

ABSTRACT

Title of Dissertation: FIRM CONNECTIVITY
AND TRADE PROTECTION
UNDER GLOBAL VALUE CHAINS

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Government and Politics

Antidumping (AD) duties have been the most widely used trade policy globally to protect domestic industries from foreign competition. Prior research assumes that firms within domestic industries will demonstrate a united stance in petitioning their home government for AD protection, and that the political salience of unified domestic industries will compel the home governments to grant protection. However, I find that many firms in the same industry remain silent or oppose these petitions, even though AD aims to protect the entire industry. I offer a firm-level theory that explains how a firm's business connections with foreign firms shapes its AD participation. As a domestic firm connects with foreign firms, two sources make it vulnerable to potential costs generated if AD duties harm foreign firms with whom it is connected. First, foreign firms can pass along the costs of AD to the domestic firm by increasing the prices of inputs or by cutting demand for products they sell to or buy from the domestic firm. Second, targeted governments can impose various trade and investment barriers on the domestic firm's business in the target country's market. I test my theory with a new firm-level dataset that accounts for all domestic firms involved

in US AD cases between 2010 and 2020, matched with millions of shipment records representing their foreign connections. I find that firms that are more sensitive to trade and have more foreign affiliates are less likely to participate in AD.

Next, I demonstrate that the previously identified firm participation in AD significantly reduces the probability that the US International Trade Commission (ITC) will accept the petition and impose AD. I first show that the ITC is largely insulated from external political pressure and that its investigation operates like a quasi-judicial procedure, through which the ITC (i.e., the judge) collects information from supporting firms (i.e., the plaintiff) and the opposing firms (i.e., the defendant) to identify the causal link between foreign dumping and material injury to the domestic industry. Under such a setting, information from opposing firms can help the ITC identify and counteract potentially biased information from the supporting firms, making rejection of the petition more likely. I test my argument by examining the ITC's AD decisions between 2010 and 2020, using the previously-constructed dataset accompanied by data taken from the ITC's final reports on these cases. I find that greater opposition from domestic firms in an AD case makes an AD petition more likely to be rejected.

This dissertation offers a more precise understanding of the origins and outcomes of antidumping duties through a firm-based approach, which bring the AD literature in line with more recent scholarship on trade. The dissertation also demonstrates the value of rule-based and transparent trade policymaking in the context of antidumping duties, providing important policy lessons for the current era of rising protectionism.

FIRM CONNECTIVITY AND TRADE PROTECTION
UNDER GLOBAL VALUE CHAINS

by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2024

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Dedication

To my parents, Deok Hwan Park and Young Hee Chung

Acknowledgments

This dissertation could not have been possible without the years of conversations with my dear advisor, Todd Allee, my other dissertation committee members, and my friends at and beyond the University of Maryland. I am grateful for their guidance and support.

I had the luxury of having Todd Allee, my best fellow fan of Arsenal F.C., as the captain of my academic voyage. Todd has deeply engaged in every stage of this dissertation and my growth as a scholar, formulating my interest in antidumping and other US trade policies, pushing me to challenge existing views, setting ambitious goals in finding new sources of evidence, and finally, providing feedback on every piece of my academic writing. It was tough to overcome the challenges Todd posed through his endless comments, but I enjoyed every bit of those moments. I learned so much from Todd in his courses, meetings, and workshops, watching him lead the discussions, provide constructive yet friendly feedback to colleagues, and balance professional and family life. Looking back on the seven years of my doctoral studies, I feel like one of the boys who went through a transformative coming-of-age journey in Rob Reiner's film *Stand by Me* (1986). Thank you, Todd, for being such a great role model, and thank goodness I decided to bring my Arsenal hoodie that day we first talked about the Gunners in your office!

Next, I am deeply grateful for every opportunity Shannon Carcelli, one of the nicest people I have ever met, has provided since she came to UMD. I still remember when Shannon emailed me and asked if I would be interested in starting a new project together, which later became my first co-authored research paper, my first chance to present at the APSA and IPES conferences, and the source of helpful research funding. I cannot emphasize more how empowering these opportunities were for me and how much I learned from these experiences. Thank you so much, Shannon, and I hope we can continue our scholarly discussions in other works in the future.

I also thank Sarah Croco for her advice and support as my mentor during my first two years in the program. Sarah was my go-to person who was always there, willing to help whenever I was stuck and needed guidance on overcoming various

hurdles in my studies. Sarah also taught me a lot about professionalism through her presence in workshops and our meetings in her office. I also learned how to review a journal article, write grant applications to train myself in methods, frame a paper better, engage students during lectures, and most of all, “How to Write a Lot.” All these have been the backbone of my dissertation.

I owe my thanks to my other committee members, Virginia Haufler and Ethan Kaplan. I thank Professor Haufler for her input on my dissertation from its prospectus stage onward, and her support and encouragement during the Croco & Haufler writing group sessions. I thank Professor Kaplan for his thought-provoking Empirical Political Economy lectures and comments on my earlier projects, which eventually helped me “connect the dots” for my dissertation.

Many faculty members at UMD GVPT have supported my academic journey. I thank Jim Gimpel for teaching me everything about spatial analysis and the opportunity for research assistance. Piotr Swistak’s game theory course forever changed how I build arguments in my research. I look forward to resuming our summer lunch meetings at Gwanghwamun, Seoul, as we used to have before the pandemic. Patrick Wohlfarth, Kathleen Gallagher Cunningham, and Mike Hanmer, in particular, were the best directors of graduate studies I could ever imagine. I thank Scott Kastner, John McCauley, and, notably, Margaret Pearson for sparing their time to provide rich advice at critical stages of my studies. I also thank Isabela Alcañiz, Antoine Banks, Fiona Shen-Bayh, Jóhanna Birnir, Ernesto Calvo, Jennifer Hadden, Calvert Jones, David Karol, Lily Mason, Kris Miler, Irwin Morris, William Reed, Stella Rouse, and Shibley Telhami for their valuable professional advice. The dream team at the GVPT office, Jessica Houchens and Karmin Cortes, and the ISSS officers Guennadi Bratichko and Aviana Symon, helped me easily overcome many administrative barriers.

I thank David Cunningham, Paul Huth, Minju Kim at Syracuse University, David Steinberg at Johns Hopkins SAIS, and Jing Qian at NYU Shanghai, as well as participants at APSA 2022, ISA 2023, the 2023 Junior Scholars in IPE workshop, and the 2024 Graduate Research Workshop at the Johns Hopkins SAIS for their helpful comments on earlier versions of my dissertation chapters. I also thank Duk-geun Ahn and Miyeon Kim at Korean MOTIE, Hyun-jung Je at KITA, Minwoo Kim at Covington

& Burling, John Allen Riggins at Wiley Rein, and especially Robert Koopman at American University for offering comments on my project based on their experience as the practitioners of antidumping and other trade policies in the US and South Korea.

Help from many librarians and scholarship foundations formed the basis of this dissertation. I thank Judy Markowitz at the UMD McKeldin Library, Chuck LaHaie at the Robert H. Smith School of Business, and Jason Amey at the Thomas Yoseloff Center, New York Public Library, all of whom played a decisive role in helping me to collect the data used in this dissertation. I also thank the Korean American Scholarship Foundation and the Institute of Humane Studies for their decision to support my study financially. The people at the Maryland Law Program, where I worked as a graduate assistant in my final years, have provided me with a welcoming environment and financial support. I am genuinely grateful to Robert Koulish for his care and friendship, as well as the summer soccer camps at Fraternity Fields for the kids from Afghanistan. I also thank Christine White for our inspiring conversations during her capstone courses.

Many scholars outside UMD have helped me grow as an academic. I am profoundly indebted to In Song Kim's advice about the profession and professionalism in my first two years in grad school. I also thank Kosuke Imai for offering a seat in his summer course on causal inference in Tokyo. I thank my advisor and role model since college, Chaesung Chun, for all of the advice he has given since 2009. I also thank Jong-wook Chung, Young-Sun Ha, Geunwook Lee, Dong-joon Jo, Shang Eung Ha, Jong Hee Park, Doohwan Ahn, Jae Hyeok Shin, Yukyung Yeo, Haeyong Lim, Yoonbin Ha, Jeongseok Lee, Hye Young You, Moohyung Cho, Minju Kwon, Changjoon Ok, and Chansong Lee for their advice on grad school life and pursuing an academic career.

Conversations with GVPT friends were always fun and inspiring. I thank Henry (and Taylor) Overos, Xiaonan Wang (and Yuruo Li), and Rithvik Yarlagadda for their exceptional friendship. Henry and Rithvik, having lunch with you two on the first day of math camp was one of the best decisions I made at Maryland. Xiaonan, thank you for our time together studying methods and the soccer games at the M-Circle. I also thank Kung-Chen Chen, Ellin Chung, Seungjun Kim, Tiago Ventura, Guan Wang, Dan Tuke, Karim Makkawy, Evan Jones, Youngjoon Lee, Kainan Gao, Connor Kopchick,

Andrew Lugg, Oja Pathak, Leo Bauer, Alauna Saparfour, Sean Rao, Jiun-Da Lin, Ryan Frazier, Ethan Kim, Tristan Hightower, Amy Meli, Victoria Worley, Autumn Perkey, Lizzie Irlbacher, Harriet Goers, Madie Fleishman, Sloan Lansdale, Xiuling Zhang, Megan Lloyd, Woohyeon Kim, Hyeri Park, Juan Gelvez, Juan Diego Alvarado, Pedro Abelin, Zhenze Huang, and Brian Wendelgass for the conversations we had together.

My Korean friends at UMD, particularly Changmin Lee, Hansol Kwak, Youngho Kim, Najoung Lim, Junhyun Lee, Kyungjun Lee, Hongjun Kim, and Meenwook Ha, were the pillars of my life at College Park. I also thank Donggeun Tak, Seung Min Oh, Hyosoo Park, Minha Lee, Hyunjoo Eom, Kyemyoung Park, Seokjin Bae, Yongwan Park, Seula Kim, Dasom Lee, Nayeon Yang, Chan Kim, Eun-Kyoung Lee, Youngjin Han, and Dakyung Yang, and Dongyoon Shin.

My beloved cohort of IR 2008 at SNU always made me feel that I am a good man and can continually improve as a scholar and an individual. Special thanks to Jaeyoung Kim, Junhoo Park, Yoeun Kim, Yeonju Seo, Jungyoon Yang (and Hyunjae Jeon), Mikyung Ji, and Kyungsil Roh. Thanks to other old friends from SNU, Sukchan Hong, Kumkang Lee and Dahjin Kim, Mingu Kim, Munkyoung Park, Kyuwon Lee, Joongyong Koh, Jaewon Lee, Taehwan Shin, Soomin Jung, Sangyeon Park, Yeri Park, Gang I Kim, Hyunkyung Kim, Dasol Shim, Betty Choi, Hosung Rah, Kyeonggeun Shin, Inhwan Oh, Inho Choi, Suhyen Bae, Sun Young Park, Junmin Park, Yesol Choi, Suji Kang, Eunsil Choi, ByungKoo Kim, Yumi Park, Chaeun Cho, Hanna Lee, Dain Yoo, Sowon Park, Mingiu Lee, and Kyuri Kim for their support in Seoul, DC, and beyond.

The SNU Alumni Association has been a shelter for me in the DMV area. I especially thank Min Ji Sohn and Heebum Kim, Eunkyoun and Jinho Park, Hyungmin Kim, and all the care from “sunbaenim” Inhwan Oh, Sang Kuen Park, Sami Lauri, Saekewn Chung, Jaewoo Lee, Wookhyun Nam, Juhee Lee, Kyeonghoon Koo, Hyungsuk Kang and Taeyun Hwang, Gwanhoo Lee, Young Jong Lee and Yoen Joo Kim, Jang Yong Lee, Jihyun Jeon, Sangmin Kim, Sangwon Koh, Seongryul Park, Yungjun Yoo, and Jihyun Lee.

I would like to acknowledge the continued support of my parents, Young Hee Chung and Deok Hwan Park, my sister Se Eun Park, and my brother-in-law Hyunsung

Park. I also received exceptional encouragement from great cousins (the “Chungs”), many of whom are pursuing similar careers.

Finally, I would like to thank the love of my life, Minyoung. Words are not enough to express the depth of my gratitude for your love, patience, and support in finishing this journey.

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List of Abbreviations

Advanced Biofuels Association (ABFA)
Alliance Treaty Obligations and Provisions (ATOP)
Antidumping (AD)
Bureau of Economic Analysis (BEA)
Countervailing (CVD)
Customs and Border Protection (CBP)
Department of Commerce (DOC)
Dispute Settlement Understanding (DSU)
Electronic Data Gathering, Analysis, and Retrieval (EDGAR)
Electronic Document Information System (EDIS)
European Community (EC)
European Union (EU)
Federal Reserve's Economic Data (FRED)
General Agreement on Tariffs and Trade (GATT)
Global Value Chains (GVC)
Gross Domestic Product (GDP)
Harmonized Systems (HS)
International Trade Commission (ITC)
Intra-Industry Trade (IIT)
John Maneely Company (JMC)
Merger and Acquisitions (M&A)
Most Favored Nation (MFN)
Multinational Corporation (MNC)
National Biodiesel Board (NBB)
North American Industry Classification System (NAICS)
Organization for Economic Co-operation and Development (OECD)
Period of Investigation (POI)
Polytetrafluoroethylene (PTFE)
Quarterly Census of Employment and Wages (QCEW)
Sanitary and Phytosanitary (SPS)
Securities and Exchange Commission (SEC)
Standard Industry Classification (SIC)
Temporary Trade Barriers Database (TTBD)
Twenty-Foot Equivalent (TEU)
United Nations (UN)
United Nations Conference on Trade and Development (UNCTAD)
United States (US)
United States Dollar (USD)
United States Trade Representative (USTR)
World Development Indicators (WDI)
World Trade Organization (WTO)

Chapter 1: Introduction

The global economy is returning to protectionism as countries are increasingly using restrictive trade measures against each other. Since 2018, the United States has imposed several waves of import tariffs on various products from its major trading partners, including Canada, Mexico, South Korea, and the European Union. China has also been a major target of new measures and has responded by imposing widespread retaliatory tariffs on imports from the US. Across the Atlantic Ocean, the European Union similarly has targeted China with new trade restrictions, including many new antidumping and countervailing duties.

A notable feature of the current wave of protectionism is the increasing use of unilateral trade policies. For example, US trade policy under the Trump administration was characterized by extensive use of previously dormant trade measures such as “Section 232” investigations of the Trade Expansion Act of 1962, and “Section 201” and “Section 301” investigations of the Trade Act of 1974.¹ These measures provide

¹ On the imposition and continuation of “Section 232(b) of the Trade Expansion Act of 1962” tariffs on Chinese steel and aluminum products, see Department of Commerce Bureau of Industry and Security, “Revisions of the Section 232 Steel and Aluminum Tariff Exclusions Process,” 89 FR 43740, available at <https://www.federalregister.gov/documents/2024/05/20/2024-10725/revisions-of-the-section-232-steel-and-aluminum-tariff-exclusions-process>. On the imposition and continuation of “Section 201 of the Trade Act of 1974 tariffs on Chinese solar panels, see Executive Office of the President, “To Further Facilitate Positive Adjustment to Competition From Imports of Certain Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled Into Other Products),” 89 FR 53333, available at <https://www.govinfo.gov/content/pkg/FR-2022-02-09/pdf/2022-02906.pdf>. On the imposition and continuation of “Section 301 of the Trade Act of 1974” duties on Chinese technological transfer and intellectual property related products, see Office of the United States Trade Representative, “Notice of Extension of Certain Exclusions: China’s Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation,” 89 FR 46948, available at <https://www.federalregister.gov/documents/2024/05/30/2024-11904/notice-of-extension-of-certain-exclusions-chinas-acts-policies-and-practices-related-to-technology>.

the US president with the discretionary ability to impose quotas or tariffs on specific imported products under “national security” and other considerations. Section 301 had been dormant since 1995, and Section 201 had been used only occasionally in the past. However, Section 232 had never been used previously, making its evocation particularly notable.

The US turn to unilateral trade policymaking has continued under the Biden administration. Most of the Section 201 tariffs on Chinese solar panels and Section 232 tariffs on Chinese steel and aluminum products remain in place as of mid-2024. Moreover, under the Biden administration the US has initiated a series of industrial policies based on the enactment of the “CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act of 2022” and the “Inflation Reduction Act of 2022,” each of which includes several protectionist provisions.

Recent political economy scholarship finds this rise of unilateral protectionism to have had significant negative effect on economic welfare. In the case of the United States, the recent “trade wars” with China have resulted in a loss of gross domestic product (GDP) and have negatively affected many Republican-leaning counties that mainly were pro-protection (Fajgelbaum et al. 2020; Kim and Margalit 2021). Likewise, many Chinese exporters to the US have experienced a decline in their sales and profits due to the tariff hikes during the US-China trade war (Jiao et al. 2022).

Relatively little is known about the domestic processes through which these protectionist trade policies are formulated and implemented. For example, for the 2018 Section 232 investigations, the Office of the United States Trade Representative (USTR) unilaterally imposed tariffs on all steel and aluminum imports from China,

except for those imported by domestic firms that petitioned and successfully obtained an exemption from the USTR. Similarly, in the case of Section 301 investigations, the USTR granted tariff exemptions to some domestic firms who made exemption requests through the USTR website. However, in both cases, little is known about which domestic firms eventually received exemptions from the USTR. These recent Section 232 and 301 investigations show that the domestic formulation of these recent unilateral trade policies is far from transparent and, therefore, raises even more questions about the overall fairness and predictability of the current use of protectionist tools.

One way to better understand the rationale behind the development and implementation of recent trade policies is to gain insights from an established protectionist measure: antidumping duties. Antidumping (AD) duties are tariffs imposed on imported goods that are believed to be sold at unfairly low prices in the domestic market. Since its introduction at the beginning of the 20th century, AD has become a popular tool for trade protection worldwide. Because of their history and widespread use, AD duties are by far the most institutionalized measures when compared to other trade policies (Goldstein 1988). Despite the prominence of AD duties, the process by which such duties are imposed remains poorly understood, and there are both gaps and misunderstandings in our knowledge of this trade policy tool.

In the United States, domestic firms can petition the US International Trade Commission (ITC) to request the imposition of AD duties against specific imports from particular countries. Throughout a largely transparent and multi-staged decision-making process, the ITC conducts a thorough investigation that allows the

implementation of AD duties to be done according to a predictable process. Moreover, a WTO (World Trade Organization) member country's use of AD duties is subject to the WTO's Anti-dumping Agreement. This means that those who use AD must follow certain procedures and that countries targeted by another country's AD can request the WTO to review its validity. Thus, the Dispute Settlement Understanding (DSU) review process regulates the arbitrary use of unilateral trade policies to maintain a stable multilateral trading system.

In sum, AD duties are one of the most popular and standardized trade policies, exhibiting a transparent and relatively predictable investigation procedure both domestically and internationally. Therefore, a better understanding of AD duties' origins and outcomes can provide a baseline for comparison with other trade policies, particularly many unilateral policies increasingly used in recent years.

Firms and Antidumping Duties

Antidumping (AD) duties are the most prominent of the many policy tools that a government has to protect a domestic industry against foreign competition. Often, the trade or industry association that seemingly represents the domestic industry gets the spotlight in the headlines of media reports for their fight to secure the domestic market against unfair foreign trade practices. However, ultimately it is the government's decision as to whether to take action to protect the domestic industry or to decline and let the trade status quo continue. Indeed, governments and industries each play a role in the overall process of enacting new AD duties. Nevertheless, much of the previous

AD research has focused on “industries,” and industry-level characteristics, to explain why some economic actors pursue AD and eventually why some of them are successful (Finger et al. 1982; Hansen 1990; Moore 1992; Hansen and Park 1995; Hansen and Prusa 1996, 1997; Busch and Reinhardt 1999).

However, it is essential to note that out of the spotlight, individual firms, and not industries, are the primary actors that initiate and lead the AD process. This is because what is referred to as a ‘domestic industry’ in an AD duty case is, in fact, a collection of firms that produce the same product or products. For example, when the US considers an AD case regarding mattresses or hardwood plywood, this implies that the entire set of firms that produces these items can be thought of as a single entity or “industry.” However, the label ‘domestic industry’ does not necessarily mean that every firm within the industry supports the AD petition. In fact, in many AD cases, the domestic industry is divided, with only a subset of firms in the domestic industry supporting the filing of the AD petition and many other firms in the same industry opposing it or failing to express their support for it. For example, when the US considered an acetone AD case against several countries in 2019, only three out of eight firms that produce the product were supportive of the petition, while the other five were unsupportive. This division within domestic industries makes it difficult to justify describing each AD duty case simply as a fight between the entire domestic industry and a foreign industry.

In fact, for a given AD investigation, many domestic producers, along with various importers and foreign firms, actively provide their input and feedback in a way that may direct the ITC toward rejecting the AD petition. For example, consider the

2016 US carbon and alloy steel cut-to-length (CTL) plate case, which targeted twelve US trading-partner countries (USITC 2017a). This AD duty case was initiated by a petition filed by three producers in the US steel industry, ArcelorMittal, Nucor Corporation, and SSAB Americas, with support from two other domestic producers, EVRAZ North America and JSW Steel USA. The firms submitted information about the domestic industry to the ITC, arguing that the surge of imports from the twelve countries had injured the domestic industry. However, as the ITC's final report on this case conveys, sixteen other domestic producers, including Cargill Inc. and Reliance Steel & Aluminum, did not support the petition. Several of these firms provided information that countered the claims made by supporting firms. One of these producers, Steel Warehouse Company, later testified at the final hearing, arguing that the ITC should not grant a protective decision to the case. As I demonstrate in chapter 5, various information and actions taken by opposing firms in the AD case can push the ITC to reject granting AD duties. The 2016 CTL case illustrates that firms are the primary actors leading the overall AD duty procedure.

One notable aspect of the previous case is that many firms in both domestic and foreign industries are multinational corporations (MNCs) that trade with firms in other countries or run businesses in these countries through their affiliates. Even some firms in the domestic industry, regardless of their stance on the AD petition, trade with foreign firms targeted with AD or have affiliates in targeted countries. This implies that much of the fight over the US domestic market through AD is not only between domestic and foreign firms, but also between some domestic firms that benefit from a protective AD decision and other domestic firms that lose from such a decision.

Therefore, to understand the origins and outcomes of AD cases, it is important to focus on domestic firms' incentives to request trade protection through AD and the impact of their participation on the ITC's AD decisions.

Theoretical Overview and Core Contributions

This dissertation examines the origins and outcomes of AD duties, using cases from the United States, the most significant user of AD duties over the last century. The primary goals of this research are to identify: 1) the conditions under which domestic firms participate in AD duty petitions, and 2) whether their participation has a meaningful impact on the outcomes of the petitions. To do so, I incorporate into my framework important recent changes to the global economy, most notably the evolution of intra-industry trade and the spread of global value chains. Doing so allows me to identify the importance of firms in what has been thought of as an "industry-level" process. It also allows me to better understand why some firms do (or do not) participate in AD duty petitions and the impact of domestic firms' AD participation on the ITC's AD decisions.

I first argue that the degree to which a domestic firm's business is connected with those of the foreign firms targeted by AD duties affects its participation in AD. Because firms increasingly produce highly specialized products, many domestic firms have established business connections with other firms across borders, even within the same industry. The rise of such complex cross-border business connections (i.e., global value chains) among domestic and foreign firms shifts some domestic firm's political

incentives to oppose such a measure on the same set of foreign firms and countries, while pushing other firms to favor imposing protective trade measures on a set of specific foreign firms and countries.

Under the evolution of intra-industry trade (IIT) and the spread of global value chains (GVCs), a domestic firm's foreign connectivity should shape its participation in AD, as it becomes vulnerable to potential costs generated if AD duties harm connected foreign firms. Specifically, two types of costs are the sources of such vulnerability. The first is the GVCs, through which this domestic firm connects with targeted foreign firms as a seller or a buyer of specialized (i.e., differentiated) products. Once AD duties are imposed on connected foreign firms, the foreign firm can pass along AD costs by reducing its demand for products it buys from the domestic firm or increasing the costs of products it sells to the foreign firm. The second is retaliation from foreign governments. Because the identity of the petitioners becomes available to the public once the petition is initiated, the domestic firm fears that targeted foreign governments may retaliate by singling out the petitioners through various barriers to trade and investment. Retaliation from foreign governments can be particularly significant if the domestic firm runs its business in targeted countries through its foreign affiliates.

Next, I demonstrate that the previously identified opposition from producers within the domestic industry significantly impacts the outcomes of AD investigations. I start by establishing that the ITC's six commissioners and the staff are insulated from political pressure, particularly because the commissioners are balanced in their partisanship, have term limits in serving their position, and are not accessible through political activities like lobbying. Based on the ITC's institutional background, I further

show that the ITC's AD investigation operates like a quasi-judicial procedure, where the commissioners make final decisions on whether the entire domestic industry was materially injured by foreign dumping based on their thorough review of the claims from the supporting firms and the opposing firms. Under such an institutional setting, the ITC's decision can be swayed by information from the petitioning firms, as information from these firms forms a basis of the ITC's understanding of the state of the domestic industry. However, knowing that the information from the petitioning firms primarily represents their interests, the ITC utilizes the information from opposing firms to better identify and counteract potentially biased information from the petitioners. Based on the argument, I expect the ITC is more likely to reject AD petitions when a greater proportion of firms oppose the petition.

Based on the above arguments, this dissertation makes several contributions to the antidumping literature, and, more broadly, to scholarship on international trade and international political economy. First, prior works have predominantly taken an industry-based approach to explaining the origins and outcomes of AD cases, but they do not provide theoretical mechanisms through which large and politically influential domestic industries can influence the ITC to make a protective AD decision. My dissertation provides a firm-based approach that shows how firms' business connections with foreign firms can affect their strategic decision to participate in AD. In doing so, I cast doubt on existing approaches that assume unified industries (Finger et al. 1982; Hansen 1990; Moore 1992; Hansen and Park 1995; Hansen and Prusa 1996, 1997; Busch and Reinhardt 1999). This dissertation also offers a fresh look at how the ITC makes decisions on AD investigations. By considering the institutional context in

which the ITC is situated, I provide and advance an information-based argument for AD outcomes. Specifically, my argument departs significantly from most prior works that emphasize the potential role of pressure from politically influential industries or considerations on foreign economic relations on the ITC's AD decision-making. Instead, I provide a new channel through which firm participation (i.e., opposition) in AD petitions can substantially impact policy outcomes. Specifically, I suggest that information from the opposing firms can shift the ITC toward making a less protective decision on AD cases by adjusting potentially biased information from the petitioners.

