FDI Inflows into China and Vietnam and the Impact of the US-China Trade War

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FDI Inflows into China and Vietnam and the Impact of the U.S.-China Trade War[*]

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Abstract

The export structures of China and Vietnam have been increasingly similar due to their close geographic proximity and similar competitive advantages in labor-intensive industries. However, recent events such as the U.S.-China trade war and the Covid-19 pandemic have had potential impacts on foreign direct investment (FDI) inflows into both countries. This study examines the FDI patterns in China and Vietnam and analyzes the effect of the U.S.-China trade war on the redirection of FDI inflows from China to Vietnam. Our findings indicate a significant shift in FDI inflows, more than doubling in the value of FDI into Vietnam in 2013, from China to Vietnam starting in 2017. The U.S.-China trade war played a crucial role in driving this redirection of FDI inflows in the short term.

Keywords: U.S.-China trade war, Vietnam, foreign direct investment, tariff.

JEL Codes: F14, F21.

1 Introduction

In the protection of domestic products and workers from trade activities, the United States announced a significant increase in tariff rates for a wide range of products in 2018. China, being the primary target of this protectionist measure, responded by retaliating immediately against the actions of the United States. The trade war between the two nations persisted from 2018 to 2019 until a "truce" in the form of the Phase One Agreement was signed on January 15, 2020. While previous research extensively discussed the consequences engendered on both sides (Amiti, Redding, & Weinstein, 2019; Chor & Li, 2021; Flaaen & Pierce, 2019), little attention has been given to the impact on neighboring countries of China, such as those in Southeast Asia who possess similar comparative advantages in labor-intensive industries, relatively cheap labor cost, and close geographic proximity to China. The global implications of the U.S.-China trade war remain an open question, and in particular, whether those bystander countries in close proximity to China have a potential gain from this trade war worth exploring.

China has experienced substantial export growth since its integration into the global economy in the 1990s, leveraging its labor-intensive endowment and manufacturing specialization to disseminate the "Made in China" label across the world (Hanson & Robertson, 2008). However, the increasing prominence of several Southeast Asian countries in export growth and their ability to substitute Chinese-made products cannot be overlooked. Intuitively, the trade war's uncertainty and supply chain costs, coupled with other ensuing global shocks like the Covid-19 pandemic, give grounds for foreign investors to shift their businesses from China to Southeast Asian countries, such as Vietnam, Thailand, and Indonesia.

Among all Southeast Asian countries, Vietnam shares the greatest similarity in export structure with China. Using bilateral trade data from the United Nations Comtrade Database, we follow De Benedictis and Tajoli (2007) and compute the Pearson's coefficient of correlation between the export compositions of China and each ASEAN country.[1] Correlations of the six member countries with the highest export similarities with China are plotted in Figure 1. It is clear that albeit Malaysia, the Philippines, Singapore, and Thailand all show an overall upward trend in their export similarities with China in recent years after a reduction from 2008 to 2017, Vietnam stands out as the most remarkably similar one with a consistently increasing trend since 2009. Notably, it has maintained a correlation coefficient of over 0.8 since 2018. This

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[1]In our case, the Pearson's coefficient of correlation is calculated as: $r_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y} = \frac{\sum_p (x_p - \frac{\sum_p x_p}{n})(y_p - \frac{\sum_p y_p}{n})}{\sigma_x \sigma_y}$, where x and y are the vectors of export shares $x \equiv [x_1, ..., x_n]$ and $y \equiv [y_1, ..., y_n]$ for products $p \in \{1, ..., n\}$. A higher correlation coefficient indicates a greater similarity in the export composition of that particular ASEAN country and China.

Figure 1: Export similarity between China and several ASEAN countries
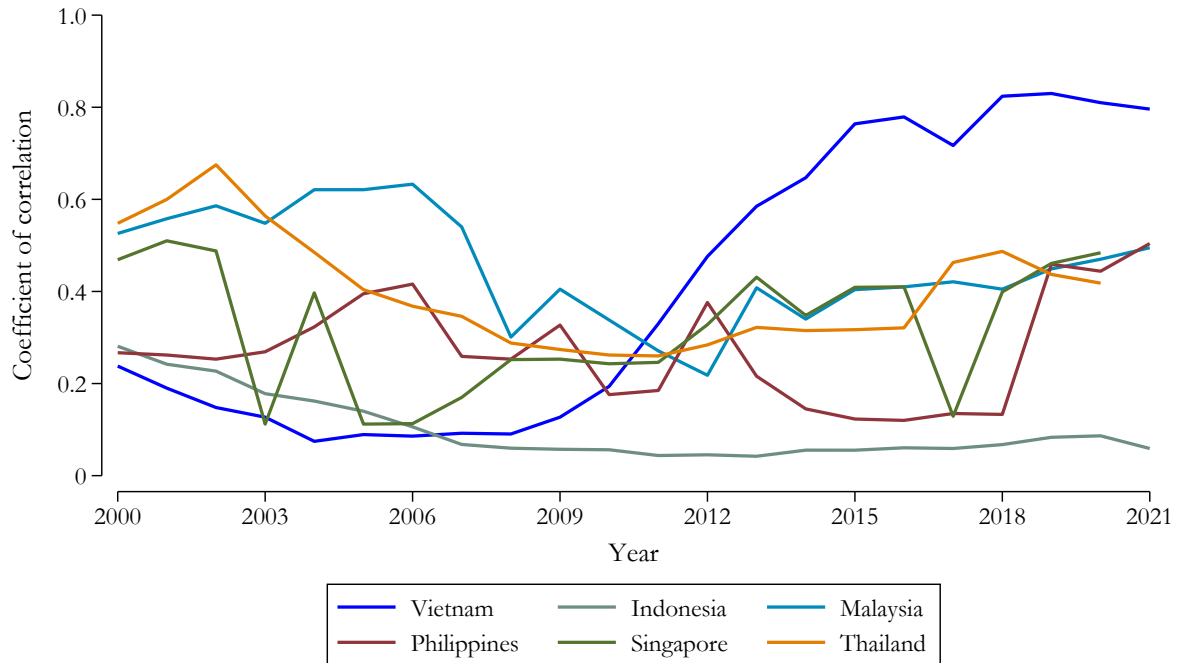
Source: Authors' calculation from the United Nations Comtrade Database. The figure presents the correlation coefficient of the export structure between China and several ASEAN countries, including Vietnam, Indonesia, Malaysia, Philippines, Singapore, and Thailand. The similarity (correlation) should range from 0 to 1, with the higher value indicating that the two countries have a higher similarity and 1 indicating identical export shares for every product in the export compositions of the two countries.

provides us with strong motivation to rivet on Vietnam, the most potential candidate to be the new favored destination for investment.

