

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

Forthcoming in *World Politics*

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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, Jeffrey Frieden, Joanne Gowa, Kosuke Imai, Daniel Kono, Helen Milner, Jennifer Oh, Saadia Pekkanen, Jon Pevehouse, Ulrike Schaede, Greg Shaffer, Leonard Schoppa, Akihiko Tamura, and Michael Witt. Jennifer Oh and Ann Lee provided valuable research assistance. We are especially grateful to the company 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.

## **Firms, Governments, and WTO Adjudication:**

### **Japan's Selection of WTO Disputes**

#### **Abstract**

What explains the selection of cases for WTO adjudication? While the WTO is widely recognized as one of the most effective international institutions, to date most studies analyze the cases that have come before the WTO. Few examine the decision of whether or not to litigate and the industry pattern of selection. This paper explores the business conditions under which industries lobby their home government to use the WTO adjudication process and the political factors that influence the government decision. We explain the industry pattern of selection for international trade disputes as a function of the velocity of the business environment. While WTO adjudication is seen as costly and slow, a positive ruling brings broader benefits in terms of deterrence against future discrimination. Firms in static industries will be more willing to invest in WTO adjudication than firms in a high-velocity business environment. The industry pattern of WTO disputes supports our argument; there are fewer WTO disputes about electronics industry issues than the likely incidence of protectionist measures. We choose Japan to test our argument in greater depth since it represents a leading exporter that provides a government report with unique data on potential WTO disputes. We find support for our argument in interviews of Japanese business officials and statistical analysis of an original dataset. We conclude that the passive attitude towards WTO adjudication by Japan's largest export industry, electronics, and the sensitivity of Japan's diplomatic relations with China have constrained the cases that Japan files. Our findings offer broader implications that the effectiveness of the WTO for dispute settlement is conditional upon the time horizon of the industry and maturity of political relations among members.

## 1. Introduction

The World Trade Organization (WTO) has become a clearinghouse for trade disputes with over three hundred cases filed since its establishment in 1995. However, many more potential trade disputes are addressed in channels outside of the WTO or simply ignored. Why are some trade barriers brought to the WTO, while others are not? In this paper, we explain the selection of WTO disputes. Our main hypothesis is that industries in a low-velocity business environment (i.e., few product lines and low product turnover) are more likely to advocate WTO adjudication than high-velocity industries (i.e., 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 government choice of disputes largely reflects the variation in industry demand, although policy priorities and diplomatic concerns also influence the government choice of disputes.

The literature on international institutions has long tried to examine how institutions, such as the WTO, change state behavior.<sup>1</sup> However, since member countries can choose to use institutions for certain issues, one must investigate the selection mechanism to properly assess the effectiveness of institutions.<sup>2</sup> 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 only observe the cases of institutional cooperation without being able to identify the universe of potential

cooperation opportunities. Because analysis tends to focus on the treaties that have been concluded or the disputes that are raised in the institutional forum, it is open to the concern about selection bias. Our paper first presents a theory of selection for WTO disputes, and shows that the industry pattern of WTO disputes supports our hypothesis. We introduce methods to analyze the extent to which selection bias in observed WTO disputes would change our conclusions. We then pursue more in depth analysis of the selection process in the case of Japan.

Japan is an ideal country 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 by Japan. Another reason for our focus on Japan is methodological. In particular, a study of the selection mechanism for WTO adjudication requires the identification of *potential* dispute cases. We create a unique dataset of such cases by using the annual report issued by the Ministry of Economy, Trade, and Industry (METI) *Report on the WTO Consistency of Trade Policies by Major Trading Partners*.<sup>3</sup> The report contains a detailed list of trade barriers against Japanese exports that have been reviewed by trade officials and scholars for consistency with WTO law, which allows us to compare those issues that were actually selected for WTO adjudication from 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 high research and development (R&D), which we use as a proxy for

high-velocity business environment.

To investigate the causal mechanism, we conduct case studies comparing the steel industry as a low-velocity case with the medium-velocity auto industry and the high-velocity electronics industry. Our interviews with business officials indicate that steel firms invested in WTO adjudication to achieve long-term deterrence benefits. Electronics firms, on the other hand, have not demanded WTO adjudication for their trade problems because of concern about cost in time and money. The auto industry strongly pushed several WTO cases in the early 1990s, but it has shown less interest in recent years as the business environment has become more dynamic and protectionism has declined. Diplomatic relations also constrain WTO cases as both industry and government officials in Japan hesitate to initiate a complaint against China.

The next section discusses market-opening strategies used to address foreign trade barriers. In Section 3, we present our model for industry demand and government supply of WTO complaints. In Section 4, we analyze the industry pattern of WTO disputes initiated by all members and we use a dataset of potential disputes to analyze Japan's selection of WTO disputes. In Section 5, we provide case studies with interviews of industry and government officials to more closely examine the causal mechanism. We conclude in Section 6.

## **2. Political Economy of WTO Adjudication**

### **2.1 Existing literature**

Political economy studies emphasize that the demand for free trade or protection arises

from lobbying by industry.<sup>4</sup> 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.<sup>5</sup>

Political strategies of firms have also been a primary interest for management scholars.<sup>6</sup> Substantial research has investigated how firms use political strategies as a defense against regulatory intrusions and to gain corporate advantages.<sup>7</sup> Corporate sales and diversification have been highlighted as important variables to predict political activity.<sup>8</sup> Firms that proactively use non-market factors enjoy competitive advantage in the market.<sup>9</sup> Yet most empirical analysis has dealt exclusively with the United States and corporate political contributions.<sup>10</sup>

Most political economy research has focused on explanations of protectionism, and less attention has been given to export promotion. Destler and Odell highlighted the need to study industries lobbying for free trade,<sup>11</sup> and later research has examined the conditions that lead to such political action by exporters. Lobbying of firms to solve a trade dispute represents a proactive business strategy for global competitive advantage.<sup>12</sup> Milner and Yoffie argue that industry structure determines when firms advocate strategic trade policies for reciprocal market access.<sup>13</sup> Gilligan shows how legislation requiring reciprocal market access deals promoted a free trade coalition of export industries in the United States.<sup>14</sup> Odell argues that market conditions influence negotiations by setting the alternative to a negotiated agreement.<sup>15</sup> The strengthening of international trade rules with the formation of the WTO has restricted many of the trade strategies considered in these studies while enhancing the multilateral adjudication

process as a central trade policy tool.

The growing literature about WTO dispute settlement focuses mostly on settlement patterns.<sup>16</sup> Rosendorff examines the demand for temporary non-compliance that produces a potential dispute case.<sup>17</sup> His model highlights the role of domestic political pressure to account for why states seek exceptions to their commitments.<sup>18</sup> We know little, however, about the conditions under which states *challenge* such violations. Bown shows that export stakes and retaliatory capacity account for cross-national variation in dispute initiation, and Davis and Bermeo demonstrate the role of litigation experience and domestic institutions to make some countries more likely to file complaints.<sup>19</sup> We still lack 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.<sup>20</sup>

## **2.2. Negotiation Fora and Market-Opening Strategies**

When confronted by a trade barrier that represents a potential WTO violation, an exporting firm has several options. First, it could take a market strategy to absorb the losses or move around the trade barrier through foreign direct investment. Second, it could lobby its government to pursue a negotiation strategy in bilateral talks, WTO committees, or other multilateral forums.<sup>21</sup> Third, it could request that the government pursue WTO adjudication. Multiple strategies may be pursued for one issue, and typically WTO adjudication arises as the *last option*. Some firms lose interest after an initial negotiation fails. Others advocate continuing

to pursue a resolution even if it means taking the issue to WTO adjudication. We are interested in the final strategy chosen for the dispute.

Product, firm, and market characteristics will influence firm decisions whether to ignore the barrier or invest in local production. The determinants of FDI flows have been analyzed extensively elsewhere,<sup>22</sup> and this paper focuses on the two non-market strategies that depend on industry and government action.

