Trading Blows: The Exchange-Rate Response to Tariffs and Retaliations

National Bank of Ukraine

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October 2, 2025

The views expressed here do not necessarily reflect the position of the Bank of England.

All Eyes on the Post-'Liberation Day' USD Depreciation

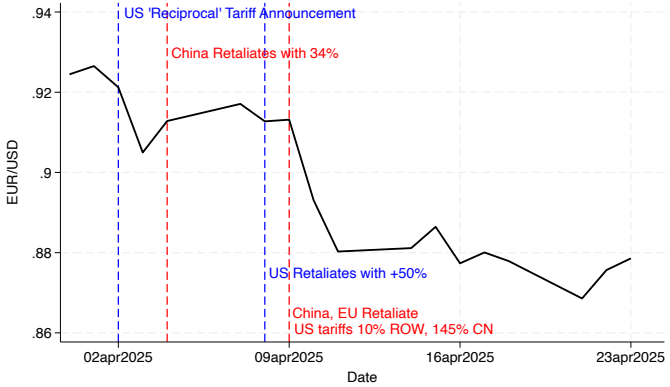

Figure: USD *depreciated* by over 6% vs. EUR and in effective terms after 'Liberation Day' tariff announcement

A **challenge to 'conventional wisdom'**, which predicts U.S. tariffs should appreciate USD?

A '**reserve-currency shock**', distinct from 2018-2020 tariff experience?

We Ask:

***Given evidence from 2018-2020**, were financial-market responses following April 2^{nd} tariffs necessarily a **surprise**?*

This Paper

#1. New dataset of tariff announcements, threats and implementations for 2018-2020 and 2025
- Account for **size of tariff rates** and **economic relevance**
- Covers US, as well as **retaliatory tariff actions** by China, EU and Canada

#2. Estimate effect of US tariffs on FX and yields 2018-2020, **accounting for retaliation**
- *Conventional wisdom redux*: on average, US tariffs *appreciate* USD and UST yields increase
- Conditioning on **retaliation** from rest-of-world, US tariffs *depreciate* and UST yields fall

#3. Compare with estimated responses for 2025
- Based on 2018-2020 evidence USD depreciation **not surprising** $\Leftrightarrow$ consistent with retaliation
- (Also consistent with open-macro model with, e.g., asymmetric country size and DCP)
- While UST yields did *initially* fall after April 2^{nd}, subsequent UST yield spike anomalous

$\Rightarrow$ 'Reserve-currency-shock' not explained by USD depreciation *alone*

Related Literature

Tariffs and FX, 2018-2020

- Jeanne & Son (’24): US tariffs appreciate USD, depreciate CNH at high frequency
- Matveev & Ruge-Murcia (’24): Trump tariff tweets appreciate the USD for up to 3 days

Tariffs and FX/Asset Prices in 2025

- Jiang et al. (’25), Hartley & Rebucci (’25): this time is different: USD $\downarrow$, yields $\uparrow$, equities $\downarrow$

Other Empirical Analyses of Tariffs

- Barratieri et al. (’21), Furceri et al. (’21): Tariffs lead to real appreciation

Tariffs in Theory

- Krugman (’82), Bergin & Corsetti (’23), Lloyd & Marin (’24), Bianchi & Coulibaly (’25)

Tariff-Shock Database

Building the Dataset: Events

Bown & Kolb ('21) Trade War Timeline

- Daily frequency over 2018-2020
- 45 US events (26 vs. China only)
- 21 Foreign responses
  China (16), EA (2), Canada (3)
- Categorizable as escalation $(+1)$ or de-escalation (-1)

[Jeanne & Son '24]

For 2025 events: Bown ('25) Timeline, will return to later

Tariff Announcement
March 1, 2018

Trump announces forthcoming tariffs on all trading partners of 25 percent on steel and 10 percent on aluminum under national security grounds. These would go further than the Commerce Department recommendations, covering an estimated $48 billion of imports, mostly from allies such as Canada, the European Union, Mexico, and South Korea. Only 6 percent of the imports covered derive from China, due to prior US imposition of antidumping and countervailing duties.

Read "Trump's Steel and Aluminum Tariffs: How WTO Retaliation Typically Works" and "Trump's Steel and Aluminum Tariffs Are Counterproductive. Here Are 5 More Things You Need to Know" by Chad P. Bown.

EU Threatens to Rebalance in Response
March 7, 2018

The European Union announces its planned retaliatory response if it were to be hit with tariffs. This includes filing a formal World Trade Organization (WTO) dispute, safeguard restrictions of its own, and a "rebalancing" of trade with the United States through almost immediate imposition of its own 25 percent tariff on $3.4 billion of US exports such as cranberries, Harley Davidson motorcycles, blue jeans, and bourbon.

Read "Europe Is Pushing Back against Trump's Steel and Aluminum Tariffs. Here's How" by Chad P. Bown.

Steel and Aluminum NAFTA Tariff Exemptions
March 8, 2018

Trump issues formal steel and aluminum tariff proclamations effective March 23, but exempts Canada and Mexico, pending his view of the outcome of the North American Free Trade Agreement (NAFTA) renegotiation talks. These exemptions exclude about one third—or $15.3 billion—of the imports announced a week earlier. He decides other partners can negotiate with US Trade Representative Robert E. Lighthizer to be excluded from the tariffs and companies can file petitions with Commerce Secretary Ross to have specific products excluded from the tariffs.

