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**The Financial Crisis, “New” Industrial Policy,
and the Bite of Multilateral Trade Rules**

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ABSTRACT

The recent Great Recession has triggered substantial government intervention—not all of it macroeconomic. This article presents evidence that the sectoral incidence and forms of government intervention appear to have changed from pre-crisis regularities. Once the commercial significance of a sector is taken into account, pre-crisis measures of trade policy intervention poorly predict the crisis-era sectoral incidence of discriminatory state measures imposed by Asian governments. Qualitative evidence focusing on three key countries in Asia—China, Japan, and South Korea—is also marshaled to sustain the contention that Asian governments have used the recent economic crisis to reinvigorate industrial policies, targeting apparent growth poles and apparently environmentally friendly technologies and sectors. Implications for the expansion of WTO rules and their effectiveness are discussed.

Key Words: financial crisis, WTO, trade rules, industrial policy, protectionism.

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1. Introduction

To cope with the current financial crisis, governments have used an array of fiscal and monetary measures to boost their economies. By many counts these efforts have helped to mitigate the ferocity of the current crisis, so avoiding an economic collapse on the magnitude witnessed during the 1930s Great Depression. During the latter the Federal Reserve failed to support commercial banks, leading 4000 to fail in the United States alone. Lack of deposit insurance led to consumer losses and an inadequate fiscal stimulus package delayed recovery until the onset of World War II. Meanwhile, the passage of the Smoot-Hawley bill in the U.S. led to higher tariffs and subsequent retaliation, leading to further contraction of world trade, and reinforcing the downward spiral that became the Great Depression.

The response to the current financial crisis has been very different. In the U.S., the Federal Reserve has supported commercial banks and bond insurance companies, and the administration launched a major fiscal stimulus package. Similar programs to help economies in trouble have been developed throughout the world, with particularly aggressive actions by countries in Asia, such as China. Most significantly, there has not been a dramatic turn toward significantly higher across-the-board tariffs (Evenett 2010).

It might be a mistake, however, to regard crisis-era government actions as entirely reactive to adverse macroeconomic and financial sector circumstances. Could it be that countries are using the financial crisis as an opportunity to promote some type of "new industrial policy" to privilege their own firms? Or has the cross-sectoral pattern of discriminatory state intervention remained unchanged? As Richard Baldwin and Simon Evenett have argued, in addition to some higher of

tariffs and resort to unfair trade actions and safeguards that often accompany economic downturns, governments have actively used subsidies and bailouts to help favored firms, export incentives, buy national provisions, and “green policies” to boost their domestic economies—often in a less-than-transparent, discriminatory manner. Such is the state of WTO rules in these areas that much recent protectionism may not be breaking any multilateral trade obligations.

At this relatively early stage, any examination of the matter of discriminatory state intervention during the crisis will run into serious data-related constraints. For this reason, we complement the statistical analysis in this article and its suggestive findings with three sectoral case studies. We urge readers to consider the evidence *in toto*. Future researchers will have the benefit of greater data availability, helping to sharpen both qualitative and quantitative analyses, and maybe ultimately confounding our findings. Still, the desire to learn what we can now about the underlying factors determining state behavior during the recent global economic crisis, as well as the systemic implications for the multilateral trading system, provides the rationale for doing the best we can with the evidence that is available.

This article is organized as follows. Section II analyzes measures of crisis-era state discrimination against foreign commercial interests in the Asia-Pacific region and elsewhere, drawing upon the Global Trade Alert dataset. The objective of the empirical analysis is to examine if indicators of pre-crisis intervention can account for the cross-sectoral variation in crisis-era government intervention that discriminates against foreign commercial interests. Can the null hypothesis—that there has been no shift in the pattern of intervention from the pre-crisis period to the crisis period—be rejected? If so, the question arises as to whether crisis-era intervention is motivated by other factors and, if so, what are they?

In Section III, we present mini-case studies of intervention efforts to shed more light on the factors the driving forces behind discriminatory state intervention in three Asian countries—China, Japan, and South Korea. This section also considers the question of how best to characterize the impact of WTO rules during the crisis—as a brake on protectionist pressures or as a device for channeling protectionism to policy instruments subject to relatively less stringent binding multilateral rules. Section IV concludes.

2. The Sectoral Incidence of Crisis-Era Discrimination: Business as Usual?

2.1. Relationship to the literature on industrial policy

The scope and efficacy of industrial policy has long been the subject of contentious debate. Marcus Noland and Howard Pack (2003) define industrial policy as “an effort by a government to alter the sectoral structure of production toward sectors it believes offers greater prospects for accelerated growth” (p. 10). They note that while the governments of Japan, Korea, and Taiwan nurtured and protected nascent industries, two other successful strategies were implemented in Asia: Hong Kong’s laissez-faire approach and Singapore’s FDI-based strategy (p. 12-13). While all three strategies produced vibrant economic results, the current academic literature contends that the blind utilization of industrial policy only marginally improves economic performance.¹ For some, industrial policy has been rationalized as a way to remedy the problems created by market distortions and incomplete information.

In considering state efforts to pursue industrial policy in the financial crisis, it is worth noting that the literature on industrial policy has identified key variables that increase the propensity and affect the ability of states to intervene in favor of their firms. Following standard macroeconomic theory, exchange rate changes will affect

the overall competitiveness of a country's firms. For example, the recent debate over China's exchange rate misalignment (and similar debates over Germany and Japan's unwillingness to revalue their currencies in the 1960s) has fostered protectionist pressures in the U.S. (Aggarwal, 2007).² Although such protectionist pressures were growing prior to the financial crisis, dramatic problems in many sectors (autos, electronics, etc.) have led U.S. policymakers in the U.S. to call for a variety of measures to counter Chinese competitiveness (Barfield, 2009). Yet the ability of countries to successfully pursue industrial policy is tied to the capacity of the state as well as the pressures it faces from societal groups. This line of inquiry has long been a mainstay of comparative political economy (on Europe, Katzenstein, 1978 and on Asia, Deyo, 1987).