Next, this dissertation advances in a new direction the recent firm-based research in IPE. A growing literature has explored the origins of firms' trade preferences and their subsequent political behavior in domestic and international trade politics (Kim 2017; Osgood 2017b; Kennard 2020; Brutger 2023) based on the New-New trade theory (Melitz 2003; Antràs 2003; Bernard et al. 2003). Moreover, following the seminal work of Milner (1988), recent research has begun to examine the role of a firm's position within various global value chains (Johns and Wellhausen 2016; Meckling and Hughes 2017; Malesky and Mosley 2018; Osgood 2018; Kim et al. 2019; Bayer 2023; Lee 2023). Building on these works, my dissertation not only demonstrates that firm-to-firm business relationships under GVCs affect firms' strategic participation in trade policies, but also the outcomes of those policies.

In addition to the above theoretical contributions, my dissertation makes an important empirical contribution to AD research, and more broadly, to IPE scholarship, by offering new empirical measures of firm-to-firm connectivity in the analyses using granular administrative and business-proprietary data. By capturing the universe of

firms involved in US antidumping cases with this data, my dissertation reveals the fuller dynamics of the trade policymaking process and the role that certain firms can play.

Finally, my dissertation provides an important policy implication in the era of a return to trade protectionism. I show that the antidumping investigation procedure in the United States operates under strict and transparent rules, as it does elsewhere. This rule-based and transparent AD policymaking process enables domestic firms seeking protection to identify clearly their potential benefits and costs from policy outcomes. My dissertation's theoretical and empirical results imply that the current use of unilateral, ad-hoc trade policies can negatively impact the welfare of intended policy beneficiaries if these beneficiaries cannot correctly identify the costs and benefits of policy outcomes.

Plan of the Dissertation

This dissertation uses a multi-method approach to examine the impact of firms' foreign business connections on the origins and outcomes of antidumping duties in the United States. In chapter 2, I provide a comprehensive review of the history of AD duties, showing that AD duties have become the most widely used protectionist measures globally since the beginning of the 20th century and that the United States has been a leading user. I further emphasize the essential role of the USITC and its rule-based and process-based decision-making procedures for determining whether to impose antidumping duties. A close review of recent research in international political economy

demonstrates that the evolution of intra-industry trade and the spread of global value chains requires a new firm-based theory to explain the origins and outcomes of antidumping duties.

Building on discussions from the previous chapter, I develop a firm-level theory of AD participation in chapter 3. I highlight the role of domestic firms' foreign business connections in explaining their decision about whether or not to participate in antidumping duty petitions in the United States. Specifically, I show that AD duties can negatively affect domestic firms' marginal profit when connected foreign firms pass the costs of AD to domestic firms by cutting demand for the products they buy from the domestic firms, or increasing the prices of inputs they sell to domestic firms. I also show that retaliation by targeted governments through trade and investment interventions can generate additional costs of for domestic firms that operate businesses in these AD-targeted countries. The chapter carefully develops several hypotheses, which predict that domestic firms that trade more with or have more foreign affiliates running businesses in targeted countries will be less likely to participate in AD.

Chapter 4 tests the central arguments of the theory laid out in chapter 3. Using an original database that identifies all domestic firms relevant to each AD petition in the United States, and their connections to foreign firms, I carry out a series of statistical tests to demonstrate that domestic firms that trade more with targeted countries of AD duties have fewer incentives to join the petitioning group of firms. Next, I show that domestic firms that operate businesses or affiliates in countries targeted by AD are disincentivized to participate in the petition as they expect foreign governments to retaliate against them. The chapter also shows the impact of targeted foreign countries'

experience and capability for retaliation on domestic firms' decision to participate in AD petitions. An in-depth study of the US biodiesel AD case provides qualitative evidence in support of the argument.

Having established the importance of firms' foreign business connections in explaining their participation in AD petitions, chapter 5 examines whether and how participation from domestic firms affects the outcomes of AD investigations in the United States. I argue that the outcomes of AD petitions depend heavily on whether the domestic firms that produce the good in question are unified or divided. Specifically, I expect that if the ITC obtains information from domestic firms opposed to the petition, they are less likely to grant the AD request. My argument highlights the importance of information from firms unsupportive of the petition in limiting protection. In the remainder of the chapter, I carry out a series of statistical tests and show that the ITC is less likely to grant protective AD decisions when the proportion of unsupportive firms is higher, or the proportion of opposing firms testifying before the ITC at final hearings is higher. An in-depth study of the 2020 polytetrafluoroethylene (PTFE) resin case against China and India demonstrates more specifically that information provided by unsupportive firms is crucial, and that such information often is provided during the final hearings held by the ITC before rendering its judgement.

Chapter 6 summarizes the lessons learned from this study their implications for research on antidumping duties and international political economy more generally. I first emphasize that *firms*, and not industries, should be the focus of future antidumping research, as firms play an essential role both in the initiation and the outcomes of antidumping duties. I also highlight that contrary to prior beliefs in the literature,

antidumping decisions are not heavily influenced by lobbying, or domestic or foreign policy considerations. Instead, decisions are made primarily based on the facts of the case, with information collected from firms that oppose the AD petition being crucial. Finally, I discuss the value of rules-based and transparent trade policymaking as compared to the current wave of unilateral, ad hoc protectionism.

Chapter 2: The Globalization of Antidumping Duties

Outline of Chapter

This chapter provides an overview of how antidumping (AD) duties work and reviews prior research on AD participation and outcomes. Through a comprehensive review of the history of AD duties, I show that AD duties have become one of, if not the, most widely used protective trade policies across countries since the beginning of the 20th century. The primary reason for AD's popularity is that it is by far the most effective tool for governments to swiftly shield their businesses from the imminent surge of imports. Among the many countries who use AD, the United States has been the most frequent user of such duties. At the same time, it has established a rule-based and transparent decision-making process on AD investigations, which is true for several other users of AD, too. The US International Trade Commission (ITC) plays a primary and decisive role in the outcomes of AD investigations. It determines whether foreign dumping has caused material injury to the domestic industry and, if so, imposes duties on imports from targeted countries.

Later in the chapter I offer a thorough review of the previous literature on AD duties. In short, prior antidumping research has focused on the impact of industry-level factors on the origins and outcomes of AD. However, recent changes in the global economy highlight the potential for significant within-industry variation in support for AD petitions, driven by the rise of intra-industry trade (IIT) and global value chains (GVCs). These developments call for a firm-level theoretical framework to better

understand the complex dynamics of trade protection, considering how individual firms' business connections with foreign firms, or lack thereof, may influence their participation in AD duty petitions.

The Significance of Antidumping Duties in Global Trade Protection

What are Antidumping Duties?

Antidumping (AD) duties refer to tariffs imposed on imported goods as a response to 'dumping' activities by foreign firms. Formally, this means that these goods were believed to be sold by foreign producers at prices below their home market price or below their cost of production (Finger et al. 1982; Deardorff 1989). Particularly to those who view dumping as unfair trade activity by foreign producers, dumping can have detrimental effects on domestic markets, as it undercuts domestic prices, erodes the market share of domestic producers, and distorts market competition. Consequently, dumping can lead to job losses, reduced profitability, and production declines within the domestic industry. In this regard, the imposition of AD duties on a specific good within a specific industry aims to offset such "material injury" and level the playing field for domestic producers by matching the prices of imported goods to those sold by domestic producers in the domestic market.

However, economists generally regard dumping as a natural form of profit-maximizing firm behavior. Brander and Krugman (1983), for example, develop a canonical 'reciprocal dumping' model that shows that when the home country and the foreign country open their markets for free trade under intra-industry trade and the

demand for foreign producers' goods is higher in the domestic market than the foreign market, then foreign producers selling goods at a lower(er) price (i.e., dumping) will benefit the welfare of both countries. Based on Brander and Krugman (1983)'s model, antidumping duties can result in an overall loss in welfare, and therefore, many economists have continued to question the rationale behind imposing antidumping duties on foreign producers (Deardorff 1989).

Since the introduction of the antidumping law in Canada (1904), followed by Australia (1906) and the United States (1916), almost 100 countries had become part of the 'Antidumping Club' by the early 2000s (Blonigen and Prusa 2016, 112). As a result, AD duties have emerged as one of the most widely used trade policies worldwide. Following Prusa's (2001) account of the global proliferation of AD duties between 1987 and 1997, efforts to accurately document the details of the global use of AD have continued. This led to Chad Bown's (2021) Temporary Trade Barriers Database (TTBD), now hosted at the World Bank, which details the global use of antidumping, countervailing duty, and safeguard measures by all major economies over the period between 1980 and 2019. Based on TTBD, **Figure 2.1** shows that between 1980 and 2019, over 7,900 AD duty petitions were filed worldwide in an attempt to impose AD duties on imports from foreign producers, including on steel, automobiles, electronics, and textiles. Many, but certainly not all, of these petitions were granted by their respective governments, resulting in the imposition of an antidumping duty on imports of a specific good from specific countries.

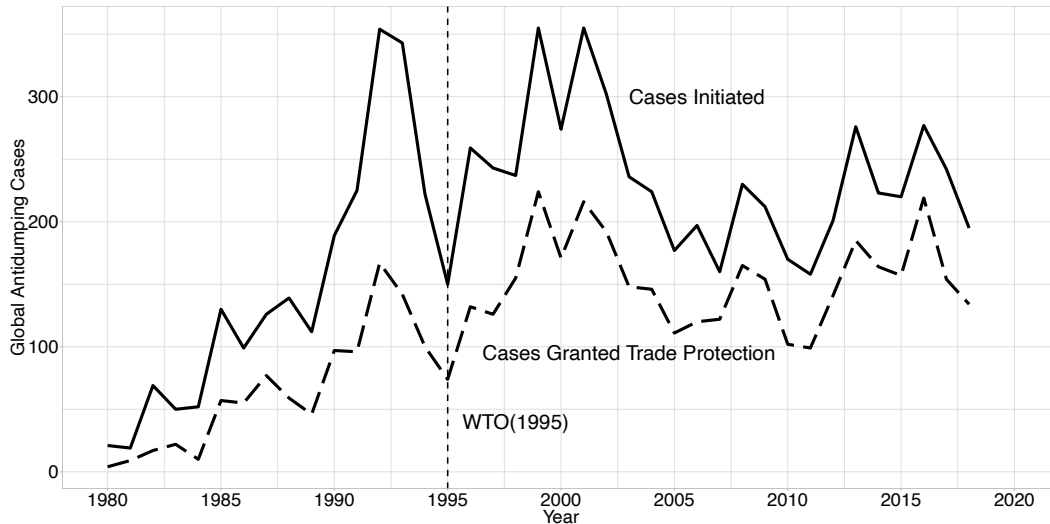


Figure 2.1 Global Trends in Antidumping Duties, 1980-2019. This figure presents the number of antidumping cases initiated worldwide, and subsequent affirmative decisions granted by the home country between 1980 and 2019. Data is based on Chad Bown’s (2021) Temporary Trade Barriers Database (TTBD). Cases without precise initiation date and final decision status were excluded.

The United States stands as the foremost user of AD duties. Between 1980 and 2019, domestic producers in the United States filed over 1,500 AD duty cases against foreign countries, consistently employing this trade remedy more frequently than any other. For example, Finger (1993) documents how the US began to impose AD duties in industries where the US faced severe import competition, providing examples such as Brazilian orange juice (USITC, 1986), Colombian cut flowers (USITC 1984b), Korean electronics (e.g., USITC 1984a), and Swedish stainless steel (e.g., USITC 1987).

As **Table 2.1** shows, however, many other countries, such as India, Australia, and Brazil, have also embraced AD duties as a means of addressing import competition and protecting domestic industries. While the United States remains at the forefront of AD duty enforcement, all major economies’ collective adoption of such measures underscores the widespread recognition of AD as an effective, albeit controversial, tool

for addressing market distortions and safeguarding national economic interests under globalization.

Country	Number of AD Duty Filings
United States	1,524
India	979
European Union	820
Australia	631
Brazil	480
Canada	460
Argentina	456
Mexico	341
Turkey	319
South Africa	309
Total	8,067

Table 2.1 Top Ten Countries for Antidumping Filings, 1980-2019. This table lists the top ten countries that filed antidumping duty cases against their trade partners between 1980 and 2019. Data is based on Chad Bown’s (2021) Temporary Trade Barriers Database.

Following the increase in countries’ adoption of domestic AD laws, the GATT/WTO system adopted the ‘Antidumping Agreement’ (GATT 1994, Article VI), where AD is treated as an exceptional but permitted means regulating import activities among member states. Unlike several GATT/WTO principles like ‘most favored nation’ (MFN) status, which does not allow applying discriminatory duties to certain members, the Antidumping Agreement explicitly authorizes member countries to impose AD duties on imports from a partner country when the partner’s dumping causes or threatens injury to (or limits the establishment of) their domestic industry. However, because of its discriminatory nature and the vagueness of key aspects of the Agreement, disagreements often arise regarding the legitimacy of a given AD action,

and AD decisions by a member state are frequently challenged under the WTO Dispute Settlement Understanding (DSU) mechanism.²

Why Have Countries Used Antidumping Duties for Trade Protection?

Countries have frequently resorted to AD duties for trade protection for several reasons. First and foremost, AD duties are perceived as essential tools for safeguarding domestic industries against foreign competition. By levying additional tariffs on low-cost imports, under the rationale that such imports are being sold unfairly, AD duties help to level the playing field for domestic producers. Moreover, in an era of increased economic interdependence, countries face heightened pressure to protect their industries from the adverse effects of international trade imbalances and competitive pressures. AD duties are perhaps the most effective mechanism for addressing these challenges, allowing governments to shield vulnerable sectors, at least temporarily from the disruptive consequences of import surges and aggressive pricing strategies.

Another reason for the widespread use of AD duties is that they are the most accessible trade remedy a domestic industry can use to protect itself from unfair foreign competition. Many trade policies that unilaterally add tariffs or restrict imports in some other ways are initiated by government agencies or involve a lengthy administrative or legislative process. These options are unattractive because domestic industries do not

² See Chaudoin, Kucik and Pelc (2016), Johns and Pelc (2016), Ryu and Stone (2018), and Kim and Spilker (2019) for related discussion. For a full text of “Agreement on implementation of Article VI of the General Agreement on Tariffs and Trade 1994” (‘The Anti- dumping Agreement’), see https://www.wto.org/english/tratop_e/adp_e/antidum2_e.htm.

have a direct say in the design and execution of the policy and would not obtain favorable results promptly. However, domestic firms can petition government agencies to retaliate swiftly against unfair foreign trade activities, which produces decisions within a relatively short period according to a delineated process.

The Process of Antidumping Duty Investigations in the United States

As is the case elsewhere, in the United States, an AD duty investigation typically begins with a petition filed by one or more domestic firms. The petitioning firms argue that specific imported products from specific foreign countries are sold at ‘less than fair value’ (i.e., dumped) prices in the US market compared to domestic producers. The domestic firms that produce these specific products, whether part of the petitioning party or not, constitute the ‘domestic industry.’ As I discuss in more detail in chapter 3, the petitioning firms must demonstrate that the petition gained the ‘majority support’ from the domestic industry upon filing of their petition. Notably, these requirements still allow for a split within the industry, with some firms supporting the petition and others opposing it. Nevertheless, most still think of a domestic “industry” pursuing an AD case.

Once the petition fulfills the ‘majority support’ criteria, two government agencies initiate AD duty investigations separately. The first is the International Trade Administration, an agency under the Department of Commerce (DOC). The DOC’s primary role is to determine the presence of foreign dumping in the US domestic

market. The second is the International Trade Commission (ITC). The ITC determines whether foreign dumping has caused severe material injury to the domestic industry.

Upon receiving the petition, the DOC initiates an investigation to determine the presence of foreign dumping. It calculates the dumping margins, representing the difference between the export price and the normal value of the goods. Then, the DOC examines various factors, including pricing data, production costs, and market conditions, to assess the presence and extent of dumping. Based on the findings of its investigations, the DOC determines the appropriate level of AD duties, if any, to offset the unfair pricing practices. It is important to note that the DOC almost always finds the presence of foreign dumping. For example, in every AD duty petition between 2010 and 2020 (except for a few withdrawn by the petitioners at the preliminary investigation stage), the DOC determined that foreign producers have sold their products at unfairly low prices in the US domestic market.

Concurrently, the ITC conducts a separate and more consequential investigation to ascertain whether the alleged dumping has caused or threatens to cause “material injury” to the domestic industry. Unlike the DOC’s investigation, which considers national and regional statistics to determine dumping margins, the ITC’s investigation accounts for a broader range of information collected from the petitioning domestic producers, domestic importers, foreign producers, and foreign governments. After reviewing all relevant information, the ITC determines whether the domestic industry has been materially injured by foreign dumping and thus whether AD duties should be imposed on imported goods to offset such injury. Thus, the final decision to protect the domestic industry effectively rests with the ITC, which evaluates the overall impact on

the domestic industry and considers broader economic considerations before determining.

It is worth noting that much of the ITC's decision-making process is intended to avoid discretionary decisions and insulate the ITC from political pressure. Created by Congress in 1921, the ITC was designed to make independent decisions on imposing protective trade measures. Three of the six commissioners were to be nominated by the Republican party and the other three by the Democratic Party. They would cast their votes independently to determine the presence of material injury due to foreign dumping (Goldstein and Lenway 1989). Also, the ITC is mandated to consider all relevant economic factors and to provide a public hearing to be placed before the final determination (Finger et al. 1982; Goldstein 1988; Goldstein and Lenway 1989; Rhodes 1993).

If the ITC decides affirmatively (to protect the domestic industry), AD duties are then imposed on imported products based on the DOC's final calculations. However, it is important to note that these AD duties are only imposed on imports from countries targeted by the AD duty petition. In other words, the country-specific AD duties are not imposed on imports of products from countries not targeted by the petition. It is also important to note that AD duties will be imposed for five years from the date of ITC's final determination. Based on the 'Uruguay Round Agreements Act' of 1994 (Pub. L. 103-465, 108 Stat. 4809), the DOC and the ITC must conduct a 'sunset review' within five years after an AD duty order is issued to determine whether foreign dumping or material injury to the domestic industry will continue if the imposed AD duties are removed. The initial AD duties will continue to be imposed on imports from

targeted countries for an additional five years if the ITC makes an affirmative determination in the sunset review.

In short, the DOC typically affirms the presence of dumping and determines the corresponding level of AD duty measures to penalize foreign industries. The ITC, on the other hand, examines claims of material injury to the domestic industry from foreign dumping and makes the pivotal decision about whether there is sufficient injury to warrant the imposition of AD.

Contesting Views on the Origins and Outcomes of US Antidumping Duties

A vast amount of the literature on the political economy of trade, including much of the research on AD duties, has relied on the Ricardo-Viner model to explain the origins and outcomes of trade protectionism. The Ricardo-Viner model, also known as the ‘specific factors’ model, assumes that three factors (capital, labor, land) are used for production. Unlike the Heckscher-Ohlin model, another dominant model of international trade that considers these factors as mobile, Ricardo-Viner assumes that only labor is mobile and can move across different industries, at least in the short term. Because other factors of production are immobile between industries, only owners of factors in the exporting industry will benefit from trade, while owners of the same factor in the importing industry will lose from trade. Based on this result, Ricardo-Viner predicts that attitudes toward trade liberalization will likely align along industry lines, with exporting industries supporting trade liberalization and import-competing industries seeking protection. Indeed, the AD petitions filed before governments are

filed by an import-competing “industry” that alleges unfair trade practices by foreigners and the need for tariffs to be applied on the relevant goods across the industry.

An implicit but important assumption in the Ricardo-Viner model is that firms within the same industry are *homogeneous* in their characteristics, which implies that gains or losses from trade would be the same for every firm in the industry. Based on this assumption, prior works on AD duties have accepted the Ricardo-Viner model’s central tenets and taken the “industry” as their primary unit of analysis. Because AD duties are designed to protect every domestic producer within the defined industry, an industry-level analysis of AD seems to provide a natural framework for explaining who asks for trade protection and who gets favorable decisions from the home government through AD. Moreover, industry-based approaches align well with the practical realities of research on AD, which involve extensive engagement and data collection from affected industries. AD duty investigations typically require detailed information on industry structure, production costs, pricing behavior, and market conditions. By utilizing detailed industry-level data, researchers have identified which factors (including industry characteristics) explain why certain AD duty cases emerge and, more importantly, why certain industries get protected by the home government and not others.

Particular attention has been devoted to the latter question, the determinants of the outcomes of AD protection. Beginning with Finger et al. (1982) in the 1980s, scholars have focused primarily on the impact of industry-level characteristics on AD decisions. As Finger et al. (1982) presents, these factors can include the domestic industry’s structure and size, the institutional structure for AD duty decision-making,

and the industry's export dependence vis-à-vis the targeted country. The degree of concentration within an industry (measured as the ratio of several largest firms' production to the total output in the domestic industry) and/or the industry's size (measured as the domestic industry's total employment or capital stock) often are highlighted as important factors that make an industry more or less successful. The view that specific features of a domestic industry may shape ITC decision-making has continued to be a core element in scholarly discussion of which industry gets AD protection from their government (Hansen 1990; Hansen and Park 1995; Hansen and Prusa 1996, 1997; Busch and Reinhardt 1999). However, the empirical findings from these works are mixed. While some of these works find that large or concentrated industries obtain more protectionist decisions from the ITC (Hansen 1990), other works find the opposite (Moore 1992) or no relationship between industry size or concentration (Hansen and Prusa 1997). Moreover, the theoretical mechanisms through which some domestic industries get protection from the ITC is not clear. Some of these works assume the ITC is subject to political considerations and assert that industries that can exert greater political influence over the ITC are more likely to obtain protective decisions.

Another strand in the literature builds on the 'congressional dominance' literature (Weingast and Moran 1983; McCubbins and Schwartz, 1984) and focuses on the relationship between the ITC and Congress. These works posit that while the decision from the ITC is deemed relatively independent from direct political pressures from domestic interest groups, its decisions can still indirectly be affected by Congress, which has the authority to periodically oversee government agencies. Perhaps the most

common argument stemming from these works is that the ITC's decisions are sensitive to whether important members of congress would desire protection in each AD case. However, empirical results from these works also exhibit mixed findings, concluding that better representation of domestic industries in congress may (Moore 1992) or may not (Devault 1993) lead to protective decisions by the ITC.

Overall, the previous literature on AD outcomes has found mixed empirical results, particularly regarding the potential impact of the industry's political influence and the ITC's vulnerability to such influence. Both strands of the AD literature, those that stem from regulatory capture and congressional dominance theories of trade policy, have been unable to identify precise theoretical mechanisms that explain how political activities from domestic industries can shape the ITC decision, either directly or indirectly.

From a conceptual standpoint, the lack of consistent empirical results may be because the previous works have failed to account for the ITC's unique institutional background. As discussed in Section 2.2.3, the ITC decides whether the domestic industry was materially injured under foreign dumping and, therefore, should be protected through AD duties. As I show in Chapter 5, the ITC was designed to be largely independent of any political pressure with a rule-based and transparent decision-making process (Goldstein and Lenway 1989, 309-12; Rhodes 1993). Therefore, it is implausible to expect that a large or concentrated industry could overtly influence the ITC's decisions on AD outcomes. Instead, the ITC's decision-making process is straightforward under the AD statute, as it focuses on defining the domestic and foreign industries' boundaries and determining whether foreign producers' alleged

dumping caused severe material injury to the domestic industry. From this view, the limits of the previous literature on AD outcomes call for a fresh look at how the ITC processes information collected from interested parties and whether this affects the ITC's decisions on AD duty petitions.

Second, the AD literature in political economy also attempts to explain the origins of AD duties; that is, which domestic industries seek trade protection through AD in the first place. Building on Finger et al. (1982), this strand of literature also considers industry-level factors that significantly impact industries' AD participation. The first is import penetration, which indicates the extent to which the demand for a specific product is met by imports from foreign countries than domestic production. While the ratio of domestic demand met by imports to domestic production may depend on how much a country relies on trade, this ratio will increase as domestic products lose competitiveness compared to imports. Rising import penetration means domestic producers will lose their shares in the domestic market, eventually leading to a loss of profit. Therefore, the domestic producers will consider requesting protection through trade remedies, including AD duties (Prusa 1992; Trefler 1993; Irwin 2005). The second is industry concentration, the extent to which market sales are dominated by one or more producers within the industry. Filing an AD petition is costly to many domestic producers, often requiring several million dollars in legal fees. Thus, it will be relatively more straightforward to file an AD duty petition for industries that are concentrated among several large firms that can afford the costs to file an AD duty petition. Finally, whether a domestic industry is export-reliant on potential target countries may influence the industry's participation in AD. For example, Blonigen and

Bown (2003) focus on retaliation threats from targeted foreign governments to reduce the likelihood of an AD duty case. The logic is twofold: First, a domestic industry that exports more to a potential target country would expect costs from the retaliatory AD to be higher and, thus, is less likely to pursue an AD case when the target is able to retaliate. Likewise, the home government is less likely to make AD decisions favorable to its domestic industry when the targeted country has more experience retaliating through the GATT/WTO channels or when the home country exports more to the targeted country.

Therefore, and as discussed above, prior works have primarily focused on explaining which industries seek out AD protection, focusing on the role of industry-level factors such as import penetration, industry concentration, and trade exposure. Once again, all these works implicitly assume homogeneity within each industry, thereby using domestic industries as the primary unit of analysis.

The Evolution of Intra-Industry Trade and the Spread of the Global Value Chains

A key reason for a lack of consensus within the empirical literatures discussed above stems from a core theoretical assumption from which these approaches rely on theory building and empirical examination: *homogeneous firms within an industry*. Participating in an AD petition is inherently a firm-level decision, which is then observed at the more aggregated, industry level. But much of the prior research assumes that firms within each industry would benefit or lose equally from AD regardless of their varying characteristics.

A closer look at recent cases reveals that not all firms within the industry unite behind AD duty petitions. **Figure 2.2** shows that many US antidumping cases filed between 2006 and 2020 were not supported by the majority number of firms within the domestic industry. The blue bars in the figure indicate the number of AD duty cases in the US where the petitioning firms failed to gain a majority of the firms in the industry when they filed their petition. This implies that although in many cases the petitioning firms were able to fulfill the two criteria to initiate a petition, a considerable number of firms did not join the petitioning party, often taking no position and sometimes opposing the petition. This significant within-industry variation in firms’ participation in AD duty petitions contradicts previous understandings in the trade protection literature.