More Tariff Exemptions
March 22, 2018

Trump issues revised formal steel and aluminum tariff proclamations, further exempting the European Union, South Korea, Brazil, Argentina, and Australia—in addition to Canada and Mexico as previously announced—but only through May 1, 2018. This means another third of the originally covered imports on March 1 are temporarily exempt.

Read "Who Is Affected by Trump's Steel and Aluminum Tariffs?" by Chad P. Bown.

Building the Dataset: Constructing Tariff Shocks

Account for **size of tariff rates** and **economic relevance**:

$$\varepsilon^{\tau}_{i,t} := \tau_{i,t} \cdot \frac{M^{\tau}_{i,t-1}}{M_{i,t-1}} \qquad \text{for } i = US, CN, EA, CA$$

where $\tau_{i,t}$ tariff rate, $M^{\tau}_{i,t-1}$ i's imports for which $\tau_{i,t}$ applies, and $M_{i,t-1}$ is i's total imports

$\Rightarrow$ Quantify 38/45 US events and 20/21 Foreign responses

$\Rightarrow$ Remove weekends: in total, 35 US events and 18 Foreign responses

▸ Summary Statistics

Date	τ*M (USD billions)	ε (%)	Description
1-Mar-18	8.95	0.3	Trump announces future tariffs of 25% on steel and 10% on aluminum (affecting mostly Canada, EU, Mexico, Korea; China only 6%).
7-Mar-18	0.85	0.04	EU announces its relatiatory response if hit with Trump tariffs, hitting 3.4B USD of consumer goods
3-Apr-18	11.55	0.3733878	US threatens tariffs on China at 25%, 50 billion USD, largely on intermediate inputs and capital goods
4-Apr-18	12.5	0.5119901	China retaliates with threat of 50 billion in tariffs, mostly on US transportation and vegetable products
20-Jul-18	26.2	0.84353	Trump threatens tariffing all Chinese imports, 500B in total (262B additional to what has already been threatened).

Building the Dataset: Retaliation Conditions

Foreign response is a retaliation ($1_{F_{\text{Retaliate}}} \equiv 1$) if occurs within 1 week of US tariff shock

- $\varepsilon^{\tau}_{F,t} \equiv \varepsilon^{\tau}_{CN+EA+CA,t}$ likely anticipated, so not treated as a 'shock'

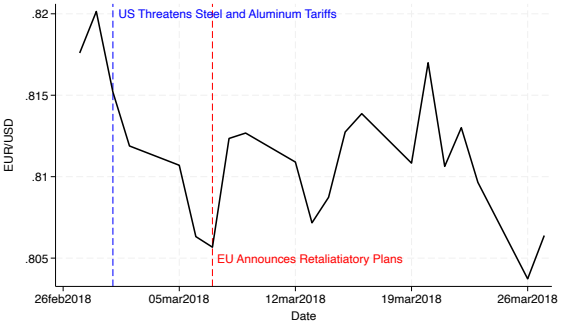

Figure: USD depreciated after March 1st 2018 steel and aluminum tariffs

▸ No Retaliation

EU considers imposing 'safeguard' import tariffs in response to US

Trade commissioner says Trump's move could have 'dangerous domino effect'

Cecilia Malmstrom, EU trade commissioner, warns that the EU will have no choice but to respond to US president Donald Trump's decision © EPA

Shawn Donnan in Washington and **Richard Milne**, Nordic correspondent

Published MAR 2 2018 | Updated MAR 2 2018, 14:56

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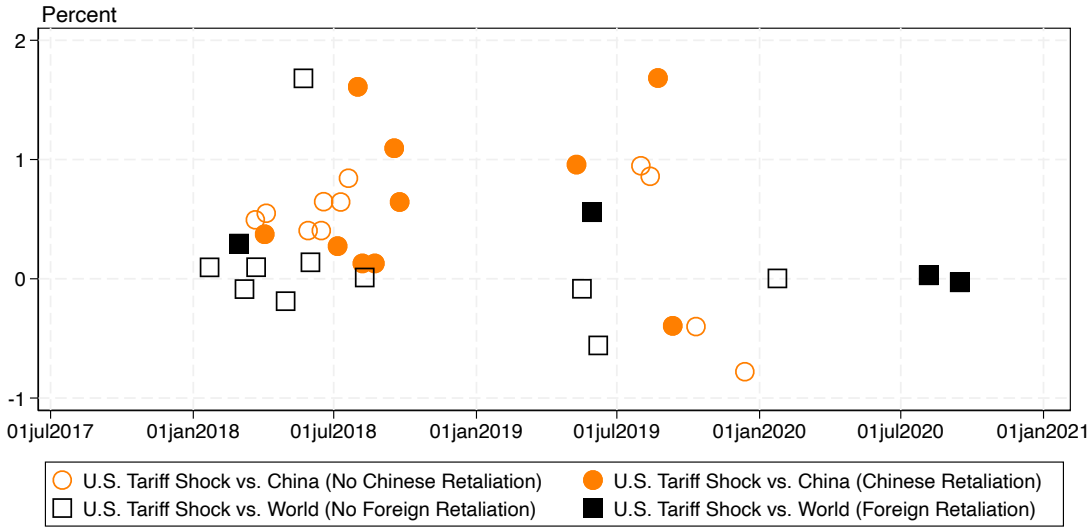
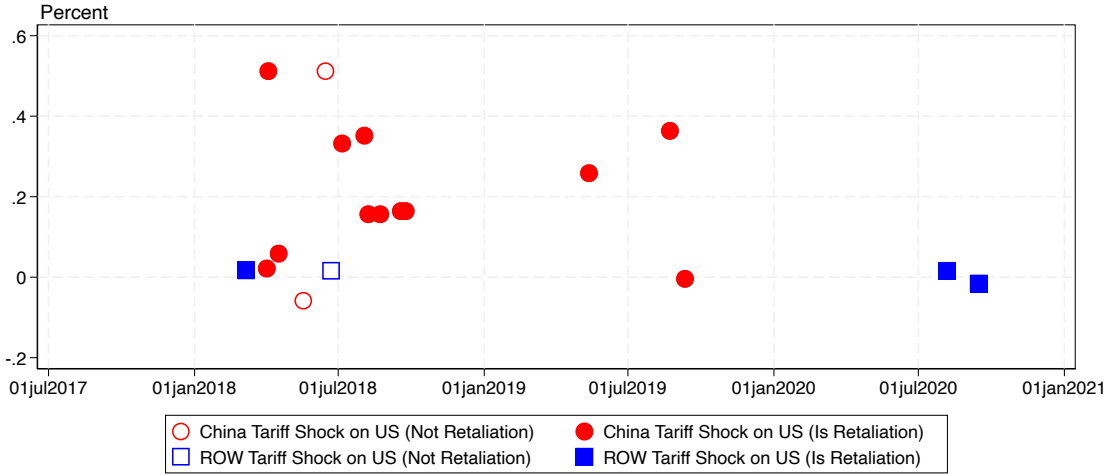
Figure: FT March 2nd 2018

