Winners and Losers in U.S.-China Trade Disputes:
A Dynamic Compositional Analysis of Foreign Direct Investment[*]

Yoo Sun Jung[1] and Yohan Park[2]

[1]*University College Dublin*
[2]*Trinity College Dublin*

March 6, 2024

Abstract

The trade conflicts between the United States and China have significantly disrupted global trade and economic growth. In today's globalized economy where the production of goods and services spans across multiple nations, these disputes have far-reaching consequences that extend beyond the involved parties and impact the broader global economy. This study uses a dynamic compositional analysis to assess the U.S.-China trade disputes' effects on multinational investment patterns in China and Southeast Asia. Analyzing firm-level greenfield foreign direct investment (FDI) data, we observe European firms increasing their investments in China to enhance market penetration, while American firms are withdrawing, redirecting their focus towards Southeast Asia to mitigate dependence on the Chinese market. This shift highlights broader international business strategy trends amid geopolitical and economic changes. The results indicate significant transformations in global supply chains, shedding light on the extensive effects of U.S.-China trade tensions on global economic equilibrium and how these tensions are reshaping international investment and supply chain dynamics.

Introduction

The escalating trade disputes between the U.S. and China, often linked to the rapid economic expansion of China since its WTO accession in 2001, underscore the competitive tensions that have arisen from China's emergence as a global manufacturing leader. This phenomenon, known as the "China shock," reflects China's significant strides in labor-intensive industries and its expansion into capital-intensive and high-tech sectors like electronics, automotive, biotechnology, and pharmaceuticals (Colotla et al. 2018). The COVID-19 pandemic further highlighted China's critical role in global supply chains, emphasizing its importance in the production of essential goods, from medical supplies to key automotive and electronics components.

In response to perceived imbalances, the U.S. imposed tariffs on around $283 billion worth of imports in 2018, with rates varying between 10% and 50% (Amiti, Redding, and Weinstein 2019). China retaliated by imposing tariffs on $3.3 billion of U.S. exports, later extending this to an additional $110 billion (Fuchs et al. 2019). This tit-for-tat escalation has intensified trade tensions, leading to what is commonly referred to as a trade war—a situation not unprecedented in history but notable now for involving the world's two largest economies.

Given that the U.S. and China together accounted for about 40% of global wealth in 2018 (Goulard 2020), their trade disputes have far-reaching implications for global trade and economic growth. This study explores the impact of these disputes on the investment patterns of multinational companies in emerging markets, focusing on foreign direct investment (FDI). FDI is crucial for economic development, bringing capital, technology, and jobs to host countries. We specifically examine the shift in FDI flows between China and Southeast Asia and compare the investment behaviors of U.S. and European firms in light of the U.S.-China trade tensions.

We argue that European firms may find competitive advantages in China during these disputes, whereas U.S. companies might turn to Southeast Asia as an alternative market, thus reshaping investment dynamics in the region. By analyzing firm-level greenfield investment data from 2003 to 2020 and employing a dynamic compositional approach, we assess how U.S.-China trade tensions affect the distribution of investments among multinational corporations in China and Southeast Asia.

Our analysis reveals a strategic pivot, with European businesses likely to solidify their footprint

in the Chinese manufacturing sector in reaction to the U.S.-China trade disputes. Conversely, U.S. corporations are showing a tendency to diversify their investments into Southeast Asian markets. This strategic realignment indicates a significant shift in global investment strategies, with broader implications for international political economy and global power distribution.

The findings of this research enrich our comprehension of the varied reactions of investors to policy uncertainties and trade disputes, shedding light on the intricate relationship between state-led trade policies and corporate investment decisions. Moreover, our study brings insights to the broader field of International Political Economy (IPE), as our findings suggest substantial effects on global geopolitics and the distribution of power by showing the transformation of the composition of foreign firms in emerging markets.

The U.S.-China Trade War

Our paper builds upon the existing body of research investigating the consequences of the U.S.-China trade disputes and the strategies firms employ amidst such policy volatility. The changing U.S.-China relations, significantly characterized by the 'China shock' and the subsequent tariff clashes, have sparked academic interest aimed at understanding the implications of these substantial economic frictions. (Autor, Dorn, and Hanson 2013, 2016; Caliendo, Dvorkin, and Parro 2019).

The literature on the U.S.-China trade disputes unfolds across four primary strands. The first strand explores the differential economic impacts of these disputes, delineating the winners and losers (Caliendo and Parro 2022; Guo et al. 2018; Li, He, and Lin 2018) across various metrics such as trade flows (Handley, Kamal, and Monarch 2020), economic growth (Waugh 2019), consumer welfare, domestic prices (Cavallo et al. 2021), and investment patterns (Caldara et al. 2020). Studies in this vein, for instance, have highlighted how increased tariffs led to declines in U.S. manufacturing employment and surges in producer prices, placing a disproportionate burden on domestic consumers without affecting the prices received by foreign exporters (Amiti, Redding, and Weinstein 2019; Flaaen and Pierce 2019).

The second strand broadens the analytical lens to consider the repercussions on nations outside the immediate conflict, acknowledging the global market's interconnected nature and the significant influence wielded by the U.S. and China (Fajgelbaum et al. 2021; Nugroho, Irawan, Amaliah,

et al. 2021). This research highlights how regions such as Southeast Asia and Europe face altered trade landscapes and opportunities as a direct consequence of the U.S.-China trade tensions (Carvalho, Azevedo, and Massuquetti 2019; Goulard 2020).

A third avenue of inquiry investigates the trade disputes' broader societal impacts, including effects on poverty and inequality (Nugroho, Irawan, Amaliah, et al. 2021), environmental concerns (Fuchs et al. 2019), and political outcomes (Blanchard, Bown, and Chor 2019; Kim and Margalit 2021). For example, studies have shown that trade tensions may hinder poverty reduction efforts in developing countries and exacerbate inequality in specific regions like Indonesia (e.g. Nugroho, Irawan, Amaliah, et al. 2021).

Finally, a growing body of work focuses on the strategic responses of multinational corporations to the heightened uncertainty in trade policy (e.g. Bloom, Bond, and Van Reenen 2007). This research emphasizes the critical role of such firms in the global economy and investigates how policy volatility influences their investment decisions, with particular attention to the implications of major policy shifts like Brexit (Hassan et al. 2020; Steinberg 2019) and the U.S.-China trade war (Amiti, Kong, and Weinstein 2020).

Our study offers a significant addition to the discourse on escalating trade tensions between the United States and China by examining the adjustments multinational corporations make to their investment strategies. Beyond assessing the direct trade impacts between the two nations, our investigation extends to how these firms adapt their approaches within their supply networks, essential of the complex global production system. This offers novel insights into how international businesses manage the challenges posed by policy uncertainty, revealing the dynamic adaptations along global value chains.

