

## Empirical Paper

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# Trade war or currency war? How do import duties translate into the RMB/USD exchange rate?

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### Abstract:

The global order has been dominated by the two economic superpowers: the United States and China. This article attempts to identify the implications of the trade policy followed by the Group of Two<sup>1</sup> (G2) for the USD/RMB exchange rate. In this quantitative study, we first estimate models considering only the tariff declarations between the two countries, where a pronouncement on the imposition of tariffs is made. In the following step, in addition to the statements, we also consider determinant variables or variables that influence the fluctuations in the Chinese currency exchange rate, namely, the exchange rate from previous days ( $t-1$  and  $t-2$ ). Research shows that the beginning of the trade war between the United States and China influenced the depreciation of the latter's currency. The effect of US declarations on the exchange rate is clearer than the impact of China's declarations and retaliations, although the estimated models also reveal some impact of Chinese actions.

**Keywords:** currency war, exchange rate, trade war

**JEL Classification:** F13, F31, F51

## 1 Introduction

The global order has been dominated by the two economic superpowers. According to International Monetary Fund (IMF) statistics, in 2020, the US economy was the biggest in terms of gross domestic product (GDP) (in current prices) at US\$20.9 trillion, followed by China at US\$14.87 trillion. Yet, considering GDP based on purchasing power parity (PPP) and the countries' share of the world total in 2020, China is the global leader with an 18.33% share, approximately 2.5 percentage points ahead of the United States, at 15.8%. At the same time, the IMF estimates that by 2026, China's share will increase to approximately 20.2%, while that of the United States will decrease to 15%, widening the gap to 5.2 percentage points. China is the second-most populated country in the world; hence, GDP per capita must also be considered. This indicator (in current prices) reveals a gap in the standard of living in these countries; in China, it is approximately US\$10,511, while in the United States, it is approximately US\$63,358.

With Donald Trump's presidency came a new chapter in the bilateral relations. As announced in his presidential campaign, the new administration that took office in 2017 started imposing duties on imports

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1 Group of Two is an informal term used to define US–China relation.

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from China. These decisions were reciprocated, which can undoubtedly be called a trade war. As the escalation of trade barriers concerns the world's biggest economies, the question about the consequences for their economies arose.

In this study, we limit our analysis of the implications of sanctions to short-term changes in the USD/RMB exchange rate while asking whether the trade war between the United States and China has escalated into a currency war. The study aims to identify/track how the declarations of tariff imposition affect the USD/RMB exchange rate. We first estimate models that consider only the tariff declarations between the two countries where a pronouncement on the imposition of tariffs is made. In the following step, in addition to the statements, we also consider determinant variables or variables that influence the Chinese currency exchange rate fluctuations, namely, the exchange rate from previous days ( $t-1$  and  $t-2$ ). Our paper contributes to the existing literature by analyzing rarely discussed dimensions of the trade war. Most studies focus on trade flows with engaged countries or the rest of the world, for example, Li et al. [2020]; Iqbal et al. [2019]; Goulard [2020]. By contrast, we demonstrate that a trade war can be the first step to a further escalation.

The paper has the following structure. The next section discusses the literature on arguments for tariff implementation and currency wars being a potential consequence of tit-for-tat trade restrictions. In the third section, we explain our methodology, while the results and discussion of our findings are presented in the fourth section. The last section concludes.

## 2 Literature review

### 2.1 Trade and duties – theoretical arguments for tariff implementation

The fundamental question is whether international trade is positive or not. Krugman [1987] provides several arguments in favor while simultaneously asking if free trade is passé. He noted that for almost two centuries (19th–20th centuries), international trade theory was dominated by the Ricardian comparative advantage theory. Krugman reviewed trade theories, from conventional ones like Heckscher–Ohlin–Samuelson, Linder, and Vernon, to ones that emphasized imperfect competition as an engine for international trade. All of those theories favored free trade, reinforcing the traditional view that trade is a good thing. Yet, Krugman noted: *Showing that free trade is better than no trade is not the same thing as showing that free trade is better than sophisticated government intervention*. This clearly contradicts Smith's argument that *all commerce that is carried on betwixt any two countries must necessarily be advantageous to both ... all duties, customs, and excise [on imports] should be abolished, and free commerce and liberty of exchange should be allowed with all nations* [Smith, 1978, as cited in Irwin, 2015].