As such, this research aims to answer two questions. Firstly, we explore whether there is a significant redirection in foreign direct investment from China to Vietnam from 2013 to 2022. Secondly, we investigate if the trade war between the U.S. and China - the two largest trading partners of Vietnam - from 2018 to 2019 has led to a shift in FDI from China to Vietnam due to the uncertainty brought by the trade war.

Using the project-level monthly data from the Orbis Crossborder Investment Database, we first employ an event study to examine the trend in FDI inflows into China and Vietnam. We then merge the FDI data with detailed information on tariffs that the U.S. and China imposed on each other from 2018 to 2022 from P. D. Fajgelbaum, Goldberg, Kennedy, and Khandelwal (2020) and Cavallo, Gopinath, Neiman, and Tang (2021) and use the difference-in-differences method to test whether the trade war has induced a shift in FDI from China to Vietnam and quantify the effect.

We find that there is a significant shift in FDI inflows from China to Vietnam from 2017 to 2022. From 2017, the total amount of FDI inflows into Vietnam, relative to China, has

increased by more than twofold compared to the gap in 2013. Additionally, the rise in the tariffs imposed on Chinese goods by the U.S. between February 2018 and October 2019 significantly reduced FDI inflows into China. A substantial portion of this FDI was redirected to Vietnam as a consequence of the tariff escalation by the U.S.

When extending the sample until December 2022, we don't find any significant effect of the U.S.-China trade war on the FDI inflows into China and the shift in the FDI inflows from China to Vietnam. This change could be attributed to factors such as foreign firms having enough time to adjust their strategies in response to the trade war and the uncertainty from the Russia-Ukraine war and the looming shadow of inflation. However, we find evidence of a positive effect of the Covid-19 pandemic on the redirection of FDI inflows from China to Vietnam.

Our work is closely related to the literature studying the determinants of FDI. Previous studies, such as Albuquerque, Loayza, and Servén (2005) and Alesina and Dollar (2000), have highlighted the role of factors like global capital market integration and trade liberalization in driving FDI inflows. Busse and Hefeker (2007) and Julio and Yook (2016) emphasize the influence of political risk and institutional quality on foreign investment. Additionally, McGrattan and Waddle (2020) investigate the impact of tightening capital regulations and higher trade costs using the case of Brexit. Consequently, we complement work in this field and show that shocks from trade tension could impose a transitory hit on the amount of foreign direct investment and redirect the foreign investment's destinations. We also shed some light on the role of the Covid-19 pandemic as a driver of FDI inflows in Vietnam and China.

We also contribute to the literature on the consequences of the U.S.-China trade war by illuminating its impact on the foreign direct investment to Vietnam and China among targeted products. Previous research has mainly focused on the welfare loss, employment changes, and consumption effects abide by the U.S. and China (Autor, Beck, Dorn, & Hanson, 2023; Chor & Li, 2021; P. D. Fajgelbaum et al., 2020; He, Mau, & Xu, 2021; Waugh, 2019). However, there has been relatively less attention given to understanding the gains and losses experienced by other nations. Our research shares some common ground with the work of P. Fajgelbaum, Goldberg, Kennedy, Khandelwal, and Taglioni (2021), which investigates global trade reallocations in response to the U.S.-China trade war and finds that countries increased exports to the rest of the world while decreasing exports to China. Our study distinguishes itself by narrowing the focus to Vietnam and China and examining the differentiated impact on FDI rather than the reshuffled trade flows.

The rest of the paper is structured as follows. Section 2 introduces the data sources and summary statistics. Section 3 conducts an event study exploring the trend in FDI inflows to Vietnam relative to China from 2013 to 2022. Section 4 zooms in on the effect of the U.S.-

China trade war by testing the parallel trend assumption and investigating the difference in FDI between Vietnam and China among the products targeted by the increased tariffs before and after the trade war. Section 5 concludes.

2 Data and summary statistics

This section describes the data and presents a summary of statistics on foreign direct investment in China and Vietnam and the tariff rates imposed by China and the U.S. during the trade war.

2.1 Data

We construct a panel of source-destination-product-month level FDI data from 2013 to 2022 using the project-level foreign direct investment data from the Orbis Crossborder Investment Database, available from Bureau van Dijk (BvD). BvD collects data from a comprehensive range of sources, including national business registries, company websites, telephone research, and newswires. These data are assembled into standardized formats, which include information on each FDI project from a source country to a destination country, with the invested product classified at the six-digit NAICS level (version 2012). We clean the duplicated observations by dropping redundant FDI projects with identical project headlines, project numbers, project announce dates, source cities, destination cities, investment values, and NAICS-6 digit codes. We also omit the observations with missing information on FDI values. Fons-Rosen, Kalemli-Ozcan, Sørensen, Villegas-Sanchez, and Volosovych (2021) discuss the strengths and weaknesses of the Orbis database and study the relationship between foreign investment and the productivity of acquired firms. Our research focuses on studying the FDI from all available source countries to two destinations of interest, China and Vietnam.

The monthly-level tariff data are taken from P. D. Fajgelbaum et al. (2020) and Cavallo et al. (2021). P. D. Fajgelbaum et al. (2020) compiles the U.S. import tariff rates and China's tariffs from 2013 to April 2019 on a monthly level and at the eight-digit Harmonized System (HS) level. We aggregate tariff data from P. D. Fajgelbaum et al. (2020) by taking the simple average of all HS-8 digit products within each HS-6 digit category to combine it with the dataset in Cavallo et al. (2021) at the HS-6 digit level, which contains the established tariff rates from May 2019 until March 2020. We assume the U.S. and China tariff rates have not been adjusted further from March 2020 to the end of 2022, considering the Phase One agreement was signed by the two countries in January 2020, which marks an official halt on the trade war (P. Fajgelbaum & Khandelwal, 2021).