Theory

Global Value Chain (GVC) firms, engaged in both importing and exporting activities, represent approximately 15% of all international trading entities, yet they account for around 80% of the world's total trade (World Bank 2019).[1] These firms play a significant role in the global economy

---

[1]Source: World Development Report 2020, available at https://www.worldbank.org/en/publication/wdr2020.

by manufacturing parts and components distributed worldwide, thus contributing substantially to the modern era of globalization through extensive involvement in cross-border production sharing.

The global manufacturing sector is heavily influenced by China and the U.S., which collectively contributed to approximately 40% of global GDP and 25% of international trade in 2019 (Nugroho, Irawan, Amaliah, et al. 2021), while also producing half of the world's manufacturing output.[2] This industrial dominance enables firms from these countries to export their products in substantial quantities not only to domestic markets but also to various regions across the globe.

This study focuses on analyzing how multinationals respond to trade disputes within the ongoing U.S.-China trade war. Specifically, we investigate changes in investment strategies of multinationals across China and Southeast Asia. Drawing from IPE literature exploring how firms manage various market uncertainties and opportunities (e.g. Handley and Limão 2022; Jung, Owen, and Shim 2021), our theory predicts a redistribution of market share among U.S. and European firms across both the Chinese and Southeast Asian markets.

American Multinationals' Approach in China

The U.S.-China trade war, akin to other strained diplomatic relations between states, has disrupted economic exchanges between countries, impacting various areas of the economies. Both Beijing and Washington have employed punitive economic measures to exert pressure on each other, resulting in significant financial constraints and hardships. Additionally, this friction may lead to anti-foreigner sentiment and consumer boycotts, thereby reducing the consumption of foreign products and subsequently decreasing demand. Such sentiments often translate into direct economic costs, affecting various aspects such as trade (Heilmann 2016), stock (Fisman, Hamao, and Wang 2014), and sales share (Pandya 2016).

In response to escalating trade disputes, multinationals, especially those from the U.S. and China, reassess the risks associated with conducting business in the opposing country. Consequently, they adopt a cautious 'wait-and-see' approach, carefully evaluating the situation before deciding on market entry. They may also explore alternative markets rather than engaging directly with conflicting partners. This cautious stance is notably emphasized for long-term commitments,

---

[2]Source: United Nations Statistics Division, available at https://unstats.un.org/unsd/snaama/.

such as greenfield investment, which entails establishing new facilities and generating local employment, as opposed to mergers and acquisitions.[3] Thus, anticipating a potential decline in their market share in China, U.S. firms are likely to refrain from expanding or making new investments, such as greenfield investment, in the Chinese market due to the high sunk costs and irreversibility associated with such business activities.

In today's highly globalized world, the effects of trade disputes between two of the biggest market players are not limited to those directly involved; they have direct or indirect impacts on other market players. This research aims to explore the impact of the U.S.-China trade war on EU investors, highlighting the EU's central role as a primary beneficiary amidst this geopolitical friction.

The uncertainties and risks stemming from the trade war may deter investment in the affected market due to increased perceptions of potential investment losses. For instance, U.S.-China trade war generates negative effects to potential investors doing business in China such as the slowdown of the Chinese market, the global economic downturn, and rising labor costs within China (Goulard 2020). However, trade friction also creates opportunities for potential investors to enter the market and increase their market share.

Multinationals' investment decision-making and reassessment in light of such disputes involve weighing both the risks and rewards of investment. Yet, the aspect of FDI rewards remains understudied, with existing literature primarily focusing on the role of political risk in FDI studies (e.g. Johns and Wellhausen 2017; Wright and Zhu 2018). Jung, Owen, and Shim (2021) provide insights into FDI's positive aspects by examining competitive opportunities for potential entrants. Their work on the impact of investment disputes on FDI inflows stands out in this regard.

European Multinationals' Approach in China

For European multinationals, the potential rewards from exploring new markets might surpass the uncertainties and challenges introduced by the U.S.-China trade disputes. This perspective arises from the global competition context with the U.S. and China's central role as a global manufacturing and supply hub. Consequently, European investors are more likely to view the tensions between

---

[3]We focus on greenfield investment for this study among other types of FDI. Further explanation regarding this choice is provided in the data section where we describe the dependent variable.

the U.S. and China as opportunities rather than risks, prompting them to amplify their investments in China.

This strategic inclination towards China, motivated by the desire to establish a secure and profitable global supply chain, positions European firms to potentially capitalize on the trade war's fallout. Such a stance is bolstered by China's low labor costs, significant market size, and strategic importance for long-term growth (Wang and Swain 1997; Wei and Liu 2001), further highlighted by its prominence as a manufacturing hub during global supply chain disruptions (Ali and Guo 2005). Thus, European entities, focusing on the expansive business prospects in China,[4] might find advantageous positions in the Chinese market, contrasting with the potential setbacks faced by U.S. investors due to the trade tensions.

The European Union's strategic engagement with China amidst U.S.-China trade disputes offers a unique advantage for EU investors, distinguishing their approach from the U.S.'s more confrontational tactics (Goulard 2020). The EU's balanced stance on issues like the Belt and Road Initiative and sanctions on Huawei underlines a strategy of cooperation rather than confrontation (Ekman et al. 2020).

This approach not only facilitates a conducive environment for European businesses to thrive but also positions them to capitalize on new investment opportunities. High-profile commitments by leading European automotive firms to expand their operations in China underscore the confidence in China's market potential. For example, Dr. Johann Wieland, President and CEO of BMW Brilliance Automotive Ltd, expressed confidence in China's long-term economic potential, stating, "We maintain a strong belief in China's economic future and are prepared to continue our high-quality development journey."[5] Similarly, both Volkswagen and BMW announced their decisions to construct automobile factories in China in 2019 and 2020.[6]

---

[4]While the US relationship is more multifaceted and strategic, most EU member states tend to focus narrowly on the business opportunities presented by China (Ekman et al. 2020).

[5]BMW-Brilliance News, "Collaborate for Success and Open a New Chapter BMW Brilliance Tiexi New Plant Embraces Its Start of Construction," April 1, 2020. http://www.bmw-brilliance.cn/cn/en/news/news/2020-4-01.html.

[6]Manufacturing Digital Magazine, "Volkswagen set to begin joint venture with JAC to invest \$752mn in electric car factory," May 16, 2020. https://manufacturingdigital.com/smart-

These actions reflect a broader trend of European firms leveraging diplomatic and economic strategies to navigate the complexities of global trade tensions, suggesting a calculated move to enhance their global supply chain resilience and market presence in China against the backdrop of U.S.-China trade dynamics.

Overall, our theory posits European investors could benefit in the Chinese market from the U.S.-China trade war, potentially at the expense of U.S. investors. Yet, the impact on investments from nations outside the U.S. and EU remains unclear due to a lack of evidence on how these tensions affect their decision-making. Our theoretical framework and expectations are detailed further in the summary Table 1.