2.2 Hypotheses on the cross-sectoral incidence of discriminatory intervention

Rather than join the scholarly debate on the efficacy of industrial policy, our focus is confined to establishing whether the recent global economic crisis has altered the pressures for discrimination against foreign commercial interests by *altering the cross-sectoral incidence of intervention*. Surely, if the latter follows the pre-crisis pattern of discriminatory intervention, then talk of a "new industrial policy" is misplaced. Perhaps, instead, the crisis has altered the relative strength of different commercial interests and their political backers. In this case, the pre-crisis incidence of government favoritism might well differ from its crisis-era counterpart. Governments' hands, however, are not entirely free. WTO and regional trade accords include commitments to do and, more importantly, not to do certain things. Thus, these binding obligations may alter the form of as well as the quantum of state

intervention. It is in this context that the suspicion that this current crisis has created "murky protectionism" is important, because it forces any evaluation of discriminatory state action to go beyond transparent state interventions, such as tariff increases. Our choice of dataset reflects this fundamental point, but comes at a price, both of which are explained below.

2.3 Choice of dataset and challenges arising

To more systematically analyze trends in government intervention, we make extensive use of the Global Trade Alert (GTA) database, which at the time of our first foray into exploring this question consisted of nearly 800 investigations of state measures that had been announced or implemented after the first crisis-related G20 summit in November 2008 (Aggarwal & Evenett 2008). This publicly available dataset goes well beyond rivals in terms of coverage of countries, policy instruments, and other information.³

Each investigation report identifies the trading jurisdiction responsible for the announcement or implementation of the measure, a description of the measure (plus sources), and an evaluation as to whether the measure introduces, eliminates, increases, narrows, or otherwise changes any asymmetric treatment between domestic and foreign commercial interests. A traffic light system is used to distinguish between measures that do not change or improve the relative treatment of foreign commercial interests, that might disadvantage foreign commercial interests, and that almost certainly discriminate against foreign commercial interests.⁴ The latter cases are the most worrying from the point of view of monitoring protectionism during the Great Recession.

In addition, each investigation of a state measure in Global Trade Alert identifies those economic sectors that are likely to be affected by a state measure. Details about a state initiative that are in the public domain are sought to identify the sectors affected. This assessment is conducted in a conservative manner. Indeed, if anything, there may be a tendency to under-report the number of affected sectors. The United Nations' CPC scheme for classifying economic activities (both goods and services) into sectors is employed. The Global Trade Alert website's statistics page⁵ enables users to view and download the latest data on the sectoral incidence of different state measures undertaken during the current crisis. As the website is updated, so are the reported statistics. Users can, therefore, reproduce or amend the calculations reported below.

In previous work (Aggarwal & Evenett, 2009) we demonstrated that for the period November 2008 to September 2009 the state measures implemented that discriminated against foreign commercial interests were highly skewed: sixty percent of the interventions affected only 20 CPC sectors. Moreover, the future pipeline of (then) announced but not implemented state measures were also concentrated in those sectors. Furthermore, worldwide aggregates revealed that many of the "traditional" sectoral recipients of protectionism turned out to be the very sectors where discrimination happened most often during the global economic downturn of 2008 and 2009. We reckoned these findings cast doubt on claims—made by some political leaders and supported by some analysts and interest groups—that crisis-era assistance to firms was being targeted towards new growth poles, such as so-called green sectors, but didn't test this proposition statistically.

By March 2010 the Global Trade Alert team had completed 350 more investigations of state measures. With more data we returned to our original theme, but took a more sophisticated approach.⁶ Here our starting point is to take the null hypothesis of "business as usual," at least as far as the determinants of protectionism⁷ are concerned *before and during* the recent global economic crisis. The business as usual hypothesis argument runs as follows: the lobbyists and promoters of a given sector took advantage of the recent global economic downturn to extract more support from governments, irrespective of the degree of harm done during the downturn to a given sector. Alternatively, the same lobbyists and promoters were able to recast proposals for greater support for their sectors in terms of whatever rhetoric or goals policymakers claimed they were pursuing with crisis-response measures. The crisis, then, provided a rent-seeking opportunity for prepared and established lobbies. On this view, measurable, objective pre-crisis indicators of high or pervasive trade barriers should account for the variation in crisis-era incidence of discrimination. In the absence of any data measurement issues, one would expect a measure of fit of a regression of indicators of post-crisis variation on pre-crisis variation to be very high, and certainly statistically significantly different from zero.

So far so good. But like many econometric projects, problems arise with implementation. The best dataset for examining crisis-era state discrimination does not extend back into the pre-crisis era. Moreover, the available pre-crisis era measures of discriminatory public policy tend to be the more transparent ones and are not yet available for 2009. So one is left with predicting the one measure of the sectoral distribution of crisis-era discrimination with various, quite different measures of pre-crisis discrimination. Worries about measurement errors, in particular

measurement errors associated with the size of each sector, compound our concerns. Indeed, one might be concerned that the signal (pre-crisis discrimination) might be overcome by noise (measurement error) and so the power of the former to explain crisis-era discrimination may be limited. Therefore, there may be two rationales for a low R^2 in the regressions estimating the sectoral distribution of crisis-era discrimination.

One drawback in our choice of indicators of pre-crisis trade protection is that by definition they only apply to tradable goods, effectively restricting our analysis to 38 of the first 50 of the UN's CPC sectors. Comparable aggregate measures of protection in the services sectors have been notoriously hard to construct.⁸ Still, total international trade in these 38 sectors accounts for the overwhelming majority of world trade. Moreover, manufacturing sectors are definitely within the scope of our analysis and in many countries these sectors are often the focus of national industrial policies.

The focus of this article on the Asia-Pacific region led us to collect information on the total number of likely and almost certainly discriminatory measures implemented by Asian Pacific governments on each (38 two-digit CPC) tradable goods sectors.⁹ The mean number of discriminatory measures per sector introduced since 1 November 2008 in the Asia-Pacific region was 6.3 and the median 5.0, indicating some skewness (see Table 1). In the statistical analyses that follow the values of the dependent variable will be constructed using this data on crisis-era sectoral incidence of discrimination.

Table 1: Summary statistics of the Asia-Pacific and other samples.