Chang [2010] and Takacs [1981] also questioned the idea of free trade. They elaborated on the conditions under which protectionism might be justified, distinguishing, among others, infant industry protection. The justification for implementing trade restrictions in new industries was first introduced by Hamilton [1791] [Founders Online] and developed by several economists; for example, List [2011]. Shafaeddin [2000] recommended the selective protection of infant industries through targeted measures that are not excessive. The aim of all nations should ultimately be free trade, and any protection should be temporary.

Baldwin [1969] observed that the infant industry argument could only be employed if there was clear and undeniable analytical evidence supporting the effectiveness and desirability of protective duties in the relevant industries, which is widely recognized and accepted. Yet, his research does not allow such conclusions to be made. He argues that duties cannot be assumed to be an effective measure to achieve an optimal learning level. Duties, regardless of whether imposed in an infant industry or not, distort consumption, but they may also fail to achieve the socially efficient allocation of productive resources in new industries. They may even decrease social welfare.

Krueger and Tuncer [1982] attempted to verify the infant industry argument by testing data for Turkey, assuming that to claim the argument is rational, input per unit of output must fall more rapidly in more protected industries. No such tendency was discovered, however; thus, they did not demonstrate that protection was not warranted. However, Harrison [1994] had reservations about their research, indicating

that they did not apply statistical tests to support their conclusions. She noticed that correlation tests between the measures of protection and productivity give a significant, positive relationship between increased protection and higher productivity growth.

Melitz [2005] analyzed how an industry's learning potential, the shape of the learning curve, and the degree of substitutability between domestic and foreign goods influence the decision to protect the industry. He compared production subsidies, tariffs and quotas, concluding that, under certain restrictions, quotas induce higher welfare levels than tariffs.

Sauré [2007] recognized a weakness in the infant industry argument not previously distinguished. He demonstrated that in the presence of a "traditional technology" with poor growth potential, the protectionism argument is not justified. Under trade barriers, domestic producers substitute advanced technologies with a low-growth alternative, thereby restraining learning and economic growth. Other arguments questioning the infant industry argument were given by Panagariya [2011]; Xu [2006], and Clemhout and Wan [1970].

Trade limitations are also justified by the need to protect senile industries, but most arguments refer to policymakers and politically motivated decisions. Gray [1985] provided a literature review about measures that could be applied to protect declining sectors. He refers to his own research [Gray, 1973], where he stated that quotas are the most effective policy tool, although Wood [1975] used his findings to argue in favor of subsidies.

Hillman [1982] referred to the protection of senescent industries and its justification related to social justice. It assumes that the state imposes duties to protect an industry that engages resources that do not have opportunities for adjustment and thus will suffer falling incomes. The concept allows authorities to temporarily compensate for entities that are facing difficulties. Hillman suggested a perspective wherein authorities prioritize their motives of self-interest over social welfare objectives, with the aim of garnering political support. The main conclusion is that a declining industry continues to decline when motives of political influence determine levels of protection. The analysis indicates that the permanency of protection depends on the specification of the political support function. The authorities may respond either way regarding the rate of the industry's decline, but politically motivated protection of a declining industry is permanent protection from outside competition.

However, Choi [2001] highlighted flaws in Hillman's research, noting that he fails to consider the option of industry shutdown and overlooks the possibility of pure consumer protection. Choi argued that the government may provide only temporary protection to a senescent industry and shows that Hillman's basic result of temporary protection is more general than suggested. Van Long and Vousden [1991] also referred to Hillman's paper when analyzing the effect of a falling world import price on the domestic price of the economy's importable goods in the presence of an endogenously determined tariff. One of their findings was that Hillman's result, that is, "a declining industry will continue to decline," holds in our general equilibrium framework.

Magee [2002] used a political economy framework to explain the empirical observation that trade protection is persistent. He found that, under certain conditions, industries decline gradually in response to a price shock even when producers do not face increasing adjustment costs. That conclusion corresponds to Hillman's findings that fading industries will continue to fade.