Table 1: Multinationals' FDI Strategies in China in Response to U.S.-China Trade War

	Home Countries of Multinationals		
	U.S.	Europe	Others
Predicted Changes in FDI inflows to China	$\Downarrow$	$\Uparrow$	$\Longrightarrow$
	Relative decrease	Relative increase	Unchanged

Strategic Diversification: American and European Investment Shifts in Southeast Asia

Amidst the escalating U.S.-China trade tensions, American investors have been prompted to seek alternatives to diversify their supply chains, with Southeast Asia emerging as a focal point. Countries within this region, such as Vietnam, Malaysia, and the Philippines, offer compelling advantages including lower labor costs, conducive business environments, and strategic geographical positioning close to China (Dhar et al. 2023; Yean Tham, Yi, and Ann 2019). This shift is underscored by the movement of American multinationals to reduce their reliance on Chinese manufacturing due to cost considerations and the impact of tariffs. A notable example is Apple, which has initiated substantial production shifts to Southeast Asia in reaction to trade disputes (Verdict 2021).

The strategic orientation of European multinationals presents a nuanced contrast to their American counterparts, particularly in light of long-term goals and short-term actions. Over the long term, these firms are committed to diversifying their supply sources and engaging in negotiations

manufacturing/volkswagen-set-begin-joint-venture-jac-invest-dollar752mn-electric-car-factory.

for free trade agreements. This strategic intent aims at reducing their dependency on critical resources like oil, gas, and rare earth minerals, aligning with the European Union's broader strategy to navigate geopolitical tensions and supply chain vulnerabilities underscored by events such as the Ukraine-Russia conflict (Hennessy 2023; Hennessy and Winanti 2022).

In the short term, European companies exhibit a pragmatic approach by capitalizing on market opportunities in China, which have arisen as U.S. firms recalibrate their presence in response to trade tensions. This involves not only maintaining but potentially expanding their operations within China to leverage these new opportunities. This approach reflects a dual strategy aimed at optimizing their market position within China while concurrently establishing a foundation for diminishing market reliance by broadening their supplier networks throughout Southeast Asia.

In summary, there are the contrasting strategic responses of U.S. and European firms to the complexities of U.S.-China trade tensions. U.S. companies are proactively expanding their operations in Southeast Asia, aiming to mitigate the risks associated with these trade tensions. This move towards Southeast Asia is characterized by urgency, driven by the need to diversify supply chains and reduce dependency on China.

On the other hand, European firms are navigating these tensions with a more calculated approach. In the short term, they are keen on bolstering their presence in China, capitalizing on the market void left by the strategic realignment of U.S. firms. Simultaneously, European companies are preparing for long-term resilience by gradually diversifying their suppliers across Southeast Asia. This balanced strategy demonstrates a commitment to maintaining a steady engagement in Southeast Asia while also exploiting new opportunities in China.

This strategic divergence—between the urgency-driven expansion of U.S. firms in Southeast Asia and the balanced, opportunity-oriented approach of European firms—highlights differing perspectives on managing global trade tensions and supply chain vulnerabilities. The anticipated shifts in market presence within Southeast Asia, as a result of these strategies, are effectively summarized in Table 2.

Data

To test our theory about the impact of trade disputes on investment market shares of multinationals, we focus on investment in manufacturing sectors within China.

Table 2: Multinationals' FDI Strategies in Southeast Asia in Response to U.S.-China Trade War

	Home Countries of Multinationals		
	U.S.	Europe	Others
Predicted Changes in FDI to Southeast Asia	$\Uparrow$	$\Longrightarrow$	$\Downarrow/\Longrightarrow$
	Relative increase	Unchanged	Minor decrease/Unchanged

Note. The South East Asia category includes countries like Vietnam, Malaysia, and Philippines.

All the U.S.-China disputes cases are fighting over the manufacturing sectors. Approximately 74% of the total 27 disputes between China and the U.S. focus solely on the manufacturing sectors, while the remaining cases involve both manufacturing and non-manufacturing sectors, such as mining, oil and gas extraction, agriculture, forestry, and fishing. Thus, our analysis is limited to the manufacturing sectors, which comprise the majority of the disputes. We seek to assess the impact of U.S.-China WTO disputes within these manufacturing sectors, considering potential sectoral heterogeneity across different industries.

Dependent variable. Of the two primary forms of Foreign Direct Investment (FDI), our focus lies on greenfield investment as opposed to mergers and acquisitions (M&As). Greenfield investment involves establishing new facilities or expanding existing ones, while M&As involve the transfer of existing assets to multinational investors. Given that our theory addresses firms' decisions regarding investment locations, opting for greenfield investment offers a distinct advantage over M&As, which are largely influenced by the location of existing assets. Therefore, in our examination of FDI market share dynamics among multinationals in response to the US-China trade war, we specifically assess the proportion of greenfield investment projects invested by firms from various home countries.

We employ the greenfield FDI data obtained from the *fDi Markets* database, specifically focusing on the manufacturing industries. The *fDi Markets* provides a comprehensive source of project-level data on greenfield investments, drawing from diverse channels such as *Financial Times* news wires, media sources, investment agencies, and market research and publication companies. This extensive dataset provides detailed information on each investment project, including capital flows, job creation estimates, the geographical regions of new facility construction, and industrial specifications. Spanning from 2003 to 2020, it covers a total of 12,552 cross-border greenfield investment projects across all manufacturing sectors in China, originating from around 70 home countries.

9

Using the greenfield FDI data, we generate a compositional variable, y_{tj}, which captures the proportion of the FDI allocated to each investing country category j in a given quarter t. The compositional outcome variable is bounded between 0 and 1 (i.e., $0 < y_{tj} < 1$), and these categories sum to one (i.e., $\sum_{j=1}^{J} y_{tj} = 1 \ \ \forall t$) in any quarter. For the analysis of the FDI within China, we divide the home countries (i.e., investor countries) into six distinct regional groups that meaningfully reflect the distribution of the Chinese FDI market: the United States, the European Union, East Asia (South Korea, Taiwan, and Japan), India, Americas (except the U.S.), and the rest of the world. For the robustness check, we conduct additional tests using an alternative categorization scheme that specifically focuses on the top 20 investing countries. For the analysis of the FDI within three South East Asia countries, including Vietnam, Malaysia, and Philippines, we generate seven categories: the United States, the EU, South Korea, China, Taiwan, Japan, and the rest of the world.

Independent variable. While the U.S.-China trade war officially started in July 2018, characterized by the U.S. imposing tariffs on Chinese imports, the roots of this trade conflict date back much further, involving a series of trade disputes that have progressively escalated and resulted in numerous cases being taken to the WTO. In our empirical analysis, our scope extends beyond tariff retaliation changes, encompassing all major trade disputes that could potentially impact U.S. firms' interests and investigating their implications for supply chains.