Variable	Asia Pacific Sample	Non-Asia Pacific Sample
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	Mean	Median	Standard deviation	Mean	Median	Standard Deviation
Number of discriminatory measures implemented in a sector, Nov 2008-Mar 2010	6.3	5.0	5.1	15.2	16.5	10.3
Mean US tariff applied in sector, 2007	2.5	1.7	3.1	2.5	1.7	3.1
Maximum Tariff applied in Sector, 2007	9.0	8.7	5.8	9.0	8.7	5.8
Global total number of AD cases in sector, 2000-7	51.3	19.0	109.5	51.3	19.0	109.5
Sector's share of world merchandise trade	0.082	0.014	0.030	0.084	0.020	0.026

N=38 in all cases.

The Asia-Pacific sample used in this article, then, includes 38 observations, one for each tradable goods sector. For comparative purposes, another sample was constructed for all of the other countries outside of the Asia Pacific region (the so-called Non-Asia Pacific or Non A-P sample consisting of 185 jurisdictions). Table 1 reveals that the mean number of discriminatory measures implemented per sector in the Non-Asia Pacific sample is more than three times as large as that in the Asia-Pacific region, consistent with the more than triple number of cases in the former.

It is also worth noting that although data is collected by 2-digit CPC sector. This does not imply that the amount of international commerce associated with each CPC sector is the same. Indeed, some sectors may involve far more international trade than others—a fact confirmed when we checked the *UN COMTRADE*

database for 2007, the last pre-crisis year. This is important because the coverage given by the press and by official bodies to different sectors may vary and the information available on discriminatory state measures in the GTA database¹⁰ may be noisier for larger sectors. In the Asia-Pacific sample, the share of total exports and imports of the 49 jurisdictions in that region varies across sectors from less than 0.1 percent to 15.2 percent (CPC sector 47). Similar variation was found in the non-Asia Pacific sample.) These computed shares of total exports will be used later as weights in a regression to correct for the heteroskedacity created by the measurement error.)

Next, on a sector-by-sector basis, we constructed indicators of the overall level of trade protection for the two samples of countries before the recent global economic downturn set in. Because there is no uncontested summary statistic available to do this, we constructed three measures and let the data (through regression tools) determine their ability to account for crisis-era discrimination. The first indicator taken was the mean sectoral *ad valorem* tariff rate charged by the United States. To the extent that the United States was a Stackelberg leader in previously-concluded multilateral tariff negotiations, other nations' tariff rates in a given sector should be a positive function of the US tariff rate. If this is the case, the U.S. tariff rate should be a good instrument for every other nation's tariff rate in a given sector.¹¹ Sectors where the U.S. tariff rate is high are likely to be sectors where other nations' tariff rates are high, reflecting an unwillingness of the governments of the latter nations to cut tariffs in sectors where the US is not willing to cut its tariff rate. This measure, therefore, picks up the influence of multilateral reciprocity on the cross-sectoral variation of pre-crisis trade barriers.

The second indicator is slightly different and attempts to take *some* account of non-tariff barriers. Suppose, in a given sector, each government can set both tariff and non-tariff barriers and that firms in all countries are savvy enough to determine the combined effects of each nation's trade barriers in a given sector. Assume further that governments will acquiesce to the trade policies of others if, in any given sector, for each major jurisdiction the sum of the average applied tariff rate and the tariff-equivalent of the non-tariff barriers is roughly equal. In this case, the best approximation for the sum of the tariff-equivalent of the trade policies in a sector is the value of applied tariff in that jurisdiction with the highest applied tariff rate. For the purposes of this article the major jurisdictions were taken to be the United States, Canada, China, Korea, Japan, and the European Union. Therefore, for each sector we identified the major jurisdiction with the largest applied average tariff rate and took that as our second indicator of sectoral trade policy stance. (As will become clear later, the improvement in explanatory power when moving from our first to our second indicator of trade policy stance is striking and could well imply that this proxy could be usefully employed in other empirical studies of trade policy formation.)

We turned to more discretionary forms of trade policy to construct our third measure of pre-crisis trade policy stance. For each sector and for the pre-crisis years 2000 to 2007, we calculated the total number of antidumping actions implemented in that sector and reported to the WTO. Antidumping remains by far the most used form of contingent protection. Securing antidumping protection typically requires considerable interaction between a government and intermediaries (including lobbyists) of a firm or sector. Other governments may be tempted to retaliate to antidumping actions taken elsewhere—and the retaliation need not take the form of another antidumping investigation. The mean number of antidumping cases per

sector is 51.3 (see Table 1), two and a half times the median number, suggesting that the application of antidumping is very skewed. This property seems to be shared by our first indicator of trade policy stance (the mean US tariff rate in a sector) but not by our second indicator.

Before conducting a formal statistical analysis, it may be of interest to examine the simple correlations between each of the three measures of pre-crisis trade policy stance and the measure of crisis-era sectoral discrimination. Three simple correlation coefficients are reported for each sample in Table 2. All six correlation coefficients are positive, as plots of the relevant variables also revealed. This finding is not inconsistent with the business as usual hypothesis, yet readers may wish to defer judgment until the contribution of measurement error is taken into account.

2.4 Formal statistical analysis: towards a negative result

Turning now to the more formal statistical analysis, it would be wrong to imply that we are testing a structural relationship between crisis-era discrimination and pre-crisis trade policy stance. As a result, we examined the degree to which different permutations of the latter might account for the former, while at the same time controlling for measurement error (using, as noted above, each sector's share of world exports.) Given the fact that the first tariff measure is used in part to compute

Table 2: Simple correlation coefficients of unweighted data.

