

### Twilight of Prosecutions of the Global Auto-Parts Cartels

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#### **EXECUTIVE SUMMARY**

The *Auto-Parts Supercartel* comprises 70 to 80 interconnected, international, automotive inputs, bidrigging schemes detected mostly during 2008 to 2017. Almost half of the convicted companies were Japan-based parent firms or their subsidiaries. The connections among the cartels are provided by overlapping corporate memberships and by the targets of collusion, 17 Original Equipment Manufacturers (OEMs) of automotive vehicles.

Experienced antitrust officials have asserted that the *Supercartel* is the largest constellation of cartels ever tackled by the world's antitrust authorities. The truth is that "it depends." In terms of the number of firms and individuals convicted, it is indeed the biggest; measured by affected sales and monetary penalties, it appears to be a close second.

The origin of these cartels is rather mysterious. Most cartels are formed after a sustained period of falling prices and profits, but not *Auto-Parts*. Outside of East Asia, auto manufacturers have long placed strong pressures on their suppliers to reduce prices of their inputs through competitive bidding. In Japan, customary OEM loyalty to suppliers began to break down in 1999, and the great majority of the cartels were launched during 1999-2006. Did the assemblers push too hard on price reductions in the early 2000s, and thereby trigger supplier collusion to cope with an existential threat?

At last count 18 jurisdictions vigorously prosecuted this supercartel, which demonstrated exceptional duration, global reach, size, and injuriousness. Estimates for affected commerce of the *Auto-Parts* supercartel range from \$3.2 to \$5.0 trillion. There are few reliable estimates of overcharges, but averaging the few preliminary estimates suggests that injuries are in the range of \$0.6 to \$1 trillion.

Antitrust enforcement aimed at this supercartel is nearly complete as of early 2019. Canada has definitely closed all *Auto-Parts* cases. In the United States, because of the U.S. five-year statute of limitations, the DOJ's investigations of auto-parts cartels began winding down in late 2015. Corporate indictments elsewhere appear to be over. Although it is possible that the DOJ may nab a couple of the 60 *Auto-Parts* fugitives and seek their extradition, further convictions of individuals in the United States are unlikely. The status of several mature EC investigations suggest that most have been closed. Brazil and Mexico still have 20-plus investigations open in 2019.

Among other observations, the Auto-Parts cases bring into focus the relationship between monetary penalties and jail time for cartelists. For example, more than \$20 billion in penalties has been imposed worldwide on nearly 300 corporate cartelists. In North America about half of those penalties were extracted through settlements from class-action damages suits, which is slightly higher than the historical average. To be sure, these penalties provide some measure of restitution for the victims of cartel crimes. But even if corporate monetary penalties rise well above the current \$20 billion total; deterrence of collusion is highly unlikely. For deterrence purposes, indictments and sentencing of hundreds of individuals in the automotive industries may have lingering effects on the ethical behavior for would-be cartel managers.

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"The auto parts investigation is the largest criminal investigation the Antitrust Division has ever pursued, ...." (Speech by Sharis A. Pozen, U.S. DOJ, January 30, 2012)

#### I. Introduction

Since at least the year 2010, price-fixing investigations have been launched by at least 26 antitrust authorities around the world targeting hundreds of manufacturers of automotive parts sold to almost all of the world's largest auto-assembly makers (OEMs).<sup>1</sup> In addition to automotive components proper, some members of the cartels sold *services* to OEMs that aided the OEMs in the distribution of finished vehicles. Some cartels conspired on direct sales of *aftermarket* parts or systems of parts to auto-parts stores. Finally, the cartelized parts were *resold* to buyers after being incorporated into finished vehicles; indirect purchasers include dealers (auto retailers), fleet rental companies, and households that purchased vehicles (consumers or "end-users").

Some of the early investigations developed from complaints of OEMs to antitrust authorities, but the vast majority were uncovered through corporate leniency applicants.<sup>2</sup> Cooperation by amnesty applicants help unearth otherwise clandestine details about how, when, and where the cartels operated.

