (Khalil and Strobel, 2024).

Our findings align with the arguments in Acharya and Laarits (2025*a*) and Cardani et al. (2025), who show that tariff wars can erode the convenience yields of U.S. Treasuries. We provide the first causal evidence that trade policy surprises in 2025 lower Treasuries' convenience yields. In Section 4, we combine the estimated coefficients from the event study with our daily trade-policy perception index to explain cumulative movements in convenience yields. Quantitatively, we show that trade-policy surprises are the primary driver of convenience-yield dynamics in 2025.

3.2.3 Effects on Inflation Expectation and Recession Probability

In addition to convenience yields, we next examine the impact of the TPS on expectations about U.S. inflation and recession risk. Higher tariffs may raise concerns about future price levels by increasing the cost of imported goods, potentially putting upward pressure on inflation expectations. We first test this channel empirically using inflation expectations implied from inflation swaps, as introduced in Section 2.2.[12]

Following the empirical specification (3), Figure 8 reports the cumulative impulse responses of inflation expectations to a one–standard-deviation increase in the trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in annualized basis points. We find that financial markets anticipate a persistent and statistically significant increase in short-term inflation expectations over the 30-day horizon, as shown in Panel (a). Panel (b) shows that medium-term inflation expectations also rise following the shock, although the estimates are not statistically significant. The increases in short- and medium-term inflation expectations are consistent with the conjecture that higher tariffs elevate expected future price levels.



(a) 1-Year (b) 2-Year (c) 10-Year

Figure 8: Cumulative Responses of Inflation Expectations to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of inflation expectations to a one–standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. Vertical blue bars denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

By contrast, Panel (c) of Figure 8 shows that long-run inflation expectations initially remain stable in response to tariff-increase news, but turn significantly negative roughly two weeks after the shock. One possible explanation is that the trade disputes between the U.S. and many other countries in 2025 heightened concerns about the long-run outlook of the U.S. economy. If market participants view trade-policy shocks as increasing the likelihood of a future recession, their long-run inflation expectations may fall rather than rise.

To examine this channel, we use expectations about recession probabilities derived from the Polymarket event "US recession in 2025?". A higher price in this market reflects a higher perceived probability of a U.S. recession in 2025. The perceived probability rose from roughly 20% in March 2025 to more than 60% around the "Liberation Day" announcements in early

[12]Figure B.1 in Appendix B.1 shows the impulse responses in the expectations about future interest rates implied from federal funds futures.

April 2025, after which it fluctuated and gradually declined.[13]

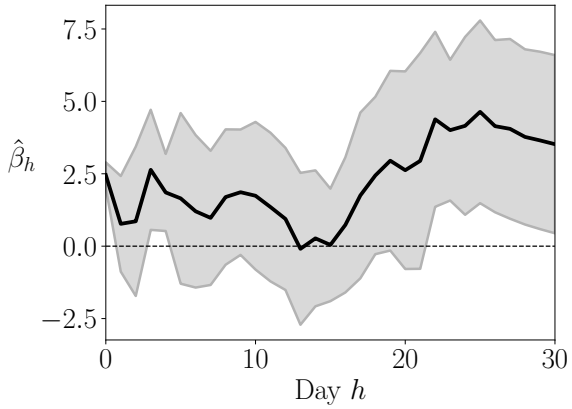


Figure 9: Cumulative Responses of the Perceived U.S. Recession Probability to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of the perceived U.S. recession probability, measured by the price in Polymarket event "US recession in 2025?", to a one–standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. The shaded area denotes 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

Figure 9 shows the cumulative responses of the perceived U.S. recession probability from the Polymarket event to a one–standard–deviation increase in the trade policy surprise. We observe a significant rise in recession probability on impact, about 2.5%. When mapping to the change of trade policy surprise around the "Liberation Day," which is 1.9 standard deviations, it implies an increased perceived recession probability of 4.6%. Figure 9 further shows that the effect becomes more pronounced roughly two weeks after the shock. Overall, a positive trade policy surprise—which reflects an increase in U.S. tariffs—heightens concerns about a future recession.

In Section 5, where we further investigate the mechanisms underlying the response of U.S. convenience yields, we show that a trade-policy surprise also raises the default risk of U.S. Treasuries measured by CDS. This evidence is consistent with the increase in recession probability inferred from Polymarket.

4 Trade Policy Surprise Index

In this section, we construct daily TPS measures from prediction markets and show that they quantitatively account for a substantial share of the variation in U.S. Treasury convenience yields during 2025.

[13]See details at https://polymarket.com/event/us-recession-in-2025.

4.1 Daily Index Construction

We measure daily trade policy surprises using an approach analogous to that in Section 3.1.2. For each market m on business day t, we retrieve the last trade executed before 4pm (New York time) and compute its adjusted price according to equation (1).[14] We denote this adjusted price by $\hat{p}_{m,t}$ and refer to it as the end-of-day price of market m on date t.

We define the market-level trade policy surprise as the one-day change in the end-of-day price,

$$\Delta p_{m,t} \equiv \hat{p}_{m,t} - \hat{p}_{m,t-1},$$

where $t-1$ denotes the previous business day. If market m is active on date t but has no trades between 9:30am and 4pm (New York time) on either date t or $t-1$, we set $\Delta p_{m,d} = 0$.

We aggregate these market-level changes into daily TPS measures in two ways. First, we extract the first three principle components of $\Delta p_{m,t}$ across markets and denote them as $\boldsymbol{PC}_t = (PC_{1,t}, PC_{2,t}, PC_{3,t})^\intercal$. Second, we compute a maturity-weighted index of price changes,

$$\Delta p_t^{MW} \equiv \frac{\sum_m w_{m,t} \Delta p_{m,t}}{\sum_m w_{m,t}}, \tag{5}$$

where $w_{m,t}$ is the remaining time to maturity of market m on date t.[15] The maturity-weighted index assigns greater weight to markets farther from their resolution dates and less weight to those close to expiration, thereby emphasizing the forward-looking component of expected tariff changes.

In Appendix C.2.1, we also extract a level factor and an uncertainty factor to capture the first and second moments of trade policy surprises, respectively. These two factors contain information beyond that embedded in the newspaper-based TPU measure and provide additional explanatory power for convenience yield dynamics.

4.2 Predicted Changes in Convenience Yields

Using the daily TPS measures, we quantify the share of variation in convenience yields attributable to trade-policy surprises. Recall from Section 3.2.2 that the estimated $\hat{\boldsymbol{\beta}} = (-1.28, 0.3, 0.9)$ in Table 6 is the contemporaneous causal impacts of the first three principle components on the 10-year convenience yield. We use these estimates to construct the daily TPS-implied cumulative changes in the 10-year convenience yield. Specifically, the implied

