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JEL Classification: F13, F31, F51, G15

Keywords:

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

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July 4, 2025

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Key Words: Exchange Rates; Event Study; Retaliation; Tariffs.

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1 Introduction

To many, the U.S. dollar (USD) depreciation in response to the U.S. government's 'Liberation Day' tariff announcements on April 2nd 2025 marked a sharp discontinuity with the past. The USD depreciated by over 6 percent against the euro (EUR) (see Figure 1a), as well as in effective terms against a basket of currencies. When viewed alongside the spike in U.S. Treasury yields, these currency moves appear reflective of a 'reserve-currency shock' whereby the safety premium associated with U.S. assets is eroded. However, numerous commentators went a step further, claiming that the USD response contradicted economic models and conventional wisdom, according to which tariffs should necessarily result in a currency appreciation driven by a shift in global demand.[1]

In this paper, we reconsider this claim, providing new empirical evidence on the response of exchange rates to tariffs threatened and/or implemented in the 2018-2020 period. Relative to the literature, our innovation consists of distinguishing tariff shocks depending on whether or not they give rise to retaliation.

Our analysis is best introduced with the case study shown in Figure 1b: the announcement of U.S. tariffs on steel and aluminum imported from the European Union (EU), and other regions, on March 1st 2018. Like the Liberation Day event in 2025, many anticipated retaliatory tariff measures almost immediately, as this FT article with the headline *"EU considers imposing 'safeguard' import tariffs in response to US"* from March 2nd 2018 evidences. Indeed, the EU announced their retaliatory measures on March 7th 2018. In contrast to the conventional wisdom, the USD depreciated immediately after the U.S. announcement. It remained significantly weaker than its end-February level over the whole of March, after EU retaliation was announced, too.

Our primary contribution is to show that this pattern is systematic. We provide econometric evidence that, while the USD does appreciate in response to U.S. tariff actions, the appreciation is offset by anticipation of retaliatory measures. Our evidence resonates with the predictions of open-economy models with dominant currency pricing that compare the transmission of unilateral tariff shocks with that of trade wars.

[1] See, e.g., the discussions in Hartley and Rebucci (2025) and Cardani et al. (2025).

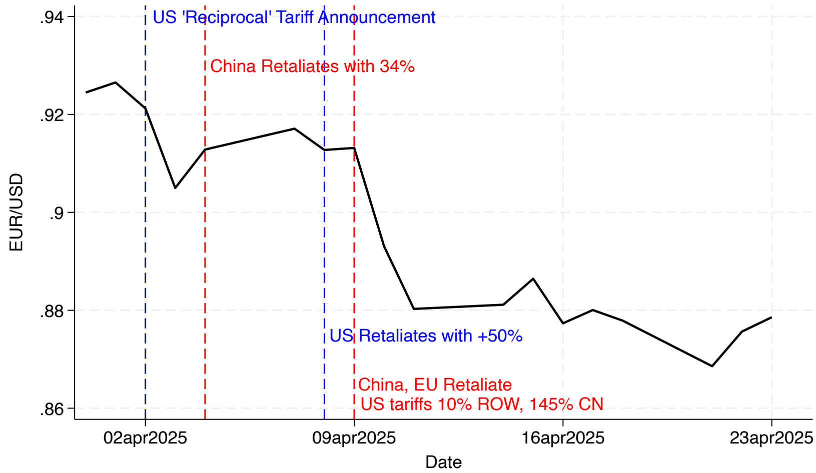
By way of example, as shown by Bergin and Corsetti (2023), with most (tradable manufacturing) prices set in USD, the U.S. economy is relatively (vs. the rest of the world) sheltered from an increase in production costs following a USD depreciation. All else equal, this asymmetry reduces the trade off U.S. policymakers face between stabilizing inflation and economic activity in response to tariffs: in a symmetric trade war, the U.S. monetary stance—prescribed by either optimal policy or a Taylor rule—remains relatively more expansionary, reducing the value of the U.S. currency.[2] In line with this theoretical insight, our evidence thus suggests that the USD depreciation following recent U.S. tariff announcements is not, in isolation, surprising once one accounts for expectations of tariff retaliation by governments in the rest of the world. What goes beyond the prediction of the theory, however, is the spike in long-maturity U.S. Treasury yields we document in response to tariff shocks after Liberation Day.

We reach these conclusions in three steps. First, we construct a new dataset of tariff shocks. Our database captures U.S. tariff announcements, threats and implementations over the 2018-2020 period and in 2025, alongside information on the tariff responses by the rest of the world (RoW), namely, China, the EU and Canada. We ground the dataset in timelines of tariff-related events compiled by the *Peterson Institute for International Economics*, with additional supporting evidence from contemporary news sources. From the information in those timelines, we note the timing of each event (at daily frequency) and classify them into either (i) a tariff announcement or threat or (ii) a tariff implementation. Armed with 45 U.S. and 21 RoW tariff events from 2018-2020 and 13 U.S. and 10 RoW tariff events in 2025, we next quantify the size of each tariff action. To do so, we construct an 'effective tariff-rate shock', by combining the size of the tariff in *ad valorem* terms with the share of imports receiving that tariff. Our shocks thus capture heterogeneity in the economic relevance of different tariff actions. Importantly, given the unpredictable nature of the U.S. tariff actions in our sample, our U.S. shocks can be viewed as unanticipated. However, as the rest-

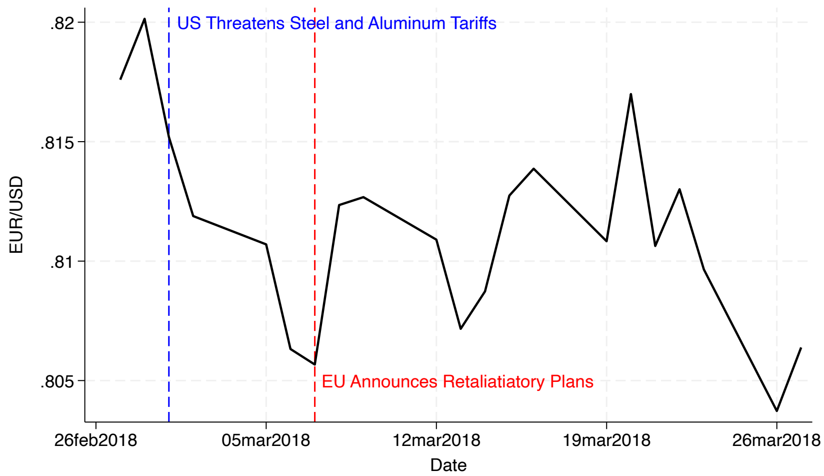
[2] Bergin and Corsetti (2023) study the transmission of a symmetric trade war under different assumptions around exchange-rate pass through and pass-through from the border to final prices due to distribution. Under perfect pass-through, optimal monetary stabilization by all countries involved in a symmetric trade war prevents currency movements. In contrast, with a dominant currency in international trade, the optimal policy, as well as the prescription from a Taylor-type rule, in the country issuing the dominant currency is relatively more expansionary.

Figure 1: Exchange-Rate Reactions to Tariff Announcements

(a) April 2nd 2025: US ‘Liberation Day’ Tariffs



(b) March 1st 2018: US Steel & Aluminum Tariffs



of-the-world events are responses to U.S. actions, they can be anticipated. As such, we do not use these as shocks. Instead, and crucially, we record a U.S. tariff shock as retaliated against if the rest of the world threatens, announces or implements a tariff on the U.S. within the subsequent 7 days, although our results are robust to varying this definition.

Second, focusing on the 2018-2020 period, we use our U.S. effective tariff-rate shocks to investigate how U.S. tariff actions affected exchange rates and interest rates in the U.S., China and euro area over the days that follow. In particular, relying on local-projection methods, we show that the USD remains roughly stable in bilateral tariff exchanges between the U.S. and China. Yet, the USD depreciates significantly in tariff exchanges between the U.S. and the world—i.e., when a broad set of countries retaliate beyond U.S.-China bilateral actions.

In a final step, we estimate the response of exchange rates to U.S. tariff shocks also in 2025, and extend the analysis to the response of 2- and 10-year bond yields. We find that in both the earlier sample and in 2025, the USD depreciated and short-maturity U.S. Treasury yields fell. In 2025, however, long-maturity Treasury yields moved opposite relative to the 2018-2020 sample, rising sharply and persistently. When viewed as a US tariff announcement on the world with retaliation, we conclude that the USD depreciation following the April 2nd 2025 U.S. tariff announcement was not entirely surprising. Nor was the response of short-maturity yields, which also fell following U.S. tariff events in the 2018-2020 period. The more persistent rise in long-maturity yields on April 2nd 2025, however, is without parallels in our sample, arguably reflecting a market reassessment of the financial consequences of geopolitical and trade fragmentation.