Lee and Swagel [1997] identified the determinants of protection. Their research is consistent with political-economy theories. Industries that are senile, weakening, and threatened by import competition tend to gain state protection. The same pattern is observed among large industries due to their political importance.

Cassing and Hillman [1986] predicted that a senescent industry survives until pressure on policymakers terminates its protection. Brainard and Verdier [1997] showed that persistent protection arises when lobbying is an alternative to the expensive adjustment. The more an industry lobbies, the more protection it receives and thus, the less it adjusts (as the incentives are minor), the better it performs in future lobbying. Brainard and Verdier stated that *when the costs of lobbying and adjustment are fully variable, declining industries contract more slowly over time and never fully adjust*. However, adding the fixed cost of creating or continuing to lobby is sufficient to generate an endogenous collapse in protection, which corresponds with Cassing and Hillman.

Imposing tariffs could be justified by the need to fight against dumping practices. Panagariya and Gupta [1998] noted that, under the auspices of the General Agreement for Tariffs and Trade (GATT), conventional protective measures have been relegated to the margins. Yet, if the demand for protection remains, anti-dumping duties serve as the key instrument of protection. Marceau [1994] defined anti-dumping measures as a trade remedy instrument that is targeted at offsetting unfair competitive practices that arise from price discrimination between different geographical markets. Anti-dumping measures were originally intended to address predatory pricing by foreign firms, but over time, they became a tool for protectionism [Cheng et al., 2001]. Even if implementing such measures is justified, the effect is like the consequences of a “regular” import tax. Brenton [2001] investigated anti-dumping duties and undertakings and revealed that anti-dumping policies cause trade diversion. Dinlersoz and Dogan [2010] distinguished two measures, tariffs and anti-dumping duties, and pointed out that reliance on the former has receded globally in recent years. Their research provides a list of differences between the two and considers their effectiveness. An anti-dumping duty is aimed at protecting a given industry, producing revenue as a by-product. Yet, its main objective is not to maximize protection, revenue, or welfare; thus, it is not typically used as a solution to an optimization problem.

Another argument to justify state intervention is the need to shape strategic trade policy. In their 1997 study, Grossman and Maggi [1997] sought to determine whether a government aiming to maximize welfare should pursue free trade or strategic policy intervention, and under what circumstances it would be beneficial to choose the former approach. Conclusions about the better option depend on the scale of the company’s investments, although the asymmetry of information between the company and the state seems to favor free trade. Ionascu and Zigic [2001] analyzed the arguments for choosing between a strategic trade policy or free trade with the reservation that the state is obliged to intervene only when the first scenario is chosen. They concluded that with the second option, domestic companies might manipulate the state. Opting for free trade leads to forgoing the benefits of profit-shifting. From the social point of view, a lack of interventions may be optimal, even under the assumption of symmetric information. This idea is even reinforced when there is information asymmetry.

Rugman and Verbeke [1990] argued that developing a strategic trade policy based on a firm’s specific advantages requires an executive bureaucracy with industry-specific knowledge. It should be able to identify which industries will benefit from the policy and which will not, and it should be aware of institutional features that prevent the government from being unduly influenced by rent-seeking companies. However, they noted that only a few countries represent such bureaucracy, while for most of them, a strategic trade policy is a bad policy. Strategic trade policies have been discussed by many other authors who question their legitimacy, for example, Milner and Yoffie [1989]; Krugman and Smith [1994], and Brander [1995].

Qiu et al. [2019] presented a comprehensive range of arguments in favor of implementing trade restrictions. They concluded that some theories (including imperfect competition and increasing returns, terms of trade arguments, distributional effects, and political economy argument) can explain trade war in general, directly or indirectly.