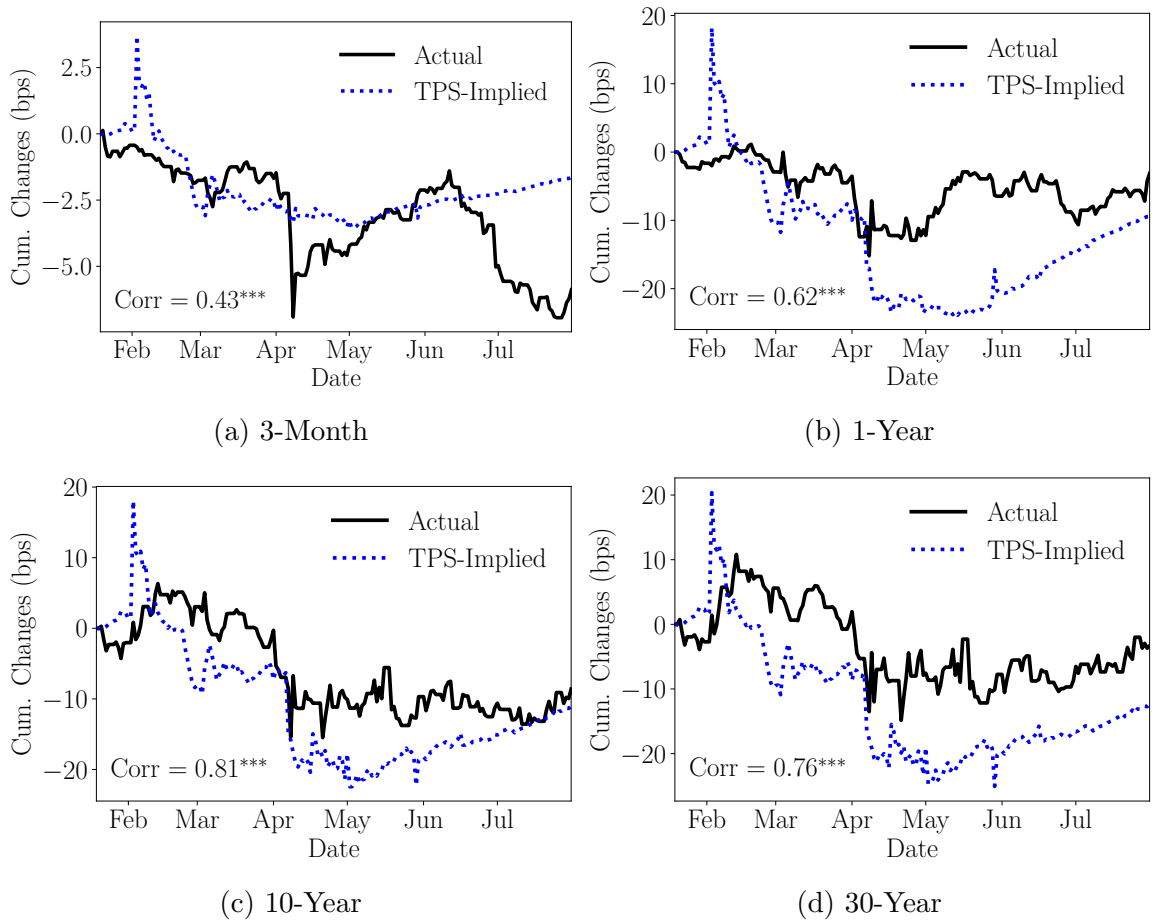
[14] In this exercise, we restrict attention to trades in market m occurring between 9:30 a.m. and 4:00 p.m. (New York time) on date t.

[15] We apply the same sign adjustment and standardization as in Section 3.1.2: we choose the sign of the first principle component so that it has a positive correlation with the maturity-weighted measure Δp_t^{MW}, and we standardize all three principle components to have unit variance.

cumulative change from date τ_0 to date τ is[16]

$$\Delta\hat{y}_{\tau_0,\tau} = \hat{\boldsymbol{\beta}} \sum_{t=\tau_0}^{\tau} \boldsymbol{PC}_t.$$

We set the start date τ_0 to January 20, 2025, the date of President Trump's inauguration.



(a) 3-Month (b) 1-Year

(c) 10-Year (d) 30-Year

Figure 10: TPS-Implied Cumulative Changes in Convenience Yields. Description.

Notes: This figure plots the cumulative changes in convenience yields (solid black line) and daily TPS-implied cumulative changes in convenience yields (dotted blue line) from January 20, 2025 to July 31, 2025. Panels (a)-(d) correspond to convenience yields at 3-month, 1-year, 10-year, and 30-year maturities, respectively. The y-axis is the cumulative daily changes in basis points, and the x-axis is the date.

Figure 10 plots the TPS-implied cumulative changes in convenience yields alongside the actual cumulative changes across different maturities. The dotted blue line represents the TPS-implied series, and the solid black line represents the realized data. Across all panels, we observe a pronounced decline in cumulative convenience yields from late January to early April 2025 at all maturities. Beginning in mid-April, realized convenience yields remain relatively stable or exhibit a modest recovery. This overall pattern is well captured by the TPS-implied cumulative changes.[17]

[16]We construct analogous series for convenience yields at 3-month, 1-year, and 30-year maturities using the estimates from Table 6.

[17]The TPS-implied series exhibits a sharp increase on February 3, 2025. On that day, the first principal

In particular, Panels (c) and (d) show that the TPS-implied changes closely track the realized changes for long-term maturities. For example, the correlation between the 10-year TPS-implied series has a correlation of 0.81 with the realized series, which is statistically significant a 1% level. Taken together, these results indicate that daily variation in trade-policy perceptions captured by prediction markets accounts for a substantial share of the movements in U.S. convenience yields during 2025. The close alignment between the TPS-implied and realized series, especially at longer maturities, underscores the strength of the high-frequency identification strategy and highlights the central role of trade-policy news in shaping investors' demand for Treasuries during this period.

5 Mechanism

In this section, we further examine the mechanisms underlying the response of Treasury convenience yields to trade policy developments since 2025. We employ the same high-frequency event-study methodology as in Section 3, but decompose the overall convenience yield into two components: a liquidity premium and a safety premium. To construct these components, we use the yields on Refcorp bonds introduced in Section 2.2.

Refcorp bonds are fully guaranteed by the U.S. Treasury under FIRREA and therefore carry the same credit risk as Treasury securities. They also receive identical tax treatment.[18] As a result, the spread between Refcorp yields and Treasury yields isolates the liquidity premium embedded in Treasuries and is free of default-risk considerations.

Formally, we decompose the convenience yield, measured as the spread between maturity-matched interest rate swap rates and Treasury yields, into two components:

$$\begin{aligned} cy_t &= y_t^{Swap} - y_t^{Govt} \\ &= \left(y_t^{Swap} - y_t^{Ref}\right) + \left(y_t^{Ref} - y_t^{Govt}\right), \end{aligned} \tag{6}$$

where cy_t denotes the convenience yield of Treasuries, y_t^{Swap} is the interest rate swap rate, y_t^{Govt} is the Treasury yield, and y_t^{Ref} is the yield on Refcorp bonds, all measured at the same maturity.

By construction, the second term in equation (6), $y_t^{Ref} - y_t^{Govt}$, captures the liquidity component of the Treasury convenience yield. Under the assumption that neither interest rate swaps nor Refcorp bonds offer special liquidity benefits, the first term, $y_t^{Swap} - y_t^{Ref}$, can be interpreted as the safety component embedded in Treasury convenience yields. We examine each component in turn.

Following specification (3), Figure 11 reports the cumulative impulse responses of the Refcorp–Treasury spread to a one–standard-deviation increase in the trade policy surprise across

component, $PC_{1,t}$, reached its lowest value, as shown in Figure C.2 in the Appendix C. This movement aligns with the 10:41 a.m. announcement listed in Table 4, in which President Trump announced a tariff pause on Mexico.

[18] See Longstaff (2004) for institutional details.

different maturities. Panels (a) and (b) show that the Refcorp–Treasury spread rises for relatively short maturities, such as the 1-year and 2-year cases. In both panels, the responses are positive on impact and remain significantly positive for several days. Thereafter, the effects become statistically insignificant and turn positive again for a brief period. In short, the liquidity premium within the convenience yield increases at short maturities following an announcement that raises U.S. tariffs.

In contrast, Panels (c) and (d) show that for longer maturities, 5-year and 10-year, the Refcorp–Treasury spread declines after the shock and remains significantly negative for an extended period. The longer the maturity, the larger the initial decline and the more persistent the negative response. This pattern suggests that investors place less value on the liquidity benefits of long-term Treasuries, while attaching greater value to the liquidity services provided by short-term Treasuries in trade policy events since 2025.