By 2019, nearly all antitrust investigations of the cartels were completed, and penalization has slowed to a trickle (Greimel 2016). After 15 years of government prosecutions and 18 years of private-damages actions, the time seems ripe to round up what has been revealed about the formerly

<sup>&</sup>lt;sup>1</sup> jconnor@purdue.edu.\_This paper is the third and likely final working paper in a series of papers on the *Auto Parts* cartels. The second version is entitled: *Is Auto Parts Evolving into a Supercartel?: AAI Working Paper No. 13-04* (August 28, 2013) [http://www.antitrustinstitute.org/~antitrust/sites/default/files/WorkingPaper13-04.pdf], which in turn is a considerably revised version of *Multiple Prosecutions Point to Huge Damages from Auto-Parts Cartels: AAI Working Paper 12-08.* (December 13, 2012). [http://ssrn.com/abstract=2190200]. The present version sums up on legal-economic developments through February 2019. I thank Bert Foer, Diana Moss, and Jon Cuneo for constructive comments on earlier drafts of this Working Paper. The cartels so far identified are characterized by a high degree of supply substitutability in the sense that the products are made in plants controlled by parts manufacturers that are rivals in supplying interconnected systems that are designed to be integrated by a single control mechanism. For example, *Thermal Systems* covers a complicated array of pumps, fans, vents, filters, compressors, sensors, displays, and driver controls wired together to heat and cool the air in the passenger cabin. Other products like bearings are less complicated. Not all auto parts makers are likely to be proved to be in collusion; an announcement by Magna (2013) appears to rule out the auto-tooling industry. Similarly, although the highly concentrated marine *Auto Shipping* industry is suspected of cartel conduct, the atomistic overland shipping industry has not been investigated.

<sup>&</sup>lt;sup>2</sup> These include applications for full amnesty (or immunity from prosecution), amnesty-plus, and partial amnesty.

clandestine *Auto-Parts Supercartel* and to try to assess the breadth and effectiveness of antitrust enforcement.<sup>3</sup>

In this report, I first address the issue raised by the quote by Sharis Pozen above: In what respects are the group of related *Auto-Parts* cartels the biggest seen in the history of contemporary price-fixing schemes and prosecutions thereof?<sup>4</sup> Then I examine (1) the historical origins of the discoveries of these cartels and their prosecutions; (2) the role of industry structure in facilitating collusive conduct; (3) geographic location of collusion; (4) duration of collusion; (5) antitrust prosecutions of the cartelists worldwide; (6) limited information on the severity and recovery of penalties; and (7) concluding observations.<sup>5</sup>

#### II. Size Measures Are Impressive

The *Auto-Parts Supercartel* is well on its way into the cartel record books, though it is not the biggest in all respects. With nearly all criminal investigations exhausted and private antitrust litigation concluded, the shape and size of these illegal schemes is known with a fair degree of certainty.

The U.S. DOJ's top antitrust official called *Auto-Parts* the "largest criminal investigation" ever pursued by the Division. European Commission officials reportedly have referred to *Auto-Parts* as the "Cartel of the Century" (Niemeyer *et al.* 2018), and antitrust experts agree that it is one of the biggest groups of cartels ever prosecuted. Antitrust prosecutors and judicial systems uniformly treat the dozens of individual automotive-inputs cartels as belonging to one grand, overarching set of interrelated collusive schemes. – a Supercartel. At the core of the Supercartel are archetypal precision components supplied to manufacturers that assemble and brand finished vehicles – the OEMs. At the periphery are other industries that supplied inputs indirectly (e.g., *Polyurethane Foam*) or post-manufacturing services (*Ro-Ro-Auto Shipping*).<sup>6</sup>

Six dimensions of the size of *Auto-Parts* enforcement challenges have been proposed. First, Pozen (2012) cited three: (1) the "scope," (2) the "affected commerce," and (3) the high dollar amount of corporate fines being imposed (Pozen 2012).<sup>7</sup> "Scope" can refer to product breadth or to (4) geographic extent. Second, a retrospective article in a legal-economics journal suggests that the *Auto-Parts* cartels were perhaps the largest U.S. antitrust litigation by citing evidence on two more indicators: (5) the high number of companies charged (48 at the time) and (6) the large numbers executives indicted (then 65) (Burtis *et al.* 2018).<sup>8</sup>

<sup>&</sup>lt;sup>3</sup> Moreover, it is now becoming clear that since the beginning of the Trump administration, the U.S. anticartel effort has been throttled back (Connor 2019a). This is not the case about the non-U.S. antitrust authorities, where assertiveness seems less diminished.

