

Tariff Uncertainty and the U.S. Dollar

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Textbook:

Unilateral tariff

⇒ relative demand & supply shift

⇒ **USD appreciates**

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Why?

- **Macro impact of tariffs:** Bianchi and Coulibaly (2025), Kalemli-Özcan, Soylu and Yıldırım (2025), Ignatenko, Lashkaripour, Macedoni and Simonovska (2025), Auray, Devereux and Eyquem (2025), Auclert, Rognlie and Straub (2025), Monacelli (2025), Alessandria, Ding, Khan and Mix (2025), Cuba-Borda, Reyes-Heroles, Queralto and Scaramucci (2025), Werning, Lorenzoni and Guerrieri (2025), Schmitt-Grohé and Uribe (2025), Caliendo, Kortum and Parro (2025), den Besten, Barnichon, Känzig and Singh (2026), ...
- **Safe-asset demand and convenience yields:** Jiang, Krishnamurthy, Lustig, Richmond and Xu (2025), Hassan, Mertens, Wang and Zhang (2025), Acharya and Laarits (2025), Du, Keerati and Schreger (2025), Shin, Wooldridge and Xia (2025), Jiang, Krishnamurthy, Lustig and Richmond (2026), Kekre and Lenel (2026)
- **Gross positions and valuation effects:** Itskhoki and Mukhin (2025), Aguiar, Amador and Fitzgerald (2025)
- **Tariff uncertainty:** Kalemli-Özcan, Soylu and Yıldırım (2026), Candia, Mitchell and Pfajfar (2026), Monacelli and Merendino (2026), Manova, Novy, Sampson and Tang (2026)

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Results:

- Gross position attenuates, but cannot overturn appreciation
- Convenience yield does not move in event windows
- A 1-sd announcement-window jump in tariff uncertainty: dollar depreciates 0.24%, equities decline 0.67%, interest rate differential remains flat (0.00)
- Markets priced tariffs as *transitory* (not credible)

Theory



- **Two countries**, endowment economies; Home = U.S., home bias $(1 - \gamma)$
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- **Tariffs and their variance**:
 - Tariffs follow an AR(1): $\hat{\tau}_t = \rho_\tau \hat{\tau}_{t-1} + \varepsilon_t$
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- **Second-order Approximation**: System linear in shock variables $\hat{\tau}_t, \sigma_t^2, \psi_t$

Convention: $\hat{\varepsilon}_t \uparrow \equiv$ USD depreciation.

- **Households** (CARA $\Rightarrow$ precautionary):

$$\text{Euler: } \mathbb{E}_t \hat{C}_{H,t+1} - \hat{C}_{H,t} = \hat{i}_{H,t} + \underbrace{\eta \sigma_t^2}_{\text{precautionary}}$$

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- **External accounts** (gross positions $\tilde{V}$):

$$\text{BoP: } \hat{V}_{H,t} = R_H \hat{V}_{H,t-1} - \Xi \left[A \left(\hat{C}_{F,t} + \hat{\varepsilon}_t \right) - \left(\hat{C}_{H,t} - \hat{\tau}_t \right) \right] + \hat{i}_{H,t} - \underbrace{\tilde{V} \left[(R_F - 1) \hat{\varepsilon}_t + \hat{i}_{F,t} \right]}_{\text{gross position}}$$

- Literature assumes arbitrageurs borrow in the USD as USD is a funding currency with low yielding USD assets
- **In the data:** higher uncertainty appreciates the USD (safe haven)
- Literature models this safe haven mechanism as marginal arbitrageur=pricer is short USD, $\kappa < 0$:
- **HOWEVER:** The net position of the US in USD is also negative. **What reconciles this?**
 - Dormant long USD actors (foreign pensions, insurers, reserve managers) are not very price sensitive (fixed cost of adjusting), and the USD is normally a good hedge as it appreciates bad times

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$\Rightarrow$ Appendix extension microfound the switch: the baseline keeps $\kappa > 0$ for tractability.

- **Risk sharing is imperfect:** $\hat{w}_t \equiv \hat{\mathcal{E}}_t - (\hat{C}_{H,t} - \hat{C}_{F,t}) \neq 0$
 $\rightarrow \hat{w}_t = \mathbb{E}_t \hat{w}_{t+1} + \eta \sigma_t^2 + \kappa \sigma_t^2 - \psi_t$

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Mechanisms at a glance

Convenience $\psi_t \downarrow$

$\hat{w}_t \uparrow$ via UIP

depreciationary

Uncertainty $\sigma_t^2 \uparrow$

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Tariff level $\hat{\tau}_t \uparrow$

$\hat{w}_t \downarrow$ or $\uparrow$

?

Proposition 1

Let $NX < 0$ Then for every $\rho \in [0, 1)$:

- (i) If $R_F \geq R_H$: for every $\tilde{V} > 0$ — a unilateral tariff level increase strictly appreciates
- (ii) Depreciation requires both $R_H > R_F$ and $\tilde{V} > 1$ (FX assets > \$ liabilities)

- Valuation effects make it possible for unilateral tariffs to transfer wealth abroad ($\hat{w}_t > 0$)
 - But these transfers can never be large enough to yield depreciation
- $\tilde{V}$ is an endogenous transmission mechanism not separate shock (e.g., σ^2, ψ_t)
 - Suppose $\hat{w} > 0$ were large enough to flip $\frac{\partial \hat{c}}{\partial \tau_t} > 0$ via $\Gamma_\tau > 0$
 - ▶ That would make valuation effects transfer wealth home
 - ▶ Then there could not be depreciation in the first place.

Each shock has a different sign and magnitude

Shock	$\hat{\epsilon}_t$ (USD dep.)	$\hat{S}_t$ (equities)	$i_{H,t} - i_{F,t}$

Tariff level: appreciation + higher differential — and it must act *symmetrically*

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Tariff level $\tau_t \uparrow$	—	—	+

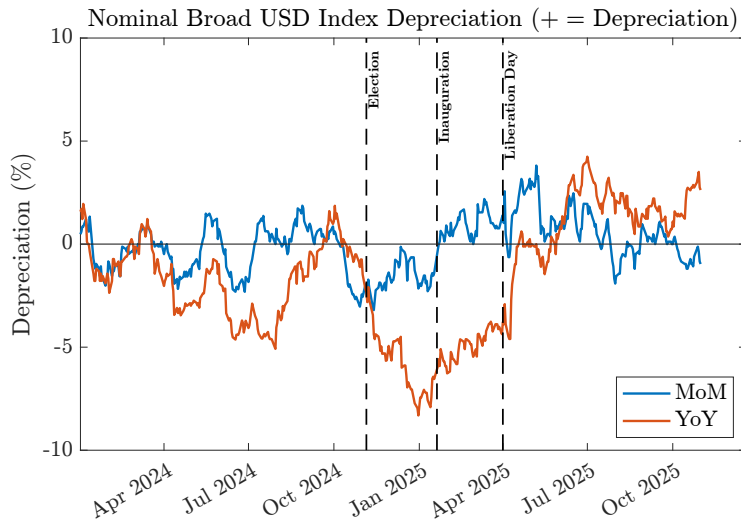
Convenience-yield decline: depreciation $\Rightarrow$ moves CIP wedge + differential