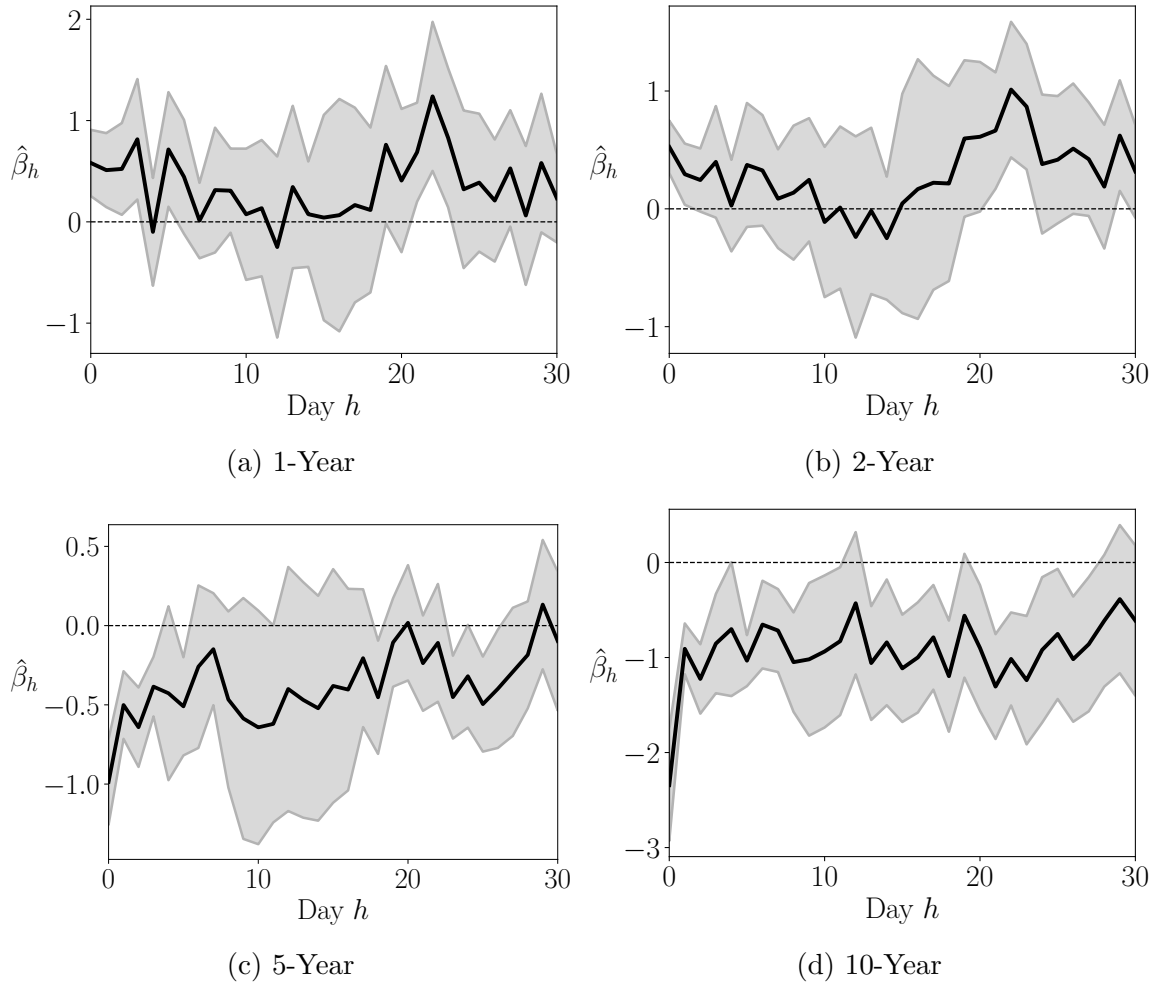


Figure 11: Cumulative Responses of Refcorp-Treasury Spread to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of Refcorp–Treasury spread to a one–standard-deviation increase in trade policy surprise across different maturities. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

After examining the liquidity channel, we now turn to the safety channel. Figure 12 reports

the cumulative impulse responses of the IRS–Refcorp spread to the same trade-policy shock analyzed in Figure 11, across different maturities.[19] Panels (a) and (b) show that the IRS–Refcorp spread declines for relatively short maturities. In both cases, the responses are negative on impact and remain significantly negative for most of the 30-day horizon. The magnitude of this decline exceeds the increase in the liquidity premium documented for short maturities in Figure 11. Consequently, the overall convenience yield falls in response to a positive trade-policy surprise, consistent with the results in Section 3.2.

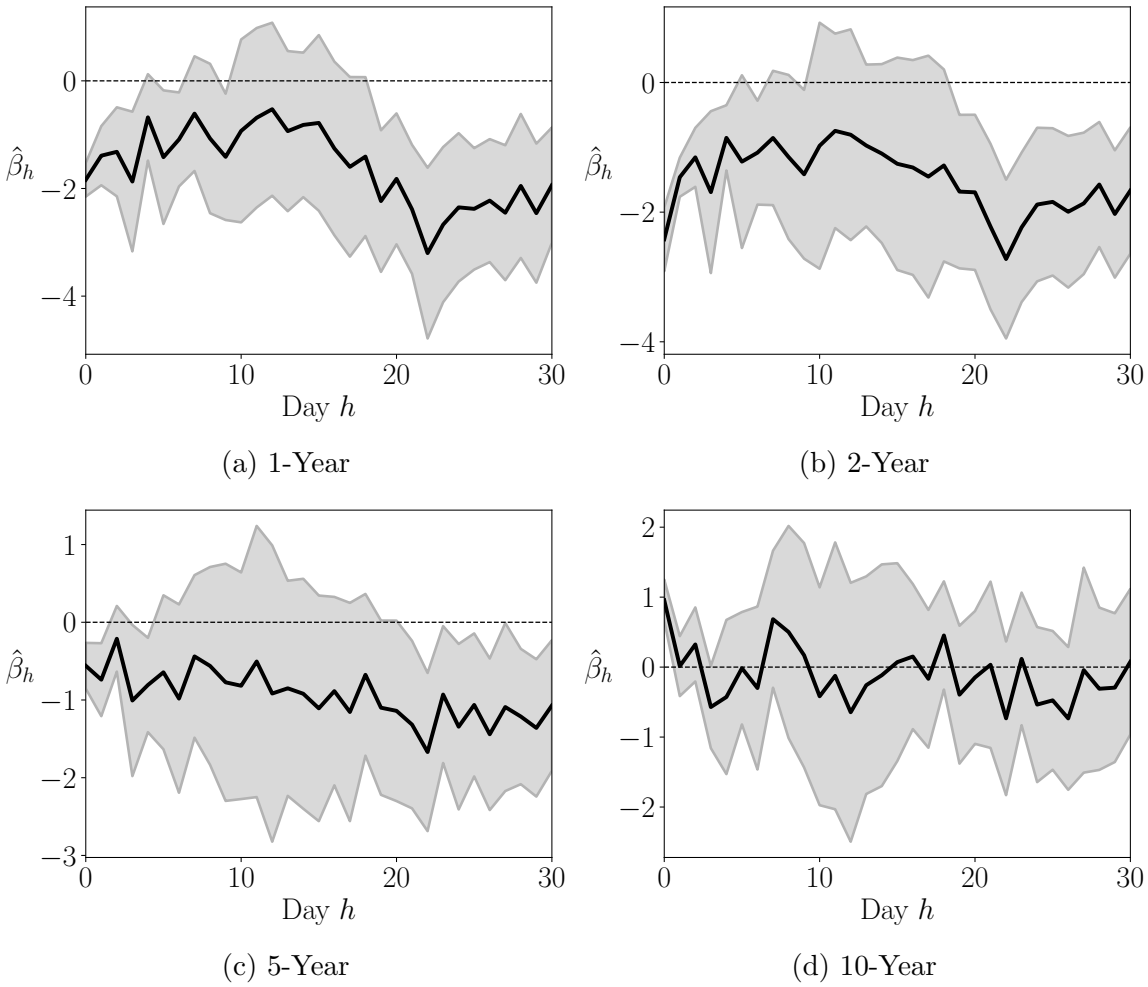


Figure 12: Cumulative Responses of the Interest Rate Swap-Refcorp Spread to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of the IRS–Refcorp spread to a one–standard-deviation increase in trade policy surprise across different maturities. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