Bilateral negotiations typically are the most efficient approach to address a dispute. A smaller number of actors make cooperation easier.<sup>23</sup> Bilateral negotiations offer flexibility, which can help negotiators reach an agreement that meets the minimum acceptable terms for both sides.<sup>24</sup> Bilateral agreements, however, are vulnerable to the risk of unraveling later when the foreign government backs out on their promise or chooses a different interpretation. Imbalances in bilateral market power further increase incentives to defect and weaken the ability to sustain liberalization through bilateral enforcement.<sup>25</sup> The narrow focus on the one issue and country that makes it easier to reach an agreement also limits the scope of benefits. Finally, bilateral negotiations may end in deadlock.

The WTO represents another venue for negotiating trade barriers. Many credit the GATT/WTO as an effective source of pressure for trade liberalization.<sup>26</sup> 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 agreement 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 interpretation and use public shaming to pressure a trade partner into changing an offending policy.

The WTO also provides a formal dispute settlement mechanism. 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 anti-dumping duties are less likely to be targeted with anti-dumping duties by other members.<sup>27</sup> 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 to file a complaint take time. Then the adjudication process and implementation period represent additional time. William Davey, former director of the Legal Affairs Division of the WTO, has advocated that reforms should prioritize shortening dispute duration. Examining 181 WTO disputes with a consultation request filed prior to July 1, 2002, Davey shows that more than half of cases settled during consultations ended within one year, but that the median time for disputes that went through the formal panel process was 34 months, and eleven cases lasted over four years.<sup>28</sup> For businesses, there may be caution about starting a process that could take anywhere from six months to four years with uncertainty about the outcome. It is not an inexpensive process. A typical case that lasts two years can cost as much as one million dollars in lawyer

fees alone, and firms also bear human resource costs from dedicating personnel to support a legal dispute.<sup>29</sup> Governments must consider policy-making inputs and costs for diplomatic relations.

Given all these options, what determines which trade problems are taken 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.<sup>30</sup> In the next section, we discuss how industry and government interests influence selection of WTO disputes.

### **3. 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.<sup>31</sup> These variables would similarly be important determinants of demand for WTO disputes. Larger industries will have more capacity to bear the costs of WTO disputes and 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.<sup>32</sup> Higher levels of export dependence and multinationality increase the industry's stakes in supporting free trade.<sup>33</sup> Existing studies, however, do not discuss how the business environment of the industry influences corporate political action.

#### **3.1 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 in the barrier. 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 “environments in which there is rapid and discontinuous change in demand, competitors, technology or regulation.”<sup>34</sup> This environment is characterized by a high degree of uncertainty for decision-making and short product cycles.<sup>35</sup> The fast rate of change in technology and consumer tastes creates incentives for firms to have rapid product turnover 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 large number of product lines.<sup>36</sup> 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.<sup>37</sup> The scale, scope, and duration of environmental changes are so significant that firms adopt different operation strategies that increase the capacity for fast product turnaround.<sup>38</sup> Managerial priorities emphasize routine short deadlines and quick transitions to take advantage of new opportunities.<sup>39</sup>

The nature of an industry’s business environment influences preferences over negotiation strategies because it determines how they evaluate the cost of resolving a trade problem. Facing the same costs in terms of human resources, legal fees, and time, firms in a high

velocity environment will face greater opportunity costs for such investment in any given trade dispute.<sup>40</sup> Since these firms have a broad range of product lines, they have less need to defend against a barrier harming profits from one product and instead emphasize using firm 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 from 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. Consequently, they are more likely to cut their losses at the bilateral stage without requesting a WTO dispute.<sup>41</sup> A firm in a slower business environment, on the other hand, is more willing to invest in a longer process. Given their narrow product line and low rate 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 value of a reputation for challenging barriers. High business velocity determines the time horizon and product diversity of firms, and we argue that these features together increase the opportunity costs from investment in market-opening strategies and lead such 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.*

### **3.2 Government Priorities and 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 the government to push forward some cases while holding back on others. First, 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.<sup>42</sup> Industries that give more political contributions are also likely to have more policy influence.<sup>43</sup>

In addition to responding to specific industry requests, governments may view some trade barriers as more problematic. In particular, WTO rules for import relief measures (anti-dumping, 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.<sup>44</sup>

On the other hand, concern about a sensitive diplomatic relationship could restrain a government from initiating a WTO dispute. The WTO dispute process can create negative public perceptions as a result of exaggerated rhetoric from both sides.<sup>45</sup> Governments may try to avoid initiating a case against a country when there is fear of spillover from trade disputes worsening diplomatic relations. There is also the strategic consideration of whether the trade partner will change the policy measure. A government may calculate that it would be futile to initiate a WTO dispute against a trade partner's industry with large employment or high import

penetration because strong resistance would prevent favorable settlement.

#### **4. Analysis of WTO Dispute Selection**

##### **4.1 Inference from Observed WTO Disputes**

Table 1 shows considerable industry variation in the issues raised in WTO dispute adjudication.<sup>46</sup> Agriculture has long been a contested area of international trade and generates the largest number of trade disputes. While the Uruguay Round Agreement brought the service sector into the international trade rules, this sector has not featured prominently in WTO adjudication. The focus for this paper is the manufacturing sector (see Figure 1). WTO members initiated 130 disputes about manufacturing sector products from 1995 to July 2005, and the largest share of cases was in the steel industry (29 percent of manufacturing cases) followed by the textile and transportation industries. In contrast, members only initiated a total of ten cases (8 percent) in the electronics industry.

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Insert Table 1 / Figure 1  
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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. Just because we observe 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  $D_i$  be an indicator variable which is equal to 1 if WTO inconsistent policy  $i$  is brought to the WTO dispute, and is equal to 0 otherwise. We use  $V_i$  to represent an indicator variable which is equal to 1 if WTO inconsistent policy  $i$  affects a high velocity industry.<sup>47</sup> 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.,  $\Pr(V_i = 1 | D_i = 1)$ , 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.,  $\Pr(D_i = 1 | V_i = 1)$ , 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,

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

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 probabilities only take non-negative values, the direction of this effect depends on whether the probability of a WTO dispute initiated for a high velocity industry, i.e.,  $\Pr(V_i = 1 | D_i = 1)$ , 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  $\Pr(V_i = 1 | D_i = 1)$  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 supporting our argument, we will further investigate by collecting data on WTO inconsistent policies.<sup>48</sup>

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. Although there have been over 300 WTO disputes, the number of WTO inconsistent policies is far greater. For example, the United States *National Trade Estimate Report* in 2003 listed 72 trade barriers by Japan, of which only 2 were addressed in WTO disputes. Over the period 1995 to 2003, the U.S. reports listed 562 barriers with five top trade partners (Canada, EU, Japan, Korea, and Mexico), of which only 8 percent (46 cases) were raised as WTO disputes.<sup>49</sup> METI's 2003 report listed 41 trade barriers by the United States, of which 6 were addressed in WTO disputes. The number of potential WTO disputes that are never filed is even larger for developing countries, which face greater obstacles for filing cases.<sup>50</sup> These numbers are suggestive that many trade barriers are not being taken up as WTO disputes.

## **4.2 The Japanese Puzzle**

In order to further investigate the industry pattern of WTO dispute selection, we look at the case of Japan. Most studies of the WTO focus on the United States and EU, and less is known about Japan even though it represents the third largest economy. The classic model of Japanese trade policy emphasizes the role of the central government to manage industrial development through targeted protection.<sup>51</sup> Yet Japanese export firms also exercise voice over



trade policy.<sup>52</sup> Especially as Japanese exports flooded world markets and met with protectionist responses, maintaining market access became a critical problem for Japanese companies.

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 United States and EU. Nevertheless, since the establishment of the WTO, Japan has taken stronger interest in trade adjudication.<sup>53</sup> 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.<sup>54</sup>

Japan has now initiated 11 cases before the WTO (see Appendix table), and the industry focus has been almost exclusively on steel (5 cases) and autos (4 cases).<sup>55</sup> Why are there no cases for the electronics industry? On the one hand, Japan fits the overall pattern discussed in the previous section for WTO countries. Yet as one of the leading global exporters of electronics, one would expect that if any country would initiate cases in the electronics sector, it would be Japan.