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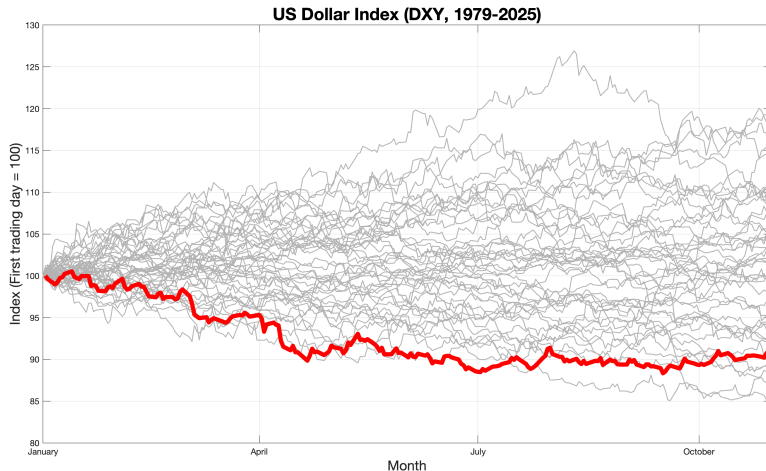
Uncertainty: the *only* shock pairing depreciation and falling equities with a *flat* differential

Shock	$\hat{\epsilon}_t$ (USD dep.)	$\hat{S}_t$ (equities)	$i_{H,t} - i_{F,t}$
Tariff level $\tau_t \uparrow$	—	—	+
Convenience yield $\psi_t \downarrow$	+	—	+
Uncertainty $\sigma_t^2 \uparrow$	+	—	≈ 0 (κ vs. η offset)

Empirics



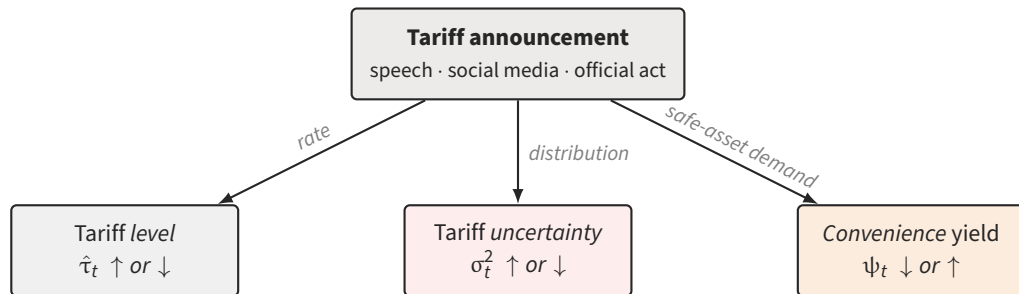
Historical Comparison of the Yearly Performance of the US Dollar, 1979..



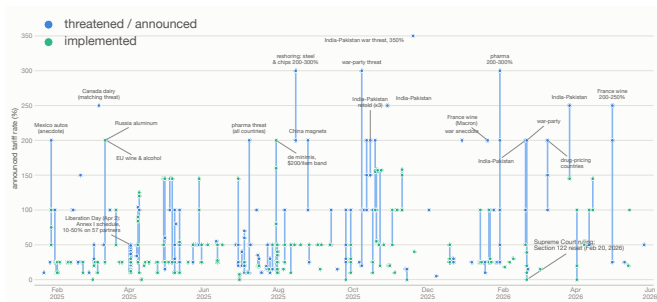
Each gray line: DXY within one calendar year, first trading day = 100; **red: 2025** (through October 31).

Source: Kalemli-Özcan and Soylu, “Can Policy Uncertainty Drive the Dollar?” (*ARFE*)

What Can a Tariff Announcement Move?

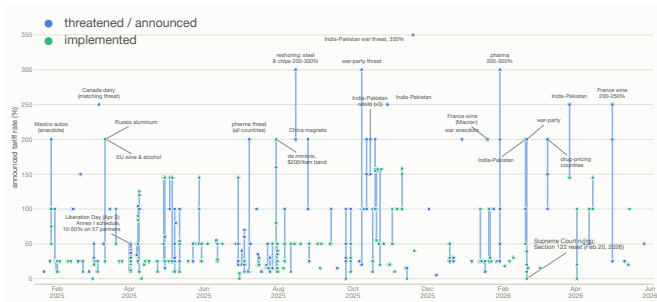


TiRADE: the tariff signal agents actually faced via announcements



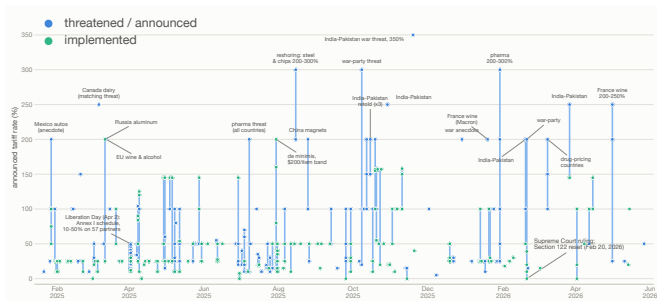
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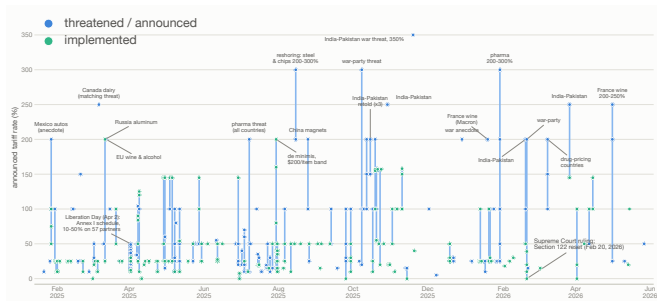
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► Said vs. statutory dispersion



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Measuring Uncertainty (σ_t^2)

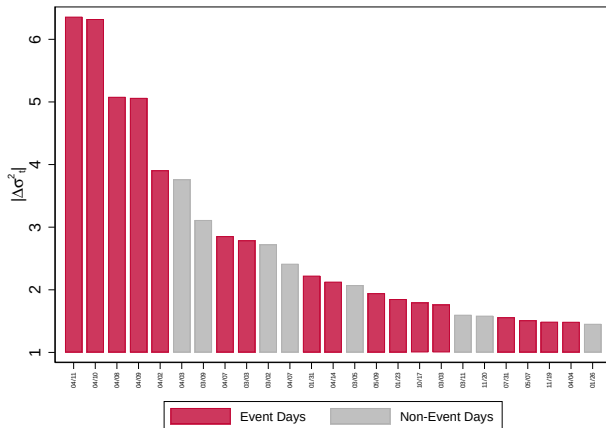


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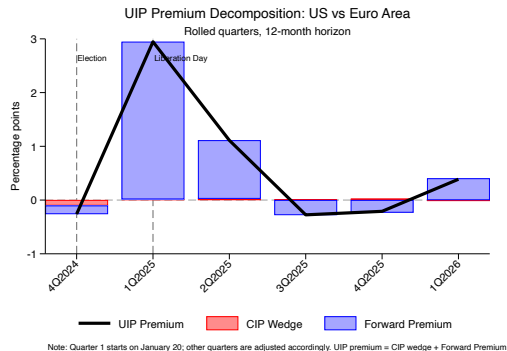
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- σ_t^2 **changes during tariff events**