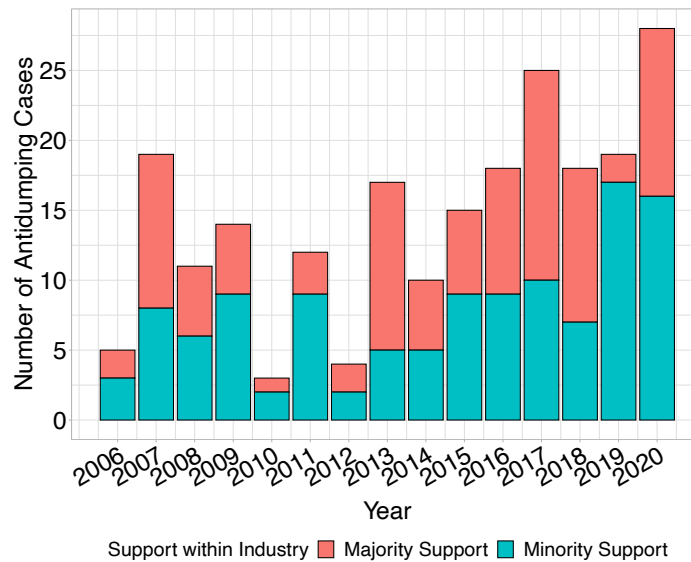


Figure 2.2 Number of Antidumping Duty Petitions Broken Down by Industry Support, 2006-2020. This figure presents the number of annual US antidumping duty petitions broken down by industry support between 2006 and 2020. For each AD case, ‘majority support’ means that petitioning firms take up more than 50% of the number of firms within the industry. ‘Minority support’ means that the number of petitioning firms was less than 50% of firms comprising the same industry. The figure indicates that a considerable number of US antidumping cases, across years, have not been supported by most members within the industry.

The inconsistency between expectations from prior works and recent empirical patterns of AD duties suggests that a new theoretical framework is needed to better understand the origins of trade protection. The literature in international trade points to a continued surge of *intra-industry trade* and the spread of *global value chains* in the last few decades. These, then, can be seen as two main drivers of firms' incentives to seek trade protection.

Intra-industry trade (IIT) refers to trade that 'consists of two-way international trade within an industry' (Krugman 1981, 959). Unlike classic trade theories that predict that countries will specialize and export only the products where they have comparative advantages, IIT has been a critical feature in international trade in the past few decades. Brühlhart (2009) estimates that in 2006 alone, IIT already accounted for about 44 percent of total global trade using the Grubel-Lloyd Index (Grubel and Lloyd 1975), defined as 3-digits Standard International Trade Classification codes. Using the same method, IIT accounts for about 76 percent of the United States trade with its trading partners in 2019.³

The United States' trade in automobile products illustrates one key implication of IIT. While the US is one of the top three exporters in the automobile industry (Harmonized Systems code 8703), it also imports a significant amount of automobile products from Germany and Japan, the two other top auto exporters. In 2017 alone, the

³ Based on my own calculation using the UN Comtrade data. The Grubel-Lloyd Index is a widely used measure to express the level of intra-industry trade as a share of total bilateral trade: $GL_{\{cd,i\}} = 1 - \frac{|Export_{\{cd,i\}} - Import_{\{cd,i\}}|}{(Export_{\{cd,i\}} + Import_{\{cd,i\}})}$, where $Export_{\{cd,i\}}$ and $Import_{\{cd,i\}}$ each refer to country c 's exports and imports to and from country d for each industry i over one particular year. It ranges between 0 and 1, and a higher index indicates a higher share of intra-industry trade. For detailed method to construct this measure, see Brühlhart, 2009, pp. 402-3.

US exported \$6.07 billions and \$1.56 billions of automobile products to Germany and Japan, respectively, while importing \$20.80 billions and \$16.08 billions from the two countries, respectively. However, a closer look at a more granular pattern of within-auto-industry trade reveals significant variation in which products are exported or imported most heavily. For example, the US in 2017 was a sizeable importer (180 million USD) from Germany of *vehicles that use spark-ignition internal combustion reciprocating piston engine with cylinder capacity not over 1000cc* (HS 8703.21) as compared to a bilateral exporter (19 million USD) of the same product to Germany. However, in the case of *vehicles that use compression-ignition internal combustion piston engine (diesel or semi-diesel) with cylinder capacity over 2500cc* (HS 8703.33), the US was more of an exporter (2.35 billion USD) than an importer (75 million USD) to Germany.

The IIT of the automobile industry in the US and Germany suggests that firms now specialize and trade highly differentiated goods even within a narrowly defined industry. One key implication of such ‘product differentiation’ is that, since each domestic firm now produces and sells very specific products, they no longer compete with all other domestic or foreign firms in the same industry. Instead, domestic firms may now regard a foreign firm in the same industry more as a partner than a competitor if the foreign firm supplies products that the domestic firm needs for its production, or if the foreign firm demands products that the domestic firm sells. This departs from what the industry-based theories have argued, implying that a new battleground in trade politics has emerged at the firm-level, particularly based on whether domestic and foreign firms can establish business relationships to buy and sell each other’s products.

Based on observations from IIT, the contemporary trade literature finds that under product differentiation, highly productive firms benefit more from trade. By contrast, less productive firms lose more from trade and are forced to exit the market (Melitz 2003). Therefore, firms with high productivity tend to get bigger in their size and prefer trade liberalization, while the opposite holds for firms with low productivity. In line with this finding, recent works have investigated the role of product differentiation on firms' various political activities. For example, Kim (2017) finds that under product differentiation, firms who export are more likely to lobby to reduce the level of tariffs applied to their traded products. Likewise, Osgood (2017b) finds that large firms within industries tend to express their favor of trade liberalization more publicly.

Another important trend in the contemporary global economy is the spread of *global value chains* (GVCs). Following decades of reductions in trade barriers and global transportation costs, firms can now buy cheaper inputs for their production worldwide. As a result, firms in many countries are increasingly separating and expanding their production stages across borders to maximize profit. This 'product fragmentation,' which can be defined as the "separation of production into parts that are performed in distinct geographic locations, either domestically or offshore, as well as within or outside the firm" (Fort 2017, 655),⁴ not only includes operating production

⁴ See also Jones 2000, Jones and Kierzkowski 2001a, Jones and Kierzkowski 2001b, Jones and Kierzkowski 2004, Venables 1999, Baldwin 2001. Alternative terms such as *vertical specialization* (Findlay 1978; Grossman and Hart 1986; Hummels, Rapoport, and Yi 1998; Hummels, Ishii, and Yi 2001; Irwin 2015), *slicing the value chain* (Krugman 1995), *production sharing* (Ng and Yeats 2001; Yeats 2001), and *outsourcing* (Rangan and Lawrence 2011; Hanson, Mataloni and Slaughter 2001) have been used interchangeably.

facilities in other countries but also sourcing production inputs from foreign firms.

Product fragmentation has contributed to the spread of ‘global value chains’, a term that can be defined as a “series of stages involved in producing a product or service that is sold to consumers, with each stage adding value, and with at least two stages being produced in different countries” (Antràs 2020, 553). Under the spread of these GVCs, intermediate goods now account for more than two-thirds of global trade (Johnson and Noguera 2012; OECD, WTO, and UNCTAD 2013; Johnson and Noguera 2017).⁵ Therefore, when trying to understand the political economy of trade, one must account for the modern patterns of intra-industry trade.

Some firms even specialize in producing within only a portion of these production stages, serving different roles in each global value chain. Upstream firms supply raw materials on the one hand, while downstream firms use intermediate goods to make final products on the other. For example, the iPhone’s GVC, one of the most complex production networks in the world, comprises over 200 firms across countries from all over the world. Each of these firms supplies different parts of the final product.⁶

Recent works have focused on the political implications of the spread of GVCs. Some of these works focus on the relationship between GVCs and trade agreements

⁵ There has been an extensive discussion on how to accurately measure the level of intermediate trade of goods in the literature. See for example, Johnson and Noguera 2012, Koopman, Wang and Wei 2014, Johnson and Noguera 2017, Wang, Wei, and Zhu 2018, and Antràs and Chor 2020.

⁶ Apple Inc., 2024, “Supplier List,” available at https://s203.q4cdn.com/367071867/files/doc_downloads/2024/04/Apple-Supplier-List.pdf (Last accessed on July 9, 2024); Apple Inc., 2024, “Smelter and Refiner List,” available at https://s203.q4cdn.com/367071867/files/doc_downloads/2024/04/Apple-Smelter-Refiner-List.pdf (Last accessed on July 9, 2024).

(Baccini, Dür, and Elsig 2018; Kim and Rosendorff 2021; Malesky and Milner 2021; Zeng, Lu and Li 2021), exchange rate policies (Weldzius 2021) and foreign direct investment (Johns and Wellhausen 2016). Specifically, at the firm level, firms' multinationality (Malesky and Mosley 2018; Kim et al. 2019; Zeng, Sebold, and Lu 2020), their position within GVCs (Meckling and Hughes 2017), and their ability to source inputs through GVCs (Osgood 2017a, 2018; Kennard 2020) have gained much attention in the literature. As firms increasingly situate themselves within many GVCs, we can expect that domestic firms' cost-benefit calculations about requesting trade protection may have changed significantly.

The Need for A Firm-level Theory for Antidumping Duties

Under the growth of intra-industry trade and global value chains, how domestic firms are connected to foreign firms in their business may help us understand their preferences for trade protection using tools such as AD. The increasing complexity of global trade dynamics, coupled with the evolving nature of international competition, underscores the need for a firm-level theory to comprehensively understand the origins and outcomes of AD duties. While prior scholarship based on an industry-based perspective has provided valuable insights, there remains a gap in understanding how domestic and foreign firms connect with each other in global value chains – and how these connections shape whether AD petitions obtain broad industry support, and how the division within the industry affects whether AD is granted.

Attempts to incorporate the role of IIT and GVCs into the AD duty literature are limited but growing. Through an analysis based on a small sample of US multinational companies (MNCs), Jensen, Quinn, and Weymouth (2015) find that MNCs that undertake more foreign direct investments through their foreign affiliates with potential targets of antidumping are less likely to get involved in AD cases under currency undervaluation. Caddel (2014) argues that the ITC is less likely to grant protection when firms in the domestic industry are affiliates of foreign multinational firms or use imported goods as intermediate inputs for their production. To first explain *which* firms participate in trade protection and *when* they do so, I provide a firm-level theory of AD participation that incorporates changes from the rise of intra-industry trade and global value chains to existing theoretical models in Chapter 3.

Chapter 3: A Firm-level Theory of Antidumping Participation

Introduction

In the previous chapter, I suggested that the rise of intra-industry trade and the spread of global value chains have been the two most important recent changes in global trade. As firms move toward selling highly specialized (i.e., differentiated) products, more and more firms are buying products from other firms to use as part of their production. As a result, many domestic firms have established various business connections with foreign firms in the same industry. One implication of these trends is that firms in the same industry now have differing political incentives to request trade protection based on their *foreign connectivity*, even though protective trade measures are expected to shield the entire industry from competition with foreign industries. Domestic firms that are more connected to their foreign counterparts must carefully consider whether protective measures such as antidumping (AD) duties would be beneficial in an overall sense. This is because their fate is now tied to that of targeted foreign firms, who would be negatively affected by the AD protection.

This chapter develops a firm-level theory of AD participation to shed light on the relationship between domestic firms' foreign connectivity and their political incentives to seek trade protection. Specifically, the theory argues that a domestic firm's vulnerability to negative implications from AD duties, originating from its foreign connectivity, plays a critical role in AD participation. When a domestic firm establishes business connections with foreign firms, it becomes vulnerable to potential

costs generated if foreign firms are harmed by some type of shock or policy change. For purposes here, the domestic firm must consider the implications of its home government imposing AD on foreign firms – and to assess whether it wants to support such an effort.

Two sources generate such vulnerability for domestic firms. One is the GVCs, where the domestic firm is directly connected with its foreign competitors as a buyer of raw or intermediate inputs or a seller of a final product. Because AD duties harm the targeted foreign firm's profit in the domestic market, the foreign firm can pass along AD-generated costs to the domestic firm by raising the price of inputs the domestic firm needs for production. It also may reduce its demand for products it buys from the domestic firm. This increase in input prices, or cut in demand for final products, can eventually result in an overall loss of the domestic firm's profit.

Another source is retaliation through barriers to trade or investment from the targeted foreign government. When the home government protects the domestic industry through AD, the domestic firm will be concerned that the foreign government will retaliate with various protective policies. Retaliation can take the form of additional tariffs on products the domestic firm sells to the targeted country, or non-tariff trade barriers, such as export restrictions on raw or intermediate inputs from the targeted country that this domestic firm needs for its production. Targeted countries can also retaliate through investment barriers in their market imposed on the domestic firm, such as restrictive licensing, permits, inspections, compliance systems, administrative allocation and decisions about production, and violation of the domestic firm's property rights. An overall loss in the domestic firm's marginal profit due to

additional costs through GVCs and foreign retaliation is the primary reason domestic firms may become reluctant to join the petitioning party.

To uncover these potential costs that shape firms' attitudes toward protection, it is essential to unpack the process by which AD is granted. Each stage of an AD investigation provides detailed information on who is seeking protection, who is targeted by the protection, and most importantly, who is opposed toward protection or ambivalent toward it. Through hundreds of pages of petition documents and multiple testimonies in public conferences and hearings, the petitioning firms argue that the government should penalize foreign producers because imported products from these producers are being sold at unfairly low prices and thus are harming the domestic industry. On the contrary, firms on the opposing side counterargue that the petitioners' arguments mischaracterize the state of the domestic industry. The opponents first argue that the petitioning party does not fully represent the interests of the domestic industry. Most importantly for purposes here, those opposed also argue that AD duties will harm firms that do business with targeted foreign countries and thus will eventually fail to protect the domestic industry. Carefully studying this clear division within domestic industries, and the detailed arguments each side puts forward, offers an opportunity to identify which firms are advocating, opposing, or indifferent to protection. It also lets us know why they are taking such a stance, given that AD is designed to protect the entire domestic industry. These intra-industry dynamics also may shape whether the ITC is willing to grant AD protection to an industry that is divided.

Because existing industry-based theories cannot explain why some firms in the same industry join the petition for trade protection, but others do not, a theory of AD

participation requires a firm-based perspective to accurately explain the origins and outcomes of trade protectionism. I start by specifying several assumptions regarding a firm's participation in AD duty cases and the characteristics of a firm that defines its foreign connectivity. These assumptions are crucial for establishing the primary argument and identifying the participation threshold in each AD case. Based on these assumptions, I argue that how vulnerable a firm is to the negative implications of its foreign connection is a major factor determining its AD participation. I suggest that the passing-along of costs from AD duties through GVCs and foreign retaliation are the two main channels through which antidumping generates the domestic firm's vulnerability. I then derive four main hypotheses that examine the relationship between a domestic firm's foreign connectivity and its participation in AD.

Domestic Firm's Participation in Antidumping

I first define a domestic firm's *participation* in antidumping. As discussed in Chapter 2, an antidumping (AD) duty case in the United States begins when one or more domestic firms files a petition simultaneously before two US government agencies, the International Trade Commission (ITC) and the International Trade Administration under the Department of Commerce (DOC), arguing that foreign firms in the same industry, from selected countries, are dumping (i.e., selling at an unfairly low price) products in the domestic market. Upon filing, the petitioning firms must submit a list of products that define the 'domestic industry.' Most notably, they must demonstrate that the recent surge of imports can be attributed to foreign dumping, and, most

importantly, that such behavior caused severe material injury to the domestic firms that sell these products. As outlined in chapter 2, these are the two primary criteria that are used by the DOC and ITC, respectively, to determine whether to impose AD in response to each petition. I emphasize that it is the domestic industry as a collective unit that files an AD case to the ITC and the DOC, even though each domestic firm must decide individually whether to join the industry's petition.

Here, I make two initial assumptions regarding the domestic firm's participation. First, given that an AD duty investigation aims to identify whether most of the domestic industry is injured by import competition, I assume that participation from a domestic firm will make the petition more likely to succeed. I validate this assumption in Chapter 5, when I turn to explaining the outcomes of AD petitions. Second, I assume that participation by a domestic firm is observed by targeted foreign firms and governments.

Firms in the domestic industry may take different positions in an AD duty petition. Throughout the chapter, I define an AD participant as a 'firm that files or co-files an AD duty petition.' Filing means a domestic firm lists itself formally as one of the AD duty petitioners. This is a deliberate choice by each firm in the industry. By contrast, all other firms in the same domestic industry that do not participate in filing the case (i.e., are not listed in the petition) are defined as nonparticipant firms.⁷

⁷ There are various reasons why a domestic firm decides not to formally participate as a petitioner. First, the firm may oppose the petition. Second, the firm may not express a position and remain silent or neutral throughout the AD investigation procedure. It also is possible that some are sympathetic but decide not to formally support the petition. I return to the first two situations in more detail in chapter 5.

The AD participants must provide information on whether U.S. imports of the good in question have risen in recent years, as well as provide evidence to support the claim import increases can be attributed to foreign producers' dumping activities. Once the petition is filed, the DOC and the ITC each review the claims and evidence from the domestic as well as foreign industries. As noted in Chapter 2, the DOC finds that foreign dumping has occurred in well over 90% of the AD duty petitions. Moreover, as discussed previously, the DOC's decisions on the presence of dumping do not automatically lead to imposition of AD duties. Rather, the decision to protect the domestic industry through AD duties hinges on the ITC's final determination. Unlike the DOC, the ITC determines whether foreign dumping has caused severe material injury to the domestic industry. It does so by examining national and regional statistics and information submitted by the petitioning and the opposing parties. It is this ITC decision about "material injury" that is more uncertain and thus more important. Once the ITC makes a final determination that the domestic industry has or has not been injured by unfair foreign competition, dumping margins determined by the DOC are used to impose AD duties on imports.

A crucial requirement for an AD case to be considered by the U.S. government is that a certain critical mass of firms in the industry must support the petition. There are two specific requirements. First, the participating firms' level of production (either by volume or value) subject to the petition should account for at least twenty-five percent of the total output in the industry during the 'period of investigation' (POI), regardless of the production levels of nonparticipants in the industry. Second, AD participants should further demonstrate that they account for more than fifty percent of

the production during the POI, represented by the sum of all domestic firms that expressed their position (either by supporting or opposing) on the petition.⁸ An AD duty investigation can only be formally initiated after the participants have demonstrated enough industry support under these criteria (19 USCA § 1673 1930).

As an illustration of the above requirements, consider two hypothetical scenarios. First, consider a situation where AD participants constitute thirty percent of the entire industry's production, and the sum of supporters and opposers also account for thirty percent of industry production. In this case, the participants' production (30%) fulfills the first criterion by surpassing the twenty-five percent threshold. It also meets the second criterion since it accounts for half the sum of participants, supporters, and opponents (60%). Second, there could be a scenario where the participants represent forty percent of the total industry production, and the sum of supporters and opponents account for fifty percent of the total production. In this case, although AD participants meet the first criterion by accounting for more than twenty-five percent of the total production in the industry, they fail to match the second criterion since their production level (40%) is less than half the sum of all position-takers (90%).

Domestic Firm's Foreign Connectivity

Next, I define a domestic firm's *foreign connectivity*, which includes the markets wherein the domestic firm operates its business, the GVCs in which it is situated, and its foreign competitors in each GVC. First, the location of a domestic firm's affiliates

⁸ This means that the volume or value of total production during the period of investigation from firms that did not take any position on making the petition are excluded from the calculation.

is one element that defines the firm's connections to foreign firms. As a firm grows, it can establish its affiliates to run businesses in many foreign markets. Depending on their business type, the domestic firm's foreign affiliates can be plants, local offices, or R&D centers. Each affiliate can be the firm's wholly owned subsidiary, the domestic firm's sister firm that operates under the same foreign parent company, or even the foreign parent firm that owns the domestic firm – depending on its relationship vis-à-vis the domestic firm. Throughout the chapter, I assume that all these affiliates operate under a single entity – the domestic firm – and that the business activities of these affiliates add up to the firm's profit across domestic and foreign markets. Based on this assumption, the domestic firm is 'connected' to a foreign firm when its affiliates transact with the foreign firm's affiliates.

Second, the domestic firm and its affiliates position differently within global value chains (GVC), which is a second component that defines the domestic firm's foreign connectivity. Due to reduced barriers to trade and transportation costs in recent decades, firms have increasingly disaggregated their production stages worldwide, leading to the spread of GVCs. From the viewpoint of a finished product, a domestic firm may find itself upstream in a GVC if the firm is a supplier of inputs needed for the finished product. For example, if a domestic firm produces ferrosilicon (i.e., an alloy of iron and silicon), it is located upstream of several GVCs, such as stainless steel and ferroalloys. On the other hand, a domestic firm may locate itself downstream of a GVC if this firm is a seller of the final good. For example, if a domestic firm sells finished residential washing machines in the market, it is located downstream of a washing machine GVC.

The domestic firm may concentrate its production on a single product, or it may produce many products in domestic and foreign markets. The number of products the domestic firms produce can change over time. However, because an AD duty investigation procedure typically takes less than eighteen months, it is sensible to assume that the type and number of products a domestic firm produces is fixed during an AD duty petition. It is also important to note that AD duties are applied only to products listed in the petition and not all the products that the domestic firm's produces. In economics, a growing body of works has examined conditions under which firms switch their product mix (Bernard, Redding, and Schott 2010; Mayer, Melitz, and Ottaviano 2021). Using quinquennial US Manufacturing Censuses from 1987 to 1997, Bernard, Redding, and Schott (2010) report that about one-half of firms altered their product mix defined by five-digit Standard Industrial Classification (SIC) codes every five years. Similarly, Mayer, Melitz, and Ottaviano (2021) show that firms tend to switch their product mix in response to demand shocks using the case of French manufacturing exporters. In these works, product mix is defined as the number of products a firm sells in the market rather than the relative distribution of sales of the firm's products.

Many foreign firms participate in the domestic firm's GVCs by selling to it or its foreign affiliates raw or intermediate inputs required for the domestic firm to produce its finished product. On the other hand, a foreign firm that instead focuses its production on a final product may need to buy raw or intermediate goods from the domestic firm (or its affiliates). As intra-industry trade evolves, even domestic and foreign firms in the same industry have established buyer-seller connections across

GVCs, where domestic firms and their foreign competitors trade raw or intermediate goods for each other's final production. Suppose the domestic firm is upstream and the foreign firm is downstream of a GVC. In that case, the domestic firm is a raw or an intermediate product seller, while the foreign firm is a buyer. Conversely, if both firms are in the same GVC, but the domestic firm is located downstream, and the foreign firm is located upstream, the domestic firm becomes the buyer and the foreign firm the seller. Because many firms produce more than one product, a domestic firm can be an upstream producer in one GVC but a downstream producer in another. This means the domestic firm may establish multiple buyer-seller relationships with one foreign firm across different GVCs.⁹ Throughout this chapter, however, I assume that domestic and foreign firms establish a single buyer-seller relationship across all GVCs they participate in, one being the buyer and the other the seller.

Finally, I assume that the domestic firm knows precisely which foreign firms it is competing with, within and across domestic and foreign markets. It also is aware of its various connections with these foreign competitors. Based on this assumption, the domestic firm knows which foreign firms could be negatively affected by a proposed AD duty – and thus can consider the expected costs (in addition to benefits) it may face in the event of a successful AD duty petition. It is worth noting that the identity of the

⁹ Antràs et al. (2012) offers an industry-level measure, *upstreamness*, that quantifies an industry's position across GVCs: how far the industry's overall production is from the final output of a GVC. Suppose the proportion of the domestic industry's total production exported to foreign countries is low, and the output from the industry is exclusively used (in other words, 'absorbed') in the domestic market. In that case, this industry is defined as downstream. Conversely, suppose the domestic industry exports most of its production to foreign countries, and the proportion of the industry's total production exported to foreign countries is high. In that case, this industry is defined as upstream.

petitioners is disclosed to the public once the petition is filed, which the domestic firm takes into account when it decides to participate in an AD petition.

All the above assumptions are important for deriving the participation threshold, given that each domestic firm must know the benefits and costs of AD participation.

The Argument

In an open economy where countries (and firms) trade with one another, importing less-expensive goods may lead to a fall in the domestic price of those goods. This import competition from foreign industries harms the domestic firm's profit in the domestic market, because the domestic firm may lose its market share to low-cost imported goods or reduce the domestic price of its products to compete with imported goods. When its domestic profit shrinks due to severe import competition, the domestic firm will consider a range of actions to mitigate its losses. As described in the previous chapter, AD duties are one of the most attractive policy options that serves this purpose. By imposing short-term tariffs on imported products to match or exceed the price of imported goods to the price of domestic products, AD duties allow domestic firms to compete with their foreign competitors and shield them from competition in the domestic market. Suppose the domestic firm expects that AD duties imposed on foreign products will shift domestic consumption to favor its products more and thereby marginally increase its profit. In that case, all else equal, it will participate in an AD duty petition. Conversely, suppose the firm expects the costs of participating in the petition to be more significant than the benefits gained, such that the imposition of AD

duties would return a marginal decrease in profit. In that case, it will refrain from participating in the petition.

To illustrate the above in detail, first consider that AD duties provide relief to domestic firms by making foreign goods sold in the domestic market more expensive. Once the home government makes an affirmative decision on an AD case, duties are imposed on products imported from targeted foreign firms. This means domestic importers should pay additional duties on their previous and future purchases of AD-subject products from targeted foreign firms. Instead of buying products from these foreign firms with extra costs, domestic importers will purchase the same products from domestic producers (or foreign producers not targeted by AD that can offer lower prices). *Ceteris paribus*, this increases the domestic firm's profit in the domestic market and is the main reason the domestic firm considers participating in an AD duty petition. Participating in the petition would be a desirable policy option for a domestic-based firm that operates only in the domestic market or operates abroad but has no business relations with targeted foreign firms.¹⁰

However, not all domestic firms exclusively benefit from AD. Instead, imposing AD duties on foreign firms may even harm the profits of some domestic firms. Recall that a domestic firm's profit is the sum of its affiliates' profits (e.g., wholly owned subsidiaries) across domestic and foreign markets. As intra-industry

¹⁰ In the United States, AD participant firms also receive payments designed to offset the material injury from foreign dumping, in addition to the expected increase in profit in the domestic market. Based on the "The Continued Dumping and Subsidy Offset Act" (also known as the 'Byrd Amendment') of 2005, the US Customs and Border Protection agency distributes a portion of the duties collected from foreign producers of AD-subject products to domestic firms who formally filed or expressed support of the AD petition (CRS Report No. RL33045).

trade has evolved, domestic firms' foreign affiliates have established business connections with foreign firms via GVCs as upstream or downstream producers. These foreign firms often compete with domestic firms in the same industry.