US Tariff Shocks, 2018-2020



China + RoW Tariff Responses, 2018-2020



Tariff Shocks and Financial Markets 2018-2020

Empirical Specifications

$$\Delta^h y_{t+h} = \alpha^h + \beta^h \varepsilon^{\tau}_{US,t} + \boldsymbol{\gamma}^{h\prime} \mathbf{x}_{t-1} + u_{t+h}$$

$$\Delta^h y_{t+h} = \alpha^h + \beta^h_1 \varepsilon^{\tau}_{US,t} + \beta^h_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_t\right) + \delta^h \mathbb{1}^{Ret}_t + \boldsymbol{\gamma}^{h\prime} \mathbf{x}_{t-1} + u_{t+h}$$

Dependent Variables y:

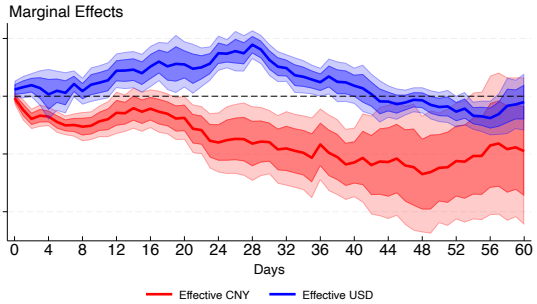
- e: Bilateral FX data, CNH/USD and EUR/USD [Datastream]
- $NEER$: Broad nominal effective exchange rate for USD, EUR and CNY [BIS]
- r^*_t, r^{US}_t: 2- and 10-year government bond yields for US, DE and CN [GFD]

Controls $\mathbf{x}$:

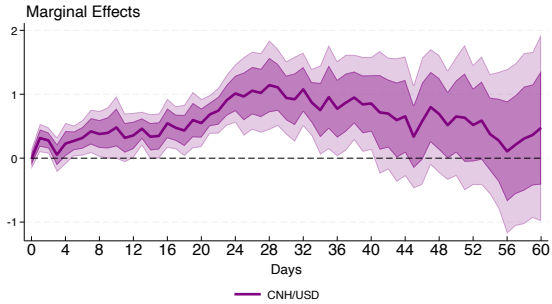
- Lagged FX and (relative) government bond yields for US, DE and CN [Datastream/GFD]
- FX macro news index, explaining up to 60% of FX movements [Stavrakeva & Tang '24]
- VIX index [CBOE]
- Covered interest parity deviations [Du et al. '18]

On Average, US Tariffs Appreciate USD & Depreciate CNH

$$\Delta^h e_{t+h} = \alpha^h + \beta^h \varepsilon^{\tau}_{US,t} + \boldsymbol{\gamma}^{h\prime} \mathbf{x}_{t-1} + u_{t+h}$$



β Effective FX

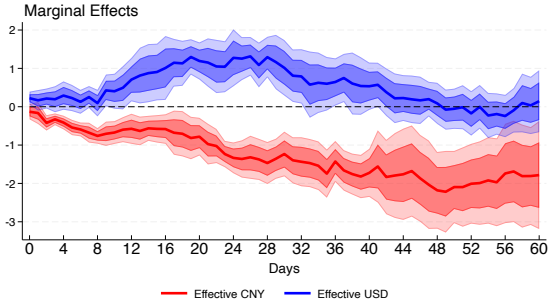


β Bilateral FX

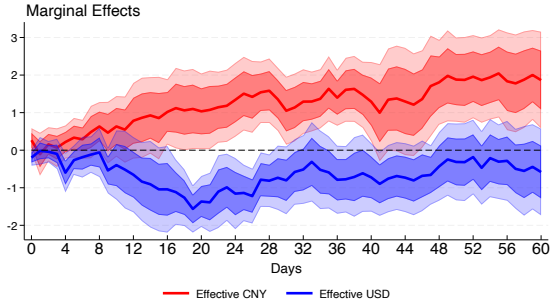
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Effective USD Appreciates *Only If* No Foreign Retaliation