Our independent variable is the number of ongoing disputes associated with manufacturing industries between the U.S. (as a complainant) and China (as a respondent) in the last three years (from $t-3$ to $t-1$).[7] This highlights our primary focus on the ongoing U.S.-China trade disputes, with the U.S. filing complaints and China responding in WTO disputes related to alleged trade barriers imposed by Beijing. These restrictions undoubtedly result in unfavorable consequences for U.S. firms, thereby opening up market opportunities for European multinational corporations. As our theory centers on evaluating the relative gains and losses among multinational corporations from the U.S. and Europe in both the Chinese and Southeast Asian markets, its theoretical foundation is rooted in examining the potential negative impacts on the interests of U.S. firms in the

---

[7]We use a three-year window on the dispute as the decision-making process for investment often spans multiple years.

Chinese market.

To identify the WTO disputes related to manufacturing sectors, we rely on the data obtained from Kucik and Pelc (2016), which provide information on the products directly involved in WTO disputes.[8] Between 2003 and 2020, a total of 15 disputes were filed by the U.S. against China, encompassing diverse manufacturing sectors such as food and beverage, chemical, nonmetallic mineral product, metal, machinery, computer and electronic product, and electrical equipment, appliance, and component manufacturing.

Controls. To account for the various factors influencing the FDI decisions of multinational corporations, we include a range of control variables. These variables include host-specific macroeconomic factors such as China's GDP per capita (logged), GDP growth rate, and population (logged). These data are retrieved from the World Bank's World Development Indicators (WDI) database.[9] Furthermore, we control for the level of political constraints within China as the host country. Higher levels of political constraints indicate a higher likelihood of providing protection to foreign assets and curbing government opportunism (Henisz 2000; Li, Owen, and Mitchell 2018). We measure the level of political constraints in China using the liberal democracy index coming from the Varieties of Democracy (V-Dem) project.

Modeling strategy: a compositional approach

As discussed above, our research focuses on examining the relative changes in the levels of compositional outcome variables, with the constraint that the values of all these categories sum to one. In this context, employing a strategy of modeling each category individually presents a challenge, as it neglects the correlations that exist between the outcome categories.

---

[8]These products are classified using various levels of Harmonized System (HS) codes, which we subsequently match with the four-digit NAICS industry codes to identify the manufacturing-related WTO disputes between the U.S. and China.

[9]For the analysis of FDI in the three South East Asian countries, the host-specific macroeconomic factors are adjusted accordingly. Specifically, in our model, we incorporate average GDP per capita, average growth rates, the average level of political constraints, and the sum of the entire population for each year within the region.

To test our theory about the trade-offs in FDI market shares over time, we instead build upon recent studies that model the effect of independent variables on the relative changes in levels of outcome variable categories (Philips, Rutherford, and Whitten 2015, 2016). This approach allows us to simultaneously analyze the compositions of the FDI market share using log-ratio transformations. Specifically, we calculate the natural logarithm of the ratio between each of the J categories and a reference category (e.g., y_{t1}), resulting in $J - 1$ logged compositions:

$$s_{tj} = ln(\frac{y_{tj}}{y_{t1}}) \ \ \forall j \neq 1 \tag{1}$$

The new measure, s_{tj}, is unbounded, and thus standard multivariate approaches may be used to estimate the models of s_{tj} (Tomz, Tucker, and Wittenberg 2002). We estimate each of the s_{tj} compositions in a seemingly unrelated regression approach using the Stata program `dynsimpie` developed by Jung et al. (2020). The use of a seemingly unrelated regression allows us to simultaneously estimate the compositions and improve estimation efficiency by considering correlated errors across the compositions. Within this framework, we estimate a lagged dependent variable model, where each composition outcome variable is regressed on our main independent variable (trade dispute), control variables, and a lagged dependent variable.[10] The equation is specified as:

$$
\begin{aligned}
s_{tj} = {} & \alpha_j + \phi_j s_{t-1,j} + \beta_{1j}\Delta Dispute_t \\
& + \beta_{2j}GDPpc_{t-4} + \beta_{3j}Growth_{t-4} + \beta_{4j}Pop_{t-4} \\
& + \beta_{5j}Polcon_{t-4} + \epsilon_{tj}
\end{aligned}
\tag{2}
$$

where the log-ratio s_{tj} is a function of a constant, its own lag,[11] the number of trade disputes initiated by the U.S. against China in the last three years, four control variables (China's GDP per

[10]The presence of unit roots in the dependent variables can introduce challenges to the validity of inferences. We employ Dickey-Fuller and Philips-Perron tests, and these tests reject the unit root null hypothesis for all our dependent variables.

[11]As an extension to our primary analysis employing the AR (1) process, we also explore the AR (2) process to validate the robustness of our results. The main results remain consistent across both specifications. The results of AR (2) models can be found in the Supplementary Materials.

capita, growth rate, population, and the level of political constraints), and an error term that could be contemporaneously correlated across the J - 1 equations. The control variables are lagged by one year to reduce the possible endogeneity issues.

As we deal with multiple equations involving log-ratio measurements of interconnected outcome variables, direct interpretation of coefficient estimates may lack informative value. In line with the suggestion proposed by Philips, Rutherford, and Whitten (2016), we instead present the substantive effects of trade disputes using graphical illustrations for a clearer understanding.

The `dynsimpie` program allows us to visually depict the changes in each outcome category over time in response to a hypothetical one-period "shock" to the key independent variable (Jung et al. 2020; Philips, Rutherford, and Whitten 2016). Specifically, at time $t = 5$, we introduce a one-standard deviation increase in the number of trade disputes between the U.S. and China, while keeping all other variables constant at their mean values. By comparing the resulting changes from this scenario to the baseline where all variables are set to their sample mean values, we can observe the dynamic effects on each outcome category. Moreover, we incorporate the parameters on the lagged dependent variables (ϕ_j) and the trade dispute variables (β_{1j}) to estimate the long-term consequences of these shocks.

Employing the compositional approach, we conduct two tests with distinct datasets. The first test analyzes the effects of US-China disputes on FDI market shares in Chinese manufacturing sectors. Additionally, we conduct a robustness test with a different categorization scheme, focusing on the top 20 investors in China's manufacturing industries. The second test explores the effects of US-China disputes on FDI market shares in Southeast Asia's manufacturing sectors, anticipating strategic divergence as US firms may expand operations in the region.
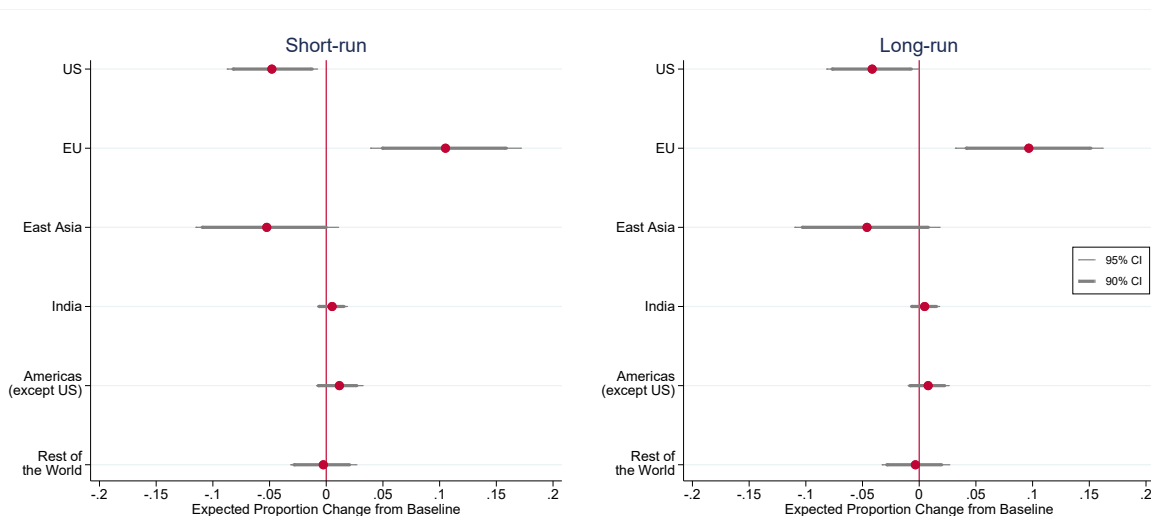
Results