Correlation of below with	Asia Pacific Sample	Non-Asia Pacific Sample
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below with...	Mean US tariff applied in sector, 2007	Maximum Tariff applied in Sector, 2007	Global total number of AD cases in sector, 2000-7	Mean US tariff applied in sector, 2007	Maximum Tariff applied in Sector, 2007	Global total number of AD cases in sector, 2000-7
Number of discriminatory measures implemented in a sector, Nov 2008-Mar 2010	0.39	0.38	0.65	0.37	0.54	0.31

N=38 in all cases.

the second tariff measure, we tended to regard these two measures as substitute independent variables. Therefore, we tended to include their tariff measures on their own or in combination with the third (antidumping-related) measure of trade policy stance (see regressions 1-5 of Table 3 for the Asia-Pacific sample). Moreover, to take account of the fact that the sectors differed in economic importance we weighted each sectoral observation first by its share in total world imports and exports. Finally, a logarithmic transformation of each variable was taken so as to scale each variable.¹²

The top panel in Table 3 reports the regression results when weighted least squares estimation methods are used to estimate the underlying parameters. Readers will recall that the WLS method will minimize the sum of squared residuals of the weighted data, but not necessarily the unweighted data that is used to calculate the measures of fit (R^2). As a result, it is possible for the R^2 computed using the original unweighted data *and* with the parameter estimates recovered using WLS to be less than zero. When this happens it implies that the WLS parameter estimates have done a worse job than had the estimated parameters all been zero and therefore accounted for none of the variation in the dependent variable. Ordinarily, a $R^2 < 0$ would indicate a degenerate outcome; here they imply that any positive "signal"

of the pre-crisis trade policy stance is drowned out by the "noise" of measurement error in accounting for the cross-sectoral variation in crisis-era discrimination.

With respect to the Asia-Pacific sample, the measures of fit improves consistently as one moves from regression 1 to 5 (see Table 3), suggesting there is some informational content in the pre-crisis measures. At its best, however, the inclusion of the maximum applied tariff rate and the indicator for antidumping incidence account for just over 13 percent of the post-crisis sectoral incidence of discrimination. This finding suggests that something else is driving government

Table 3: To what extent does the pattern of pre-crisis of protectionism predict the sectoral incidence of crisis-era discrimination? Parameter estimates from the Asia-Pacific (A-P) and other sample (Not A-P).

Weighting scheme	Sample → Variable ↓	Regression number						
		1	2	3	4	5	6	7
		A-P	A-P	A-P	A-P	A-P	Not A-P	Not A-P
Sectoral share of world trade	ln(1+US tariff)	44.864 (0.006)			8.400 (0.244)			
	ln(1+max tariff)		24.699 (0.000)			10.068 (0.002)	35.165 (0.000)	25.042 (0.000)
	ln(1+global AD cases)			.468 (0.000)	.441 (0.000)	.319 (0.000)		0.280 (0.000)
	R-squared	-2.444	-1.571	-0.746	-0.362	0.131	-2.354	-0.624
Square root of sectoral share of	ln(1+US tariff)	22.491 (0.011)			7.407 (0.182)			
	ln(1+max tariff)		18.895 (0.000)			8.388 (0.007)	27.626 (0.000)	16.935 (0.000)

	ln(1+global AD cases)			.404 (0.000)	.380 (0.000)	.303 (0.000)		.349 (0.000)
	R-squared	-2.063	-0.469	-0.745	-0.377	0.160	-0.781	0.265

Notes:

1. Parameter estimated using weighted least squares is reported vertically above its p-value, which in turn is reported in brackets.

2. The R-squared calculations in this table were undertaken with the original, unweighted dependent and independent variables. As a result, given the parameter estimates were recovered from an algorithm that minimized the sum of squared residuals of the weighted data, R-squared calculations computed with the unweighted data need not lie in the traditional [0, 1] interval. Still, higher R-squared calculations are associated with better fit.

intervention or the pervasiveness of measurement error. Matters are no better in the non-Asia Pacific sample, suggesting that the former findings are not region-specific.

One objection could be that the choice of weights is arbitrary—even if weighting by some notion of a sector's trade-related importance is appealing. We tried using the square root of a sector's share in world trade (a transformation that would reduce the number of weights close to zero) and re-estimated the parameters (see the bottom panel of Table 3). The pattern of results is same as before. Now, however, the pre-crisis measures of trade policy stance can account for a sixth of the crisis-era discrimination in the Asia-Pacific region and just over a quarter of such variation in the non-Asia Pacific region.

The evidence presented in this section amounts to a negative result. The pre-crisis measures of trade policy stance employed here cannot account for much—let alone all—all of the sectoral incidence of crisis-era protectionism. There is clearly some "signal" contained in the pre-crisis measures, but not much. Measurement error no doubt accounts for some of the failure, but can we attribute all of the shortfall from $R^2=1$ to measurement error? On the basis of these results, we cannot

rule out that crisis-era discriminatory intervention appears to have been motivated by other considerations, including potentially the desire to promote new growth poles as well as environmentally friendly or supportive technologies (so-called green industries.)

One objection to this result is to argue that the unweighted variables were highly correlated and, therefore, the perceived failure of the "business as usual" hypothesis is primarily due to way in which measurement error is treated. Even if the unweighted regressions were taken at face value (that is, the measurement error is ignored), they imply that the combined explanatory power of the pre-crisis trade policy measures is at most 54.3% and 57.4% of the crisis-era discrimination in the A-P and Non A-P samples, respectively.¹³ Between 40% and 45%, then, of the crisis-era discrimination remains unexplained, suggesting again that other factors are at work.

Another suggestion might be to collect information on variables that correlate with crisis-era motives for discrimination but that are not related to pre-crisis rationales for such intervention. The high profile in recent years given to so-called green industries is, at first cut, a promising opportunity—until one realizes that almost every sector has been said to produce goods that are "environmentally friendly." Objective classification, then, becomes difficult. Still, future researchers may be more creative than us in this regard.

It could also be the case that many of the sectors that received trade protection before the Great Recession also benefited from lots of discrimination during the crisis (as Aggarwal & Evenett 2009 found) but that the considerations influencing state discrimination changed. It is for these reasons that we took a broader view of the motives, sources, and forms of state discrimination and

intervention, collecting qualitative evidence to shed light on the suggestions raised in this section. The next section describes state interventions in a number of sectors that appear not to have been motivated by purely defensive trade policy considerations.

