

Firms, Governments, and WTO Adjudication: Japan's Selection of WTO Disputes

Author(s): Christina L. Davis and Yuki Shirato

Source: *World Politics*, Vol. 59, No. 2 (Jan., 2007), pp. 274-313

Published by: Cambridge University Press

Stable URL: <https://www.jstor.org/stable/40060189>

Accessed: 23-07-2018 18:26 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

Cambridge University Press is collaborating with JSTOR to digitize, preserve and extend access to *World Politics*

FIRMS, GOVERNMENTS, AND WTO ADJUDICATION

Japan's Selection of WTO Disputes

By CHRISTINA L. DAVIS and YUKI SHIRATO*

I. INTRODUCTION

WITH over three hundred cases filed since its establishment in 1995, the World Trade Organization (WTO) has become a clearinghouse for trade disputes. Many more potential trade disputes are addressed in channels outside of the WTO, however, or simply ignored. Why are some trade barriers brought to the WTO, while others are not? In this article, we explain the selection of WTO disputes. Governments file complaints, but they typically choose a case in close coordination with their affected export industry. Our main hypothesis is that industries in a low-velocity business environment (few product lines and low product turnover) are more likely to advocate WTO adjudication than high-velocity industries (many product lines and rapid product turnover). In a business environment where competitiveness depends on rapid development of new products, high-velocity industries face greater opportunity costs from waiting and investing resources for WTO dispute settlement. We argue that the WTO disputes governments choose to pursue largely reflect the variation in industry demand although the choices are also influenced by policy priorities and diplomatic concerns.

The literature on international institutions examines how institutions, such as the WTO, change state behavior.¹ However, since member

*Previous versions of this paper were presented at the International Studies Association Annual Meeting (2005), Association for Asian Studies Annual Meeting (2005), Princeton University International Relations Colloquium, Harvard University Program on U.S.-Japan Relations, and the University of Washington Japan Studies Program. The authors thank the following individuals for comments on earlier drafts: James Alt, David Baldwin, Sarah Bermeo, Jeffry Frieden, Joanne Gowa, Kosuke Imai, Daniel Kono, Helen Milner, Jennifer Oh, Saadia Pekkanen, Jon Pevehouse, Ulrike Schaele, Greg Shaffer, Leonard Schoppa, Akihiko Tamura, and Michael Witt. Jennifer Oh and Ann Lee provided valuable research assistance. We are especially grateful to the corporate and government officials in Japan who kindly shared their time and knowledge in interviews. In particular, Ichiro Araki, Tsuyoshi Kawase, and Soichiro Sakuma patiently answered our questions in multiple interviews and contributed important insights to improve our understanding of Japanese trade policy.

¹ Robert Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984); Beth Simmons and Lisa Martin, "Theories and Empirical Studies of International Institutions," *International Organization* 52 (Autumn 1998).

countries can choose to use institutions for certain issues, the selection mechanism must be investigated to properly assess the effectiveness of those institutions.² Our hypothesis suggests that the effectiveness of the WTO is conditional upon the time horizon of the industry.

The challenge for many studies of international institutions is that scholars observe cases of institutional cooperation without being able to identify the universe of potential cooperation opportunities. Analysis tends to focus on the treaties that have been concluded or the disputes that have been raised in the institutional forum and, as such, is open to concern about selection bias. This article presents a theory of selection for WTO disputes and shows that the industry pattern of those disputes supports our hypothesis. It introduces methods to analyze the extent to which selection bias in observed WTO disputes would change our conclusions and pursues an in-depth analysis of Japan's selection process.

Japan is ideal for testing our hypothesis because the high-velocity electronics industry represents its largest export industry. Although Japan is known for its active industrial policy and organized business sector, it initiates few WTO disputes and none for the electronics industry. We show that low demand from industry accounts in part for the low number of WTO cases initiated. Japan is also ideal from a methodological standpoint. In particular, a study of the selection mechanism for WTO adjudication requires the identification of *potential* dispute cases. We create a unique data set of such cases by using the *Report on the WTO Consistency of Trade Policies by Major Trading Partners*, the annual report issued by Japan's Ministry of Economy, Trade, and Industry (METI).³ The report contains a detailed list of trade barriers against Japanese exports that has been reviewed by trade officials and scholars for consistency with WTO law; it allows us to compare the issues that were actually selected for WTO adjudication to a realistic sample of likely cases. Our statistical analysis shows that the Japanese government was less likely to initiate a WTO dispute for industries with a high ratio of research and development (R&D) expenditure to total revenue, which we use as a proxy for a high-velocity industry.

To investigate the causal mechanism, we conduct case studies comparing the low-velocity steel industry with the medium-velocity au-

² George Downs, David Rocke, and Peter Barsoom, "Is the Good News about Compliance Good News about Cooperation?" *International Organization* 50, no. 3 (1996).

³ Reports from 1998 on are available at <http://www.meti.go.jp/english/report/index.html> (accessed October 30, 2006). Earlier reports are available in print, e.g., *1997 Report on the WTO Consistency of Trade Policies by Major Trade Partners* (Tokyo: Ministry of International Trade and Industry, 1997). METI publishes the report annually from 1992.

tomobile industry and the high-velocity electronics industry.⁴ Our interviews with Japanese business officials indicate that steel firms invest in WTO adjudication to achieve long-term deterrence benefits. The automobile industry strongly pushed several WTO cases in the early 1990s, but has shown less interest in recent years as its business environment has become more dynamic and protectionism has declined. Due to concerns about costs in time as well as in money, the electronics industry has not sought WTO adjudication for its trade problems. Diplomatic relations also constrain WTO cases, evinced in the hesitation of industry and government officials in Japan to initiate complaints against China.

In the next section, we discuss the market-opening strategies used to address foreign trade barriers. In the third section, we present our model for industry demand and government supply of WTO complaints. We analyze the industry pattern of WTO disputes initiated by all members and use a data set of potential disputes to analyze Japan's selection of WTO disputes in the fourth section. The fifth section provides case studies with interviews of industry and government officials to more closely examine the causal mechanism. Finally, we conclude with a discussion of how business environment shapes the industry pattern of WTO adjudication.

II. POLITICAL ECONOMY OF WTO ADJUDICATION

EXISTING LITERATURE

Political economy studies emphasize that the demand for free trade or protection arises from lobbying by industry.⁵ In empirical studies, variables such as competitiveness, factor mobility, industry size and concentration, and trade dependence account for industry preferences, and collective action and political institutions shape the ability of industries to influence policy.⁶

⁴ When we refer to the steel industry, we include firms engaged in production of both iron and steel. The automobile industry includes producers of motor vehicles (cars and trucks), and the electronics industry includes producers of appliances, computers, watches, cameras, and semiconductors. Figure 1 notes the industry classification.

⁵ Stephen Magee, William Brock, and Leslie Young, *Black Hole Tariffs and Endogenous Policy Theory: Political Economy in General Equilibrium* (Cambridge: Cambridge University Press, 1989); Gene M. Grossman and Elhanan Helpman, *Interest Groups and Trade Policy* (Princeton: Princeton University Press, 2002).

⁶ Helen Milner, *Resisting Protectionism: Global Industries and the Politics of International Trade* (Princeton: Princeton University Press, 1988); Michael Hiscox, *International Trade and Political Conflict: Commerce, Coalitions, and Mobility* (Princeton: Princeton University Press, 2002); Fiona McGillivray, *Privileging Industry: The Comparative Politics of Trade and Industrial Policy* (Princeton: Princeton University Press, 2004).

Political strategies of firms have also been a primary interest for management scholars.⁷ Researchers have investigated how firms use political strategies as a defense against regulatory intrusions and to gain corporate advantages.⁸ Corporate sales and diversification have been highlighted as important variables to predict political activity.⁹ Firms that proactively use nonmarket factors enjoy competitive advantage in the market.¹⁰ Yet the largest proportion of empirical analysis has dealt exclusively with the United States and corporate political contributions.¹¹

Most political economy research has focused on explanations of protectionism, and less attention has been given to export promotion. I. M. Destler and John Odell highlight the need to study industries lobbying for free trade,¹² and they and others have examined the conditions that lead to such political action by exporters. Lobbying by firms to solve a trade dispute represents a proactive business strategy for global competitive advantage.¹³ Helen Milner and David Yoffie argue that industry structure determines when firms advocate strategic trade policies for reciprocal market access.¹⁴ Michael Gilligan shows how legislation that required reciprocal market-access deals promoted a free-trade coalition of export industries in the United States.¹⁵ Odell argues that market conditions influence negotiations by setting the alternative to a negotiated agreement.¹⁶ The strengthening of international trade rules with the formation of the WTO restricts many of the

⁷ Jeffrey Pfeffer and Gerald R. Salancik, *The External Control of Organizations* (New York: Harper and Row, 1978); David P. Baron, *Business and Its Environment*, 4th ed. (Upper Saddle River, N.J.: Prentice Hall, 2003).

⁸ David J. Vogel, "The Study of Business and Politics," *California Management Review* 38, no. 3 (1996); Amy J. Hillman, Gerald Keim, and Douglas Schuler, "Corporate Political Activity: A Review and Research Agenda," *Journal of Management* 30, no. 6 (2004).

⁹ Brian Shaffer and Amy J. Hillman, "The Development of Business-Government Strategies by Diversified Firms," *Strategic Management Journal* 21, no. 2 (2000).

¹⁰ Douglas Schuler, Kathleen Rehbein, and Roxy D. Cramer, "Pursuing Strategic Advantage Through Political Means: A Multivariate Approach," *Academy of Management Journal* 45, no. 4 (2002).

¹¹ Kevin B. Grier, Michael C. Munger, and Brian E. Roberts, "The Determinants of Industry Political Activity, 1978–1986," *American Political Science Review* 88, no. 4 (1994); Wendy Hansen and Neil J. Mitchell, "Disaggregating and Explaining Corporate Political Activity: Domestic and Foreign Corporations in National Politics," *American Political Science Review* 94, no. 4 (2000).

¹² I. M. Destler and John Odell, "Anti-Protection: Changing Forces in United States Trade Politics," *Policy Analyses in International Economics* 21 (1987).

¹³ Brian Shaffer, "Firm-level Response to Governmental Regulations," *Journal of Management* 21, no. 3 (1995); David P. Baron, "Integrated Strategy, Trade Policy, and Global Competition," *California Management Review* 39, no. 2 (1997).

¹⁴ Helen Milner and David Yoffie, "Between Free Trade and Protectionism: Strategic Trade Policy and a Theory of Corporate Trade Demands," *International Organization* 43, no. 2 (1989).

¹⁵ Michael Gilligan, *Empowering Exporters: Reciprocity, Delegation, and Collective Action in American Trade Policy* (Ann Arbor, Mich.: University of Michigan Press, 1997).

¹⁶ John Odell, *Negotiating the World Economy* (Ithaca, N.Y.: Cornell University Press, 2000), 52–3.

trade strategies considered in these studies while enhancing the multi-lateral adjudication process as a central trade-policy tool.

The growing literature on WTO dispute settlement focuses primarily on settlement patterns.¹⁷ Peter Rosendorff examines the demand for temporary noncompliance that produces a potential dispute case.¹⁸ His model highlights the role of domestic political pressure when states seek exceptions to their commitments.¹⁹ Scholars know little, however, about the conditions under which states *challenge* such violations. Chad Bown shows that export stakes and retaliatory capacity account for cross-national variation in dispute initiation, and Christina Davis and Sarah Bermeo demonstrate the roles litigation experience and domestic institutions play in making some countries more likely to file complaints.²⁰ Still lacking is a theory to explain the industry pattern of cases that are chosen. The role of industry is critical to understanding WTO adjudication given that most cases are developed through close cooperation between the affected industry and government.²¹

NEGOTIATION FORA AND MARKET-OPENING STRATEGIES

When confronted by a trade barrier that represents a potential WTO violation, an export firm has several options. First, it could take a market strategy to absorb the associated losses or circumvent the trade barrier through foreign direct investment (FDI). Second, it could lobby its government to pursue a negotiation strategy in bilateral talks, WTO committees, or other regional and multilateral fora.²² Third, it could request that the government pursue WTO adjudication. Multiple strategies may be pur-

¹⁷ E.g., Marc Busch and Eric Reinhardt, "Testing International Trade Law: Empirical Studies of GATT/WTO Dispute Settlement," in Daniel Kennedy and James Southwick, eds., *The Political Economy of International Trade Law: Essays in Honor of Robert E. Hudec* (Cambridge: Cambridge University Press, 2002).

¹⁸ Peter Rosendorff, "Stability and Rigidity: Politics and Design of the WTO's Dispute Settlement Procedure," *American Political Science Review* 99, no. 3 (2005).