Related Literature. Our paper most directly contributes to the empirical literature assessing exchange-rate responses to tariffs. Closest to our work is Jeanne and Son (2024) who show that U.S. tariffs during the 2018-2020 period appreciated the USD and depreciated the Chinese Yuan (CNH) using minute-by-minute data. Although our focus is on lower, daily-frequency moves, our average results are consistent with the work by these authors: in line with the conventional wisdom and a number of other studies (e.g., Furceri et al., 2018; Barattieri et al., 2021), U.S. tariff shocks appreciate the USD. However, we show that this average effect masks heterogeneity, with the USD appreciating only if the U.S. tariff actions were not met with retaliation. Relative to Jeanne and Son (2024), our results suggest the importance of allowing for market anticipation of retaliatory measures, as these may be already priced in the exchange rate at the time of the U.S. announcements.

Within the empirical literature, a key contribution is to construct a new database tracking changes in tariffs. Our application, to exchange rates, has antecedents in the literature assessing the impact of news on exchange rates (e.g., Faust et al., 2006; Andersen et al., 2007; Rogers et al., 2014). Relatedly, Matveev and Ruge-Murcia (2024) use tweets by the U.S. President about potential tariffs on Canadian and Mexican goods, finding that they appreciate the USD. Similarly, Filippou et al. (2025) show that a broader set of tweets by the U.S. President, with macroeconomic and trade content, drive significant USD appreciation.

More recent work has focused on the Liberation Day tariff announcements, highlighting surprising features of asset-market moves in this period (e.g., Hartley and Rebucci, 2025; Jiang et al., 2025). In contrast to these contributions, our systematic empirical analysis reveals the challenges of comparing the financial-market moves following the single Liberation Day event to the average effect of tariffs over the 2018-2020 period. Once we focus on US tariff actions over 2018-2020 on a wider set of trading partners that elicited foreign retaliation, we conclude that the USD depreciation following April 2nd 2025 was not necessarily surprising. Perhaps more surprising though, and in line with Jiang et al. (2025), is the spike in long-maturity U.S. Treasury yields.

Stepping back, our results contribute to the broad literature assessing the macroeconomic implications of tariffs, where the exchange-rate response plays a crucial role in determining the size and sign of aggregate variables. In the Mundell-Fleming framework, tariffs result in a currency appreciation, which can worsen the trade balance and reduce employment. In contrast, within dynamic open-economy models, the nominal exchange rate can depreciate following tariffs when import substitution is sufficiently low (Ostry, 1991; Lloyd and Marin, 2024; Auclert et al., 2025) or if domestic interest rates fall (Krugman, 1982). Indeed, a nominal currency depreciation can arise when monetary policy is set optimally in response to tariffs (Bergin and Corsetti, 2023, 2025; Bianchi and Coulibaly, 2025). Our paper provides direct model-free evidence on exchange-rate responses to tariffs, highlighting the importance of retaliation for the sign and persistence of currency changes.

The remainder of this paper is structured as follows. Section 2 describes our tariff shock database. Section 3 presents our empirical analysis of the exchange-rate response to tariff shocks between 2018 and 2020. Section 4 compares the April 2nd 2025 Liberation Day responses to our empirical estimates from the 2018-2020 period and discusses the response of bond yields. Section 5 concludes.

2 Tariff-Shock Database

One key contribution of this paper is to develop a new daily database of effective tariff-rate shocks, covering the periods 2018-2020 and 2025-present. This section describes the construction of those shocks, which we plan to update periodically. The underlying timeline of tariff-related news comes from the *Peterson Institute*. We combine this with narrative evidence and macroeconomic data to construct shock series scaled for the size and economic relevance of tariff measures. Most importantly, we distinguish between whether our US tariff shocks are retaliated against.

2.1 Tariff News Timeline

Bown and Kolb (2025) provide a detailed timeline tracking tariff-related news during the 2018-2020 period. We restrict our sample to events within that which pertain directly to tariffs and involve at least one of the U.S.'s largest four trading partners: the EU, Mexico, China and Canada. This leaves 58 event days in total for the 2018-2020 period, including 45 with actions by the U.S., 16 by China, 2 by the EU and 3 by Canada. For the purposes of our analyses into the effects of tariff news on financial markets, we use only events occurring on business days, dropping tariff-related news occurring on non-business days. In addition, we drop events from the timeline which do not constitute a tariff threat, announcement or implementation.[3] After dropping these events, our final timeline for the 2018-2020 period includes 46 distinct entries (days).

Panel A of Table A.1 details these 2018-2020 events. On these 46 days are 35 U.S. tariff announcements, threats or implementations,[4] and 19 tariff responses by China, the EU and Canada. A majority of the U.S. tariff events, 21 out of 35, pertain to U.S.-China-bilateral tariffs, with the remaining 14 events corresponding to 'global' tariffs beyond these U.S.-China bilateral actions. These are mostly on specific products such as steel and aluminum, autos, solar panels and washing machines. Of the 19 tariff-

[3]For example, the timeline includes the U.S. filing a complaint to the WTO about Chinese retaliatory tariffs on July 16th 2018, as well as the U.S. announcing subsidies for farmers affected by tariffs on July 24th 2018. While not independent of the trade war, since neither of these are direct tariffs on traded goods, we drop them from our timeline.

[4]In some instances the dates on which tariffs are announced, threatened or implemented are not mutually exclusive, so we are not able to decompose events along these lines.

response events, 15 represent actions by China and 4 by the EU and Canada (including the March 1st 2018 example shown in Figure 1b).

The right-most columns of Table A.1 categorize all these events as tariff escalations or de-escalations, denoted by $+1$ or -1, respectively. The majority of events represent escalations, although there are still a number of de-escalation events. The narrative information in the table also helps to highlight the unanticipated nature of many of the U.S. tariff actions. And, even when a tariff-related event was expected, the details of tariff proposals were less clear *ex ante*.

As the rest-of-the-world events represent retaliations, the unanticipated nature of these events is less clear. So, a crucial step in our analysis is to determine which events represent retaliations to specific U.S. policies. Rather than use foreign retaliatory tariff events as 'shocks' themselves, we instead distinguish between U.S. tariff shocks that *were* and *were not* retaliated against. The idea here is that foreign retaliatory tariffs are likely to be anticipated or heavily signaled—as the March 1st 2018 example in the Introduction highlighted—so will not be exogenous events.

We classify a U.S. shock to have been retaliated against if we see a foreign response within the 7 days following the initial U.S. event. From the perspective of our empirical event-study analysis, this is akin to assuming that markets expected a retaliation at the time of the initial U.S. tariff action. We view the 7-day cut-off to be conservative, since in practice retaliations occur pretty swiftly, as the timelines in Table A.1 demonstrate. Importantly, our results are robust to alternative specifications of this retaliation rule, including modifying the threshold number of days and accounting for the intent behind foreign tariffs.

Panel B of Table A.1 details events in 2025, to date, from Bown (2025). There are 17 event days in total,[5] which include 14 U.S. tariff actions and 11 rest of the world actions. As we shall discuss in Section 4, the "global" nature of the U.S. tariffs and the number of rest-of-the-world actions, as well as the size of the tariff shocks and the speed with which they have taken place, stand out as key differences with the tariffs in 2018-2020.

[5] In the 2025 sample, there are 3 events occurring on weekends, which are not included in the table.

2.2 Shock Construction

Our news database isolates key tariff-related events. In Table A.1, we have distinguished between escalations or de-escalations, captured by an indicator variable taking the value $+1$ and -1, respectively, as in Jeanne and Son (2024). This indicator, however, does not capture differences in tariff rates or the economic relevance of announcements—e.g., a 10% tariff on a single type of good vs. a 10% tariff on all inputs. To account for heterogeneity in the economic importance of different tariff-related news events, we transform our news database into a (set of) continuous shock variable(s)—i.e., an effective tariff-rate shock—by combining narrative evidence and macroeconomic data.