We then merge the FDI data with the tariff data by transforming the foreign direct

investment from the NAICS-6 digit level to the HS-6 digit level. When performing a concordance of the NAICS-6 digit classification to the HS-6 digit classification, multiple NAICS-6 digit codes correspond to the same HS-6 digit code. The reverse also holds true in the concordance, i.e., multiple HS-6 digit codes correspond to the same NAICS-6 digit. Therefore, we compute a simple average FDI inflow at the source-destination-HS-6 digit-month level, as follows:

$$FDI_{sdgt} = \sum_{n \in g} \frac{1}{N} \times FDI_{sdnt}, \tag{2.1.1}$$

where s indicates the source country of the FDI inflow, d refers to the destination country of the FDI inflow, g is the HS-6 digit product, t refers to month, n is the NAICS-6 digit industry, and N is the total number of HS-6 digit codes being merged to 1 NAICS-6 digit code.

Other data on Gross Domestic Product (GDP), World Trade Organization member status, and member status of a free trade agreement are sourced from the CEPII Gravity database (Conte, Cotterlaz, & Mayer, 2022).

2.2 Summary statistics

Table 1 presents the summary statistics of foreign direct investment (FDI) projects and their values in China and Vietnam.

The FDI projects and foreign investment value in China have fluctuated over the years. The first decline within our sample period occurred in 2015 and 2016, which can be attributed to several domestic and global factors. The global trade volume in 2015 was the lowest since 2010, with a slight rebound in 2016, as reported by UNCTAD and WTO.[2] Additionally, the economic slowdown in China and uncertainties surrounding Brexit during the same period likely contributed to decreased investment opportunities and reduced investor confidence. The total value of foreign investment in China experienced rapid growth after 2016. However, the peak of $118 billion USD in 2018 was followed by a 40% decline in the subsequent year, reflecting the volatile global market conditions during the 2018 U.S.-China trade war. Henceforth, FDI in China has remained moderate amid ongoing global turbulence, such as the Covid-19 pandemic and events like the Russia-Ukraine war.

The trend in the number of FDI projects in Vietnam appears to align with various global events from 2013 to 2017 that led to the dynamic in investment. However, an interesting observation from Table 1 is that the number of FDI projects in Vietnam increased during the

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[2]According to UNCTAD and WTO estimates, global merchandise exports declined by 13% from 2014 to 2015 and services exports declined by 6%. Although merchandise trade increased slightly in volume terms in 2016, it declined in value terms due to a fall in export and import prices. The sources are available from: https://unctad.org/news/global-trade-slows-down-five-year-low-2015 and https://www.wto.org/english/res_e/statis_e/wts2017_e/wto_chapter_03_e.pdf.

Table 1: Number of FDI Projects and Total FDI Value into China and Vietnam

| Year	China		Vietnam	
	# Projects	FDI (mil US$)	# Projects	FDI (mil US$)
2013	1,078	46,840.66	132	3,563.49
2014	1,162	60,799.68	196	16,259.81
2015	991	40,247.22	210	20,416.82
2016	731	51,646.39	195	19,324.00
2017	1,080	83,087.30	216	18,458.26
2018	1,777	118,842.06	247	32,783.46
2019	2,285	70,826.86	321	27,706.99
2020	1,261	50,948.95	112	9,641.88
2021	2,364	53,135.90	94	45,188.44
2022	1,763	29,469.40	111	15,074.35

Source: Authors' calculation based on the Orbis Crossborder Investment Database.

U.S.-China trade war from 2018 to 2019. During the same period, the FDI value in Vietnam exhibited a more considerably increase in 2018 compared to China and only experienced a temperate drop in 2019. The increasing trend of the foreign investment amount in Vietnam in 2021 was also more robust than that in China, possibly due to China's consistently strict border control measures, which may have undermined foreign investor confidence and redirected investments to Vietnam. In 2022, Vietnam was similarly affected by the influence of global events, resulting in a decrease in investment.

Figure 2 illustrates the FDI inflows into China and Vietnam, using the value in 2013 as the base. Remarkably, FDI inflows into Vietnam experienced a significant increase compared to the initial level in 2013. In accordance with the observations from Table 1, the relative FDI inflows into Vietnam escalated at a faster pace in 2018 and only slightly declined in 2019 compared to China. Despite the challenges posed by the Covid-19 pandemic, Vietnam has continued to attract foreign investment opportunities in the second year following the outbreak.
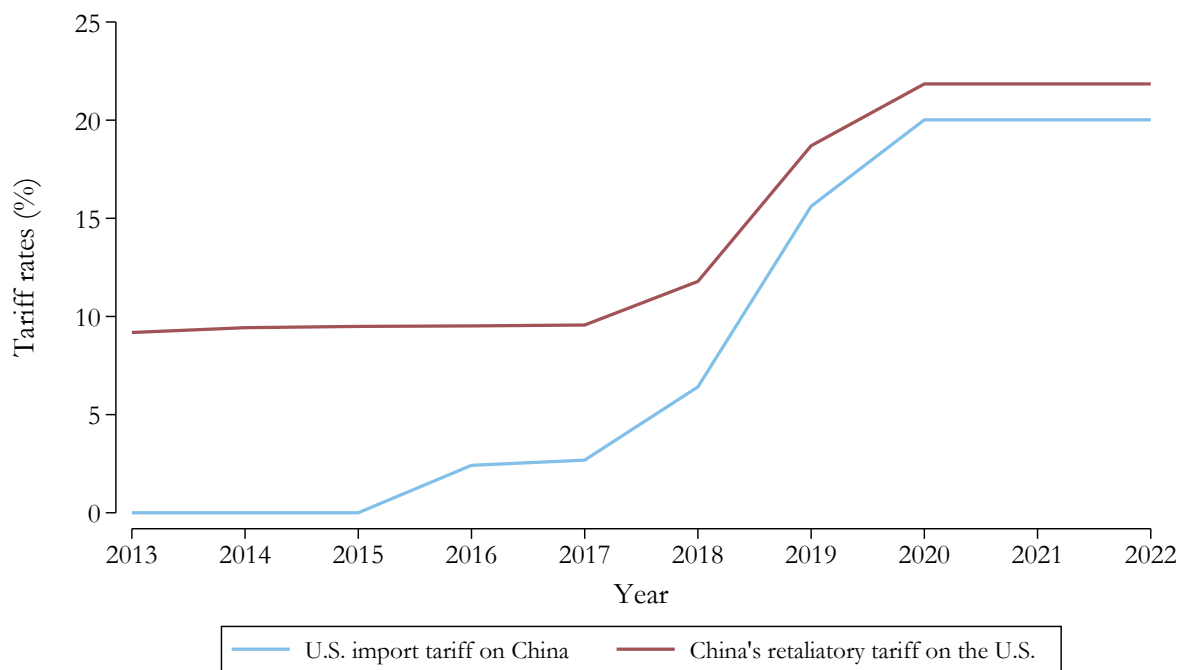
Table 2 displays the timeline of the U.S.-China trade war from 2018 to 2019, while Figure 3 provides the unweighted average tariff rates for the specific product categories targeted by each type of tariff during the trade war. In August 2017, the U.S. started conducting an investigation of China's unfair trade practices involving the forced transfer of American technology and intellectual property. The initial adjustments in import tariffs by the U.S. began in February 2018, with a focus on washing machines and solar panels. Following the release of the investigation results in March 2018, President Trump announced that the United States Trade Representative (USTR) would propose a list of products and potential tariff increases in response to China's practices, which were deemed unreasonable,