¹⁹ See also Peter Rosendorff and Helen Milner, "The Optimal Design of International Trade Institutions: Uncertainty and Escape," *International Organization* 55 (Autumn 2001); George Downs and David Locke, *Optimal Imperfection? Domestic Uncertainty and Institutions in International Relations* (Princeton: Princeton University Press, 1995).

²⁰ Chad Bown, "Participation in WTO Dispute Settlement: Complainants, Interested Parties, and Free Riders," *World Bank Economic Review* 19, no. 2 (2005); Christina Davis and Sarah Bermeo, "Who Files? Developing Country Participation in GATT/WTO Adjudication," Working Paper (Princeton: Princeton University, 2007).

²¹ Gregory Shaffer, *Defending Interests: Public-Private Partnerships in WTO Litigation* (Washington, D.C.: Brookings Institution Press, 2003).

²² The Doha round talks represent one such multilateral forum. Some specific trade problems that represent potential legal disputes are resolved in the context of a multilateral trade round (e.g., the U.S.-EU oilseeds dispute in the Uruguay Round). The principal aims of trade rounds, however, are to reduce tariffs and set new rules and this forum is only available during the period that a round has been convened. Therefore trade rounds are in general less conducive to the settlement of routine trade disputes.

sued for one issue, and typically WTO adjudication arises as the last option. Some firms lose interest after an initial negotiation fails. Others advocate continued pursuit of a resolution even if it means taking the issue to WTO adjudication. We are interested in the final strategy chosen for a dispute.

Product, firm, and market characteristics will influence firm decisions to ignore the barrier or to invest in local production. The determinants of FDI flows have been analyzed extensively elsewhere;²³ this article focuses on the two nonmarket strategies, bilateral negotiations and WTO adjudication that depend on industry and government action.

Bilateral negotiations typically are the most efficient approach to address a dispute, although there is always the possibility they may end in deadlock. A smaller number of actors can make cooperation easier to achieve.²⁴ Bilateral negotiations offer flexibility, which can help negotiators reach an agreement that meets the minimum acceptable terms for both sides.²⁵ Bilateral agreements, however, are vulnerable to the risk of unraveling at a later date if one of the governments backs out on its promise or chooses a different interpretation. Imbalances in market power further increase incentives to defect from bilateral agreements and weaken the ability to sustain liberalization through bilateral enforcement.²⁶ The narrow focus on issues and countries that makes it easier to reach an agreement also limits the scope of benefits.

The WTO represents another venue for negotiating trade barriers. Many credit the General Agreement on Tariffs and Trade/WTO (GATT/WTO) as an effective source of pressure for trade liberalization.²⁷ Multilateral institutions lower some transaction costs and facilitate credible commitments to liberalize. Agreements reached as part of multilateral negotiations promise wider benefits given that all members of the trade regime accept the agreements as legally binding commitments. WTO committees offer a forum for discussion of trade barriers seen as inconsistent with the agreements. Through repeatedly raising a problem in the multilateral setting, members can work out differences of interpre-

²³ E.g., Elhanan Helpman, Mark Melitz, and Stephen Yeaple, "Export Versus FDI with Heterogeneous Firms," *American Economic Review* 94, no. 1 (2004).

²⁴ Kenneth Oye, "Explaining Cooperation under Anarchy: Hypotheses and Strategies," *World Politics* 38, no. 1 (1985).

²⁵ Saadia Pekkanen, Mireya Solis, and Saori Katada, "Trading Gains for Control: International Trade Forums and Japanese Economic Diplomacy," *International Studies Quarterly* (forthcoming).

²⁶ Giovanni Maggi, "The Role of Multilateral Institutions in International Trade Cooperation," *American Economic Review* 89, no. 1 (1999); William Davey, "Dispute Settlement in the WTO and RTAs: A Comment," in Lorand Bartels and Federico Ortino, eds., *Regional Trade Agreements and the WTO Legal System* (Oxford: Oxford University Press, 2006).

²⁷ John Jackson, *The World Trading System*, (Ann Arbor, Mich.: University of Michigan Press, 1999).

tation and use public shaming to pressure a trade partner into changing an offending policy.

The WTO also provides a formal dispute-settlement mechanism. On the one hand, adjudication brings international pressure for compliance and deters similar trade barriers by other countries. Recent studies find that countries that use the WTO to challenge antidumping duties are less likely to be targeted with antidumping duties by other members.²⁸ On the other hand, the adjudication process raises other transaction costs. In particular, businesses frequently complain that the system takes too long. Even before filing a complaint, preliminary negotiations with the trade partner and consultations among industry and government officials about whether or not to file take time. The adjudication process and implementation period represent additional time. William Davey, former director of the legal affairs division of the WTO, advocates that shortening dispute duration be a priority of reform. Examining 181 WTO disputes with a consultation request filed prior to July 1, 2002, Davey shows that while more than half of the cases settled during consultations ended within one year, the median time for disputes that went through the formal panel process was thirty-four months, and eleven cases lasted over four years.²⁹ Businesses may be cautious about starting a process with an uncertain outcome that could take anywhere from six months to four years. It is not an inexpensive undertaking. A typical case that lasts two years can cost as much as \$1 million in lawyer fees plus the additional human-resource costs of dedicating personnel to support a legal dispute.³⁰ Governments must additionally weigh policy-making inputs and harm to diplomatic relations.

Given all these options, what determines which trade problems are brought to court? Taking the supply of potential cases, i.e., policies inconsistent with WTO rules, as exogenous, we offer a theory to explain the decision to challenge such measures.³¹ In the next section, we dis-

²⁸ Bruce Blonigen and Chad Bown, "Antidumping and Retaliation Threats," *Journal of International Economics* 60 (2003); Marc Busch and Eric Reinhardt, "Does the WTO Matter? U.S. Antidumping Investigations and the Rule of Law" (Paper presented at the annual meeting of the American Political Science Association, Washington D.C., September 2005).

²⁹ William Davey, "Evaluating WTO Dispute Settlement: What Results Have Been Achieved Through Consultations and Implementation of Panel Reports?" (Paper presented at "Conference on WTO at 10," Tokyo, October 25, 2005).

³⁰ The cost and time figures were confirmed in interviews with top Washington, D.C.-based international trade law firms and METI officials. They would on average be the same across industries but vary case by case. One lawyer for a Washington, D.C. law firm that frequently represents Japan in both antidumping and WTO litigation said that when firms decline to go forward with a particular case of litigation after an initial inquiry, they cite the expected costs of dedicating staff to support the case. Author telephone interview with Washington, D.C. lawyer, Princeton, September 22, 2006.

³¹ Modeling both the supply of protection and decision to challenge would go beyond the scope of this article. We instead rely upon data of observable protection to determine the conditions under

cuss how industry and government interests influence selection of WTO disputes.

III. THE DEMAND AND SUPPLY OF WTO COMPLAINTS

Studies of corporate political action emphasize that size, concentration, and multinationality determine which firms and industries have the interest and capacity to mobilize for political action.³² These variables would similarly be important determinants of demand for WTO disputes. Larger industries have more capacity to bear the costs of WTO disputes and to persuade the government to support their interests. Theories of collective action lead one to expect that concentrated industries will be more likely to mobilize for political action.³³ Higher levels of export dependence and multinationality increase the industry's stakes in supporting free trade.³⁴ Existing studies, however, do not discuss how the business environment of an industry influences corporate political action.

BUSINESS ENVIRONMENT AND FIRM PREFERENCES FOR TRADE POLICY

Firms are profit-maximizing actors whose interest in a trade dispute is a function of potential profit losses from continuation of the trade barrier and the cost of lobbying to bring a change. We emphasize business environment (high or low velocity) as an important explanatory variable that influences how firms weigh the costs of trade barriers and market-opening strategies. High-velocity environment is defined as an "environment[s] in which there is rapid and discontinuous change in demand, competitors, technology or regulation."³⁵ This environment is characterized by a high degree of uncertainty for decision making and short product cycles.³⁶ The fast rate of change in technology and consumer tastes creates incentives for firms to have rapid product turnover

which states challenge WTO-inconsistent policies. In Section IV, the subsection entitled "Addressing Potential Bias in METI Sample of WTO-Inconsistent Policies" discusses the possibility of an endogenous process.

³² Grier, Munger, and Roberts (fn. 11); Hansen and Mitchell (fn. 11); Hillman, Keim, and Schuler (fn. 8).

³³ Mancur J. Olson, *The Logic of Collective Action* (Cambridge, Mass.: Harvard University Press, 1965).

³⁴ Milner (fn. 6).

³⁵ Kathleen M. Eisenhardt and L. J. Bourgeois III, "Politics of Strategic Decision Making in High-Velocity Environments: Toward a Midrange Theory," *Academy of Management Journal* 31, no. 4 (1988), 738.

³⁶ Richard A. D'Aveni, *Hypercompetition: Managing the Dynamics of Strategic Maneuvering* (New York: Free Press, 1994).

and compete with many product lines. Research shows a direct relationship between the velocity of change in the business environment and the frequency and speed of introducing new products, so that one expects firms in a high-velocity environment to have a larger number of product lines.³⁷ Electronics is often given as an example of an industry characterized by a high-velocity business environment. In such industries, leading firms set goals to have as much as 30 percent of revenues come from new products.³⁸ The scale, scope, and duration of environmental changes are so significant that firms adopt different operation strategies to increase the capacity for fast product turnaround.³⁹ Managerial priorities emphasize routine short deadlines and quick transitions to take advantage of new opportunities.⁴⁰

The nature of an industry's business environment influences preferred negotiation strategies because it determines how a firm evaluates the cost of resolving a trade problem. Facing identical expenditures in terms of human resources, legal fees, and time, firms in high-velocity environments will face greater opportunity costs for investment in any given trade dispute than firms in low-velocity environments.⁴¹ Since high-velocity businesses have a broad range of product lines, they have less need to defend against a barrier that harms profits from one product and instead use their resources for new product development.

In particular, firms in fast-moving markets will view time as a critical transaction cost, and they will discount the long-term impact on profits from continuation of a trade barrier. Firms that fear obsolescence by falling behind the pace of market development cannot afford the delay of waiting for the next period to recoup their losses. These firms must seek the quickest solution to their trade problems and are more likely to cut their losses at the bilateral stage without requesting a WTO dispute.⁴²

³⁷ Sunder Kekre and Kannan Srinivasan, "Broader Product Line: A Necessity to Achieve Success?" *Management Science* 36, no. 10 (1990); Haim Mendelson and Ravindran R. Pillai, "Industry Clockspeed: Measurement and Operational Implications," *Manufacturing and Service Operations Management* 1, no. 1 (1999); Gilvan Souza, Barry Bayus, and Harvey Wagner, "New-Product Strategy and Industry Clockspeed," *Management Science* 50 (April 2004).

³⁸ Kathleen M. Eisenhardt and Shona Brown, "Time Pacing: Competing in Markets that Won't Stand Still," *Harvard Business Review* (March/April 1998).

³⁹ Kathleen M. Eisenhardt, "Making Fast Strategic Decisions in High-Velocity Environments," *Academy of Management Journal* 32, no. 3 (1989); William C. Bogner and Pamela S. Barr, "Making Sense in Hypercompetitive Environments: A Cognitive Explanation for the Persistence of High-Velocity Competition," *Organization Science* 11, no. 2 (2000).

⁴⁰ Souza, Bayus, and Wagner (fn. 37).

⁴¹ The number of actors may raise collective-action costs for mobilization of firms in an industry, which varies across industries. We take this into account in our empirical analysis and discussion in the text.

⁴² A similar reluctance to litigate would be expected when deciding whether to defend against antidumping petitions in domestic legal procedures. Although antidumping is not the focus of

Conversely, firms in a slower business environment are more willing to invest in a longer process. Given their narrow product lines and low rates of product turnover, these firms have a large stake in actions to defend the profit stream for one product line. They will place less weight on the time it takes to reach a solution and greater weight on both the expected losses from the trade barrier and the value of a reputation for challenging barriers. Business-environment velocity determines the time horizon and product diversity of firms, and we argue that for high-velocity businesses, these features together increase the opportunity costs of investment in market-opening strategies and lead these firms to discount the harm from ongoing trade barriers.

—Hypothesis. Firms in a high-velocity business environment will be less likely to advocate WTO adjudication than firms in a low-velocity business environment.

