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

Hang Banh [*]   Litianqi Fan [†]   Xuyao Zhang [‡]

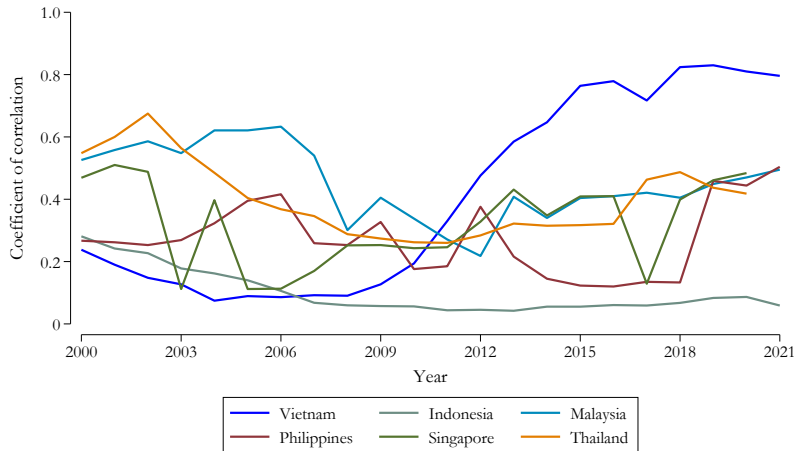Asia Competitiveness Institute (ACI), LKYSPP, NUS

MRes/PhD at University of Warwick

Data and Policy Analytics Seminar Series

[*] hangbanh@nus.edu.sg
[†] Litianqi.Fan@warwick.ac.uk
[‡] sppzhx@nus.edu.sg

Export similarity between China and several ASEAN countries

Source: Authors' calculation from the United Nations Comtrade Database.

Tech

Foxconn leases new site in Vietnam as Apple contractor continues to diversify production away from China

- Taipei-listed Foxconn, formally known as Hon Hai Precision Industry, has signed a lease with Saigon-Bac Giang Industrial Park Corp
- Foxconn's latest deal in Vietnam comes after its iPhone plant in Zhengzhou was rocked

Tech / Big Tech

Chinese smartphone maker Xiaomi taps Vietnam as production base for Southeast Asia market amid supply chain disruptions at home

- DBG delivered Xiaomi's first batch of made-in-Vietnam smartphones last month, with the models sold to the local market, as well as in Malaysia and Thailand
- Xiaomi's move is the latest sign that major smartphone makers are gradually moving

REUTERS

Asian Markets

Analysis: Chinese suppliers race to Vietnam as COVID let-up opens escape route from Sino-U.S. trade war

By Francesco Guarascio

March 16, 2023 12:12 PM GMT+8 · Updated 4 months ago

Forbes

FORBES > BUSINESS > RETAIL

EDITORS' PICK

Vietnam Is Becoming The Big Winner In The China Trade Wars

Warren Shoulberg Former Contributor ⓘ
I'm a retail junkie who loves to see who is doing what...and to whom

Oct 16, 2019, 01:48pm EDT

Diversifying supply chains
Selected firms that have announced plans to start or expand manufacturing in Vietnam

Company	HQ	Products	Status
Kyocera	Japan	Printers	Completed
Samsung	South Korea	Smartphones	Completed
Sharp	Japan	PCs	Completed
Fast Retailing	Japan	Textiles	Ongoing
GoerTek	China	Wearables	Ongoing
Guizhou Tyre	China	Tyres	Ongoing
HL Corp	China	Bike parts	Ongoing
Ricoh	Japan	Printers	Ongoing
TCL	China	TVs	Ongoing
Dell	U.S.	Notebooks	Planned
Man Wah	Hong Kong	Furniture	Planned
Nintendo	Japan	Game consoles	Planned

SOURCE: News sources, Fitch Solutions (Oct 2019)

CNBC

Research questions

The context

- Export structures of China and Vietnam have been becoming more and more similar
- Recent shocks: the U.S.-China trade war since 2018, the Covid-19 pandemic in 2020-2022

Research questions

- Was there a shift in FDI inflows from China to Vietnam during the period from 2013 to 2022?
- Did the U.S.-China trade war lead to a shift in FDI inflows from China to Vietnam?

Preview

This paper

1. *analyze the pattern of FDI inflows into China and Vietnam*

2. *examine the impact of the U.S.-China trade war on the redirection of FDI inflows from China to Vietnam, and determine the duration of this effect, if applicable*

Findings

- Starting from 2017, a notable shift in FDI inflows from China to Vietnam has been observed

- The increase in the U.S. tariff from the U.S.-China trade war resulted in a shift in the FDI inflows from China to Vietnam in the short term

Outline

Literature review

Related literature

- Determinants of FDI

- Consequences of the U.S.-China trade war

  - The welfare loss, employment changes, and consumption effects abide by the U.S. and China (Autor et al., 2023; Chor & Li, 2021; P. D. Fajgelbaum et al., 2020; He et al., 2021; Waugh, 2019).