Figure 2: FDI inflows into China and Vietnam
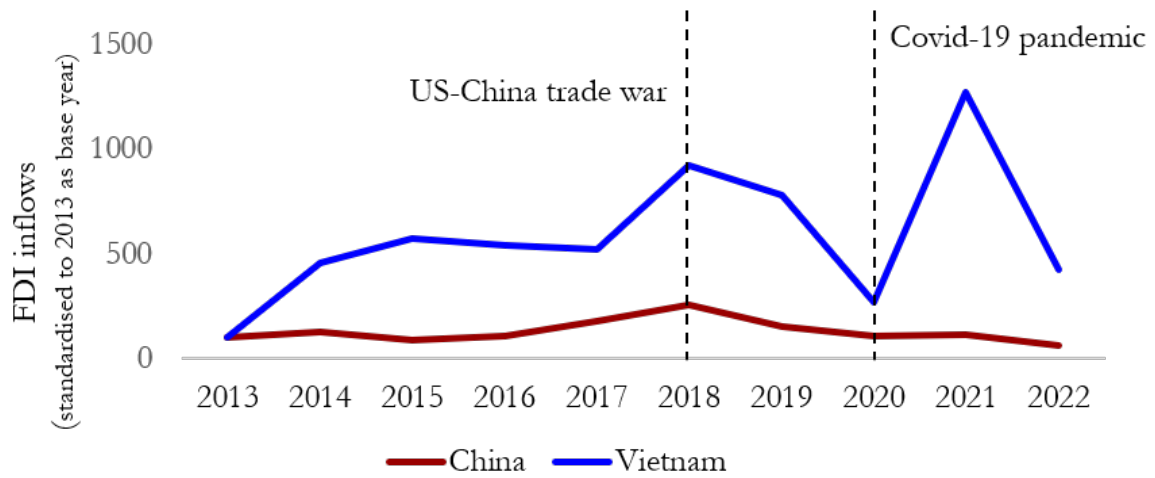
Figure 3: U.S. import tariff on China and China's retaliatory tariff on U.S. exports

discriminatory, and detrimental to U.S. commerce. Multiple rounds of tariff increases and retaliatory measures by China were then carried out between July 2018 and September 2019, as depicted in Figure 3. In December 2019, both countries cancelled the Phase Five tariffs in anticipation of the Phase One agreement.

Table 2: Timeline of the U.S.-China trade war from 2018 to 2019

Panel A: Actions and tariffs on U.S. imports enacted by the United States

Key event	Month enacted
Investigation on China: Technology transfer, intellectual property, and innovation	Aug, 2017
Washing machines and solar panels (Applied to all import partners)	Feb, 2018
Aluminum and steel (Applied to various import partners)	Mar, 2018
Release of investigation results	Mar, 2018
Announced tariffs on Chinese goods	Apr, 2018
Phase 1 applied on China	Jul, 2018
Phase 2 applied on China	Aug, 2018
Phase 3 applied on China (largest set of tariffs)	Sept, 2018
Phase 3 tariffs increased	May, 2019
Phase 4 tariffs applied on China	Sept, 2019
Phase 5 (Cancelled)	Dec, 2019

Panel B: Retaliatory tariffs on U.S. exports enacted by China

Key event	Month enacted
Aluminum waste, scrap, pork and agricultural products	Apr, 2018
Retaliation on Phase 1	Jul, 2018
Retaliation on Phase 2	Aug, 2018
Retaliation on Phase 3	Sept, 2018
Retaliation on Phase 3 with higher tariff rates	May, 2019
Retaliation on Phase 4	Sept, 2019
Retaliation on Phase 5 (Cancelled)	Dec, 2019

Notes: Authors' summary based on Flaaen and Pierce (2019), P. Fajgelbaum and Khandelwal (2021), and available sources from the United States Trade Representative (USTR). The U.S. government initiated the investigation on China regarding technology transfer, intellectual property, and innovation on August 2017. A public hearing was held by USTR on October 10, 2017. The investigation results, released on March 2018, accused China for its unfair trade practices on intellectual property and technology transfer, which were then followed by several tariff-increase waves on China.

3 Trends in FDI inflows to Vietnam relative to China since 2013

In this section, we employ an event study approach to visualize the trends in FDI inflows to Vietnam relative to China from 2013 to 2022, using the following specification:

$$
log(FDI_{sdy}) = \alpha_0 + \alpha_1 log(GDP_{sy}) + \alpha_2 WTO_{sdy} + \alpha_3 FTA_{sdy} +
$$
$$
\sum_{y=2013}^{2022} \beta_y I(Year = y) \times Vietnam + \alpha_{sd} + \alpha_y + \varepsilon_{sdy} \tag{3.0.1}
$$

The dependent variable, denoted as $log(FDI_{sdy})$, represents the logarithm of FDI inflows from source country s to destination country d in year y. The variable *Vietnam* is a dummy variable that takes the value of 1 when the destination of FDI inflows in Vietnam. The control variables include the logarithm of source country s's GDP in year y ($log(GDP_{sy})$), a dummy variable that equals 1 when both source country s and destination country d are WTO members

in year y (WTO_{sdy}), and a dummy variable that equals 1 when both source country s and destination country d are members of the same free trade agreement (FTA) in year y (FTA_{sdy}). Additionally, we incorporate source-destination fixed effects (α_{sd}) and year fixed effects (α_y). These fixed effects capture shocks at the macro level and the bilateral source-destination characteristics that might affect FDI inflows, such as distance, shared border, and cultural and historical ties. Thus, the coefficient β_y indicates the extent to which the gap in the FDI inflows into China and Vietnam has changed in year y compared to the gap in the base year 2013.