GOVERNMENT PRIORITIES IN DISPUTE SELECTION

While governments are unlikely to initiate a WTO dispute in the absence of interest from business, favoritism for particular industries, policy priorities, and diplomatic concerns may lead a government to push forward some cases while holding back others. One would expect governments to be more willing to support cases for industries that are large in size because they have a greater impact on economic welfare and employment.⁴³ Industries that give more political contributions are also likely to have more policy influence.⁴⁴

In addition to responding to specific industry requests, governments may view some trade barriers as more problematic than others and give them priority. In particular, WTO rules for import relief measures (antidumping, countervailing, and safeguard duties applied for temporary protection) have been highly contested. Governments have shown a strong tendency to initiate WTO disputes related to these measures and panels have consistently found in favor of their challenges.⁴⁵

analysis in this article, a lawyer for a Washington D.C. law firm frequently involved in antidumping cases noted that electronics firms are less likely than steel firms to pursue litigation to defend against an antidumping petition. Author telephone interview with Washington, D.C. lawyer, Princeton, September 22, 2006.

⁴³ Gary Becker, "A Theory of Competition among Pressure Groups for Political Influence," *Quarterly Journal of Economics* 98 (1983).

⁴⁴ Grossmann and Helpmann (fn. 5); Wendy Hansen and Jeffrey Drope, "Purchasing Protection? The Effect of Political Spending on U.S. Trade Policy," *Political Research Quarterly* 57, no. 1 (2004).

⁴⁵ Daniel Tarullo, "Paved with Good Intentions: The Dynamic Effects of WTO Review of Anti-Dumping Action," *World Trade Review* 2, no. 3 (2004).

However, a government may refrain from initiating a WTO dispute when concerned about a sensitive diplomatic relationship. The WTO dispute process can create negative public perceptions as a result of exaggerated rhetoric from both sides.⁴⁶ Governments may try to avoid initiating a case against a country when there is fear that spillover from a trade dispute would worsen diplomatic relations. There is also the strategic consideration of whether the trade partner would change the policy measure. A government may calculate that it would be futile to initiate a WTO dispute against a trade partner's large-employment or high import-penetration industry because strong resistance by that partner would prevent favorable settlement.

IV. ANALYSIS OF WTO DISPUTE SELECTION

INFERENCE FROM OBSERVED WTO DISPUTES

Table 1 shows considerable industry variation in the issues raised in WTO dispute adjudication.⁴⁷ Agriculture has long been a contested area of international trade and generates the largest number of trade disputes. While the Uruguay Round agreements that established the WTO brought the service sector into international trade rules, this sector has not featured prominently in WTO adjudication. The focus for this article is the manufacturing sector (Figure 1). WTO members initiated 130 disputes concerning manufacturing-sector products from 1995 to July 2005. The steel industry had the largest number of cases, thirty-eight, representing 29 percent of all manufacturing cases, followed by the textile, automobile, and chemical industries. In contrast, the electronics industry had only ten cases (8 percent of the total).

The problem with drawing conclusions about dispute initiation based on this data, however, is that we do not know the full list of potential WTO disputes. The observation that there are more WTO disputes about steel than electronics in Figure 1, does not necessarily imply that WTO violations against steel are more likely to be brought to the WTO. To see this more formally, let Di be an indicator variable that is equal to 1 if WTO-inconsistent policy i is brought to the WTO dispute and that is equal to 0 otherwise. We use Vi to represent an indicator variable that is equal to 1 if WTO-inconsistent policy i affects a high-velocity industry.⁴⁸

⁴⁶ Karen Alter, "Resolving or Exacerbating Disputes? The WTO's New Dispute Resolution System," *International Affairs* 79, no. 4 (2003).

⁴⁷ This table reports WTO disputes following the convention to count as one case a dispute between one pair of countries on a given policy issue.

⁴⁸ While we treat the velocity of the business environment as a continuum in the empirical analysis, it is convenient here to consider just the case of high-velocity industry represented by electronics versus all others.

TABLE 1
SECTOR BREAKDOWN OF WTO DISPUTES^a

<i>Sector</i>	<i>All Members</i>	<i>%</i>	<i>U.S.</i>	<i>%</i>	<i>EU</i>	<i>%</i>	<i>Japan</i>	<i>%</i>
Primary	138	41	26	37	15	22	0	0
Manufacturing	130	39	23	32	31	46	8	73
Services	8	2	4	6	3	4	0	0
Horizontal issues	62	18	18	25	19	28	3	27
Total	338	100	71	100	68	100	11	100

^a Summarizes the number of WTO dispute cases filed as of July 2005 when counting distinct disputes on a single policy issue. "Horizontal issues" refers to disputes about policy issues that are not specific to a particular industry, e.g., tax codes.

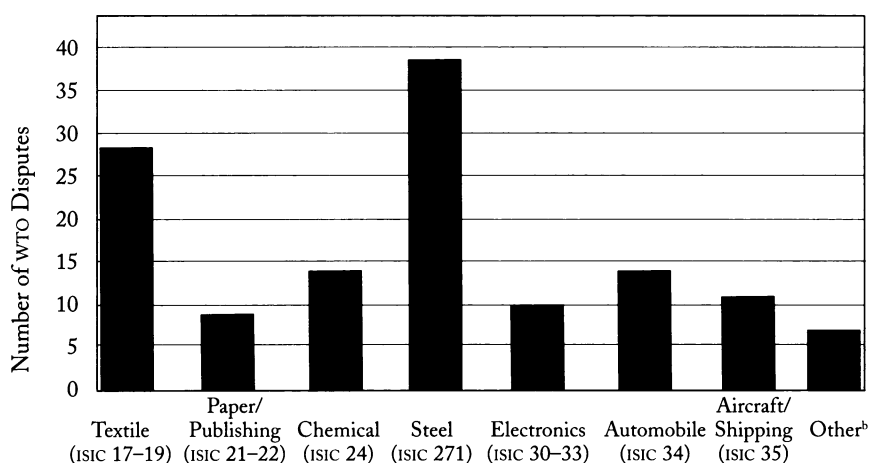


FIGURE 1

INDUSTRY BREAKDOWN OF WTO DISPUTES, MANUFACTURING SECTOR^a

^a Number of WTO dispute cases filed as of July 2005 in the manufacturing sector when counting distinct disputes on a single policy issue. Manufacturing industry codes from the UN International Standard Industrial Classification (ISIC rev. 3) are given in parentheses.

^b Includes five cases from nonmetallic mineral products (ISIC 26), e.g., cement, and two miscellaneous industrial goods.

Then, the data in Figure 1 allows us to estimate the probability that a WTO dispute is about a policy affecting a high-velocity industry, i.e., $\Pr(V_i = 1 \mid D_i = 1)$, while it cannot be used to directly estimate the probability that a WTO-inconsistent policy affecting a high-velocity industry will be brought to the WTO dispute, i.e., $\Pr(D_i = 1 \mid V_i = 1)$, which is the quantity of interest.

Nevertheless, the observed data contain some information about whether a WTO-inconsistent policy in a high-velocity industry is more or less likely to be challenged in a WTO dispute. To see this, we apply the Bayes' rule to derive the following relationship:

$$\begin{aligned} & \Pr(D_i = 1 \mid V_i = 1) - \Pr(D_i = 1 \mid V_i = 0) \\ &= \Pr(D_i = 1) \{ \Pr(V_i = 1 \mid D_i = 1) - \Pr(V_i = 1) \} / [\Pr(V_i = 1) \{ 1 - \Pr(V_i = 1) \}]. \quad (1) \end{aligned}$$

If our hypothesis is correct, then the difference in the probabilities of WTO dispute initiation between a high-velocity industry and other industries, which is given in the left-hand side of the equation, will be negative. Since the probability only takes nonnegative values, the direction of this effect depends on whether the probability of a WTO dispute initiated for a high-velocity industry, i.e., $\Pr(V_i = 1 \mid D_i = 1)$, is greater or less than the probability that a WTO-inconsistent policy affects a high-velocity industry, i.e., $\Pr(V_i = 1)$. From Figure 1, we estimate $\Pr(V_i = 1 \mid D_i = 1)$ to be 10/130, which is approximately equal to 0.077. Thus, our hypothesis holds true so long as $\Pr(V_i = 1)$ is greater than 0.077 or, equivalently, the proportion of high-velocity industry trade barriers in the total population of potential cases is at least 7.7 percent. Although this seems plausible and offers preliminary evidence in support of our argument, we further investigate by collecting data on WTO-inconsistent policies.⁴⁹

The challenge is how to measure potential cases for WTO litigation. We are equally interested in why countries do not file a case when a trade partner has a policy that violates WTO rules. The number of WTO-inconsistent policies is far greater than the over 300 WTO disputes filed since the organization's inception in 1995. For example, the United States' 2003 *National Trade Estimate Report* lists seventy-two trade barriers by Japan; only two of these were addressed in WTO disputes. In the period from 1995 to 2003, the U.S. reports lists 562 barriers with five top trade partners (Canada, EU, Japan, Korea, and Mexico), but only forty-six (8 percent) were raised as WTO disputes.⁵⁰ METI's 2003 report

⁴⁹ Office and telecom equipment, typical electronics-industry products, comprised 14 percent of world merchandise exports in value in 2004. WTO, *International Trade Statistics 2005*.

⁵⁰ Unlike the Japanese report, the U.S. report does not select cases on the basis of WTO consistency, so some items included are not potential WTO disputes.

lists forty-one trade barriers by the United States, six of which were addressed in WTO disputes. The number of potential WTO disputes that are never filed is larger for developing countries, which face greater obstacles to filing cases.⁵¹ These numbers suggest that many trade barriers are not being taken up as WTO disputes.

THE JAPAN PUZZLE

To further investigate the industry pattern of WTO dispute selection, we look at Japan. Most studies of the WTO focus on the U.S. and EU; and less is known about Japan even though it represents the world's third-largest economy. The classic model of Japanese trade policy emphasizes the role of the central government in managing industrial development through targeted protection.⁵² Yet Japanese export firms also have a voice in determining trade policy.⁵³ Maintaining market access has been a critical problem for them since the early 1980s when their exports started to flood world markets and were met with protectionist responses.

Despite being a major trading state, the Japanese government used the GATT dispute system infrequently and has not been active in the WTO relative to the U.S. and EU. Nevertheless, it has taken a stronger interest in trade adjudication since the establishment of the WTO. The use of WTO adjudication to resolve trade disputes has received strong backing from the trade bureaucracy and powerful export industries in Japan.⁵⁴ Where once Japanese trade policy was dominated by countless exchanges of defensive bilateral negotiations with the United States, it now engages with many more international economic forums.⁵⁵

Japan has initiated eleven cases before the WTO (see Appendix), the majority of which have focused on the steel (five cases) and automobile

⁵¹ Henrik Horn, Petros Mavroidis, and Hakan Nordstrom, "Is the WTO Dispute Settlement System Biased?" Discussion Paper, no. 2340 (Washington, D.C.: Center for Economic Policy Research, 1999). In an innovative study to generate potential disputes as a function of bilateral product-market pairings (PMPs) over \$1 million, Horn, Mavroidis, and Nordstrom find that for the first four years of the WTO and for the 113 members for which trade data was available, there were over one hundred thousand PMPs relative to 146 WTO disputes filed. The U.S., EU, and Canada initiated more disputes than predicted by their trade interests model. Lack of effective representation is suggested as one reason why developing countries initiate relatively fewer disputes than their share of trade.

⁵² Chalmers Johnson, *MITI and the Japanese Miracle* (Palo Alto, Calif.: Stanford University Press, 1982).

⁵³ Kent Calder, *Strategic Capitalism* (Princeton: Princeton University Press, 1993).

⁵⁴ Keisuke Iida, *Legalization and Japan: The Politics of WTO Dispute Settlement* (London: Cameron May, 2006). Saadia M. Pekkanen, "Aggressive Legalism: The Rules of the WTO and Japan's Emerging Trade Strategy," *The World Economy* 24, no. 5 (2001). Amy Searight, *MITI and Multilateralism: The Evolution of Japan's Trade Policy in the GATT Regime* (Ph.D. diss., Stanford University, 1999).

⁵⁵ Ellis Krauss and T. J. Pempel, *Beyond Bilateralism: U.S.-Japan Relations in the New Asia-Pacific*, eds. (Palo Alto, Calif.: Stanford University Press, 2004).

(four cases) industries.⁵⁶ There are no cases for the electronics industry. On the one hand, Japan fits the overall pattern for WTO countries discussed in the previous section. On the other hand, as a leading global exporter of electronics, one would expect Japan to actively defend market access and initiate WTO disputes to benefit its most important export industry. In 2001, electronics goods were Japan's top export earner with a 24 percent share of the value of total Japanese exports.⁵⁷ Table 2 shows that the electronics industry is the source of over one-third of all Japanese manufacturing exports and is the nation's largest producer and employer. In 2002, electronics industry firms and associations gave a total of ¥225 million in political contributions to the ruling Liberal Democratic Party (LDP). Looking at the manufacturing sector as a whole, the donation was the second largest after the automobile industry (¥285 million) and well ahead of the steel industry (¥142 million).⁵⁸ Hence the puzzle: why has Japan not initiated any WTO cases for the electronics industry?