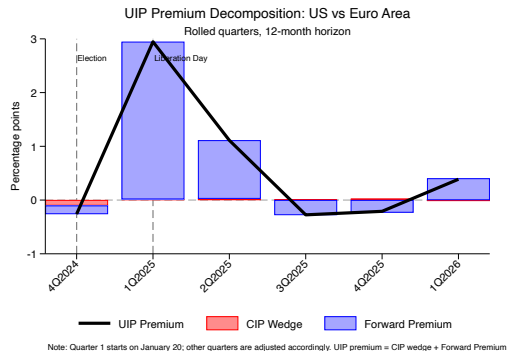


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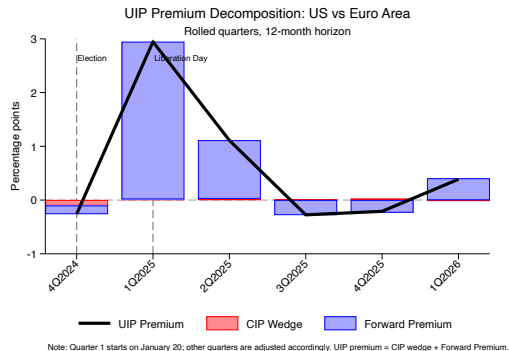
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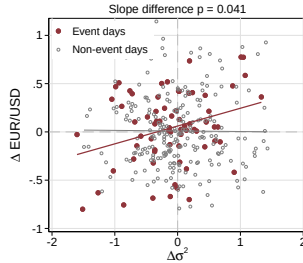
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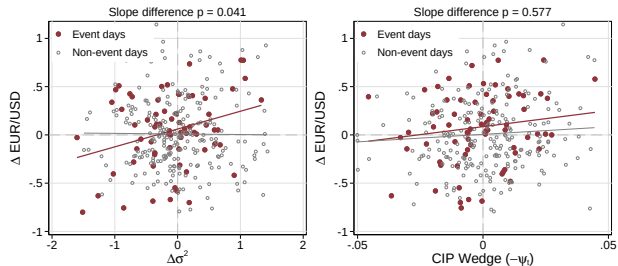
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- Announcement windows: $\Delta\psi_t = 0.00$ (s.d. 0.03)
- We do *not* dispute a secular erosion — we recover the same ~20bp 1Y-basis drift as Jiang et al. (2025).



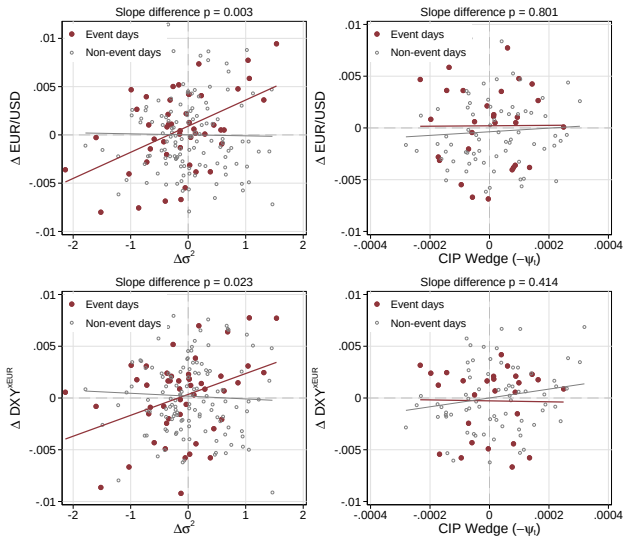
The $\hat{\epsilon}_t - \sigma_t^2$ Relationship Changes on Tariff Days



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OLS: $\Delta x_t = \alpha + \beta_\tau \Delta \tau_t + \beta_\sigma \Delta \sigma_t^2 + \beta_\psi \Delta \psi_t + u_t$ — daily announcement windows

Outcome	$\Delta \hat{\epsilon}_t$ (EURUSD, %)	$\Delta \hat{S}_t$ (SPX/ES1, %)	$\Delta(i_t - i_t^*)$ (1Y, pp)
$\Delta \tau_t$: Net Tariff Change (pp)	0.002 (0.002)	0.005 (0.006)	0.000 (0.000)
σ_t^2 : PCA Uncertainty (std)	0.236*** (0.078)	-0.673*** (0.242)	-0.006 (0.009)
$\Delta \psi_t$: CIP Wedge (1Y, pp)	-1.410 (5.266)	-1.990 (10.666)	1.192 (0.815)
Constant	-0.019 (0.064)	0.030 (0.140)	0.000 (0.006)
SD outcome	0.427	0.945	0.038
R^2	0.189	0.348	0.151

Tariff level: — 0.002 (s.e. 0.002); no level channel

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CIP wedge: statistically insignificant

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Uncertainty significant & matches the sign table (+, −, 0)

Outcome	$\Delta \hat{\epsilon}_t$ (EURUSD, %)	$\Delta \hat{S}_t$ (SPX/ES1, %)	$\Delta(i_t - i_t^*)$ (1Y, pp)
$\Delta \tau_t$: Net Tariff Change (pp)	0.002 (0.002)	0.005 (0.006)	0.000 (0.000)
σ_t^2 : PCA Uncertainty (std)	0.236*** (0.078)	-0.673*** (0.242)	-0.006 (0.009)
$\Delta \psi_t$: CIP Wedge (1Y, pp)	-1.410 (5.266)	-1.990 (10.666)	1.192 (0.815)
Constant	-0.019 (0.064)	0.030 (0.140)	0.000 (0.006)
SD outcome	0.427	0.945	0.038
R^2	0.189	0.348	0.151

Per 1 sd of tariff uncertainty: dollar **+0.236***** (depreciation), equities **−0.673*****, differential **−0.006 (0.009)**. Shapley: $\sigma_t^2 = \mathbf{83.8\%}$ of explained EURUSD variation.

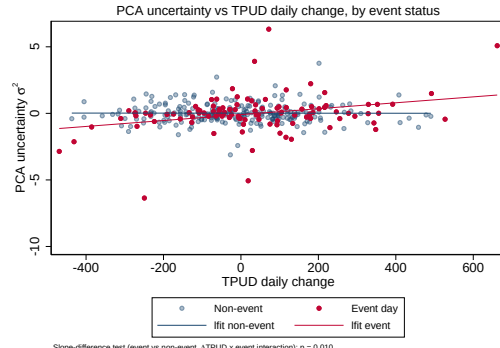
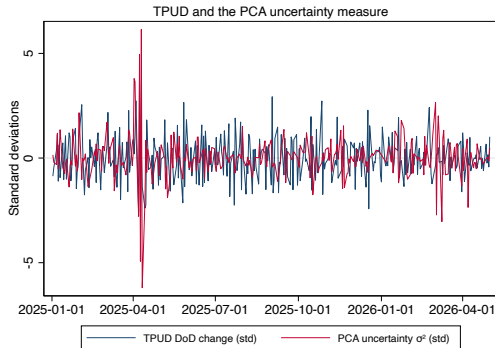
IV Regression: Tariff Uncertainty and the Dollar



Instruments: daily ΔTPU (newspaper) and $\Delta \sigma^2_{\text{Markov}}$ (TiRADE tariff-news variance, pre-first-expiry)