By contrast, long-term IRS–Refcorp spreads exhibit little systematic response to the trade-policy shock, as shown in Panels (c) and (d). The longer the maturity, the weaker the response, and the estimates are generally not statistically significant. At the 5-year maturity, the point

[19] We also examine the response of the U.S. sovereign credit default swap (CDS) premium to a trade-policy surprise, and find that the CDS premium rises following the shock, indicating reduced perceived safety of U.S. Treasuries. Details can be found in Appendix B.3.

estimates in Panel (c) are negative but insignificant, whereas at the 10-year maturity, shown in Panel (d), the estimates are close to zero along the horizon.

Taken together, Figures 11 and 12 reveal that although the aggregate convenience yield of U.S. Treasuries declines at both short and long maturities following a tariff-increase announcement, the mechanisms differ across the maturity spectrum. For long-term maturities, the decline is driven primarily by a loss of liquidity benefits. For short-term maturities, the decline stems mainly from a reduction in safety benefits, with only a modest offset from an increase in liquidity premia.

6 Conclusion

In this paper, we provide new causal evidence that U.S. trade policy surprises were a key driver of Treasury convenience yields during the 2025 trade war. Using transaction-level data from Polymarket's tariff prediction markets, we construct a novel high-frequency measure of trade policy surprises and exploit narrow event windows around unscheduled announcements to isolate exogenous shifts in tariff expectations.

We highlight three main findings. First, unexpected tariff increases persistently lower Treasury convenience yields across all maturities, weakening the privilege benefits historically associated with U.S. government bonds. These shocks explain a substantial share of the observed movements in convenience yields during the first half of 2025, particularly at longer maturities. Second, the mechanisms underlying these declines differ by maturity through distinct safety and liquidity channels. Third, trade policy surprises have broad macro-financial effects, including lower equity prices, higher market volatility and trade-policy uncertainty, elevated short-term inflation expectations, and increased recession risk.

In summary, our findings underscore the sensitivity of U.S. convenience yields to geopolitical and policy developments. We also show that prediction markets provide a powerful tool for capturing policy surprises at high frequency. More broadly, prediction-market data offer a promising platform for measuring expectations about economic and geopolitical events that lack traditional financial-market instruments. As prediction markets continue to expand in scope and liquidity, they may become an increasingly valuable complement to existing market- and text-based indicators for studying policy shocks, real-time belief updating, and the transmission of geopolitical risk into asset prices.

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Online Appendix

A Data Construction

A.1 Polymarket Data

1. Retrieve Polymarket events that are tagged with the following keywords: trade, trades, trade-war, tariff, tariffs.[20]
2. Retain events whose descriptions contain at least one of the above keywords.[21]
3. Manually review the remaining events and remove those unrelated to trade policy.
4. Exclude markets with total dollar volume (over the sample period) strictly below $100,000.
5. From the remaining markets, retain all Type-1 markets and the subset of Type-2 markets corresponding to G10 currencies.
6. Keep only markets whose outcomes indicate a clear direction of tariff increase or decrease.

A.2 Financial Data

Table A.1 provides details on the data sources for constructing the financial variables.

[20] We query the Polymarket Gamma API with the `tag_slug` parameter set to each keyword (case-insensitive): https://docs.polymarket.com/developers/gamma-markets-api/overview.

[21] We search the keywords (case-insensitive) across the `ticker`, `slug`, and `title` fields returned by the API.

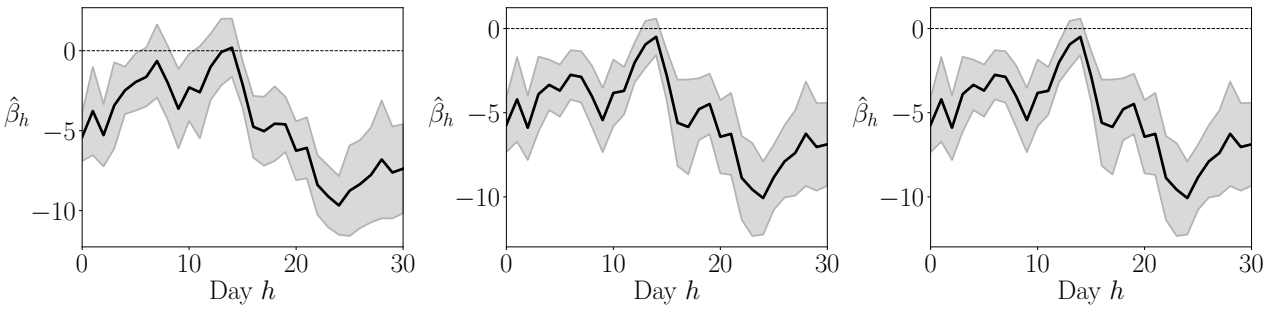
Table A.1: Variable Definitions for Financial Data

Variable	Tenor	Bloomberg Ticker
S&P 500	–	SPX Index
VIX	–	VIX Index
Fed Funds Futures	–	FFA[M][Y]
Inflation Swap	1-Year	USSWIT1 BGN Curncy
	2-Year	USSWIT2 BGN Curncy
	10-Year	USSWIT10 BGN Curncy
Treasury Yield	3-Month	BV3M0082 BVLI Index
	1-Year	BV010082 BVLI Index
	2-Year	BV020082 BVLI Index
	5-Year	BV050082 BVLI Index
	10-Year	BV100082 BVLI Index
	30-Year	BV300082 BVLI Index
Interest Rate Swap	1-Year	USOSFR1 BGN Curncy
	2-Year	USOSFR2 BGN Curncy
	5-Year	USOSFR5 BGN Curncy
	10-Year	USOSFR10 BGN Curncy
	30-Year	USOSFR30 BGN Curncy
RefCorp STRIPs	1-Year	BV010091 BVLI Index
	2-Year	BV020091 BVLI Index
	5-Year	BV050091 BVLI Index
	10-Year	BV100091 BVLI Index
	30-Year	BV300091 BVLI Index
U.S. Sovereign CDS	1-Year	US CDS USD SR 1Y D14
	2-Year	US CDS USD SR 2Y D14
	5-Year	US CDS USD SR 5Y D14
	10-Year	US CDS USD SR 10Y D14

B More Empirical Results

B.1 Expectations about Future Interest Rates

We further incorporate the expectations about future interest rates using standard federal funds futures prices (e.g., Bernanke and Kuttner, 2005; Gertler and Karadi, 2015).



(a) 1-Year (b) 2-Year (c) 4-Year

Figure B.1: Cumulative Responses of Interest Rate Expectations to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of interest rate expectations to a one-standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. Vertical blue bars denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

B.2 Effects of TPU on Convenience Yields

Table B.1: Effects of TPU on Convenience Yields.