IDENTIFYING POTENTIAL WTO CASES

A remaining question is whether the electronics industry faces trade barriers that could be raised by the Japanese government as a WTO dispute. Since the pattern of a country's WTO cases might reflect the underlying protection against an industry by foreign governments, the initiation of cases relative to the universe of potential WTO cases must be evaluated.

We create a sample of potential disputes from METI's annual *Report on the WTO Consistency of Trade Policies by Major Trade Partners*. The stated goal of the report is to examine the trade policies of major trade partners from the perspective of their consistency with international law, and to urge trade partners to change those policies if they conflict with international rules. METI officials compile a draft list of trade barriers primarily based on information from ministries and consultations

⁵⁶ The Byrd Amendment case (DS217) is counted here as a steel-industry case. Although it is related to horizontal policy issues relevant to other industries, it was primarily backed by the steel industry, which has been the major target of U.S. antidumping measures. Author interview with METI official, Tokyo, August 22, 2005. The antizeroing case (DS322) was also supported by the steel industry, but is not counted as a steel-industry case because it was primarily related to the ball-bearings industry. The case against U.S. procurement policies was horizontal because it broadly affected several industries.

⁵⁷ Japan Tariff Association, data available at <http://www.stat.go.jp/english/data/chouki/18.htm> (accessed October 30, 2006).

⁵⁸ The data on Japanese political contributions was collected by the authors from data on corporate donations in public filings reported in the daily government bulletin, *Kanpo*. Note that we have only counted donations by firms and associations to the LDP that were over ¥1 million. From 1995 to 2002, political contributions to the LDP accounted for an average of 92 percent of total political contributions to all political parties from corporations and business associations. *Kanpo* (Government Bulletin), <http://kanpou.npb.go.jp/> (accessed October 30, 2006).

TABLE 2
PROFILE OF JAPAN'S MANUFACTURING SECTOR BY INDUSTRY ^a

<i>Industry</i>	<i>Exports (%)</i>	<i>Production (%)</i>	<i>Employment (%)</i>
Electronics	35.6	18.2	17.6
Automobile	21.5	13.4	7.8
Machinery	14.1	9.1	11.2
Chemical	10.9	15.0	5.5
Steel	3.5	6.2	2.6
Textile	1.6	2.4	7.9

SOURCE: OECD/STAN Structural Analysis Database, vol. 2004, release 4.

^a Production value, exports, and employment for each industry as a percent of the manufacturing sector total for the year 2001. The columns do not total to 100 percent because the table highlights only major industries.

with industry officials. They send questionnaires to industry associations and solicit both formal and informal comments. The Industrial Structure Council Committee on Unfair Trade Policies, a METI advisory body composed of scholars and industry representatives, then suggests revisions of the report, and there is a period for public comment. According to a METI official, the report is specifically intended to provide a resource for identifying areas in which the Japanese government should initiate WTO complaints.⁵⁹

Using reports covering the period from 1995–2004, we coded ninety-six total trade barriers in the manufacturing sector (counting only once a barrier that continued over multiple years).⁶⁰ We coded all the listed trade barriers by Japan's trade partners.⁶¹ The United States, the EU, and China dominate as Japan's largest trading partners (with 20.5 percent, 14.2, and 15.5 percent of Japan's trade, respectively, in 2003).⁶² Thirty-one percent of the trade barriers address U.S. policies, while 23 percent address EU policies. Since China is only included in the reports after joining the WTO in November 2001, it has a relatively smaller proportion of trade barriers (9 percent). Table 3 shows the distribution of trade barriers in the manufacturing sector by industry. It is striking that there are more trade barriers related to electronics than to any other manufacturing industry.

⁵⁹ Author interviews with METI officials, Tokyo, June 3, 2003, and August 23, 2005.

⁶⁰ We omit cases related to primary goods, services, and horizontal cases that do not mention a specific industry.

⁶¹ Japan's top-fifteen trade partners were routinely included in the reports: Australia, Canada, China, EU, Hong Kong, India, Indonesia, Korea, Malaysia, Mexico, Philippines, Singapore, Taiwan, Thailand, and the United States. In addition, reports occasionally listed trade barriers for Argentina and Brazil, which we have included.

⁶² METI, data available at http://www.meti.go.jp/policy/trade_policy/trade_db/html/f_y2003.html (accessed October 30, 2006).

TABLE 3
MANUFACTURING SECTOR TRADE BARRIERS
OF JAPAN'S MAJOR TRADE PARTNERS

<i>Industry</i>	<i>Reported Trade Barriers</i>	<i>Percentage</i>
Electronics	34	35.4
Automobile	20	20.8
Steel	17	17.7
Misc. industrial goods	9	9.4
Chemical	9	9.4
Textile	7	7.3
Total	96	100.0

SOURCE: METI *Report on the WTO Consistency of Trade Policies by Major Trade Partners* for the years 1995–2004.

Policies that violate WTO rules are a major concern to Japanese electronics firms. In a survey of 528 Japanese companies, electronics industry firms reported the highest interest in seeing the WTO-inconsistent policies of foreign governments corrected. Thirty-two percent of electronics industry respondents (eleven of thirty-four firms) considered WTO-inconsistent policies to be a major concern, compared with only 24 percent of auto firms (six of twenty-five firms) and 11 percent of metal industry firms (two of nineteen firms).⁶³ When asked why they did not pursue potential WTO cases, the most frequent response from firm officials was that the costs in terms of both time and money were too great.

The legal concerns of the electronics industry are similar to those of other industries. Table 4 shows a comparative breakdown of the trade barriers that are listed in Table 3 by the most directly relevant WTO agreement. It illustrates that as with other industries, the electronics industry is most frequently confronted by trade barriers that are related to either the antidumping agreement or discriminatory policies against the GATT basic principles. Indeed, this reflects the broader pattern observed among the WTO cases that are initiated by all members.⁶⁴

Export share, industry size, political contributions, government reports on unfair trade barriers, and industry concern about WTO viola-

⁶³ Japan External Trade Organization (JETRO) and METI, *Kokusai keizai ruru ni kan suru kigyō ankettō chiyōsa* [Survey of Corporations about International Economic Rules] (Tokyo: JETRO, February 2004).

⁶⁴ Data summarizing WTO disputes by agreement shows that the GATT is cited in nearly 40 percent of complaints, followed by antidumping and safeguard agreements, which were referenced in 10 percent of cases (note that WorldTradeLaw.net's summary of WTO cases initiated during the years 1995 to 2004 shows a total of 652 legal complaints, allowing for the overlap in which one WTO dispute cites multiple agreements). Available at <http://www.worldtradelaw.net/> (accessed October 30, 2006).

TABLE 4
BREAKDOWN OF TRADE BARRIERS BY WTO AGREEMENTS ^a

<i>Industry</i>	<i>ad</i>	<i>tex</i>	<i>gatt</i>	<i>gp</i>	<i>roo</i>	<i>sg</i>	<i>scm</i>	<i>tbt</i>	<i>trims</i>	<i>trips</i>	<i>Total</i>
Electronics	9	0	13	1	4	0	1	6	0	0	34
Automobile	0	0	7	0	0	2	1	3	7	0	20
Steel	7	0	1	0	0	5	2	2	0	0	17
Misc. industrial goods	2	0	2	0	0	2	2	0	1	0	9
Chemical	0	0	4	0	0	0	0	3	0	2	9
Textile	0	2	2	0	1	2	0	0	0	0	7
Total	18	2	29	1	5	11	6	14	8	2	96
Percentage	18.8	2.1	30.2	1.0	5.2	11.5	6.3	14.6	8.3	2.1	100

^a Manufacturing trade barriers against Japanese exports from Table 3 broken down by the most directly relevant legal claim at stake in the barrier. The following WTO agreements are included: Antidumping (AD), Textiles (Tex), GATT, Government Procurement (GP), Rules of Origin (ROO), Safeguards (SG), Subsidies and Countermeasures (SCM), Technical Barriers to Trade (TBT), Trade Related Investment Measures (TRIMS), Trade-Related Aspects of Intellectual Property Rights (TRIPS). We do not include agreements that are not relevant to the trade barriers included in our data set.

tions all point to an expectation for electronics to be prominent in Japanese complaints to the WTO. It is not obvious why electronics does not have a place alongside of steel and automobiles as the focus of Japan's choice of WTO cases.

ANALYSIS OF WTO DISPUTE SELECTION USING JAPANESE DATA ON WTO-INCONSISTENT POLICIES

We conduct statistical analysis to evaluate the conditions under which an industry that faces a foreign trade barrier is more likely to be selected by the Japanese government for initiation of a WTO case. The unit of observation is a WTO-inconsistent policy faced by the Japanese manufacturing sector. Table 5 provides a descriptive summary. Variables are measured using the year that the trade barrier is first listed in the METI report.

The outcome variable has three categories: *no negotiation*, cases that were mentioned in the report without reference to any government action (twenty-five); *negotiation*, cases that were raised in bilateral talks, WTO committee meetings, or other venues (sixty-one); and *WTO adjudication*, cases in which Japan initiated a WTO dispute (ten).⁶⁵ We use

⁶⁵ One horizontal WTO dispute (DS95, US—Procurement) is excluded. While we include the Byrd Amendment case that could be considered a horizontal issue because the policies affected more than one industry, the results are not sensitive to omitting this case.

TABLE 5
DESCRIPTIVE STATISTICS OF VARIABLES^a

<i>Variable</i>	<i>Mean</i>	<i>s.d.</i>	<i>Min.</i>	<i>Max.</i>
Velocity (R&D/production, percent)	4.45	3.39	0.50	14.30
Political contributions (million yen)	197.75	126.54	0.00	365.31
Production (log billion yen)	8.55	0.81	5.51	9.43
Export/production (percent)	22.60	15.29	2.10	85.90
FDI (log 100-million yen)	7.87	0.85	5.61	9.80
Concentration (log HHI index)	7.60	0.54	6.01	8.81
Import relief measure (0-1)	0.31	0.47	0.00	1.00
Product specific measure (0-1)	0.51	0.50	0.00	1.00
High distortion (0-1)	0.60	0.49	0.00	1.00
U.S. (0-1)	0.51	0.50	0.00	1.00
GDP (log 2000 U.S. dollars), trade partner	29.02	2.34	12.70	29.93
Import penetration (percent), trade partner	44.18	28.61	11.10	124.70
Employment share (percent), trade partner	0.74	0.53	0.10	2.50

^a Descriptive statistics are for the sample of ninety-six trade barriers used in Table 6, model 1, with the exception of the last four variables, which are for the sample of fifty-nine cases with OECD trade partners used in model 2. Variables related to industry characteristics (i.e., all variables except for import relief measure, U.S. trade partner, and GDP of trade partner) are measured specific to the ISIC two- or three-digit industry classification. We generally used two-digit ISIC industry categories but used a smaller category when the barrier affected a narrow industry and data were available at the appropriate level.

the percentage of expenditures for research and development in total production to measure the velocity of the business environment.⁶⁶

The ratio of R&D to total sales or production has been used frequently in business-management studies to measure the stability of a business environment, degree of technological instability, and innovativeness.⁶⁷ Although patents are also a commonly used indicator, the demand and supply of patents is more subject to variation according to government

⁶⁶ OECD/STAN database, www.oecd.org/sti/stan (accessed October 30, 2006).

⁶⁷ See Gregory Dess and Donald Beard, "Dimensions of Organizational Task Environments," *Administrative Science Quarterly* 29, no. 1 (1984); F. M. Scherer and Keun Huh, "R&D Reactions to High-Technology Import Competition," *Review of Economics and Statistics* 74, no. 2 (1992); D'Aveni (fn. 36); Ken Kusunoki, Ikujiro Nonaka, and Akiya Nagata, "Organizational Capabilities in Product Development of Japanese Firms: A Conceptual Framework and Empirical Findings," *Organization Science* 9, no. 6 (1998); Mendelson and Pillai (fn. 37); Keith Smith, "Measuring Innovation," in Jan Fagerberg, David C. Mowery, and Richard R. Nelson, eds., *The Oxford Handbook of Innovation* (Oxford: Oxford University Press, 2005). Research and development has also been used as a measure of asset specificity, e.g., with high R&D representing high asset specificity. See James Alt, Fredrik Carlsen, Per Heum, and Kare Johansen, "Asset Specificity and the Political Behavior of Firms: Lobbying for Subsidies in Norway," *International Organization* 53, no. 1 (1999). Because this generates the opposite expectation—that R&D would have a positive correlation with industry mobilization for government intervention—the two concepts are empirically testable.

patent policies than is spending on research.⁶⁸ Moreover, since R&D spending and patent numbers are strongly correlated, the two can be seen as alternative measures of industry investment in product development.⁶⁹ The availability of Organisation for Economic Co-operation and Development (OECD) data that aggregates R&D spending by industry allows us to test our hypothesis at the industry level, where most lobbying takes place.