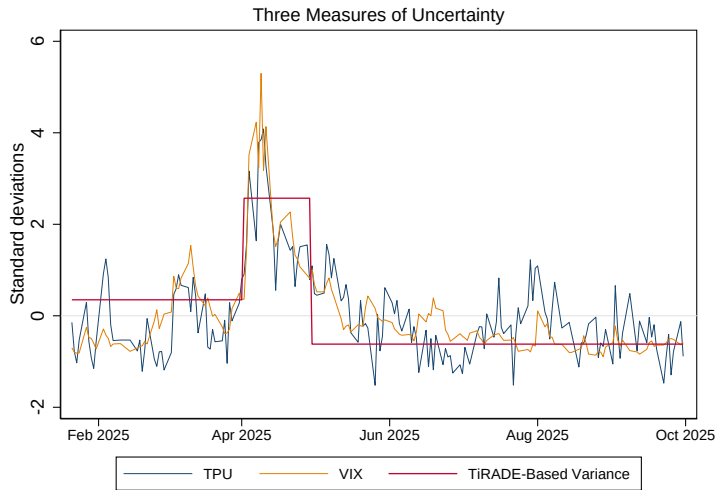
	ΔTPU (Caldara et al., 2020)		$\Delta \sigma^2_{\text{Markov}}$ (TiRADE)	
	(1) 2SLS	(2) Placebo	(3) 2SLS	(4) Placebo
<i>Panel A: Second stage. Dep. var. $\Delta EURUSD$ (%)</i>				
$\Delta \tau_t$: Net Tariff Change (pp)	0.005 (0.005)	0.000 (0.000)	0.015 (0.015)	-0.000 (0.003)
σ_t^2 : PCA Uncertainty (std)	0.222* (0.135)	17.960 (324.820)	0.613*** (0.130)	0.048 (0.236)
$\Delta \psi_t$: CIP Wedge (1Y, pp)	-3.245 (4.641)	99.695 (1781.155)	-15.276*** (5.479)	0.889 (1.649)
<i>Panel B: First stage. Dep. var. σ_t^2</i>				
ΔTPU_t	0.002*** (0.001)	-0.000 (0.000)		
$\Delta \sigma^2_{\text{Markov},t}$			0.001*** (0.000)	0.000** (0.000)
Robust first-stage F	13.4	0.0	25.3	4.5
First-stage partial R^2	0.116	0.000	0.128	0.008

The Uncertainty Composite Tracks Trade-Policy Uncertainty



Slope-difference test (event vs non-event, Δ TPUD x event interaction): $p = 0.010$.

σ_t^2 vs. the daily Caldara, Iacoviello, Molligo, Prestipino and Raffo (2020) trade-policy-uncertainty index: the composite spikes on TPU announcement days — policy uncertainty, not generic financial volatility. [back](#)



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- Standard currency factor analysis
(Lustig-Roussanov-Verdelhan): 24 currencies

$$r_{c,t} = \alpha_c + \beta_c^{DOL} DOL_{-c,t} + \beta_c^{carry} HML_t + \varepsilon_{c,t}$$

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$$r_{c,t} = \alpha_c + \beta_c^{DOL} DOL_{-c,t} + \beta_c^{carry} HML_t + \varepsilon_{c,t}$$

$r_{c,t}$: ex-post excess return of currency c against the USD (+ = USD depreciates)

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$$r_{c,t} = \alpha_c + \beta_c^{DOL} DOL_{-c,t} + \beta_c^{carry} HML_t + \varepsilon_{c,t}$$

$DOL_{-c,t}$: the dollar factor, the average move of the other 23 currencies (leave-one-out)

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$$r_{c,t} = \alpha_c + \beta_c^{DOL} DOL_{-c,t} + \beta_c^{carry} HML_t + \varepsilon_{c,t}$$

HML_t : high-rate minus low-rate currencies

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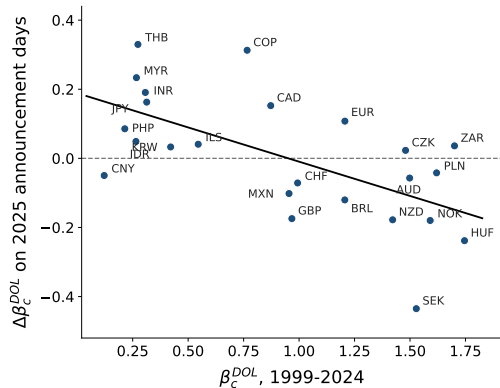
Beyond the Euro: Announcement Days Are Shocks to the Dollar



- Standard currency factor analysis (Lustig-Roussanov-Verdelhan): 24 currencies

$$r_{c,t} = \alpha_c + \beta_c^{DOL} DOL_{-c,t} + \beta_c^{carry} HML_t + \varepsilon_{c,t}$$

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- The announcement-vs.-ordinary change in β_c^{DOL} is predicted by the 1999-2024 $\beta_c^{DOL} \Rightarrow$ the cross-section **compresses** toward one
 - Shock to **the dollar itself**: all 24 pairs move as one



- **Claim:** the dollar's depreciation around tariff announcements was priced **tariff-regime uncertainty**. Announcements move both the level and the **perceived distribution** of future tariffs, and only the uncertainty shock pairs **depreciation + falling equities + a flat differential**, as in the minute-level record

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- **The claim is narrow: we measure the fast object.** Not the level (priced transitory, $\rho_{\tau} = 0.20$), not valuation (dampens, never flips), not the covered basis (mean move 0.00 pp). Whatever erodes the dollar's safe-asset status erodes slowly, outside these windows

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- **For trade-war macro:** the state variable is not just the tariff rate but the **perceived volatility of the tariff regime**; exorbitant privilege rests on policy predictability



<https://www.globallinkages.org/>

Global Linkages Lab at Brown University



TiRADE is posted!



Appendix

- Limited-information Bayesian estimation matching the three announcement-window EUR/USD coefficients
 - Adjust shock timing:
$$\hat{\tau}_t = \rho_\tau \hat{\tau}_{t-1} + \epsilon_{t-1}$$

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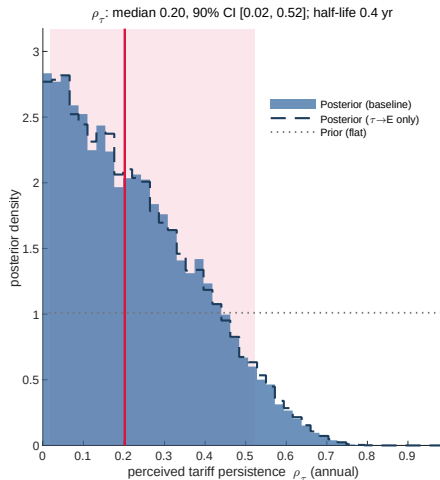
- Adjust shock timing:

$$\hat{\tau}_t = \rho_\tau \hat{\tau}_{t-1} + \epsilon_{t-1}$$

- ρ_τ : median 0.20 [0.02, 0.52],
 $P(\rho_\tau > 0.9) \approx 0 \Rightarrow$ tariffs believed to be not persistent/credible

► Calibration

► Posterior table



- *Global* shock: in bad states of the world the US does relatively better $\rightarrow$ for these shocks the USD is its own insurance (2008, 2020)
- *Tariff* shock: in bad states of the world the US does relatively worse $\rightarrow$ the USD stops being a good hedge
- So they act only when **both** hold: the shock is large enough to cover the fixed cost of adjusting, *and* the uncertainty is US-specific