3. Case Studies of Industrial Intervention in the Financial Crisis

We turn now to an analysis of examples of intervention in three major countries in Asia: China, Japan, and S. Korea. Our objective is to explore the dynamics of state intervention in one specific sector in each of these countries to provide an in-depth analysis of the types of measures that have been used to supplement our aggregate statistical analysis. Of course, an ideal case analysis would consider intervention in each of these countries across all sectors (as well as other countries in Asia), both before and after the financial crisis to assess the changes we have seen across sectors and with respect to intervention mechanisms. In view of space limitations, and given the theme of this article, we chose instead to provide an in-depth analysis of one sector in each country where there has been effort to promote what is seen as a “growth pole” in an illustrative effort—rather than decisive testing of our proposition that government intervention is increasing with the financial crisis. Following this logic, we look at wind turbines in China (a relatively new industry where the Chinese have intervened to help the industry previously), and the cases of autos in Japan and Korea (older industries where “green” autos are being promoted). In each case, we focus on economic trends in the industry, the types of government intervention measures and the apparent motivation for this action (government or firm-led), and finally briefly consider their consistency with WTO rules and implications.

3.1 China: Wind Turbines as a Strategic Industry

Faced with increasing pressure to curb greenhouse gas emission and a growing need for energy, the wind turbine industry is seen together with other green industries as crucial for China. Global capacity has been rising rapidly, according to the Global Wind Energy Council (2010) with total wind production capacity worldwide of 157.9 gigawatts (GW) at the end of 2009, of which China accounted for 25.1 GW (after Germany at 25.8 GW and the U.S. at 35.2 GW). China's growth has been particularly dramatic, rising by 100% from only 12.1 GW at the end of 2008. By 2020 China aims to have between 135 to 150 GW of wind generation capacity. A recent Harvard-Tsinghua University study argued that China could meet all of its electricity demands by 2030 through the use of windpower (Fairley, 2009).

In terms of industry players, the number of domestic producers has risen from only six in 2004 to over 70 by 2009, and China became the number one world producers of wind turbines (Bradsher, 2010). At the same time, prices have fallen rapidly, dropping in 2009 from the beginning to the end of the year from a per kilowatt price for a 1.5 megawatt turbine from \$879 to \$732, and profit margins have fallen, dropping from 25 to 30% on average to only 10% (HK Trade Development Council, 2009 & UPI 2010). Still, the drop in metal prices during the financial crisis helped lower costs by 10% (China Energy Newswire, 2008). Meanwhile, foreign producers have dramatically lost market share from 79% of the market in 2004 to less than 49 percent in 2008 and to 17% at the end of the first half of 2009 (Zhe, 2009).

China has been devoting unprecedented resources to develop renewable energy sources like solar power and wind turbines. Of the ¥4 trillion (\$586 billion) economic stimulus package that the government released in response to the global

financial crisis, ¥210 billion (\$31 billion) was devoted to energy-saving and carbon-reduction projects. And in June 2009 a Chinese government official announced that the government would invest \$14.6 billion to more than double its wind capacity from 2008 to 2010 (Liu, 2009).

In December 2009, the National People's Congress passed new legislation that, as an amendment to the 2006 renewable-energy law, forces state-owned power grid companies to buy up all the electricity produced from renewable sources even though it might be more expensive than electricity produced from coal (Oster, 2009). This is part of China's ambitious plan to produce 15% of its energy from renewable resources by 2020.

Although China's installation of wind turbines to generate electricity is experiencing extraordinary growth, the Chinese government's determination to promote domestic wind turbine producers makes the Chinese market a hostile place for foreign producers. Sixty-five percent of China's expanded wind power market is made up of "national-level concession projects" that are snatched up by domestic producers, leaving only the 35 percent of the market for foreign firms to compete in. India's Suzlon Energy Chief Executive for China notes that no turbine suppliers from international companies established in China has been selected for these projects. The Chinese government often argues that the prices charged by foreign firms are too high. But foreign firms are frustrated that the price expected by the government is so low that their wind turbines can only meet capacity targets at the expense of quality and performance.

Domestic turbines produced by firms such as Shenzhen-listed Goldwind are indeed cheaper, but are far below international quality standards. Furthermore, foreign firms have a hard time keeping up with regulatory changes. Other regulations

that work against foreign firms include the government ban of any turbines with a capacity less than 1 MW—the most common size of their turbines. While foreign turbines with capacity of 850 KW are only 10-15% more expensive than Chinese ones, that difference jumps to 30% for turbines with a capacity of 2MW (Geoghegan, 2009).

In 2009, foreign wind turbine manufacturers bid on a package of 25 wind turbines for a combined cost of \$7 billion. Despite foreign companies having met Chinese domestic content regulations that 70% of components for wind turbines must come from China (Geoghegan, 2009), no foreign company was awarded the contract and all were disqualified on "technical grounds" (Bradsher, 2009). Joerg Wuttke, the president of the EU Chamber of Commerce in China noted, "It seems that the central government has decided that this must be awarded to Chinese manufacturers and not foreigners who have invested big in China" (Zhong, 2009).

The Chinese government required that, by the end of 2009, renewable energy must account for at least 3% of the generating capacity of a large power company (excluding hydroelectric power). But it does not specify how much power is actually generated from that capacity, giving companies the incentive to buy the cheapest possible wind turbines that leave foreign producers at a disadvantage. Financial regulations also make it difficult for foreign-owned wind farms to borrow money or to sell carbon credits (Bradsher, 2009).

Meanwhile, the government offers research subsidies to Chinese wind turbine firms. Producers can receive a payout of ¥600 (an 8.8% subsidy per KW) for the first 50 units they produce of any new turbine with a capacity over 1MW. Only turbine makers with a majority Chinese ownership are eligible for this subsidy (China Energy Newswire, 2008).

In 2005, the National Development and Reform Commission (NDRC) introduced a cap that required Chinese wind farms to source at least 70% of turbine parts from domestic producers. As a result, the market share of foreign turbine firms dropped from 75% in 2005 to only 20% in 2008. However, this regulation has recently been scrapped in government promoted efforts to secure more advanced technology to meet its ambitious clean energy targets.

The success of the Chinese domestic turbine industry has led to foreign forays. In October 2009, a Chinese-U.S. consortium announced that China would invest 49% of a \$15 billion project to build wind turbines in Texas (Balfour, 2009). Two hundred and forty of those turbines are to be produced by A-Power Energy Generation Systems based in Shenyang, China. Some American responded with disapproval that the project partially funded by American government stimulus was ironically accompanied by a loss of domestic jobs.