We present the percentage values of β_y in Figure 4, using 2013 as the base year. The results demonstrate that the gap in FDI inflows into China and Vietnam has reduced by more than half since 2017 compared to the gap in 2013 after controlling for characteristics at various levels.

Figure 4: Event Study of FDI Inflows into Vietnam
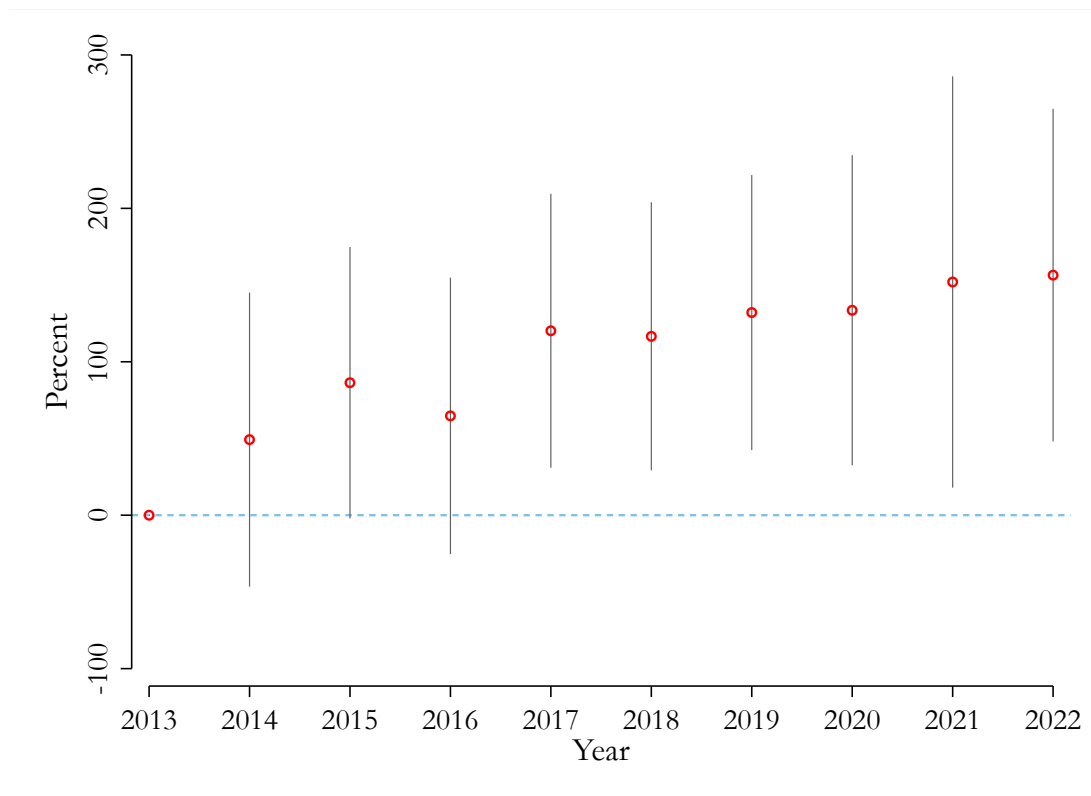
Notes: Figure plots the coefficients on event time dummies for Vietnam relative to China. We include the source country's GDP, a dummy equal one if the country pair is engaged in a regional trade agreement, and a dummy equal one if the country pair is members of WTO as our control variables. The regression also includes time fixed effects and source-destination fixed effects. Error bars show 95% confidence intervals. The sample period is from 2013 to 2022.

While this figure provides initial evidence of the increasing preference of foreign investors for Vietnam over China, it is important to note that this outcome cannot be solely attributed to the U.S.-China trade war between 2018 and 2019. In particular, the trade tension

between the U.S. and China started in August 2017, with USTR's announcement on investigating China's acts, policies, and practices surrounding technology transfer, intellectual property, and innovation. Additionally, several ongoing factors, including Vietnam's participation in FTAs such as CPTPP, which was named TPP in 2017, as well as global events like the Covid-19 pandemic and the Russia-Ukraine war, could have influenced these trends.[3] Acknowledging this finding, we examine the role of the U.S.-China trade war in contributing to this shift in FDI in the next section.

4   Effect of the U.S.-China trade war

This section disentangles the effect of the U.S.-China trade war on the FDI inflows to China and Vietnam. We start by conducting a parallel trend assumptions test to check if no significant shift in FDI occurred before the accusation of the U.S. on China (February 2018). We then use a difference-in-differences (DiD) specification to examine the magnitude of the change in foreign direct investment to Vietnam relative to China among products targeted by the U.S. import tariffs. Our results indicate that there is a shift in the FDI from China to Vietnam with the inception of the trade war.

4.1   The parallel trend assumption

To employ the difference-in-differences method to investigate the potential impact induced by the trade war between U.S. and China, foreign investment into China and Vietnam must be shown to have a parallel trend prior to the trade war.