Appendix: Approximated Equilibrium

8 sequences $\{\hat{p}_{H,t}, \hat{p}_{F,t}, \hat{\varepsilon}_t, \hat{i}_{H,t}, \hat{i}_{F,t}, \hat{V}_{H,t}, \hat{C}_{H,t}, \hat{C}_{F,t}\}$ given shocks $\{\hat{\tau}_t, \sigma_t^2, \psi_t\}$:

$$\text{Euler: } \mathbb{E}_t \hat{C}_{H,t+1} - \hat{C}_{H,t} = \hat{i}_{H,t} + \eta \sigma_t^2, \quad \mathbb{E}_t \hat{C}_{F,t+1} - \hat{C}_{F,t} = \hat{i}_{F,t}$$

$$\text{CPI: } 0 = (1 - \gamma) \hat{p}_{H,t} + \gamma (\hat{\varepsilon}_t + \hat{p}_{F,t} + \hat{\tau}_t), \quad 0 = (1 - \gamma A) \hat{p}_{F,t} + \gamma A (\hat{p}_{H,t} - \hat{\varepsilon}_t)$$

$$\text{UIP: } \hat{i}_{H,t} - \hat{i}_{F,t} = \mathbb{E}_t \hat{\varepsilon}_{t+1} - \hat{\varepsilon}_t + \kappa \sigma_t^2 - \psi_t$$

$$\text{Goods: } 0 = (1 - \gamma) (\hat{C}_{H,t} - \hat{p}_{H,t}) + \gamma A (\hat{C}_{F,t} + \hat{\varepsilon}_t - \hat{p}_{H,t})$$

$$0 = \gamma (\hat{C}_{H,t} - \hat{\varepsilon}_t - \hat{p}_{F,t} - \hat{\tau}_t) + (1 - \gamma A) (\hat{C}_{F,t} - \hat{p}_{F,t})$$

$$\text{BoP: } \hat{V}_{H,t} = R_H \hat{V}_{H,t-1} - \Xi [A (\hat{C}_{F,t} + \hat{\varepsilon}_t) - (\hat{C}_{H,t} - \hat{\tau}_t)] + \hat{i}_{H,t} - \tilde{V} [(R_F - 1) \hat{\varepsilon}_t + \hat{i}_{F,t}]$$

$\eta = \frac{\alpha}{2} \lambda_C^2$, $\kappa = \chi \lambda_E^2$ are equilibrium objects (squared policy-function loadings on the tariff innovation);

$\Xi \equiv R_H \gamma / V_H$, $\tilde{V} \equiv B_F / B_H$; asymmetric home bias $\gamma_F = A \gamma$ pins $NX = \gamma(A - 1)$.

Wedge solution ($A = 1, \tilde{V} = 0$):

$$\hat{w}_t = \underbrace{\left(-\frac{R_H - 1}{R_H - \rho}\right)}_{<0} \hat{\tau}_t + \underbrace{R_H^{-1}(\eta + \kappa)}_{>0} \sigma_t^2 \underbrace{- R_H^{-1}}_{<0} \psi_t + \underbrace{\frac{1 - R_H^{-1}}{\gamma}}_{>0} \hat{V}_{H,t-1}$$

Exchange rate:

$$\hat{e}_t = \underbrace{\left(\left(\frac{1}{2} - \frac{R_H - 1}{R_H - \rho}\right)(1 - 2\gamma)^2 - \frac{1}{2}\right)}_{<0} \hat{\tau}_t + \underbrace{R_H^{-1}(1 - 2\gamma)^2 \eta}_{>0} \sigma_t^2 + \underbrace{R_H^{-1}(1 - 2\gamma)^2}_{>0} (\kappa \sigma_t^2 - \psi_t) + \dots$$

- Tariff level: appreciation — wedge capitalizes the expected reversal of the tariff
- σ_t^2 : depreciation through both η (Euler) and κ (UIP premium); $\psi_t \downarrow$ likewise depreciationary
- General ($A, \tilde{V}$) case: Proposition 1 in the paper

Proposition 2 (net importer, any persistence)

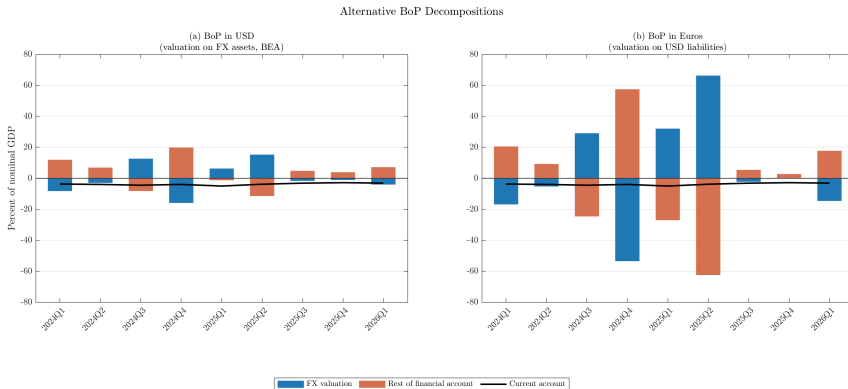
Let $NX < 0$ and impose steady-state admissibility. Then for every $\rho \in [0, 1)$:

- (i) If $R_F \geq R_H$: $\partial \hat{E}_t / \partial \hat{\tau}_t < 0$ for every admissible $\tilde{V} > 0$ — a tariff increase strictly appreciates, no matter how large the balance sheet.
- (ii) If $\tilde{V} \leq 1$ (FX assets $\leq$ \$ liabilities): solvency forces $R_F > R_H$, so (i) applies — tariff-level depreciation is impossible.
- (iii) Depreciation requires both $R_H > R_F$ and $\tilde{V} > (R_H - 1)/(R_F - 1) > 1$.

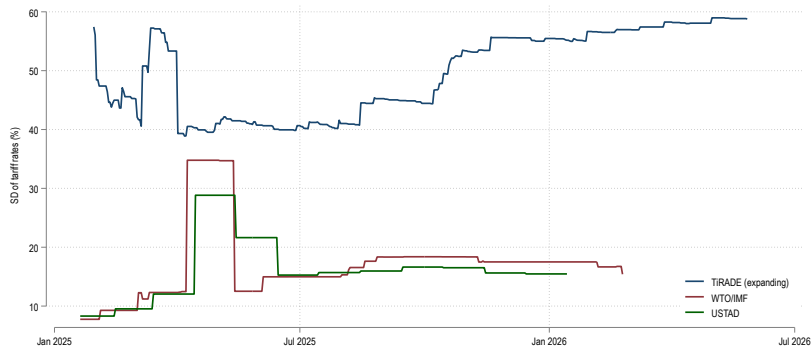
Key step: impact response $\propto (1 - \rho)\gamma(1 - \gamma - NX)\Gamma^2 f(\tilde{V}) - \Xi \mathcal{K}_\rho$ with

$f(\tilde{V}) = (R_H - 1) - (2R_F - R_H - 1)\tilde{V}$; the net-importer solvency floor $(R_F - 1)\tilde{V} > (R_H - 1)$ puts $f(\tilde{V}) < 0$ in exactly the exorbitant-privilege configuration. U.S.: $\tilde{V} = 0.67 < 1 \Rightarrow$ case (ii).

Appendix: Valuation Depends on the Currency of Denomination



BoP in dollars (BEA convention): valuation on the FX-asset leg. BoP in euros: valuation on the *dollar liability* leg, roughly twice as large ($B_H > B_F$). The relevant primitives are the gross position $\tilde{V}$ and currency composition, not the net position alone.



TiRADE (communicated) dispersion never falls below 39pp and reaches 59pp; statutory series (WTO-IMF, USTAD) start near 8pp and never exceed 35pp. The two layers decouple after the April-May 2025 U.S.-China escalation.