The connection between *Cargill, Inc.* and *Pt Pelita Agung Agrindustri* is an illustrative example. Cargill is a US multinational firm that focuses its production primarily on agricultural and chemical products. Pelita is an Indonesian firm that focuses its production on crude palm oil. Both firms produce biodiesel products and compete in the US biodiesel market. Since at least 2013, however, Pelita has been supplying crude palm oil to Cargill, which Cargill uses to sell biodiesel products in the US and other foreign markets. Therefore, when Pelita, as well as other Indonesian firms, were targeted in a 2017 biodiesel case, Cargill was not supportive of the US AD petition. That is because although Cargill in theory stood to benefit from AD on biodiesel, it also stood to be negatively affected if Pelita was harmed by an AD action.

The Cargill and Pelita example shows that participating in an AD duty petition can negatively affect some domestic firms connected with their targeted competitors, even if they simultaneously also stand to benefit in other ways from the AD action. Specifically, there are two possible channels through which AD duties can generate costs for domestic firms and eventually dissuade them from participating in antidumping. The first is the domestic firms' GVCs, in which they have business connections with targeted foreign firms and thus are sensitive to "pass-along" costs. The second is retaliation through barriers to trade and investment from foreign governments targeted by antidumping.

Pass-Along of Antidumping Costs through GVCs

The first channel through which AD generates costs to the domestic firm is the firm's GVCs, specifically when the domestic firm has business connections with one or more targeted foreign firms regarding products other than those subject to AD. When these two firms are located within the same GVC, one would be an upstream producer and the other a downstream producer. For example, consider the business connection between *Bridgestone Americas, Inc.*, *Nexen Tire Korea*, and *Zhongce Rubber Company Thailand*. Bridgestone Americas is a US subsidiary of Bridgestone Corporation, a Japan-based multinational firm focusing on tire and rubber production. Nexen and Zhongce are multinational firms focusing on tires and rubber products. Although the three giants of the global tire industry compete in the US tire market, they also have established buyer-seller relationships along with many tires and rubber GVCs. Specifically, Bridgestone has bought several rubber tires from the other two firms. Like the biodiesel case, when Nexen and Zhongce Rubber were targeted in the 2020 passenger vehicle and light truck tires AD case in the US, Bridgestone was not supportive of the petition. Although Bridgestone could have benefited from penalizing its Korean and Thai competitors through AD duties, it also had the risk of being negatively affected if Nexen and Zhongce were punished.

Under a buyer-seller relationship, AD duties imposed on foreign firms will raise the price and thus reduce the demand for the products targeted firms trade with the domestic firm. First, the targeted foreign firm can be a seller of inputs the domestic firm needs for its production. As the upstream seller in this case, the foreign firm will be forced to increase the price of inputs when its profit margin in the domestic market

shrinks due to AD duties. Second, the targeted foreign firm can reduce demand for the domestic firm's final products as the downstream buyer to compensate for its losses from AD. This pass-along of AD costs from targeted foreign firms to domestic firms will result in a loss of profit for the domestic firm. Thus, even if the domestic firm expects to gain temporarily in the domestic market from AD duties, it will fear losing its profit since the costs of AD duties can be translated back to itself through GVCs. The more the domestic firm focuses its production on this GVC, the more profit it may lose through the GVC.

Foreign Retaliation through Barriers to Trade and Investment

Retaliation from foreign governments is the other channel through which AD generates costs for the domestic firm. According to the antidumping statute in the United States, the identity of the petitioning party is publicly disclosed once the AD investigation is initiated. Because of this disclosure, the domestic firm can expect foreign governments to be able to retaliate against those US firms that pushed for AD duties. The foreign government's retaliation can be executed through various trade restrictions, including tariffs and non-tariff barriers such as antidumping and countervailing (CVD) duties, import quotas, export restrictions, and sanitary and phytosanitary (SPS) measures. For instance, unlike AD duties, countervailing duties are imposed to match unfairly low prices of imported products because of unfair subsidies that foreign firms receive from their governments. Both import quotas and export restrictions limit the volume of products that foreign countries sell to or buy from the home country. While the purpose of these policies could be to provide remedies to losses from AD duties, they can also

serve as a tool of retaliation. The domestic firm can expect the targeted government to retaliate specifically against itself or other firms in the petitioning industry, which would reduce their profit across domestic and foreign markets.

For example, one of the factors that divided the US solar industry in its 2011 AD duty petition against China was the fear of Chinese retaliation against domestic firms upon the US imposition of AD duties on Chinese solar products (photovoltaic solar cells).¹¹ These fears were proven right when the Chinese government singled out US solar product exporters and imposed AD duties on imported polysilicon in response to US AD duties.¹² Such concerns of retaliation from target governments are well documented in, for example, a series of amendments to the petition for the biodiesel from Argentina and Indonesia case. Petitioning firms in the US biodiesel industry repeatedly argued against publicly disclosing their identity because they “fear they may be targeted for retaliation once their identity is revealed to customers” (National Biodiesel Board Fair Trade Coalition 2017a, 2; National Biodiesel Board Fair Trade Coalition 2017b, 1).

Moreover, the foreign government can also retaliate against the domestic firm by imposing barriers to investment in the domestic firm within its borders. These barriers can include “limitation on foreign equity participation, access to government-

¹¹ Melanie Hart and Kate Gordon, “5 Myths and Realities About U.S.-China Solar Trade Competition,” *American Progress*, May 16, 2012, available at <https://www.americanprogress.org/article/5-myths-and-realities-about-u-s-china-solar-trade-competition/> (Accessed on Feb 18, 2024).

¹² Mufson, Steven. “Chinese tariffs may hurt U.S. makers of solar cells’ raw material,” *The Washington Post*, July 23, 2013, available at https://www.washingtonpost.com/business/economy/chinese-tariffs-may-hurt-us-makers-of-solar-cells-raw-material/2013/07/23/01ac60a4-f3d9-11e2-aa2e-4088616498b4_story.html.

funded research and development programs, local content requirements, technology transfer requirements” (USTR 2023, p. 2). Foreign governments may also break their foreign direct investment contract vis-à-vis the domestic firm (Wellhausen 2015) or violate the domestic firm’s property rights in the foreign market (Elkins et al. 2006; Allee and Peinhardt 2010, 2011; Wellhausen 2015; Johns and Wellhausen 2016).

Existing AD studies have argued that anticipating foreign retaliation could have an ex-ante restraining effect on AD participation (Milner and Yoffie 1989; Baldwin 1990; Gawande and Hansen 1999; Blonigen and Bown 2003). The idea is that any domestic industry with significant exports to the AD-targeted country is more vulnerable to foreign retaliation. Indeed, AD-targeted governments regularly have threatened to retaliate or have retaliated against using AD through various trade barriers. As in the US-China solar panel dispute in 2011, a common dynamic is that the targeted government will file its own AD “countersuit” against the firms that initiated the AD petition. For example, Canada’s use of AD duties against US steel products between 1992 and 1993 was a retaliatory response to the US antidumping cases that targeted Canadian steel products initiated in 1992 (Blonigen and Bown 2003, 250). The US and China exchanged another round of ‘tit-for-tat’ AD filings when the US imposed AD duties on Chinese tires and steel tubes in 2008, followed by China’s imposition of AD duties on US cars and chicken products in 2009.¹³ My approach to these retaliatory dynamics builds on previous arguments, but acknowledges the heterogeneity of firms within the domestic industry and the fact that some may be more sensitive to retaliation

¹³ Voice of America. “China Responds to New US Tariffs with Anti-Dumping Investigation.” November 2, 2009. Available at <https://www.voanews.com/a/a-13-2009-09-14-voa10-68709317/409444.html>.

than others. Specifically, I argue that because some U.S. firms are more (less) connected globally, those firms are more (less) susceptible to tit-for-tat retaliation and thus less (more) likely to participate.

Summary of the Argument

All the above considerations can be conceptualized as part of each domestic firm's cost-benefit calculation. Below, I present **Proposition 1** and the summary of the proposed argument.

Proposition 1 (Firm-level AD Participation). An AD decision to protect the domestic industry determines the domestic firm's marginal profit (M_i) from product $i = 1, 2, 3, \dots, K$, in the domestic market and foreign markets $j = 0, 1, 2, \dots, J$, where

$$M_i = \underbrace{\Delta \text{Profit in Domestic Market}_i}_{\text{Gains from Antidumping}} - \underbrace{\sum_{j=0}^J (\Delta \text{Costs in GVCs}_{i,j} + \Delta \text{Costs from Retaliation}_{i,j})}_{\text{Losses from Antidumping}}$$

The domestic firm participates in an AD duty petition if, and only if $\sum_{i=1}^K M_i > 0$.

Based on the above discussion, **Proposition 1** shows that the threshold for the domestic firm's participation hinges on the marginal profit across all products that this firm produces in domestic and foreign markets. The intuition is that while AD is expected to increase the profit of the AD-subject product from the domestic market, it does not guarantee that the domestic firm's overall profit will be positive. This is because when the domestic firm has business connections with foreign firms, the foreign firm can pass along AD-induced costs to the domestic firm through GVCs, or

the foreign government can retaliate using barriers to trade and investment. These AD-induced costs across foreign markets can exceed the gains from AD in the domestic market. In this case, the domestic firm will not participate even if antidumping assures increased domestic profit from the products subject to AD.

Suppose a domestic firm focuses its business exclusively on the domestic market and has no business connections with firms in targeted foreign countries. In this straightforward scenario, affirmative AD duties will result in an aggregate increase in profit for this firm. Therefore, this firm is likely to participate in antidumping. However, suppose another domestic firm has established business connections with one or more firms in target countries. In this case, AD duties may result in an aggregate decrease in profit for this domestic firm if the sum of expected costs from AD through GVCs and foreign retaliation exceed the expected gains from AD in the domestic market. This is particularly the case when the domestic firm is highly connected with foreign economies in case it heavily relies on trade with targeted foreign firms or is a multinational corporation with many affiliates operating in targeted foreign countries.

Based on these dynamics, I present three hypotheses below.

Hypotheses

The above discussion highlights the importance of a domestic firm's foreign connectivity in deciding the threshold for AD participation. Based on a domestic firm's calculus of AD participation presented above, I discuss several scenarios that describe the conditions under which a firm is less likely to participate in support of an AD duty

petition. I then put forward four testable hypotheses. Overall, I argue that firms that expect a decrease in the sum of marginal profit from antidumping are less likely to participate in AD petitions.

First, a domestic firm's level of trade with targeted foreign economies can affect the domestic firm's likelihood of AD participation. First, domestic firms that trade more with foreign firms in the countries targeted by AD duties may expect these foreign firms to pass along the costs from AD to domestic firms participating in the petition. As discussed earlier, when domestic and targeted foreign firms are positioned in the same GVC, foreign firms may increase the price of inputs used for the domestic firm's production or cut demand for final products from the domestic firm to mitigate losses from AD. Thus, the more a domestic firm trades with foreign firms targeted by AD, the more sensitive it is to these pass-along costs. Second, domestic firms may expect foreign governments to retaliate against AD duties by adding tariffs or restricting imports and exports of products the domestic firm trades with the foreign country. Therefore, expecting that AD duties can have negative implications to its profit from targeted foreign firms and governments, domestic firms that trade more with a targeted foreign country are less likely to participate in an AD duty petition.

Hypothesis 1 (Costs of AD from Trade) *Domestic firms are less likely to participate in AD duty petitions when they trade more with AD-targeted countries.*

Next, a domestic firm's business operations in targeted countries through its foreign affiliates can affect its likelihood of AD participation. Since the identity of AD

participants is disclosed, foreign governments can retaliate against the domestic firm using restrictive policies that affect the domestic firm's foreign affiliates. The foreign government may impose costs on the domestic firm by breaching existing foreign direct investment contracts with the domestic firm's foreign affiliates, which can harm the affiliate's profit in the foreign market. The foreign government can also retaliate by discriminating against the domestic firm's affiliates in favor of their competitors in the foreign market through government procurement contracts. Therefore, if a domestic firm has an affiliate running a business in the targeted foreign country, it is more likely to refrain from participating in an AD petition.

Hypothesis 2 (Costs of AD from Foreign Affiliates) *Domestic firms are less likely to participate in AD duty petitions when they have affiliates operating in targeted countries.*

In addition to the domestic firm's vulnerability to retaliation from its foreign affiliates, the targeted foreign country's propensity to retaliate will also affect the likelihood of its AD participation. Suppose the foreign country has a record of imposing many AD duties against other countries in the past. In that case, this country is more likely to retaliate with its own AD duties, thus negatively affecting domestic firms' exports in foreign markets. Therefore, if the targeted country is a frequent user of AD, the domestic firm is less likely to participate in the AD duty petition. Specifically, the deterrent effect of a targeted foreign country's propensity to retaliate on a domestic

firm's AD participation will be particularly pronounced when the country has been a frequent user of AD against the United States.

Hypothesis 3A (Foreign Experience in AD) *Domestic firms are less likely to participate in AD duty petitions when the targeted country is a frequent user of AD.*

Hypothesis 3B (Foreign Experience in AD against the US) *Domestic firms are less likely to participate in AD duty petitions when the targeted country is a frequent user of AD against the United States.*

Finally, the targeted foreign country's capacity to retaliate will also affect the likelihood of the domestic firm's AD participation. Suppose the targeted foreign country has a large economy. In that case, this country can likely retaliate through a wide range of protective trade and investment policies that can harm domestic firms participating in AD. Put differently, the larger the targeted country, the greater the potential for it to retaliate and the greater potential harm to the domestic firm if it does so.

Hypothesis 4 (Capacity for Retaliation: Market Size) *Domestic firms are less likely to participate in AD duty petitions as the targeted country's market size increases.*

Conclusion

In this chapter, I argued that a domestic firm's business connections with foreign firms shapes the firm's incentives to seek trade protection through AD duties. My theory suggests that using AD duties is less desirable for domestic firms that trade more with targeted foreign firms or those with affiliates operating businesses in targeted foreign countries. Yes, imposing AD duties on foreign firms could temporarily boost domestic firms' profit in the domestic market. However, the enactment of AD duties may introduce additional costs to the domestic firm through the GVCs where the domestic and targeted foreign firms engage as well as through retaliation from the foreign government. Domestic firms are also less likely to participate in an AD duty petition if the foreign government has the capacity to retaliate by using antidumping, or various other tools it may have at its disposal.

In the following chapter, I test the above hypotheses with both quantitative and qualitative evidence. To do so, I first construct a novel firm-level database that captures the details of US domestic firms' AD participation, their foreign trade with targeted countries, and their foreign-affiliate presence in those countries. Using these new data, along with data on targeted countries, I devise and estimate a statistical model of the relationship between a domestic firm's foreign connectivity and its AD participation. The baseline model is further tested using different measures and subsamples that guarantee the robustness of the result. Finally, I present a 2017 US biodiesel antidumping case study against Argentina and Indonesia to provide a qualitative evaluation of the theory.

Chapter 4: The Impact of Domestic Firms' Foreign Connectivity on Their Antidumping Participation

Introduction

The previous chapter developed a firm-level theory of antidumping (AD) participation. It generated several hypotheses that are unified by their emphasis on the relationship between domestic firms' foreign connectivity and a reduced likelihood of AD participation. First, domestic firms that trade more with AD-targeted countries are less likely to participate in an AD duty petition. Second, domestic firms with more affiliates operating in AD-targeted countries are less likely to participate in an AD duty petition. Third, a domestic firm is less likely to participate in an AD duty petition when the target country has more experience using AD duties, particularly against the US. Finally, and relatedly, a domestic firm is less likely to participate in AD when the target country has greater capacity for retaliation.

In this chapter, I empirically test the above hypotheses to establish how a domestic firm's foreign connectivity affects its AD participation. Properly investigating these relationships requires a firm-level database that captures domestic firms' participation in AD and their trade relations with foreign economies. Thus, I construct an original firm-level database that captures these characteristics to test the above hypotheses. The empirical tests presented in this chapter demonstrate the impact of a domestic firm's foreign connectivity on its participation in AD. Specifically, a series of statistical tests show that a domestic firm that trades more with countries

targeted by US antidumping duties is likely to participate less in the AD duty petition. The domestic firm is also less likely to participate less in AD if it has a greater number of affiliates operating in targeted countries. A case study of the US domestic firm's participation in the 2017 biodiesel AD case against Argentina and Indonesia lends further support to these findings.

A New Firm-Level Database of US Antidumping Duty Cases

My original database covers US antidumping cases initiated between 2010 and 2020. I restrict my analysis to this period primarily because much of the data on granular, firm-level characteristics are only available for the recent decade. Nevertheless, this 11-year period covers a range of economic conditions in the U.S. and spans various presidential and congressional configurations, thus enhancing the generalizability of the findings. Throughout the chapter, the unit of analysis is the *firm-year-AD case*.

To construct the database, I first turn to the most complete global antidumping database, Chad Bown's (2021) Temporary Trade Barriers Database (TTBD). The TTBD captures the core details of AD cases filed in 34 countries between 1980 and 2019, which includes cases in the United States. For each case, the TTBD provides information on when the case was initiated and ended, and whether the home country made an "affirmative" decision to protect its domestic firms through AD. It is particularly helpful in terms of capturing the details of which domestic firms participated in the petition and the identity of the targeted foreign governments and firms. It also details which foreign countries are targeted, and whether the home country

made an “affirmative” decision to protect its domestic firms through AD. Furthermore, the database includes information on the level of AD duties (i.e., “dumping margins”) imposed on each targeted foreign firms and whether the foreign governments later appealed the home government’s decision to the World Trade Organization’s Dispute Settlement Mechanism. Because of the thoroughness of the data, the TTBD has been widely used in the political economy of trade literature on the origins and outcomes of AD duties (Broz and Werfel 2014; Caddel 2014; Jensen et al. 2015; Miler and Allee 2018; Osgood 2021; Kim and Spiller 2019; also see Busch and Pelc 2014; Pelc 2016; Kim 2017; Kim and Pelc 2021).

However, the TTBD has several limitations for testing my theory. First and foremost, it provides only the names of participant firms for each AD duty case. Information on nonparticipant firms in the same domestic industry, who often are numerous, is not offered. This lack of nonparticipant firms’ identity makes it impossible to study within-industry variation across AD cases. Second, the database does not capture any additional details about the participant firms (as well as non-participant firms). Specifically, we do not know the features of participant firms, such as a domestic firm’s total sales as well as the nature and location of its operations, particularly its business relations with foreign firms. This information is essential to explain why some domestic firms participate in AD duty cases but not others. Therefore, I must overcome these constraints and collect relevant firm-level characteristics for every US firm in each AD case.

Therefore, I construct a novel firm-specific database by drawing information on US antidumping cases from the US International Trade Commission (ITC)’s

Electronic Document Information System (EDIS), the source of information that the TTBD relies on. The EDIS hosts various documents submitted to the ITC by participant and nonparticipant domestic firms, domestic importers, targeted foreign firms, and their governments. These documents contain information on the names and addresses of participants, nonparticipants, and targeted foreign firms. They also indicate which domestic products the petitioning firms are requesting to receive antidumping protection. Notably, they contain various documents that lay out why the participant firms believe the domestic industry is materially injured from unfair import competition. Most importantly, the EDIS compiles procedural documents that span the duration of each AD duty case, such as the ITC's questionnaires to domestic and foreign industries regarding an AD case (and key elements of their responses), transcripts of the ITC's internal meetings, voting records, public conferences, and hearings. Finally, the EDIC contains the final ITC summary report for each AD case.

Using EDIS, I first retrieve information on 149 US antidumping cases initiated between 2010 and 2020. For each of these cases, the petitioning domestic producers are requesting the US government to impose AD duties on specific products imported from specific foreign countries. These products of AD interest are classified in detail at the Harmonized Systems ten-digits (HS10) level,¹⁴ defining the boundary of the 'domestic industry' in each AD case. I exclude a small number of cases from the

¹⁴ The Harmonized System (HS) is a standardized method used to classify traded products, ranging from two to ten digits (which more digits representing greater disaggregation). Customs authorities widely used it worldwide to identify identical or similar trade products to impose duties and taxes. Many standard trade databases provide data at the HS 6-digit level. See <https://www.trade.gov/harmonized-system-hs-codes#:~:text=Among%20industry%20classification%20systems%2C%20Harmonized,method%20of%20classifying%20traded%20products> for detailed information.

operational analyses due mostly to data incompleteness.¹⁵ Excluding the above cases and firms, my final database includes 149 cases that target 56 countries, between 2010 and 2020. The dataset also provides information on more than one thousand products subject to AD duty cases, each classified at the Harmonized System 10-digit level. Most importantly for purposes of this chapter, these cases include nearly 1,200 domestic US participant and nonparticipant firms (as well as more than ten thousand targeted foreign firms). Because in this chapter I care about U.S. firm decisions in the context of whether to support a given AD petition, the number of operational cases in my regression analyses is 1,188. **Table 4.1** provides summary statistics of the cases below.

Variable	AD Cases	Domestic Firms	Target Firms	Target Countries	AD Products (HS10)
Number	149	1,188	10,753	56	1,323

Table 4.1 Summary Statistics of US Antidumping Duty Cases, 2010-2020.

Conceptualization and Measurement of Variables

Outcome Variable: Firm Participation

Using this newly constructed dataset, I first create the primary outcome variable: *participation*. As discussed in the previous chapter, AD duty petitions begin when a set of firms in a domestic industry files a petition to the USITC and the DOC, arguing that

¹⁵ I excluded the 2018 and 2020 “Mattresses” cases, the 2012 and 2016 “Hardwood Plywood” cases, and the 2016 “Softwood Lumber Products” cases because the petition documents for these cases do not provide enough information to specify nonparticipant domestic firms. I further excluded the 2017 “Common Alloy Aluminum Sheet” case since this case was self-initiated by the Department of Commerce (DOC) rather than by any firm in the domestic industry. Finally, I excluded several US state-owned and Puerto Rican firms from the analysis because data for these firms was unavailable.

foreign firms in the same industry are dumping their products and causing injury to the domestic industry. Upon filing, the petitioning firms must submit a list of all firms that produce the products for which they are requesting the government to impose AD duties on imports. Because I care primarily about a domestic firm’s decision to participate (or not) in support of the AD petition, I use the list of firms submitted by the petitioners. I code *participation* as one (1) if a domestic firm in the US industry formally lists itself as the petitioning party in a relevant AD case. Domestic firms that do not participate as a petitioning party, but still produce products that define the domestic industry, are considered nonparticipants and are coded as zero (0).

Table 4.2 summarizes the number and the proportion of participant and nonparticipant firms in my database. The numbers indicate that overall, just under 40% of relevant firms in petitioning domestic industries participated in US antidumping cases between 2010 and 2020. The fact that a majority of firms do not participate is notable, since as discussed in the previous chapter, the extant literature typically assumes that the filing U.S. industry is unified and supportive.

Participation	Number	Proportion
1 (participant)	473	39.81%
0 (nonparticipant)	715	60.19%

Table 4.2 The Number and Proportion of Participant and Nonparticipant Firms.

Vulnerability to Foreign Connectivity

Next, I turn to my primary explanatory variables of interest. The first set of variables captures a domestic firm’s vulnerability to the various negative implications of AD.

The first variable representing such vulnerability is a *domestic firm's trade with targeted foreign countries*. As discussed in Chapter 3, the domestic firms that trade more with foreign firms targeted by AD duties may expect these foreign firms to pass along the costs from AD to domestic firms participating in the petition. Also, domestic firms may expect foreign governments to retaliate against AD duties by adding tariffs or restricting imports and exports of products the domestic firm trades with the foreign country.

I use millions of firm-to-firm transaction records between the domestic firm and targeted foreign firms to construct the *domestic firm's trade with targeted foreign countries* variable. In the United States, a firm that engages in international trade must report all relevant information regarding its import and export activities to the Customs and Border Protection (CBP), a federal law enforcement agency operating under the US Department of Homeland Security. Each time a firm's shipment arrives at or departs from a US port, the firm must report the names of the buyers and the sellers, the shipments' origin and destination countries, the type of the shipped products, the amount of trade measured as tons or the number of twenty-foot equivalent (TEU) unit containers, and the date of the shipment. All this information provides the basis for creating a unique and important measure of a domestic firm's foreign trade.

To create this firm-specific trade variable, I use the Panjiva Supply Chain Intelligence Data, a proprietary US customs database that offers millions of firm-to-firm international transaction records for each domestic firm.¹⁶ Using Panjiva, I

¹⁶ Panjiva is one of many companies that draws these daily shipment data directly from the CBP. The Panjiva data for my analysis is downloaded from one of the terminals at the Thomas Yoseloff Business Center, New York Public Library. As of January 10, 2024, the New York

construct each *domestic firm's trade with targeted foreign countries* by adding weights of all shipments (in tons) that a domestic firm bought from or sold to target countries between the petition date and the previous two years.¹⁷ I use the recent two years of shipments because participant firms typically argue their losses from rising import competition based on the recent two years of records. One critical challenge of using international transaction data is that firms use different business names (also known as 'trade names') when trading with foreign firms.¹⁸ To provide a consistent measure, I carefully verified the full range of individual US firms' identities using various sources such as the Wayback Machine¹⁹, Mergent Intellect²⁰, and these firms' official websites.

Public Library is the only place in the United States that offers the Panjiva database to the public.

¹⁷ For example, suppose Cargill, Inc. was one of the participants of the US antidumping petition against Thailand initiated on June 2, 2017. In that case, I sum up Cargill's trade (import and export) records (in kilotons) with Thailand between June 3, 2015, and June 1, 2017 (two years) and divide it by two to compute the annual average of Cargill's trade with Thailand. The resulting number becomes the measure of foreign trade.