  - Global trade reallocations in response to the U.S.-China trade war (Fajgelbaum et al. 2021)

Data and summary statistics

Data

- Greenfield bilateral FDI projects at the NAICS level from Orbis Crossborder Investment Database from January 2013 to December 2022

  - Collect from national business registries, company websites, telephone research, and newswires

  - Our sample includes all FDI projects in China and Vietnam

- Monthly-level tariff data

  - Fajgelbaum et al. (2020) from 2013 to April 2019

  - Cavallo et al. (2021) from May 2019 to March 2020

  - Assume the tariff rates remained unchanged from March 2020 to December 2022, given the Phase One agreement signed by the two countries in January 2020

FDI projects and value into China and Vietnam

Number of FDI Projects and Total FDI Value into China and Vietnam

	China		Vietnam	
Year	# 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.

FDI inflows into China and Vietnam

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

US-China trade war - U.S. actions

Panel A: Actions and tariffs on US 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

US-China trade war - China actions

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

U.S. and China's tariffs
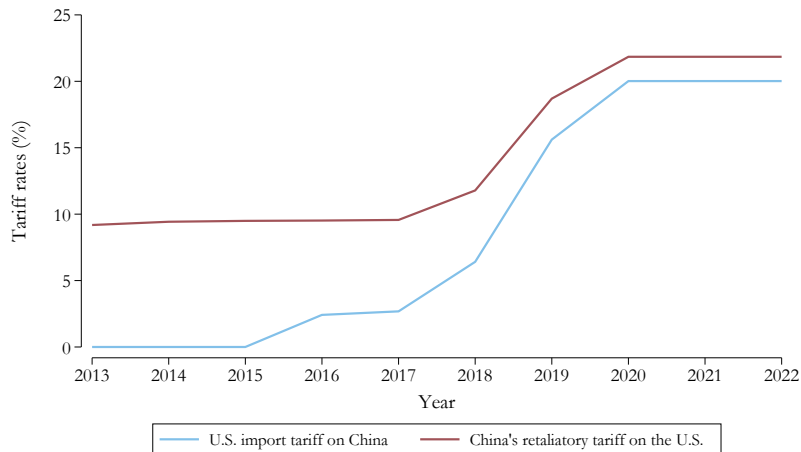
Source: Authors' calculation based on Fajgelbaum et al. (2020) and Cavallo et al. (2021). The figure presents the unweighted average U.S. import tariff rates and China's retaliatory tariff rates for respectively targeted products.

Shift in FDI inflows from China to Vietnam between 2013-2022

Econometrics specification - Event study

$$log(FDI_{sdy}) = \alpha_0 + \alpha_1 log(GDP_{sy}) + \alpha_2 WTO_{sdy} + \alpha_3 FTA_{sdy} +$$
$$\sum_{y=2013}^{2022} \beta_y I(Year = y) \times Vietnam + \alpha_{sd} + \alpha_y + \epsilon_{sdy} \qquad (1)$$

where:

- $log(FDI_{sdy})$: log of FDI inflows from source s to destination d in year y
- $Vietnam$: is a dummy equal to 1 if the destination of the FDI inflows in Vietnam
- Controls: log of GDP of source s in year y ($log(GDP_{sy})$), a dummy for both s and d are WTO members in year y (WTO_{sdy}), a dummy for both s and d are members of the same FTA in year y (FTA_{sdy}), source-destination fixed effects (α_{sd}), year fixed effects (α_y)
- β_y: 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.

Shift in FDI inflows from China to Vietnam

- The gap in FDI inflows into China and Vietnam has reduced by more than half since 2017 compared to the gap in 2013.
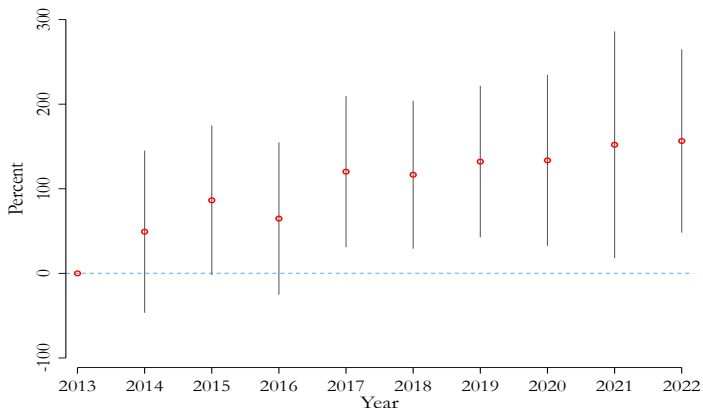
Notes: Figure plots the coefficients on event time dummies for Vietnam relative to China. Error bars show 95% confidence intervals. The sample period is from 2013 to 2022.
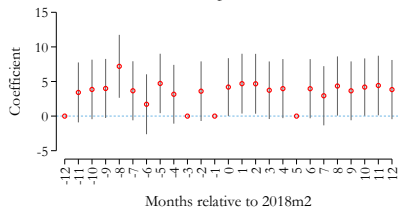
Effect of the U.S.-China trade war