We include additional variables to control for industry characteristics. The size of the industry is measured by the production value added.⁷⁰ Export dependence is measured as the ratio of exports to total production.⁷¹ We include a measure of FDI by industry.⁷² To test the influence of industry concentration on WTO dispute initiation, we use the Herfindahl-Hirschman Index (HHI), which is a common measure of industry concentration.⁷³ The industry concentration variable allows us to control for the possibility that collective action costs for industries vary by the number of major actors.

We also control for factors that are likely to influence the government supply of WTO complaints. We measure political influence in terms of contributions by the industry to the ruling Liberal Democratic Party.⁷⁴ We include an indicator for import relief measures because these have been the favorite target of governments in WTO disputes and are a particular policy priority for the Japanese government.

Two indicator variables control for features related to a trade barrier that would affect the cost-benefit analysis of industry and governments. First, a variable measures whether the trade barrier was product specific (e.g., the U.S. change in the tariff classification of multipurpose vehicles was product specific, whereas its Corporate Average Fuel Economy [CAFE] regulation affected the entire automobile industry). Fifty-one percent of the cases were product specific. Such narrow barriers represent lower stakes overall and may affect a smaller number

⁶⁸ Bronwyn Hall and Rosemarie Ham Ziedonis, "The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979–1995," *RAND Journal of Economics* 32, no. 1 (2001).

⁶⁹ Zvi Griliches, "Patent Statistics as Economic Indicators: A Survey," *Journal of Economic Literature* 28, no. 4 (1990).

⁷⁰ OECD/STAN database, www.oecd.org/sti/stan (accessed October 30, 2006). Current value figures adjusted to 2000 base-year prices.

⁷¹ Ibid.

⁷² Current value figures adjusted to 2000 base-year prices. Ministry of Finance, *Foreign Direct Investment*, <http://www.mof.go.jp/english/e1c008.htm> (accessed October 30, 2006).

⁷³ We coded HHI for the product at the closest level of aggregation to the products specified in the trade barrier. Japan Fair Trade Commission, *Statistics of Cumulative Production and Shipment Concentration in Major Industries*, <http://www.jftc.go.jp/ruiseki/ruisekidate.htm> (accessed October 30, 2006).

⁷⁴ Kanpo (fn. 58).

of firms. Second, we include a variable for the distortionary burden of the trade barrier. This indicator codes cases that involved substantial market closure resulting from policies such as high-level quantitative restriction (ban, quota, or increase of tariff/duty by more than 10 percent); use of standards or rules of origin to implement a de facto ban on imports; violation of intellectual property rights; or subsidies provided to competitors. Sixty percent of the cases involved such high-distortion policies. Other barriers coded as having a more moderate distortionary effect on trade included policies such as low-level quantitative restrictions or burdensome procedures. One would expect the more distortionary barriers to be higher priorities for WTO adjudication.

A final set of variables focus on the strategic interaction between trade partners. First, an indicator variable for the United States controls for the special bilateral relationship. Second, we measure the gross domestic product (GDP) of the trade partner (after taking the log value). Larger markets offer more economic opportunities for Japan's industry, but larger markets may also have more bargaining leverage. Two variables measure the intensity of protection pressure in the trade partner: the import penetration ratio and employment share of the trade partner's industry.⁷⁵

Table 6 presents the results from multinomial logistic regression using the three-category outcome variable where "no negotiation" is the base category.⁷⁶ Model 1 uses the full sample of ninety-six trade barriers and estimates whether a trade barrier was raised by Japan in WTO adjudication or negotiated relative to the base outcome of trade barriers that were not raised for either negotiation or adjudication. Due to limited data availability, model 2 uses a smaller sample of trade barriers with Japan's OECD trade partners. The results support our hypothesis that industries in a high-velocity business environment as measured by R&D spending are significantly less likely to have WTO disputes than industries in a low-velocity business environment.⁷⁷

⁷⁵ GDP data is from World Bank Development Indicators, reported in 2000 constant U.S. dollars. The import penetration and employment share data is from the OECD/STAN database, www.oecd.org/sti/stan (accessed October 30, 2006).

⁷⁶ Since the multinomial logit model assumes independence of irrelevant alternatives, in some cases the multinomial probit model is more appropriate. However, the data are not very informative about the correlation among the underlying latent variables. Using the Bayesian multinomial probit estimation of Kosuke Imai and David A. van Dyk, the estimation of the correlation parameter is found to be sensitive to its prior distribution. Nevertheless, when we conduct sensitivity analyses using various priors, e.g., strong positive correlation, independent, and strong negative correlation, the coefficient for R&D is consistently negative with substantive impact. Kosuke Imai and David A. van Dyk, "A Bayesian Analysis of the Multinomial Probit Model Using Marginal Data Augmentation," *Journal of Econometrics* 124 (February 2005); idem, "MNP: R Package for Fitting the Multinomial Probit Model," *Journal of Statistical Software*, 14, no. 3 (May 2005).

⁷⁷ The results are consistent when clustering standard errors for seventeen two-digit ISIC industry categories or when clustering standard errors for thirteen trade partners. The results are also consistent

TABLE 6
STATISTICAL ANALYSIS OF JAPAN'S WTO DISPUTE INITIATION^a

VARIABLE	MODEL 1				MODEL 2			
	WTO		NEGOTIATION		WTO		NEGOTIATION	
	COEF	S.E.	COEF	S.E.	COEF	S.E.	COEF	S.E.
Velocity	-3.133***	1.041	0.150	0.124	-3.910***	1.287	0.151	0.198
Political contributions	0.009*	0.006	0.000	0.003				
Production	8.935***	2.847	0.367	0.466	7.815***	2.722	-0.266	0.836
Export/production	0.357***	0.129	0.036	0.029	0.477**	0.200	-0.013	0.043
FDI	-2.035**	0.912	-0.555	0.402				
Concentration	-4.033**	1.655	-0.018	0.542				
Import relief measure	4.894***	1.628	-1.164	0.737	3.311*	1.817	-0.514	0.779
Product specific	-3.835***	1.361	1.003	0.669				
High distortion	2.040	1.307	0.341	0.512				
U.S.					4.907	3.366	0.271	0.885
GDP of partner					-0.278	0.359	0.059	0.104
Import penetration					0.195*	0.104	0.008	0.015
Employment share					-5.833**	2.267	0.097	0.752
Constant	-37.034***	13.088	0.444	4.758	-67.955***	24.379	0.957	8.006
N=	96				59			
Log likelihood	-64.741				-37.569			

*p<.10; **p<.05; ***p<.01

^aModel 1 uses multinomial logit regression for the full sample of ninety-six trade barriers with three outcome categories: no negotiation, negotiation, initiation of WTO dispute. The first two columns report coefficients and robust standard errors for the estimates of WTO initiation compared to the base category outcome of no negotiation. The second set of coefficients and standard errors estimate the negotiation outcome relative to the base category outcome of no negotiation. Model 2 uses multinomial logit regression for the fifty-nine trade barriers with OECD partners for which data on import penetration and employment shares were available.

Since the coefficients in Table 6 are difficult to interpret, we compute the effects of our velocity measure in terms of predicted probability of initiating a WTO dispute for a given trade barrier. We first simulate model parameters from their asymptotic sampling distribution and compute the Monte Carlo estimates of predicted probability of a WTO dispute initiation.⁷⁸ We then examine the effect of changing the R&D variable while holding other variables constant. Using model 1, we hold

when using rare events logit to estimate model 1 with a dichotomous dependent variable. For example, the estimated R&D coefficient using rare events logit is -2.116 (p-value of 0.025). Gary King and Langehe Zeng, "Logistic Regression in Rare Events Data," *Political Analysis* 9, no. 2 (2001).

⁷⁸ We used the software CLARIFY. See Michael Tomz, Jason Wittenberg, and Gary King, "CLARIFY: Software for Interpreting and Presenting Statistical Results, Version 2.1," (Stanford University, University of Wisconsin, and Harvard University, January 5, 2003). Available at <http://gking.harvard.edu> (accessed June 1, 2005).

all variables constant at their observed 1995 values for the automobile industry and shift R&D from 3 to 3.8, which corresponds to the actual observed shift from 1995 to 2003 for the industry. This shift reduces the predicted probability of dispute initiation on average by 0.12 (with 95 percent confidence interval -0.32, -0.02), which is an 84 percent change of the point estimate from 0.14 to 0.02. For comparison, the shift of production from 9.18 to 9.26 (the automobile industry's actual observed shift in values from 1995 to 2003) increases the probability of dispute initiation on average by 0.09 (with 95 percent confidence interval 0.02, 0.21), a 66 percent change from 0.14 to 0.23.

Political contributions to the LDP increase the likelihood that an industry will have a WTO case initiated by the government. The relatively small effect of this variable on WTO litigation may reflect that firms use their political influence for priorities such as corporate tax reduction and commercial law deregulation rather than trade policy.⁷⁹ As expected, industry size has a large positive effect on WTO dispute initiation, and industries with higher levels of export dependence are more likely to have WTO disputes. FDI of the industry has a negative effect on the likelihood of a trade barrier being selected for a WTO case. While multinational firms support free trade, direct investment in foreign markets can also place them in a position of benefiting from trade barriers that exclude competitors. By controlling for FDI, our results show that the lack of WTO disputes in electronics cannot simply be attributed to the high multinationality of firms in this industry. However, further research is necessary to sort out the complex relationship between FDI and trade policy.

A puzzling result is the negative effect of industry concentration, which goes against collective action arguments. Our findings offer additional support to studies that question the usefulness of concentration to explain industry behavior.⁸⁰ In Japan, high concentration could be a disadvantage since the government is reluctant to be seen as acting in the narrow interests of one or two firms.⁸¹

⁷⁹ *Keidanren* announces an annual policy assessment for the LDP and the Democratic Party of Japan (DPJ), which evaluates the two parties' consistency and performance on ten priority policies (most members contribute to the LDP). This assessment provides the basis on which 1,662 member corporations make political contributions to political parties. Tax reform, social security system reform, and regulatory reform were listed as the top three items in 2006, whereas promotion of appropriate trade and investment policies was listed as the ninth item. Available at <http://www.keidanren.or.jp/english/policy/2006/067table.pdf> (accessed October 30, 2006).

⁸⁰ Wendy Hansen, Neil Mitchell, and Jeffrey Drope, "The Logic of Private and Collective Action," *American Journal of Political Science* 49, no. 1 (2005); Ulrike Schaede, *Cooperative Capitalism: Self-regulation, Trade Associations, and the Antimonopoly Law in Japan* (Oxford: Oxford University Press, 2000).

⁸¹ Author interview with METI official, Tokyo, August 23, 2005.

As expected, import relief measures are more likely than other trade barriers to be selected for WTO disputes. The Japanese government has long tried to negotiate stronger restraints on import relief measures, and officials hope to use WTO adjudication as another tool to lower the use of these policies as a form of protection. Six of Japan's WTO cases have focused on import relief measures. The variable measuring the distortionary nature of the trade barrier is not significant, although it is in the expected positive direction. Barriers targeting a single product are significantly less likely to be challenged with WTO complaints than barriers that affect an entire industry. This finding fits with the negative effect for industry concentration—broad rather than narrow industry stakes are more likely to find support for government action in Japan.

The positive coefficient for U.S. trade barriers reflects that the United States has become Japan's most frequent target in WTO adjudication. With the strong alliance between the two countries and frequent use of the WTO system by the United States, Japanese diplomats have little fear that a WTO dispute will disrupt bilateral relations. In contrast, Japan has never initiated a case against China—a major trade partner with which it has sensitive political relations.⁸² Surprisingly, an indicator variable for whether another country has initiated a WTO complaint against a trade barrier does not have a significant effect on the likelihood that Japan will initiate a WTO case against that same barrier (this variable is not included in the models presented here).⁸³ Model 2 shows that Japan may exercise restraint toward industries that have high employment share for its trade partner, but not toward those with high import penetration.

ADDRESSING POTENTIAL BIAS IN METI SAMPLE OF WTO-INCONSISTENT POLICIES

In the above analysis, we measure potential disputes by relying on METI reports of WTO-inconsistent policies. One concern is whether there could be sample selection bias in the set of trade barriers on the METI list. Such a bias could arise during the process of collecting information on barriers and deciding which to include in the reports. Since the true

⁸² Japan has joined as a third party for two complaints against China; one initiated by the United States (DS309 Value-added Tax on Integrated Circuits, filed in 2004) and one initiated by the U.S., EU, and Canada (DS339, 340, 342 Measures Affecting Import of Auto Parts, filed in 2006). A METI official said that the affected Japanese industry associations did not request a complaint in these cases. Author interview with METI official, Tokyo, August 17, 2006.