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^{h} \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



β_1 No Retaliation

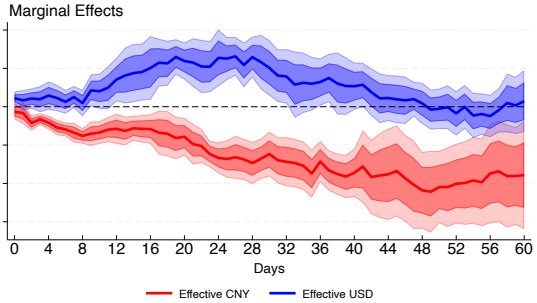


β_2 Marginal from Retaliation

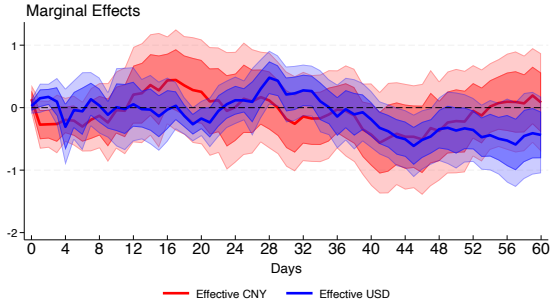
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Effective USD Appreciates *Only If* No Foreign Retaliation

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_t\right) + \delta^h \mathbb{1}^{Ret}_t + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



β_1 No Retaliation

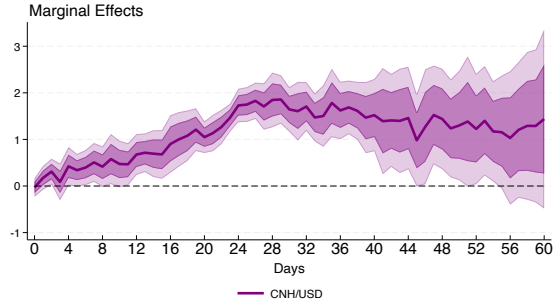


$\beta_1 + \beta_2$ Total from Retaliation

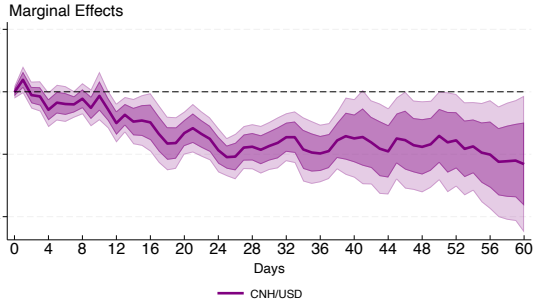
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Bilateral USD Appreciation *Only If* No Foreign Retaliation

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^{h} \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



β_1 No Retaliation



β_2 Marginal from Retaliation

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Bilateral USD Appreciation *Only If* No Foreign Retaliation

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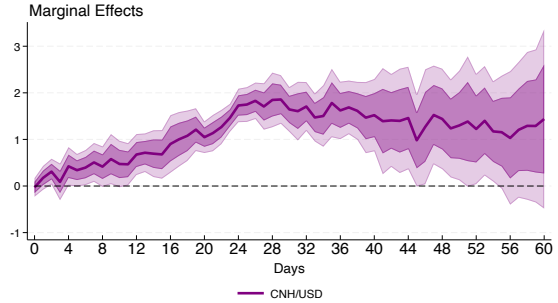
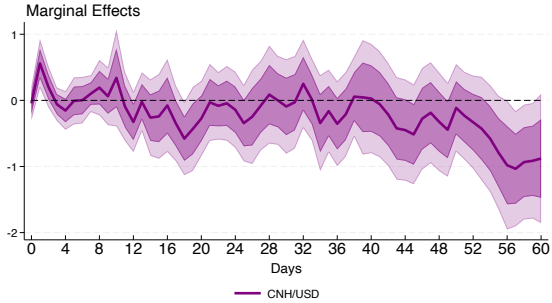


β_1 No Retaliation

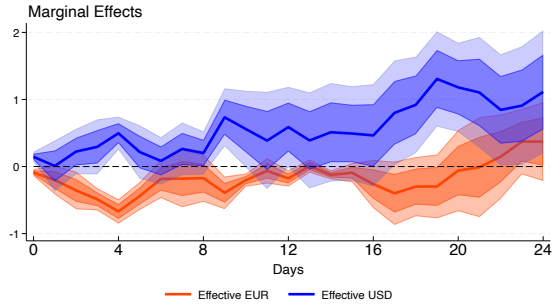


$\beta_1 + \beta_2$ Total from Retaliation

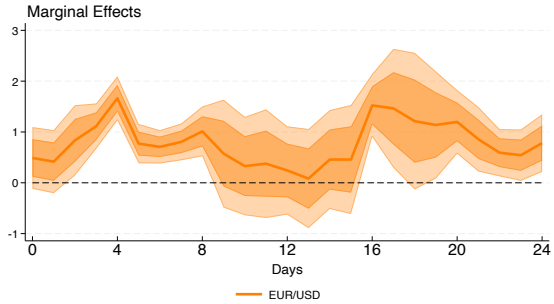
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Focus in on 14 *Global* Events: USD *Appreciates* with No Retaliation