## 2.2 Currency war

The central argument in the debate over US–China relations revolved around the widely recognized “Make America great again” motto, which suggested that limiting imports would boost the demand for domestic goods among consumers. Regardless of the motives that led to the escalation of trade barriers between the two nations, consequences for the national economies arose. It is clear that imposing duties and other trade barriers usually meets with retaliation and ultimately leads to a trade war. However, the key question that arises is: Does it hurt, and if so, does it hurt everyone the same? Johnson [1953] analyzed trade wars based on the optimum tariff argument. He demonstrated that while large countries can benefit from a trade war, small ones always lose. Kennan and Riezman [1988] confirm Johnson’s conclusions, suggesting that big countries win tariff wars: if a country is substantially bigger, it can expect to gain from a tariff war, despite retaliation. However, Lerner [1936] demonstrated that, under specific conditions, an *ad valorem* tariff on imported goods has the same effect on decisions about output and resource allocation

as a symmetric *ad valorem* export tax. He demonstrated that foreign currency exchange rates would rise enough to neutralize both import and export tariffs, thus leaving importers no worse off and exporters no better off. Freund and Gagnon [2017] investigated the effects of border-adjusted consumption taxes and concluded that the real exchange rate (RER) tends to rise by the full amount of the tax imposed. Together with the increase in RER, a country's exports become less competitive.

The term *currency war* was introduced by Brazilian Finance Minister Guido Mantega in September 2010 in response to quantitative easing in the United States. He indicated that the Federal Reserve's unconventional monetary policy, which was aimed at preventing deflation and stimulating a crisis-ridden economy, mounted to a "beggar the neighbor" approach [Eichengreen, 2013].

Włodarczyk [2014] reviewed some definitions of the currency war concept. At its core, it involves actions taken by central banks or governments to satisfy their national interests through interventions in the foreign currency market. Another perspective considers it as a deliberate devaluation of a nation's currency to boost exports and domestic economic activity while exerting pressure on importers, thereby directly impeding other countries' economies. Some researchers view currency wars as maneuvers undertaken by monetary or governmental authorities to intentionally lower the value of their national currency in response to comparable measures initiated by another country, especially a significant trading partner. The concept can also be interpreted as imposing the expenses shifting the burden of recovering from an economic downturn onto a partner by engaging in competitive devaluations or depreciations.

Picardo [2015] defines these phenomena as a currency devaluation sequence to increase the competitiveness of exports and make imports more expensive, pushing customers towards domestic goods. Thus, an export-oriented economy, in particular, may stimulate the currency to neutralize the negative consequences of import taxes. Thus, a trade war may also take a turn towards a currency war, understood as the devaluation of a country's currency to gain a comparative advantage in international trade. Such competitive devaluation can be implemented to restore the competitiveness of exports and maintain the attractiveness of the products in international trade [Rodrik, 2018].

China's currency, the renminbi (RMB), is officially an "other conventional fixed peg arrangement" pegged to the US dollar. Yet, as the IMF notes, the *de facto* regime in the country is different from its *de jure* regime.

Jeanne [2021] described historic examples of currency wars. He pointed out that the demand for domestic goods can be increased by depreciating the home currency, taxing imports, or subsidizing exports. At the same time, currency depreciation can be achieved with lower interest rates, higher inflation targets, the imposition of taxes on capital inflows, or accumulating foreign exchange reserves. However, he does not consider short-term impulses from government announcements regarding changes in the trade policy aimed at a specific product and/or country. Brown [2019] stated that currency wars are nothing new, as depreciation often follows levied tariffs, a slowdown in economic growth, or actions taken by the central bank, and it is aimed at "neutralizing" its impact.

By 2020, then-President Trump proposed several policy measures as a response to the Chinese government's economic policies. One of the main objectives was to raise tariffs on Chinese products, thereby reducing their demand and resulting in a weakening of the renminbi. It also made North American producers reduce their manufacturing orders from China, choosing other Asian nations instead. By imposing tariffs, this protectionist policy led to a new strategy to strengthen the US domestic market [Huang, 2022].

When Donald Trump took office, a series of declarations towards China and tariff impositions began, followed by symmetrical countermeasures. After nearly 2 years, the result in the economies of both countries could be defined as new export controls to China, which were implemented by the US Department of Commerce. These restrictions require companies to receive a license to export from the United States [China Briefing, 2023], and it affects both US companies and companies from third-party countries that sell US-made items to China. It also affects China's exchange rate.