The extent of lobbying by firms in China is hard to gauge, but the activist role of the government and the top down nature of industrial policy seems evident. In November 2009, the NDRC decided to designate the wind power equipment market as being subject to "overcapacity macro control and guidance" because of the rapid influx of new players into the industry (HKTDC, 2009). It also expressed concern that too much of the technology used by Chinese producers was imported and pressured firms to develop domestic technology.

Despite criticism of its government-led policies to promote its domestic wind turbine industry, China has continued to maintain a WTO consistent policy—but only because it has refused to sign the Government Procurement Agreement in the WTO. At the time of its accession to the WTO in 2001, China had agreed to sign the agreement "as soon as possible" (Bradsher, 2009). And despite having agreed to

treat American firms on par with Chinese firms in the U.S.-China Strategic and Economic Dialogue held in Washington, D.C. in July 28, 2009, in November 2009 China explicitly announced that it would give preferences to domestic firms in six areas including computers, clean power, communication, office equipment, software and energy-efficient products (Business Week, 2010).

3.2 Japan's Auto Industry: Bolstering Green Cars

The 2008 financial crisis severely impacted Japan's auto industry in early 2009, not only due to the sharp fall in demand for in the US market (Japan's largest market), but also challenges within the internal domestic Japanese market (The Detroit News, 2009). In Japan, auto sales fell from 5.35 million in 2007, to 5.08 million in 2008, and dropped further to 4.61 million in 2009 (Japan Autos Report, 2010). Auto sales have been recovering since September 2009 as the stimulus measures to boost sales kicked in. This fall in domestic sales of 14% was considerably less dramatic than the fall in exports of Japanese vehicles by 49% from January to November 2009. With respect to imports, sales fell from 265,086 in 2007 to only 198,828, a decline of 25%.

Responding to active lobbying by major auto companies for government support, the Japanese government undertook significant efforts to boost the domestic automobile industry. The Japan Automobile Manufacturers Association (JAMA) asked for a "review of tax rates", and requested the government to ease the financial burden on automobile owners by cutting taxes in 2008 (Nakata, 2008). In 2009, JAMA further proposed a tax incentive in which consumers are paid to scrap older, less fuel-efficient vehicles (Edmund's Auto Observer, 2009). Firms in the domestic auto industry, including Toyota, also intensely lobbied lawmakers representing the interests of the industry inside METI (Ministry of Economy, Trade

and Industry) and the ruling parties for a tax cut for the automobile industry (Bingo, 2009).

The Japanese government took the reins in implemented "green" measures to boost the domestic automobile industry via two distinct programs: a preferential tax cut program for "green" vehicles, for which few foreign cars are eligible; and a Japanese version of America's 'cash for clunkers' program to trade in old cars for newer ones with strict fuel and mileage standards, which excluded a majority of foreign cars.

Under the 2009 tax reform bill, Japan passed a bill detailing a preferential tax system (Global Trade Alert, 2009), which reduces the vehicle excise tax and vehicle weight tax imposed on eco-friendly cars. Made official on March 31, 2009, the green tax incentive temporarily waives the entire automobile weight tax for people buying hybrid and electric cars, and also provides tax reductions of 50 to 75% for other types of environmentally friendly cars that meet Japanese emission and mileage standards.

Although about 40% of Japanese cars qualified for the tax reduction, few imported cars met the low-emission standard, and hence have been unable to benefit from the new system. This is partially because cars are manufactured in accordance with the environmental standards of the countries where they are manufactured. In Japan, where cars mostly tend to be driven in urban areas, there are stricter limitations for particulates and nitrogen oxides, but standards of European countries where cars tend to be driven around widely dispersed urban areas have stricter limitations for CO₂. In order to meet Japanese emission requirements, foreign cars would have to undergo cumbersome technical adjustment, which many companies are reluctant to adopt.

After the U.S. introduced its "cash for clunker" program, which allows car owners to trade in vehicles older than 13 years old for new, fuel-efficient models, Japan rolled out a similar incentive scheme in late 2009, allowing consumers to receive credits of up to \$2,800. However, Japan's program includes strict mileage rules that necessitate the 2010 fuel economy standard of 35.5 mpg (Niedermeyer, 2009). It also excluded imported vehicles from companies that have low sales in Japan. In practice this meant that fewer than 40 percent of foreign cars were eligible for the program, in contrast to 87 percent of domestic cars. In fact, U.S. cars were at first completely ineligible as they were placed under a special volume permit (for low volume imports) that did not require standardized Japanese testing of fuel standards. As Volkswagen Japan President Gerry Dorizas noted, it is a "non-tariff barrier that the government has put in," especially as Japan's fuel economy standards are based on an arcane testing method that critics say hardly resembles real-life driving (Reuters, June 2009).

In addition to the green tax and cash for clunker program, a few local governments appear to be implementing "Buy Local" policies at the provincial level to encourage purchases of some local products, including cars (Global Trade Alert, 2009). This comes on top of a complicated system of nine different taxes already levied on Japanese car owners, which can be 50% higher than in Germany and more than 200% of that in the US (Reuters, June 2009), thus further discouraging foreign carmakers from competing in the Japanese market.

As a result of the new preferential green government initiatives, Japanese automakers such as Nissan Motor Co. reported an increase of up to 30% in orders for eco-friendly cars, while Toyota Motor Corp, reported overall domestic vehicle orders growth of 20 percent in April 2009. In stark contrast, sales of foreign-branded

passenger cars went *down* by 30% from April to June 2009. This trend led to complaints from foreign carmakers, with one representative exclaiming that the government did not put into place "a general car tax cut, but one specially intended for Toyota!" (Bingo, 2009).