Appendix: Tariff Asymmetry — Daily Event Windows



	Increases ($\Delta\tau > 0$)	Decreases ($\Delta\tau < 0$)	Diff. ($\uparrow - \downarrow$)
Net $\Delta\tau$ (pp)	+11.143*** (1.470)	-6.546*** (1.800)	+17.689***
EURUSD, USD dep. (%)	+0.108 (0.067)	-0.143 (0.126)	+0.252*
DXY ex-EUR, re-signed (%)	+0.066 (0.056)	-0.062 (0.135)	+0.128
<i>N</i> days	92	16	

Outcome	Increase $\hat{\beta}_+$	Decrease $\hat{\beta}_-$	$p(\beta_+ = \beta_-)$	Pooled $\hat{\beta}$	<i>N</i>
EURUSD, USD dep. (%)	0.003 (0.006)	0.026 (0.016)	0.217	0.006	94
DXY ex-EUR, re-signed (%)	0.003 (0.005)	0.021 (0.015)	0.252	0.005	94

Top: event-window means by sign of $\Delta\tau_t$. Bottom: kinked regressions

$100 \Delta y = \alpha + \beta_+ \max(\Delta\tau_t, 0) + \beta_- \min(\Delta\tau_t, 0) + u$; the Wald test fails to reject symmetry ($p = 0.22$), and both slopes are economically nil — no level channel in either direction (16 de-escalation days: limited power).

Zeroth Stage: Do tariff announcements move $\hat{c}_t$, $\hat{s}_t$, & $i_{H,t} - i_{F,t}$?



	EUR/USD $\Delta \hat{c}_t$	Equities $\Delta \hat{s}_t$	Int. diff. $\Delta i_{H,t} - \Delta i_{F,t}$	Uncertainty $\Delta \sigma_t^2$	CIP basis $\Delta \psi_t$
15 min	0.021** (0.010)	0.110 (0.070)	-0.0002 (0.0013)	1.514** (0.704)	-0.0002 (0.0008)
30 min	0.016** (0.008)	0.091 (0.074)	-0.0005 (0.0011)	0.976** (0.468)	-0.0003 (0.0008)
60 min	0.017 (0.011)	0.103 (0.077)	-0.0004 (0.0014)	0.994** (0.503)	-0.0006 (0.0009)
120 min	0.022* (0.011)	0.090 (0.082)	-0.0007 (0.0020)	0.705* (0.426)	-0.0002 (0.0008)
240 min	0.020 (0.016)	0.079 (0.097)	0.0006 (0.0030)	0.548 (0.363)	0.0002 (0.0008)
Daily (11am EoD)	0.190* (0.107)	0.396 (0.296)	0.0085 (0.0060)	0.661** (0.287)	-0.0050** (0.0021)

Increases Drive the Dollar Down; Decreases Partly Reverse It



Event-day contributions to the first-to-last move, split by the sign of $\Delta\tau_t$

	EUR/USD		DXY ex-EUR		Equities		$i - i^*$	
	%	share	%	share	%	share	pp	share
Sum, increase days ($\Delta\tau_t > 0, n=91$)	7.56	62%	3.42	60%	3.27	14%	-0.12	19%
Sum, decrease days ($\Delta\tau_t < 0, n=15$)	-1.88	-15%	-0.84	-15%	6.99	30%	+0.24	-39%
Total first→last ($n=466$ days)	12.21	100%	5.72	100%	23.02	100%	-0.62	100%

Value columns: cumulative daily change over 21 Jan 2025–1 May 2026 (EUR/USD, DXY, equities in percent; $i - i^*$ in pp, total through 15 Apr 2026, $n=450$ days). Share = contribution as a fraction of the first-to-last total (total row = 100% by construction). Tariff *increases* deliver ~60% of the dollar's depreciation; *decreases* push it back up (-15%). Equities mirror this: the 15 de-escalation days carry 30% of the equity move.

Appendix: Descriptive Event-Window Averages ($\tau \times \sigma^2$ splits, daily)



Variable	Raw avg.	$\tau \uparrow$ $\sigma^2 \uparrow$	$\tau \uparrow$ $\sigma^2 \downarrow$	$\tau \downarrow$ $\sigma^2 \uparrow$	$\tau \downarrow$ $\sigma^2 \downarrow$
Net $\Delta\tau$ (pp)	+8.56*** (1.49)	+9.56*** (1.67)	+13.27*** (2.65)	-4.49* (1.76)	-7.48** (2.49)
σ^2 (PCA uncertainty, std)	-0.03 (0.14)	+0.87*** (0.20)	-0.69*** (0.15)	+0.38** (0.11)	-1.28** (0.54)
$\Delta\psi$: CIP wedge (1Y, pp)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01 (0.01)
EURUSD, USD dep. (%)	+0.06 (0.06)	+0.23* (0.12)	-0.05 (0.07)	-0.01 (0.16)	-0.20 (0.17)
DXY ex-EUR, re-signed (%)	+0.04 (0.05)	+0.19* (0.09)	-0.08 (0.07)	+0.05 (0.17)	-0.11 (0.18)
Stock index, SPX/ES1 (%)	+0.13 (0.15)	-0.58*** (0.20)	+0.74*** (0.22)	-0.13 (0.31)	+0.86** (0.38)
TPU daily change	+30.69 (20.18)	+52.34* (29.47)	+11.68 (31.94)	+36.54 (82.46)	+14.06 (75.00)
N obs.	102	44	42	5	11
% of obs.	100.0	43.1	41.2	4.9	10.8

The pooled near-zero is two large opposite responses canceling: the sign of the *uncertainty* change, not of the *tariff change* sorts the market response [back](#)

Appendix: Descriptive Event-Window Averages (intraday)



Variable	Raw avg.	$\tau \uparrow$ $\sigma^2 \uparrow$	$\tau \uparrow$ $\sigma^2 \downarrow$	$\tau \downarrow$ $\sigma^2 \uparrow$	$\tau \downarrow$ $\sigma^2 \downarrow$
Net $\Delta\tau$ (pp)	+6.57*** (0.90)	+5.57*** (1.06)	+10.30*** (1.87)	-7.62 (2.71)	-5.47* (2.61)
EURUSD, USD dep. (%)	-0.03** (0.01)	-0.04** (0.02)	-0.04 (0.04)	0.00 (0.02)	-0.04 (0.05)
DXY ex-EUR, re-signed (%)	-0.01 (0.01)	-0.03** (0.01)	+0.01 (0.04)	-0.02 (0.03)	-0.04 (0.04)
Stock index, SPX/ES1 (%)	+0.04 (0.08)	-0.21*** (0.04)	+0.47 (0.29)	-0.18 (0.06)	+0.28** (0.11)
VIX (pts)	+0.03 (0.17)	+0.67*** (0.15)	-1.04** (0.44)	+0.32* (0.10)	-0.29* (0.16)
EURUSD 1M vol (pts)	0.00 (0.01)	+0.04** (0.02)	-0.09** (0.04)	-0.02* (0.00)	-0.05** (0.02)
σ^2 (PCA uncertainty, std)	-0.01 (0.37)	+1.32*** (0.31)	-2.23** (1.00)	+0.34 (0.12)	-0.77*** (0.20)
<i>N</i> obs.	140	48	26	3	10
% of obs.	100.0	34.3	18.6	2.1	7.1