<sup>&</sup>lt;sup>4</sup> Pozen's DOJ colleague Scott Hammond reiterated in a Detroit speech in March 2013 that *Auto-Parts* will be the largest cartel conviction in the history of the Division [http://bearingcode.com/newupdates2013.html].

<sup>&</sup>lt;sup>5</sup> Eight tables of detailed data are at the end of this paper.

<sup>&</sup>lt;sup>6</sup> In other words, there is room for disagreement by regulators or those who chronicle this supercartels as t the precise list of products to be included. This report may take a rather inclusive view of the Supercartel's composition.

<sup>&</sup>lt;sup>7</sup> I interpret the term "scope" to mean the number of markets with non-substitutable goods that were investigated or convicted. A *Global Competition Review* commentary agrees with (or perhaps paraphrases) Pozen. "The Auto Parts investigation, the largest ever cartel investigation in terms of the number of corporate prosecutions...." (Higbee *et al* 2018). Pozen also cited a possible fourth characteristic of size, namely, the substantial coordination of the DOJ with the Japan FTC, the EC, and the Canadian Bureau of Competition. This possible indicator of size is not transparent and therefore not measurable with public data.

<sup>&</sup>lt;sup>8</sup> Burtis et al. (2018) also cite the number of parts products involved ("more than fifty"), but this is scope.

It is apparent that when writers refer to the automotive-parts cartels they are employing a *supercartel* concept. Size comparisons are facilitated by my previous work in conceptualizing supercartels (Connor 2013). Most of the many intertwined and overlapping auto-parts cases clearly seem to qualify as the world's third supercartel, following the infamous *Bulk Vitamins* cartels of the 1990s and the *Banking* collusion scandals a decade later (Connor 2008, 2014).<sup>9</sup> Supercartels are unique and uniquely large. They are: (1) global in scope, (2) have a large number of distinct products (i.e., separate cartels) that have partially overlapping corporate membership, and (3) direct their price fixing at customers in one vertical production-distribution channel. In short, supercartels have wheels within wheels.<sup>10</sup>

#### (1) Scope

When enforcement scope is mentioned, it most commonly refers to the number of separate markets affected by collusion. More than 200 auto parts identified by unique SKUs (part numbers) were subject to bid rigging. However, many of the parts were bundled into integrated "systems," and it was these systems that were the objects of bid rigging.<sup>11</sup> It now appears that no fewer than 70 separate *Auto-Parts* and related automotive markets were investigated for collusion. By mid 2019, 70 *Auto-Parts* cartels had been penalized, and ten cases were remaining resolution.<sup>12</sup>

However, 70 to 80 is slightly shy of the number of *Banking* supercartel markets, which is 88. *Auto-Parts* is the *second* largest number of product markets of any of the historical *supercartels*.<sup>13</sup> Moreover, the evolving *Generic-Drug* cartels prosecutions could easily exceed *Auto-Parts*.<sup>14</sup>

#### (2) Affected Commerce

The *Auto-Parts* cartels had enormous dollar sales during their collusive conduct periods. Unfortunately, reliable information on sales of many automotive components and systems seem to be proprietary within the industry. Estimates of affected commerce can be obtained for about threefifths of the cartels. Some estimates from decisions of antitrust authorities (e.g., *Trucks* in South Korea) are fairly precise, as are some from public sources (e.g., *Trucks* in the EU), are fairly reliable. While a few market estimates are quite rough, affected sales for about 49 of the cartelized markets amount to *\$3.2 trillion* (measured in current or nominal dollars). Projecting these sales to the total of the 70 condemned cartels and adjusting for inflation would likely to raise sales to the \$4 to \$5 trillion range.<sup>15</sup>

<sup>&</sup>lt;sup>9</sup> Admittedly, decisions regarding the product or temporal boundaries can be tricky and require expert judgment.