⁸³ Eight of Japan's eleven WTO cases have additional complainants (see Appendix), as indeed most WTO disputes involve more than one complainant. It is not clear, however, whether Japan piggybacks on the actions of other countries in terms of legal work and diplomatic relations in these eight cases, since Japan prepares an independent legal case and represents itself in the WTO adjudication.

population of potential cases can never be observed, the possibility cannot be ruled out.⁸⁴ However, we can assess the sensitivity of our conclusions by calculating the threshold of the sample selection bias that would change substantive conclusions from the observed data.

Formally, let L_i represent an indicator variable that is equal to 1 if WTO-inconsistent policy i is included in the METI list. Then, from the observed data, one can estimate the probability that a WTO-inconsistent policy in a high-velocity industry is raised as a WTO dispute, i.e., $\Pr(D_i = 1 \mid V_i = 1, L_i = 1)$ and $\Pr(D_i = 1 \mid V_i = 0, L_i = 1)$. Next, we define the sample selection bias as the ratio of the probability of inclusion on the METI list for a WTO-inconsistent policy in a high-velocity industry relative to one in other industries. Formally, we write, $\Psi = \Pr(L_i = 1 \mid V_i = 1) / \Pr(L_i = 1 \mid V_i = 0)$, which is greater than 0. For example, $\Psi = 2$ implies that a WTO-inconsistent policy in a high-velocity industry is twice as likely to be included in the list as one in other industries. Finally, we assume that a WTO-inconsistent policy that is not on the METI list will not be challenged by the government in a WTO dispute, i.e., $\Pr(D_i = 1 \mid V_i = 1, L_i = 0) = \Pr(D_i = 1 \mid V_i = 0, L_i = 0) = 0$. This assumption is empirically supported by the fact that all Japanese WTO dispute cases are from the METI list, and METI officials indicate that the report is viewed as the long list from which they select WTO disputes.

Then, by applying the law of total probability, one can write:

$$\begin{aligned} & \Pr(D_i = 1 \mid V_i = 1) - \Pr(D_i = 1 \mid V_i = 0) \\ = & \Pr(L_i = 1 \mid V_i = 0) \{ \Psi \Pr(D_i = 1 \mid V_i = 1, L_i = 1) - \Pr(D_i = 1 \mid V_i = 0, L_i = 1) \}. \quad (2) \end{aligned}$$

Similar to equation 1, the left hand side of equation 2 represents the quantity of interest, i.e., the difference in probability of WTO dispute initiation for a WTO-inconsistent policy in a high-velocity industry relative to one in other industries. Applying the technique outlined in the subsection "Inference from Observed WTO Disputes," from the observed data in Table 3 we estimate $\Pr(D_i = 1 \mid V_i = 1, L_i = 1)$ to be at most 1/35 (a more conservative estimate than the observed 0/34), which is approximately equal to 0.029, whereas $\Pr(D_i = 1 \mid V_i = 0, L_i = 1)$ is estimated to be 10/62 or approximately 0.161. Thus, our hypothesis holds true so long as the magnitude of sample selection bias, i.e., Ψ , is less than 5.65. In other words, only if a WTO-inconsistent policy

⁸⁴ Omitted cases are expected to be few and of little significance. As discussed in Section IV in the subsection "Identifying Potential WTO Cases," the government gathers information through every available channel and aims to be comprehensive in its compilation of the list. Firms have little reason not to disclose that they face a trade barrier.

in a high-velocity industry is six times *more likely* to be included in the report than one in a low-velocity industry, does sample bias threaten the validity of our conclusions. Such a scenario appears to be highly unlikely and so we conclude that sample selection bias, even if it exists, is unlikely to alter our conclusions.

In yet another possibility, an endogenous model of the supply of protection suggests that anticipation of whether or not a barrier is likely to be challenged influences the foreign government's decision to adopt a WTO-inconsistent policy or not. The above reasoning can directly address this concern if one redefines the population as the set of all trade policies and repeats the same calculation by defining *Li* as an indicator variable that is equal to 1 if a trade partner adopts a WTO-inconsistent policy and the policy is included in the list. However, this changes the quantity of interest from explaining why some WTO-inconsistent policies are challenged to explaining why some trade policies are adopted *and* challenged. Even if the latter is the quantity of interest, the anticipation of foreign retaliation would have to exercise a substantially large effect on the incidence of WTO-inconsistent policies for our conclusions about high-velocity industry to be reversed. The political economy literature suggests that domestic politics plays a large role in generating demand for protection. Indeed, the design of the WTO dispute system increases its stability by allowing governments to violate a WTO rule while recognizing that they may face retaliation when a trade partner challenges the policy.⁸⁵ Therefore it seems unlikely that strategic anticipation itself would play a dominant role in the decision about whether to adopt a WTO-inconsistent policy. The sensitivity analysis above confirms that our findings are quite robust to even substantial amounts of selection bias in the process that generates WTO-inconsistent policies included in the METI reports.

V. JAPANESE CASE STUDIES: COMPARISON OF THE ELECTRONICS, STEEL, AND AUTOMOBILE INDUSTRIES

We examine how different industries react to trade barriers by comparing the market-opening strategies of three major export sectors in Japan: electronics, steel, and automobile. All are globally competitive export sectors for Japan, but vary in industry structure and business environment. In 2001, Japanese exporters held an 11.2 percent world market share for electronics, 10.4 percent share for steel, and 15.2 per-

⁸⁵ Rosendorff (fn. 18).

cent share for automobiles.⁸⁶ We selected these three industries for case-study analysis because they have the largest number of potential cases according to the METI trade reports and vary across the key independent variable we use to measure industry velocity.⁸⁷ Table 3 shows that these industries comprise 73.9 percent of all manufacturing trade barriers in the report.

Table 7 shows the R&D ratio relative to total revenue, the ratio of new products relative to total product lines, and the patent registration figures for leading Japanese companies in the three sectors. All three measures show electronics as a high-velocity industry. The steel industry, in contrast, faces a more static, low-velocity business environment, while the automobile industry has moderate dynamism.

ELECTRONICS INDUSTRY

The electronics industry is the prototypical dynamic industry in which firms compete across a broad range of products that have short product life cycles. The electronics industry includes domestic appliances, radio and television products, computers, semiconductors, cameras, and precision instruments.⁸⁸ Electronics firms engage in intense competition to develop new products and spend more on R&D than firms in most other industries (Table 7). The largest consumer electronics firm, Matsushita, listed 148 product lines in its 2004 annual report, including multiple kinds of televisions and computers.

In Japan, the electronics industry structure is fragmented with no dominant firm as industry leader. Rather, the Japan Electronics and Information Technology Association (JEITA) rotates its chairmanship among eight major firms (Fujitsu, Hitachi, Matsushita, Mitsubishi, NEC, Sharp, Sony, and Toshiba). Industry concentration ranges from low for semiconductors to high for supercomputers.

In total, METI identified thirty-four trade barriers for electronics products (Table 3). Tariff classification issues arise because of the evolving

⁸⁶ World Trade Analyzer data set, compiled by International Trade Division, Statistics Canada. Information available at <http://www.statcan.ca/bsolc/english/bsolc?catno=65F0016X> (accessed October 30, 2006).

⁸⁷ Textiles represents another low-velocity industry, but would not be expected to take an active role advocating WTO cases given low exports. The chemical industry competes in a low-to-middle velocity business environment and has substantial exports, but the industry faces fewer trade barriers. It may also have less demand for WTO dispute resolution because it has another forum option. Chemical industry trade issues are routinely addressed at the International Council of Chemical Associations (ICCA), which was established by developed countries' national chemical associations during the GATT Uruguay Round negotiations. Author interviews with officials of Sumitomo Chemical and Japan Chemical Industry Association, Tokyo, January 23, 2004, and February 23, 2004.

⁸⁸ We categorize ISIC 30–33 as electronics.

TABLE 7
INDUSTRY COMPARISON OF PRODUCT INNOVATION BY LEADING FIRMS^a

<i>Industry</i>	<i>Company</i>	<i>Total Product Lines</i>	<i>New Product Ratio</i>	<i>R&D Ratio</i>	<i>Registered Patents in Japan</i>	<i>Registered Patents in U.S.</i>	<i>Velocity</i>
Electronics ^b	Matsushita	148	20.7	7.7	13828	1934	high
	Sony	61	19.5	6.9	6067	1305	
Automobile	Toyota	77	5.2	3.9	4040	426	medium
	Nissan	35	11.4	4.8	2756	261	
Steel ^c	Nippon Steel	55	3.6	0.7	1097	n.a.	low
	JFE Steel	28	0.0	1.5	855	n.a.	

SOURCES: 2004 annual company reports available at company Web sites; Japan Patent Office, Annual Report 2006; U.S. Department of Commerce, Patent and Trademark Office; and Intellectual Property Owners Association (<http://www.ipo.org/>).

^aAll figures are for 2004. New products are those listed as a new final product introduced that year. R&D figures show R&D expenditure as a percent of total sales. Patents in Japan and the U.S. show numbers of patents registered in 2004.

^bDue to the large number of product lines and subcategories, the new-product ratio for Matsushita is based on television-related products. The new-product ratio for Sony is based on camcorders.

^cNo patent data were available because Nippon Steel and JFE Steel are not ranked among the top 300 U.S. patent owners.

nature of the industry—new products are ahead of existing regulations. Electronics goods have been frequent targets of antidumping measures and are also subject to nontariff barriers such as discriminatory regulations, rules of origin, and procurement policies. Electronics firms have dealt with some foreign trade barriers through foreign investment. However, for new products, FDI is not an immediate solution and firms may turn to negotiations.

Surprisingly, no electronics industry barriers are reported with regard to intellectual property rights (Table 4). This is not because electronics firms do not face intellectual property infringement, but because the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) requires that states have regulations to establish minimum levels of protection. Governments file complaints for dispute settlement on intellectual property rights (IPR) issues when there is a systematic breach of TRIPS by another member, but individual intellectual property infringement cases against particular firms (e.g., a violation of a company patent) do not constitute legal standing for WTO adjudication (and are not included in the METI reports on trade barriers). Firms pursue piracy incidents via domestic litigation or by appeal to

the government where the incidents occur for administrative action.⁸⁹ Weak enforcement of intellectual property rights in the legal systems of China and other Asian states has been a major concern for several Japanese industries including the electronics and automobile industries. The METI reports highlight IPR enforcement as a priority for Japan's trade agenda. Diplomatic concerns with China made the Japanese government hesitant to file a WTO complaint immediately after China's WTO entry. IPR-related trade problems are currently brought up by Japan in other fora, especially in WTO TRIPS council and in bilateral negotiations. In the near future, Japan may initiate a case related to TRIPS.⁹⁰

Bilateral negotiations have been pursued for many trade problems. The camcorder dispute with the EU is illustrative. Although video cameras are subject to a 4.9 percent tariff, in 2001 the European Commission amended its customs code to classify digital camcorders as video machines, which are subject to a 14 percent tariff. The change was justified because the digital product could be manipulated to record TV input. With several hundred million dollars at stake, Japanese firms coordinated through JEITA to protest the change. After JEITA's appeal, the government raised the issue in EU-Japan regulatory consultations, but the policy has not been changed.⁹¹

Firms in the electronics industry have shown little interest in WTO adjudication. Interviews with officials from leading Japanese electronics firms indicate that they have not requested that the government initiate any cases. Representatives from smaller firms such as Sharp and Ricoh said they had never thought to raise a case for WTO adjudication because the costs were too high.⁹² Officials from both Matsushita and Mitsubishi said their firms had decided against requesting that the

⁸⁹ The pattern of activity to address IPR infringement in China, which is a major problem for Japanese firms, shows a preference for settlement by administrative procedure over litigation. Administrative procedure is used more (4,263 requests) than formal legal claims (192 cases totaling civil and criminal procedures). METI, Field Survey for Infringement of Intellectual Property Right in China (June 2005). Available at <http://www.meti.go.jp/english/report/data/050623ChinaIPR.html> (accessed October 30, 2006). Primary reasons cited for prevalent use of administrative procedure are expedited process and direct benefits through confiscation and disposal of counterfeit goods. In the report, twenty-one of the 134 companies that responded were electronics firms; of those twenty-one, 95 percent suffer from IPR infringement. Other industries include machinery (thirty-five respondents, 71 percent suffer from IPR infringement); chemical (twenty-seven respondents, 63 percent suffer from IPR infringement); automobile (eight respondents, 100 percent suffer from IPR infringement); and miscellaneous industrial goods (twenty-seven respondents, 78 percent suffer from IPR infringement).