Our baseline tariff-shock measure captures *both* the size of the announced, threatened or implemented tariff rate *and* the total value of imports impacted by those tariffs. Let $\tau_{i,t}$ denote the *ad valorem* tariff rate linked to a tariff event on a date t and for a country/region i. In addition, let $M^{\tau}_{i,(-1)}$ denote the USD value of annual imports affected by that tariff (in billions) in the last 12-month period for which it is measured relative to date t, and let $M_{i,(-1)}$ denote total annual imports by country i over the corresponding period. Our tariff shock, $\varepsilon^{\tau}_{i,t}$, is defined as:

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

where US denotes U.S., CN is China, EA is euro area and CA is Canada.

The shock definition (1) ensures that the shock measure captures the economic relevance of the tariff actions. For example, if U.S. total imports are 2.5tn USD and the U.S. applies, announces or threatens a 25% tariff on 100bn USD of foreign imports, we record this as a 1% effective tariff-rate shock. In addition, the normalization of the shock with respect to total imports $M_{i,(-1)}$ helps to account for inflation over time, so shock values can be compared across the two (2018-2020 and 2025) sub-samples.

In practice, we obtain information on the tariff rate $\tau_{i,t}$ and size of the 'tariffed' goods $M^{\tau}_{i,(-1)}$ from narrative information related to the tariff event. In some instances, this can be read directly from Table A.1. For example, on April 3rd 2018, the U.S. announced an *ad valorem* tariff rate of $\tau_{i,t} = 0.25$ on a pre-determined (nominal) quantity of imports $M^{\tau}_{i,(-1)} = 50$bn USD. In other cases, when tariffs are applied on a subset of goods (e.g., steel and aluminum on March 1st 2018), we calculate the quantity of imports of those specific goods using a variety of sources.

Figures 2a and 2b plot our tariff shocks and responses for the 2018-2020 period. (Orange) circles denote U.S. tariff actions applied on imports *only* from China, while (black) squares represent U.S. 'global' tariff actions that are not only applied to China (e.g., product-based tariffs). For events that were met with foreign relation within 7 days, the corresponding circle or square is filled in. For example, in the figure, the first black filled-in square from the left corresponds to the March 1st 2018 event described in the Introduction, when the U.S. announced tariffs on imported steel and aluminum from the EU. The effective tariff-rate shock on that date is around 0.3%, reflecting the 25% and 10% *ad valorem* rates on steel and aluminum, respectively, and the scale of these imports overall (as a share of U.S. total imports).

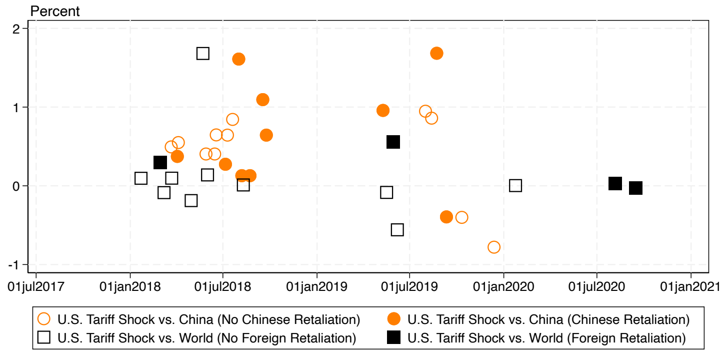
The magnitude of the overall effective tariff-rate shocks over the 2018-2020 period lies between -1% and +2%. In our graphs, negative values denote instances where announced tariffs were paused, or canceled or implemented tariffs were removed. For example, there are three negative values in the second half of 2019 recorded in Figure 2a. These represent a de-escalation of the U.S.-China trade war over that time. On September 11th 2019, the U.S. delayed an increase of tariffs on China and, in retaliation on the same day, China announced the removal of some tariffs on the U.S. Subsequently, the U.S. administration canceled announced increases in tariff rates on China, in anticipation of a trade deal on October 11th 2019 and upon successful agreement of a trade deal on December 13th 2019.

Figure 2b plots effective tariff-rate responses for rest-of-the-world actions. Here, the shaded entries denote events that took place in retaliation to U.S. tariffs, so correspond with shaded U.S. actions in Figure 2a. Although almost all Foreign actions occur swiftly (within a week) and so meet the retaliation condition, the retaliatory measures are strikingly small in terms of effective tariff-rate magnitudes. While the U.S. tariff shocks in Figure 2b lie between -1% and 2%, the retaliatory actions range from -0.1% to 0.5%.

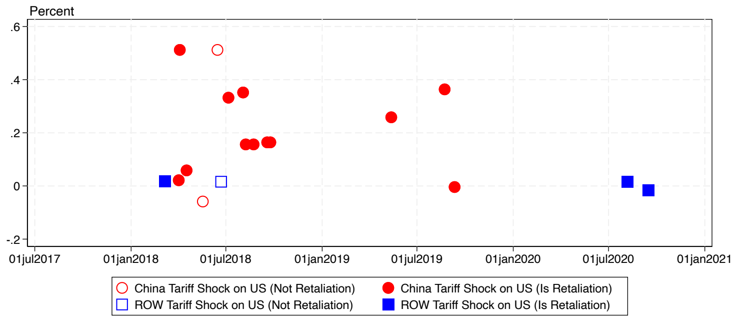
Figures 2c and 2d plot our U.S. and rest-of-the-world tariff shocks for the more re-

Figure 2: Effective Tariff-Rate Shocks and Responses, 2018-2020 and 2025

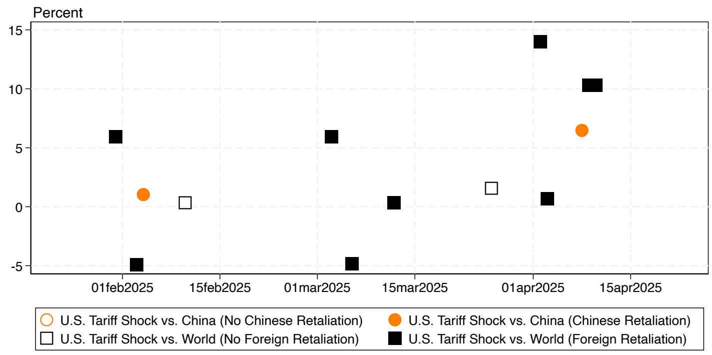
(a) U.S. Shocks 2018-2020



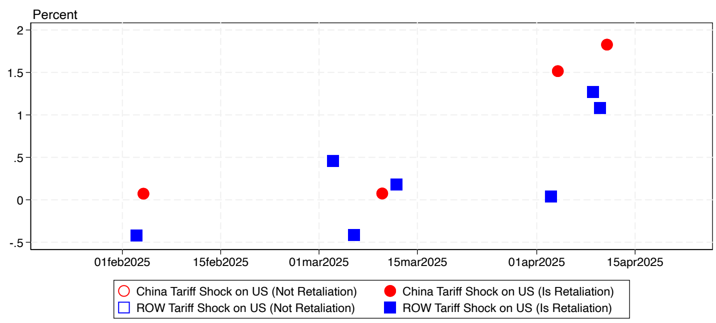
(b) Rest-of-the-World Responses 2018-2020



(c) U.S. Shocks 2025-Present



(d) Rest-of-the-World Responses 2025-Present



Notes. Shocks constructed by combining tariff news timeline (Bown and Kolb, 2025) (for 2018-2020) and Bown (2025) (for 2025-Present) with narrative evidence on the size and economic relevance of each event via equation (1).

cent period, 2025-present. Compared to Figures 2a and 2b, there are 4 key differences. First, shocks are much larger in magnitude. The Liberation Day tariffs represented a U.S. effective tariff-rate shock shock of around 14%, while the largest shock between 2018 and 2020 was less than 2%. Second, the shocks happened in quicker succession, over a matter of days. Third, within the week after Liberation Day, all of the tariff shocks were retaliated against. In contrast, during the 2018-2020 period, less than 50% of U.S. tariff events were retaliated against. Finally, while the majority of 2018-2020 tariffs were focused on China, the 2025 events span a broader set of countries and involve global retaliation.

3 Tariff Shocks and Exchange Rates, 2018-2020

Armed with our shock series, we now assess their impact on exchange rates over the days and weeks following tariff actions.