¹⁸ For example, a Chicago-based steel producer, John Maneely Company (JMC Steel Group), rebranded to Zekelman Industries in 2016. Both names appear separately in Panjiva, even though they point to the same firm. Also, firms experience mergers and acquisitions (M&A) and change their names over time based on their new ownership structure. For example, ABB, Inc. acquired Baldor Electric Company in 2010. The names of both firms appear in Panjiva years after 2010. For the cases mentioned above, constructing the foreign trade variable based on the name of the domestic firm reported in the petitioning documents will underestimate this firm's actual amount of trade.

¹⁹ The Wayback Machine is a worldwide web digital archive founded by the nonprofit "Internet Archive." This website crawls and stores the data uploaded on the same URL over time. Because most companies upload detailed information on their business history, locations, products, and news, the Wayback Machine allows the user to 'go back in time' and retrieve accurate data. For example, 35,428 snapshots of ABB, Inc.'s website "ABB.com" are available to the public between October 23, 1996, and August 8, 2023. Even if ABB, Inc. changed its website's contents or links to these contents over time, users can return to a specific date and collect information that the Wayback Machine provides. See, for example, https://web.archive.org/web/20230000000000*/abb.com (Access on August 8, 2023).

²⁰ The Mergent Intellect is a proprietary database offered by Dun & Bradstreet that provides business information of US and international firms. The critical advantage of Mergent Intellect is that it gives names, trade names, sales, and locations of a firm's headquarters and branches. Specifically, it provides information of all private firms that engage in US antidumping duty cases but those that are not covered in popular databases like Compustat and Orbis.

Doing so allows me to cross-check all records from Panjiva with the above sources, and thus to produce a complete record for all 1,188 U.S. firms in my database of their recent trade with the targeted countries.

Table 4.3 presents a sample illustration of the data records from Panjiva that I use to construct the *domestic firm's trade with targeted foreign countries* variable.

Shipment Date	Domestic Firm	Target Country	Product (HS6)	Product Description	Firm's Trade with Targeted Country (in tons)
2010/05/13	Accuride	China	8473.30	Parts and accessories for automatic data processing machines and units thereof, magnetic or optical readers, transcribing machines, etc., others	3.93
2014/01/04	Bekaert	Brazil	7213.91	Of circular cross section measuring less than 14 mm in diameter	110.90
2015/01/26	ArcelorMittal	Japan	6903.20	Refractory non constructional ceramic goods others (retorts, muffles, plugs Etc.), containing over 50% singly or combined, of alumina or silica -	30.28
2016/06/19	Nan Ya Plastics	Taiwan	3907.60	Polyethylene terephthalate having a viscosity number of 78 ml/g or higher	182.00
2018/01/31	Acme Staple Company	Taiwan	8205.59	Handtools (including glass cutters) and parts thereof, others, of base metal	5.89
2020/01/20	Ricoh Electronics Inc.	Germany	8460.99	Machine tools for deburring, polishing metal, sintered metal carbides, abrasives or polishing products, other than gear cutting, etc., others	0.70
⋮	⋮	⋮	⋮		⋮

Table 4.3 Sample Panjiva Data on US Domestic Firms' Foreign Trade.

Next, I construct my second explanatory variable, *domestic firm's affiliates in targeted countries*. A domestic firm that has its affiliates running business in foreign countries targeted by AD might expect the governments of those targeted countries to use retaliatory trade and investment restrictions against those affiliates. If so, that could harm the profit of the domestic firm's foreign affiliates operating in targeted countries. Thus, I expect the likelihood of a domestic firm's AD participation to decrease when the domestic firm has affiliates operating in targeted foreign countries.

I construct the variable *domestic firm's affiliates in targeted countries* to capture the total number of the domestic firm's affiliates operating in target countries at the time of the petition. As a first point of clarification, a foreign affiliate can be a subsidiary that is wholly owned by the domestic firm. For example, Whirlpool México, S. de R.L. de C.V. is a wholly owned Mexican subsidiary of the US domestic firm Whirlpool Corporation. Thus, in the 2011 refrigerator and residential washer antidumping cases where Whirlpool was one of the domestic participants, Whirlpool México is counted as one of Whirlpool's foreign affiliates in the analysis. Next, for situations in which the domestic firm is a subsidiary of a multinational corporation (MNC), foreign affiliates in the targeted country include the MNC's headquarters or any other of the MNC's subsidiaries operating in the target country. For example, Gerdau Ameristeel US Inc. is a US subsidiary of the Brazilian multinational iron and steel producer Gerdau. Therefore, in the 2016 carbon and alloy steel antidumping case against Brazil and various other countries, Gerdau's Brazilian affiliates (and affiliates from other targeted countries) are all counted as Gerdau Ameristeel's foreign affiliates.

It is worth noting that fully identifying the domestic firm’s foreign affiliates requires careful review of various sources, especially if these firms operate under a complex ownership structure across many countries.²¹ To reliably construct the foreign affiliates variable, I first identified whether the domestic firm is a publicly traded company on a stock exchange. In the United States, publicly traded companies must periodically file their financial performance through the Securities and Exchange Commission (SEC)’s EDGAR (Electronic Data Gathering, Analysis, and Retrieval) system. Using information from the domestic firm’s SEC filings, I identify all foreign affiliates of publicly traded US firms in AD duty cases.²² For public firms whose headquarters are located outside the US, and thus do not report to the SEC, I used the annual reports uploaded on their websites to identify their foreign subsidiaries. However, the case of private companies’ foreign affiliates requires a different process, since these companies are not required to make their ownership structure publicly available. For these private firms, I visited their official websites and identified all companies typically listed in sections such as “About,” “Our History,” “Our Business,” “Locations,” and “Global Presence.” This process was supplemented with extensive web searches to identify additional affiliate links for these firms.²³

Another set of explanatory variables considers the targeted foreign countries’ propensity for retaliating against the home country’s AD duties with its own AD duties,

²¹ For example, see Betz and Pond (2023) and Bayer (2023) that recently dealt with identifying MNCs’ complex ownership structures for political science research.

²² Specifically, I use information on domestic firms’ subsidiaries from their annual Form 10-K filings, and foreign firms’ subsidiaries from their annual Form 20-F filings.

²³ To gain accuracy in this information, I visited these firms’ official website captured at the closest date to the petition date available through the Wayback Machine.

along with its capacity for doing so. First, if the targeted country has a reputation for initiating retaliatory actions against other countries, then the domestic firm can expect this country is more likely to retaliate when it is hit by AD duties from the home country. Specifically, the targeted countries' experience in using AD duties in the past can be thought of as its propensity to retaliate. Much of the prior works in the AD literature have shown that many targeted countries have used counter-AD as a tool of tit-for-tat retaliation against AD duties from the home country (Gawande and Hansen 1999; Blonigen and Bown 2003). Therefore, I expect the likelihood of a domestic firm's AD participation decreases as the number of recent AD duties filed by targeted foreign countries increases.

For each AD duty case, I calculate the total number of AD duty cases filed by target countries in the past five years to construct a *foreign AD experience* variable. I draw this information from Chad Bown's (2021) TTBD. However, the TTBD does not provide information on AD duty filings from several countries (Armenia, Bahrain, Egypt, Kazakhstan, Oman, Saudi Arabia, the United Arab Emirates, and Vietnam). Thus, I use the "Database of Anti-Dumping Measures" from the World Trade Organization's Trade Remedies Data Portal to count the number of previous AD filings from these countries, in order to arrive at my totals. I also construct a *foreign AD experience against US* to examine whether target countries experience in filing AD against the United States influences AD participation more.²⁴

Additionally, targeted countries' capacity to retaliate against an AD filing targeting them can be a major factor that affects the domestic firm's AD participation.

²⁴ <https://trade-remedies.wto.org/en/antidumping/measures>

If the target country has a sizeable market and thus the domestic firm believes the targeted country has sufficient resource to retaliate with one or more among a wide range of trade and investment measures, then the domestic firm is less likely to participate in AD for fear of retaliation. Based on this discussion, I include a capacity-related variable for target countries' market size.

First, I use the target country's *GDP*, a widely used measure to capture a country's *Market Size*. To construct the targeted foreign countries' collective *market size*, I use the GDP (in current USD) value of all target countries transformed by natural logarithm, using data drawn from the World Bank's World Development Indicators (WDI).²⁵ The resulting metric represents the market size of all target countries for each AD duty case. Given that Taiwan is frequently included as a target country in US antidumping cases (19 out of 142 unique cases), I draw Taiwan's GDP between 2009 and 2020 from the Statistical Database of Taiwan's Directorate-General of Budget, Accounting and Statistics.

Control Variables

In addition to the primary explanatory variables, several firm-specific and industry-specific characteristics may influence a firm's participation in a relevant AD case. I thus construct various firm- and industry-level variables and include them to control for their potential confounding effects on AD participation.

²⁵ <https://data.worldbank.org/indicator>

First, I control for a domestic firm's *product mix* by including a variable for the number of products that a firm produces, typically classified at the Harmonized Systems six-digit level. If a domestic firm produces a small number of products, the profit from each of these products will constitute a relatively large portion of the firm's overall profit. Thus, if any of this firm's few products are facing severe import competition, it is more likely to support a protectionist action. However, if the domestic firm produces many products, the profit from each of these products will comprise a relatively small portion of its overall profit. In this case, this firm's overall profit is less likely to be affected by import competition facing any one product, and thus the firm is less likely to participate in an AD petition. Thus, I expect that as the number of products that a domestic firm produces at the time of the petition increases, the likelihood of this firm's AD participation will also decrease.

To construct the product mix variable, I first use Mergent Intellect, a proprietary firm-level database, to acquire information on the various products that each domestic firm produces, as captured by six-digit NAICS (North American Industry Classification System) codes. These NAICS codes are used by US federal agencies to classify individual firms to a related industry. Next, for purposes of consistency and comparability, I translate these firm-specific NAICS codes to the HS six-digit level using the R package *concordance* (Liao et al. 2020), which is developed to bridge the NAICS industry and HS product codes. For my final variable, then, I capture the full mix of products that each domestic firm produces at the HS 6-digit level.

Next, I control for a domestic firm's annual *sales*, which can confound the relationship between the proposed explanatory variables and the firm's participation in

AD. A domestic firm with higher sales is larger in size, so it is likely to have more resources needed to actively support an AD duty petition given that legal fees to file an AD duty petition typically costs about one or two million dollars. Moreover, a domestic firm with more resources may be tempted to participate more in AD because it can endure short-term losses from the pass-along costs through GVCs or retaliation from foreign governments. Data on firms' annual sales (in millions of USD) is drawn from Mergent Intellect.²⁶

I also consider several industry-level variables that might affect a firm's decision to participate in an AD petition. The first variable, *association*, indicates whether an industry association (e.g., American Sugarbeet Growers Association) or a labor union (e.g., United Steel Workers) is co-filing the AD duty petition with other domestic firms in the industry. The presence of trade or industry organizations as formal petitioners may imply that there was a significant level of consensus across firms within the domestic industry prior on the need to protect themselves through an AD duty petition, which might have pressured many domestic firms more to participate in the petition. Also, labor unions' participation in an AD duty petition might imply that a significant portion of the workforce within the industry was demanding protection from rising imports, which might have encouraged their employers, the domestic firms, to participate in the petition. Thus, I control for the presence of these organizations to remove possible confounding effect that they might have for each AD duty case.

²⁶ I rely on sales data from Mergent Intellect because most of my database consists of private firms whose financial information is not disclosed through many proprietary databases such as Compustat or Orbis.

I also account for the participant industry's overall position within global value chains, measured as the industry's *upstreamness*, considering that firms in the downstream industry may be more reluctant to participate in the petition, on average, as AD duties may increase the prices of inputs they need for production.

Finally, I include two binary indicators *China* and the *EU*, to account for these two economies importance in the global economy. I code the China variable as one (1) if a (non) participant firm was involved in an AD case that listed China as one of the targeted countries and zero (0) if not. I thus code the EU variable as one (1) if a (non) participant firm was involved in an AD case that listed one or more members of the European Union as targeted countries and zero (0) if not.²⁷

Table 4.4 summarizes the sources of data used in the chapter.

²⁷ These countries include Austria, Belgium, Croatia, Czechia, France, Germany, Greece, Italy, Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden, and the United Kingdom (Cases before January 31, 2020, due to withdrawal of the United Kingdom from the European Union).

Variable Name	Variable Type	Measurement	Data Source	N
AD Participation	Binary (0 or 1)	1 if the firm is a participant in AD case, 0 if it is not	AD petition documents and exhibits (USITC)	
Domestic Firm's Trade with Foreign Countries	Continuous	Total weight of the domestic firm's shipments with target countries (in kilotons) between the petitioning day and previous two years	Panjiva	
Domestic Firm's Foreign Affiliates	Continuous	Total number of the domestic firm's foreign affiliates (i.e., subsidiary, sister company, parent company) in target countries	Firms' website (Wayback Machine), SEC filings, and additional web search	
Targeted Countries' AD Experience	Continuous	Total number of antidumping duty cases filed by targeted foreign countries	TTBD and WTO AD Database	
Targeted Countries' AD Experience (US)	Continuous	Total number of antidumping duty cases against the United States filed by targeted foreign countries	TTBD and WTO AD Database	
Market Size	Continuous	Sum of all targeted countries' GDP in the year before the petition	The UN Comtrade Database (for trade volume), the World Bank World Development Indicators (for GDP), and the Statistical Database of Taiwan's Directorate-General of Budget, Accounting and Statistics	1,188
Number of Targeted Countries	Continuous	Number of countries targeted by the US antidumping duty case	AD petition documents and exhibits (USITC)	
Product Mix	Continuous	Number of HS6 products that falls into a firm's NAICS industry codes	NAICS (Mergent Intellect) to HS-6 codes through R package <i>concordance</i> (Liao et al., 2020)	
Sales	Continuous	USD (in millions)	Mergent Intellect	
Association	Binary (0 or 1)	1 if AD petition is initiated by a trade association, industry association, or labor union	AD petition documents and exhibits (USITC)	
Upstreamness	Continuous	AD participating industry's average distance to final output of global value chains: lower value means downstream, higher value means upstream	Antràs et al. (2012)	
China	Binary (0 or 1)	Indicator of whether China is targeted in the AD case	AD petition documents and exhibits (USITC)	
EU	Binary (0 or 1)	Indicator of whether any member of the European Union is targeted in the AD case	AD petition documents and exhibits (USITC)	

Table 4.4 Final Database. This table presents the variables used in the following empirical analyses, their measurement, and the sources of the data used to construct the variables.

Estimation Strategy

Because the outcome variable is binary (participation or nonparticipation), I use logistic regression to model the relationship between the outcome and explanatory variables. Specifically, I estimate a series of logistic regressions of *AD participation* on: *domestic firm's trade with targeted countries*, *domestic firm's affiliates in targeted countries*, *Targeted countries' AD experience*, *market size*, and the various controls – which takes the following specification:

$$\begin{aligned} \text{Logit}(\text{Participation} = 1)_i = & \alpha + \beta_1 \text{Domestic Firm's Trade with Targeted Countries}_i + \\ & \beta_2 \text{Domestic Firm's Affiliates in Targeted Countries}_i + \\ & \beta_3 \text{Target Countries' AD Experience}_j + \beta_4 \text{Market Size}_j \\ & \beta_5 \text{Product Mix}_i + \beta_6 \text{Sales}_i + \\ & \beta_7 \text{Number of Target}_j + \beta_8 \text{Upstreamness}_j + \beta_9 \text{Association}_j + \\ & \beta_{10} \text{China}_j + \beta_{11} \text{EU}_j \end{aligned}$$

where i denotes a US domestic firm engaged in an AD duty petition in the United States, and j is the AD case.

Using the baseline specification, I run four models to empirically test my hypotheses. Model 1 includes all five primary explanatory variables and the number of targeted countries as a control. Model 2 further includes firm-level controls, and model 3 adds industry-level controls to produce a fully-specified model. Model 4 uses a different measure of foreign AD experience, the total number of target countries' AD filings against the US, rather than their total number of AD filings against all countries.

Primary Findings

Table 4.5 presents the primary findings. First, across all four relevant models in **Table 4.5**, the estimates of *Domestic Firm's Trade with Targeted Countries* are negatively associated with its participation in AD duty petitions. This is true regardless of which controls are or are not inserted into the estimation (see models 1-4). All estimates for the *Domestic Firm's Trade with Targeted Countries* variable are statistically significant at the 95% confidence level. This means that, on average, as a firm's level of foreign trade with targeted countries increases its likelihood of participating in AD decreases. This is true even after controlling for the firm's product range, sales, and other industry characteristics (see models 2 through 4).

Similarly, the estimates for the *Domestic Firm's Affiliates in Targeted Countries* are also negatively associated with AD participation at conventional levels of statistical significance. Once again, this finding holds even when considering differences across firm-level and industry-level characteristics, as shown by consistent estimates across all models in **Table 4.5**. The estimates and their statistical significance indicate that as the domestic firm's business activities in the foreign market (represented by the number of its foreign affiliates) increases, on average its likelihood of its AD participation decreases.

Next, estimates on *Targeted Countries' AD Experience* are negatively associated with the domestic firm's participation in AD, holding across models 1 through 3. This means that the likelihood of the domestic firm's AD participation decreases, *ceteris paribus*, when targeted foreign countries have greater experience using AD themselves. However, as the estimate for Model 4 suggests, foreign countries' experience using AD

against the United States specifically is not statistically associated with the domestic firm's AD participation, although the degree of association is much stronger. The interpretation could be that while domestic firms in general care about whether potential target countries are experienced in using AD, whether these countries have specifically targeted the US through AD does not necessarily shape all domestic firms' participation in AD. Finally, the estimates reveal that the foreign countries' overall *Market Size* is not negatively associated with the domestic firm's participation in AD, and if anything may be positively related. One interpretation is that past AD use is a more informative signal of possible retaliation than the general capacity of the targeted country.

	Dependent Variable: Firm Participation in AD			
	(1)	(2)	(3)	(4)
Firm's Trade with Targeted Countries	-0.002*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Firm's Affiliates in Targeted Countries	-0.046*** (0.013)	-0.057*** (0.015)	-0.055*** (0.016)	-0.053*** (0.015)
Target Countries' AD Experience	-0.011*** (0.003)	-0.011*** (0.003)	-0.006** (0.003)	-0.032 (0.020)
Market Size	-0.004 (0.063)	-0.012 (0.064)	0.423*** (0.127)	0.448*** (0.127)
Product Mix		0.0014*** (0.0005)	0.0013** (0.0005)	0.0012** (0.0005)
Sales		0.00002** (0.00001)	0.00002** (0.00001)	0.00002** (0.00001)
Number of Target Countries	0.002 (0.023)	-0.012 (0.025)	-0.057 (0.038)	-0.053 (0.038)
Association			0.419 (0.151)	0.430 (0.150)
Upstreamness			0.083 (0.086)	0.074 (0.086)
China			-0.995*** (0.279)	-1.031*** (0.274)
EU			-0.249 (0.263)	-0.475** (0.236)
Constant	0.040 (1.806)	-0.537 (1.818)	-12.299*** (3.597)	-13.022*** (3.609)
Observations	1,188	1,188	1,188	1,188
Log Likelihood	-776.74	-768.74	-756.24	-757.06
Akaike Inf. Crit.	1,565	1,553	1,536	1,538

Table 4.5 Firms' Connections in Global Value Chains, Foreign Retaliation, and Antidumping Participation. This table presents the results from binary logistic regression of US firms' AD participation on domestic firm's trade with targeted countries, domestic firms' affiliates in targeted countries, target countries' AD experience, and market size.

A graphical representation of the results from Model 3 aids in the substantive interpretation of the findings. **Figure 4.1** presents predicted changes in the probability of a firm's AD participation as the domestic firm's trade with targeted countries increases. As shown in the figure, the predicted probability of a US domestic firm participating in an AD duty petition gradually decreases as a firm trades more with

targeted countries. For example, while a US firm that does not trade with a targeted foreign country has about a 41% chance of participating in an AD duty petition, *ceteris paribus*, this probability decreases by more than half as this firm's trade with targeted countries increase by 400 kilotons of goods annually. Moreover, as the firm begins to trade heavily with the targeted countries, it's probably of participation falls below 5%.

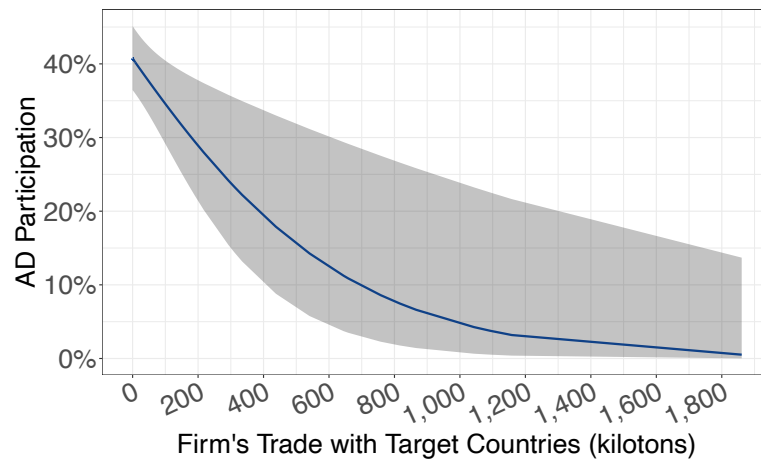


Figure 4.1 Predicted Changes in AD Participation by Foreign Trade. This figure presents predicted changes and prediction intervals in a firm's probability of participating in AD on its foreign trade. Panels are based on results from Model 3 in Table 4.5.

Likewise, **Figure 4.2** shows that the predicted probability of a US firm participating in an AD duty petition decreases substantially as it has more foreign affiliates operating in targeted countries. For example, it shows that while a US firm that runs all its operations within the domestic boundary has a 42% chance of participating in an AD duty petition, this probability decreases about 30% when this firm operates 10 affiliates in foreign countries and 52% when this firm operates 20 affiliates in foreign countries.

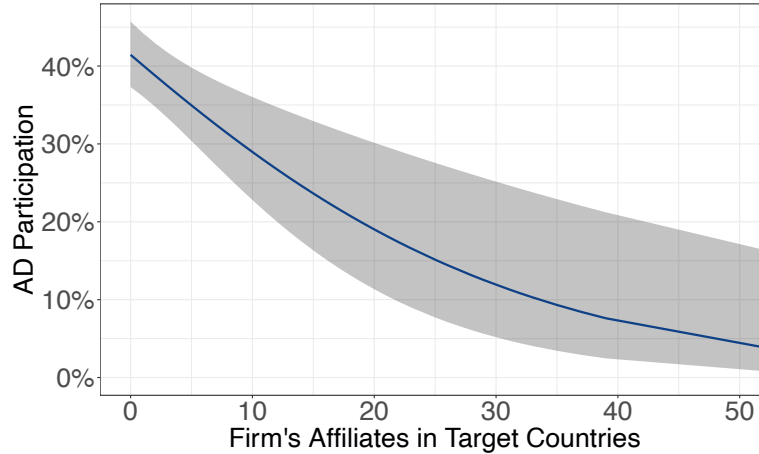


Figure 4.2 Predicted Changes in AD Participation by Foreign Affiliates. This figure presents predicted changes and prediction intervals for a firm’s probability of participating in AD based on the number of its affiliates in targeted countries. Panels are based on results from Model 3 in Table 4.5.

The above results align with the findings from prior work. Based on evidence from a sample of US multinational corporations (MNCs), Jensen et al. (2015) find that MNCs that trade with foreign countries through their foreign affiliates are also less likely to get involved in AD cases. However, the unique contribution of these new findings is that I also account for many private and nonparticipant firms, most of whom are non-MNCs. Thus, while past work focusing on MNCs may provide a partial picture of why firms participate in protective trade policies, the results from this chapter expand on Jensen et al. (2015) by accounting for all domestic firms that engaged in AD duties, as well as modeling their connections with the target countries directly.

Next, **Figure 4.3** shows that the predicted probability of a US firm participating in an AD duty petition decreases steadily as it faces foreign countries with more experience in AD. For example, a US domestic firm has about a 41% chance of participating in an AD duty petition against foreign countries with no experience in

AD; this probability decreases about 7% when targeted countries have filed twenty AD cases against other countries in the past. The probability of a domestic firm’s AD participation decreases about 17% when filing against countries that filed fifty AD cases in the past. These numbers are substantively meaningful given that countries targeted by US antidumping cases have historically filed 142 AD duties, on average, against other countries between 1989 and 2019.²⁸

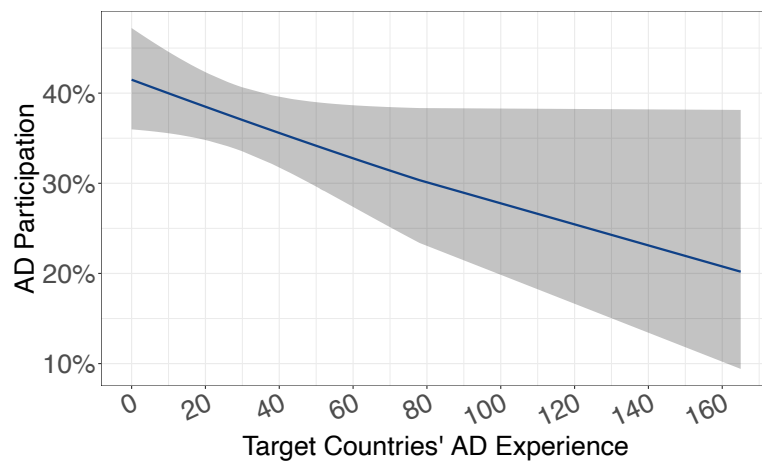


Figure 4.3 Predicted Changes in AD Participation by Foreign AD Experience. This figure presents predicted changes and prediction intervals for a firm’s probability of participating in AD based on the number of previous AD filings by targeted countries. Panels are based on results from Model 3 in Table 4.5.

Apart from results from the main explanatory variables, results from two controls are worth noting. First, contrary to expectations, the more products a firm sells, the less likely the firm is to participate in an AD duty petition, on average. This finding is robust across the various estimations in **Table 4.5**. Also, and unsurprisingly, the firm’s total sales are statistically associated with the firm’s participation in AD. As a

²⁸ The estimate is based on Chad Bown (2021)’s TTBD and the WTO AD Database.

firm has more resources at its disposal (i.e., greater overall sales), it is better able and thus more likely to participate in AD actions, *ceteris paribus*.