Appendix: Intraday Window Ladder — Actual vs. Non-Event Windows



Post window	Placebo slope	Event slope	Event–placebo slope	N_{event}	$N_{placebo}$	R^2
Panel A: EURUSD (%)						
15 min	0.000 (0.002)	0.010* (0.006)	0.011 (0.006) [0.245]	84	25491	0.141
30 min	0.003 (0.004)	0.001 (0.009)	-0.001 (0.010) [1.000]	84	25491	0.002
60 min	0.007 (0.006)	0.018* (0.010)	0.010 (0.012) [0.470]	84	25491	0.172
120 min	0.012 (0.008)	0.014 (0.009)	0.002 (0.012) [1.000]	84	25491	0.064
240 min	0.023* (0.012)	0.020** (0.009)	-0.003 (0.015) [0.738]	84	25491	0.056
Panel B: Stock index, SPX/ESI (%)						
15 min	-0.094*** (0.006)	-0.123*** (0.032)	-0.029 (0.033) [1.000]	78	21171	0.730
30 min	-0.125*** (0.009)	-0.169*** (0.044)	-0.044 (0.045) [1.000]	78	21171	0.690
60 min	-0.167*** (0.013)	-0.225*** (0.027)	-0.058 (0.030) [1.000]	78	21171	0.858
120 min	-0.216*** (0.020)	-0.276*** (0.013)	-0.060 (0.023) [1.000]	78	21171	0.883
240 min	-0.275*** (0.032)	-0.389*** (0.020)	-0.114 (0.038) [1.000]	78	21171	0.897
Panel C: U.S.–Germany interest differential (pp; daily change)						
15 min	0.000 (0.000)	0.001 (0.001)	0.001 (0.001) [0.429]	23	10793	0.182
30 min	0.000 (0.000)	0.000 (0.001)	0.001 (0.001) [0.955]	23	10864	0.034
60 min	-0.001 (0.000)	0.001 (0.001)	0.001 (0.001) [0.998]	23	10969	0.050
120 min	-0.002* (0.001)	0.002 (0.002)	0.003 (0.003) [~0.001]	23	10969	0.087
240 min	-0.004*** (0.002)	0.001 (0.003)	0.005 (0.004) [~0.001]	23	10969	0.007

Outcome	$\Delta \hat{\epsilon}_t$ (EURUSD, %)			$\Delta DXY_t^{\text{EUR}}$ (re-signed, %)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta \tau_t$: Net Tariff Change (pp)	0.006 (0.005)	0.006 (0.005)	0.002 (0.002)	0.005 (0.005)	0.005 (0.005)	0.003 (0.003)
σ_t^2 : PCA Uncertainty (std)		0.133* (0.069)	0.236*** (0.078)		0.081 (0.061)	0.233** (0.101)
$\Delta \psi_t$: CIP Wedge (1Y, pp)			-1.410 (5.266)			-2.736 (4.545)
Constant	0.021 (0.066)	0.017 (0.063)	-0.019 (0.064)	0.005 (0.053)	0.004 (0.053)	-0.030 (0.060)
N	94	88	49	94	88	49
SD outcome	0.588	0.597	0.427	0.501	0.505	0.417
R^2	0.022	0.138	0.189	0.021	0.081	0.200

Regressors added one at a time; column (3)/(6) is the CIP-available subsample ($N = 49$). σ_t^2 prices the dollar in every specification; $\Delta \tau_t$ and $\Delta \psi_t$ never do. [back](#)

Outcome	$\Delta \hat{\epsilon}_t$ (EURUSD, %)		ΔDXY_t^{xEUR} (re-signed, %)	
	(1)	(2)	(3)	(4)
$\Delta \tau_t$: Net Tariff Change (pp)	0.000 (0.001)	0.001 (0.001)	0.002 (0.002)	0.003 (0.002)
σ_t^2 : PCA Uncertainty (std)		0.018 (0.012)		0.012 (0.010)
ΔVIX				
$\Delta \psi_t$: CIP Wedge (1Y, pp)				
Constant	-0.024** (0.012)	-0.042*** (0.015)	-0.022** (0.011)	-0.030** (0.013)
N	116	86	108	86
SD outcome	0.137	0.148	0.124	0.131
R^2	0.001	0.185	0.018	0.113

Regressor	Shapley R^2	% of full R^2	Coefficient
Panel A. $\{\Delta\tau, \sigma^2, \Delta\psi\}$, full $R^2 = 0.109$			
$\Delta\tau_t$: Net Tariff Change (pp)	0.011	10.5%	0.004
σ_t^2 : PCA Uncertainty (std)	0.091	83.8%	0.125
$\Delta\psi_t$: CIP Wedge (1Y, pp)	0.006	5.7%	-0.840
Panel B. $\{\Delta\tau, \sigma^2\}$ (no CIP requirement), full $R^2 = 0.105$			
$\Delta\tau_t$: Net Tariff Change (pp)	0.013	12.8%	0.005
σ_t^2 : PCA Uncertainty (std)	0.092	87.2%	0.117

Each regressor's contribution to the EURUSD announcement-window R^2 , averaged over all orderings of $\{\Delta\tau_t, \sigma_t^2, \Delta\psi_t\}$: the uncertainty score carries 83.8% of the explained variation (87.2% without the CIP-availability restriction). [back](#)

Outcome	$\Delta \hat{\varepsilon}_t$ (EURUSD, %)			
	(1)	(2)	(3)	(4)
$\Delta \tau_t$: Net Tariff Change (pp)	0.005 (0.005)	0.006 (0.005)	0.004 (0.005)	0.006 (0.005)
σ_t^2 : PCA Uncertainty (std)		0.133* (0.069)	0.442*** (0.111)	
ΔVIX			-0.162*** (0.059)	0.033 (0.032)
Constant	0.012 (0.068)	0.017 (0.063)	0.018 (0.060)	0.014 (0.067)
N	88	88	88	88
SD outcome	0.597	0.597	0.597	0.597
R^2	0.020	0.138	0.260	0.051

On announcement days, ΔVIX alone does not price the dollar (col. 4); conditional on the tariff-uncertainty composite, the residual VIX move loads with the *safe-haven* sign (col. 3). Off announcements, top-decile $|\Delta \text{VIX}|$ days ($N = 12$) *appreciate* the dollar: -0.078% per VIX point (s.e. 0.018) — the opposite of the tariff-window fingerprint $+0.236$. [back](#)

Appendix: Convenience Is a Short-End Phenomenon (Maturity Slope)



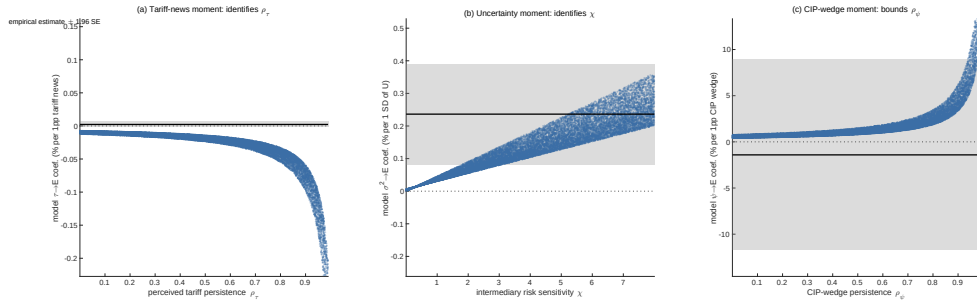
Outcome	$\Delta(i_t - i_t^*)$ 1Y DE (pp)	$\Delta(i_t - i_t^*)$ 1Y EA-AAA (pp)	$\Delta(i_t - i_t^*)$ 30Y EA-AAA (pp)
$\Delta\tau_t$: Net Tariff Change (pp)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
$\Delta\sigma_t^2$: Uncertainty Score (std)	-0.002 (0.007)	-0.001 (0.010)	0.005 (0.009)
$\Delta\psi_t$: CIP Wedge (pp)	1.532*** (0.269)	1.743*** (0.390)	0.618* (0.351)
Constant	0.002 (0.007)	0.003 (0.011)	-0.006 (0.010)
N	41	41	41
SD outcome	0.057	0.073	0.054
R^2	0.521	0.394	0.079