In 2001, electronics goods were Japan's top export earner with a 24 percent share of the value of total Japanese exports.<sup>56</sup> Table 2 shows that the electronics industry is the source of over one-third of all Japanese manufacturing exports, and is the largest producer and employer. In 2002, electronics industry firms and industry associations contributed a total of 225 million yen in public contributions to the ruling Liberal Democratic Party. The electronics industry was the second most generous manufacturing industry after the auto industry (285 million yen), and

well ahead of the steel industry, which only donated 142 million yen.<sup>57</sup>

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Insert Table 2  
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### 4.3 Identifying Potential WTO Cases

An important question remains. Does the electronics industry face trade barriers that could be raised by the Japanese government as a WTO dispute? Since the pattern of WTO cases might reflect the underlying protection against an industry by foreign governments, one needs to evaluate the initiation of cases relative to the universe of potential WTO cases.

We create a sample of potential disputes from METI's annual *Report on the WTO Consistency of Trade Policies by Major Trade Partners*. METI officials compile a draft list of trade barriers primarily based on information from ministries and consultation 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, suggests revisions, and there is a period for public comment. 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. According to a METI official, the report was specifically intended to provide a resource for finding areas in which the Japanese government should initiate WTO complaints.<sup>58</sup>

Using reports covering the period from 1995-2004, we coded 96 total trade barriers in the manufacturing sector (counting only once a barrier that continued over multiple years).<sup>59</sup> We coded all the listed trade barriers by Japan's trade partners.<sup>60</sup> The United States, China, and the EU dominate as Japan's largest trading partners (20.5 percent, 15.5 percent, and 14.2 percent of Japan's trade respectively in 2003).<sup>61</sup> Nearly one-third of the trade barriers address U.S. policies, followed by 22 percent about 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 any other manufacturing industry.

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Insert Table 3  
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Policies that violate WTO rules are a major concern to Japanese electronics firms. In a survey of 528 Japanese companies, electronic industry firms reported the highest interest in seeing the WTO illegal policies of foreign governments corrected: 32 percent of electronic industry respondents (eleven of thirty-four firms) considered WTO violation 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).<sup>62</sup> In response to a question asking why firms did not pursue potential WTO cases, the most frequently cited reason was that the costs (time

and financial) were too great.

The legal concerns of the electronics industry are generally similar with those of other industries. Table 4 shows the comparative breakdown of Japan's trade barriers by the most directly relevant WTO agreement. It shows that like other industries, the trade barriers that most frequently confront the electronics industry are related to either the anti-dumping 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.<sup>63</sup>

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Insert Table 4  
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Thus we are left with the puzzle -- why has Japan focused on steel and autos in its choice of WTO cases? Export share, industry size, political contributions, government reports on unfair trade barriers, and industry concern about WTO violations all point to an expectation for electronics to be a focus for Japanese complaints to the WTO. It is not obvious why steel should play such a prominent role.

#### **4.4 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* for cases that were mentioned in the report without reference to any government action (25 cases); *negotiation* for cases that were raised in bilateral talks, WTO committee meeting, or other venue (61 cases); and *WTO adjudication* when Japan initiated a WTO dispute (10 cases).<sup>64</sup> We use the percent of expenditures for research and development in total production to measure the velocity of the business environment.<sup>65</sup>

The ratio of R&D to total sales or production has been frequently used in business management studies to measure the stability of the business environment, degree of technological instability, and innovativeness.<sup>66</sup> Although patents are also a commonly used indicator, the demand and supply of patents is more subject to variation according to government patent policies than is true for spending on research.<sup>67</sup> 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 (see Table 7).<sup>68</sup> The availability of OECD data that aggregates R&D spending by industry allows us to test our hypothesis at the industry level at which 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.<sup>69</sup> Export dependence is measured as the ratio of exports to total production.<sup>70</sup> We include a measure of FDI by the industry.<sup>71</sup> 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.<sup>72</sup>

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.<sup>73</sup> 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 the 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 the U.S. Corporate Average Fuel regulation affected the entire auto industry). Fifty-one percent of the cases were product specific. Such narrow barriers represent lower stakes overall and may affect a smaller number of firms. Second, we include a variable for the distortionary burden from the trade barrier. This indicator codes cases that involved substantial market closure resulting from policies such as high 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 restriction or burdensome procedures. One would expect the more distortionary barriers to be higher priorities for WTO adjudication.

In Model 2, we focus on the strategic interaction between trade partners through several variables. First, an indicator variable for the United States controls for the special bilateral relationship. Second, we measure the GDP of the trade partner (after taking the log to smooth high values). Larger markets offer more economic stakes for Japan's industry, but larger economies 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.<sup>74</sup>

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Insert Table 5  
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Table 6 presents the results from multinomial logistic regression using the three-category outcome variable where no negotiation is the base category.<sup>75</sup> Model 1 uses the full sample of 96 trade barriers and estimates whether the 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. Model 2 uses a smaller sample of trade barriers with Japan's OECD trade partners due to limited data availability. The results support our hypothesis that industries with high-velocity business environment as measured by R&D spending are significantly less likely to have a WTO dispute.<sup>76</sup>

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Insert Table 6  
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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.<sup>77</sup> We then examine the effect of changing the R&D variable while holding other variables constant. Using model 1, we hold all variables constant at their observed 1995 values for the auto industry and shift R&D from 3 to 3.8, which corresponds to the actual observed shift from 1995 to 2003 for that industry. This shift reduces the predicted probability of dispute initiation on average by 0.12 (with 95 percent confidence interval -0.322, -0.025), which is an 84 percent change of the point estimate from 0.140 to 0.023. For comparison, the shift of production from 9.18 to 9.26 (the actual observed shift in values from 1995 to 2003 for the auto industry) increases the probability of dispute initiation on average by 0.09 (with 95 percent confidence interval 0.022, 0.213), a 66 percent change from 0.140 to 0.239.

Political contributions to the LDP increase the likelihood for an industry to have a WTO case initiated by the government. The relatively small effect may reflect that firms use their political influence for other priorities such as corporate tax reduction and commercial law deregulation rather than trade policy.<sup>78</sup> 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 for a trade barrier to be 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. Nevertheless, further research is necessary to separate 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 are weak, but offer additional support to studies that question the usefulness of concentration to explain industry behavior.<sup>79</sup> In Japan high concentration could be a disadvantage since the government is reluctant to be seen as acting for the narrow interests of one or two firms.<sup>80</sup>

As expected, import relief measures are more likely than other trade barriers to be selected for WTO disputes. Six of Japan's WTO cases have focused on import relief measures. The Japanese government has long tried to negotiate stronger restraints on escape clause measures, and officials hope to use WTO adjudication as another tool to lower the use of these policies as a form of protection. In contrast, 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 relationship 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, which is a major trade partner but has sensitive political relations.<sup>81</sup> Surprisingly, an indicator variable for whether another country initiates a WTO complaint against a trade barrier does not have a significant effect on the likelihood that Japan will initiate.<sup>82</sup> The variable is not included in the models presented here. Model 2 shows that Japan may exercise restraint towards industries that have high employment share for its trade partner, but not for those with high import penetration.

#### **4.5 Addressing Potential Bias in METI Sample of WTO Inconsistent Policies**

In the above analysis, we have measured 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 in 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 population of potential cases can never be observed, one cannot rule out such a possibility altogether.<sup>83</sup>

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 which 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) in Section 4.1, 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 same technique used in Section 4.1, from the observed data in Table 3, we estimate  $\Pr(D_i = 1 | V_i = 1, L_i = 1)$  to be at most  $1/35$  (a more conservative estimate than the observed  $0/34$ ), which is approximately equal to 0.029, whereas  $\Pr(D_i = 1 | V_i = 1, L_i = 1)$  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.  $\Psi$ , is less than 5.65. In other words, only if a WTO inconsistent policy 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 would suggest that anticipation of whether a barrier is likely to be challenged would influence the foreign government decision on whether to adopt a WTO inconsistent policy. 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  $L_i$  as an indicator variable which is equal to 1 if a trade partner adopts a WTO inconsistent policy and this 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 stability in the system by allowing governments to violate a WTO rule while recognizing that they may face retaliation when a trade partner challenges the policy.<sup>84</sup> 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.