Between March and August 2018 alone, the Shanghai Composite Index (SEC), which is the barometer of China's foreign exchange market, showed a depreciation of the RMB close to 8%, highlighting the dependence that China has on its exports; manufacturing companies were the most affected [Zhang, 2018]. Some authors, such as Stiglitz [2018], have stated that the lack of balance in the multilateral trade must be

resolved through increased national savings. Lawrence [2018] argued that the bilateral war, and especially the protectionism that was proposed, has more to do with violating the rules proposed by the World Trade Organization (WTO) and altering the world trade order. They also suggested that the lack of a stable trade balance is mainly due to a structural problem and how the domestic consumption of the countries is carried out. China has high levels of domestic savings despite low perceived returns, while the United States has low levels of savings. Stiglitz [2018] proposed reducing the current account deficit via monetary and fiscal policy, which is still under discussion. That brings us to the war of attrition, where the escalation of tariffs hurts both economies. The additional measures on technology sanctions, currency manipulation designation, and the impediment of investments drive these two countries further away from each other.

### 3 Methodological approach

In our quantitative study, we first estimate models that consider only the tariff declarations between the two countries, where some pronouncement on the tariff imposition is made. Second, in addition to these statements, we also include some determinant variables or variables that influence the fluctuations of the RMB/USD, namely, the exchange rate from previous days ( $t-1$  and  $t-2$ ). The chronology of statements considered in the model is retrieved from the Mullen [2021] elaboration.<sup>2</sup>

To model the first alternative, we initially consider only the dates on which the United States made declarations about China and where they are accompanied by a tariff tax of a certain value in dollars. This first approximation does not consider the dates when they made only declarations without any tariff-type indicator. Similarly, we model the effect of China's declarations on its own currency exchange rate. It is expected that a declaration made by China will have less effect on the RMB/USD exchange rate than those announced by the United States. Therefore, Granger causality is used to validate or reject the analytical proposals.

The modeling strategy is developed from the use of dichotomous fictional variables, since to “quantify” attributes, we introduced artificial variables (dummies) that take the values of 0 or 1, where 1 indicates the presence (or possession) of that attribute and 0 its absence [Gujarati and Porter, 2010, p. 277]. In this case, 1 is assigned from the moment the tariff is imposed. Thus, there are two possible forms of modeling:

Analysis of variance (ANOVA)

$$Y_i = \alpha_0 + \beta_i \sum_i^n Di + u_i; i = 1, 2, \dots, n \quad (1)$$

where  $Y_i$  represents the RMB/USD exchange rate, and  $D_i$  refers to the first dummy variable, which corresponds to the date of some declaration of the trade war, taking 0 before the date of that declaration and 1 from that date. We have included  $\alpha_0$  and  $\beta_i$ , which are parameters to be estimated;  $n$  is the number of statements made.

Analysis of covariance (ANCOVA)

$$Y_i = \alpha_0 + \beta_i \sum_i^m Di + \delta_i \sum_j^n Xi + u_i; i = 1, 2, \dots, n \quad (2)$$

where  $Y_i$  represents the RMB/USD exchange rate, and  $D_i$  is a dummy variable, which corresponds to the date of a trade war declaration; it takes the same values as in the ANOVA model.  $X_i$  corresponds to control variables that affect the dependent variable  $Y_i$ , which considers the dependent variable,  $Y_i$ , lagging over time.  $\alpha_0$ ,  $\beta_i$ , and  $\delta_i$  are parameters to be estimated;  $n$  is the number of declarations made.

Before estimating the ANOVA and ANCOVA models, the relevant fictional variables are created according to the dates on which declarations of tariff impositions are issued by both countries. Likewise, Granger

<sup>2</sup> List of events considered in the US–China trade war timeline since July available upon request.

causality is used to identify causal relationships in the context of Vector Autoregressive Model, (VAR) to identify causal relationships, particularly of dummy variables (which represent dates of declarations in the trade war) with the exchange rate.

## 4 Conducting research and results

The exchange rate information for the renminbi comes from the `stooq.pl` website and covers the period from January 20, 2017 to November 29, 2021, with daily information. Thus, the Granger Causality test<sup>3</sup> allowed us to identify that together, there is causality, directionality, or the effect of the US's declarations on China's exchange rate, represented by the dummy variables:  $D_1, D_2, \dots, D_{10}$ . The test indicates that variables  $D_1$  and  $D_8$  are statistically significant at the 5% level, while variable  $D_{10}$  is significant at the 10% level.