In Equation 4.1.1, we focus on whether there are differences in the foreign investment into China and Vietnam for products targeted by the U.S. import tariffs. Since we view February 2018 as the first confrontation between the U.S. and China in the trade war, we select the sample to start from a year before February 2018 to a year after. As such, j in Equation 4.1.1 ranges from -12 to 12. We interact this event time dummy with *Vietnam* (a dummy equal to one when the destination country is Vietnam) and $target_{gt}^{U.S.}$ (a dummy equal to one if there was an increase in the U.S. import tariff imposed on product g during the U.S.-China trade war). We include the FDI source country's GDP (GDP_{sy}) and a dummy that equals one if both s and d are members of the same free trade agreement (FTA) in year y (FTA_{sdy}). In consideration of the potential impact of China's retaliatory tariffs, we focus on the products influenced by China's

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[3]The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), also known as TPP11, is a free trade agreement among 11 countries, including Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam. Originally known as the Trans-Pacific Partnership (TPP), the agreement included the U.S. as one of its initial negotiators. However, following the U.S. withdrawal from the negotiations in January 2017, the agreement was renamed as the CPTPP.

retaliatory tariffs using a similar specification in Equation 4.1.2.

$$log(FDI_{sdgt}) = \alpha_0 + \sum_{j=-12}^{12} \alpha_{1t} I(Event_{gt} = j) \times target_{gt}^{U.S.} \times Vietnam +$$
$$\alpha_2 log(GDP_{sy}) + \alpha_3 FTA_{sdy} + \alpha_{sd} + \alpha_{gd} + \alpha_t + \varepsilon_{sdy}$$
(4.1.1)

$$log(FDI_{sdgt}) = \alpha_0 + \sum_{j=-12}^{12} \alpha_{1t} I(Event_{gt} = j) \times target_{gt}^{China} \times Vietnam +$$
$$\alpha_2 log(GDP_{sy}) + \alpha_3 FTA_{sdy} + \alpha_{sd} + \alpha_{gd} + \alpha_t + \varepsilon_{sdy}$$
(4.1.2)

Panel A and B in Figure 5 plot the results of the event time dummies for Vietnam relative to China for products targeted by U.S. tariffs and China's tariffs, respectively.

Figure 5: Tests for parallel trend assumptions: 2017:2-2019:2
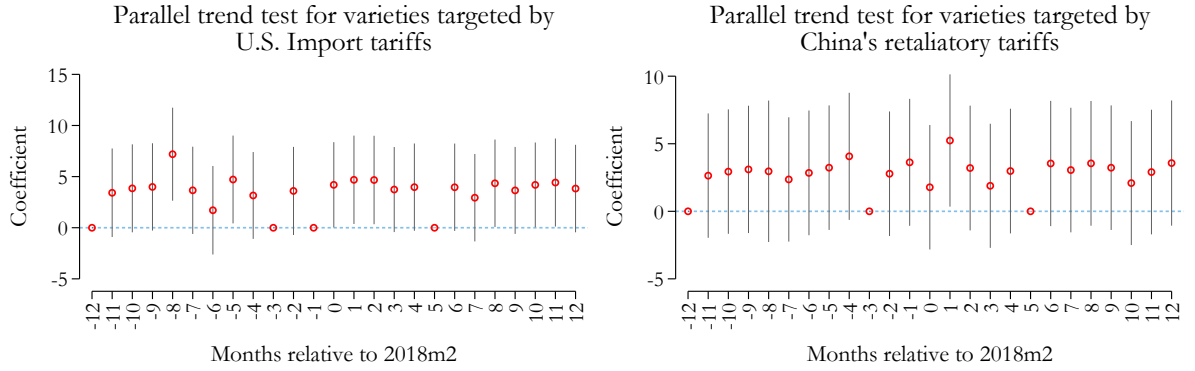
Notes: Panel A plots event time dummies for Vietnam relative to China in products targeted by the U.S. import tariffs. Panel B plots event time dummies for Vietnam relative to China in products targeted by China's retaliatory tariffs. We include the source country's market size and a dummy equal one if the country pair is engaged in a regional trade agreement as our control variables. We also include source-destination, product-destination, and time fixed effects. Error bars show 95% confidence intervals. The sample period is from 2017:2 to 2019:2.

Notably, a positive and statistically significant rise in foreign direct investment to Vietnam relative to China was observed immediately in February, March and April 2018 for products targeted by the U.S. import tariffs. However, we note that the parallel trend assumption for the same varieties is not valid for June and September 2017, as shown by Panel A. We conjecture that the shift in FDI inflows from China to Vietnam in June 2017 arose out of China's credit rating downgrade for the first time since 1989 by Moody in May 2017, and the shift in September 2017 was a result of the U.S.'s investigation on China's unfair trade practices started in August 2017. We acknowledge this issue of the parallel trend assumption and interpret the results with caution.

On the other hand, our results in Panel B reveal that the parallel trend assumption is valid among the products targeted by China's retaliatory tariffs. We also observed a shift in FDI inflows from China to Vietnam for the same products in March 2018. In our Appendix Figure

, we present the results by including products affected by both tariffs simultaneously. The results remain the same.

4.2 Econometrics specification and results

In this section, we explore the effect of the U.S.-China trade war on the foreign direct investment received by Vietnam relative to China using a difference-in-differences (DiD) specification in this section.

We utilize our panel dataset to calculate the tariffs imposed by the U.S. and China (T_{gt} for the U.S. and China), as described in Equation 4.2.1. We assign the statutory tariff rates for the targeted products identified at the HS-6 digit level from the moment those tariffs become effective ($T_{gt}^{Statutory,i}$). For products that remain unaffected or where the tariffs have not yet been implemented, we assign T_{gt} the value of the applied tariff rates ($T_{gt}^{Applied,i}$). In Equation 4.2.2, we calculate $\Delta T_{gt}^{U.S.}$ as the changes in $T_{gt}^{U.S.}$ compared to the average U.S. tariff rates from February 2017 to January 2018. Similarly, we compute ΔT_{gt}^{China} as the changes in T_{gt}^{China} compared to the average retaliatory tariff rates during the same period. Therefore, $\Delta T_{gt}^{U.S.}$ and ΔT_{gt}^{China} capture two folds of differences: one difference regarding the time before and after the trade war, one difference in the intensity (magnitude) of the increased tariff on targeted products relative to non-targeted products.

$$T_{gt}^i = \begin{cases} T_{gt}^{Statutory,i} & \text{if } target_{gt} = 1 \text{ and } t \geq Tariff\ effective\ date \\ T_{gt}^{Applied,i} & \text{otherwise} \end{cases} \quad (4.2.1)$$

where $i \in \{U.S., China\}$.