## **5. Japan Case Studies: Comparison of Electronic, Steel, and Auto Industries**

We examine how different industries react to trade barriers by comparing the market-opening strategies of three major export sectors in Japan: steel, auto, and electronics. All are globally competitive export sectors for Japan, but vary in their industry structure and business environment. In 2001 Japanese exporters held an 11.2 percent world market share for electrical machinery and appliances, 10.4 percent for iron and steel, and 15.2 percent share for automobiles.<sup>85</sup> 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 our key independent variable measuring industry velocity.<sup>86</sup> Table 3 shows that these industries

comprise 78.4 percent of all manufacturing trade barriers in the report.

Table 7 shows the R&D ratio, 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 sector in contrast faces a more static business environment, while the automobile industry has moderate dynamism.

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Insert Table 7  
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## **5.1 Electronics industry**

The electronics industry is the prototypical dynamic industry in which firms compete across a broad range of products with a short product life cycle. The electronics industry includes, for example, domestic appliances, radio and television products, computers, semiconductors, cameras, and precision instruments.<sup>87</sup> The largest consumer electronics firm, Matsushita, listed 148 product lines in its 2004 annual report, including multiple kinds of televisions and computers. These firms engage in intense competition to develop new products and spend more on R&D than most other industries (see Table 7).

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

concentration for supercomputers.

In total, METI identified 34 unfair trade barriers for electronics products (see Table 3). Tariff classification issues arise because of the evolving nature of new products that are ahead of existing regulations. Electronics goods have been frequent targets of anti-dumping measures, and are also subject to non-tariff 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 (see Table 4). This is not because electronics firms do not face intellectual property infringement, but because the TRIPs (Trade Related Intellectual Property Rights) Agreement only requires that states have regulations to establish minimum levels of protection. Governments file complaints for dispute settlement on 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 X company patent) do not constitute legal standing for WTO adjudication (and are not included in the METI reports on trade barriers). Rather firms pursue piracy incidents through recourse to domestic litigation or appeals for administrative action.<sup>88</sup> 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 electronics and auto industries. METI reports highlight IPR enforcement as a priority for Japan's trade

agenda, and Japan may in the near future initiate a WTO case related to the TRIPS Agreement.<sup>89</sup>

Bilateral negotiations have been chosen for many trade problems. The camcorder dispute with Europe 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 subject to a 14 percent tariff. The change was justified because a computer hacker could manipulate the product to enable recording TV input. With several hundred million dollars at stake, Japanese firms have 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.<sup>90</sup>

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 a case. 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.<sup>91</sup> Officials from both Matsushita and Mitsubishi said their firms had decided against requesting that the government bring a WTO case even when their lawyers had indicated that they could win a WTO challenge of a dumping finding against their product.<sup>92</sup>

The U.S.-Japan supercomputer dispute was one example of a high stakes dispute that could have been taken to the WTO for adjudication. 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 to be illegally sold at below fair market prices.<sup>93</sup> 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.<sup>94</sup> 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 anti-dumping 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.<sup>95</sup> NCAR canceled its plan to purchase NEC equipment. MITI officials encouraged NEC to consider WTO adjudication, but the company decided that it did not want to request a WTO case.<sup>96</sup>

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. But 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 process for the supercomputer case because they thought uncertainties about cost and time in a WTO dispute were greater than the U.S. domestic court process.<sup>97</sup> An official with Hitachi said that for most of their problems a fast solution was the top priority, and direct talks with the foreign government were the best route. He noted that in a business where technology developed so quickly, spending too much time to solve a problem for one product would lead to delays in the development of the next

product.<sup>98</sup> 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 would take more than two years to reach a resolution was meaningless.<sup>99</sup> A METI official confirmed that it was the cost in time rather than money that discouraged many firms from continuing with a dispute.<sup>100</sup>

The political and economic resources of an industry are important factors to determine when interest groups lobby their governments for help with trade problems. An additional necessary condition, however, is patience. Dynamic industries will have low demand for WTO adjudication because it takes too long.

## **5.2 Steel Industry**

In comparison with the electronics industry, steel firms have a smaller number of products and are less diversified. The leading firm, Nippon Steel Corporation (NSC), spends only one percent of its sale revenue on R&D, and there were 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.<sup>101</sup> This makes FDI an unattractive commercial strategy for steel firms.<sup>102</sup> On the whole, there is less emphasis on rapid new product development as the key to success in the industry.<sup>103</sup>

NSC has long been the dominant player in the Japanese steel industry, and was the third largest steel producer globally in 2003. Traditionally, NSC serves as the president of the industry association. NSC has also represented Japanese business as a whole -- three of ten

chairmen of *Keidanren*, the umbrella business organization of Japan, have been from NSC.

Japanese steel exports have met protectionist trade barriers in several markets and are frequently accused of dumping excess production at below normal prices. Indeed, of the twelve steel trade barriers in the METI reports, all but one is related to either anti-dumping duties or safeguard measures. Virtually every steel product exported by Japan to the United States is subject to anti-dumping or safeguard measures.

The steel industry has requested four of the cases that Japan has initiated before the WTO, all of which were complaints against U.S. anti-dumping/safeguard measures:

*Anti-Dumping Act of 1916* (DSU162, 10 February 1999); *Anti-Dumping Measures on Certain Hot-Rolled Steel Products from Japan* (DSU184, 18 November 1999); *Definitive Safeguard Measures on Imports of Certain Steel Products* (DSU249, 20 March 2002); and *Sunset Review of Anti-Dumping Duties on Corrosion-Resistant Carbon Steel Flat Products from Japan* (DSU244, 30 January 2002). In these four cases, the industry association paid the legal fees for hiring an American law firm to help prepare the case. The Japanese government expects the industry that requests a case to pay the legal fees, and the government pays those costs for cases on broad trade issues that are not requested by a particular industry.<sup>104</sup> The steel industry also lobbied for the case brought against the United States *Byrd Amendment, The Continued Dumping and Subsidy Offset Act of 2000* (DSU217, 21 December 2000).<sup>105</sup>

Steel industry officials stated that the cost of litigation, time for the dispute to reach settlement, and likelihood of narrow or incomplete compliance meant that the immediate trade

benefit from winning the case would not justify the cost for most of the steel cases.<sup>106</sup> Rather, indirect benefits related to reputation and deterrence of future protectionism motivated the decision to request a WTO case.<sup>107</sup> Even in the one case in which Japan failed to win a positive ruling and the targeted trade barrier remained in place (DSU244), an NSC official cited potential benefit because the ruling upheld parts of the Japanese government's criticism of U.S. anti-dumping methodology (zeroing) and could prevent other countries from using a similar method.

METI has supported requests for WTO cases by the steel industry with only a few exceptions. The industry wanted to initiate a dispute on U.S. safeguard measures on line pipe, but the government instead filed as a third party.<sup>108</sup> When China initiated safeguard measures on 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.<sup>109</sup> The Foreign Ministry is also consulted in decisions about dispute initiation, and it is cautious about harming diplomatic relations with China given bilateral tensions related to treatment of WWII historical legacy and conflicting territorial claims. While victory in a WTO case may take years to achieve and not bring large direct benefits, the 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 supports this attitude. In addition, the active NSC role as industry leader

makes it easier to build industry consensus.

### **5.3 Automobile industry**

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

Industry structure is moderately concentrated. Three companies, Toyota, Nissan and Honda, have been vying for market share and industry leadership. The Japan Automobile Manufacturers Association (JAMA) has rotated its chairmanship every two years among Toyota, Nissan and Honda since 2000. These companies have a de facto “veto” power in defining policy positions of Japanese auto industry.<sup>110</sup> However, 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.<sup>111</sup> On the political side, two of Toyota’s chairmen have served as chairmen of *Keidanren*. This leadership role helps the industry to 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, of which 2 million were exported. Toyota produced an additional 3 million cars overseas.<sup>112</sup>

The flood of exports and increasing market share for Japanese auto firms has led to many trade

barriers. Table 3 shows that the transportation sector accounts for 22 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 regards to China.<sup>113</sup> 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.<sup>114</sup>

In the initial years of the WTO, the auto industry was very 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: US - *Imposition of import duties on autos from Japan* (DSU6, 22 May 1995); Brazil - *Certain automotive investment measures* (DSU51, 6 August 1996); Indonesia - *Certain measures affecting the automobile industry* (DSU55, 10 October 1996); and Canada - *Certain measures affecting the automotive industry* (DSU139, 8 July 1998).