3.1 Average Effects Across All Shocks

We begin by estimating the average impact of all U.S. tariff events over the 2018-2020 period. To do this, we estimate the following local-projection (Jordà, 2005) specification:

$$e_{t+h} - e_{t-1} = \alpha^h + \beta^h \varepsilon^{\tau}_{US,t} + \boldsymbol{\gamma}^{h\prime} \mathbf{x}_{t-1} + u_{t+h} \tag{2}$$

where e_{t+h} denotes the (log) bilateral or effective USD exchange rate h business days after a date-t tariff event. Our coefficient of interest is β, which denotes the marginal impact of a 1pp effective tariff shock on the dependent variable.

Regression (2) includes a set of (lagged) control variables $\mathbf{x}_{t-1}$ intended to capture factors that could impact the dependent variable, while being correlated (in sample) with the shock series itself. Primary among these controls is the daily exchange-rate macroeconomic-news index of Stavrakeva and Tang (2024), which has been shown to capture over 65% of exchange-rate volatility at monthly frequency and 90% at quarterly frequency. This series is included to ensure that our β coefficient does not inadvertently capture the effects of other macroeconomic news—as opposed to the tariff event itself. We also control for lagged 10-year relative interest differentials (for the U.S. vs. the EU and China), the lagged VIX, and lagged 3-month covered interest parity deviations from Du et al. (2018), to account for other potential documented drivers of exchange rates.

Figure 3A plots estimated impulse responses from equation (2) for all U.S. tariff events in the 2018-2020 period, both those that were and were not retaliated against. The left-hand figure presents the response of the effective USD and CNY exchange rate, where an increase corresponds to an effective currency appreciation, and vice versa for a decrease. The right-hand figure documents results for the CNH/USD bilateral exchange rate, defined such that an increase corresponds to a USD appreciation (i.e., the bilateral exchange rate represents the yuan price of 1 USD).[6] For inference, we augment the local-projection regression with lags of the dependent variable (Montiel Olea and Plagborg-Møller, 2021) and use Newey and West (1987) standard errors.

The results in Figure 3A align with the conventional wisdom, as well as the existing literature for the 2018-2020 period (most notably Jeanne and Son, 2024). On average, U.S. tariff shocks during the 2018-2020 period are associated with an appreciation of the USD, in both effective terms and bilaterally against the CNH. Our point estimates indicate that a 1pp effective tariff-rate shock is, on average, associated with around 1% appreciation over the four weeks following the event. Consistent with our results for the CNH/USD bilateral exchange rate, we also find that the effective CNY exchange rate significantly depreciates in the weeks after a surprise U.S. tariff action.

3.2 Retaliation

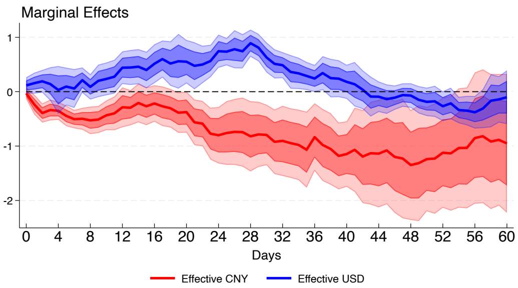
Although consistent with conventional wisdom, the results of regression (2) do not account for differences when U.S. tariffs face retaliation. To reach our key empirical result, we extend our regression setup to separately estimate the impact of U.S. tariff actions on exchange rates when there is and is not retaliation within the subsequent 7 days. To do so, we use the information collated in Section 2 to define a retaliation

[6] We use the CNY and CNH (vis-a-vis the dollar) when estimating the effects of all our tariff shocks since Chinese imports are hit directly by almost all U.S. tariff shocks in our sample, and since China is the main country responding to U.S. tariff actions.

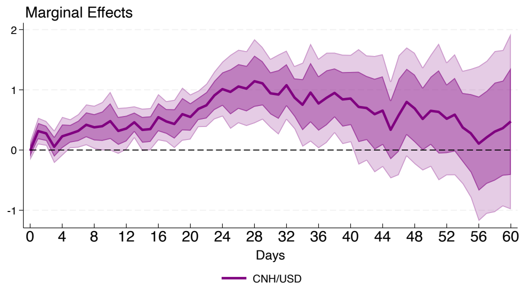
Figure 3: Estimated Impacts of 2018-2020 Tariff Events on Exchange Rates

A. Average Impacts

$\hat{\beta}$: Effective FX

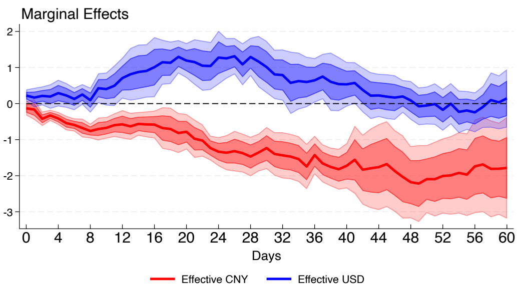


$\hat{\beta}$: Bilateral FX

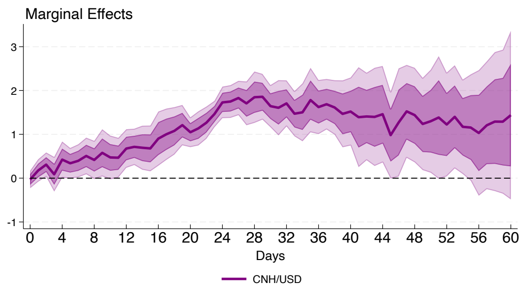


B. Impacts Conditional on Retaliation

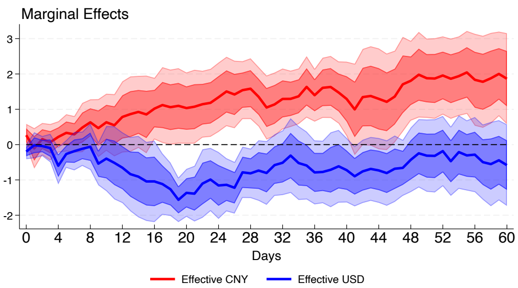
$\hat{\beta}_1$: No Retaliation



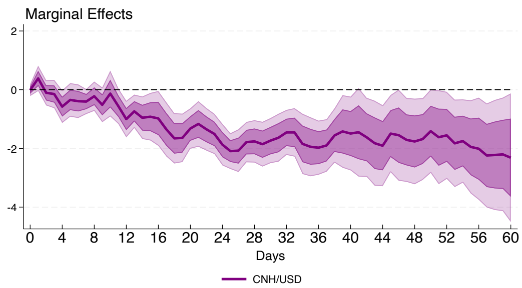
$\hat{\beta}_1$: No Retaliation



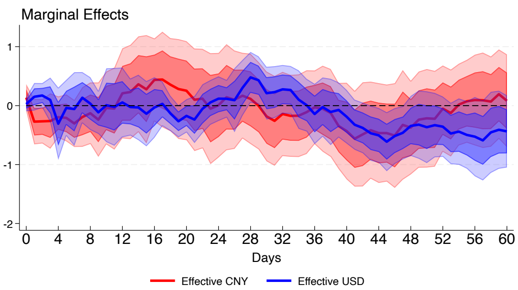
$\hat{\beta}_2$: Marginal from Retaliation



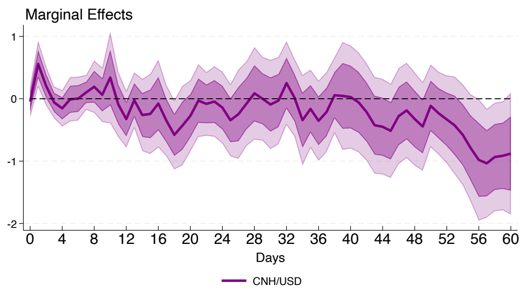
$\hat{\beta}_2$: Marginal from Retaliation



$\hat{\beta}_1 + \hat{\beta}_2$: Retaliation



$\hat{\beta}_1 + \hat{\beta}_2$: Retaliation



Notes. Shaded areas correspond to the 68% and 90% confidence intervals constructed from Newey and West (1987) standard errors with four lags, from the local-projection regression (2) (Panel A) and (3) (Panel B) with lags of the dependent variable (Montiel Olea and Plagborg-Møller, 2021).

indicator variable $\mathbb{1}_t^{Ret}$, which equals 1 if a U.S. tariff shock on date t was retaliated against within 7 days, and 0 otherwise, by any region (i.e., China, EU or Canada). We then estimate the following extended local-projection model:

$$e_{t+h} - e_{t-1} = \alpha^h + \beta_1^h \varepsilon_{US,t}^{\tau} + \beta_2^h \left(\varepsilon_{US,t}^{\tau} \times \mathbb{1}_t^{Ret} \right) + \delta^h \mathbb{1}_t^{Ret} + \boldsymbol{\gamma}^{h\prime} \mathbf{x}_{t-1} + u_{t+h} \tag{3}$$

Here, β_1 represents the estimated effect of U.S. tariff shocks on exchange rates conditional on no retaliation, while $\beta_1 + \beta_2$ is the corresponding estimate conditional on relation—such that β_2 captures the marginal effect of retaliation. We estimate equation (3) using the same controls and inference procedures as for equation (2).