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_t\right) + \delta^h \mathbb{1}^{Ret}_t + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



Effective: β_1 No Retaliation

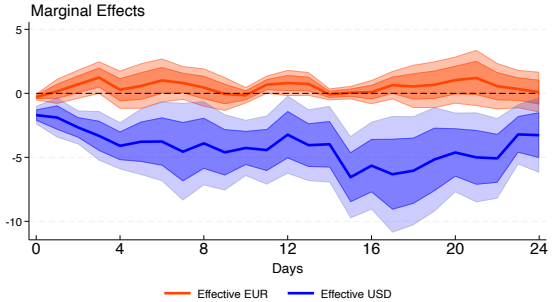


Bilateral: β_1 No Retaliation

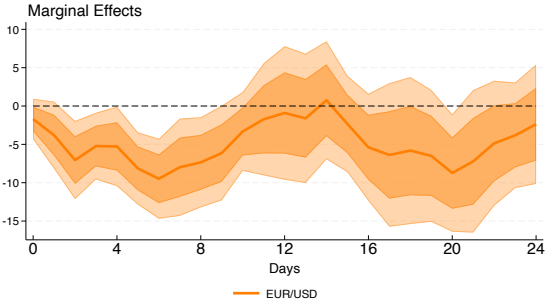
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Focus in on 14 *Global* Events: USD *Depreciates* with Retaliation

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_t\right) + \delta^h \mathbb{1}^{Ret}_t + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



Effective: $\beta_1 + \beta_2$ Total from Retaliation

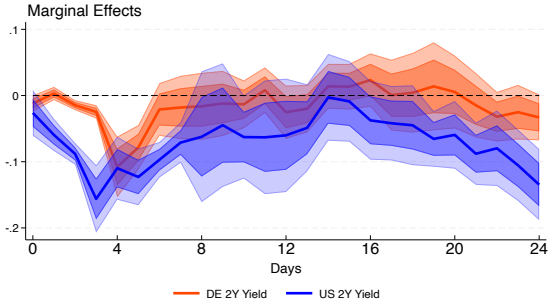


Bilateral: $\beta_1 + \beta_2$ Total from Retaliation

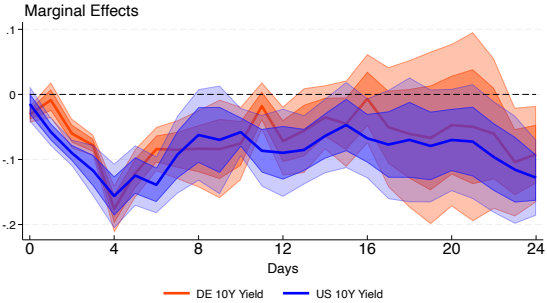
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Such *Global* Events Also Associated with Lower Global Yields

$$r_{t+h} - r_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_t\right) + \delta^h \mathbb{1}^{Ret}_t + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



2-Year: β_1 No Retaliation

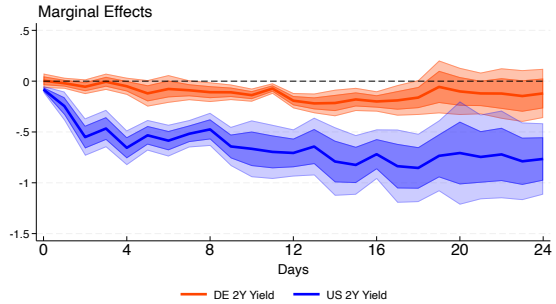


10-Year: β_1 No Retaliation

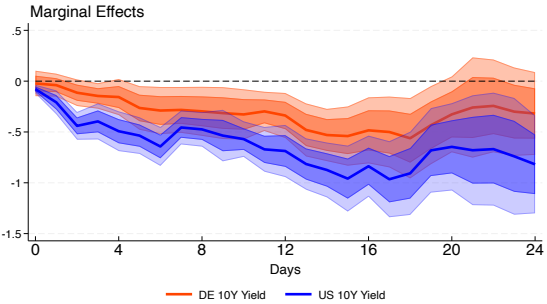
Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Such *Global* Events Also Associated with Lower Global Yields

$$r_{t+h} - r_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^{h} \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$



2-Year: $\beta_1 + \beta_2$ Total from Retaliation



10-Year: $\beta_1 + \beta_2$ Total from Retaliation

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Robustness

Retaliation Indicator:

- Varying window length (3 and 10 days)
- Utilising ‘scale’ (i.e., effective tariff rate) of retaliation