Winners and losers: market shares of firms investing in China

We begin by analyzing the impact of US-China trade disputes on the composition of foreign investing firms in China, with a particular focus on the manufacturing sector. Our approach incorporates a dynamic simulation that introduces a counterfactual shock in WTO trade disputes between the U.S. and China in quarter five, $t = 5$. The counterfactual shock corresponds to a one standard

deviation increase in the number of trade disputes initiated by the United States against China, roughly 2.6. [12]

Figure 1 presents the effects of the counterfactual shock on the expected proportion of FDI flows into China from firms originating from diverse home countries. The figure summarizes the estimated short-term effects (left panel) and long-term effects (right panel) in each category, along with confidence intervals at both 95 and 90 percent levels.

Figure 1: Effects of an increase in U.S.-China disputes on relative market shares in Chinese manufacturing industries

Simulated effect of a 1-SD increase in the average number of U.S.-China trade disputes in the last three years. "East Asia" includes South Korea, Taiwan, and Japan.

These results provide compelling evidence supporting our argument regarding the effects arising from a one standard deviation increase in the number of WTO trade disputes between the U.S. and China. Consistent with our expectations, the introduction of this shock in WTO disputes helps European investing firms to relatively expand their investment market share in Chinese manufacturing industries by approximately 10 percentage points. Conversely, these gains come at the expense

---

[12]The average annual count of WTO disputes between the US and China is 3.4, with the median value being 3 disputes. From 2003 to 2020, a span of 18 years, there were six instances where the US initiated three or more disputes against China in a year. Accordingly, our analysis includes a shock of one standard deviation, which translates to an increase of 2.6 disputes, as this is within a realistic and plausible scope. To ensure the robustness of our findings, we also conduct an analysis considering a scenario with a two-dispute increase. These additional results, affirming the consistency of our primary findings, are detailed in the Supplementary Material Figure A8.

of U.S. investors, who face a reduction in market share by approximately five and four percentage points in the short and long run, respectively, as a result of the increased trade disputes. These estimates are statistically significant at the 5% level. In the Supplementary Material, we further provide a change-from-baseline plot that depicts the counterfactual shock's effects throughout the simulation period, along with the seemingly unrelated regression analysis results in Table A3.

It is worth noting that the relative gains observed among European firms do not come at the expense of U.S. firms alone. The results indicate that investors from East Asian countries, including South Korea, Taiwan, and Japan, also face a decline in market share. Specifically, East Asian multinationals experience a decrease of approximately five percentage points in both the short and long run, though the point estimate of the long-run effect narrowly misses reaching statistical significance at the 10% level. This finding may suggest a potential link between geopolitical factors and the investment decisions of East Asian countries, particularly in terms of their reliance on the United States compared to China. One plausible explanation is that the unique geopolitical circumstances of these countries prompt their public and private firms to prioritize alignment with U.S. foreign policy, especially regarding China. For East Asian multinationals, the security of economic ties and a supportive relationship with the U.S. might outweigh the potential benefits of pursuing new opportunities in a country that is perceived as challenging the established regional order. Exploring how geopolitical interests reshape multinational investment decisions abroad could be a promising direction for future research.

To ensure the robustness of our findings, we conduct additional tests using an alternative categorization scheme that focuses on the top 20 home countries, representing approximately 94% of the total FDI volume in China from 2003 to 2020. Given our theoretical interest in examining whether EU multinationals achieve relative gains at the expense of U.S. firms, we keep the U.S. and EU categories unchanged. Instead, we reclassify the non-EU countries within the top 20 into three distinct groups. First, we group Taiwan, South Korea, Singapore, and Japan together as advanced economies within East Asia.

Second, following the internationally recognized standard scheme for country classification based on economic development proposed by the International Monetary Fund (IMF) and the Organisation for Economic Co-operation and Development (OECD), we assign Canada and Switzerland to a separate group. Lastly, we allocate the remaining countries within the top 20, including

15

India, Saudi Arabia, Kuwait, South Africa, and Indonesia, to another group, characterizing them as emerging and developing home countries within the top 20. The home countries beyond the top 20 are then consolidated into a final group referred to as the "rest of the world."

Figure 2: Effects of U.S.-China disputes on relative market shares in Chinese manufacturing industries (Top 20 investors)
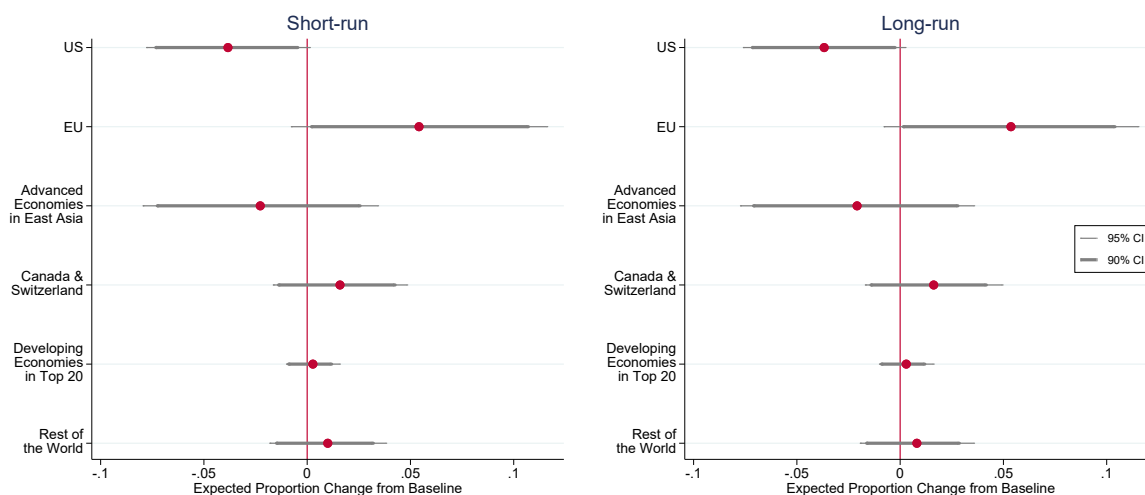
Simulated effect of a 1-SD increase in the average number of U.S.-China trade disputes in the last three years. "Advanced Economies in East Asia" includes South Korea, Taiwan, Japan, and Singapore. "Developing Economies in Top 20" includes India, Saudi Arabia, Kuwait, South Africa, and Indonesia.