Out of four cases, three were based on industry petitions. In the 1995 case, JAMA and auto makers paid for legal fees and lobbying in Washington D.C., which cost several million dollars in total.<sup>115</sup> The industry also paid legal fees to support the government initiation of a WTO 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 government went forward to initiate this case in 1998.<sup>116</sup> Japan's WTO case against Brazil's investment restrictions was related to autos, but there was little industry lobbying and METI officials said they chose the case as an easy victory with a useful precedent.<sup>117</sup> Japan's auto industry also called for the government to join as a third party for an EU case against India on trade-related investment measures.<sup>118</sup>

The auto industry's decision to lobby the government to file a WTO case against the United States in 1995 demonstrates their willingness to pay high costs for the deterrence effect from a WTO dispute. Bilateral talks over the low penetration of U.S. auto and auto parts exports in the Japanese market had collapsed in 1994, and in May 1995 the United States threatened to impose 100 percent tariffs on the import of Japanese luxury automobiles. The United States had been aggressively using unilateral sanctions stipulated in Section 301 of the 1974 Trade Act as an effective tool in bilateral negotiations before 1995.<sup>119</sup> 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.<sup>120</sup> The auto industry could not give in to the U.S. threat of sanctions as a matter of both principle and interest.<sup>121</sup> The industry association position paper asserted that no violations of international trade laws had been found.<sup>122</sup> The stakes were large, with industry sources claiming that the export loss would have been 5.9 billion U.S.

dollars.<sup>123</sup> The industry, on the other hand, acknowledged that the immediate loss of exports from sanctions would not have been recovered through victory in WTO adjudication.<sup>124</sup> The proactive move paid off as an early settlement was reached two months later without having to wait for a WTO ruling. The U.S. not only withdrew its sanctions, but it also has never again threatened to use unilateral sanctions against Japan.

There has been a decline in interest in WTO adjudication recently according to industry officials, and no case has been initiated related to autos since 1998. An increase in the velocity of the business environment is one reason. A Toyota official cited speed as one of the most important reasons not to pursue WTO adjudication, as it takes too much time to achieve removal of the trade barrier.<sup>125</sup> While the auto industry reached a quick settlement in its first two cases, the auto-related cases with Indonesia and Canada lasted over thirty months between filing the complaint and implementation of the settlement.<sup>126</sup> This is a critical drawback as the velocity of the business environment in the auto industry has been increasing. The R&D share of production for Japan's auto industry rose from 3 in 1995 to 3.8 in 2003. A Consumer Survey shows that the turnover time for automobiles has shortened from 7.3 years in 2002 to 6.7 years in 2005.<sup>127</sup> New models are so quickly outdated that firms must invest in constant development of new models and product lines; the number of distinct varieties of cars has increased from nineteen in 1994 to thirty-three in 2004.<sup>128</sup>

Another factor that helps to account for the decline in industry petitions for WTO cases by the auto industry is the success of past cases. The industry is reaping the benefit of its earlier



active engagement in WTO disputes as the deterrence effect has reduced barriers against its exports. A Nissan representative said, “now they know that if they adopt a policy against WTO rules, they may get sued.”<sup>129</sup> Whereas the METI report listed from ten to thirteen trade barriers for the auto industry each year during the period 1995 to 1997, in the last three years from 2002 to 2004, each annual report has only mentioned four to six trade barriers for the auto industry. One of the most prominent barriers the auto industry has faced is the local contents requirement, a violation of the Trade-Related Investment Measures 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 their regulations in this area.<sup>130</sup>

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

## **6. Concluding Remarks**

This is the first study to examine 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

high 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 research 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 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 indicated that steel and auto 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.

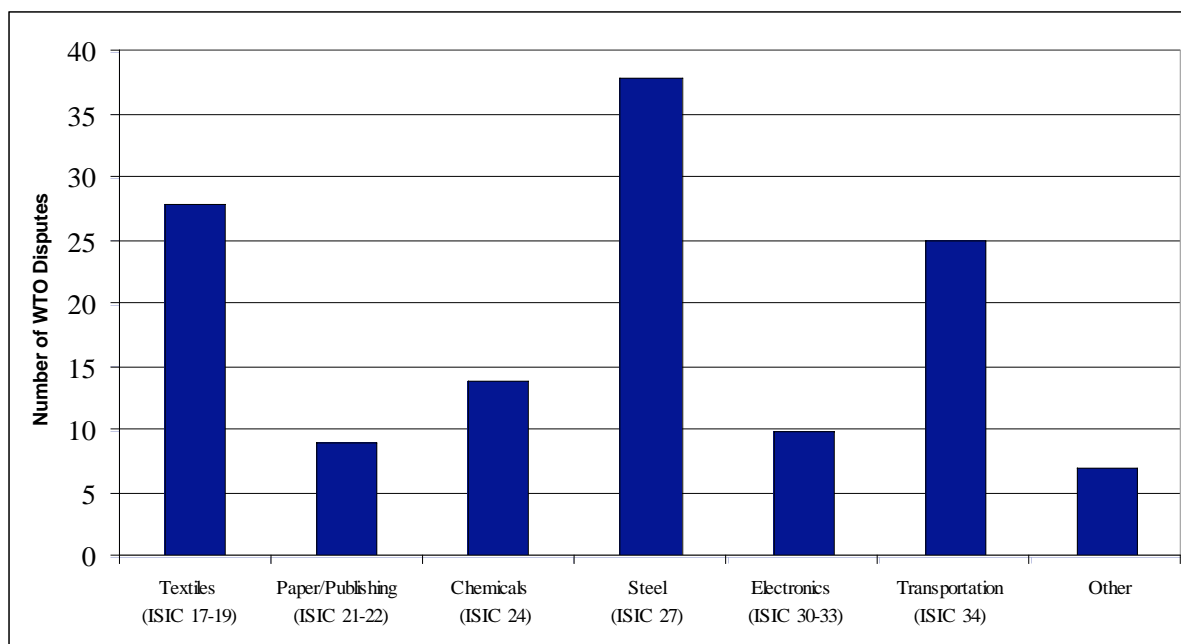
Table 1 showed that WTO disputes by all member states tend to be focused in primary goods and low-velocity manufacturing industries like textiles and steel. Japan follows this pattern except that it has no disputes related to primary goods where it does not have substantial exports. Even as a leading 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. Future research should explore this pattern in other countries. Preliminary analysis of trade barriers faced by the United States shows a similar pattern in which 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 anti-dumping, IPR cases, or investor arbitration.

An additional constraint that emerged repeatedly in interviews is Japan's reluctance to initiate a WTO dispute against China. Firms expressed concern that the Chinese government would view the 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. Firm anticipation of government reluctance also dampened their 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 violation

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 the time and money incurred in the process. Not only does this discourage participation by developing countries, but it also reduces the use of the system by a broad set of industries. The debate about international institutions has focused on the many ways in which institutions reduce transaction costs, but more attention should be given to the broader range of transaction costs and incentives for different actors. From the firm perspective, time, legal fees, and lobbying resources make it a costly decision to request government initiation of a WTO dispute. 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.

**Figure 1. Manufacturing Sector, Industry Breakdown of WTO Disputes**



The figure shows the 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.

**Table 1. Industry Breakdown of WTO Disputes**

Sector	All		U.S.		EU		Japan	
	members	%		%		%		%
Primary	138	41	26	37	15	22	0	0
Manufacturing	130	39	23	32	31	41	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

The table 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.

**Table 2. Profile of Manufacturing Sector by Industry**

Industry	Exports (%)	Production (%)	Employment (%)
Electronics	35.6	18.2	17.6
Transportation	26.1	14.7	9.0
Machinery	14.1	9.1	11.2
Metals	6.4	12.4	12.3
Chemicals	10.9	15.0	5.5
Textiles and footwear	1.6	2.4	7.9

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

Source: OECD Stan Structural Analysis Database, Vol. 2004 release 4.