Figure 3B presents the results for effective currency baskets in the left-hand column and the CNH/USD bilateral exchange rate in the right-hand column. The estimated responses conditional on no retaliation corroborate with the average across the sample: the USD significantly appreciates, in effective terms and *vis-à-vis* the CNH, following a U.S. tariff shock. Point estimates are somewhat larger than in Figure 3A.

However, the responses conditional on retaliation are significantly different. The impulse responses in the middle row show that retaliation pushes the USD to *depreciate* in effective and bilateral terms. The magnitude of the marginal $\hat{\beta}_2$ coefficient broadly offsets that of the no-retaliation coefficient, $\hat{\beta}_1$, such that the overall effect of tariffs with retaliation on exchange rates are approximately awash, as shown in the bottom panels. Recall from Section 2 that the size of rest-of-the-world effective tariff-rate shocks are smaller than those of the U.S. Our empirical evidence may reasonably reflect asymmetries in the transmission of tariff shocks and the impact of tariffs on financial markets. We expand on this issue below.

3.3 Global Events

In the set of 35 U.S. tariff events between 2018 and 2020, 21 capture actions specifically on China, while 14 reflect events that involve tariffs on other U.S. trade partners—predominantly the EU, Canada and Mexico—often *in addition* to China. In this subsection, we focus our attention on these events, asking the question of whether the exchange-rate responses differ when these US tariff actions on the world are met with retaliation.

To address this, we re-estimate regression (3), restricting our sample to these 14 global events. Figure 4 plots the estimated impulse responses, focusing on the USD *and EUR* effective tariff rates, as well as the EUR/USD bilateral exchange rate (where, again, this is defined such that a decline corresponds to a USD depreciation).[7]

Qualitatively, the USD patterns are similar to Figure 3B, which relies on the entire set of shocks with retaliation. Conditional on no retaliation, the USD appreciates significantly—both in effective terms and bilaterally *vis-à-vis* the euro.[8] The marginal impact of retaliation, captured by $\hat{\beta}_2$, again has the opposite sign and is statistically significant indicating that retaliation places pressure on the USD to depreciate.

But there is a key difference in this case: the magnitude of estimated responses. In Figure 3B, the $\hat{\beta}_1$ and $\hat{\beta}_2$ were similar in magnitude such that a retaliation would leave the implied USD exchange rate broadly unchanged. In Figure 4, the $\hat{\beta}_2$ coefficients are much larger. The peak marginal effect of a 1pp effective U.S. tariff rate shock, conditional on no-retaliation, is around 1.5% on the USD effective exchange rate. The marginal impact of retaliation peaks at nearly -6pp. So, if the rest of the world retaliates against a U.S. tariff action, our results indicate that the USD will actually *depreciate*—both in effective terms and *vis-à-vis* the euro.

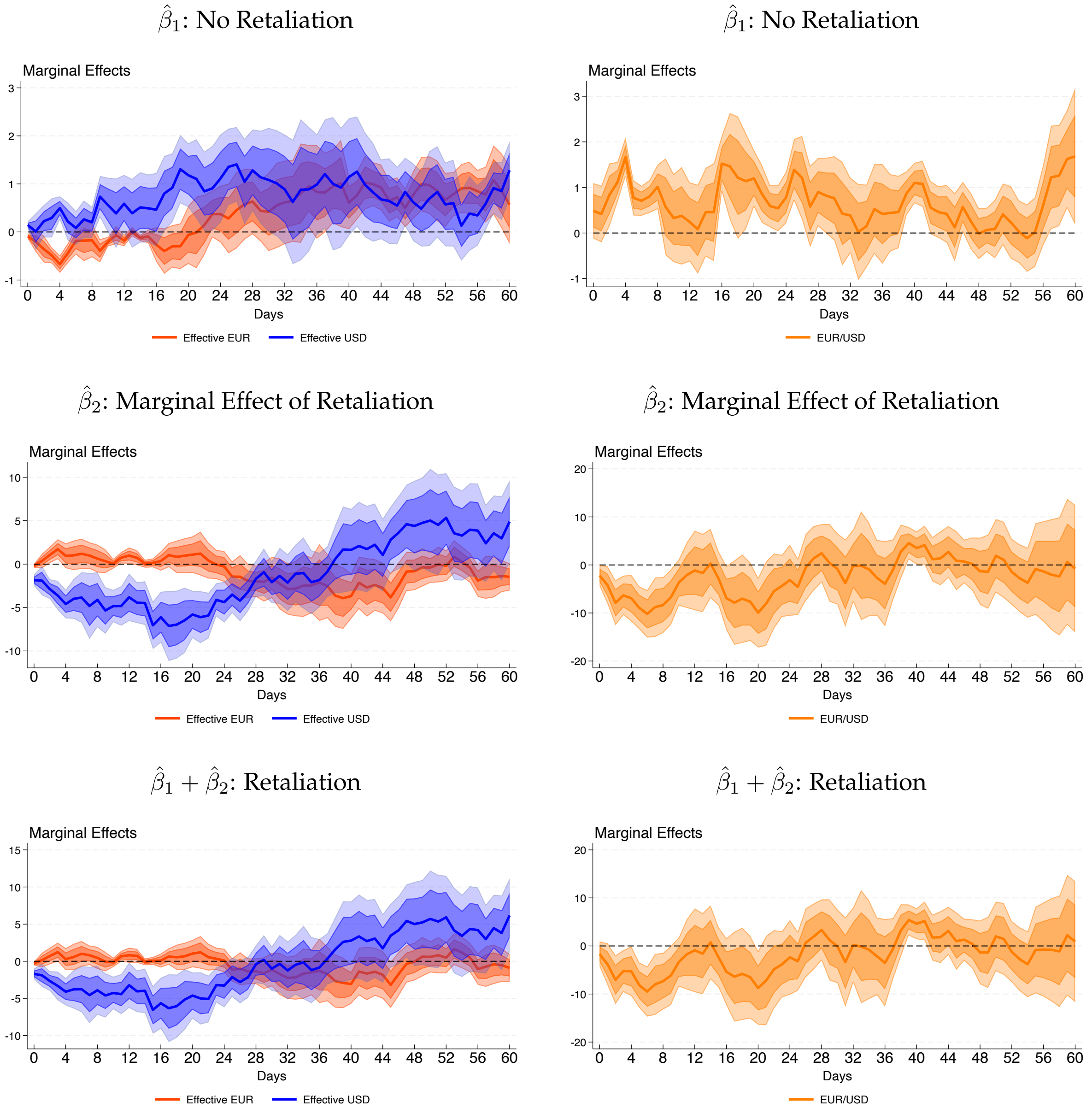
It is worth reiterating that our evidence is *not* a departure from theory. In the model by Bergin and Corsetti (2023), a trade war can imply a USD depreciation even when tariff rates are raised symmetrically. The reason is that, in a world economy in which the USD is the dominant currency in international trade, the asymmetry in exchange-rate pass through translates into an asymmetry in the policy trade offs faced by monetary authorities when responding to tariff shocks. Specifically, a USD depreciation will not produce significant imported U.S. inflation in goods and inputs—at the border, imports prices in USD move very little with the exchange rate, at least in the short run—improving the benefits from pursuing a relatively expansionary policy compared with the rest of the world.[9] Additional relevant asymmetries in the transmission of tariff

[7]We focus on the EUR for these 'global' tariff events to provide a comparison with the 2025 period, and because the euro-area imports are hit directly by many of these U.S. tariff events.

[8]The USD also appreciates on average across all observations, as shown in Figure B.1.