The results of the dynamic simulation with the alternative categorization scheme, shown in Figure 2, affirm our main findings.[13] Specifically, we observe a significant increase of approximately five percentage points in the EU firms' market shares in China's manufacturing sectors following a one standard deviation rise in the number of WTO trade disputes initiated by the U.S. against China. This instantaneous change in market share is sustained in the long run as well. In contrast, the introduction of the same shock in trade disputes results in a decline of about four percentage points in the U.S. multinationals' market shares in China, persisting in both the short and long run. All of these estimates are statistically distinguishable from zero at least the 10% level.

Turning to other groups, we can see that the increase in U.S.-China trade disputes does not necessarily lead to significant relative declines in market share for advanced economies in East Asia. However, the inclusion of Singapore in this group, despite its different level of strategic interests and geopolitical dependence on the U.S. compared to the other three countries, may complicate

---

[13]The Supplementary Material includes both a change-from-baseline plot and a table reporting the results of the seemingly unrelated regression analysis.

the identification of consistent response patterns to the increase in trade disputes between the U.S. and China. The advanced economies of Canada and Switzerland appear to experience some relative gains as a result of the trade disputes between the U.S. and China, but the estimates are not statistically significant at conventional levels. The counterfactual shock in trade disputes does not yield significant shifts in market shares for the developing economies within the Top 20 investors, including India and Indonesia, as well as for the group of investing countries that fall outside the Top 20.

Beyond employing a different categorization approach, our study also expands to include various robustness tests on our main findings. First, we address the potential effects of time trends on the relative market share of FDI and trade disputes by including linear and/or quadratic time trends in our main model. Trade volume is also factored into our main model to avoid any omitted variable bias influencing the relationship between trade disputes and FDI market share in the manufacturing sector of China. Additionally, we reassess the effect of trade disputes using a reduced counterfactual shock level. In another variation, we substitute the AR (1) process with an AR (2) process. All these results are detailed in the Supplementary Material, in Sections S5 and S6.

Seeking new frontiers beyond China

We now turn our attention to the examination and empirical testing of our theoretical proposition regarding the influence of trade disputes on the market shares of U.S. multinationals in FDI within a specific market—Southeast Asia, to be precise. The countries in focus, including Vietnam, Malaysia, and the Philippines, have emerged as attractive alternative production destinations due to their compelling advantages such as lower labor costs, favorable business environments, and close geographic proximity to China. As U.S. companies strive to strengthen their supply chains and capitalize on market share growth outside of China, we expect to see a relative increase in U.S. firms investment activities within the region, especially in the manufacturing sectors.

To assess this theoretical expectation, we employ greenfield FDI data on three South East Asian countries: Vietnam, Malaysia, and the Philippines. These countries have emerged as highly attractive alternative production sites for investors in the manufacturing sectors. To ensure comparability with the Chinese market in terms of size, we aggregate these three countries into a single market.[14]

---

[14]The host-specific macroeconomic factors are also adjusted accordingly. Specifically, in our

The compositional categories consist of seven countries/groups: the top five investing countries (Japan, South Korea, the United States, China, Taiwan), the EU, and the rest of the world. Among these categories, the first five countries represent the top five investing nations in the region, collectively accounting for 65% of the total FDI volume invested between 2003 and 2020. Similar to the analysis conducted for the Chinese market, we estimate a lagged dependent variable model using the same model specification as Equation 2 within a seemingly unrelated regression framework.

In line with our theoretical expectations, the findings indicate that an upsurge in trade disputes between the U.S. and China leads to an expansion of U.S. multinationals' market share in FDI within the Southeast Asian region, as shown in Figure 3. From a substantive perspective, the shock resulting from U.S.-China trade disputes results in an increase of around 12 percentage points in the U.S. firms' market share in the manufacturing sectors of Southeast Asia. This immediate change in market share persists in the long run as well. All of these point estimates are statistically significant at the 10% level. The findings of this study confirm the belief that U.S. multinationals actively consider Southeast Asia as a promising alternative market to bolster their presence and mitigate risks associated with trade disputes involving China.[15]

An interesting observation is that the substantial gains achieved by U.S. multinationals do not come at the expense of rival countries or blocs, such as China or the EU. The increase in U.S.-China trade disputes does not lead to substantial shifts in market share for either firms from China or the EU. In the context where both China and the EU do not experience a loss in market share, it raises the question of which entities endure the substantial declines amid the trade disputes between the U.S. and China.
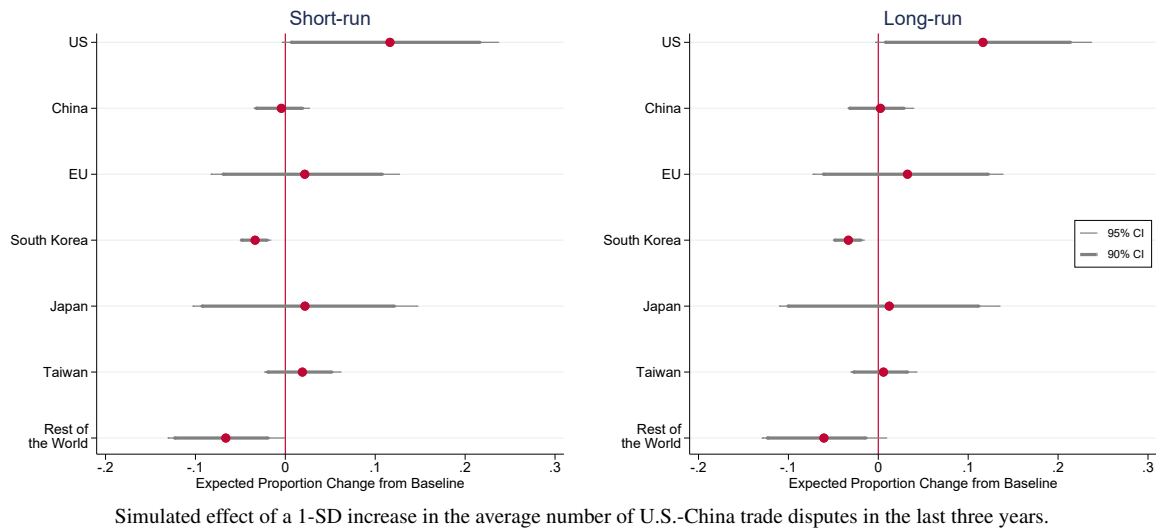
As previously mentioned in our theoretical framework, we anticipate an increase in the presence of U.S. firms in Southeast Asia, leaving the question of potential losers as an empirical inquiry. Our theory suggests that the European Union is not likely to be the primary loser in this context. So, who will face losses? Our analysis reveals that firms from South Korea and non-major investing countries experience declines as losers in the manufacturing sectors of Southeast Asia.

model, we incorporate average GDP per capita, average growth rates, the average level of political constraints, and the sum of the entire population for each year within the region.