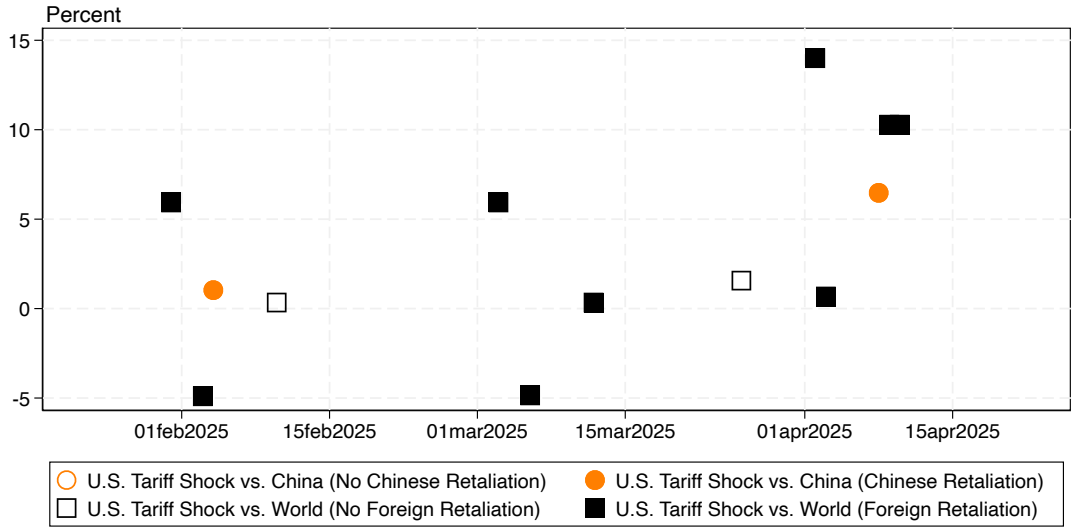
US Tariff Shocks:

- Using US tariff dummy (and, so, all 45 events)
- Treating weekend events as taking place on subsequent Monday

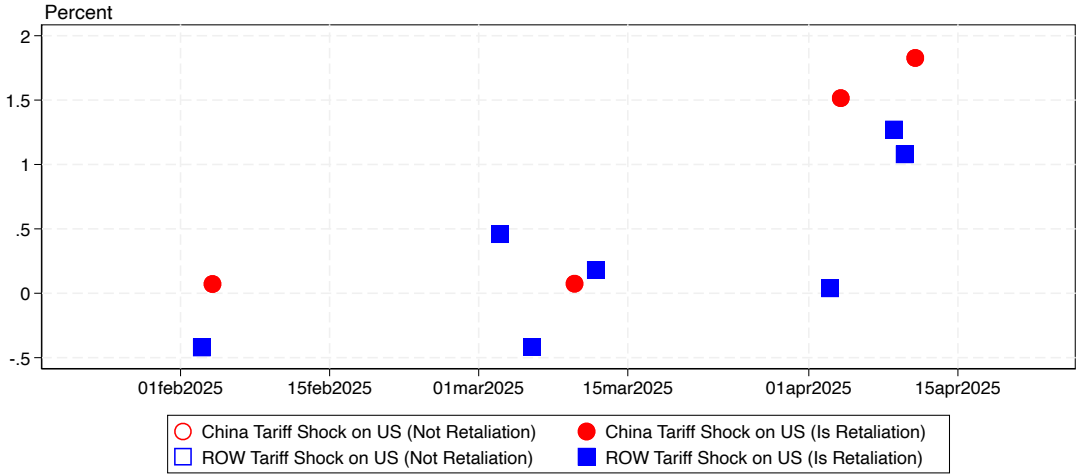
Exploring additional currencies: GBP, CHF, CAD, etc...

Is This Time Different?
Tariff Shocks and Financial Markets 2025

US Tariff Shocks, 2025



China + RoW Tariff Responses, 2025



5 Key Differences vs. 2018-2020

#1 2025 US tariff shocks **much larger** than 2018-2020

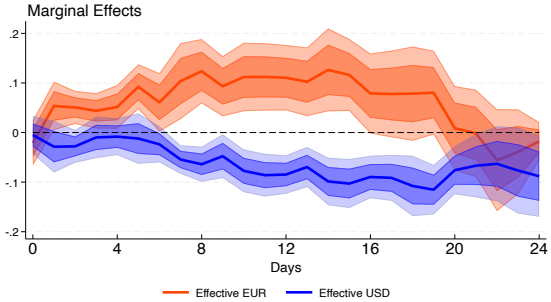
#2 **Pace** of new tariffs in 2025 much greater

#3 Almost all 2025 US tariff shocks are **retaliated against** (vs. <50% in 2018-2020)

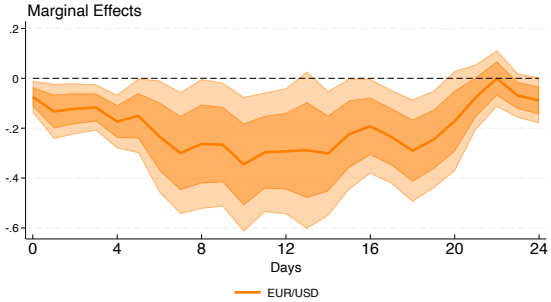
#4 Tariff events **more global** in nature