Panel A: Changes in 1-Year Convenience Yield (bps)

	Contemporaneous				Next-Day			
	Coef	Std. Err.	Adj. R^2	Nobs	Coef	Std. Err.	Adj. R^2	Nobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TPU	−0.044	(0.074)	-0.005	172	0.122*	(0.063)	0.002	172

Panel B: Changes in 2-Year Convenience Yield (bps)

	Contemporaneous				Next-Day			
	Coef	Std. Err.	Adj. R^2	Nobs	Coef	Std. Err.	Adj. R^2	Nobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TPU	−0.061	(0.106)	-0.005	172	0.208**	(0.085)	0.008	172

Panel C: Changes in 5-Year Convenience Yield (bps)

	Contemporaneous				Next-Day			
	Coef	Std. Err.	Adj. R^2	Nobs	Coef	Std. Err.	Adj. R^2	Nobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TPU	−0.064	(0.109)	-0.005	172	0.173*	(0.088)	0.003	172

Panel D: Changes in 10-Year Convenience Yield (bps)

	Contemporaneous				Next-Day			
	Coef	Std. Err.	Adj. R^2	Nobs	Coef	Std. Err.	Adj. R^2	Nobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TPU	−0.095	(0.114)	-0.003	172	0.110	(0.098)	-0.002	172

Panel E: Changes in 30-Year Convenience Yield (bps)

	Contemporaneous				Next-Day			
	Coef	Std. Err.	Adj. R^2	Nobs	Coef	Std. Err.	Adj. R^2	Nobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TPU	−0.172	(0.154)	-0.000	172	0.202*	(0.117)	0.002	172

B.3 U.S. Sovereign Default Premium

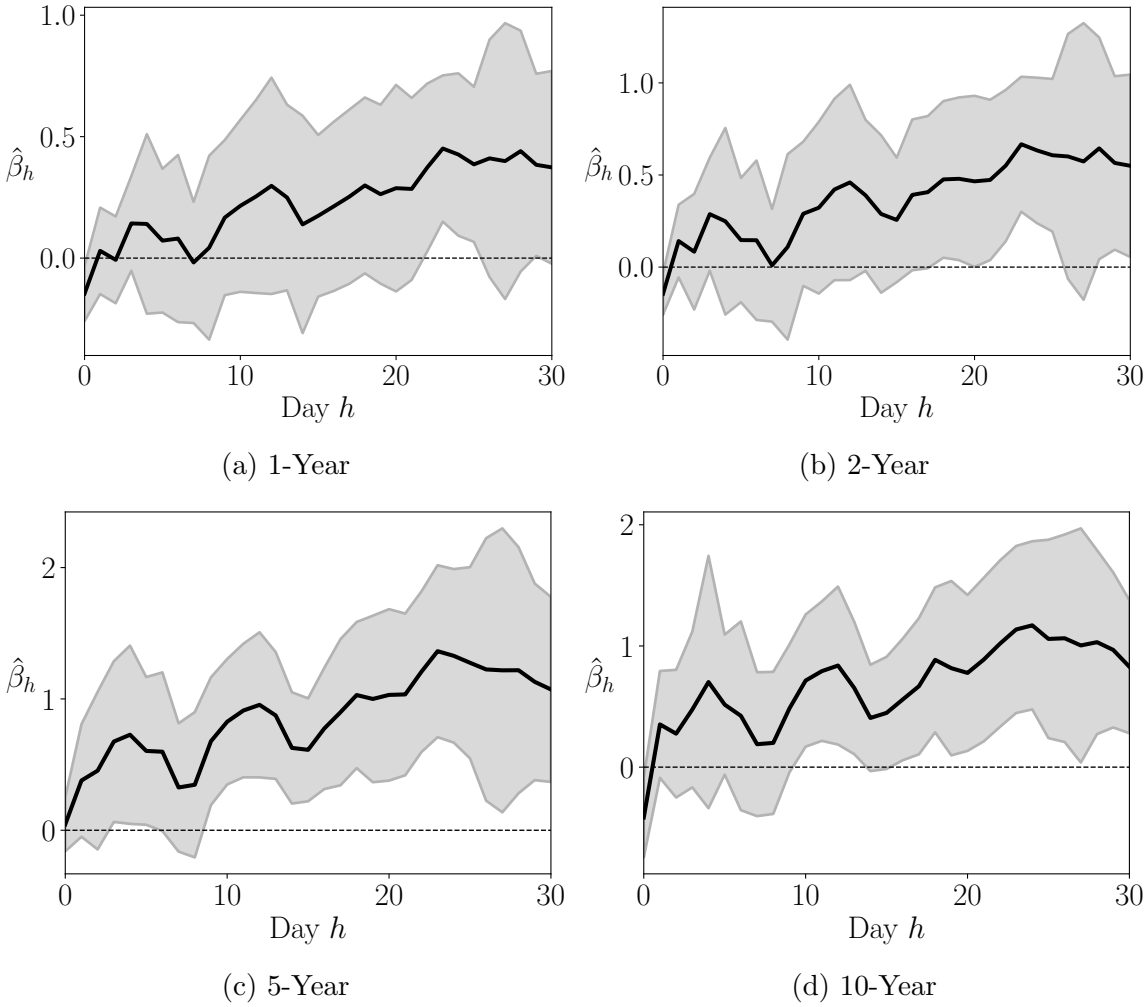
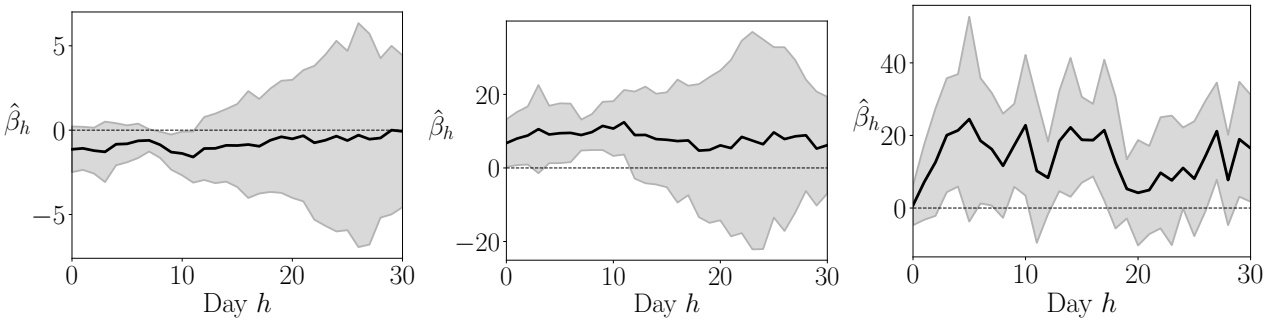


Figure B.2: Cumulative Responses of U.S. Sovereign CDS Premium to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of the U.S. sovereign CDS premium to a one-standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