Checking parallel trend assumption (1)

$$log(FDI_{sdgt}) = \alpha_0 + \sum_{j=-12}^{12} \alpha_{1t} I(Event_{gt} = j) \times target_{gt}^{U.S.} \times Vietnam+$$

$$\alpha_2 log(GDP_{sy}) + \alpha_3 FTA_{sdy} + \alpha_{sd} + \alpha_{gd} + \alpha_t + \epsilon_{sdy} \qquad (2)$$
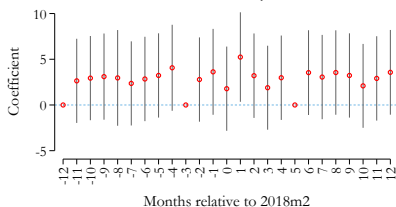
$$log(FDI_{sdgt}) = \alpha_0 + \sum_{j=-12}^{12} \alpha_{1t} I(Event_{gt} = j) \times target_{gt}^{China} \times Vietnam+$$

$$\alpha_2 log(GDP_{sy}) + \alpha_3 FTA_{sdy} + \alpha_{sd} + \alpha_{gd} + \alpha_t + \epsilon_{sdy} \qquad (3)$$

Checking parallel trend assumption (2)

Parallel trend test for varieties targeted by
U.S. Import tariffs

Parallel trend test for varieties targeted by
China's retaliatory tariffs

*Notes:* Error bars show 95% confidence intervals. The sample period is from 2017:2 to 2019:2.

- China's credit rating downgrade for the first time since 1989 by Moody in May 2017

- U.S.'s investigation on China's unfair trade practices started in August 2017
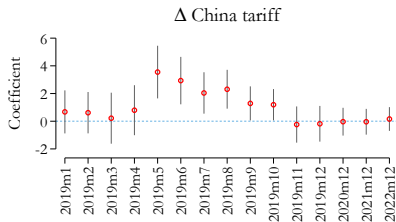
Econometrics specification

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

- $\Delta FDI_{sdgt} = log(FDI_{sdgt}) - \overline{log(FDI_{sdg,Feb17-Jan18})}$, $t \geq February$ 2018,

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

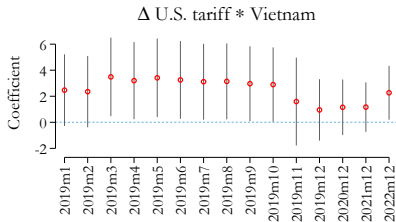- $\Delta T_{gt}^{China} = log(1 + T_{gt}^{China}) - log(1 + \overline{T_{g,Feb17-Jan18}^{China}})$.

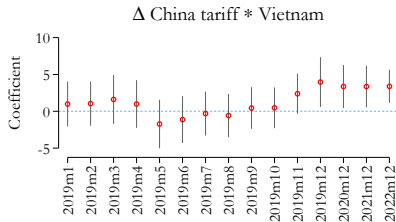# Effect of the U.S.-China trade war on the redirection of FDI inflows
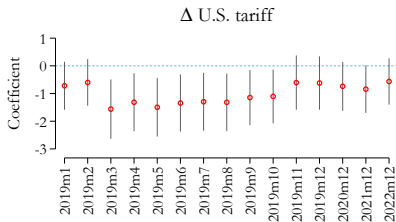
CONCLUSION

Conclusion

- The gap in FDI inflows into China and Vietnam has reduced by more than half since 2017 compared to the gap in 2013.

- The U.S.-China trade war led to a reduction in FDI into China. A one percentage point increase in U.S. import tariffs compared to the average monthly level before February 2018 led to about 1.5% decline in FDI into China.

- The U.S.-China trade war led to a redirection of FDI inflows from China to Vietnam.

- However, the effect of the U.S.-China trade war is short-term.

THANK YOU

APPENDIX

Details on T_{gt}^i

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

-

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

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

Details on export similarity

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.

$$r_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y} = \frac{\sum_p (x_p - \frac{\sum_p x_p}{n})(y_p - \frac{\sum_p y_p}{n})}{\sigma_x \sigma_y}, \tag{5}$$

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 $p \in \{1, ..., n\}$

Details on FDI data (1)

Industries by NAICS-6 - Products by HS 6-digit: m×m relationship

We compute the simple average FDI inflows at the source-destination-HS-6 digit-month level, as follows:

$$FDI_{sdgt} = \sum_{n \in g} \frac{1}{N} \times FDI_{sdnt}, \tag{6}$$

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

Details on FDI data (2)

For example,

1 NAICS receives 100 mUSD of FDI and it could correspond to 4 types of HS-6 codes.

We then suppose each HS-6 product receives $100/4 = 25$ mUSD of FDI.

After this simple average, we aggregate the FDI under the same HS-6 codes to have the FDI at the source-destination-month-HS6 level.