We construct our outcome variable as shown by Equation 4.2.3, where we utilize the average logged foreign investment value from February 2017 to January 2018 as the general level of FDI before the trade war.[4] s indicates the source country, d indicates the destination country (Vietnam and China), g identifies the product at the HS6 level, and t denotes the month that is on or after February 2018. We then test the impact of the trade war on FDI using specification 4.2.2 with various different samples to examine the effect in the middle and long terms. All the regressions control for source-destination (α_{sd}), HS-6 product-destination (α_{gd}), source-time (α_{st}), and time (α_t) fixed effects, with robust standard errors used.

$$\Delta FDI_{sdgt} = \alpha_0 + \alpha_{1t}\Delta T_{gt}^{U.S.} \times Vietnam + \alpha_{2t}\Delta T_{gt}^{China} \times Vietnam +$$
$$\alpha_{3t}\Delta T_{gt}^{U.S.} + \alpha_{4t}\Delta T_{gt}^{China} + \alpha_{sd} + \alpha_{gd} + \alpha_{st} + \alpha_t + \varepsilon_{sdy} \quad (4.2.2)$$

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[4]We use the average FDI from February 2017 to January 2018 to capture as many HS-6 digit products as possible.

where

$$\Delta FDI_{sdgt} = log(FDI_{sdgt}) - \overline{log(FDI_{sdg,Feb17-Jan18})},$$

$$\Delta T_{gt}^{U.S.} = log(1 + T_{gt}^{U.S.}) - log(1 + \overline{T_{g,Feb17-Jan18}^{U.S.}}),$$

$$\Delta T_{gt}^{China} = log(1 + T_{gt}^{China}) - log(1 + \overline{T_{g,Feb17-Jan18}^{China}}), \tag{4.2.3}$$
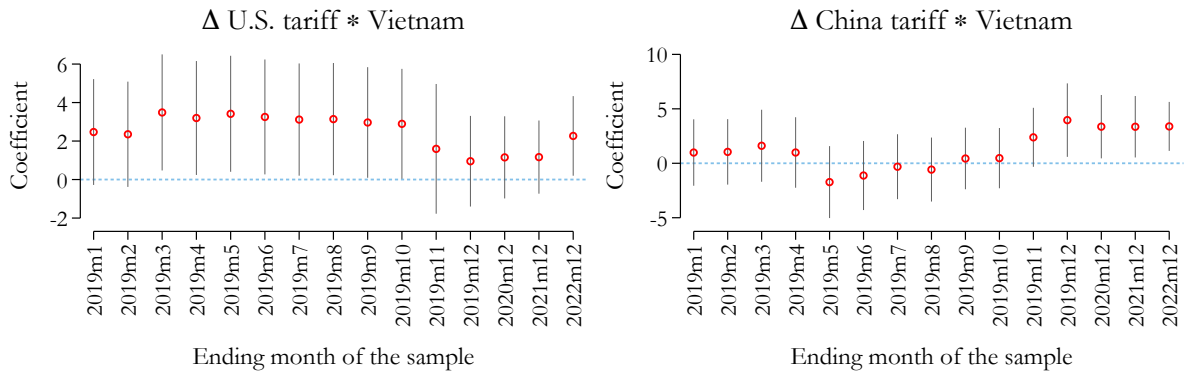
$$t \geq February \ 2018.$$

Results of the regressions in Equation 4.2.2 are reported in Figures 6 and 7.

Figure 6: Impact of U.S.-China trade war on FDI inflows to China
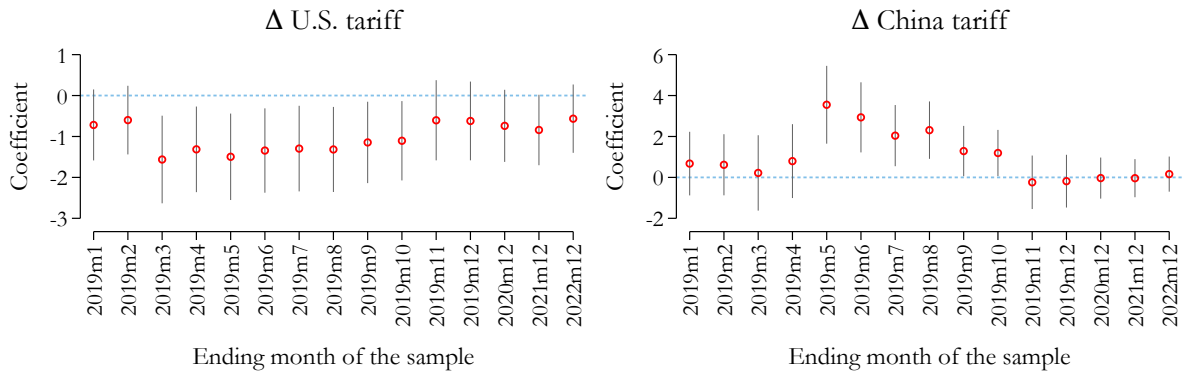
Notes: Panels A and B plot the estimated coefficients on $\Delta T_{gt}^{U.S.}$ and ΔT_{gt}^{China} in Equation 4.2.2 ($\hat{\alpha}_{3t}$ and $\hat{\alpha}_{4t}$), respectively, for different samples starting from February 2018. The x-axis shows the last month of each sample. All regressions control for source-destination, HS-6 product-destination, source-time, and time fixed effects. Error bars show 95% confidence intervals.

Figure 7: Impact of U.S.-China trade war on the shift in FDI from China to Vietnam

Notes: Panels A and B plot the estimated coefficients on $\Delta T_{gt}^{U.S.} \times Vietnam$ and $\Delta T_{gt}^{China} \times Vietnam$ in Equation 4.2.2 ($\hat{\alpha}_{1t}$ and $\hat{\alpha}_{2t}$), respectively, for different samples starting from February 2018. The x-axis shows the last month of each sample. All regressions control for source-destination, HS-6 product-destination, source-time, and time fixed effects. Error bars show 95% confidence intervals.

In Panel A of Figure 6, the negative and statistically significant coefficient on $\Delta U.S. \ tariff$ indicates an overall reduction in FDI into China as a consequence of the increase in the tariffs on Chinese products imposed by the U.S. Specifically, a one percentage point increase in U.S. import tariffs compared to the average monthly level during 12 months before February 2018

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led to about 0.565% to 1.563% decline in FDI into China. This amount of FDI was redirected to Vietnam as shown by a significantly positive estimated coefficient on $\Delta T_{gt}^{U.S.} \times Vietnam$ in Panel A of Figure 7, with magnitudes being more than double the magnitudes of the coefficient on $\Delta U.S.\ tariff$. However, the impact is statistically significant for samples ending between March 2019 to October 2019.