The  $p$ -values of variables  $D_1, D_8$ , and  $D_{10}$  indicate that they are relevant to explain the shocks generated by the US's declarations about China on 06/07/2018, 01/09/2019, and 14/09/2020.

Regarding China's declarations towards the United States, the effects on its exchange rate are negligible. The Granger causality test<sup>4</sup> shows that, jointly, there is no significant effect, rejecting the existence of directionality or the effect of China's declarations about the RMB/USD exchange rate. Only the first statement influenced China's exchange rate.

To identify the effect of tariff declarations on the counterparty, we have estimated four models (Table 1). Two of them consider only declarations, while the other two also reflect the exchange rate in previous days (lagging 1 day and 2 days). Thus, Model 1 shows that the first US statement on 06/07/2018, imposing a 25% tax on imports from China amounting to 34 billion dollars, depreciated the renminbi by 0.18 RMB. The same happened with the declaration of 05/08/2019. However, the declarations dated 11/09/2019, 14/09/2020, and 02/12/2020 appreciated it. Only the first date confirms our expectations, as this declaration was positive, that is, a delay in the introduction of new tariffs; the other two declarations were a threat to bilateral trade.

Model 2, in addition to the dummy variables, includes the lagged exchange rate to observe if this influences the behavior of the exchange rate in time  $t$ . The estimation shows that the exchange rate in the past is also relevant to explain it in time  $t$ . Likewise, the initial declaration of tariff levies maintains the depreciative effect on the RMB/USD exchange rate. The same applies to the declaration of 10/05/2019, which corresponds with our expectations.

Model 3 seeks to reflect the effect of China's trade war escalation declarations on the RMB/USD. The estimation shows that the responses to the US initial statement also had a depreciation effect on the exchange rate, at a magnitude very similar to that caused by its initial statement (0.17 vs. 0.18). Likewise, China's statement of 15/05/2019 also influenced the depreciation of the renminbi by 0.05. The declarations of 01/09/2020 and 15/09/2020 had an appreciable effect on the currency. Considering the nature of these declarations (imposing vs. withdrawing restrictions), these effects follow our expectations.

Model 4 includes the exchange rate lagged by two periods, in addition to dummy variables that model tariff shocks. The result indicates that the behavior of the renminbi's past exchange rate also influences its present behavior, depreciating it. Likewise, the model allows us to identify that the response to the initial declaration of trade war by the US had a devaluing effect (depreciation) on China's exchange rate.

As has been noted throughout this work, the intention of the United States has always been to reduce its trade deficit with China, regardless of the economic implications. This trade war involved imposing tariffs on certain products, with a tariff rate greater than 25%, only in the first half of 2019, strongly reducing US imports of these products taxed tariff. Another effect was that of trade diversion, to the detriment of Chinese products, where American companies turned to producers from Taiwan, Mexico, Vietnam, and even the European Union in order to obtain the products necessary for manufacturing [Nicita, 2019]. Over the long term, the ongoing trade war between the United States and China is expected to significantly reduce the trade

<sup>3</sup> The results of the VAR Granger Causality/Block Exogeneity Wald Tests for US declarations are available upon request.

<sup>4</sup> The results of the VAR Granger Causality/Block Exogeneity Wald Tests for China's declarations are available upon request.