[9]Within the model, a U.S. monetary expansion sustains demand for rest-of-the-world production. Moreover, since a USD depreciation weighs on the foreign-currency prices of imports from the U.S., it

Figure 4: Exchange-Rate Impacts of 2018-2020 Global Tariff Events Conditional On Retaliation



Notes. Shaded areas correspond to the 68% and 90% confidence intervals constructed from Newey and West (1987) standard errors with four lags, from the local-projection regression (3) augmented with lags of the dependent variable (Montiel Olea and Plagborg-Møller, 2021).

shocks and the policy response could obviously arise from differences in exchange-

also reduces rest-of-the-world imported inflation. Therefore, in the rest of the world, even if retaliation matches U.S. tariff rates one-for-one, matching the U.S. monetary stance is not desirable within the model. A weaker rest-of-the-world currency would not help foreign firms' competitiveness, since prices are sticky in USD. Instead, it would increase imported inflation. Because of this, the optimal rest-of-the-world monetary response entails a more conservative response to the shock, containing inflation at the cost of some output losses, and contributing to a USD weakening.

rate regimes, as well as from differences in targeted sectors and industries—e.g., with countries setting diverse tariffs rates on intermediate inputs, commodities, and final consumer goods.[10] In view of these considerations, when the rest of the world retaliates against U.S. tariffs, a USD depreciation *per se* should neither be surprising nor considered at odds with economic modeling.

4 Is This Time Different?

In this section, we apply our empirical model to the 2025 tariff shocks. By comparing our results across the two samples, we address two questions. First, do the exchange-rate responses in 2025 differ from those in 2018-2020, in sign or magnitude? Second, are there differences in shock transmission to bond yields that shed light on the role of stabilization policies for financial markets? We address these questions in turn.

4.1 Tariff Shocks and Exchange Rates in 2025

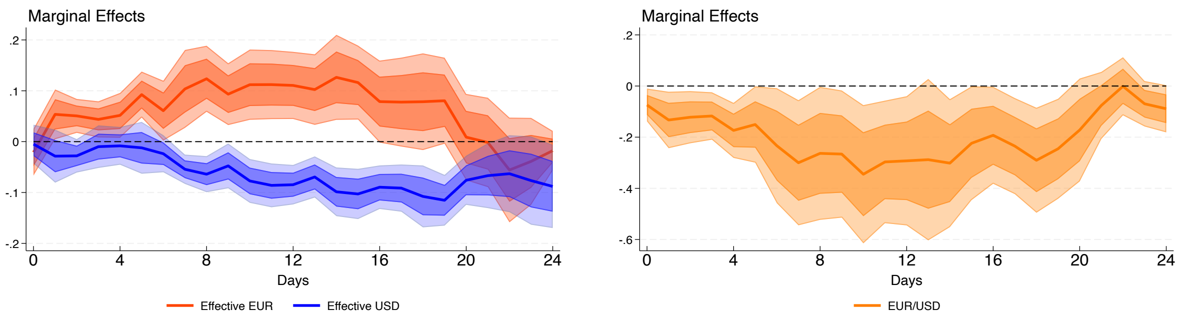
Results from re-estimating our average effect regression (2) using the 2025 tariff shocks are presented in Figure 5A. As apparent from this figure, the U.S. tariff actions in 2025 *depreciate* the USD, both in effective terms and bilaterally against the EUR. Importantly, since all post-April 2nd 2025 U.S. tariffs are retaliated against, and almost all correspond to US tariff announcements on a wide set of trading partners, the correct counterpart for these results in the 2018-2020 period comes from $\beta_1 + \beta_2$ in regression (3), where we see a U.S. dollar depreciation as well (see Figure 4). The key distinction is in the magnitudes. But note that, if anything, conditional on a linear model, the U.S. dollar depreciation following April 2nd was too small given the size of the U.S. tariffs.

[10] A step in this research direction is the specification of a two-tradable sector model enriched with a non-tradable sector, as in Bergin and Corsetti (2025). Firms in non-differentiated-goods sector are competitive; firms in the differentiated-goods sector are monopolistically competitive, price under nominal rigidities and can enter/exit the market. Asymmetries in sectoral tariffs results in asymmetries in the monetary stance.

Figure 5: Impact of 2025 Tariff Events on Asset Prices

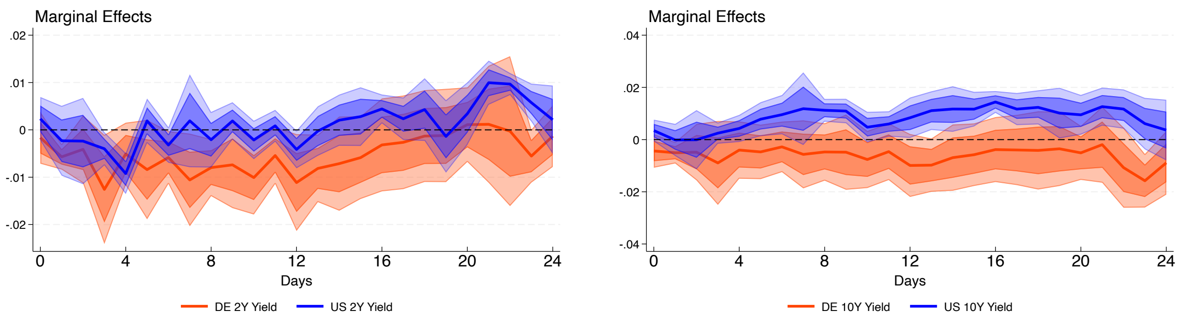
A. Exchange Rates

$\hat{\beta}$: Effective FX $\qquad\qquad$ $\hat{\beta}$: Bilateral FX



B. Bond Yields

$\hat{\beta}$: 2Y Bond Yields $\qquad\qquad$ $\hat{\beta}$: 10Y Bond Yields



Notes. Shaded areas correspond to the 68% and 90% confidence intervals constructed from Newey and West (1987) standard errors with four lags, from the local-projection regression (2) augmented with lags of the dependent variable (Montiel Olea and Plagborg-Møller, 2021).

4.2 Tariff Shocks and Bond Yields: 2018-2020 vs. 2025

We now bring the model to bear on the response of bond yields. In the 2018-2020 sample, for which we report results in Appendix B (Figure B.2), U.S. bond yields respond negatively, consistent with a scenario of price stability in which economic activity may be negatively affected by the impact of tariffs on productivity. The response follows the same pattern at both the 2-year and the 10-year horizon, and is stronger with retaliation. Irrespective of retaliation, yields in Europe respond more positively than in the U.S.

The same pattern does not repeat in 2025, as Figure 5B shows. While US 2-year yields do fall, the response is muted. US 10-year yields, however, significantly increase over time. At longer horizons, the short-run stabilization policy of the central bank, which may optimally accommodate some inflation to sustain economic activity, should no longer be reflected in investors' expectations. These yield moves may instead reflect a re-appraisal of growth and inflation prospects. The comparison of these results across the two periods thus points to a different, more complex, transmission mechanism may have been at play in 2025 compared to the 2018-2020 period.

5 Conclusion

In this paper, we provide new empirical evidence on the response of exchange rates to tariff actions based on the recent experiences in 2018-2020 and 2025. Our innovation comes from a careful classification between tariff shocks, depending on whether they give rise to retaliatory measures in the rest of the world.

We construct a new dataset documenting effective tariff-rate shocks, going beyond a classification of escalations/de-escalations used in the literature to date. Our shocks measure has the advantage of capturing the size and economic relevance of different tariff announcements.

Our econometric evidence for the period 2018-2020 shows that, when the rest of the world is expected to retaliate against a U.S. tariff announcement, the USD can depreciate significantly, at odds with a widespread view, but in line with theoretical exercises. In light of our evidence, the USD depreciation following the April 2nd 2025 is not surprising. The response of 10-year yields is, however, significantly different.

References

ANDERSEN, T. G., T. BOLLERSLEV, F. X. DIEBOLD, AND C. VEGA (2007): "Real-Time Price Discovery in Global Stock, Bond and Foreign Exchange Markets," *Journal of International Economics*, 73, 251–277.

AUCLERT, A., M. ROGNLIE, AND L. STRAUB (2025): "The Macroeconomics of Tariff Shocks," NBER Working Papers 33726, National Bureau of Economic Research, Inc.

BARATTIERI, A., M. CACCIATORE, AND F. GHIRONI (2021): "Protectionism and the Business Cycle," *Journal of International Economics*, 129.

BERGIN, P. R. AND G. CORSETTI (2023): "The macroeconomic stabilization of tariff shocks: What is the optimal monetary response?" *Journal of International Economics*, 143, 103758.