<sup>&</sup>lt;sup>10</sup> Readers, please note that this is not a bad pun about the auto-parts cartels: no wheel-parts makers have been accused. <sup>11</sup> For example, the cartel often called *Occupant Safety* includes safety belts, air bags, steering-wheel assemblies, g-force sensors, radar, lidar, ultrasonic detectors, automatic brakes, controls for setting these components, connective wiring, computers, and in the most advanced cars software to integrate "autopilot" and self-driving capabilities.

<sup>&</sup>lt;sup>12</sup> As of early 2019, a dozen or so of the 113 companies are still awaiting to be fined in in the near future by Brazil and a few other tardy antitrust authorities. However, many have been dismissed from prosecution by antitrust authorities that do not announce case closings.

<sup>&</sup>lt;sup>13</sup> By definition an ordinary cartel affects only a single well-defined market and industry. I judge that since 1990 only three other supercartels can be identified: *Bulk Vitamins, Banking*, and probably the *Lava Jato* cartel centered in Brazil <sup>14</sup> A recent press report says that 300 drugs are currently under investigation, and quoted an experienced antitrust attorney saying: "This is most likely the largest cartel in the history of the United States," Nielsen said" (Rowland 2017). <sup>15</sup> No matter the exact figure, cartel penalties will average less than 1% of affected commerce – a very low severity by historical standards.

Despite this large sales estimate, it is not certain that the *Auto-Parts* cartels are the highest in sales, mainly because the *Banking* supercartel, though bigger, is not comparable.<sup>16</sup>

#### (3) Geographic Extent

Scope could possibly refer to geographic extent of prosecutions. The affected commerce of most of the *Auto-Parts* cartels was geographically global in scope. Forty-nine of the proven-guilty *Auto-Parts* cartels (70%) were organized on a global scale<sup>17</sup> – a much higher proportion than for international cartels in general.<sup>18</sup> Consequently, the number of antitrust authorities engaged in *Auto-Parts* investigations was very large.

Besides North America and the EU,<sup>19</sup> virtually all of the guilty *Auto-Parts* cartels colluded in Asia (seven nations), predominantly East Asia plus a few in South Asia and Turkey. Fifty-three of the 70 penalized cartels (76%) operated in the United States and at least 28 of the convicted cartels (40%) had sales in the EU (and several more EC decisions are in the pipeline). It also appears that they infected the auto-assembly industries in Australia, Mexico, Brazil and South Africa.<sup>20</sup> In total, the national assembly industries of 29 nations were affected by collusive conduct, and 16 antitrust authorities investigated at least one cartel (including five EU NCAs). However, the number of antitrust authorities that prosecuted *Banking* was 33, so *Auto-Parts* is not close to a world record by this measure of scope.<sup>21</sup>

#### (4) Number and Amount of Monetary Penalties Imposed

Within three years of the first raids in September 2013, a total of almost \$2.0 billion in corporate fines had been imposed.<sup>22</sup> Five years later, monetary penalties had reached \$20.7 billion – second in terms of a world record.<sup>23</sup> However, some extreme projections of penalties in *Diesel Emissions* imply that *Auto-Parts* cartels' penalties will surpass the *Banking* supercartel, which had \$30 billion in penalties.

#### (5) Number of Corporate Cartelists Indicted

<sup>&</sup>lt;sup>16</sup> Going back to the 1990s, the previous record-sales commodity cartels were those in *Bulk Vitamins; Auto Parts* surpasses the Vitamins supercartel by quite a bit (Connor 2008). Sales of the *Banking* supercartel are definitely higher, but historically economists do not compare financial sector sales with industrial real products (Connor 2014). Better measures like value added are not available.

<sup>&</sup>lt;sup>17</sup> Global cartels are those that fixing prices on two or more continents; operations on three or four continents are typical.

<sup>&</sup>lt;sup>18</sup> In the PIC data set, only 17% of the convicted cartels were global in geographic scope (Connor 2014: 12). But in *Bulk Vitamins*, 15 of the 16 (94%) were global.

<sup>&</sup>lt;sup>19</sup> Assembly of 100,000 or more light vehicle units annually in 2010 covers 15 of the EU Member States.

<sup>&</sup>lt;sup>20</sup> The major exceptions were Algeria, Argentina, and Egypt.

<sup>&</sup>lt;sup>21</sup> Air Cargo reached 15.