Robustness Checks

To assess the robustness of the previous findings, I re-estimate the same baseline model, but this time with different measures and on different subsamples. First, I re-estimate the models in **Table 4.5** using the past three years of a domestic firm's total trade with targeted countries (as compared to a two-year window). Running the model with a different measure does not change the results statistically or substantively, as the estimates and their standard errors remain similar compared to the baseline model (see model 1 in **Table 4.6**).

I also re-estimate the models on a more restrictive timeframe, to avoid potential bias from the recent pandemic-related supply chain disruptions. Given that many states in the United States began to shut down in 2020, I omit the model with cases initiated only between January 1, 2010, and December 31, 2019. Focusing on pre-COVID cases also does not change the results presented in the baseline model (see model 2 below).

Finally, I account for the fact that relatively few firms operate numerous foreign affiliates and certain firms may be unusually large or globally oriented – and thus some of them could be driving the findings. Therefore, I re-estimate the baseline model after dropping from the analysis the top 1% firms that trade with target foreign countries and top 1% firms in terms of the number of foreign affiliates operating in target foreign countries. The results show that nearly all the findings are unchanged, except for the statistical significance of *Firm's Trade with Targeted Countries*, from the baseline

model (see models 3 and 4 in **Table 4.5**). In sum, results from the various robustness checks, presented in **Table 4.6**, largely confirm the findings from the primary analysis.

	Dependent Variable: Participation			
	Foreign Trade (3yr Window)	Pre-Pandemic	w/o Top 1% Firms (Foreign Trade)	w/o Top 1% Firms (Foreign Affiliates)
	(1)	(2)	(3)	(4)
Firm's Trade with Targeted Countries	-0.002*** (0.001)	-0.003*** (0.001)	-0.001 (0.002)	-0.003*** (0.001)
Firm's Affiliates in Targeted	-0.055*** (0.016)	-0.070*** (0.019)	-0.057*** (0.016)	-0.047** (0.018)
Targeted Countries' AD Experience	-0.006** (0.003)	-0.006* (0.003)	-0.006** (0.003)	-0.006** (0.003)
Market Size	0.424*** (0.126)	0.460*** (0.138)	0.422*** (0.126)	0.418*** (0.126)
Observations	1,188	1,034	1,177	1,177
Firm Controls	Yes	Yes	Yes	Yes
Case Controls	Yes	Yes	Yes	Yes

Table 4.6 Baseline Model with Different Measure and Subsamples. This table presents results for a set of robustness checks for Table 4.5.

The 2017 US Antidumping Duties on Biodiesel Products from Argentina and Indonesia

Having established the statistical evidence on the relationship between the domestic firm's foreign connectivity and its AD participation, this section further investigates this relationship through a study of the 2017 US antidumping duty case that US biodiesel producers filed against their Argentine and Indonesian competitors.

In March 2017, a coalition of fifteen firms including Archer Daniels Midland Company, Renewable Energy Group, and World Energy, along with the National Biodiesel Board, one of the trade associations in the US biodiesel industry, jointly petitioned the US government to levy AD duties on biodiesel products from Argentina

and Indonesia. The petitioners argued that “...companies in Argentina and Indonesia are getting advantages that cheat U.S. trade laws and are counter to fair competition.” Indeed, as the US International Trade Commission concluded in the final report to the AD duty case, the US imports of biodiesel products had increased by more than 460 percent from 97.8 million gallons in 2014 to 550.7 million gallons in 2016, leading to a decrease in the US biodiesel industry’s domestic market share (USITC 2017b). Based on their own estimates of the rise of biodiesel imports and the decline of the industry’s domestic market share, the petitioners argued that “the resulting imbalance caused by unfair trade practices is suffocating U.S. biodiesel producers.”²⁹ For the petitioners, the dramatic increase in biodiesel imports and the its harm to the industry was because Argentine and Indonesian biodiesel producers had been selling their products at an unfairly low price in the US market.

The petitioners in the US were not alone in blaming unfair trade practices from these two countries. In November 2013, the European Commission (EC) decided to impose AD duties on imports from Argentina and Indonesia, following a year-long AD duty investigation that initiated on August 2012.³⁰ Following the Commission’s

²⁹ The National Biodiesel Board, “U.S. biodiesel industry calls out illegal trading,” March 23, 2017, URL: <https://web.archive.org/web/20170329045733/http://biodiesel.org/news/news-display/2017/03/23/u.s.-biodiesel-industry-calls-out-illegal-trading> (Accessed on June 21, 2023).

³⁰ See European Commission, “Notice of initiation of an anti-dumping proceeding concerning imports of biodiesel originating in Argentina and Indonesia,” August 29, 2012, available at [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52012XC0829\(02\)&qid=1711763822901](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52012XC0829(02)&qid=1711763822901) (Accessed on March 29, 2024) and European Commission, “Council Implementing Regulation (EU) No 1194/2013 of 19 November 2013: imposing a definitive anti-dumping duty and collecting definitively the provisional duty imposed on imports of biodiesel originating in Argentina and Indonesia,” November 26, 2013, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013R1194&qid=1711763919156> (Accessed on March 29, 2024)

decision, Peru also imposed heavy AD duties against Argentine biodiesel products, based on a petition from its domestic industry.³¹ Given that the EU and the Peruvian government took sides with their domestic industries in the previous years, the claims that imports from Argentina and Indonesia are harming the US industry might have been appealing to biodiesel producers that were involved in the 2017 US AD duty case.

However, many domestic firms in the US biodiesel industry were not supportive of the petition against Argentina and Indonesia. Contrary to the petitioners' claim that most of the industry supported the petition, many other firms in the US biodiesel industry did not explicitly express their support for the petition. For example, Louis Dreyfus Company and Cargill, Inc., who are members of the petitioning trade association National Biodiesel Board, did not participate in the petition. Moreover, Louis Dreyfus Company actively opposed the petition as part of another trade association, Advanced Biofuels Association (ABFA). ABFA comprised several firms, including major biodiesel companies like Targray and Wilmar International, and stated that its members "vehemently oppose this action and expect these petitions' rejections" and that "customers who chose to use internationally sourced biodiesel for transportation fuels or heating oil are significantly impacted by this petition."³²

³¹ Reuters, "Peru imposes anti-dumping tariffs on biodiesel imports from Argentina," available at <https://www.reuters.com/article/idUSKCN12Q2OC/> (Accessed on March 29, 2024).

³² Advanced Biofuels Association, "ABFA Opposes NBB Petition Against Biodiesel from Argentina and Indonesia," March 23, 2017, available at <https://web.archive.org/web/20171001115138/http://advancedbiofuelsassociation.com/blog/a/bfa-opposes-nbb-petition-against-biodiesel-from-argentina-and-indonesia/> (Accessed June 21, 2023).

In line with the arguments laid out in Chapter 3, varying firm-level foreign connectivity across US biodiesel producers explains why some firms were taking an active role in making a petition against Argentina and Indonesia, while other firms were reluctant to joining the petitioning party or even opposed the petition. For years, many US biodiesel producers expanded their biodiesel business to these two countries. For example, US biodiesel producers Cargill, Darling Ingredients, Louis Dreyfus, and Wilmar established their affiliates (e.g., Cargill S.A.C.I., Rousselot Argentina S.A., Louis Dreyfus Commodities S.A., Wilmar Bioenergi) in Argentina and Indonesia to process grains, animal feed, and biofuels. Along with foreign affiliates' business activities, these producers were active importers of raw inputs of and finished biodiesel products from Argentina and Indonesia.³³ For example, Cargill, Inc. had been a frequent buyer of raw palm oil products from PT Pelita of Indonesia, as noted earlier.

For domestic firms like Cargill that are closely connected with their apparent competitors through value chains where they buy raw inputs for production, AD duties can result in an increase in their production costs. Domestic firms like Louis Dreyfus or Wilmar that were involved in AD petitions can also lose from AD, as they fear that the governments of Argentina and Indonesia might retaliate against the AD action through various policies that negatively affect their business through foreign affiliates. The varying degree of business connections between the US firms and Argentina, as well as Indonesia, appears to be closely linked to their AD participation decisions. This

³³ The Biodiesel Magazine, "Groups Take Predictable Sides As US Biodiesel Trade War Develops," March 22, 2017, available at <https://biodieselmagazine.com/articles/groups-take-predictable-sides-as-us-biodiesel-trade-war-develops-2491718> (Accessed on March 29, 2024).

case highlights the real-world importance of a domestic firm's foreign connectivity, thought of in many ways, on its AD participation. In line with the statistical evidence presented in this chapter, the qualitative evidence laid out here further shows that domestic producers that trade more with targeted countries or have their affiliates operating in these countries are less likely to participate in AD.

Conclusion

This chapter evaluated the connectivity-based hypotheses put forward in the previous chapter. By using a new US antidumping dataset that accounts for a domestic firm's foreign business connections, I show that a domestic firm's foreign trade with, and the presence of its foreign affiliates in, the target country makes it less likely to participate in support of AD. The results provide new insights into a longstanding literature on demands for trade protection through AD duties, building on the recent firm-based literature in trade politics. It shows first and foremost that the role of firms should be emphasized much more. This is because firms have heterogeneous preferences to engage in protective trade policies due to different connectivity to foreign economies. I presented data to show how firms in an industry are frequently divided in terms of whether they support an AD petition. I then constructed a new firm-level database that considers all domestic firms relevant to AD petitions in the US, and their business connections with foreign firms, using millions of domestic firm-to-foreign firm shipments. Based on this database, I developed a set of measures of firms' position within global value chains, to a more precise degree than has been done previously. The chapter ultimately demonstrates that as firms increasingly establish business

connections with their foreign competitors along various value chains, traditional trade measures designed to shield domestic industries from foreign competition are introducing additional costs to the beneficiaries. In Chapter 5, I show that domestic firms' AD participation, stemming from their business connection with their foreign competitors can have a substantively meaningful impact on the ITC's AD duty decisions. Specifically, I emphasize that information from domestic firms unsupportive of the petition is particularly useful for the ITC to determine whether to impose AD duties on imports from specific countries.

Chapter 5: Firm Participation and Antidumping Decisions

Outline of the Chapter

How does firms' lack participation in AD, identified in the previous chapter, translate into policy outcomes? In this chapter, I examine the impact of this non-participation, focusing specifically on the importance of information offered to the ITC by domestic firms unsupportive of the AD petition. I begin by digging deeper into the AD investigation procedure to understand how the ITC makes its decision and what factors should be most influential. I highlight two institutional aspects of the ITC. First, I show that the ITC's six commissioners and the staff are purposely insulated from external political pressure by the nature of their appointment. Second, I argue that the ITC's AD investigation procedure resembles a litigation case in the judicial branch. As such, the ITC will use information collected from both supporters and opponents of the petition to identify whether foreign dumping caused material injury to the domestic industry. Because the information provided by petitioners is likely to be biased, the presence and participation of opposing firms becomes crucial.

Building on the ITC's institutional aspects discussed above, I argue that information from unsupportive and opposing firms significantly influences the ITC's decisions, often leading to less protective outcomes. The information from unsupportive firms can be used to remove potential bias in the original petition, which provides pro-protection, baseline information. I further argue that information from opposing firms that testify at the final hearing will be particularly influential on the

ITC's AD decision. A series of statistical analyses, and a case study of the 2017 polytetrafluoroethylene resin petition, supports my arguments. In sum, the ITC's decisions are shaped by counter-information from unsupportive firms, demonstrating the importance of comprehensive data collection in the AD investigation process.

The Institutional Aspects of ITC's Antidumping Duty Investigations

I begin this chapter by providing additional information about how the ITC conducts its investigation, and which factors might influence its decisions on AD petitions. Specifically, I emphasize two unique institutional aspects of AD investigations: the insulation of commissioners and staff from political pressure and the quasi-judicial procedure of the investigation.

ITC Commissioners and Staff

The most crucial institutional aspect of an AD investigation is that the two groups of individuals at the ITC who carry out investigations and make AD decisions are purposely insulated from external political pressure. The first of these groups is the six commissioners. Each commissioner is nominated by the president and confirmed by Congress under the AD statute. Once appointed, the ITC commissioners serve for nine years, but their reappointment is not allowed. In addition, the AD statute requires that three of the commissioners must have a Republican affiliation, and the other three must have a Democratic affiliation, in order to maintain an overall balanced appearance. Finally, lobbying the commissioners is prohibited by law (19 C.F.R. § 200). The limited

political access to the commissioners during their term, and their lack of reappointment, limits the development of political connections between the commissioners and interest groups affected by AD decisions.

Under such a setting, the primary role of the commissioners is to review the information provided by the individual firms involved in the petition as well as that provided by the ITC staff - and to determine whether foreign dumping has caused material injury to the domestic industry during the period of investigation (POI). The POI is a period during which the petitioners argue that imports from specific foreign countries surged, leading to severe material injury to the domestic industry. Based on this POI, the ITC collects industry-level information and determines the presence (or absence) of foreign dumping and injury to the domestic industry. The POI varies by each case but typically ranges between six months or one year before the petition date.

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Specifically, proprietary business information from individual firms is an essential source that allows the commissioners to better assess the state of the domestic industry under import competition. The commissioners acquire this information through questionnaires to domestic producers, importers, and foreign producers, or through direct engagement with these firms in public conferences and hearings. Most of the information from the questionnaires and the commissioners' interaction with the interested parties during conferences or hearings later becomes available to the public.

³⁴ For an example of a POI, see <https://www.govinfo.gov/content/pkg/FR-2016-12-15/pdf/2016-30150.pdf>.

The second group is the ITC staff, which includes investigators, trade analysts, international economists, statisticians, and legal experts. As is the case with bureaucrats at other federal agencies, the ITC staff are career bureaucrats, and thus, lobbying the ITC staff is also prohibited by law. The staff cannot directly influence the commissioners' AD decisions. Instead, the primary role of the ITC staff is to collect various statistical data from federal and local government agencies regarding the prices and import flows in the product being considered for AD, as well as the domestic industry's production and employment. They also compile and summarize proprietary business data from domestic producers, importers, and foreign producers. Once they acquire these data, the ITC staff process it and publish the staff report on the AD case that informs the commissioners about the recent changes to the domestic industry's production, employment, and import flows. As described below, the staff report is a critical source of information that the ITC relies on to determine the linkage between foreign dumping and material injury to the domestic industry. The staff report, along with the data used to publish the report, are open to the public in the ITC's final AD reports, except for most business data provided by individual firms involved in the petition.

Quasi-judicial Information Gathering

Another unique institutional aspect of the AD investigation is that its overall process exhibits a quasi-judicial structure, resembling a litigation case in the judicial branch. The ITC's AD investigation consists of multiple steps to ensure balanced and accurate

AD decisions. The primary goal of an AD duty investigation is to collect quality data from all domestic and foreign firms relevant to an AD case to help the commissioners determine whether foreign dumping has caused material injury to the domestic industry. However, like a typical litigation case, the information the ITC uncovers during the investigation may only represent the interest of a specific firm that is either supportive or unsupportive of the petition. Therefore, a piece of information from an unsupportive firm may conflict with another piece of information provided originally by the supportive, petitioning firms. Thus, during the preliminary and final stages, the ITC staff and the commissioners continuously update their assessment of the AD case by comparing and verifying different sets of information from supportive and unsupportive groups.

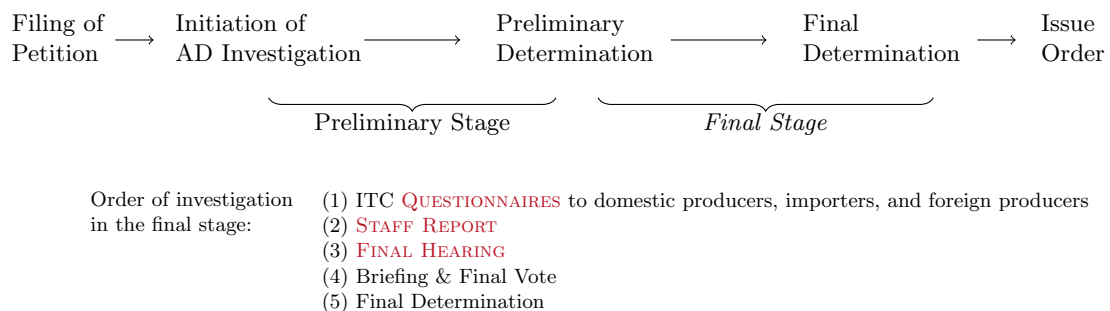


Figure 5.1 The ITC’s Antidumping Duty Investigation Procedure. This figure presents the overall procedure of an AD duty investigation conducted by the staff and commissioners at the US International Trade Commission.

Figure 5.1 above provides an overview of a typical AD investigation and actions taken by the ITC. Among these actions, the role of the ITC’s questionnaires, the staff report, and the commissioners’ direct interaction with interest parties through the final hearing are the three decisive sources of information for the ITC in making its final decision.

The initial information that the ITC acquires comes from the petition filed by the petitioning protection-seeking domestic producers. The petitioning firms provide a list of products they believe are being sold by foreign producers at a deliberately low price in the US domestic market. Based on the list provided, the petitioners identify all domestic producers that sell the product(s) in the domestic market and define them as the ‘domestic industry’ relevant to the AD petition. The petitioners also identify a list of domestic importers that import the product(s) from foreign countries and a list of foreign producers that allegedly underprice their products in the US domestic market. Through this information, the petitioners try to make their case that dumping by foreign producers exists, and, most importantly, has caused material/substantial injury to the domestic industry.

As **Figure 5.1** indicates, the ITC initiates its preliminary stage investigation once the petitioners file their petition, followed by the final stage investigation. Here, I will discuss the steps in the final stage only, as the two stages proceed in similar steps, with the final stage playing a decisive role in an AD investigation. During the final stage, the ITC first sends questionnaires to all domestic producers, importers, and foreign producers listed in the petition (i.e., ‘interested parties’) that may be affected by the ITC’s decision. Upon receiving the ITC’s request to submit answers to its questionnaires, each of these firms may provide proprietary business information that indicates whether it sells products subject to AD in the domestic market, whether its business focuses on the domestic market, and whether it has business connections with producers in the targeted foreign country. The information acquired through the

questionnaires is then used to assess and confirm the petitioners' definition of the domestic industry and their claims of material injury from foreign dumping.

In addition to proprietary business data collected from the petitions and questionnaires, the ITC staff further collects data from federal and local agencies. It provides the staff's assessment of the causal link between the domestic industry's injury and foreign dumping through a staff report. This information becomes publicly available throughout the investigation and offers supporting evidence to bolster the ITC's reasoning regarding its final AD decision.

Finally, because the ITC's questionnaires and the staff report may not fully reveal the effect of foreign dumping on material injury to the domestic industry, the ITC hosts a final hearing before it makes an AD decision. Any individual who represents one of the interest parties subject to AD, including lawyers, academics, consultants, employees of domestic producers (or of importers or foreign firms), labor unions or trade/industry association staff, US politicians, and US and foreign government officials, are allowed to attend and testify before the ITC commissioners at the conference or the hearing.

These meetings aim to provide a 'final update' to the ITC's information on the domestic industry. For example, individuals representing one or more supporting firms may provide further evidence to demonstrate that imports from targeted foreign countries have directly competed with domestic producers and undermined the domestic industry's production. These individuals may provide their own data to support claims that supporting, and not opposing, firms are the leading producers in the domestic industry, thus the ITC should account for the supporting firms' voice more

when making its final decision. However, firms that oppose the petition may counter the arguments made by supporting firms in several ways. In many cases, the opposing firms can argue that imports from foreign countries are qualitatively different from domestic producers' products and are not the primary cause of the domestic industry's recent downturn. The opposing firms may also provide evidence that many producers use imports from foreign countries in the domestic industry, and therefore, an affirmative decision from the ITC will harm the entire industry.

After the final hearing, the commissioners hold a briefing about the AD case and then cast their votes to determine if the ITC should impose AD duties (i.e., 'affirmative decision') against imports from targeted countries or not (i.e., 'negative decision'). If the number of commissioners who vote for an affirmative decision is greater than those who vote against an affirmative decision, then the ITC decides to impose AD duties. In the case of a tie, the ITC makes an affirmative decision on the case (USITC 2015).³⁵

Institutional Background and the ITC's AD Decisions

Based on the previous discussion, I make several assumptions about the ITC's decisions on AD petitions. First, the above discussion establishes that the ITC staff and the commissioners are quite insulated from external political pressure. Thus, I first

³⁵ United States International Trade Commission, 2015, *Antidumping and Countervailing Duty Handbook*, p. II-12, available at https://www.usitc.gov/trade_remedy/documents/handbook.pdf. Specifically, the ITC's handbook writes, "An evenly divided vote by the Commission represents an affirmative determination in antidumping and countervailing duty investigations."

assume that the ITC's primary focus in AD investigations is identifying the link between foreign dumping and material injury to the domestic industry. Any political consequences derived from the decision are beyond the scope of an AD investigation, and, therefore, should not affect the ITC's decision. For example, the ITC should not consider whether its AD decision will negatively impact the US foreign economic relations with targeted countries, such as US allies, or whether its decision disregards the interests of politically influential domestic industries in the US.

Second, I assume that the information the ITC collects from interested parties of an AD petition is incomplete and subject to bias. Because of the quasi-judicial nature of an AD investigation, the ITC acts as a judge in a typical litigation case who makes a judgment based on information submitted by the plaintiff (i.e., the supporting firms) and the defendant (i.e., the opposing firms). Under this setting, the information the ITC collects from supporters (plaintiffs) and opposers (defendants) of the AD petition may be biased toward each party's interests and potentially mislead the ITC's understanding of foreign dumping activities and their impact on the domestic industry. Because the AD investigation does not guarantee the ITC will acquire complete and 'objective' information, the ITC's final decision on an AD petition will depend on which firm related to the AD petition provides information to the ITC and how the ITC processes information acquired from these firms.

Finally, I assume that each supporting or opposing firm relevant to an AD petition seeks and chooses strategies to maximize the probability of its desired outcome, which is an affirmative decision for the supporting firm and a negative decision for the opposing firm. The supporting firm will maximize its probability of

obtaining an affirmative decision by crafting the petition documents with information highlighting evidence of foreign dumping activities. On the other hand, the opposing firm will maximize its probability of gaining a negative decision by providing information that counters what the supporting firm has claimed in the petition document and follow-up stages in the AD investigation, such as answers to the ITC's questionnaires and public conferences and hearings.

The Argument

The Central Role of Counterinformation from Unsupportive Firms on AD Decisions

I argue that information from firms unsupportive of an AD petition plays a decisive role in shaping the ITC's AD decision in a negative direction. Because unsupportive firms have access to more accurate business information needed to assess the validity of supporting firms' claims, their information may significantly update (in other words, 'debias') the ITC's understanding about the state of the domestic industry, which otherwise would be slanted to favor the interests of the supporting firms.

It is worth reiterating that the ITC's primary goal in its AD investigation is to identify the causal link between foreign dumping and material injury to the domestic industry. Suppose the ITC believes there is a reasonable amount of evidence that this link exists. In this case, the ITC will make an affirmative decision on the AD case and impose AD duties on imports from foreign countries. However, the ITC cannot examine this link independently as it requires access to proprietary business information from producers in the domestic industry. Thus, in order to get access to

information it needs to make a fully-informed AD decision, the ITC ideally would like to collect information from both the supportive firms, which is guaranteed, and the firms that are unsupportive, which is more variable.

The core information that is compiled initially comes from the petitioning firms' documents. This information includes a list of firms in the domestic industry, importers of the good(s) in question, and foreign producers that the petitioners believe produce or import products subject to AD. It also includes the petitioners' claims on the link between foreign dumping and material injury to the domestic industry. Because no other information is available to the ITC in this investigation stage, initial information from the petitioning firms sets the 'baseline' of an AD duty investigation.

However, baseline information from the petitioners is neither objective nor accurate enough to fully inform the ITC about the state of the domestic industry. This is because the primary goal of the petition is to obtain an affirmative decision from the ITC, and petitioning firms have incentives to provide highly favorably information through their petition documents. One way to achieve this goal is to include as many domestic producers that support the petition as possible in defining the domestic industry. By doing so, they can demonstrate to the ITC that they have acquired enough support within the domestic industry, which provides a strong initial signal to the ITC that the domestic industry will benefit from the ITC's affirmative AD decision. Similarly, the petitioners can also request the ITC to remove one or more domestic producers that sell products subject to AD in the domestic market but are not supportive

of the petition.³⁶ Because information from the petition documents serves as a baseline for the ITC's investigation, the ITC may end up using this somewhat biased information to conduct follow-up investigations on the nature of the domestic industry. In this case, the ITC may incorrectly estimate an affirmative decision's potential benefits and costs, which could harm a substantial portion of the domestic industry.

To avoid the potential pitfalls of using only the baseline information supportive firms, the ITC collects additional information from firms other than those that support the petition to correct potential biases. Information from domestic producers that are unsupportive of the petition is particularly beneficial for the ITC, because these firms' interests do not necessarily align with those of the supportive firms. The ITC can use information from unsupportive firms to update the baseline information collected from the petition. For example, unsupportive firms may provide counter-information that helps the ITC identify additional domestic producers not listed in the petition. Counterinformation from unsupportive firms can also be helpful in identifying domestic producers that do not produce products subject to AD but were listed in the petition. Finally, unsupportive firms may provide information or data that undermines the claims of material injury from supporting firms. Specifically, unsupportive firms can demonstrate that imports from foreign countries did not negatively impact the entire domestic industry's production, or even argue that imports are beneficial to some in the domestic industry. In sum, contrary information from unsupportive firms can

³⁶ For example, in the 2019 polyethylene terephthalate sheet case against Korea, Mexico, and Oman, the petitioners asked the ITC to remove OCTAL Extrusions from the domestic industry because it is a domestic subsidiary of the Oman producer OCTAL SAOC FZC (USITC 2020).

update the ITC's understanding of the domestic industry by 'debiasing' the petitioners' claims of material injury due to foreign dumping.

In addition to the counter-information gathered from unsupportive firms, the ITC may gather additional critical information from domestic firms that explicitly oppose the petition. As previously described, information from unsupportive firms in the domestic industry is helpful for the ITC in correcting potential biases gained from the petition documents. However, in some cases, information from more than unsupportive firms may be required. For example, suppose a domestic firm does not support the petition because it is not a significant producer in the domestic industry. In this case, this firm may provide helpful information to identify the overall structure of the domestic industry, but not necessarily information that is significant enough to correct potential biases from the petition. In that sense, information from firms that oppose the petition can provide useful new information to the ITC. First, because the interests of opposing firms directly conflict with those of the supporting firms, counterinformation from opposing firms can better correct potential biases about the domestic industry provided in the petition. Specifically, the opposing firms may accurately inform the ITC about business relations among domestic firms within the industry or among those among domestic firms and their foreign affiliates. The opposing firms may also provide critical information about why the domestic industry experienced a downturn in its production and employment during the investigation period, as these firms have more relevant information about themselves and their domestic competitors. Based on this information, the ITC may shift toward making a negative decision.