**Table 3. Manufacturing Sector Trade Barriers of Japan's Major Trade Partners**

Industry	Reported Trade Barriers	%
Electronics	34	37.0
Transportation	23	23.9
Misc. industrial goods	6	5.4
Metals	17	17.4
Chemical	9	9.8
Textiles	7	6.5
Total	96	100.0

The first column shows the number of trade barriers reported in the METI "Report on the WTO Consistency of Trade Policies by Major Trade Partners" over the years 1995-2004. The second column indicates percentage of total barriers.



**Table 4. Breakdown of Japan's Trade Barriers By WTO Agreement**

<b>Industry</b>	<b>AD</b>	<b>Tex</b>	<b>GATT</b>	<b>GP</b>	<b>ROO</b>	<b>SG</b>	<b>SCM</b>	<b>TBT</b>	<b>TRIMs</b>	<b>TRIPs</b>	<b>Total</b>
Electronics	9	0	13	1	4	0	1	6	0	0	34
Transportation	0	0	7	0	0	2	3	3	8	0	23
Misc. Industrial goods	2	0	2	0	0	2	0	0	0	0	6
Metals	7	0	1	0	0	5	2	2	0	0	17
Chemical	0	0	4	0	0	0	0	3	0	2	9
Textiles	0	2	2	0	1	2	0	0	0	0	7
<b>Total</b>	<b>18</b>	<b>2</b>	<b>29</b>	<b>1</b>	<b>5</b>	<b>11</b>	<b>6</b>	<b>14</b>	<b>8</b>	<b>2</b>	<b>96</b>
<b>%</b>	<b>18.8</b>	<b>2.1</b>	<b>30.2</b>	<b>1.0</b>	<b>5.2</b>	<b>11.5</b>	<b>6.3</b>	<b>14.6</b>	<b>8.3</b>	<b>2.1</b>	<b>100</b>

The table lists 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: Anti-dumping (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 and Intellectual Property Rights (TRIPS). We do not include other agreements that have not been relevant to the trade barriers included in our dataset.

**Table 5. Descriptive Statistics of Variables**

	mean	s.d.	min	max
Velocity (R&D/production, %)	4.45	3.39	0.50	14.30
Political contributions (mn yen)	197.75	126.54	0.00	365.31
Production (log bn yen)	8.55	0.81	5.51	9.43
Export/production (%)	22.60	15.29	2.10	85.90
FDI (log 100 mn 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
US (0-1)	0.32	0.47	0.00	1.00
GDP (log 2000 US\$), trade partner	28.97	2.36	12.70	29.93
Import penetration (%), trade partner	44.52	28.41	11.10	124.70
Employment share (%), trade partner	0.76	0.53	0.10	2.50

Note that the descriptive statistics are for the sample of 96 trade barriers used in model 1, with the exception of the last four variables which are for the sample of 59 cases with OECD trade partners used in model 2. Variables related to industry characteristics (i.e. all variables except for import relief measure, US trade partner, GDP of trade partner) are measured specific to the ISIC 2 or 3 digit industry classification. We generally used 2 digit ISIC industry categories, but used a smaller category when the barrier affected a narrow industry and data was available at the appropriate level.

**Table 6. Statistical Analysis of Japan's WTO Dispute Initiation**

Variable	Model 1				Model 2			
	WTO Initiation		Negotiation		WTO Initiation		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				
US					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

Model 1 uses multinomial logit regression for the full sample of 96 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 59 trade barriers with OECD partners for which data on import penetration and employment shares were available.

**Table 7. Industry Comparison of Product Innovation by Leading Firms**

Industry	Company	Total product lines	New product ratio	R&D ratio	Registered patents in Japan	Registered patents in US	Velocity
Electronics	Matsushita	148	20.7*	7.7	13828	1934	high
	Sony	61	19.5*	6.9	6067	1305	
Auto	Toyota	77	5.2	3.9	4040	426	medium
	Nissan	35	11.4	4.8	2756	261	
Steel	Nippon Steel	55	3.6	0.7	1097	n.a.**	low
	JFE Steel	28	0.0	1.5	855	n.a.**	

Note: All 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 US show numbers of patents registered in 2004. \*Due to the large number of product lines and subcategories, the new product ratio for Matsushita is based on Television-related products and for Sony is based on camcorders. \*\* Nippon Steel and JFE Steel are not ranked among top 300 U.S. patent owners so no data was available.

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

### Appendix: Japan's WTO Complaints

Industry	Date of complaint	WTO Case	Short Title of Dispute	Status to Date	Additional Complainant
Automobile	May 1995	DS6	US - Imposition of Import Duties on Autos	Mutually Agreed Solution reached before panel	None
Automobile	Jul 1996	DS51	Brazil - Certain Automotive Investment Measures	Consultations requested — case settled before panel	US (DS52)
Automobile	Oct 1996	DS55	Indonesia - Autos	Appellate Report Adopted (July 1998)	EC (DS54) US (DS59)
Horizontal	Jul 1997	DS95	US - Procurement	Panel established, case settled before ruling.	EC (DS88)
Automobile	Jul 1998	DS139	Canada - Autos	Appellate Report Adopted (June 2000)	EC (DS142)
Steel	Feb 1999	DS162	US - 1916 Antidumping Act	Appellate Report Adopted (Sept 2000), compliance arbitration	EC (DS136)
Steel	Nov 1999	DS184	US - Hot-Rolled Steel	Appellate Report Adopted (Aug 2001)	None
Steel/horizontal	Dec 2000	DS217	US - Offset Act (Byrd Amendment)	Appellate Report Adopted (Jan 2003), compliance arbitration	Australia, Brazil, Chile, EC, India, Indonesia, Korea, Thailand
Steel	Jan 2002	DS244	US - Corrosion-Resistant Steel Sunset Review	Appellate Report Adopted (Jan 2004)	None
Steel	Mar 2002	DS249	US - Steel Safeguards	Appellate Report Adopted (Dec 2003)	EC (DS248) Korea (DS251) China (DS252) Switzerland (DS253) Norway (DS254) New Zealand(258) Brazil (DS259)
Ball bearings	Nov 2004	DS322	US - Zeroing (Japan)	Panel ruling, appeal in process	EC (DS294)

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- <sup>1</sup> 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).
- <sup>2</sup> George Downs, David Rocke, and Peter Barsoom, “Is the Good News about Compliance Good News about Cooperation?,” *International Organization* 50, no. 3 (1996).
- <sup>3</sup> Reports from 1998 on are available at <http://www.meti.go.jp/english/report/index.html>. 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.
- <sup>4</sup> 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).
- <sup>5</sup> 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).
- <sup>6</sup> Jefferey 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: Prentice Hall, 2003).
- <sup>7</sup> 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).
- <sup>8</sup> Brian Shaffer and Amy J. Hillman, “The Development of Business-Government Strategies by Diversified Firms,” *Strategic Management Journal* 21, no. 2 (2000).
- <sup>9</sup> 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).
- <sup>10</sup> 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).
- <sup>11</sup> I.M. Destler and John Odell, “Anti-Protection: Changing Forces in United States Trade Politics,” *Policy Analyses*

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in *International Economics* 21 (1987).

<sup>12</sup> 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).

<sup>13</sup> 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).

<sup>14</sup> Michael Gilligan, *Empowering Exporters: Reciprocity, Delegation, and Collective Action in American Trade Policy* (Ann Arbor: University of Michigan Press, 1997).

<sup>15</sup> John Odell, *Negotiating the World Economy* (Ithaca: Cornell University Press, 2000), 52-53.

<sup>16</sup> 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).

<sup>17</sup> Peter Rosendorff, "Stability and Rigidity: Politics and Design of the WTO's Dispute Settlement Procedure," *American Political Science Review* 99, no. 3 (2005).

<sup>18</sup> 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 Rocke, *Optimal Imperfection? Domestic Uncertainty and Institutions in International Relations* (Princeton: Princeton University Press, 1995).

<sup>19</sup> 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 (2007).

<sup>20</sup> Gregory Shaffer, *Defending Interests: Public-Private Partnerships in WTO Litigation* (Washington, D.C.: Brookings Institution Press, 2003).