<sup>&</sup>lt;sup>22</sup> In December 2012, I predicted that fines and other penalties would probably reach at least \$5 billion. "At this rate these cases are evolving, there is a good chance that monetary penalties eventually may climb to \$5 billion or more." (Connor 2013: 2).

<sup>&</sup>lt;sup>23</sup> Casting back 30 years, the current world record holder is the *LIBOR and related Foreign Exchange* supercartel, which has accumulated \$32.8 billion in penalties.

I expect about 450 to 500 corporate cartelists eventually to be indicted in *Auto-Parts*. Already there are 320 corporate fines imposed on the cartels' corporate participants<sup>24</sup>, ten more signed consent decrees, 11 grants of immunity, and 113 companies still under investigation.<sup>25</sup> As of early 2019, a scores of companies are still awaiting to be indicted or fined in in the near future by Brazil and a few other tardy antitrust authorities. The number of corporate indictments in *Auto-Parts* is clearly a world record.<sup>26</sup>

#### (6) Number of Individuals (Cartel Managers) Indicted

The number of individuals indicted worldwide in *Auto-Parts* reached 190 by mid 2019. Of the 190 indictments of executives, 169 (89%) were sought by the U.S. DOJ.<sup>27</sup> The individuals indicted in the *Banking* supercartel totaled 105, so *Auto-Parts* is by far in the leading supercartel by this metric.

Individual U.S. fines are token (median \$20,000), but custodial sentences are the highest recorded. The DOJ has so far imposed prison penalties on 68 *Auto-Parts* executives. As of mid 2019, total U.S. incarceration is 1175 months (an average of 17.3 months for each incarcerated individual). About 60 executives indicted by U.S. prosecutors (36%) are fugitives awaiting sentencing.<sup>28</sup> An additional 100 *Auto-Parts* managers involved in four cartels have been indicted by Brazil.<sup>29</sup>

#### III. Origins of Collusion and the Investigations

#### A. Remote Causes

The remote causes of the price-fixing behavior may lie in the customary organization of many Japanese suppliers of components to brand-name manufacturers; these organizations are called *keiretsu*. Vehicle-assembly manufacturers historically fostered close, trusting relationships with a small number of relatively small auto-parts suppliers (Dawson and Kendall 2013). Auto manufacturers often have significant equity in their suppliers, work closely together on technological standards and design, share proprietary technology, and "enjoy the right of first refusal for newly developed technology" (ibid.). In other words, members of a *keiretsu* share a consensus view that incumbent suppliers deserve protection from competitive rivalry.

<sup>&</sup>lt;sup>24</sup> This the count of *fining decisions*, not companies; because some companies were fined across several cartels, there are only *151 unique parent companies or parent groups* receiving fines (Connor 2019). In *Banking*, the number of cartelists was 222 (Connor 2014).

<sup>&</sup>lt;sup>25</sup> Historically 95% of indicted hard-core cartelists are convicted. This does not include at least a dozen guilty amnesty recipients likely to be penalized in privates suits soon. Note that this is a count of penalties and likely penalties, so serial colluders are double counted.

<sup>&</sup>lt;sup>26</sup> The Banking supercartel had 222 banks indicted (Connor 2014, 2016b).

<sup>&</sup>lt;sup>27</sup> There is a small amount of double-counting of the executives, because a dozen or more were indicted for multiple counts of bid rigging in multiple schemes. Three individuals that were indicted, after substantial cooperation, had their charges were dismissed.

<sup>&</sup>lt;sup>28</sup> The U.S. justice system will typically keep looking for these fugitives for up to ten years, but nearly all of them – especially those near the end of their careers – will evade arrest and extradition. If one counts fugitives as having zero months in prison, then the 128 indicted executives were sentenced to a mean average of 9.2 months in prison.
<sup>29</sup> Brazil will likely charge more than 200 company managers in total, though imprisonment is not customary, and their fines are usually paid by their employers. Japanese prosecutors sought and received criminal sentences for nine executives in the *Auto Bearings* cartel; however, the Japanese courts suspended incarceration or converted the three-year prison terms to probation.