⁹⁰ Author interview with METI official, Tokyo, January 13, 2004.

⁹¹ Author interviews with officials of Sony, Tokyo, December 4, 2003, and January 25, 2005; author interviews with officials of Matsushita, Tokyo, November 28, 2003.

⁹² Author interview with Sharp official, Tokyo, January 15, 2004; author interview with Ricoh official, Tokyo, February 12, 2004.

government bring a WTO case even when their lawyers indicated that they could win a WTO challenge of a dumping finding against their product.⁹³

The U.S.-Japan supercomputer dispute is an example of a high-stakes dispute that could have been taken to the WTO for adjudication, but was not. In May 1996, when NEC was on the verge of concluding a \$35-million contract to sell its supercomputers to the National Center for Atmospheric Research (NCAR), the U.S. Department of Commerce (DOC) issued a warning to NCAR that it evaluated the product as illegally sold at below fair-market prices.⁹⁴ The U.S. supercomputer firm Cray, which lost in the bid against NEC, had filed a dumping petition. NEC decided to file a suit with the U.S. Court of International Trade to challenge the DOC finding.⁹⁵ Lawyers for NEC expected to win the case because the DOC issued its dumping determination before the actual procurement had taken place so that there was clear lack of due process. In March 1999, however, the International Trade Commission upheld the DOC decision mandating 454 percent antidumping duties. The U.S. Supreme Court refused to hear a related lawsuit filed by NEC that claimed U.S. authorities had acted with bias against the company.⁹⁶ NCAR canceled its plan to purchase NEC equipment. METI officials encouraged NEC to consider WTO adjudication, but the company decided that it did not want to request a WTO case.⁹⁷

What accounts for the reluctance to use the WTO? In part, it is the calculation that paying legal fees and internal personnel support for WTO adjudication is not worth the amount of trade interest at stake for the firm given its broad range of products. However, officials at most firms emphasized *time* when asked to explain why they viewed WTO adjudication as too costly for their problems. NEC did not pursue WTO adjudication for the supercomputer case because executives thought uncertainties about costs and the time involved in a WTO dispute were greater than they would be in the U.S. domestic court process.⁹⁸ An official with Hitachi said that for most of their problems a fast solu-

⁹³ Author interview with Matsushita Electric official, Tokyo, November 28, 2003; author interview with Mitsubishi Electric official, Tokyo, January 21, 2004.

⁹⁴ *Journal of Commerce*, (January 15, 1999).

⁹⁵ The DOC determined that Fujitsu and NEC had sold vector supercomputers at less than fair value. It calculated a dumping margin of 173 percent for Fujitsu and 454 percent for NEC. Department of Commerce, "Notice of Final Determination of Sales at Less than Fair Value: Vector Supercomputers from Japan," *Federal Register*, vol. 62, no. 167 (August 28, 1997), 45623-45627.

⁹⁶ *Journal of Commerce*, (March 4, 1999).

⁹⁷ Author interview with NEC officials, Tokyo, March 10, 2004. According to the officials interviewed, one of the reasons they wanted to take this case up to the Supreme Court was to defend NEC's corporate reputation of not giving in to unfair trade practices.

⁹⁸ Author interview with NEC officials, Tokyo, March 10, 2004.

tion is the top priority and direct talks with the foreign government are the best route. He noted that in a business where technology develops quickly, spending too much time to solve a problem for one product would lead to delays in the development of the next product.⁹⁹ An official with Sony made a similar point, saying that in an industry where products are old in two to three years, any strategy that takes more than two years to reach a resolution is meaningless.¹⁰⁰ A METI official confirmed that it is the cost in time rather than money that discourages many firms from continuing with a dispute.¹⁰¹

The political and economic resources of an industry are among the factors that determine whether interest groups lobby their governments for help with trade problems. A necessary condition for the industry, however, is a long time horizon. Dynamic industries have low demand for WTO adjudication because it takes too long.

STEEL INDUSTRY

Steel firms have a smaller number of products and are less diversified than firms in the electronics industry. The leading firm, Nippon Steel Corporation (NSC), spends only one percent of its sale revenue on R&D and released only two new products in 2004. In this industry, new plant production is often necessary to expand product lines and production volume, but it takes at least five years and millions of dollars for a new plant to be established and go into operation. This makes FDI an unattractive commercial strategy for steel firms.¹⁰² In the steel industry as a whole, there is less emphasis on rapid new-product development as the key to success.¹⁰³

NSC has long been the dominant player in the Japanese steel industry and was the third largest steel producer globally in 2003. Traditionally, an NSC executive serves as the president of the industry association. NSC has also represented Japanese business as a whole—three of the ten chairmen of *Keidanren* (Japan Business Federation), the largest business organization of Japan, established in 1946, have been from NSC.

Japanese steel exports have met protectionist trade barriers in several markets and are frequently accused of dumping excess production at

⁹⁹ Author interview with Hitachi official, Tokyo, January 29, 2004.

¹⁰⁰ Author interview with Sony official, Tokyo, December 4, 2003.

¹⁰¹ Author interview with METI official, Tokyo, August 23, 2005.

¹⁰² Author interview with NSC official, Tokyo, January 13, 2004. Metal-related industries composed only 3 percent of the total FDI outflows of Japan in 2003, compared with 14 percent for the electronics industry and 8 percent for the transportation industry. See http://www.mof.go.jp/english/fdi/2004a_3.htm (accessed October 30, 2006). Metal includes both ferrous and nonferrous industries. Transportation includes automobiles, motorcycles, and other vehicles as well as components.

¹⁰³ Process development and quality improvement of existing products are more important than rapid new-product development. Author interview with NSC official, Tokyo, October 29, 2003.

below normal prices. Indeed, of the twelve steel trade barriers in the METI reports, all but one is related to either antidumping duties or safeguard measures. Virtually every steel product exported by Japan to the United States is subject to antidumping or safeguard measures.

The steel industry requested four out of eleven WTO cases initiated by Japan; all four of which were complaints against U.S. antidumping/safeguard measures: *Anti-Dumping Act of 1916* (DS62, February 10, 1999); *Anti-Dumping Measures on Certain Hot-Rolled Steel Products from Japan* (DS184, November 18, 1999); *Definitive Safeguard Measures on Imports of Certain Steel Products* (DS249, March 20, 2002); and *Sunset Review of Anti-Dumping Duties on Corrosion-Resistant Carbon Steel Flat Products from Japan* (DS244, January 30, 2002). In these cases, the industry association paid the legal fees of an American law firm hired to help prepare the case. The Japanese government expects the industry that requests a case to pay the related legal fees, while it pays the legal fees for cases on broad trade issues that are not requested by a particular industry.¹⁰⁴ The steel industry also lobbied for the case brought against the United States—*Byrd Amendment, The Continued Dumping and Subsidy Offset Act of 2000* (DS217, December 21, 2000).¹⁰⁵

Steel industry officials stated that the cost of litigation, time for the dispute to reach settlement, and the likelihood of narrow or incomplete compliance meant that the immediate trade benefit from winning a case would not justify the cost for most of the steel cases. Rather, indirect benefits related to reputation and deterrence of future protectionism motivated their decision to pursue WTO cases.¹⁰⁶ Even in the one case in which Japan failed to win a positive ruling and the targeted trade barrier remained in place (DS244), an NSC official cited a potential benefit: the ruling upheld parts of the Japanese government's criticism of U.S. antidumping methodology (zeroing) and could prevent other countries from using a similar method.

METI has supported requests for WTO cases from the steel industry with only a few exceptions. The industry wanted to initiate a dispute over U.S. safeguard measures on line pipe, but the government instead filed as a third party.¹⁰⁷ When China initiated safeguard measures on

¹⁰⁴ The practice of having the industry beneficiary pay the litigation fees, at least partially, is fairly common among WTO members, including the United States and the EU.

¹⁰⁵ Author interview with NSC official, Tokyo, October 29, 2003.

¹⁰⁶ Author interviews with NSC and JFE officials, Tokyo, October 29, 2003, January 9, 2004, and January 13, 2004.

¹⁰⁷ Author interview with NSC official, Tokyo, October 29, 2003. "United States—Definitive Safeguard Measures on Imports of Circular Welded Carbon Quality Line Pipe from Korea" (DS202, June 13, 2000).

Japanese steel in 2003 that raised questions about WTO rules, Japan's steel industry decided it was not worth trying to push a WTO case because it feared that the Chinese government would engage in retaliation and because it was aware that the Japanese government was reluctant to initiate the first WTO case against China.¹⁰⁸ The Foreign Ministry is consulted in decisions about dispute initiation, and it is cautious about harming diplomatic relations with China given bilateral tensions related to treatment of World War II historical legacy and to conflicting territorial claims.

While victory in a WTO case may take years to achieve and not bring large direct benefits, the steel industry has focused on using WTO cases to support predictable business conditions for their exports through deterrence of future trade barriers. The low-velocity business environment of the industry supports this attitude. In addition, NSC's role as an industry leader makes it easier to build industry consensus.

AUTOMOBILE INDUSTRY

The automobile industry is a moderately dynamic industry in which we would expect firms to dedicate substantial resources to product development and also be willing to invest in lobbying to protect market access. This industry is similar to the electronics industry in its use of FDI as a major strategy for market access. While the Japanese automobile industry benefits from high international competitiveness and profits, it also seeks government help to deal with foreign trade barriers.

The industry has a moderately concentrated structure. Toyota, Nissan, and Honda vie for market share and industry leadership. Since 2000, the Japan Automobile Manufacturers Association (JAMA) has rotated its chairmanship among the three every two years. These companies have de facto veto power in defining the policy positions of the Japanese automobile industry.¹⁰⁹ Toyota is the clear industry leader with 35 percent of domestic sales in 2004 as compared to Nissan's 13.7 percent and Honda's 11.8 percent.¹¹⁰ On the political side, two of Toyota's chairmen have served as chairmen of *Keidanren*. This leadership role helps the industry mobilize for collective action.

The Japanese automobile industry is global in both foreign production and export dependence. For example, Toyota's domestic production volume in 2004 was 3.7 million cars, two million of which were

¹⁰⁸ Author interview with NSC official, Tokyo, October 29, 2003.

¹⁰⁹ Before 2000, Toyota and Nissan shared the chairmanship. Author interview with JAMA official, Tokyo, October 29, 2003.

¹¹⁰ Yano Research Institute, *Market Share in Japan* (Tokyo: Yano Research Institute, 2005).

exported. Toyota produced an additional three million cars overseas.¹¹¹ The flood of exports and increasing market share for Japanese auto firms has led to many trade barriers. Table 3 shows that the automobile industry accounts for twenty-one percent of the trade barriers listed in the METI report. These include policies such as voluntary export restraints and local content requirements.

The industry has tried to open foreign markets through a number of strategies. Bilateral negotiations have been frequent, and industry officials cite this as their favored approach, especially with regard to China.¹¹² The industry also engages in direct contact with foreign industry and governments. For example, JAMA made an agreement with the China Association of Automobile Manufacturers that the industry should deal with disputes regarding intellectual property infringement through the venue of the China Chamber of International Commerce.¹¹³

In the initial years of the WTO, the automobile industry was proactive in pursuing WTO adjudication. Four of the first five WTO cases initiated by Japan before 1999 were auto related. Japan gained favorable settlement in all four cases: U.S.—*Imposition of Import Duties on Autos from Japan* (DS6, May 22, 1995); Brazil—*Certain Automotive Investment Measures* (DS51, August 6, 1996); Indonesia—*Certain Measures Affecting the Automobile Industry* (DS55, October 10, 1996); and Canada—*Certain Measures Affecting the Automobile Industry* (DS139, July 8, 1998). Keisuke Iida highlights the role of Japan's large multinational auto firms to support these WTO cases in the role of an enforcement constituency that lobbied the government to file the WTO complaints and provided information to assist in the development of the legal cases.¹¹⁴

Out of four cases, three were based on industry petitions. In the 1995 U.S. case, JAMA and auto makers paid legal and lobbying fees in Washington D.C., which totaled several million dollars.¹¹⁵ The industry also paid the legal fees to support government initiation of the WTO

¹¹¹ The ratio of exports in domestic production for Toyota is 53 percent, Nissan 51 percent, and Honda 41 percent. Available at http://www.jama.or.jp/stats/stats_news.html (accessed October 30, 2006).