#5 **Scale of retaliations** commensurately larger

Estimated Effects: Currency Markets



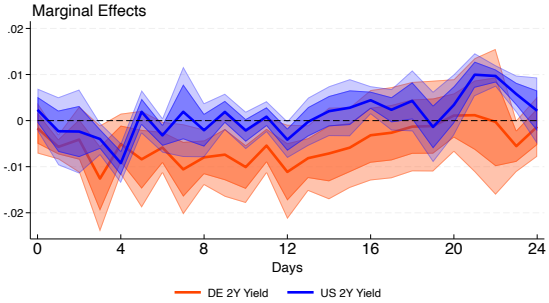
Effective



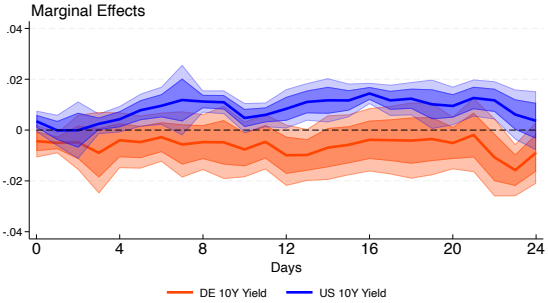
Bilateral

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

Estimated Effects: Bond Markets



2-Year

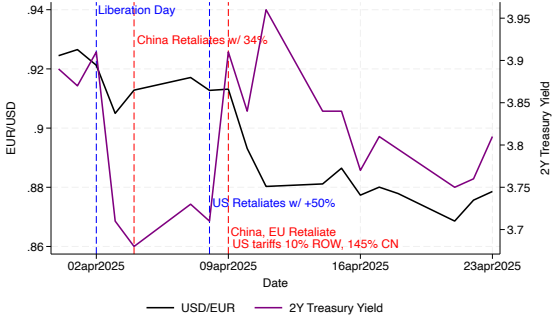


10-Year

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

So, Is This Time Different?

- What happened from April 2^{nd} to April 7^{th}, at least directionally, was not necessarily surprising, in light of our evidence for 2018-2020
  - Key to not look at average effects of tariffs, but to isolate effects of retaliation globally



- Subsequently, further USD depreciation—alongside EU retaliation—and **more anomalous** (by our evidence) spike in US yields

Conclusion

- Build dataset of US tariff shocks and foreign retaliations for 2018-2020 and 2025
- Effect of US tariffs on FX depends on **retaliations**
  - USD appreciates on average
  - But retaliations place pressure on USD to depreciate, especially if global
- Latter is relevant case for Liberation Day

$\Rightarrow$ Unsurprising that the USD depreciated and yields fell on global growth concerns

  - While yields eventually spiked, the timing inconsistent with USD depreciation

- Results (for FX) consistent with open-macro model with DCP

▸ Other Currencies

Appendix

Shock Summary Statistics

Panel A: All US Tariff Shocks			
# $\varepsilon^{\tau}_{US,t}$	# $1_{F_{\text{Retaliate}}} = 1$	$\lvert\overline{\varepsilon^{\tau}_{US,t}}\rvert$	$\lvert\overline{\varepsilon^{\tau}_{F,t}}\rvert$
35	15	0.51	0.08
Panel B: US Tariff Shocks in US-China Trade War			
# $\varepsilon^{\tau}_{US,t}$	# $1_{C_{\text{Retaliate}}} = 1$	$\lvert\overline{\varepsilon^{\tau}_{US,t}}\rvert$	$\lvert\overline{\varepsilon^{\tau}_{CH,t}}\rvert$
21	11	0.68	0.22
Panel C: US Tariff Shocks in US-World Trade War			
# $\varepsilon^{\tau}_{US,t}$	# $1_{W_{\text{Retaliate}}} = 1$	$\lvert\overline{\varepsilon^{\tau}_{US,t}}\rvert$	$\lvert\overline{\varepsilon^{\tau}_{W,t}}\rvert$
14	4	0.28	0.02

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US Threatens Tariffs + No Chinese Retaliation: USD Appreciates

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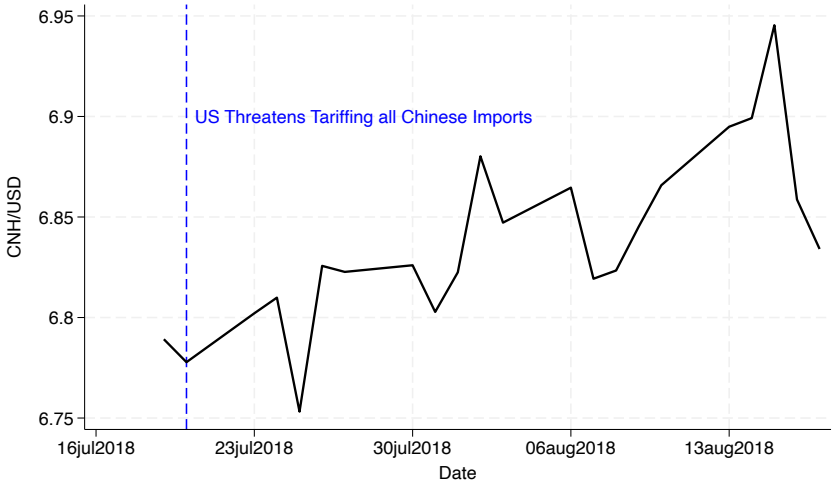
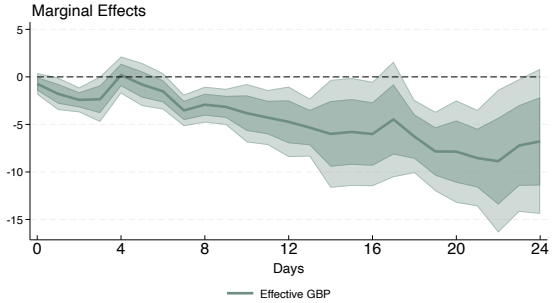
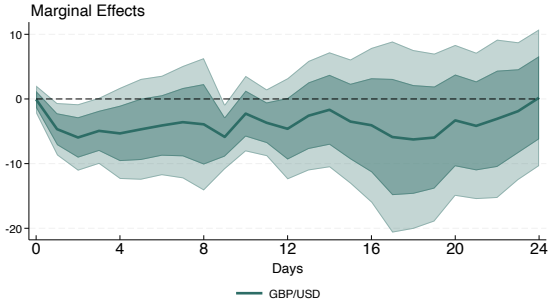


In 2018-20 *Global* Events: GBP app. vs. USD but eff. dep. if Ret.