**Table 1.** Estimation of ANOVA and ANCOVA models for the renminbi

Variable	Parameters	Coefficient Model 1	Coefficient Model 2	Coefficient Model 3	Coefficient Model 4
Constant	$\alpha_0$	6.614 (0.006) [973.037] {0.000}	0.064 (0.027) [2.385] {0.017}	6.614 (0.007) [912.824] {0.000}	0.075 (0.025) [2.993] {0.002}
D1:	$\beta_1$	0.182 (0.023) [7.903] {0.000}	0.009 (0.003) [2.726] {0.006}	0.175 (0.024) [7.167] {0.000}	0.008 (0.003) [2.590] {0.009}
D2:	$\beta_3$	0.047 (0.035) [1.345] {0.178}	-0.006 (0.004) [-1.255] {0.209}	0.053 (0.037) [1.433] {0.151}	-0.005 (0.004) [-1.087] {0.277}
D3:	$\beta_4$	-0.027 (0.029) [-0.919] {0.358}	-0.0007 (0.004) [-0.174] {0.861}	-0.025 (0.031) [-0.825] {0.409}	-7.66E-06 (0.004) [-0.001] {0.998}
D4:	$\beta_5$	0.059 (0.074) [0.796] {0.426}	0.022 (0.010) [2.140] {0.032}	0.084 (0.041) [2.066] {0.039}	0.002 (0.005) [0.541] {0.588}
D5:	$\beta_6$	0.018 (0.076) [0.236] {0.812}	-0.018 (0.010) [-1.731] {0.083}	0.093 (0.040) [2.297] {0.021}	-0.0006 (0.005) [-0.126] {0.899}
D6:	$\beta_7$	0.154 (0.055) [2.795] {0.005}	0.004 (0.007) [0.520] {0.603}	0.059 (0.020) [2.91] {0.003}	0.002 (0.002) [0.816] {0.414}
D7:	$\beta_8$	0.048 (0.062) [0.777] {0.437}	0.003 (0.008) [0.350] {0.725}	0.047 (0.098) [0.487] {0.625}	0.002 (0.013) [0.169] {0.865}
D8:	$\beta_9$	0.036 (0.059) [0.607] {0.543}	-0.015 (0.008) [-1.897] {0.058}	-0.075 (0.097) [-0.769] {0.441}	-0.007 (0.012) [-0.611] {0.540}
D9:	$\beta_{10}$	-0.110 (0.049) [-2.236] {0.0255}	0.005 (0.006) [0.855] {0.392}	-0.193 (0.045) [-4.216] {0.000}	-0.001 (0.006) [-0.259] {0.795}
D10:	$\beta_{11}$	-0.341 (0.018) [-18.161] {0.000}	-0.007 (0.002) [-2.389] {0.0170}	-0.332 (0.043) [-7.560] {0.000}	-0.002 (0.005) [-0.424] {0.671}
D11:	$\beta_{12}$	-0.218 (0.018) [-11.631] {0.000}	0.002 (0.002) [0.755] {0.450}		

(Continued)



Table 1. Continued

Variable	Parameters	Coefficient Model 1	Coefficient Model 2	Coefficient Model 3	Coefficient Model 4
Renminbi <sub>t-1</sub>	$\delta_1$		0.922 (0.028) [31.916] {0.000}		0.927 (0.028) [32.138] {0.000}
Renminbi <sub>t-2</sub>	$\delta_2$		0.067 (0.028) [2.343] {0.019}		0.060 (0.028) [2.106] {0.035}
	$R^2$	0.723	0.994	0.686	0.994
	<i>Akaike info criterion</i>	-1.256	-5.116	-1.086	-5.116
	<i>Schwarz criterion</i>	-1.206	-5.153	-1.115	-5.150
	<i>Hannan-Quinn criterion.</i>	-1.237	1.996	0.025	1.997

Dependent variable: renminbi.

Note: () standard err, [] t-stat, {} p-value.

Source: Authors' own elaboration with data from the renminbi.

ANCOVA, analysis of covariance; ANOVA, analysis of variance.

imbalance. However, in the short term, a rise in prices of imported goods has been observed, particularly for intermediate and final products consumed domestically in the United States [Amiti et al., 2019].

The trade war has generated many effects, the most significant of which have been the depreciation of the currencies of China's main trading partners, including the euro, the Japanese yen, the Korean won, and the Australian dollar, to the detriment of the US dollar [Xu and Lien, 2020]. This type of behavior of the currencies and the reaction of the trading partners allowed the renminbi to be quoted in a position of 7:1 against the dollar, which was an unattractive response from the Chinese government [Garrett, 2019].

It seems that, in the short term, the Commercial War has been won by the United States due to its much stronger negotiating position, but above all, because of its relevance for international markets. It is vital for China to enter the American market to establish a commercial position with the rest of the world. Unfortunately, no new negotiating alternatives have been presented, which will lead to China thinking of a longer-term strategy since it has a more fragile economy in the short term than it had 20 years ago [Wharton, 2019].