The Japanese cash-for-clunker program also received criticism, with U.S. automakers stating that it "overwhelmingly benefits the purchase of domestic vehicles over imported ones by making the vast majority of imports ineligible for the program"—especially as US cars were completely ineligible. Having come under major political fire and multiple complaints from U.S. officials, the Japanese government allowed American-brand cars to participate in the government's "cash for clunkers" plan (Reuters, Jan 2009). However, the Japanese concession is mostly symbolic—American brands General Motors, Ford and Chrysler export only about 2,000 vehicles a year to Japan (Carty, 2010), and less than 40% of American cars are eligible under the program's mileage standards. The U.S. government has continued to press the Japanese government on including more U.S. cars in Japan's program of subsidies for eco cars (The Daily Yomiuri, 2010). Ironically, GM's Hummer 3 qualified as a fuel-efficient car because of Japanese rules tying fuel efficiency to a car's weight (Tabuchi, 2010).

In terms of WTO consistency, there appears to be little in Japanese actions that might be actionable under WTO rules. Instead, the measures used have focused on "technical" considerations as non-tariff barriers, leading to the preferences we have seen for the Japanese auto industry over foreign firms. To the extent that the Japanese government has changed its policies, it would appear that its motivations are broadly political rather than tied to WTO legal considerations.

3.3 Korean Cars: A Different Approach?

The Korean auto market also experienced significant stress in the financial crisis. Domestic sale of motor vehicles fell from 1.219 million in 2007 to 1.154 million in 2008, before recovering dramatically to 1.394 million in 2009. Meanwhile, imports initially increased from 66,594 to 79,473 cars from 2007 to 2008, but then fell sharply to 63,383 cars in 2009.¹⁴ The Korean auto market is dominated by Hyundai-Kia with a market share of over 75%, with GM Daewoo at about 16%, and Renault Samsung, and SsangYong Motor splitting the rest. Top imported brands include Honda, BMW, Mercedes-Benz, Lexus, and Volkswagen, with all imports in 2009 accounting for 4.3% of the market (down from 6.5% in 2008).

In February 2009, carmaker Ssangyong filed for bankruptcy protection with the Korean government after failing to rally financial support from the government (Jong-woo, 2009). Later on in the same month, GM Daewoo requested emergency funding. The government denied emergency lending to Daewoo, forcing it to turn to its main creditor instead, the Korean Development Bank (Korea Times, 2009). The Korean government was muted in its response to these troubles. It is not clear why the Korean government did not come to the immediate aid of these two car companies, but speculation points to a combination of weak lobbying and perhaps the Korean government's insistence on anti-protectionism.

The government did, however, acknowledge recommendations made by car companies. In December 2008, carmakers called for tax cuts, which the government implemented a few months later (Channel News Asia, 2009). At the same time, the Korean government announced plans to reduce the consumption tax, and abolish the environmental tax on diesel engines, while providing financial support for hybrid R&D technology. Later in the same month, the government became more aggressive

in its intervention, announcing it was considering ways to provide cash through creditor institutions and increase lending liquidity to carmakers in order to ease auto-financing tensions. Yet in the end, it did not provide direct cash injections, choosing to work through intermediaries such as banks to disperse around \$377 million in aid, in accordance with WTO regulations (Korea Times, 2008).

In March 2009, as he cautiously urged carmakers to 'tighten [their] belts' before seeking government assistance, President Lee Myung Bak unveiled a series of government incentives to reinvigorate the domestic production and consumption of cars (BBC, 2009). The new incentives included providing liquidity to auto-financing firms, financial support funds for local governments, an increase in spending on R&D technology (specifically fuel economy and hybrid engines), and reform of auto-industry labor-management relations (The Hankyoreh, 2009). The most controversial plan however, was a 70% cut on registration and acquisition taxes for buyers who replaced their pre-2000 vehicles with new ones that limit greenhouse gases. This would lower the price of a car by about \$2,000 (Swire, 2009). This was seen as directly and positively affecting domestic purchases. The government stressed that imported cars would also benefit from the proposal and was careful to emphasize that these tax incentives did not interfere with the WTO definitions of protectionism and that the effort was promoted as dually benefiting car industries (albeit domestic) and the environment. In addition, the fact that incentives directly affect consumers rather than automobile producers made it more difficult to argue that the government was favoring domestic industries (Hyun-cheol, 2009).

In June of 2009, the government announced tax incentives for hybrid electric car purchases, providing rebates of up to \$2,400. The tax rebate will continue until December 2012. This coincided with the announcement by Hyundai Motor Corp and

Kia Motor Corp that they would begin selling their hybrid cars in the latter part of 2009 (Park, 2009).

Although Korea is not explicitly violating WTO standards with its tax incentives and intervention in the car industry, the support nonetheless has drawn the attention of the WTO and the United States. The Korean government's new focus on environmentally friendly green industries, for example, raises fears of a murky "green protectionism." While the pre-2000 vehicle trade-in clause of the government's aid package has been lauded for combating both environmental degradation and jumpstarting economic recovery, many view it as discriminatory in favor of domestic industries. Korea also maintains an 8% tariff on imported cars (Han, 2009). In addition, there are a host of various other non-tariff barriers (Korea-US FTA, 2007).

Since 2003, Korea has enforced engine displacement taxes on automobiles according to motor size, citing the need to cap emissions and gasoline consumption—seen as a "non-tariff barrier" on American competition and another example of green protectionism (Rohter, 2008) The Korean government vehemently asserts that its measures are within the guidelines of WTO regulations. According to one Korean analyst, "[a]s long as subsidies are given to customers and not companies, and the tax cut is given to both Korean and imported vehicles, it's hard to criticize the Korean government for resorting to protectionism" (Korea Times, 2009). The WTO, while aware of Korea's support of the auto industry, has yet to specifically reprimand the Korean government.

Nevertheless, the United States views the government's tax incentives as direct subsidies for the domestic automobile industry, and has accused Lee of hypocrisy—enacting protectionist measures despite his vocal support for free trade and anti-protectionist vigilance. And while the incentives are not handouts and can

benefit imported cars, they can still be seen as protectionist because the primary and intended beneficiaries are domestic car manufacturers (Hyun-cheol, 2009).