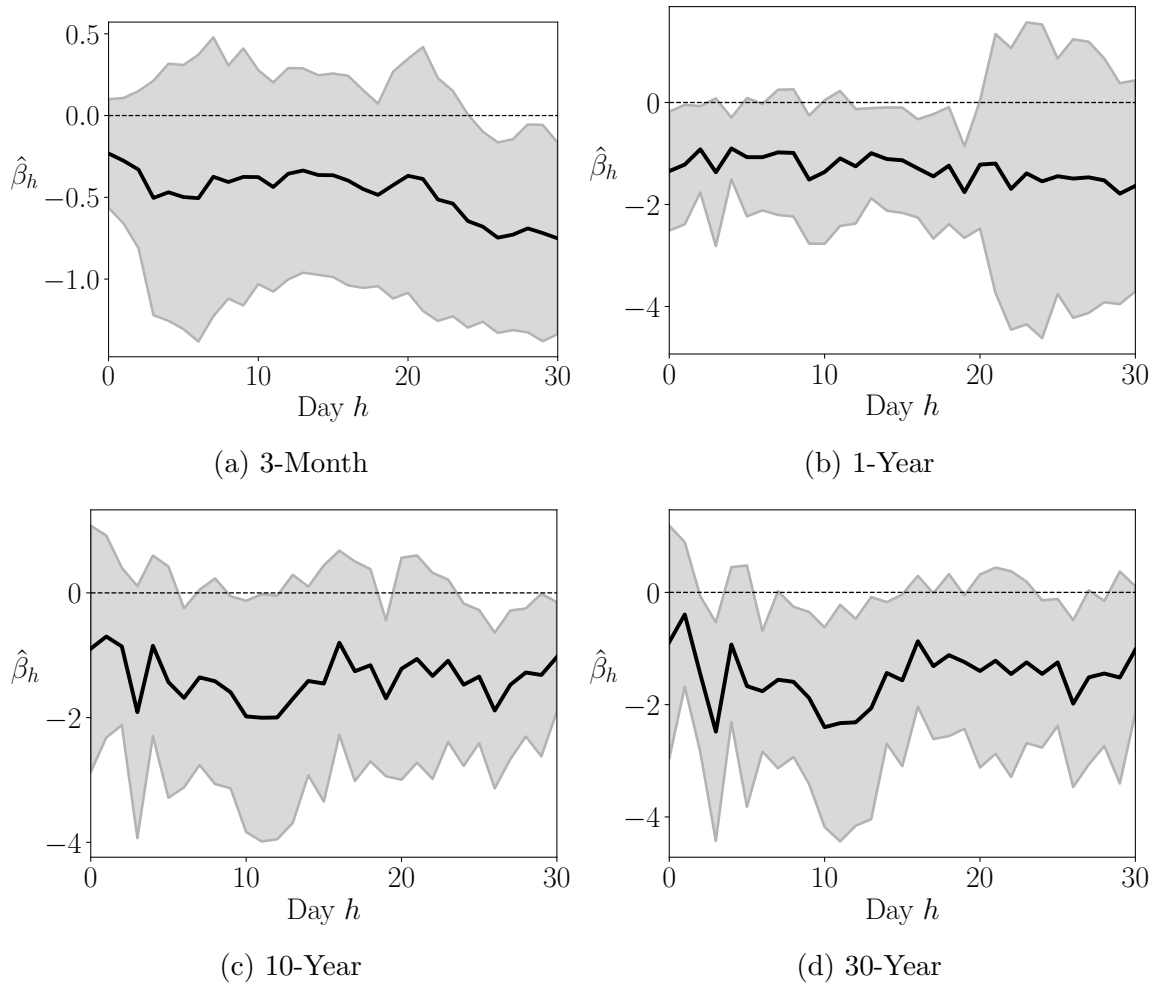
B.4 Results Using 60-Minute Event Windows



(a) S&P 500 (b) VIX (c) TPU

Figure B.3: Cumulative Responses of S&P 500, VIX and TPU to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of S&P 500, VIX, and TPU to a one-standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.



(a) 3-Month (b) 1-Year

(c) 10-Year (d) 30-Year

Figure B.4: Cumulative Responses of Convenience Yields to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of convenience yields to a one-standard-deviation increase in trade policy surprise across different maturities. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

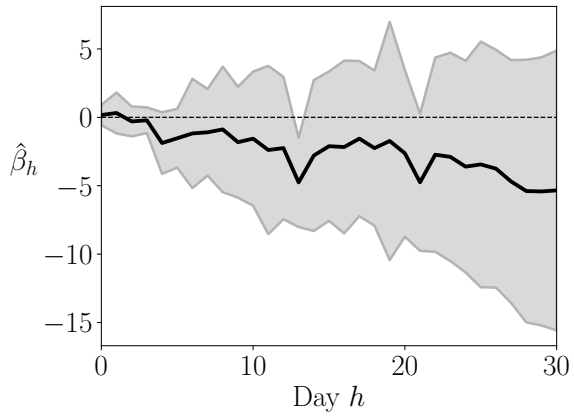
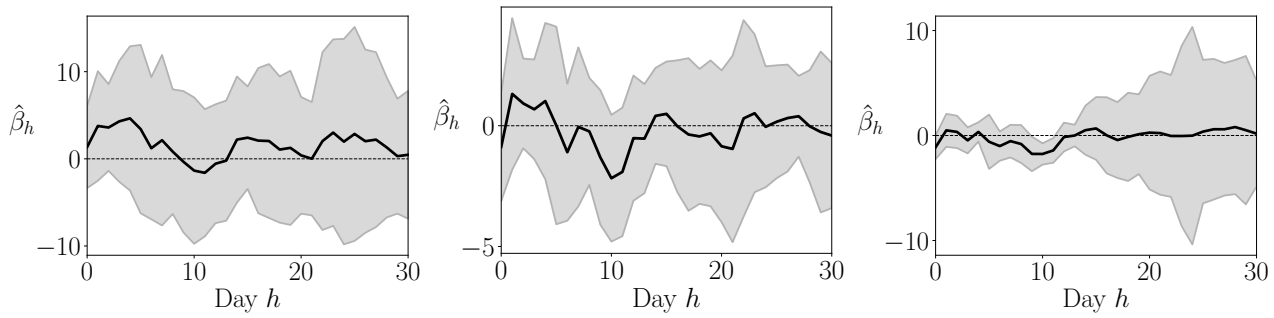


Figure B.5: Cumulative Responses of Convenience Yields to A Trade Policy Surprise: Evidence from Treasury Basis against the G10 Countries

Notes: This figure shows the cumulative impulse responses of convenience yields measured by the CIP deviations against the G10 countries to a one-standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in basis points, and the x-axis reports the horizon h in days. The shaded area denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.



(a) 1-Year (b) 2-Year (c) 10-Year

Figure B.6: Cumulative Responses of Inflation Expectations to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of inflation expectations to a one-standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. The shaded areas denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

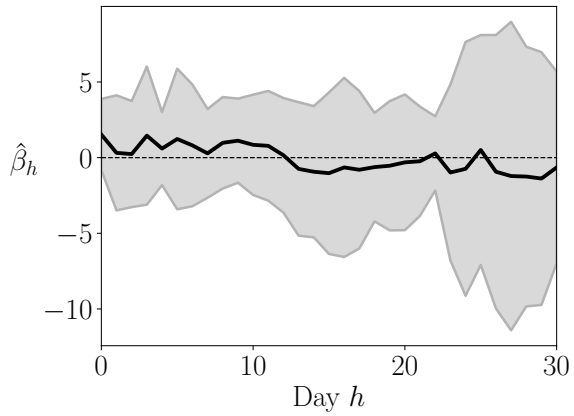


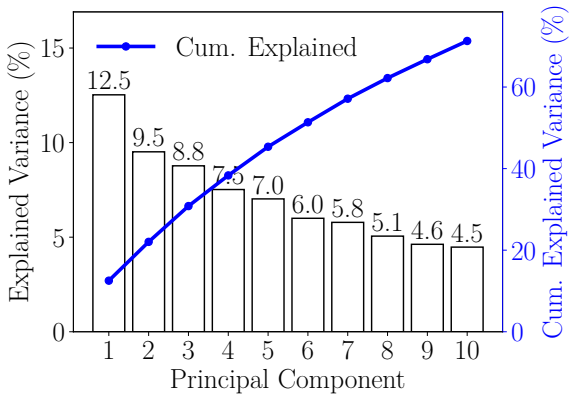
Figure B.7: Cumulative Responses of the Perceived U.S. Recession Probability to A Trade Policy Surprise

Notes: This figure shows the cumulative impulse responses of the perceived U.S. recession probability, measured by the price in Polymarket event "US recession in 2025?", to a one-standard-deviation increase in trade policy surprise. The y-axis reports the coefficient estimate $\hat{\beta}_h$, interpreted in percentage points, and the x-axis reports the horizon h in days. The shaded area denote 95% confidence intervals, and the horizontal dotted line marks zero. The confidence intervals are constructed by Newey-West standard errors with four lags.