Information from the opposing firms may be most poignant when these firms appear at the final hearing. As previously discussed, the final hearing is where the ITC makes a ‘final update’ about an AD duty case, based on its interaction with all interested parties of the petition. The final hearing begins with opening remarks from individuals representing one of the producers from the supporting group, and often the opposing group. During these presentations, the ITC commissioners ask questions regarding the state of the domestic industry and verify information provided by interested parties with information provided by the other interested parties in attendance. After the presentations are over, the commissioners ask follow-up questions regarding whether imported products from foreign firms compete directly with the products sold by the domestic producers (supporters), and how this competition has directly undermined domestic producers’ production and investments in domestic facilities. In many AD cases, opposing firms testify against what the supporters have argued with specific industry information, which can be particularly crucial in identifying the link between foreign dumping and material injury.

Hypotheses

Counterinformation from Unsupportive Firms

The above discussion highlights the importance of the counterinformation provided by unsupportive and opposing firms in the ITC’s AD decision. Based on the ITC’s calculus of an AD decision, I discuss several scenarios that describe the conditions under which the ITC is less likely to make an affirmative AD decision.

First, the proportion of unsupportive firms or opposing firms within the domestic industry can affect the ITC's likelihood of making an affirmative AD decision. Unsupportive firms can provide counterinformation that can correct potential biases stemming from the petition documents. Thus, as the relative number of firms that can provides this information to the ITC increases, the ITC is less likely to make an affirmative decision.

Hypothesis 1A (Counterinformation from Unsupportive Firms) *The ITC is less likely to grant affirmative AD decisions when the proportion of unsupportive firms is higher.*

To test Hypothesis 1A, I construct the primary explanatory variable, *Unsupportive Firms*, by counting the number of domestic firms not listed as a petitioner or that have not expressed their support of the petition to the ITC. I then divide this number by the total number of domestic firms in the domestic industry in the AD case. The proportion of unsupportive firms within the domestic industry becomes the measure of how much the domestic industry is unsupportive of the petition.³⁷

In addition to the number of unsupportive firms, the ITC may find information from certain unsupportive firms, primarily large or leading firms in the industry, to be

³⁷ The petition document may not correctly report the list of domestic firms to the ITC. Thus, the ITC requests additional information from other firms in the domestic industry, including non-petitioning domestic firms, importers, and foreign firms. This information is available from the ITC's final AD investigation report. However, the ITC's final report often masks each firm's position on the petition from public disclosure due to business sensitive information. Thus, I additionally collect domestic firms' letters of request for their "entry of appearance" at the preliminary conference or final hearing, and transcripts of these meetings to further identify the supporters of the petition.

most important. These firms may be more consequential to the overall health of the domestic industry, and they also may have a greater capacity to provide information. Therefore, I construct *Unsupportive Firms' Market Share* to account for the influence of counterinformation from large firms on AD decisions. Using Mergent Intellect, I first draw the sales (in USD) of all domestic firms in the year these firms were involved in the petition. I then divide the total sales of unsupportive firms by the total sales of all domestic firms in an AD case.

Next, within the group of unsupportive firms, those that explicitly oppose the petition, and make themselves available to provide additional information, can be particularly influential on the ITC's decision making. Because the baseline information that the ITC acquired from the petition may have prompted the ITC toward an affirmative decision, information from the opposing firms can correct this bias and lead the ITC toward a more negative decision. This is particularly true when opposed firms attend the final hearing. This is, because the final hearing offers an opportunity for a 'final update' of the state of the domestic industry. During this final step, the ITC commissioners' interaction with opposing firms may be quite influential, particularly when more of these firms testify before the commission at the final hearing. Thus, as the ITC encounters a higher proportion of opposing firms attending the final hearing, it is less likely to make an affirmative decision in an AD case.

Hypothesis 1B (Counterinformation from Testifying Opposers) *The ITC is less likely to grant affirmative AD decisions when a higher proportion of opposing firms attend the final hearings.*

To test Hypothesis 1B, I use the ITC's final report on AD cases and identify which opposing firms in the industry appeared and testified at the final hearing – either through one of their employees directly, or through lawyers who legally represent them – against an affirmative AD decision. Using this information, I construct *Testifying Opposers* by dividing the number of all opposing firms that testified at the final hearing by the number of all domestic firms in the AD duty case.

Finally, like the case of unsupportive firms, large and leading firms that oppose the petition and appear that the final hearing may be more important to the ITC's decision. I thus construct *Testifying Opposers' Market Share* by dividing the total sales of testifying opposers by the total sales of all domestic firms in an AD case.

Industry Decline

In addition to counterinformation from unsupportive firms, other factors may affect the ITC's AD decision. Most important is the actual state of the domestic industry and whether it truly has suffered material injury from dumped imports. Past studies have emphasized the centrality of this information (Finger et al. 1982; Hansen 1990; Baldwin and Steagall 1993; Blonigen and Bown 2003). Recall that the ITC's primary job is to assess whether the domestic industry has suffered material harm during the period of investigation. To do so, the ITC is likely to examine the state of the domestic industry using data that captures the extent to which the industry's has experienced a recent downturn during the period of investigation (POI).

I measure industry decline in two ways. First, I examine the changes in domestic industry's production during the POI and construct *Change in Domestic Production*. Utilizing industry-level production data available from the Bureau of Economic Analysis (BEA) and the Federal Reserve's Economic Data (FRED), I measure this variable as follows:³⁸

$$\text{Change in Domestic Production (\%)} = \frac{(\text{DP at POI start month} - \text{DP at POI end month})}{\text{DP at POI start month}}$$

Here, the baseline metric is the domestic industry's production at the beginning month of period of AD investigation, defined as a 3-digit NAICS industry code. I then subtract the domestic industry's production at the final month of period of AD investigation and divide it by the baseline metric. The final metric represents the relative change (decline) in the domestic industry's production over the period of investigation. If this measure is positive, the domestic industry's production has declined during the period of investigation. If this measure is negative, the domestic industry's production has improved during the period of investigation. I expect the ITC to grant an affirmative decision more likely when the *Change in Domestic Production* is greater.

An alternative measure for industry decline is *Import Penetration*, a measure conventionally used in the international trade literature to calculate how much of the domestic demand for certain products is satisfied or filled by imports. Because the ITC's AD investigation aims to determine whether surging imports due to foreign dumping caused material injury to the domestic industry, the ITC may use the import

³⁸ See Appendix, Section A1 that detail the construction of this measure.

penetration ratio at the time of the petition to make its final decision. One of the standard measures of import penetration is to divide the volume of imports for certain products by the total volume of these products remaining in the domestic boundary (adding the volume of these products supplied by imports and domestic production and subtracting the volume of exports of these products to other countries). The final metric represents the importance of imports of the good in the US relative to the total volume of the product in the domestic market:

$$\text{Import Penetration (\%)} = \frac{\text{Imports Subject to AD}}{(\text{Domestic Production Subject to AD} + \text{Imports Subject to AD} - \text{Exports Subject to AD})}$$

Suppose the import volume of certain products is zero or negligibly small. In that case, this ratio will also be zero or close to zero, indicating that the domestic market is not much ‘penetrated’ by imports. However, as the import volume of these products increases, this ratio will also increase, indicating that imports satisfy much of the domestic market’s demands.

To construct this variable, I need to acquire information on the domestic industry’s domestic production, as well as import and export levels of the product(s) being considered for AD. To do so, I use the BEA-FRED data previously collected for domestic production. In addition to the BEA-FRED data, I draw monthly US imports and exports of products subject to AD, defined as a 6-digit NAICS industry code, from

USA Trade Online.³⁹ Using these sources and the above equation, I calculate the *Import Penetration* ratio at the timing of the petition for each AD case.

Domestic Political Pressure and Foreign Economic Relations

Although I do not expect ITC decisions to be heavily swayed by domestic political and foreign policy considerations, I nevertheless include additional variables to control for the possible influence of political considerations, given the prominence of these ideas in the existing AD literature.

Previous research (Hansen 1990; Drope and Hansen 2004; Blonigen and Bown 2003) argues that some type of ‘political pressure’ from interest groups can steer the ITC toward making a positive (or negative) final decision. Because directly lobbying the ITC staff is prohibited by law, these lines of argument highlight various types of indirect influence that groups may have on ITC decisions. The first of these is industry size. If the domestic industry subject to AD is large enough so that 1) the industry is important to the US national economy or 2) it has the political resources to influence the ITC commissioners’ decisions, the ITC may prefer to grant an affirmative decision on the AD case. A frequently used measure of industry size is the domestic industry’s production and employment. Using the previously collected BEA-FRED data, I first construct *Industry Production* by using the natural logarithm value of the industry’s domestic production at the time of the petition. I then use the US Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) data to construct

³⁹ <https://usatrade.census.gov/>

Industry Employment by calculating the natural logarithm value of the domestic industry's total employment, defined as a 6-digit NAICS industry code at the petition date.⁴⁰

Another possible channel of influence is through politicians. Domestic firms that support the petition may ask their political representatives to express support for the petition to the ITC. In many AD cases, members of Congress submit their letters of support in favor of (or against) the AD duty petition. Moreover, some appear at final hearings and testify about their position on the petition before the ITC commissioners (Miler and Allee 2018). If the domestic industry can exhibit political pressure through the members of Congress, their presence at the final hearing will affect the ITC's final decision. For a measure of support from members of congress, I use the list of hearing witnesses documented in the ITC's final reports and construct a binary measure of *Congressional Support* indicating whether any members of Congress attended the ITC's final hearing to request an affirmative decision. I code this variable as one (1) if at least one US senator or house representative supporting the petition appeared at the final hearing and zero (0) if otherwise.

Next, the decision in an AD duty case could have significant implications for US foreign economic relations, even if those factors are beyond the scope of the AD investigation. One of these consequences is possible retaliation from targeted countries. As described in Chapter 2, many countries retaliate when another country (the sender)

⁴⁰ <https://www.bls.gov/cew/home.htm>. The QCEW data is available at the 6-digits NAICS industry level. Therefore, I make a concordance between the 10-digits Harmonized System codes from the ITC's final reports and the 6-digits NAICS industry codes from the QCEW data.

imposes AD duties on their products. One widely used way to retaliate is to impose AD duties on imports from the sender. Suppose the ITC considers potential retaliation from target countries costly to the domestic industry or the US economy. In that case, AD cases that target countries that have frequently used AD duties against the US are less likely to receive affirmative decisions from the ITC. I account for these considerations and add targeted foreign countries' experience in using AD duties against the US and whether each AD case targets US major economic rival, China, or any US ally. Like in Chapter 4, I construct *Foreign AD Experience* by counting the number of recent ten years' AD filings from targeted countries against the US, drawing data from Chad Bown's (2021) Temporary Trade Barriers Database (TTBD) and the "Database of Anti-Dumping Measures" from the World Trade Organization's Trade Remedies Data Portal.⁴¹

Finally, the ITC may situate its AD decision within a broader political context, such as the US strategic competition with China or US relations with its allies. First, because AD duties increase the prices of imports from a specific country for the next five years once they are imposed, the ITC may consider an affirmative decision on Chinese imports to be especially aligned with sentiment within US domestic politics or central to US dominance in the global economy. This is particularly true given that imports from China are known to have significantly affected the US political economy over the past few decades (Autor et al. 2013, 2020; Feigenbaum and Hall 2015). I thus construct a binary variable *China* and code this variable as one (1) if an AD duty petition specifies China as one of the targeted countries and zero (0) if otherwise.

⁴¹ <https://trade-remedies.wto.org/en/antidumping/measures>

In addition, the ITC might consider making a more lenient decision on AD cases where US allies are targeted, because US allies play a significant military and economic role in maintaining the US influence in many areas of the world. Therefore, I code *US Ally* as one (1) if an AD duty petition specifies at least one US ally as one of the target countries and zero (0) if otherwise. To construct this variable, I use the Alliance Treaty Obligations and Provisions database (Leeds et al. 2022).⁴²

Table 5.1 summarizes the sources of data used in the chapter.

⁴² <https://www.atopdata.org/>.

Variable Name	Variable Type	Measurement	Data Source
ITC's AD Decision	Binary (0 or 1)	1 if the ITC's final decision is affirmative, 0 if it is negative	
Unsupportive Firms (%)	Continuous	% of the number of firms in the domestic industry that are unsupportive of the AD petition	AD petition documents, ITC's final reports, final hearing transcripts, and Mergent Intellect
Unsupportive Firms' Market Share (%)	Continuous	% of market share of firms in the domestic industry that are unsupportive of the AD petition	
Testifying Opposers (%)	Continuous	% of the number of firms in the domestic industry that testify against an affirmative AD decision at the final hearing	
Testifying Opposers' Market Share (%)	Continuous	% of market shares of firms in the domestic industry that testify against an affirmative AD decision at the final hearing	
Industry Decline (%)	Continuous	% change in domestic industry's domestic production (million USD) during the case-level period of investigation	Bureau of Economic Analysis, Federal Reserve Economic Data, Bureau of Labor Statistics, and ITC's final reports
Import Penetration (%)	Continuous	% of import subject to AD to the domestic absorption (domestic production + import – export)	
Industry Production (log)	Continuous	Natural logarithm value of the domestic industry's domestic production	
Industry Employment (log)	Continuous	Natural logarithm value of the domestic industry's employment	
Congressional Support	Binary (0 or 1)	1 if the at least one member of congress requested for ITC's affirmative decision at the final hearing	
Foreign AD Experience	Continuous	Total number of antidumping duty cases against the United States filed by targeted foreign countries	The Temporary Trade Barriers database (Bown 2021) and the World Trade Organization's Antidumping Database
China	Binary (0 or 1)	1 if the AD duty case includes China as one of the target countries	ITC's final AD duty case reports
US Ally	Binary (0 or 1)	1 if the AD duty case includes at least one NATO member or non-NATO US allies as one of the target countries	ITC's final reports and the Alliance Treaty Obligations and Provisions database

Table 5.1 Final AD Decision Database. This table presents the variables used in the following empirical analyses, their measurement, and the sources of the data used to construct the variables.

Primary Findings

To test the above arguments, I examine the 144 US antidumping duty petitions initiated between January 1, 2010, and December 31, 2020. For each of these cases, the petitioning producers in the domestic industry are requesting the US government to impose AD duties on specific products imported from particular countries.⁴³ Across these cases, the primary outcome variable is *AD Decision*. In an AD duty case, the ITC makes two types of decisions on imports from a target country. First, the ITC makes an ‘affirmative’ decision if it determines that the domestic industry is materially ‘injured,’ ‘retarded,’ or ‘threatened’ by foreign dumping activities. Second, the ITC makes a ‘negative’ decision if it determines that the domestic industry is *not* materially injured, retarded, or threatened by foreign dumping activities. Based on the above information, I code *AD Decision* as one (1) if the ITC makes an affirmative decision and zero (0) if the ITC makes a negative decision on the AD duty case. **Table 5.2** summarizes the number and proportion of ITC’s affirmative and negative AD decisions on cases initiated between 2010 and 2020.

AD Decision	Number	Proportion
1 (affirmative)	115	79.86%
0 (negative)	29	20.14%

Table 5.2 The Number and Proportion of AD Decisions between 2010 and 2020.

⁴³ I exclude a handful of cases from the final analyses. First, I exclude several cases where the petitioners withdrawn before the ITC initiated its investigation (the 2010 glyphosate case) or where the case was concluded at the provisionary stage (the 2017 titanium sponge case). I also exclude a few AD cases like the 2014 sugar case against Mexico, where the domestic industry comprises too many small domestic producers, and it is challenging to acquire firm-level characteristics of domestic firms.

To understand the determinants of AD outcomes, I estimate a series of logistic regressions of the ITC's AD Decision on the proportion of unsupportive firms, industry decline, and the various controls – which takes the following specification, where i denotes each AD duty case targeting multiple foreign countries:

$$\text{Logit}(\text{AD Decision} = 1)_i = \alpha + \beta_1 \text{Unsupportive Firms}_i + \beta_2 \text{Industry Decline}_i + \beta_3 \text{Industry Production}_i + \beta_4 \text{Industry Employment}_i + \beta_5 \text{Congressional Support}_i + \beta_6 \text{Foreign AD Experience}_i + \beta_7 \text{China}_i + \beta_8 \text{US Ally}_i$$

Using the baseline specification, I run four models to test my hypotheses empirically. Model 1 includes the two primary explanatory variables, unsupportive firms (%) and industry decline (%), and the various control variables. Models 2 through 4 each use alternative explanatory variables for the counterinformation from unsupportive firms: unsupportive firms' market share (%), testifying opposers (%), and testifying opposers' market share (%), respectively, along with the various controls. Model 5 includes the unsupportive firms and the testifying opposers variables together, and Model 6 uses market shares of both of these variables as explanatory variables.

Table 5.3 presents the primary findings. First and most notably, across models 1 and 3 in **Table 5.3**, the estimates of the counter-information variables (unsupportive firms, unsupportive firms' market shares, and testifying opposers) are negatively associated with the ITC's affirmative decision in AD duty cases. Specifically, the estimates for unsupportive firms and their market share in the domestic industry are statistically significant at the 95% confidence level. This means that, on average, the greater the share of unsupportive firms in an AD duty case, the lower the likelihood of

the ITC making an affirmative decision on imports from targeted countries. This result implies that, even after controlling for various other political and economic factors that may affect the ITC's AD decisions, unsupportive firms can lead the ITC toward a less protective decision in AD petitions by providing information that counters the claims of supporting firms.

In model 3, the estimate for the *Testifying Opposers* is also negatively associated with the ITC's affirmative decision, this time at the 90% confidence level. This means that, on average, a higher proportion of opposing firms testifying at the final hearing decreases the likelihood of the ITC making an affirmative decision on the AD case. This implies that information from opposing firms that testified before the ITC commissioners at the final hearing was also effective in leading the ITC toward making a less protective decision on the AD petition.

In Model 5, the estimate for the proportion of unsupportive firms remains negatively associated with the ITC's AD decision, as in the estimate in Model 1. The estimate for this variable in model 5 is also statistically significant at the 95% confidence level. This result shows that the information from unsupportive firms continues to be consequential in leading the ITC to make a less protective decision in AD cases, even when accounting for the specific importance of information from opposing firms testifying at the final hearing. This suggests that the final-hearing information from opposed firms makes a negative determination even more likely, even after controlling for the effect of the case having a greater percentage of unsupportive firms more generally. In model 6, the estimate for unsupportive firms' market share also is negatively associated with the ITC's decision. Like the result from model 2, this

estimate is statistically significant at the 95% confidence level. This further suggests that certain type of information, from certain unsupportive firms, can be particularly consequential. In sum, statistical results from across the models in **Table 5.3** indicate that information from firms unsupportive and opposed to the petition is an essential factor that leads the ITC towards a negative decision in AD cases.

	Dependent Variable: <i>AD Decision</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Unsupportive Firms (%)	-0.018** (0.008)				-0.017** (0.008)	
Unsupportive Firms' Market Share (%)		-0.019*** (0.007)				-0.020*** (0.007)
Testifying Opposers (%)			-0.032* (0.018)		-0.026 (0.018)	
Testifying Opposers' Market Share (%)				0.000 (0.000)		0.000 (0.000)
Industry Decline (%)	0.169*** (0.057)	0.178*** (0.057)	0.165*** (0.056)	0.162*** (0.054)	0.171*** (0.058)	0.180*** (0.057)
Industry Production	-0.062 (0.335)	-0.049 (0.337)	-0.067 (0.339)	-0.039 (0.335)	-0.086 (0.338)	-0.072 (0.339)
Industry Employment	-0.062 (0.148)	-0.032 (0.153)	-0.067 (0.153)	-0.063 (0.149)	-0.065 (0.150)	-0.031 (0.154)
Congressional Support	0.129 (0.185)	0.051 (0.186)	0.088 (0.185)	0.069 (0.177)	0.139 (0.192)	0.040 (0.186)
Foreign AD Experience	0.005 (0.025)	0.004 (0.025)	0.002 (0.025)	0.002 (0.024)	0.006 (0.025)	0.005 (0.025)
China	0.406 (0.815)	0.605 (0.813)	0.656 (0.792)	0.663 (0.775)	0.404 (0.826)	0.595 (0.814)
US Ally	-0.372 (0.618)	-0.316 (0.621)	-0.034 (0.615)	-0.183 (0.602)	-0.244 (0.629)	-0.381 (0.625)
Constant	4.600 (10.139)	3.668 (10.214)	3.929 (10.282)	2.997 (10.149)	5.322 (10.241)	4.435 (10.272)
Observations	144	144	144	144	144	144
Log Likelihood	-62.682	-61.267	-63.740	-65.247	-61.622	-60.756
Akaike Inf. Crit.	143.364	140.533	145.479	148.494	143.244	141.512

Table 5.3 Unsupportive Firms and the ITC's Decisions on Antidumping Duty Petitions. This table presents the results from binary logistic regression of the proportion of unsupportive and opposed domestic firms on the ITC's AD decision. Models 1 through 4 include each one of the explanatory variables with control variables. Models 5 includes proportions of unsupportive firms and testifying opposers as explanatory variables with controls. Finally, Model 6 includes market shares of unsupportive firms and testifying opposers as explanatory variables with controls.

A graphical representation of the results from Model 2 aids in the substantive interpretation of the primary findings. **Figure 5.2** presents predicted changes in the probability of the ITC’s AD affirmative decision as the proportion of unsupportive firms in an AD duty case increases. As shown in the figure, the predicted probability of the ITC granting an affirmative decision gradually decreases as the proportion of unsupportive firms in the domestic industry increases. For example, while the ITC has about a 91% chance of granting an affirmative decision on an AD duty case when none of the domestic firms in the industry are unsupportive of the petition, *ceteris paribus*, this probability decreases by 12% as the proportion of domestic firms that do not support the petition increases to 50%. Moreover, if a substantial majority of domestic firms are not supportive of the AD duty petition, the ITC’s probability of granting an affirmative decision falls below 70%.

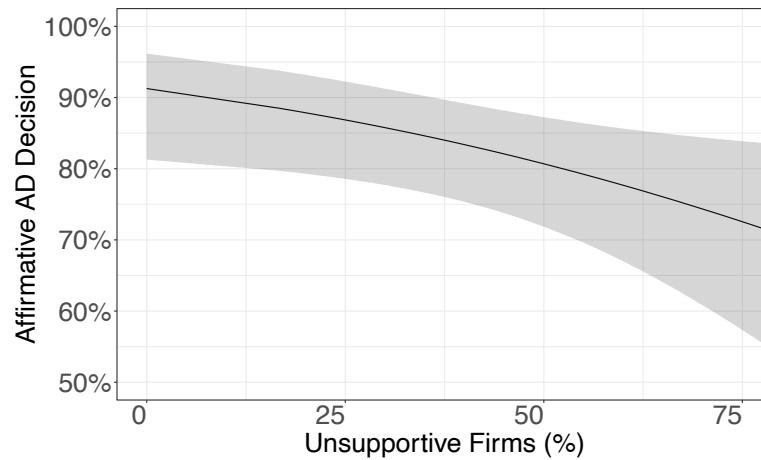


Figure 5.2 Predicted Changes in ITC’s AD Decision by the Proportion of Unsupportive Firms. This figure presents predicted changes and prediction intervals in the ITC’s probability of granting an affirmative decision for an antidumping duty petition on the proportion of the number of domestic firms that are unsupportive of the petition. The figure is based on results from Model 1 in Table 5.3.

Likewise, **Figure 5.3** shows that the predicted probability of the ITC making an affirmative decision on an AD duty decreases substantially as the proportion of unresponsive firms' market share in the domestic industry increases. For example, while the ITC has a 90% chance of granting an affirmative AD decision when all domestic firms support the petition, this probability decreases to 79% when unresponsive firms take 50% of the domestic industry's market share. Moreover, this probability decreases to 59% if no domestic firms support the petition.

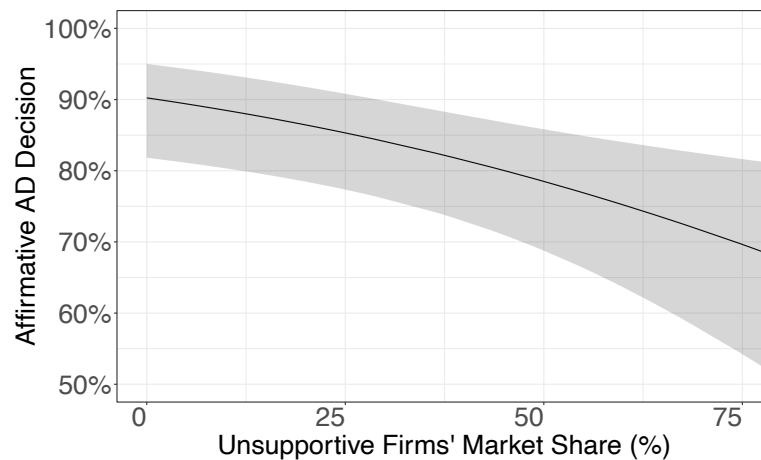


Figure 5.3 Predicted Changes in ITC's AD Decision by the Proportion of Opposing Firms Attending the Final Hearing. This figure presents predicted changes and prediction intervals in the ITC's probability of granting an affirmative decision for an antidumping duty petition on the proportion of unresponsive firms' market share. The figure is based on result from Model 2 in Table 5.3.

Apart from the results for the primary explanatory variables, the findings for *Industry Decline* are as expected and powerful. First, across all models, the estimates of *Industry Decline* (%) are positively associated with the ITC's affirmative decision in AD duty cases. This means that the likelihood of the ITC's affirmative AD decision increases, *ceteris paribus*, when the domestic industry's relative production has declined more during the period of investigation. This finding is logical and reassuring. It suggests

that on the whole, the ITC is meeting its mandate to impose AD only in cases where it is warranted due to the substantial harm caused to the domestic industry.