<sup>21</sup> 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 US-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.

<sup>22</sup> e.g. Elhanan Helpman, Mark Melitz, and Stephen Yeaple, "Export Versus FDI with Heterogeneous Firms," *American Economic Review* 94, no. 1 (2004).

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- <sup>23</sup> Kenneth Oye, "Explaining Cooperation Under Anarchy: Hypotheses and Strategies," *World Politics* 38, no. 1 (1985).
- <sup>24</sup> Saadia Pekkanen, Mireya Solis, and Saori Katada, "Trading Gains for Control: International Trade Forums and Japanese Economic Diplomacy" *International Studies Quarterly* (forthcoming).
- <sup>25</sup> 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).
- <sup>26</sup> Ibid.; John Jackson, *The World Trading System*, (Ann Arbor: University of Michigan Press, 1999).
- <sup>27</sup> Bruce Blonigen and Chad Bown, "Anti-dumping and Retaliation Threats," *Journal of International Economics* 60 (2003); Marc Busch and Eric Reinhardt, "Does the WTO Matter? US Antidumping Investigations and the Rule of Law" (Paper presented at the annual meeting of the American Political Science Association, Washington D.C., 2005).
- <sup>28</sup> 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).
- <sup>29</sup> The cost and time figures were confirmed in interviews with top Washington D.C. 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 anti-dumping 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 a team of staff to support the case. Author telephone interview with Washington D.C. lawyer, Princeton, 22 September 2006.
- <sup>30</sup> Modeling both the supply of protection and decision to challenge would go beyond the scope of this paper. We instead rely upon data of observable protection to determine the conditions under which states challenge WTO inconsistent policies. Section 4.5 addresses the possibility of an endogenous process at the international level by which states decide whether to adopt a WTO inconsistent policy after conditioning on the likelihood of a challenge from a trade partner.
- <sup>31</sup> Grier et al. (fn. 10); Hansen and Mitchell (fn. 10); Hillman et al. (fn. 7).
- <sup>32</sup> Mancur J. Olson, *The Logic of Collective Action* (Cambridge: Harvard University Press, 1965).
- <sup>33</sup> Helen Milner, *Resisting Protectionism: Global Industries and the Politics of International Trade* (Princeton:



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Princeton University Press, 1988).

<sup>34</sup> 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.

<sup>35</sup> Richard A. D'Aveni, *Hypercompetition: Managing the Dynamics of Strategic Maneuvering* (New York: Free Press, 1994).

<sup>36</sup> Sunder Kekre and Kannan Srinivasan, "Broader Product Line: A Necessity to Achieve Success?," *Management Science* 36, no. 10 (1990); Haim Mendelsohn 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).

<sup>37</sup> Kathleen M. Eisenhardt and Shona Brown, "Time Pacing: Competing in Markets that Won't Stand Still," *Harvard Business Review* (March/April 1998).

<sup>38</sup> 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).

<sup>39</sup> Souza et al. (ft. 36)

<sup>40</sup> The number of actors may raise collective action costs for mobilization of firms in an industry, which would vary across industries. We take this into account in our empirical analysis and discussion below.

<sup>41</sup> A similar reluctance to litigate would be expected for the decision of whether to defend against anti-dumping petitions in domestic legal procedures. Although this is not the focus of analysis in this paper, a lawyer for a Washington D.C. law firm frequently involved in anti-dumping cases noted that electronics firms are less likely than steel firms to pursue litigation to defend against an anti-dumping petition. Author telephone interview with Washington D.C. lawyer, Princeton, 22 September 2006.

<sup>42</sup> Gary Becker, "A Theory of Competition among Pressure Groups for Political Influence," *Quarterly Journal of Economics* 98 (1983).

<sup>43</sup> Grossmann and Helpmann (fn. 4); Wendy Hansen and Jeffrey Drope, "Purchasing Protection? The Effect of Political Spending on U.S. Trade Policy," *Political Research Quarterly* 57, no. 1 (2004).

<sup>44</sup> Daniel Tarullo, "Paved with Good Intentions: The Dynamic Effects of WTO Review of Anti-Dumping Action," *World Trade Review* 2, no. 3 (2004).

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<sup>45</sup> Karen Alter, “Resolving or Exacerbating Disputes? The WTO’s New Dispute Resolution System,” *International Affairs* 79, no. 4 (2003).

<sup>46</sup> 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.

<sup>47</sup> 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.

<sup>48</sup> Office and telecom equipment, typical electronics industry products, comprised 14 percent of world merchandise exports in value in 2004. WTO International Trade Statistics 2005.

<sup>49</sup> Unlike the Japanese report, the U.S. report does not select cases on the basis of WTO consistency so some items included that are not potential WTO disputes.

<sup>50</sup> In an innovative study to generate potential disputes as a function of bilateral product-market pairings (PMPs) over \$1 million dollars, Horn et al. (1999) find that for the first four years of the WTO and 113 members for which trade data was available, there were over one hundred thousand PMPs relative to 146 WTO disputes filed. The US, EU, and Canada initiate more disputes than predicted by their trade interests model. Lack of effective representation is suggested as one reason why developing countries initiate relatively less disputes than their share of trade. See 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).

<sup>51</sup> Chalmers Johnson, *MITI and the Japanese Miracle* (Stanford: Stanford University Press, 1982).

<sup>52</sup> Kent Calder, *Strategic Capitalism* (Princeton: Princeton University Press, 1993).

<sup>53</sup> Saadia M. Pekkanen, “Aggressive Legalism: The Rules of the WTO and Japan’s Emerging Trade Strategy,” *The World Economy* 24, no. 5 (2001).

<sup>54</sup> Ellis Krauss and T.J. Pempel, *Beyond Bilateralism: U.S.-Japan Relations in the New Asia-Pacific*, eds. (Stanford: Stanford University Press, 2004).

<sup>55</sup> The Byrd amendment case (DS217) is counted here as a steel industry case. Although it related to horizontal policy issues relevant to other industries, it was primarily backed by the steel industry that has been the primary target of U.S. anti-dumping measures (Author interview with METI official, Tokyo, 22 August 2005). The anti-zeroing case (DS322) was also supported by the steel industry, but is not counted as steel because it was primarily related to the ball-bearing industry. The case against U.S. procurement policies was horizontal because it broadly affected several industries.

<sup>56</sup> Japan Tariff Association, data available at <http://www.stat.go.jp/english/data/chouki/18.htm>

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<sup>57</sup> Calculated from data on corporate donations in public filings. Note that we have only counted donations by firms and associations to the LDP that were over 1 million yen. 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. National Printing Bureau of Japan, *Kanpo* (Government Bulletin), <http://kanpou.npb.go.jp/> (accessed October 30, 2006).

<sup>58</sup> Author interviews with METI officials, Tokyo, 3 June 2003 and 23 August 2005.

<sup>59</sup> We omit cases related to primary goods, services, and horizontal cases that do not mention a specific industry.

<sup>60</sup> Japan's top 15 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.

<sup>61</sup> METI, data available at [http://www.meti.go.jp/policy/trade\\_policy/trade\\_db/html/f\\_y2003.html](http://www.meti.go.jp/policy/trade_policy/trade_db/html/f_y2003.html)

<sup>62</sup> JETRO and METI, *Kokusai keizai ruru ni kan suru kigyō anketto chiyosa* (*Survey of Corporations about International Economic Rules*) (Tokyo: February 2004).

<sup>63</sup> Data summarizing WTO disputes by agreement shows that the GATT is cited in nearly forty percent of complaints, followed by Anti-dumping and safeguard agreements which were referenced in 10 percent of cases (note that their 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). Data available at <http://www.worldtradelaw.net/>, (accessed October 30, 2006).

<sup>64</sup> 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.

<sup>65</sup> OECD STAN Indicators database.

<sup>66</sup> R&D has also been used as a measure of asset specificity (e.g. Alt et al. 1999), with high R&D representing high asset specificity. Since 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. 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. 35); 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. 36); Keith Smith, "Measuring

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Innovation,” in Jan Fagerberg, David C. Mowery, and Richard R. Nelson, eds., *The Oxford Handbook of Innovation* (Oxford: Oxford University Press, 2005).