[15]In the Supplementary Material, we further provide a change-from-baseline plot and a table presenting the results of the seemingly unrelated regression analysis.

Figure 3: Effects of an increase in U.S.-China disputes on relative market shares in Southeast Asia

Simulated effect of a 1-SD increase in the average number of U.S.-China trade disputes in the last three years.

Specifically, our analysis demonstrates a notable decline in market shares for foreign investors from non-major investing countries. In response to a shock in the number of U.S.-China trade disputes, these firms witness a significant short-term decrease of approximately seven percentage points. Moreover, this impact persists in the long run, although with a slightly reduced magnitude. Similarly, South Korea, being the second-largest investor in the region, stands out as its firms encounter a relative decline in market share, amounting to approximately three percentage points in both the short and long run.

Conclusion

The U.S.-China trade war represents a significant shift in the global economic landscape, challenging the norms of globalization and the liberal economic order. As these economic powerhouses escalate their trade barriers, the global economy faces the risk of a slowdown, particularly because of their central roles in worldwide supply chains.

This situation has prompted U.S. companies, directly affected by the trade disputes, to reconsider their supply chain strategies. The allure of China's market — with its skilled workforce, supportive government policies, and robust infrastructure — remains strong. Yet, the mounting trade tensions compel these American firms to evaluate the benefits of diversifying their supplier base. In contrast, European companies perceive these tensions as an opportunity to enhance their

presence in a key manufacturing hub, aiming to capitalize on the gaps left by American firms.

This paper explores the impact of the U.S.-China trade tensions by analyzing how they influence the investment strategies of U.S. and European firms, particularly in terms of global production and greenfield investments. We argue that these tensions are prompting U.S. corporations to rethink their supply chain configurations, with a strategic pivot towards Southeast Asia as a means of reducing their dependency on China. This shift is characterized by an increased investment in Southeast Asia, reflecting a strategic effort to diversify supply chains away from the Chinese market. In contrast, European companies are seen to adopt a different approach, opting to strengthen their existing operations within China, while also maintaining a steady engagement in Southeast Asia.

This strategic variance underscores a larger movement within the multinational corporate sector towards diversification, driven not only by the current trade tensions but also by a need to build resilience in the face of global supply chain disruptions. Such disruptions have been vividly illustrated by recent events, including the COVID-19 pandemic and the Russia-Ukraine conflict, which have highlighted the vulnerabilities in global supply chains and the critical need for strategic diversification.

Our study employs a dynamic compositional analysis to examine the impact of U.S.-China trade disputes on the FDI decisions of multinationals, with a particular focus on the markets in China and Southeast Asia. The findings reveal a clear contrast: European firms have increased their investments in China, capitalizing on opportunities to deepen their market penetration. In contrast, American multinationals are pulling back from the Chinese market and pivoting their attention and resources towards Southeast Asia in an effort to reduce their reliance on the Chinese market.

This strategic shift highlights the contrasting responses of U.S. and European firms to trade tensions, with enduring global strategy implications. Our analysis reveals that the differing approaches to expansion and diversification adopted by U.S. and European firms remain consistent in both short and long effects scenarios. These similarities in the short- and long-run suggest that strategic decisions made in response to these disputes play a pivotal role in shaping a firm's long-term global positioning. This persistence is unsurprising, given the advantages of being a first mover and the high level of competitiveness in the economic arena. Consequently, the results im-

ply that European firms, by seizing new opportunities in China and Southeast Asia as alternative manufacturing hubs to China, may emerge as the primary beneficiaries of the U.S.-China trade war, rather than the two nations directly involved in the conflict.

Looking forward, we suggest potential future research areas that could delve into global redistribution trends among multinational investors. These areas may involve expanding the analysis to include additional regions and closely monitoring the evolving investment patterns of multinational corporations worldwide, including those from China. Such research could offer valuable insights into the dynamic landscape of international business amidst ongoing global tensions.

In the both Chinese and Southeast Asian markets, European firms and US firms show distinctive expanding and diversification strategies. Their different response to the ongoing U.S. -China tension remains in both the short- and long-term effects scenarios for most cases. The similarities of those patterns underscore that firms' response to the ongoing disputes determines their global strategy significantly persists in the long run, which is not surprising considering the first-mover advantages and high level of competitiveness in the economic battlefield. Thus, probably the winner of the US-China trade friction are not those two conflicting countries but European firms expanding its foothold in the Chinese market, and Southeast Asia with its rising presence in the global manufacturing hub. We look forward to further research on these mechanisms of global redistribution trends among multinational investors, expand our study to other regions, and monitor the shifting investment patterns of multinational corporations worldwide.

References

Ali, Shaukat and Wei Guo (2005). Determinants of FDI in China. *Journal of global business and technology* 1(2):21–33.

Amiti, Mary, Sang Hoon Kong, and David Weinstein (2020). *The effect of the US-China trade war on US investment*. Tech. rep. National Bureau of Economic Research.

Amiti, Mary, Stephen J Redding, and David E Weinstein (2019). The impact of the 2018 tariffs on prices and welfare. *Journal of Economic Perspectives* 33(4):187–210.

Autor, David H, David Dorn, and Gordon H Hanson (2013). The China syndrome: Local labor market effects of import competition in the United States. *American economic review* 103(6):2121–2168.

— (2016). The China shock: Learning from labor-market adjustment to large changes in trade. *Annual review of economics* 8:205–240.

Blanchard, Emily J, Chad P Bown, and Davin Chor (2019). *Did Trump's trade war impact the 2018 election?* Tech. rep. National Bureau of Economic Research.

Bloom, Nick, Stephen Bond, and John Van Reenen (2007). Uncertainty and investment dynamics. *The review of economic studies* 74(2):391–415.

Caldara, Dario, Matteo Iacoviello, Patrick Molligo, Andrea Prestipino, and Andrea Raffo (2020). The economic effects of trade policy uncertainty. *Journal of Monetary Economics* 109:38–59.

Caliendo, Lorenzo, Maximiliano Dvorkin, and Fernando Parro (2019). Trade and labor market dynamics: General equilibrium analysis of the china trade shock. *Econometrica* 87(3):741–835.

Caliendo, Lorenzo and Fernando Parro (2022). Lessons from US-China Trade Relations.

Carvalho, Monique, André Azevedo, and Angélica Massuquetti (2019). Emerging Countries and the Effects of the Trade War between US and China. *Economies* 7(2):45.

Cavallo, Alberto, Gita Gopinath, Brent Neiman, and Jenny Tang (2021). Tariff pass-through at the border and at the store: Evidence from us trade policy. *American Economic Review: Insights* 3(1):19–34.