——— (2025): "Monetary Stabilization of Sectoral Tariffs," Working Paper w33845, National Bureau of Economic Research.

BIANCHI, J. AND L. COULIBALY (2025): "The Optimal Monetary Policy Response to Tariffs," Working Papers 810, Federal Reserve Bank of Minneapolis.

BOWN, C. P. (2025): "Trump's Trade War Timeline 2.0: An Up-to-Date Guide," Peterson Institute for International Economics.

BOWN, C. P. AND M. KOLB (2025): "Trump's Trade War Timeline: An Up-to-Date Guide," Peterson Institute for International Economics, First Version: April 19, 2018.

CARDANI, R., M. KÜHL, J. PEPPEL-SREBRNY, AND R. STRAUCH (2025): "Exchange rate uncertainty, tariff hikes, and adjustment costs," *VoxEU.org*, CEPR VoxEU Column.

DU, W., J. IM, AND J. SCHREGER (2018): "The U.S. Treasury Premium," *Journal of International Economics*, 112, 167–181.

FAUST, J., J. H. ROGERS, S.-Y. WANG, AND J. H. WRIGHT (2006): "The High Frequency Response of Exchange Rates and Interest Rates to Macroeconomic Announcements," *Journal of Monetary Economics*, 54, 1051–1068.

FILIPPOU, I., A. E. GOZLUKLU, M. T. NGUYEN, AND G. VISWANATH-NATRAJ (2025): "Signal in the noise: Trump tweets and the currency market," *Journal of International Money and Finance*, 156, 103343.

FURCERI, D., S. A. HANNAN, J. D. OSTRY, AND A. K. ROSE (2018): "Macroeconomic Consequences of Tariffs," NBER Working Papers 25402, National Bureau of Economic Research, Inc.

HARTLEY, J. AND A. REBUCCI (2025): "Tariffs, the dollar, and equities: High-frequency evidence from the Liberation Day announcement," *VoxEU.org*, CEPR VoxEU Column.

JEANNE, O. AND J. SON (2024): "To what extent are tariffs offset by exchange rates?" *Journal of International Money and Finance*, 142, 103015.

JIANG, Z., A. KRISHNAMURTHY, H. N. LUSTIG, R. RICHMOND, AND C. XU (2025): "Dollar Upheaval: This Time is Different," Working paper, SSRN, SSRN Working Paper No. 5220444.

JORDÀ, Ò. (2005): "Estimation and Inference of Impulse Responses by Local Projections," *American Economic Review*, 95, 161–182.

KRUGMAN, P. (1982): "The Macroeconomics of Protection with a Floating Exchange Rate," *Carnegie-Rochester Conference Series on Public Policy*, 16, 141–182.

LLOYD, S. P. AND E. A. MARIN (2024): "Capital controls and trade policy," *Journal of International Economics*, 151.

MATVEEV, D. AND F. RUGE-MURCIA (2024): "Tariffs and the Exchange Rate: Evidence from Twitter," *IMF Economic Review*, 72, 1185–1211.

MONTIEL OLEA, J. L. AND M. PLAGBORG-MØLLER (2021): "Local Projection Inference Is Simpler and More Robust Than You Think," *Econometrica*, 89, 1789–1823.

NEWEY, W. K. AND K. D. WEST (1987): "A Simple, Positive Semi-definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix," *Econometrica*, 55, 703–708.

OSTRY, J. D. (1991): "Tariffs, Real Exchange Rates, and the Trade Balance in a Two-Country World," *European Economic Review*, 35, 1127–1142.

ROGERS, J. H., C. SCOTTI, AND J. H. WRIGHT (2014): "Evaluating Asset-market Effects of Unconventional Monetary Policy: a Multi-country Review," *Economic Policy*, 29, 749–799.

STAVRAKEVA, V. AND J. TANG (2024): "A Fundamental Connection: Exchange Rates and Macroeconomic Expectations," *The Review of Economics and Statistics*, 106, 1–17.

Appendix

A Timeline of Tariff Events

Table A.1: Timeline of Tariff Events (+1 denotes effective tariff increase, −1 decrease)

Date	Description	US Event	RoW Event
A: 2018-2020			
22-Jan-18	U.S. imposes safeguard tariffs on solar panels and washing machines.	1	0
01-Mar-18	U.S. announces future tariffs of 25% on steel and 10% on aluminum across board (affecting mostly Canada, EU, Mexico, Korea).	1	0
07-Mar-18	EU announces its retaliatory response if hit with U.S. steel and aluminum tariffs, hitting consumer goods.	0	1
08-Mar-18	U.S. temporarily exempts Canada and Mexico from steel and aluminum tariffs.	-1	0
22-Mar-18	Investigation finds China uses unfair trade practices; U.S. indicates forthcoming tariffs on Chinese goods and WTO dispute. At same time, U.S. temporarily exempts EU, Korea, Brazil, Argentina, Australia from steel and aluminum tariffs.	1	0
23-Mar-18	U.S. steel and aluminum tariffs come into effect.	1	0
02-Apr-18	China imposes retaliatory tariffs on U.S. on aluminum waste and various foods.	0	1
03-Apr-18	U.S. threatens tariffs on China, at 25% on 50bn USD, largely on intermediate inputs and capital goods.	1	0
04-Apr-18	China retaliates with threat of tariffs on 50bn USD imports, mostly on U.S. transportation and vegetable products.	0	1
05-Apr-18	U.S. escalates by asking officials to consider whether addition 100 billion USD of US imports from China should be tariffed.	1	0
17-Apr-18	China imposes preliminary tariffs on U.S. Sorghum.	0	1
30-Apr-18	U.S. extends tariff exemptions for EU, Canada and Mexico; Argentina, Australia and Brazil receive indefinite exemptions.	-1	0
18-May-18	China ends Sorghum tariffs during negotiations.	0	-1
23-May-18	U.S. considers 25% tariffs on autos and parts.	1	0
29-May-18	U.S. says it will impose tariffs on 50bn USD of Chinese goods starting June 15.	1	0
01-Jun-18	U.S. ends tariff exemptions for EU, Canada, Mexico.	1	0
15-Jun-18	U.S. amends list of tariffed 50bn goods from China; China also updates its list. Both effective from July 6.	1	1
18-Jun-18	U.S. looks into another 200bn USD of Chinese imports to tariff at rate of 10%.	1	0
22-Jun-18	EU retaliates against U.S., affecting steel, aluminum, agriculture and food.	0	1
06-Jul-18	First stage of U.S. and Chinese 50bn USD tariffs, totalling 34bn USD, go into effect.	1	1
10-Jul-18	U.S. publishes list of additional 200bn USD worth of Chinese imports to tariff.	1	0
20-Jul-18	U.S. threatens to tariff all Chinese imports.	1	0
01-Aug-18	U.S. considers 25% tariff on 200bn USD of Chinese imports, up from 10%.	1	0
03-Aug-18	China threatens further tariffs on 60bn USD of goods (5–25%).	0	1
07-Aug-18	U.S. finalizes second tranche of 50bn USD tariff plan.	1	0