Announcement-day differential regressions across maturities. The CIP wedge loads on the 1Y differential at 1.532*** (U.S.–Germany) and 1.743*** (U.S.–EA AAA) but collapses to 0.618* at 30Y, with R^2 falling 0.521/0.394 $\rightarrow$ 0.079. A repricing of the dollar's safe-asset convenience should raise the differential across the entire curve; the covered wedge is instead short-end money-market plumbing. $\Delta\sigma_t^2$ is negligible at every maturity — a priced uncertainty shock, not an across-the-curve erosion. [back](#)

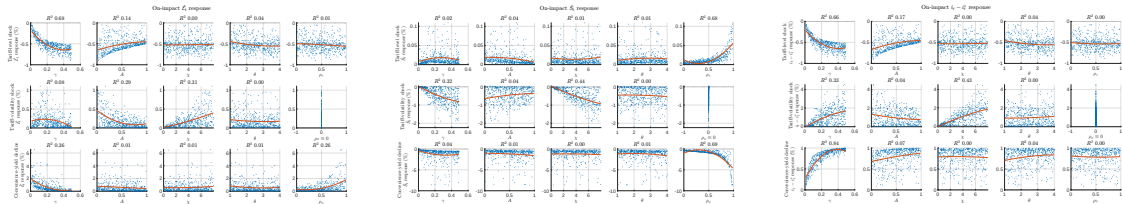
Appendix: Calibration (annual; consumption numeraire)



Parameter	Value		Source / target
<i>Fixed from data (1999–2024 averages, per unit of PCE)</i>			
γ	0.0708	foreign expenditure share	ICIO
NX	−0.050	trade balance	BEA ITA
α	2	CARA curvature	standard
i_H	2.64%	\$ funding rate ($\beta_H = 0.974$)	BoP income yield, liabilities
B_H	1.53	net \$ liability position	BEA IIP + currency shares
B_F	1.03	net FX asset position	BEA IIP + currency shares
<i>Implied by the steady state $(R_F - 1)B_F - (R_H - 1)B_H = -NX$</i>			
A	0.294	home-bias asymmetry	$1 + NX/\gamma$
Ξ	0.046	BoP slope	γ/B_H
i_F	8.8%	FX total return ($\beta_F = 0.919$)	$(i_H B_H - NX)/B_F$
$\tilde{V}$	0.67	gross-position ratio	B_F/B_H
<i>Degrees of freedom (estimated / simulated)</i>			
$\chi, \theta, \rho_\tau, \rho_\psi$	—	$U[0, 8], U[1, 4], U[0, 0.99), U[0, 0.99)$	estimated on event-study moments



- (a) Under news timing the announcement response to a tariff is smallest at low ρ_τ and falls steeply as $\rho_\tau \rightarrow 1$ $\Rightarrow$ the near-zero empirical coefficient bounds persistence from above. (b) The uncertainty coefficient is linear in χ and crosses the estimate in the interior $\Rightarrow$ pins χ . (c) The convenience coefficient rises in ρ_ψ through the present-value multiplier $1/(1 - \rho_\psi)$ $\Rightarrow$ the wide band accommodates much of the prior but rejects $\rho_\psi \rightarrow 1$. [back](#)



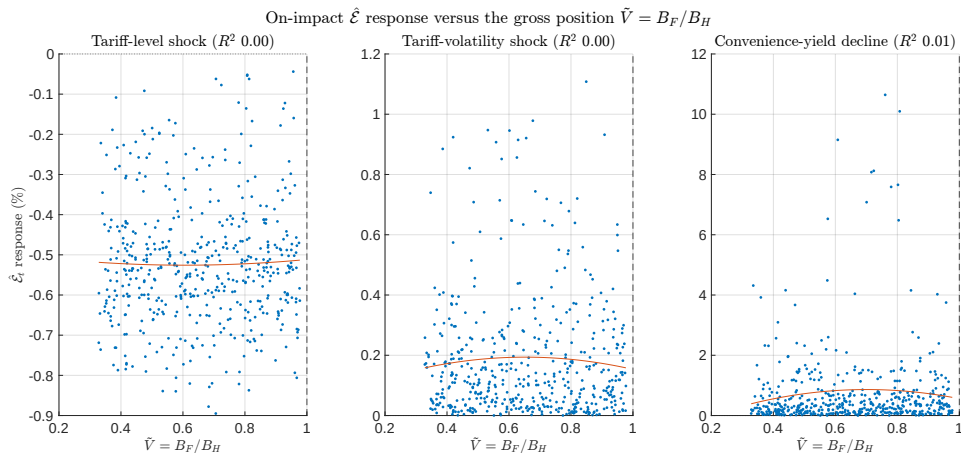
Impact responses of $\hat{\epsilon}_t, \hat{S}_t, i_H - i_F$ to the three shocks across drawn primitives $(\gamma, A, \chi, \theta, \rho_\tau)$, with i_F adjusting to satisfy steady-state solvency at $B_H = 1.53, B_F = 1.03$; uncertainty-row dispersion is driven almost entirely by χ .

Specification	ρ_τ (annual)			χ		ρ_ψ (annual)		ESS
	Median	90% CI	$P(\rho_\tau > 0.9)$	Median	90% CI	Median	90% CI	
Baseline (3 FX moments)	0.20	[0.02, 0.52]	0.00	5.98	[2.67, 7.79]	0.44	[0.04, 0.88]	8,718
$\tau \rightarrow \mathcal{E}$ only	0.20	[0.02, 0.53]	0.00	3.98	[0.39, 7.59]	0.49	[0.05, 0.94]	14,435
$\sigma^2 \rightarrow \mathcal{E}$ only	0.49	[0.05, 0.94]	0.09	5.89	[2.65, 7.78]	0.49	[0.05, 0.94]	18,629
$\psi \rightarrow \mathcal{E}$ only	0.49	[0.05, 0.94]	0.09	4.00	[0.40, 7.59]	0.44	[0.04, 0.88]	28,529
No model-error tolerance	0.04	[0.00, 0.15]	0.00	6.21	[2.67, 7.86]	0.43	[0.04, 0.88]	518

Weighted quantiles of 30,000 prior draws; Gaussian quasi-posterior on the three FX cells, news-timing tariff shock. Single-moment rows show block-diagonal identification. Without the model-error tolerance the posterior reads announcements as even more transitory ($\rho_\tau \approx 0$).

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Appendix: The Gross Position Never Flips the Sign



On-impact $\hat{\mathcal{E}}$ responses against $\tilde{V} = B_F/B_H \in [0.33, 0.98]$, other primitives drawn from their priors, i_F adjusting through steady-state solvency. Over the entire range the tariff-level response never flips sign — the

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