Colotla, Ian, Yvonne Zhou, Victor Du, John Wong, Jeff Walters, Justin Rose, and Lars Maecker (2018). China's Next Leap in Manufacturing. *Boston Consulting Group*.

Dhar, Bablu Kumar, Thanh Tiep Le, Tina A Coffelt, and Jakhongir Shaturaev (2023). US-China trade war and competitive advantage of Vietnam. *Thunderbird International Business Review* 65(2):255–263.

Ekman, Alice, Lucrezia Poggetti, Björn Jerdén, John Seaman, Tim Summers, and Justyna Szczudlik (2020). Europe in the Face of US-China Rivalry.

Fajgelbaum, Pablo, Pinelopi K Goldberg, Patrick J Kennedy, Amit Khandelwal, and Daria Taglioni (2021). *The US-China Trade War and Global Reallocations*. Working Paper 29562. National Bureau of Economic Research.

Fisman, Raymond, Yasushi Hamao, and Yongxiang Wang (2014). Nationalism and Economic Exchange: Evidence from Shocks to Sino-Japanese Relations. *The Review of Financial Studies* 27(9):2626–2660.

Flaaen, Aaron and Justin R Pierce (2019). Disentangling the effects of the 2018-2019 tariffs on a globally connected US manufacturing sector.

Fuchs, Richard, Peter Alexander, Calum Brown, Frances Cossar, Roslyn C Henry, and Mark Rounsevell (2019). Why the US–China trade war spells disaster for the Amazon. *Nature* 567(7749):451–454.

Goulard, Sebastien (2020). The impact of the US–China trade war on the European Union. *Global Journal of Emerging Market Economies* 12(1):56–68.

Guo, Meixin, Lin Lu, Liugang Sheng, and Miaojie Yu (Feb. 2018). The Day After Tomorrow: Evaluating the Burden of Trump's Trade War*. *Asian Economic Papers* 17(1):101–120. eprint: https://direct.mit.edu/asep/article-pdf/17/1/101/1688772/asep_a_00592.pdf.

Handley, Kyle, Fariha Kamal, and Ryan Monarch (2020). *Rising import tariffs, falling export growth: when modern supply chains meet old-style protectionism*. Tech. rep. National Bureau of Economic Research.

Handley, Kyle and Nuno Limão (2022). Trade policy uncertainty. *Annual Review of Economics* 14:363–395.

Hassan, Tarek Alexander, Stephan Hollander, Laurence Van Lent, and Ahmed Tahoun (2020). *The global impact of Brexit uncertainty*. Tech. rep. National Bureau of Economic Research.

Heilmann, Kilian (2016). Does political conflict hurt trade? Evidence from consumer boycotts. *Journal of International Economics* 99:179–191.

Henisz, W. J. (2000). The Institutional Environment for Economic Growth. *Economics & Politics* 12(1):1–31.

Hennessy, Alexandra (2023). The impact of Russia's war against Ukraine on Sino-European relations. *Journal of European Integration* 45(3):559–575.

Hennessy, Alexandra and Poppy S Winanti (2022). EU-Indonesia trade relations. In: *A Geo-Economic Turn in Trade Policy? EU Trade Agreements in the Asia-Pacific*. Springer:319–342.

Johns, Leslie and Rachel Wellhausen (2017). The Price of Doing Business: How Upfront Costs Deter Political Risk. At https://www.internationalpoliticaleconomysociety.org/conference-2017-program (accessed March 15, 2019).

Jung, Yoo Sun, Erica Owen, and Gyu Sang Shim (2021). Heterogeneity in How Investors Respond to Disputes: Greenfield Foreign Direct Investment and Coindustrial Disputes. *The Journal of Politics* 83(4):1260–1274.

Jung, Yoo Sun, Flávio DS Souza, Andrew Q Philips, Amanda Rutherford, and Guy D Whitten (2020). A command to estimate and interpret models of dynamic compositional dependent variables: New features for dynsimpie. *The Stata Journal* 20(3):584–603.

Kim, Sung Eun and Yotam Margalit (2021). Tariffs as electoral weapons: the political geography of the US–China trade war. *International organization* 75(1):1–38.

Kucik, Jeffrey and Krzysztof J Pelc (2016). Measuring the Cost of Privacy: A Look at the Distributional Effects of Private Bargaining. *British Journal of Political Science* 46(4):861–889.

Li, Chunding, Chuantian He, and Chuangwei Lin (2018). Economic Impacts of the Possible China–US Trade War. *Emerging Markets Finance and Trade* 54(7):1557–1577.

Li, Quan, Erica Owen, and Austin Mitchell (2018). Why Do Democracies Attract More or Less Foreign Direct Investment? A Meta-Regression Analysis. *International Studies Quarterly* 3(1):494–504.

Nugroho, Anda, Tony Irawan, Syarifah Amaliah, et al. (2021). Does the US–China trade war increase poverty in a developing country? A dynamic general equilibrium analysis for Indonesia. *Economic Analysis and Policy* 71:279–290.

Pandya, Sonal (2016). Political Economy of Foreign Direct Investment. *Annual Review of Political Science* 19:455–75.

Philips, Andrew Q, Amanda Rutherford, and Guy D Whitten (2015). The dynamic battle for pieces of pie—Modeling party support in multi-party nations. *Electoral Studies* 39:264–274.

— (2016). Dynamic pie: A strategy for modeling trade-offs in compositional variables over time. *American Journal of Political Science* 60(1):268–283.

Steinberg, Joseph B (2019). Brexit and the macroeconomic impact of trade policy uncertainty. *Journal of International Economics* 117:175–195.

Tomz, Michael, Joshua A Tucker, and Jason Wittenberg (2002). An easy and accurate regression model for multiparty electoral data. *Political Analysis* 10(1):66–83.

Verdict (2021). *Apple Diversifies Supply Chain but Keeps China at the Center*. Accessed on June 18, 2021. URL: https://www.verdict.co.uk/apple-supply-chain-china/.

Wang, Zhen Quan and Nigel Swain (1997). Determinants of inflow of foreign direct investment in Hungary and China: time-series approach. *Journal of International Development: The Journal of the Development Studies Association* 9(5):695–726.

Waugh, Michael E (2019). *The consumption response to trade shocks: Evidence from the US-China trade war*. Tech. rep. National Bureau of Economic Research.

Wei, Yingqi and Xiaming Liu (2001). *Foreign direct investment in China: Determinants and impact*. Edward Elgar Publishing.

World Bank (2019). *World development report 2020: Trading for development in the age of global value chains*. The World Bank.

Wright, Joseph and Boliang Zhu (2018). Monopoly rents and foreign direct investment in fixed assets. *International Studies Quarterly* 62(2):341–356.

Yean Tham, Siew, Andrew Kam Jia Yi, and Tee Beng Ann (2019). US–China trade war: Potential trade and investment spillovers into Malaysia. *Asian Economic Papers* 18(3):117–135.