Continued on next page

Table A.1 – continued from previous page

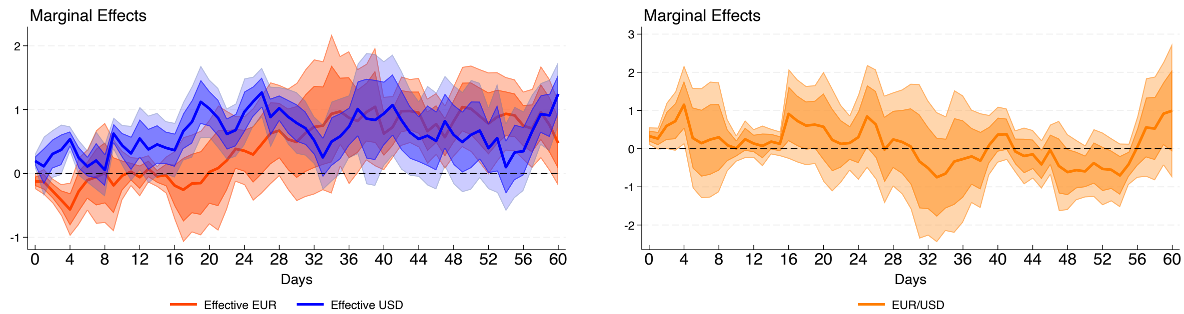
Date	Description	US Event	RoW Event
08-Aug-18	China removes crude oil from 50bn USD tariff list, but maintains 25% on 16bn USD.	0	1
10-Aug-18	U.S. doubles steel tariffs on Turkey to 50%, aluminum to 20%.	1	0
23-Aug-18	Second tranches of U.S. and China 50bn USD tariffs come into effect.	1	1
17-Sep-18	U.S. finalizes 200bn USD tariff list, with 10% tariff rising to 25% in Jan.	1	0
18-Sep-18	China finalizes tariffs on 60bn USD of US goods; lowers rate to 5–10%.	0	1
24-Sep-18	US (200B at 10%) and China (60B at 7%) tariffs come into effect.	1	1
10-May-19	U.S. tariffs of 25% on 200bn USD of Chinese goods come into effect.	1	0
13-May-19	China intends to retaliate by raising tariff rate on 60bn USD.	0	1
17-May-19	U.S. lifts steel and aluminum tariffs on Canada and Mexico.	-1	0
30-May-19	U.S. announces 5% tariffs on all imports from Mexico due to border.	1	0
01-Jun-19	China tariffs on 36bn USD of goods go into effect.	0	1
07-Jun-19	U.S calls off Mexico tariffs.	-1	0
01-Aug-19	U.S. announces 10% tariffs on all remaining Chinese exports, starting Sep 1.	1	0
13-Aug-19	U.S. plans two new tariff rollouts, 112bn USD and 160bn USD.	1	0
23-Aug-19	China retaliates with 75bn USD tariffs. U.S. raises tariffs to 30%.	1	1
11-Sep-19	China removes some tariffs; U.S. delays increase.	-1	-1
11-Oct-19	U.S. cancels October tariffs in anticipation of trade deal.	-1	0
13-Dec-19	U.S. cancels December tariffs after trade deal.	-1	0
24-Jan-20	U.S. increases steel and aluminum tariffs on EU, Taiwan, Japan and China.	1	0
06-Aug-20	U.S. reinstates Canadian steel tariffs. Canada retaliates.	1	1
15-Sep-20	U.S. ends tariffs on Canadian steel.	-1	-1
B: 2025-Present			
31-Jan-25	U.S. announces tariffs on all imports from Canada, Mexico (25%), China (+10%).	1	0
03-Feb-25	U.S., Canada and Mexico postpone tariffs for 1 month.	-1	-1
04-Feb-25	U.S. 10% tariffs on China. China retaliates with 15%/10% on U.S. goods.	1	1
10-Feb-25	U.S. announces 25% tariffs on steel and aluminum.	1	0
03-Mar-25	U.S. confirms tariffs; Canada and China retaliate.	1	1
06-Mar-25	USMCA exemptions on Canada/Mexico tariffs. Canada follows.	-1	-1
10-Mar-25	China's March 4 retaliatory tariffs come into effect.	0	1
12-Mar-25	U.S. steel/aluminum tariffs come into effect. Canada, EU retaliate.	1	1
26-Mar-25	U.S. announces 25% auto tariffs (USMCA exempted).	1	0
02-Apr-25	U.S. 'Liberation Day': tariff rate rises by 14pp.	1	0
03-Apr-25	March 26 auto tariffs take effect. Canada retaliates.	1	1
04-Apr-25	China announces 34% tariffs on all U.S. goods.	0	1
08-Apr-25	U.S. amends 34% tariff on China to 84%.	1	0
09-Apr-25	Liberation Day tariffs paused; U.S. announces 125% tariffs on China. China, EU, Canada retaliate.	1	1
10-Apr-25	China's retaliatory tariffs take effect. EU retaliation paused.	1	1
11-Apr-25	China announces further retaliation: 125% on U.S. imports.	0	1

B Additional Results

Figure B.1: Average Impact of 2018-2020 Global Tariff Events on Exchange Rates

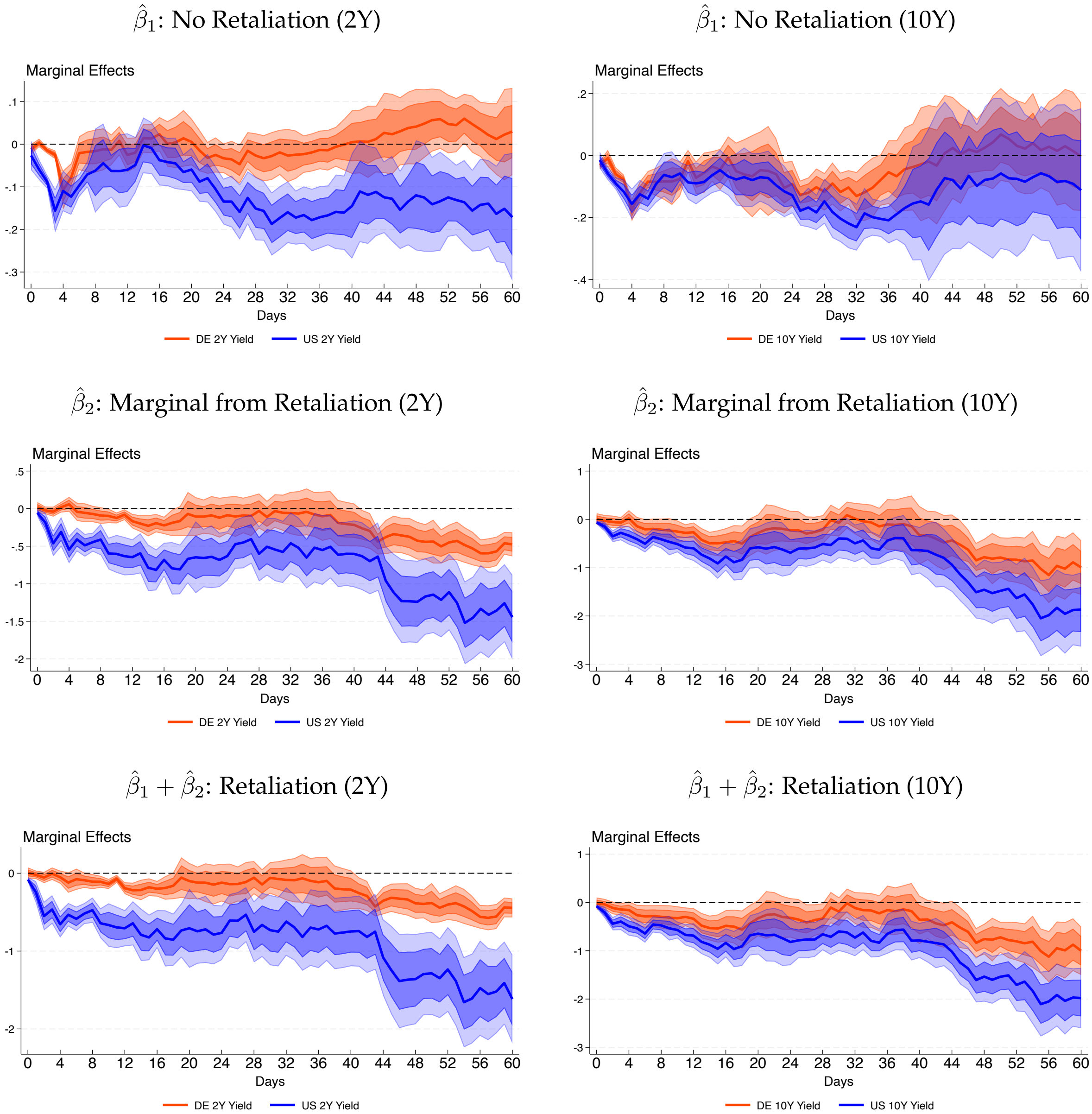
$\hat{\beta}$: Effective FX

$\hat{\beta}$: Bilateral FX



Notes. Shaded areas correspond to the 68% and 90% confidence intervals constructed from Newey and West (1987) standard errors with four lags, from the local-projection regression (2) augmented with lags of the dependent variable (Montiel Olea and Plagborg-Møller, 2021).

Figure B.2: 2- & 10-Year Bond Yields and 2018-2020 Global Tariff Events Conditional on Retaliation



Notes. Shaded areas correspond to the 68% and 90% confidence intervals constructed from Newey and West (1987) standard errors with four lags, from the local-projection regression (3) augmented with lags of the dependent variable (Montiel Olea and Plagborg-Møller, 2021).