America may win the trade war (i.e., get some concessions from China) in the short term because its bargaining position is stronger. The Chinese economy looks more fragile today than it has been in the past 20 years, whereas the American economy is very strong. Access to the American economy is more important to China than access to the Chinese economy is to America. China probably has no alternative but to make some concessions to the United States, although these concessions are probably in its long-term interests anyway [Horsley, 2019].

The ongoing debate surrounding these scenarios is complex and extends beyond mere social media exchanges or presidential speeches that may generate threats. It is rooted in the consistent application of long-term economic and trade policies by the United States that have consistently disadvantaged its adversaries. The United States is widely considered the most protectionist country in terms of its commercial policies. So, the thought of a frontal attack between the Chinese and American economies is still far away; American choices are a part of its strategy to control and dominate the dialog on the forum of global economic relations [Garrett, 2019].

In recent years, China has carried out reforms to integrate itself into the world economy (albeit with a departure from the capitalist vision). Noteworthy initiatives from the 1990s include financial reforms, particularly with the creation of the Export–Import Bank of China, whose purpose was to finance technology and equipment, or China’s entry into the WTO at the end of 2001.

Another key moment in the country’s integration into global trade was when its national currency joined the basket of reserve currencies of the IMF in 2015 through the Special Drawing Rights (SDR). In the same year, the Asian Infrastructure Investment Bank (AIIB) was launched. Thus, since Xi Jinping became President of the People’s Republic of China, he has refocused economic strategies, including placing the renminbi in the IMF’s SDR and expanding China’s influence in Africa and Eurasia through the Belt and Road Initiative.

As explained in the first part of this paper, some well-founded arguments support trade restrictions. However, in the United States, its main objective was to safeguard its domestic market from an influx of Chinese products and slow down the expansion of China itself. Thus, President Trump introduced restrictive tariffs on Chinese exports to the United States. The impact of those decisions included the depreciation of the RMB/USD exchange rate, as shown in Models 1–4. The study has revealed that a trade war between the two countries had spillover effects. The imposition of tariffs was followed by the exporter’s currency devaluation, compensating for the decreased competitiveness of exporters’ goods. On the other hand, it increased the prices of imported goods. Thus, China imposes import duties to protect its domestic market (i.e., producers and suppliers).

Thus, the US attempt to protect its internal market by imposing tariffs on imports from China, under the premise of Make America Great Again, serves the purpose of protecting its internal markets. However, it inadvertently favors China’s products, which are cheaper on international markets due to exchange rate adjustments. Thus, the trade war can lead to a currency war, understood as the currency devaluation aimed at gaining a comparative advantage in international trade.

## 5 Conclusion

The research showed that the beginning of the trade war between the United States and China influenced the depreciation of the renminbi due to the several rounds of tariff levy declarations from both countries. The effect of the US declarations on the RMB/USD exchange rate is clearer than the impact of China’s declarations and retaliations, although the estimated models do reveal that they had some impact.

The beginning of the trade war between the two countries saw the renminbi depreciate. However, in the most recent declarations, the opposite effect was noticed, and it appears that the ongoing trade war could potentially benefit China. This could happen if the volume and value of Chinese products traded internationally surpass the negative impact of the US tariffs. Additionally, the depreciation of the renminbi could make Chinese products more price-competitive, thus generating a greater demand for them. This confirms that a trade war and the imposition of tariffs could meet with attempts to *neutralize* (at least partially) price increases resulting from the import tax with a cheaper currency in the exporting country.

It has been observed that competitive devaluation or a currency war (a term used by former IMF director Dominique Strauss-Kahn before the Board of Governors on October 8, 2010) arises from the conflict between emerging and developed countries striving to keep their currency devalued. This strategy allows the most industrialized countries to maintain their competitiveness [Molina, 2014]. Thus, a devaluation of the exchange rate would mean a reduction in export prices and an increase in external demand. However, it would simultaneously increase import prices while reducing domestic demand from third countries.

Future research will aim to verify how the imposed duties translate into inflation. It will allow us to ascertain who pays the price for the decisions made by policymakers. Considering that the United States imports not only final goods but also raw materials, components, and semi-finished goods from China, imposed duties can hit the stability of prices directly and indirectly by increasing prices of products “Made in America.”

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