<sup>67</sup> 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).

<sup>68</sup> Zvi Griliches, “Patent Statistics as Economic Indicators: A Survey,” *Journal of Economic Literature* 28, no. 4 (1990).

<sup>69</sup> OECD STAN Industry database (Vol 2005 release 4) (last accessed September 29, 2006). Current value figures adjusted to 2000 base year prices.

<sup>70</sup> OECD STAN Industry database.

<sup>71</sup> 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).

<sup>72</sup> 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).

<sup>73</sup> *Kanpo* (fn. 57).

<sup>74</sup> 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 Indicators Database.

<sup>75</sup> 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 Bayesian multinomial probit estimation of Imai and 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); “MNP: R Package for Fitting the Multinomial Probit Model,” *Journal of*

<sup>76</sup> The results are consistent when clustering standard errors for seventeen 2-digit ISIC industry categories, or when clustering standard errors for thirteen trade partners. The results are also consistent 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 Langche Zeng, "Logistic Regression in Rare Events Data," *Political Analysis* 9, no. 2 (2001).

<sup>77</sup> We used the software Clarify. See Michael Tomz, Jason Wittenberg, and Gary King, "CLARIFY: Software for Interpreting and Presenting Statistical Results, Version 2.1," (January 5, 2003) Stanford University, University of Wisconsin, and Harvard University. Available at <http://gking.harvard.edu>, (accessed June 1, 2005).

<sup>78</sup> *Keidanren* drafts a policy guideline, based on which 1662 member corporations make political contributions to political parties, mostly to the LDP.

<sup>79</sup> 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).

<sup>80</sup> Author interview with METI official, Tokyo, 23 August 2005.

<sup>81</sup> Japan has joined as a third party for two complaints against China that were initiated by the United States (DS 309 Value-added Tax on Integrated Circuits, filed in 2004) and by the United States, EU, and Canada (DS 339, 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, 17 August 2006.

<sup>82</sup> Eight of Japan's 11 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, since Japan prepares an independent legal case and represents itself in the WTO adjudication process.

<sup>83</sup> Omitted cases are expected to be few and of little significance. As discussed in section 4.3, the government

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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.

<sup>84</sup> Rosendorff (fn. 17)

<sup>85</sup> World Trade Analyzer dataset.

<sup>86</sup> Textiles and footwear 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 less trade barriers. It may also have less demand for WTO dispute resolution because the chemical industry has another forum option. Chemical industry trade issues are routinely addressed at the International Council of Chemical Association (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, 23 January 2004 and 23 February 2004.

<sup>87</sup> We categorize ISIC 30-33 as electronics.

<sup>88</sup> 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 by far used more (4263 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)

<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, 21 of the 134 companies that responded were electronics firms, out of which 95% suffer from IPR infringement. Other industries include machinery (35 respondents, 71% suffer from IPR infringement), chemical (27, 63%), automobile (8, 100%), and miscellaneous industrial goods (27, 78%).

<sup>89</sup> Diplomatic concerns with China have 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 WTO TRIPs Council and bilateral negotiations. Author interview with METI official, Tokyo, 13 January 2004.

<sup>90</sup> Author interviews with officials of Sony, Tokyo, 4 December 2003 and 25 January 2005; Author interview with officials of Matsushita, Tokyo, 28, November 2003.

<sup>91</sup> Author interview with Sharp official, Tokyo, 15 January 2004; Author interview with Ricoh official, Tokyo, 12 February 2004.

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<sup>92</sup> Author interview with Matsushita Electric official, Tokyo, 28 November 2003; Author interview of Mitsubishi Electric official, Tokyo, 21 January 2004.

<sup>93</sup> *Journal of Commerce*, January 15, 1999.

<sup>94</sup> 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.

<sup>95</sup> *Journal of Commerce*, March 4, 1999.

<sup>96</sup> Author interview with NEC officials, Tokyo, 10 March 2004. According to them, one of the reasons they wanted to take this case up to the Supreme Court is to defend the corporate reputation of not giving in to unfair trade practices.

<sup>97</sup> Author interview with NEC officials, Tokyo, 10 March 2004.

<sup>98</sup> Author interview with Hitachi official, Tokyo, 29 January 2004.

<sup>99</sup> Author interview with Sony official, Tokyo, 4 December 2003.

<sup>100</sup> Author interview with METI official, Tokyo, 23 August 2005.

<sup>101</sup> Author interview with NSC official, Tokyo, 13 January 2004.

<sup>102</sup> 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.

([http://www.mof.go.jp/english/fdi/2004a\\_3.htm](http://www.mof.go.jp/english/fdi/2004a_3.htm)).

<sup>103</sup> Process development or quality improvement of existing products is more important. (Author interview with NSC official, Tokyo, 29 October 2003).

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

<sup>105</sup> Author interview with NSC official, Tokyo, 29 October 2003.

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

<sup>107</sup> Author interview with NSC official, Tokyo, 13 January 2004.

<sup>108</sup> Author interview with NSC official, Tokyo, 29 October 2003. "United States - Definitive Safeguard Measures on Imports of Circular Welded Carbon Quality Line Pipe from Korea" (DSU202, 13 June 2000).

<sup>109</sup> Ibid.

<sup>110</sup> Before 2000, Toyota and Nissan shared the chairmanship. Author interview with JAMA official, Tokyo, 29

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October 2003.

<sup>111</sup> Yano Research Institute, *Market Share in Japan* (Tokyo: Yano Research Institute, 2005).

<sup>112</sup> The ratio of exports in domestic production for Toyota is 53%, Nissan 51% and Honda 41%. Data available at [http://www.jama.or.jp/stats/stats\\_news.html](http://www.jama.or.jp/stats/stats_news.html).

<sup>113</sup> Author interviews with officials of Nissan, Tokyo, 19 December 2003; Author interview with officials of Honda, Tokyo, 22 December 2003; Author interview with officials of Toyota, Tokyo, 20 February 2004. Industry officials said they chose bilateral venue over others, especially WTO adjudication, because of fear of direct retaliation from Chinese government and anticipation of Japanese government's reluctance to bring a case against China. In 2001, China imposed a 100% tariff on Japanese auto imports as retaliation after the Japanese government imposed safeguard measures on agricultural imports from China.

<sup>114</sup> *Nikkei Shimbun*, March 19, 2004. *Inside US-China Trade*, 11 February 2004.

<sup>115</sup> Author interview with JAMA official, Tokyo, 29 October 2003.

<sup>116</sup> Author interview with METI official, Tokyo, 3 June 2003; Author interview with Nissan official, Tokyo, 19 December 2003.

<sup>117</sup> Author interview of JAMA official, Tokyo, 29 October 2003; Author interview with METI official, Tokyo, 25 August 2005.

<sup>118</sup> Author interview with Toyota official, Tokyo, 16 January 2004.

<sup>119</sup> Thomas O. Bayard and Kimberly Ann Elliott, *Reciprocity and Retaliation in U.S. Trade Policy* (Washington, D.C.: Institute for International Economics, 1994).

<sup>120</sup> Leonard Schoppa, "The Social Context in Coercive International Bargaining," *International Organization* 53, no. 2 (1999).

<sup>121</sup> Author interview with officials of JAMA, Tokyo, 29 October 2003; Author interview with officials of Nissan, Tokyo, 19 December 2003; Author interview with officials of Toyota, Tokyo, 20 February 2004.

<sup>122</sup> 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).

<sup>123</sup> *Jidosha Shimbun*, May 1995.

<sup>124</sup> Author interview with officials of JAMA, Tokyo, 29 October 2003; Author interview with officials of Toyota, Tokyo, 20 February 2004.

<sup>125</sup> Author interview with Toyota official, Tokyo, 16 January 2004.



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<sup>126</sup> Davey (fn. 28).

<sup>127</sup> Economic and Social Research Institute, *Business Statistics*, <http://www.esri.cao.go.jp/jp/stat/> (accessed October 30, 2006).

<sup>128</sup> *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.

<sup>129</sup> Author interview with Nissan representative, Tokyo, 19 December 2003.

<sup>130</sup> Author interview with Toyota official, Tokyo, 16 January 2004.