Tensions between Korea and the US over the highly unbalanced trade in autos have been exacerbated in light of the financial crisis and government responses. Korean cars were seen to benefit widely from the "cash for clunkers" program, and some have accused Hyundai of starting the program prematurely and unfairly (Motavalli, 2009). In September of 2009, Senator Debbie Stabenow (D-Michigan) wrote a letter to President Obama urging him to protest South Korean protectionism, a sentiment that was later echoed by many other congressmen (Stabenow, 2009). In January of 2010, the House of Representatives planned a meeting to examine the trade deficit and South Korean barriers to American autos and President Obama has committed himself to ratifying KORUS-FTA (Palmer, 2010). This case is perhaps the best example of murky protectionism. Although the Korean government has abided by WTO regulations, Korean automobile manufacturers are the implicit beneficiaries.

III.4 Intervention in the Financial Crisis and the WTO

What lessons can we draw from our statistical and case study analysis with respect to the management of trade by the WTO? First, despite nearly 25 years of the Washington Consensus, widespread membership of the WTO, and numerous trade agreements being signed, governments were not prepared to stand back and let market forces unfold. Nor were governments willing to confine themselves to macroeconomic policy tools during the recent global economic downturn. On the contrary, governments have gone beyond typical macroeconomic reactions to actively discriminate to shape the future trajectory of selected industries. In such a

climate, countries that have pursued economic liberalization or have resisted protectionist temptations may well rethink global efforts to promote trade liberalization. Some governments may see others' discrimination as a rationale for further multilateral rule-making; others, however, may decide to join those attempting to tilt the commercial playing field, while another group may wish for the former over the medium to longer term while engaging in the latter in the interim!

Second, the crisis demonstrates the incompleteness of existing WTO rules and the need for countries that are major trading states to extend WTO disciplines. Yet at the same time, this very incompleteness must surely qualify our view as to how effective those multilateral disciplines could ever be. This is because subsequent financial crises—or periods of acute economic pain—are likely to trigger further attempts to circumvent extant multilateral rules as governments seek new means to help favored sectors or firms.

To the extent that each expansion in the scope of WTO disciplines catches up with prior circumvention, and that governments find new means with which to intervene, circumvention of multilateral trade rules will be the norm in straightened economic times. This cycle can only be broken if governments accept across-the-board binding disciplines on state measures that discriminate against foreign commercial interests. Only then will WTO rules be said to hold the line against protectionism. Being reminded of this fundamental point is perhaps the ultimate lesson of the resort to selective intervention or industrial policy during this most recent global economic crisis.

4. Conclusion

Although it may still be premature to say so, in the view of many analysts the macroeconomic interventions of governments during 2008 and 2009 have staved off another Great Depression. A sharp downturn, sometimes referred to as a Great Recession, did transpire—but there was no return to the job and output losses of the 1930s. Yet, as far as the non-macroeconomic policy measures taken during the crisis are concerned, perhaps a more cautious interpretation is needed. In this article, we considered the form and sectoral incidence of state measures and discrimination against foreign commercial interests in the Asia-Pacific region. Indicators of traditional trade policy stance before the crisis were shown to explain only a little of the sectoral incidence of cross-border discrimination during the crisis, causing us to revisit the potential rationales and forms of state intervention as well as to consult qualitative evidence. The illustrative cases of government intervention in the wind power industry in China and the auto industry in Japan and South Korea suggest that firms and governments have actively pursued objectives to secure advantages for their own firms.

Our investigations suggest that the crisis has led to a revival of industrial policies, implemented using subsidies, biased government procurement policies, and some traditional trade policy instruments. Government intervention appears to have morphed into forms that are not very well constrained by existing multilateral trade rules or which have been specifically tailored to avoid them. Whether the return of industrial policy heralds a new era of commercial policy disputes between nations, provides the impetus for greater multilateral rule making, or quite possibly both, remains to be seen.

Even if new binding rules are eventually negotiated, the incomplete nature of WTO rules must surely make observers wonder whether—during the next sharp global economic downturn—other loopholes will be exploited instead. More significantly, the considerations raised in this article ought to temper what even the most fervent believer in multilateralism can reasonably expect the bite of actual WTO rules to be during a sharp global economic downturn. Until governments are prepared to sign disciplines on the exercise of discrimination against foreign commercial interests that reach across all policy instruments, then the incompleteness of the WTO contract will remain and its role in global economic crises limited principally to channeling protectionist pressures into the unregulated or under-regulated elements of the world trading system. One might view tackling the incompleteness of the WTO contract as the ultimate systemic trade-related challenge raised by the recent global economic crisis.

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¹ Evenett (2005) provides a summary of the development of industrial policies in Japan, Korea, Taiwan, and China.

² Indeed the Global Trade Alert database, the primary database used in this study, has recorded a number of deliberate competitive currency devaluations.

³ The components of the database and summary statistics can be downloaded at www.globaltradealert.org. Periodic reports on the prevalence and form of protectionism can be found on the same database. The underlying database is available in Excel form from Simon Evenett.

⁴ A longer account of the methodology used (and the inevitable design choices incumbent in conducting such an exercise) are described in section 2 of Evenett (2009).

⁵ These statistics are available at <http://www.globaltradealert.org/site-statistics>

⁶ It goes without saying that the simple correlations-based evidence presented below could be developed further. Statistical analysis could be used to identify sectors that are outliers to the proposition that the incidence of crisis-era discrimination is determined by the sectoral incidence of pre-crisis protectionism.

⁷ Taken to be the introduction of a state measure that discriminates against foreign commercial interests.

⁸ World Bank and United Nations officials have contacted the Global Trade Alert team to discuss whether there is much evidence of discrimination against foreign commercial interests in service sectors other than financial services (CPC sector 81). None of these investigators has been able to establish much discrimination against non-financial services. This may well be because such discrimination was already pretty severe or that new discrimination is "buried deep" in hard-to-track implementing regulations.

⁹ We consider 49 jurisdictions in the Asia-Pacific region. Please contact the authors for the list.

¹⁰ And other databases on policy stance.

¹¹ All data on tariffs and antidumping measures referred to in this and subsequent paragraphs was collected from published WTO sources.

¹² In each case the nature of the logarithmic transformation was as follows. A variable that took value x was transformed using the natural logarithm of $(1+x)$. The addition of one ensured that the natural logarithm was always defined.

¹³ Results available from authors.

¹⁴ KAMA data.