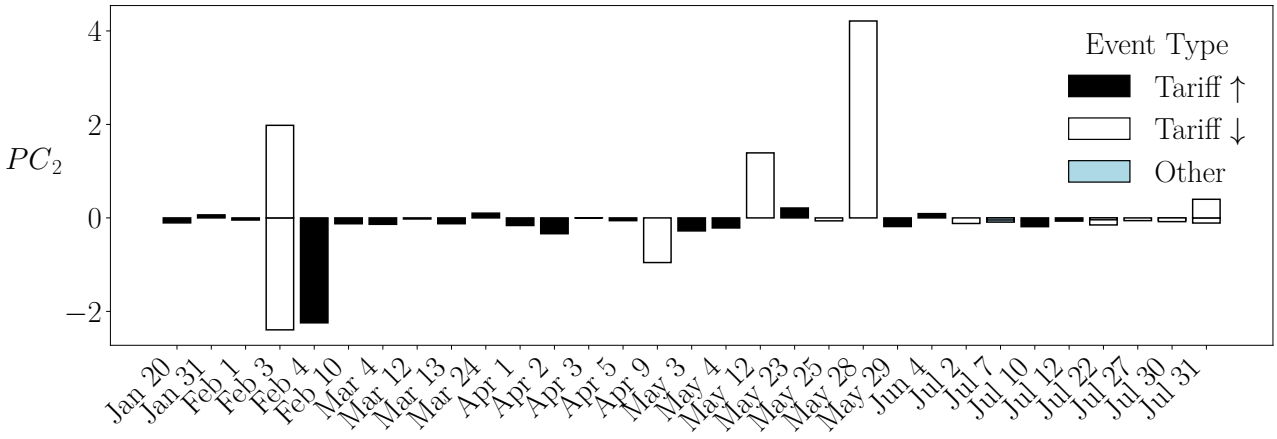
C Principle Component Analysis

C.1 Event Study

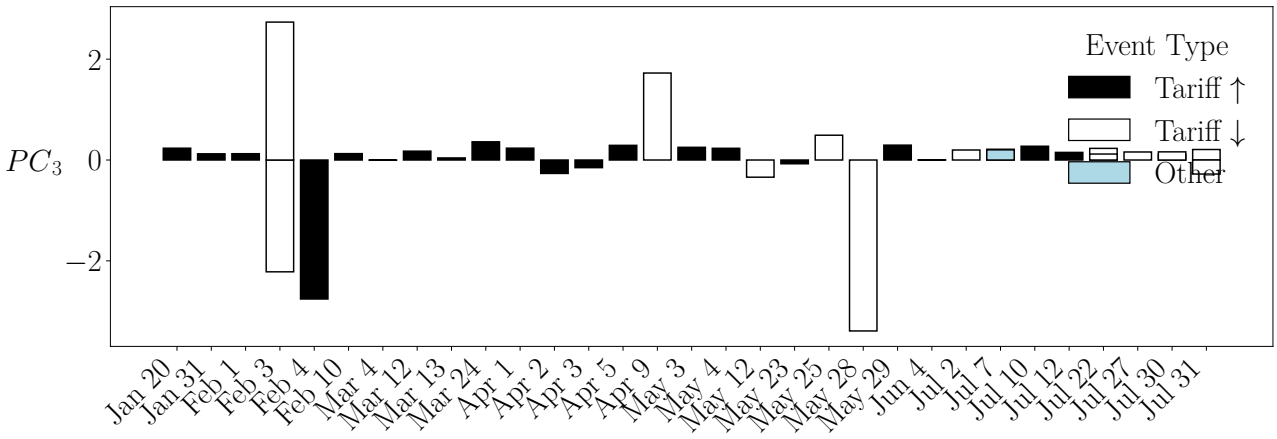
We provide details on the principle component analysis conducted in Section 3.1.2. In Figure C.1, Panel (a) indicates that the first principle component explains 12.5% of the cross-sectional variation in market-level surprises, and the first ten principle components jointly explain over 60% of the variation. Panels (b) and (c) plot the time series of the second and the third principle components, respectively.



(a) Explained Variance



(b) PC_2



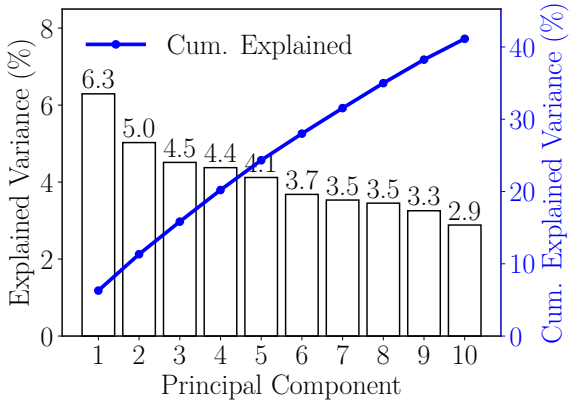
(c) PC_3

Figure C.1: Principle Component Analysis for Event Study

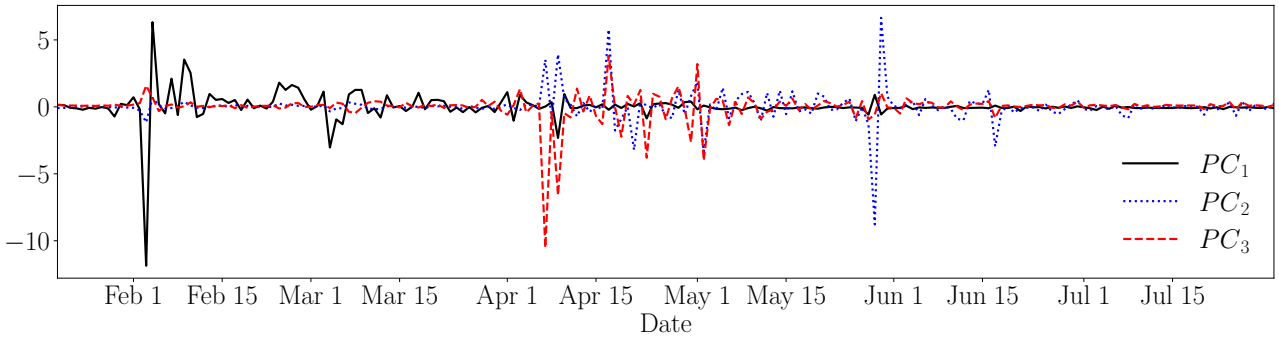
C.2 Daily Trade Policy Surprise Index

We provide details on the principle component analysis conducted in Section 4.1. In Figure C.2, Panel (a) indicates that the first principle component explains 6.3% of the cross-sectional variation in market-level surprises, and the first ten principle components jointly explain over 40% of the variation. Panels (b) and (c) plot the time series of the first three

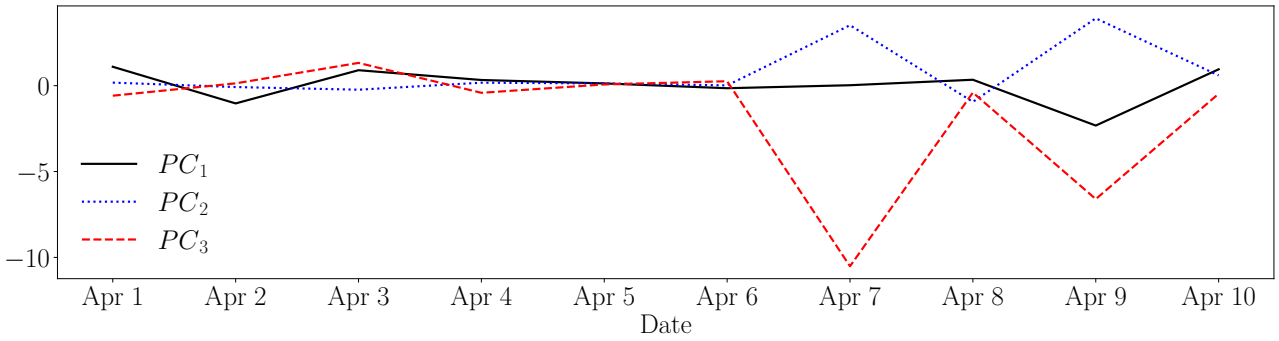
principle componets from January to July 2025 and in early April 2025, respectively.