*Keiretsu* are a modern-day, looser version of the Japanese *zaibatsu*, which flourished from the 1920s to 1945, and of which 16 were formally dismantled and outlawed in 1946-1947 by U.S. occupation authorities (Caves and Uekusa 1976). *Zaibatsu* and *keiretsu*<sup>30</sup> can be described as conglomerates<sup>31</sup> with important horizontal and vertical relationships that may be informal, contractual, or reinforced by cross ownership; they may be united by a holding company that controls a major bank.<sup>32</sup> Many *zaibatsu* were revived or tolerated by the authorities in the 1950s in order to supply the allies in the Korean War. Several *keiretsu* were newly formed or first began growing rapidly at this time.<sup>33</sup>

Cracks in the *keiretsu* system serving the automotive sector first began around 1999 when Renault took over struggling Nissan (Dawson and Kendall 2013). In June 1999, the Renault-Nissan Alliance appointed a new hard-charging CEO, Carlos Ghosn, who emphasized extreme cost-cutting measures as a principal strategy to improve profitability.<sup>34</sup> Nissan's *keiretsu* was disbanded and replaced by open-source bidding for Nissan parts and components. In order to stay price-competitive, Toyota and Honda shifted to open bidding too, initially outside of Japan. Collusion in four Japanese auto-parts cartels began in the year 2000.

The second blow to the *keiretsu* system occurred in 2005 when the Japanese Fair Trade Commission instituted a formal corporate leniency program for cartelists (JFTC 2005). This program, modeled on programs adopted by other antitrust authorities as early as 1993, offered powerful monetary incentives for cartel participants to confess their own transgressions, denounce fellow conspirators, and normally cause the collapse of the cartel. "[Japanese] companies fingered in other cartels worried they'd be burned again if they didn't step forward," said Kazuhiko Takeshima, former head of the JFTC (ibid.). The leniency program was contrary to widely held notions of oligopolistic cooperation among leading Japanese businesses, especially *keiretsu* members. In January 2009, the JFTC and three other antitrust authorities opened investigations into price fixing of undersea/underground cables; two of the suspects were Furukawa Electric and Sumitomo Electric.

<sup>&</sup>lt;sup>30</sup> The major difference between the two seems to be that *zaibatsu* were controlled by and named after extended families (Mitsui, Mitsubishi, Sumitomo, etc.), whose assets were seized in 1946, whereas *keiretsu* are organized by a single finalproduct manufacturer or manufacturing group. Additionally, the former tended to emphasize tight vertical integration by a single supplier, whereas the latter accommodated a small number of suppliers that had a degree of rivalry in R&D. <sup>31</sup> Besides a big bank, holding company, and international wholesale trading firm, each *Keiretsu* usually includes insurance, shipping, and a wide variety of manufacturing companies.

<sup>&</sup>lt;sup>32</sup> For example, the Tokai (or Toyoda) Group is led by the Tokai Bank and includes the Daihatsu, Suzuki, and Toyota auto manufacturers. Toyota sponsors a supplier group known as Kyohokai that encompasses 200 parts suppliers (Jie et al. 2013). While ostensibly an information-sharing organization, meetings and outings offer opportunities for collusion. After being convicted for price fixing of wiring harnesses and related safety equipment in 2011, Fujikura Ltd., after strengthening its internal antitrust compliance program, withdrew from Kyohokai activities. The major change from the 1920s is that family control has been replaced by holding-company shareholder control.

<sup>&</sup>lt;sup>33</sup> Toyota and Honda are examples. Toyota Group owns in Toyota Motor Corp., and TMC has majority or controlling shares in auto-parts suppliers Denso Corp., JTEKT Corp., Tokai Rika Co., Kanto Auto Works, Aichi Steel Corp, Aisin Seiki Co., Ltd and others. Toyota's bank was known as Toyo Trust and Banking until 2001 when it merged with two other banks to become UFJ Bank (now Mitsubishi UFJ Financial Group, Inc.). As of early 2013, Denso and Tokai Rika Co. were convicted and JTEKT was a suspect in bid rigging. Honda owns 15% of Yamashita Rubber Co., a defendant in the *Rubber Anti-Vibration Parts* cartel.