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^{h} \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$





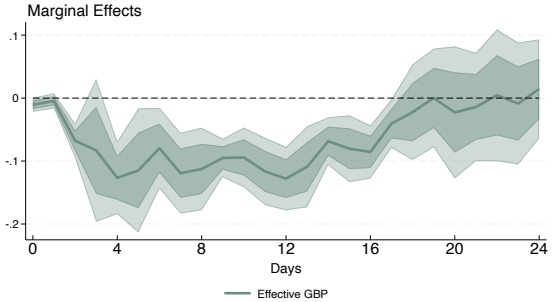
Effective: $\beta_1 + \beta_2$ Total from Retaliation

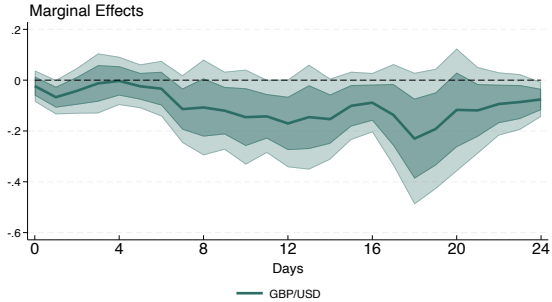
Bilateral: $\beta_1 + \beta_2$ Total from Retaliation

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

In 2025: GBP appreciates vs. USD but effective depreciates

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^{h} \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$





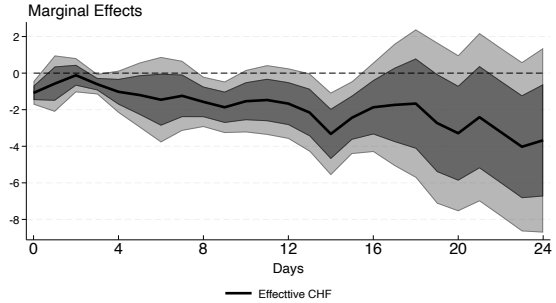
Effective: $\beta_1 + \beta_2$ Total from Retaliation

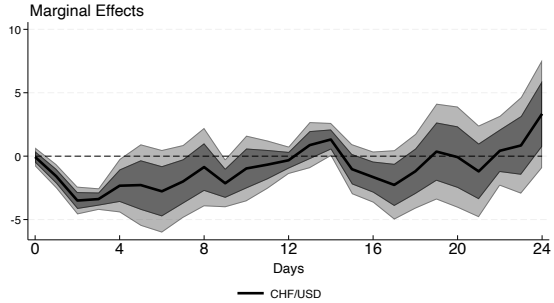
Bilateral: $\beta_1 + \beta_2$ Total from Retaliation

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

In 2018-20 *Global* Events: CHF app. vs. USD but eff. dep. if Ret.

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^{h} \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$





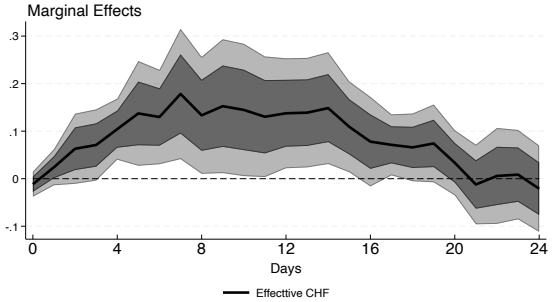
Effective: $\beta_1 + \beta_2$ Total from Retaliation

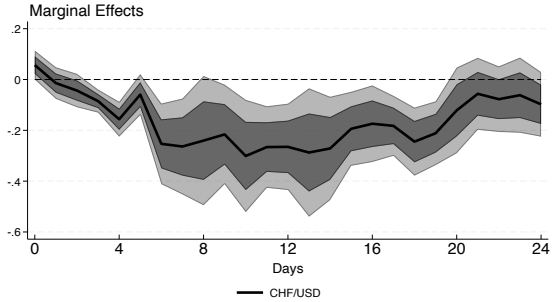
Bilateral: $\beta_1 + \beta_2$ Total from Retaliation

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

In 2025 *Global* Events: CHF appreciates both vs. USD and effective

$$e_{t+h} - e_{t-1} = \beta_0 + \beta_1 \varepsilon^{\tau}_{US,t} + \beta_2 \left(\varepsilon^{\tau}_{US,t} \times \mathbb{1}^{Ret}_{t}\right) + \delta^h \mathbb{1}^{Ret}_{t} + \gamma^{h'} \mathbf{x}_{t-1} + u_t$$





Effective: $\beta_1 + \beta_2$ Total from Retaliation

Bilateral: $\beta_1 + \beta_2$ Total from Retaliation

Note. Shaded areas are 68% and 90% confidence intervals from Newey-West standard errors with 4 lags.

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