¹¹² Author interview with officials of Nissan, Tokyo, December 19, 2003; author interview with officials of Honda, Tokyo, December 22, 2003; author interview with officials of Toyota, Tokyo, February 20, 2004. Industry officials said they chose bilateral venues over others, especially WTO adjudication, because of fear of direct retaliation from the Chinese government and anticipation of the Japanese government's reluctance to bring a case against China. In 2001, China imposed a 100 percent tariff on Japanese auto imports as retaliation after Japan imposed safeguard measures on agricultural imports from China.

¹¹³ *Nikkei Shimbun* (March 19, 2004); *Inside US-China Trade*, vol. 4, no.6 (February 11, 2004).

¹¹⁴ Iida (fn. 54).

¹¹⁵ Author interview with JAMA official, Tokyo, October 29, 2003.

case against Indonesia's national car program. Mixed incentives from FDI divided the industry position on Canada's preferential policies for U.S. auto imports. When Toyota and Nissan were interested in bringing a WTO case against the Canada auto pact that favored U.S. producers, Suzuki would not support the case because it had a joint venture with General Motors in Canada and benefited from the barrier. The Japanese government went forward to initiate this case in 1998.¹¹⁶ Japan's case against Brazil was related to domestic content requirements that violated the WTO Agreement on Trade-Related Investment Measures (TRIMs). Nissan's president complained to the Japanese government about the Brazilian policy, which discriminated against Nissan's exports to Brazil because it lacked any domestic production base in Brazil.¹¹⁷ METI officials said they saw the case as an easy victory with a useful precedent.¹¹⁸ Japan's automobile industry also called for the government to join as a third party in an EU case against India on trade-related investment measures.¹¹⁹

The automobile industry's decision to lobby the government to file a WTO case against the United States in 1995, the first year the institution was operational, demonstrates its willingness to pay high costs for the deterrence effect of a WTO dispute. Prior to 1995, the United States had been aggressively using the unilateral sanctions stipulated in Section 301 of the Trade Act of 1974 as an effective tool in bilateral negotiations.¹²⁰ When bilateral talks over the low penetration of U.S. auto and auto-parts exports in the Japanese market collapsed in 1994, the United States threatened to impose 100 percent tariffs on the import of Japanese luxury automobiles in May 1995. While Japan had generally succumbed to U.S. threats in the past, the WTO ban on unilateral measures changed the social context to make it easier for Japan to resist U.S. demands.¹²¹ The automobile industry could not give in to the U.S. threat of sanctions as a matter of both principle and interest.¹²² The industry association position paper asserted that

¹¹⁶ Author interview with METI official, Tokyo, June 3, 2003; author interview with Nissan official, Tokyo, December 19, 2003.

¹¹⁷ Iida (fn. 54), 135.

¹¹⁸ Author interview with JAMA official, Tokyo, October 29, 2003; author interview with METI official, Tokyo, August 25, 2005.

¹¹⁹ Author interview with Toyota official, Tokyo, January 16, 2004.

¹²⁰ Thomas O. Bayard and Kimberly Ann Elliott, *Reciprocity and Retaliation in U.S. Trade Policy* (Washington, D.C.: Institute for International Economics, 1994).

¹²¹ Leonard Schoppa, "The Social Context in Coercive International Bargaining," *International Organization* 53, no. 2 (1999).

¹²² Author interview with officials of JAMA, Tokyo, October 29, 2003; author interview with officials of Nissan, Tokyo, December 19, 2003; author interview with officials of Toyota, Tokyo, February 20, 2004.

no violations of international trade law had been found.¹²³ The stakes were large; industry sources claimed that the export loss would be \$5.9 billion.¹²⁴ The industry also acknowledged that the immediate loss of exports from sanctions would not be recovered through victory in WTO adjudication.¹²⁵ The proactive move paid off; without having to wait for a WTO ruling, an early settlement was reached two months later. The U.S. not only withdrew its sanctions, but it has not threatened to use unilateral sanctions against Japan again.

According to industry officials, there has been a decline of interest in WTO adjudication, and no case related to autos has been initiated since 1998. One of the reasons given for this is an increase in the velocity of the business environment. A Toyota official cited concern about delays as one of the most important reasons not to pursue WTO adjudication, as it takes too much time to achieve removal of a trade barrier.¹²⁶ While the automobile industry won quick settlements in its first two cases against the U.S. and Brazil, the auto-related cases with Indonesia and Canada lasted over thirty months between filing the complaints and implementation of the settlements.¹²⁷ When initially considering whether to file a case, neither the industry nor government can know whether it will settle early or stretch on for years. This potential for delay is a drawback of adjudication, which has become more important as the velocity of the business environment in the automobile industry has increased. The R&D share of production for Japan's automobile industry rose from 3 percent in 1995 to 3.8 percent in 2003. A consumer survey shows that the turnover time for automobiles shortened from 7.3 years in 2002 to 6.7 years in 2005.¹²⁸ New models are so quickly outdated that manufacturers must invest in constant development of new models and product lines; the number of distinct varieties of cars increased from nineteen in 1994 to thirty-three in 2004.¹²⁹

Another factor attributed to the decline in petitions for WTO cases by the automobile industry is the success of past cases. The industry is

¹²³ Japan Automobile Manufacturers Association, *U.S.-Japan Trade Relations—Myth and Reality—The Case of the Automobile Negotiations* (November 10, 1995). Available at <http://www.jama.org/library/position111095.htm> (accessed October 30, 2006).

¹²⁴ *Nikkan Jidosha Shimbun* (May 1995).

¹²⁵ Author interview with officials of JAMA, Tokyo, October 29, 2003; author interview with officials of Toyota, Tokyo, February 20, 2004.

¹²⁶ Author interview with Toyota official, Tokyo, January 16, 2004.

¹²⁷ Davey (fn. 28).

¹²⁸ Economic and Social Research Institute, *Business Statistics*, <http://www.esri.cao.go.jp/jp/stat/> (accessed October 30, 2006).

¹²⁹ *Asahi Shimbun* (August 1, 2005), 5. In another article, Nissan and Toyota officials lamented about the shortening cycle of new products. *Nikkei Shimbun* (July 1, 2005).

reaping the benefits of its earlier active engagement in WTO disputes as the deterrence effect has reduced barriers against its exports. A Nissan representative observed, "Now they know that if they adopt a policy against WTO rules, they may get sued."¹³⁰ Whereas the METI report listed from ten to thirteen trade barriers for the automobile industry each year during the period 1995 to 1997, in the three years from 2002 to 2004, each annual report listed only four to six trade barriers for the industry. One of the most prominent barriers the industry has faced is local content regulations, where governments require companies to use or purchase a certain amount of domestic products. Such regulations conflict with the WTO TRIMS agreement. Following Japan's success in the WTO disputes against Brazil, Indonesia, and Canada, which were all related to local content rules, many countries have voluntarily improved regulations in this area.¹³¹

The case of Japan's automobile industry illustrates how changes in business environment alter the choice firms make when considering whether to request a WTO dispute. For Japan's automobile industry, the WTO represented a major pillar of its market-opening strategy in the 1990s, but as the velocity of its business environment has increased, it has shown less interest in this particular negotiation forum.

VI. CONCLUSION

This is the first study that examines the industry pattern in selection of WTO disputes. We confirm that standard political economy variables such as industry size and export dependence strongly predict selection of WTO disputes, and we introduce a new variable, velocity of the business environment. Although studies in management science emphasize the importance of business velocity to shape corporate strategies, little attention has been given to the time horizons of industry in the political economy literature. Our research shows that business environment is an important variable to explain which industries are more likely to demand WTO dispute settlement, and future studies should explore the relevance of the velocity of the business environment to other aspects of industry-government interactions.

Whereas much of the existing research on international institutions faces critiques about endogeneity and selection bias, we introduce new methods to address this problem that could be applied more generally

¹³⁰ Author interview with Nissan representative, Tokyo, December 19, 2003.

¹³¹ Author interview with Toyota official, Tokyo, January 16, 2004.

to other areas of research. First, we conduct sensitivity analysis of the observed data in order to quantify the amount of selection bias that would reverse our findings. Second, to directly address the selection process, we gather data on potential disputes for empirical analysis of the selection mechanism that sends some issues into the institutional forum. Finally, we use case studies to more thoroughly investigate the causal mechanism in the context of firm and government decision making.

The pattern of WTO disputes initiated by all members supports our expectation that high-velocity industries will be less likely to have a WTO case initiated. Analysis of the selection of WTO disputes by Japan from the sample of WTO-inconsistent policies facing its exporters shows that the focus on steel and auto industry cases is based upon strong demand from these industries in contrast to weak demand for WTO adjudication from the electronics industry. Interviews revealed that steel and automobile industry officials expected to reap long-term gains from defending their products against trade barriers. Electronics industry officials were more concerned about the cost in time and money associated with WTO adjudication and prioritized investment in new product development.

Table 1 shows that WTO disputes by all member states tend to be focused in primary goods and low-velocity manufacturing industries like textile and steel. Japan follows this pattern except that it has no disputes related to primary goods where it does not have substantial exports. Even as a leading electronics exporter, Japan has not initiated any WTO disputes related to electronics. The evidence from Japan is a hard test of our hypothesis that high-velocity industries will have less interest in WTO adjudication. Japan's low rate of participation in WTO adjudication is in part due to low industry demand given the structure of its export sector. More research is needed to explore this pattern in other countries. Preliminary analysis of trade barriers faced by the United States, for example, shows a similar pattern; the government is more likely to initiate a WTO case for static industries. The importance of business environment should also be evaluated in other areas of litigation such as antidumping, IPR cases, and investor arbitration.

An additional constraint that emerged repeatedly in interviews is Japan's reluctance to initiate a WTO dispute against China. Firm officials expressed concern that the Chinese government would view a complaint as a hostile act and retaliate through other policies that could be harmful for business (e.g., trade rights or tax treatment). Government officials were worried about causing damage to highly sensitive diplomatic relations. Anticipation of government reluctance also dampened

company officials' interest in trying to push for a case. As a result, despite China's large share of Japan's trade and several clear examples of WTO-inconsistent policies, Japan has not initiated any disputes against China.

Our findings show that the effectiveness of the WTO as an institution for solving trade disputes is offset by costs in time and money incurred by the process. Not only does this discourage participation by developing countries, but it also reduces the use of the system by an important set of industries. The debate about international institutions has focused on the many ways institutions reduce transaction costs, but more attention should be given to a broader range of transaction costs and incentives for different actors. From the corporate perspective, time, legal fees, and lobbying resources make requesting government initiation of a WTO dispute a decision that must be weighed in light of the business environment. Some of these costs help to reduce frivolous cases that could overburden the system, but they also act as a selection mechanism that favors static industries over their more dynamic counterparts.

APPENDIX: JAPAN'S WTO COMPLAINTS

<i>Industry</i>	<i>Date of Complaint</i>	<i>WTO Case</i>	<i>Short Title of Dispute</i>	<i>Status to Date</i>	<i>Additional Complainant</i>
Automobile	May 1995	DS6	U.S.—Imposition of Import Duties on Autos	mutually agreed solution reached before panel	None
Automobile	July 1996	DS51	Brazil—Certain Automotive Investment Measures	consultations requested; case settled before panel	U.S. (DS52)
Automobile	Oct. 1996	DS55	Indonesia—Autos	appellate report adopted (July 1998)	EC (DS54) U.S. (DS59)
Horizontal	July 1997	DS95	U.S.—Procurement	panel established; case settled before ruling	EC (DS88)
Automobile	July 1998	DS139	Canada—Autos	appellate report adopted (June 2000)	EC (DS142)
Steel	Feb. 1999	DS162	U.S.—1916 Antidumping Act	appellate report adopted (Sept. 2000); compliance arbitration	EC (DS136)

APPENDIX (*cont.*)

<i>Industry</i>	<i>Date of Complaint</i>	<i>WTO Case</i>	<i>Short Title of Dispute</i>	<i>Status to Date</i>	<i>Additional Complainant</i>
Steel	Nov. 1999	DS184	U.S.—Hot-Rolled Steel	appellate report adopted (Aug. 2001)	None
Steel/ horizontal	Dec. 2000	DS217	U.S.—Offset Act (Byrd Amendment)	appellate report adopted (Jan. 2003); compliance arbitration	Australia, Brazil, Chile, EC, India, Indonesia, Korea, Thailand
Steel	Jan. 2002	DS244	U.S.—Corrosion-Resistant Steel Sunset Review	appellate report adopted (Jan. 2004)	None
Steel	Mar. 2002	DS249	U.S.—Steel	appellate report Safeguards adopted (Dec. 2003)	Brazil (DS259) China (DS252) EC (DS248) Korea (DS251) Norway (DS254) New Zealand (DS258) Switzerland (DS253)
Ball bearings	Nov. 2004	DS322	U.S.—Zeroing (Japan)	appellate report adopted (Jan. 2007)	EC (DS294)