(a) Explained Variance



(b) January 20, 2025 to July 31, 2025



(c) April 1-10, 2025

Figure C.2: Principle Component Analysis for Daily Trade Policy Surprise Index

C.2.1 Economic Interpretations of Principle Components

Our daily TPS measures admit a natural economic interpretation in terms of the first and second moments of trade policy surprises. We construct a level factor $F_{1,t}$ and an uncertainty factor $F_{2,t}$ by rotating the first two principle components, $PC_{1,t}$ and $PC_{2,t}$. Each factor loads on both principle compoents, and we choose the rotation such that: (i) the level factor has zero empirical correlation with the VIX; (ii) the two factors are orthogonal to each other; and (iii) both factors have unit variance. We additionally choose the sign of the second factor so that it is positively correlated with the VIX.[22] Table C.1 shows that the level factor and uncertainty

[22]Appendix C.2.2 provides more details on the rotation procedure.

factors are highly correlated with the first and second principle components, respectively.

Table C.1: Correlation Between Level and Uncertainty Factors and Daily TPS

	F_1	F_2
PC_1	0.996^{***}	0.074
PC_2	0.104	-0.996^{***}
Δp^{MW}	0.242^{**}	0.257^{***}
ΔTPU	-0.077	-0.033
ΔS&P 500	-0.077	-0.178^{*}
ΔVIX	0.000	0.163^{*}

To examine whether our factors contain information beyond the text-based TPU measure from Caldara et al. (2020), we estimate the following regression:

$$\Delta cy_{t-1,t} = \alpha + \beta_1 F_{1,t} + \beta_2 F_{2,t} + \gamma TPU_t + \varepsilon_t, \tag{C.7}$$

where $\Delta cy_{t-1,t}$ denotes the change in convenience yields from the market close on day $t-1$ to the market close on day t, and TPU_t is the daily trade policy uncertainty index from Caldara et al. (2020).

Table C.2 reports the regression results. The two factors jointly explain more than 7% of the daily variation in long-term convenience yields, whereas the TPU index explains less than 1%.[23] Although neither the TPS-derived factors nor TPU have strong explanatory power for short-term convenience yields at the daily frequency, both TPS-derived factors exhibit economically significant effects at longer maturities. In particular, an increase in the level factor is associated with a significant decline in long-term convenience yields, and a similar decline follows from an increase in the uncertainty factor.

[23] See Table B.1 in Appendix B.2 for regressions using only TPU.

Table C.2: Effects of Level and Uncertainty Factors on Convenience Yields

Dep. Var.	3-Month	1-Year	5-Year	10-Year	30-Year
	(1)	(2)	(3)	(4)	(5)
F_1	−0.016	−0.104	−0.250*	−0.320***	−0.408***
	(0.021)	(0.139)	(0.128)	(0.099)	(0.119)
F_2	−0.018	−0.250*	−0.298*	−0.344**	−0.351**
	(0.027)	(0.146)	(0.171)	(0.144)	(0.165)
TPU	−0.061*	−0.064	−0.099	−0.139	−0.224
	(0.034)	(0.079)	(0.112)	(0.114)	(0.153)
Constant	0.002	0.006	−0.001	−0.019	−0.002
	(0.034)	(0.082)	(0.077)	(0.100)	(0.126)
Observations	172	172	172	172	172
Adjusted R^2	0.005	0.050	0.052	0.082	0.073

Notes: This table reports regression results of convenience yields on the level and uncertainty factors of TPS and TPU, following the specification (C.7). Columns (1)-(5) report results for convenience yields at 3-month, 1-year, 5-year, 10-year, 30-year maturities, respectively. Convenience yields are expressed in basis points. The level factor (labeled F_1) and the uncertainty factor (labeled F_2) have zero mean and a standard deviation of one. Newey standard errors with four lags are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

C.2.2 Rotation of Principle Components

We rotate the first two principle components to generate two new factors. Let $\boldsymbol{PC}_1, \boldsymbol{PC}_2 \in \mathbb{R}^{T\times 1}$ denote the first two principle components (as vectors), where T is the number of daily time series observations. Let $\boldsymbol{F}_1, \boldsymbol{F}_2 \in \mathbb{R}^{T\times 1}$ denote the two factors (as vectors).

We would like the two have the following economic interpretaion: the first factor captures the level of trade policy surprise and the second factor captures the uncertainty in trade policy, respectively. To do so, we impose the following restriction on the new factor $\boldsymbol{F}_1$: it should be orthogonal to an "uncertainty" measure (denoted as $\boldsymbol{u} \in \mathbb{R}^{T\times 1}$ and explained below). Following Gurkaynak, Sack and Swanson (2005), it boils down to finding a matrix $\boldsymbol{A} \in \mathbb{R}^{2\times 2} = \begin{bmatrix} a_1 & b_1 \\ a_2 & b_2 \end{bmatrix}$ such that $\begin{bmatrix} \boldsymbol{F}_1 & \boldsymbol{F}_2 \end{bmatrix} = \begin{bmatrix} \boldsymbol{PC}_1 & \boldsymbol{PC}_2 \end{bmatrix} \boldsymbol{A}$. We solve the four scalar parameters, a_1, a_2, b_1, and b_2, by imposing the following restrictions (which yield four equations).

1. The new factors have unit variance. Since the two principle components are orthogonal and have unit variance, this restriction is equivalent to

$$a_1^2 + a_2^2 = 1,$$
$$b_1^2 + b_2^2 = 1.$$

2. The new factors are orthogonal to each other. Since the two principle components are orthogonal, this restriction is equivalent to

$$a_1 b_1 + a_2 b_2 = 0.$$

3. The new factor $\boldsymbol{F}_1$ is orthogonal to the uncertainty measure $\boldsymbol{u}$. This leads to

$$\begin{aligned} & \text{Corr}\left(\boldsymbol{F}_1, \boldsymbol{u}\right) = 0 \\ \Longrightarrow \quad & \text{Corr}\left(a_1 \boldsymbol{PC}_1 + a_2 \boldsymbol{PC}_2, \boldsymbol{u}\right) = 0 \\ \Longrightarrow \quad & a_1 \text{Corr}\left(\boldsymbol{PC}_1, \boldsymbol{u}\right) + a_2 \text{Corr}\left(\boldsymbol{PC}_2, \boldsymbol{u}\right) = 0. \end{aligned}$$

   The two population moments $\text{Corr}\left(\boldsymbol{PC}_1, \boldsymbol{u}\right)$ and $\text{Corr}\left(\boldsymbol{PC}_2, \boldsymbol{u}\right)$ are replaced with the empirical estimates (time series correlations over our sample period from date 0 to date T). Then the above equation becomes an equation with two unknowns a_1 and a_2.

We use VIX as the uncertainty measure $\boldsymbol{u}$. Table C.1 shows that the second factor is positively correlated with VIX and thus can be interpreted as trade policy uncertainty.