The regression results in Panel A of both Figures 6 and 7 for the samples ending after October 2019 do not yield significant findings. This lack of significance just one month after the last wave of tariff increases in September 2019 implies that the effect of the increase in U.S. tariff on FDI inflows to China and the FDI redirection may have been more pronounced in the short term. As the trade war unfolded and persisted over time, foreign firms may have adapted to the trade tensions and are able to adjust their strategies and supply chains to mitigate the risk and uncertainty. Additionally, it can also be attributed to global shocks and other factors that may have buffeted the redirection of FDI inflows from China to Vietnam such as the uncertainty arising from the Covid-19 pandemic. Also, we could not ignore the grave shock posed by the Russia-Ukraine war. This geopolitical conflict may have diverted FDI flows away from both China and Vietnam, making it difficult to isolate the specific impact of the U.S.-China trade war on FDI inflows.

By contrast, the coefficients on $\Delta China\ tariff$ are positive and statistically significant in samples ending between May 2019 and October 2019 in Panel B of Figure 6. This result is intuitive, as China's retaliatory tariff is imposed on the products imported from the U.S. Thus, it is not directly related to foreign investors' decisions to initiate a project in China. The significant results revealed in Panel B could partly capture the impact of other factors not captured by our specification.

Additionally, the coefficients on $\Delta China\ tariff \times Vietnam$ in Panel B of Figure 7 are statistically insignificant in samples before December 2019, which aligns with our expectation that China's retaliatory tariffs did not have a discernible effect on foreign investment in China and Vietnam. However, the estimation results for $\Delta China\ tariff \times Vietnam$ are larger and more statistically significant than the coefficients on $\Delta China\ tariff$ in samples ending after December 2019, implying that a higher amount of FDI was shifted from China to Vietnam. One possible explanation for this amplified coefficient is that it partially captures the influence of the Covid-19 pandemic. During this period, China's stringent border control measures discouraged foreign investors from investing in China, while Vietnam maintained a relatively open border.

5 Conclusion

Our study contributes empirical evidence to the growing attractiveness of Vietnam as a foreign investment destination relative to China, shedding light on the role of the U.S.-China

trade war in driving this trend in the short term. We observed a substantial reduction in the gap in foreign direct investment (FDI) inflows into China and Vietnam starting in 2017.

Employing a difference-in-differences specification, we draw several key conclusions. First, when examining the sample period from February 2018 to October 2019, we find that the increased import tariff rates imposed by the U.S. on China had a significantly negative impact on FDI inflows into China, reducing it by at most 1.563% compared to the pre-trade war period. However, compared to China, the rise in the U.S. tariffs increased the FDI inflows into Vietnam due to the shift in FDI inflows from China to Vietnam. On the other hand, we found a positive effect of the increase in import tariff rates imposed by China on the U.S. when examining the period from February 2018 to October 2019.

By extending the sample period to the end of 2022, we conclude that the effect of the U.S.-China trade war on FDI inflows into China and the relocation of FDI inflows from China to Vietnam is short-term. However, we document some signals of a positive effect of the Covid-19 pandemic on the shift in FDI from China to Vietnam. These findings underscore the significance of trade tension and shocks, such as trade wars and global crises, in reshaping investment preferences and destinations.

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A Appendix

A.1 Parallel trend assumption

$$
\begin{aligned}
log(FDI_{sdgt}) = \alpha_0 + \sum_{j=-10}^{12} \alpha_{1t} I(Event_{gt} = j) \times target_{gt}^{U.S.} \times Vietnam + \\
\sum_{j=-10}^{12} \alpha_{1t} I(Event_{gt} = j) \times target_{gt}^{China} \times Vietnam + \\
\alpha_2 log(GDP_{st}) + \alpha_3 FTA_{sdt} + \alpha_{sd} + \alpha_{gd} + \alpha_t + \varepsilon_{sdy}
\end{aligned}
\tag{1.1.1}
$$

Figure A.1: Tests for parallel trend assumptions: 2017:2-2019:2
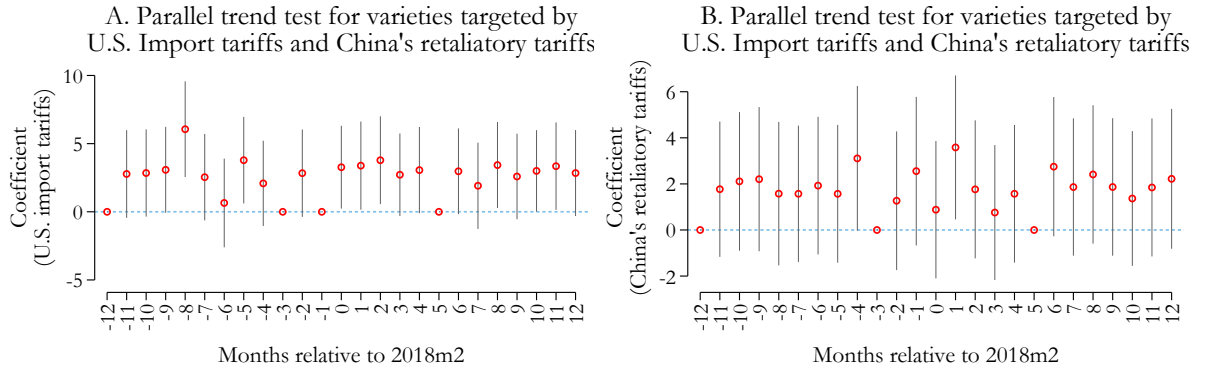
Notes: We simultaneously include products targeted by the U.S. tariffs and China's retaliatory tariffs. Panel A plots the coefficients on event time dummies for Vietnam relative to China in products targeted by the U.S. tariffs. Panel B plots the coefficients on event time dummies for Vietnam relative to China in products targeted by China's retaliatory tariffs. We controlled for the source country's GDP and a dummy equal 1 if both source and destination are members of the same free trade agreement. We also include source-destination, product-destination, and time fixed effects. Error bars show 95% confidence intervals. The sample period is from 2017:2 to 2019:2.