Results from industry characteristics variables and the ‘political’ control variables also are notable because of their lack of support. Across all six models, *Industry Production* and *Industry Employment* estimates are not statistically significant at conventional levels. In fact, the estimates from these variables are typically negatively associated with the ITC’s AD decision. The interpretation of this result is that the ITC’s AD decision does not depend on the domestic industry’s political influence, which is measured as its domestic production and employment during the period of investigation. Likewise, the estimates of *Congressional Support*, the other political control variable, also are not statistically significant at conventional confidence levels. This means that whether members of Congress testify in support of the petition before the ITC commissioners in the final hearing does not impact the ITC’s final decision.

Next, the estimates of *Foreign AD Experience* also are not statistically associated with the ITC’s AD decision. This implies that potential costs of retaliation from targeted foreign countries that have experience in using AD duties are not considered by the ITC when making an AD decision. Moreover, the estimates from *China* and *US Ally* are also not statistically significant at conventional confidence levels, showing that the ITC does not strictly penalize cases that include the US major economic rival, China, or makes lenient decisions to allies that are politically close to the US. All these findings support the assumption I previously made in the chapter,

which is that the ITC is not really affected by considerations beyond the scope of its investigation.

Robustness Check

To assess the robustness of the previous findings, I re-estimate the same baseline model, but this time with alternative control variables. First, I include another explanatory variable, *Import Penetration*, which can be used as an alternative measure of industry decline. Models 1 through 4 in **Table 5.4** replace *Industry Decline* with *Import Penetration*, using models from **Table 5.3**. Running these models does not change the results statistically or substantively. The estimates are positively associated with the outcome variable, and their standard errors are statistically significant at the conventional levels, like those of the baseline model. This means that as the ITC observes a higher penetration of imported goods in the domestic market, it is more likely to make an affirmative AD decision.

Second, I construct a binary variable, *Trump Administration*, to further investigate whether any other channels of political pressure influence the ITC's AD decision. Since 2017, the Trump administration has shifted US trade policy in a protectionist direction, imposing measures against its trading partners, including Section 201 tariffs on solar panels, Section 232 tariffs on steel and aluminum, and Section 301 tariffs on a wide range of Chinese imports. Under this political atmosphere, the ITC may have been pressured to make affirmative decisions on AD duty investigations more than in previous years. I therefore code *Trump Administration* as

one (1) if an AD duty investigation was initiated between 2017 and 2020, and code as zero (0) if otherwise. Models 5 and 6 use the baseline models in **Table 5.3** but replaces *Congressional Support* with *Trump Administration* to examine the impact of alternative channels of political influence. However, it does not appear that the ITC as more protectionist during the Trump era. Most importantly, the estimates for the primary variables in models 5 and 6 remain negatively associated with the outcome variable, and their standard errors are statistically significant at the conventional levels, like those of the baseline model. This indicates that firm opposition remains important, even during that unique time.

	Dependent Variable: <i>AD Decision</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Unsupportive Firms (%)	-0.020** (0.008)				-0.018** (0.008)	
Unsupportive Firms' Market Share (%)		-0.015** (0.006)				-0.035* (0.019)
Testifying Opposers (%)			-0.033* (0.019)		-0.026 (0.018)	
Testifying Opposers' Market Share (%)				0.000 (0.000)		0.000 (0.000)
Import Penetration (%)	60.512** (23.638)	54.994** (23.168)	58.330** (23.890)	55.142** (22.879)		
Industry Decline (%)					0.163*** (0.057)	0.158*** (0.057)
(log) Industry Production	-0.074 (0.329)	-0.087 (0.328)	-0.038 (0.329)	-0.012 (0.326)	-0.146 (0.330)	-0.156 (0.332)
(log) Industry Employment	0.047 (0.189)	0.015 (0.210)	-0.010 (0.212)	0.002 (0.202)	-0.043 (0.141)	-0.055 (0.145)
Congressional Support	0.099 (0.192)	-0.005 (0.187)	0.070 (0.193)	0.048 (0.184)		
Trump Administration					0.346 (0.493)	0.436 (0.505)
Foreign AD Experience	-0.002 (0.023)	-0.003 (0.024)	-0.006 (0.023)	-0.006 (0.023)	0.015 (0.025)	0.012 (0.026)
China	0.458 (0.787)	0.604 (0.794)	0.745 (0.776)	0.729 (0.756)	0.158 (0.833)	0.392 (0.812)
US Ally	0.010 (0.618)	0.020 (0.622)	0.275 (0.620)	0.126 (0.605)	-0.472 (0.636)	-0.155 (0.628)
Constant	2.179 (10.029)	2.758 (10.066)	0.799 (10.115)	-0.074 (10.010)	6.923 (9.988)	6.454 (10.068)
Observations	144	144	144	144	144	144
Log Likelihood	-64.242	-64.294	-65.602	-67.294	-62.694	-63.485
Akaike Inf. Crit.	146.484	146.589	149.204	152.588	143.388	144.969

Table 5.4 Baseline Model with Different Controls. This table presents the results from logistic regressions of information from unsupportive domestic firms and industry decline on the ITC's AD decisions.

The 2017 Polytetrafluoroethylene (PTFE) Resin Products Case from China and India

Having established and solidified the statistical evidence on the relationship between counterinformation from unsupportive firms on the ITC's AD decision, this section further investigates this relationship through a study of the 2017 US antidumping duty case on polytetrafluoroethylene (PTFE) resin products, on which the ITC made a negative decision.

In September 2017, The Chemours Company petitioned the US government to impose AD duties on PTFE resin products imported from China and India. Chemours is well-known for one of its Polytetrafluoroethylene (PTFE)-based products, Teflon, widely used to coat cookware products. It was separated from the US multinational chemical giant DuPont in 2015 to focus on performance chemicals productions.⁴⁴ Through its petition, Chemours argued that “Chinese and Indian PTFE resin imports increased their U.S. market share by 17 percent from 2014 to 2016” because of “substantial underselling of domestic producers’ prices” by dumped and subsidized imports from China and India, and as a result, “the domestic industry has suffered material injury.”⁴⁵

According to the petition from Chemours, the domestic PTFE resin industry comprises only two firms. The first is Chemours, the petitioner, and the second is

⁴⁴ The Chemours Company, 2015, “DuPont Completes Spin-off of The Chemours Company,” July 1, available at <https://investors.chemours.com/news-releases/news-releases-details/2015/DuPont-Completes-Spin-off-of-The-Chemours-Company/default.aspx> (Last accessed on June 30, 2024).

⁴⁵ Cassidy Levy Kent (USA) LLP (On Behalf of the Chemours Company), 2017, “Petition for the Imposition of Antidumping Duties on Imports of Polytetrafluoroethylene (PTFE) Resin from the People’s Republic of China and Antidumping and Countervailing Duties on Imports of PTFE from India,” September 28, 2017, pp. 24-34. Available at <https://edis.usitc.gov> (Last accessed on June 25, 2024.)

Daikin Americas, which did not express its support for the petition. In line with the arguments laid out in this chapter, Chemours had an incentive to exclude Daikin Americas from the list of domestic producers because then the ITC's decision on the linkage between foreign dumping and the material injury to the domestic industry would be examined only based on the changes in the Chemours' domestic production and revenue. At the beginning of its petition, Chemours argued that "Given its relationship to a Chinese producer and its imports of PTFE, any opposition to the petition by Daikin should be disregarded."⁴⁶

Like the 2017 biodiesel case described in Chapter 4, the primary reason why other producers in the domestic industry do not participate in the petition is because many of these firms trade with or have their affiliated companies in targeted countries. Daikin America was one of these 'connected' firms because as a US subsidiary of Japanese multinational Daikin Industries, Ltd., it had one of its affiliates, Daikin Fluorochemicals Co. Ltd, operating its business in China. Although Daikin did not attend the final hearing, it submitted a written response to the ITC's questionnaires on its US production and business relations with foreign producers. Based on information from Daikin and other producers regarding Daikin's status, the ITC concluded that "because Daikin's principal interest lies in domestic production, we find that appropriate circumstances do not exist to exclude Daikin from the domestic industry as a related party" (USITC 2018, 15).

Moreover, based on the questionnaires sent to various domestic producers, importers, and foreign producers of the PTFE resin industry, the ITC determined that

⁴⁶ Cassidy Levy Kent (USA) LLP (On Behalf of the Chemours Company), 2017, p. 3.

Chemours' claim that it represents the majority of the domestic PTFE resin industry was incorrect, as Chemours was actually only one of the seven domestic producers in the industry. The six other domestic producers were Daikin America, 3M, AGC Chemicals Americas, Flontech USA, Freudenberg, and Whitford Worldwide Company, LLC. All these producers were unsupportive of the petition. Moreover, two domestic producers, AGC and Whitford, expressed their opposition throughout the investigation and testified before the ITC commissioners at the final hearing and requested a negative AD decision. During the final hearing, one Whitford employee stated, "In our opinion, anti-dumping and countervailing duty orders placed on PTFE dispersion from China and India will seriously and perhaps irreparably damage the large and diverse U.S. PTFE processing industry."⁴⁷ One employee from AGC Chemicals also stated that "the extent that the market was down from 2014 to 2016, we all experienced the same thing together, and it had nothing to do with import competition" and that "AGC's business would be unfairly altered and restricted if duties are placed on PTFE resins."⁴⁸

Having collected information from all domestic producers in the industry, the ITC determined that while the volume of PTFRE resin imports to the US domestic market was significant during the POI, the majority of the shipments were (re)directed to targeted countries and that there hasn't been "a significant rate of increase of the

⁴⁷ United States International Trade Commission, 2018, "Revised and Corrected Commission Hearing(Pages 1-208), Polytetrafluoroethylene Resin from China and India; Inv. No. 701-TA-588 and 731-TA-1392-1393 (Final)," Available at <https://edis.usitc.gov> (Last accessed on June 22, 2024).

⁴⁸ Ibid.

volume or market penetration of imports of the subject merchandise during the POI.”⁴⁹
Based on this determination, the ITC made a negative AD decision on the 2017 PTFE resin case.

This case highlights the importance of the information that the ITC collects from domestic producers who do not support the petition. The ITC may have made an alternative (i.e., affirmative) decision on this case if it relied only on information from Chemours, which supported the linkage between foreign dumping and material injury to the domestic industry. However, by collecting additional information from unsupportive and opposing producers in the industry, the ITC could redefine the domestic industry and therefore determine that the information from the petitioners only represented themselves and not the entire domestic industry. Thus, in line with the statistical evidence presented in this chapter, the qualitative evidence laid out here further shows that ITC is less likely to make an affirmative decision when numerous unsupportive firms provide information about the domestic industry, contrary to the claims of the petitioners.

Conclusion

This chapter offered an information-based argument that highlights the impact of information from unsupportive firms on the ITC’s AD decisions. I examined these information-based hypotheses in the context of recent US antidumping cases. My tests reveal that a higher proportion of unsupportive firms within an AD duty case, and the proportion of opposing firms attending the final AD hearing, does make the ITC less

⁴⁹ United States International Trade Commission, 2018, p. 39.

likely to make an affirmative decision on the AD case. Contrary to what the previous AD research argued, I also find that factors regarding industry level characteristics or external political pressure do not drive the ITC's decision towards a more affirmative AD decision.

The theoretical argument and the empirical results provide two new insights into how AD cases are resolved. First, I offer and confirm a new, information-based channel that shapes the ITC's decision, along with the expected influence of industry decline. Second, the results from my statistical models show that political pressure and political considerations are not the primary drivers of ITC's decisions, contradicting much of the conventional wisdom.

Chapter 6: Lessons from A Firm-based Approach to US Antidumping Duty Cases

In this final chapter, I draw several lessons from the findings presented in the previous chapters. I begin by discussing the various implications of this firm-based study for current and future research on antidumping. Next, I situate the findings from this dissertation within international political economy scholarship, particularly the emerging research on firms' political strategies. Finally, I discuss how studying AD duties in the way I have done can help us to better understand the current era of returning protectionism and consider how new trade measures might be best implemented.

Implications for Antidumping Research

An overarching finding of the dissertation is that firms actively engage in trade policymaking and exert notable influence on the outcomes of antidumping duty cases. This is important on its own, since AD is the most widely-used protectionist trade measure across the globe. The importance of firm connectivity (chapter 4) and the role of unsupportive firms on AD outcomes (chapter 5) is apparent across a range of quantitative tests. Additionally, the case studies that I present in chapters 4 and 5 demonstrate in detail how individual firms shy away from supporting AD due to the potential repercussions of such actions, and also how some AD petitions are rejected due to the efforts of firms who stand to lose from AD. These dynamics are likely at play across many different AD petitions. Because participating in an AD duty petition

is essentially a firm-specific decision, future enquiries into AD, whether focused on the question of who pursues AD or whether an AD petition is successful, should focus on the preferences and behaviors of firms.

The revelation that firms are a primary actor that influences AD policymaking challenges much of the previous scholarship that somewhat myopically thinks in terms of industries and whether an entire industry wants or obtains AD. Based on an implicit assumption that AD duties are industry-based actions unilaterally taken against foreign industries, prior research on AD has searched extensively for the most appropriate set of industry characteristics that answer the given question. Yet, these industry-based approaches have been plagued by underspecified theoretical mechanisms and mixed empirical findings. As the previous chapters collectively show, what we observe to be domestic industries in AD cases is, in fact, a group of domestic firms within the domestic industry wherein some support the imposition of AD duties while others oppose it. Depending on their varying calculi regarding AD outcomes, each domestic firm in the industry takes a different position on a given AD petition.

I not only identify the importance of firms for AD, but highlight the mechanisms through which firms play an important role in AD. I first show how certain firms choose not to support the AD petition due to their business connections with foreign firms. The idea that these connections could exist and might be important is logical, yet few previous AD studies have pursued this line of argument. Moreover, a major contribution of my study is that I show how these connections operate by carrying out substantial original data collection that links domestic firms and foreign firms. In doing so, I connect the AD literature to important, broader research on the

role of intra-industry trade and global value chains on various aspects of international political economy. I also emphasize that foreign firms and foreign governments can impose additional costs via these connections if they so choose. In this regard, my theory explicitly highlights how domestic firms' foreign connections can have a "deterrent effect" on their support for AD. This deterrent effect on some firms also has downstream implications for whether AD is enacted, since a lack of firm support reduces the likelihood that the ITC will impose AD.

One of the most striking findings from chapter 5 is that the empirical results largely discredit the influence of politics on AD outcomes. The political weight of the domestic industry requesting trade protection does not appear to affect the ITC's decision. Nor does the decision seem to be shaped by concerns about US foreign economic relations. Not even the members of Congress who have the authority to oversee the ITC's activities seem to have a meaningful impact on ITC's decisions. All the above findings presented in this chapter depart significantly from those of prior works in the AD literature that have long examined antidumping duties through the lens of lobbying and political influence. Instead of politics, the orchestration of information from the supporting and opposing firms influences the ITC's AD decisions.

Therefore, an important lesson from this study is that information from firms opposing the petition matters in AD. Firms within a domestic industry must be aware of what is going on at the ITC in order to decide whether to support or oppose an AD petition. Other interested parties also must be aware of the petition in order to compile and share information with the ITC that may be important. Those seeking trade

protection may be disadvantaged in the global economy, but they have an advantage when using protectionist tools. That is because they control the initial information flow by making a set of claims in their AD petition. What matters more is whether other firms decide to contest those claims, either passively by not supporting an AD petition, or actively, by providing written information or testimony to contradict them. What chapter 5 shows is that the ITC can only do its job when it has the full slate of information that it needs to assess the legitimacy of an AD petition. I demonstrate that in many cases, the ITC thoughtfully considers all the information relevant to an AD petition, and sometimes decides to reject it.

Future inquiries into antidumping outcomes should examine whether information provided by other interested parties matters in the ITC's decisions. In particular, information and actions taken by importers or targeted foreign producers may influence the ITC's decision towards a less (or more) protective decision. For example, recall that the goal of the ITC is to identify whether the surge of imports caused material injury to the domestic industry; while the ITC is armed with national and regional-level statistics on import prices and import flows, it may be unsure which imports caused the harm. To overcome this limitation, the ITC can utilize the questionnaires from importers along with their testimony at the final hearings. Therefore, understanding better the role that importers and foreign firms play during AD investigations may provide a more complete answer to the inquiries of ITC's antidumping decisions. Input from others less directly involved in the economic exchange, such as foreign diplomats, outside experts, and academics, also may play a role and is worth considering.

Finally, future research should examine whether and how the dynamics that I highlight here in the context of the United States apply in other countries. One reason is because the AD investigation process is similarly institutionalized across countries. Some of this is because of years of widespread global use that has led to convergence in how countries pursue AD. But much is also due to the multilateral rules governing the use of AD, and the gradual clarification through the World Trade Organization's Dispute Settlement Mechanism rulings of how those rules should be applied. Another reason is that many of the other heaviest users of AD also possess domestic industries that are heterogeneous, as well as multinational firms that may have deep foreign connections of their own. Indeed, the evolution of GVCs and intra-industry trade implies that firms around the world have various connections to foreign firms and affiliates that transcend borders and that should affect their preferences toward globalization. Thus, I would expect strategic and connected firms to play a role in limiting AD in other countries, too.

Implications for International Political Economy Research

The findings from this dissertation build on other recent research in international political economy. As intra-industry trade through global value chains continues to evolve globally, scholars have identified divisions within industries regarding many trade policy areas. In particular, existing research shows the ways in which firms are active in pursuing their own interests. These areas include, for example, lobbying for trade liberalization (Kim 2017; Osgood 2017) or climate change regulations (Kennard 2020), and petitioning for AD duties (Jensen et al. 2015). An important contribution of

my research is that I not only identify and explain firms' strategies in trade policymaking (in chapter 4), but I also highlight the impact of firm behavior on important policy outcomes. Specifically, in chapter 5, I showed that firms that oppose AD can affect the ITC's decision in a way that reduces protectionism. Thus, future work in IPE should attempt to show not just the strategies that firms pursue, but how their actions affect policy outcomes.

Furthermore, the most recent scholarship on firms and trade emphasizes the role of a firm's size or productivity on its preferences toward a specific trade policy (Kim 2017; Osgood 2016; Plouffe 2017). These attributes are undoubtedly important. However, my work adds another layer to the discussion by highlighting the role of firm-to-firm business connections formulated along various global value chains. This required careful empirical work to identify the relevant US firms, their ownership structure, and their relations with other domestic and foreign firms. More crucially, it was necessary to trace the various linkages each firm has to firms in different countries. The efforts that I made in this dissertation contribute to a more accurate empirical analysis of firm-to-firm relationships, similar to what other recent research has done to identify better the firms' political connections (Betz and Pond 2022) or ownership (Bayer 2023; Lee 2023) in other areas of IPE. In chapter 4, I constructed an original firm-level AD dataset to empirically examine the impact of such business connections on firms' AD participation, using datasets and approaches that could be more widely adopted by IPE scholars who acknowledge that firms are an important part of the trade story.

It also is important to note that my dataset considers the universe of US and foreign firms that were involved in US antidumping cases. Much of the firm-based research in the IPE literature tends to examine only a portion of large public firms due to data limitations. However, a key advantage of the empirical analyses presented in this dissertation is that it reveals a fuller picture of the dynamics in trade policymaking. My research demonstrates that incorporating a wider variety of firms is important and possible.

Implications for Understanding the Return of Protectionism

As many firms continue to develop complex business relations with their domestic and foreign competitors, firms must consider whether a proposed trade policy will advance their interests. Many firms have come to benefit from, and plan for, continued globalization. However, the current wave of protectionism is not just escalating, but also moving beyond more predictable and transparent policy tools like AD and instead utilizing more opaque and unilateral instruments. This presents a challenge for firms, who may not know the new “rules of the game” and may face greater policy uncertainty. Indeed, one of the benefits of AD is that it is inclusive, transparent, and somewhat predictable. In this regard, an important lesson of this study is that a more rules-based and transparent design of trade policymaking and its implementation can serve the interests of domestic firm (i.e., the policy recipient) better compared to those that are less predictable and opaque.

But the reality is that the ongoing wave of protectionism is likely to be less rules-based and more ad hoc. It is important for firms to be able to provide their input into future trade policymaking processes, in order to obtain their desired outcomes, or, at a minimum, to provide their perspective to the government on the current state of trade relations. It is crucial for firms to engage their governments in the midst of this new formulation of trade restrictions. My research suggests that their input should shape outcomes, perhaps in ways that limit the damage of protectionism and enhance overall welfare. At a minimum, firms will need to be able to obtain exceptions to some of the more sweeping protectionist measures.

I suggest that concerns with the protectionism we are now seeing is not just that it is harmful or contradicts the established norm of free trade. It is that form that it is taking. These unilateral policies generally lack transparency and are being used inconsistently and hastily. Therefore, it is more difficult to predict policy outcomes compared to under rules-based, multilateral policies. These unilateral policies, when considered in the aggregate, can introduce severe uncertainty not just to the target of the policy but to the intended beneficiaries as well. Trade policymaking leads to more desirable outcome when it embeds less uncertainty (Handley and Limão 2017), rather than more, as scholars and practitioners alike have already seen (Bloom et al. 2018).⁵⁰ Therefore, it would be desirable if governments continued to use established trade policy tools like antidumping duties, which provide a more stable environment for the

⁵⁰ Ben White, Andrew Restuccia, and Nancy Cook, “War inside Trump trade team triggers global angst,” *Politico*, May 31, 2018, available at <https://www.politico.com/story/2018/05/31/donald-trump-economic-advisers-trade-war-616110> (Last accessed July 9, 2024).

policy recipients. This can minimize potential harm to all relevant actors as compared to unprecedented, less-established policies like the Section 232 investigations. Whether the current wave of protectionism leads us back to the drastic, ‘Beggars-Thy-Neighbor’ ages in the 1930s may depend on whether policymakers value the established rules for using protectionism or decide to make up new rules as they go.

Appendix

A1. Measurement of Domestic Production using data from the US Bureau of Economic Analysis (BEA) and the Federal Reserve Economic Data (FRED)

In order to construct changes domestic production during the period of AD investigation for a given domestic industry, I first need to collect information on the domestic production levels of domestic industries subject to AD duties. However, while the ITC lists products subject to each AD case using the HS (Harmonized Systems) codes (used to identify the types of products traded with other countries), the production levels of the domestic industry subject to AD are available using the NAICS (North American Industry Classification System) codes.

To create a measure of production changes in the domestic industry related to products subject to AD, I need to make a concordance between the HS codes from the ITC's final report and the NAICS codes from US federal statistical agencies. I first focus on the industry-level production data. I collect the Bureau of Economic Analysis (BEA) "2017 Gross Domestic Product by Industry" data (in millions of dollars), which reports US domestic industries' monthly production defined as a 3-digit NAICS industry code.⁵¹ I downloaded the FRED data through the Data Download Program,⁵²

⁵¹ The BEA data is available at <https://apps.bea.gov/iTable/?reqid=150&step=2&isuri=1&categories=gdpind#eyJhcHBpZCI6MTUwLzJzZGVwcyI6WzEsMiwzXSwiZGF0YSI6W1siY2F0ZWdvcmlscyIsIkdkcHhJbmlkX0xsbllRbYmxlX0xpc3QiLCIxNSJdXX0=>. Specifically, I downloaded data with the table options as follows: "Scale": Millions; "First Year": 2017; "Last Year": 2017; Include all rows; "Frequency": Annual. In addition, I use the FRED (Federal Reserve's Economic Data)'s 'Industrial Production and Capacity Utilization - G.17' data, which sets the 2017 domestic production as the baseline and reports monthly percentage changes in domestic production. Historical releases of FRED's Industrial Production and Capacity Utilization are available at <https://www.federalreserve.gov/releases/g17/default.htm>.

⁵² <https://www.federalreserve.gov/datadownload/Choose.aspx?rel=g17>. the seasonally adjusted monthly "Industrial Capacity" data, with the following series codes: G210 (Mining); G311A2 (Food, Beverage, and Tobacco); 313A4S (Textiles and Products); G315A6 (Apparel and Leather Goods); G321 (Wood Products); G322 (Paper); G323 (Printing and Related Support Activities); G324 (Petroleum and Coal Products); G325 (Chemical); G326 (Plastics and Rubber Products); G327 (Nonmetallic Mineral Product); G331 (Primary Metal); G332 (Fabricated Metal Products); G333 (Machinery); G334 (Computer and Electronic Product); G335 (Electrical Equipment, Appliance, and Component); G337 (Furniture and Related

By multiplying the percentage changes from the FRED data with the BEA's 2017 baseline estimates, I obtain the monthly estimates of US domestic industries' production (in millions of USD) between 2008 and 2020.

Next, I turn to the ITC's final report and collect information on all products subject to AD duties, defined as 10-digit Harmonized System product codes. I use the R package *concordance* (Liao et al. 2020), which is based on Pierce and Schott (2018)'s HS-NAICS concordance tables, to match the HS-10 products listed in ITC final reports and the monthly NAICS-3 industry domestic production from the BEA-FRED data. From this exercise, I create a measure of the domestic industry subject to AD's production for any month between 2008 and 2020. Because the DOC and the ITC define the period of investigation (POI) for each AD duty case, I can also derive the domestic industry's production (DP) at the starting month of the POI and the end month of the POI.

For example, the ITC's final report on the 2010 "Certain Aluminum Extrusions" case against China specifies forty-two products subject to the AD duty investigation, each defined as 10-digit Harmonized System product codes (e.g., 7604.21.0000; 7604.29.1000; 7604.29.3010, ..., 8418.99.8060). To match these product codes to the NAICS-3 industry codes, I extract the first 6 digits from the HS-10 products (e.g., 7604.21, 7604.29, ..., 8418.99) and use the "concord_hs_naics" command in the concordance package to make concordance between the HS-6 codes to the NAICS-6 digits codes. As a result, all forty-two HS-10 products in this AD case fall into six NAICS-6 industries (331316, 332321, 332322, 332999, 332998, and 333415). I then aggregate these codes up to the NAICS-3 industries (331, 332, and 333) to match the data available from the BEA and the FRED. Because the period of investigation for the 2010 aluminum extrusions case was between July 1, 2009, and December 31, 2009, I obtain the monthly domestic production of NAICS 331, 332, and 333 industries on July 1, 2009, and January 1, 2010. I then measure Industry Decline by subtracting the sum of NAICS 331, 332, 333 productions in January 2010 (A) from

Products); G339 (Miscellaneous); G3361T3 (Motor Vehicles and Parts); G3364T9 (Aerospace and Miscellaneous Transportation Equipment). These codes correspond to the HS-10 codes of products listed in AD cases in my database.

the sum of the same industries' domestic productions in July 2009 (B). I then divide (B-A) by A.

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