<sup>&</sup>lt;sup>34</sup> Carlos Ghosn was initially appointed COO of Nissan Motors by Renault in June 1999 and became CEO and President of Renault in 2005. In the late 1900s he earned the sobriquet "Le Cost Killer" after restoring Renault to profitability through plant closings and other cost-cutting measures. He is co-author of the book *Shift: Inside Nissan's Historic Revival* (http://uk.askmen.com/celebs/men/business\_politics\_60/76\_carlos\_ghosn.html). In October 2016, Mitsubishi Motors joined the Renault-Nissan Alliance. In 2019, Mr. Ghosn was arrested and imprisoned in Japan for tax evasion.

Both companies made auto wiring harnesses as well as cables. Both companies sought and received leniency from the JFTC for offering full cooperation in the *Wiring Harness* cartel (ibid.).<sup>35</sup> They may have applied for immunity elsewhere; neither company has yet been indicted by the DOJ for price fixing in *Wiring Harness*.

#### B. Proximate Events

How the current wave of auto-parts antitrust prosecutions began is uncertain (Bird and Bird 2012). One story is that an EC investigation was prompted by the complaints around 2009 of several EU automobile manufacturers ("OEMs"); the OEMs said that some manufacturers of automotive wire harnesses were refusing to bid competitively on Requests for Proposals issued by the OEMs. This scenario is a typical way of detecting a cartel before leniency programs became nearly the sole method in the late 1990s. Other sources say that in late 2009 a whistle-blower approached the Canadian Competition Bureau ("the Bureau") to apply for amnesty (Johnson Winter 2012). The Bureau sent requests for information to five other auto-parts suppliers and shared its findings with other antitrust authorities. If this event was the initial impetus for the *Auto-Parts* investigations, it reinforces the widespread dependence of antitrust authorities on leniency programs to generate cartel cases.

Whatever the initial impetus, in late February 2010 three antitrust authorities conducted coordinated international raids of auto-parts companies' headquarters worldwide. The Japan Fair Trade Commission ("JFTC") raided DENSO offices in Japan, and the Antitrust Division of the U.S. Department of Justice (DOJ) raided three auto-parts manufacturers, including DENSO<sup>36</sup>. The industry or company targets of the EC's raids in February 2010 were initially unknown, but later revealed to be the EU headquarters of four wire-harness manufacturers, including DENSO.<sup>37</sup> Spokespersons for the JFTC and DOJ later announced that their raids were part of a wide-ranging investigation of collusion beginning as early as January 2000 in several auto-parts industries. Convictions began in late 2011.<sup>38</sup> The U.S. DOJ fine announced in September 2011 in *Wire Harness* was the first in *Auto Parts*; Japan was the second authority to fine an *Auto-Parts* cartel, also *Wire Harness*, in January 2012.

In early 2010, the DOJ, EC, and JFTC initially raided manufacturers of three auto parts: *Wiring Harnesses, Fuel Senders,* and *Instrument Panel Clusters.* Probably aided by Amnesty-Plus programs<sup>39</sup>, further cartels were investigated: *Aftermarket Sheet Metal*<sup>40</sup> in 2010; *Aftermarket Auto Lights* in July 2010; *Occupant Safety Systems* and *Auto Refrigerants* in February 2011; *Auto Bearings, Aftermarket Auto* 

<sup>&</sup>lt;sup>35</sup> Under "Amnesty-Plus" a company guilty of price fixing in industry A, but which does not qualify for immunity in that cartel ("Cartel A"), can confess its involvement in a cartel in industry B, offer evidence and full cooperation, and qualify for full amnesty in Cartel B as well as enhanced leniency in Cartel A.

<sup>&</sup>lt;sup>36</sup> Besides Canada, other early movers may have included South Korea and Australia.

<sup>&</sup>lt;sup>37</sup> The four targeted firms were Leoni AG, S-Y Systems, Yazaki Corp., and DENSO. This history is summarized in Part D. of the 2<sup>nd</sup> Consolidated Complaint, In re Automotive Parts Antitrust Litigation (August 2014).

<sup>&</sup>lt;sup>38</sup> The U.S. DOJ fine announced four *Auto-Parts* fines in 2011 the first in February 2011 in *Aftermarket Auto Lighting*; Japan was the second authority to fine an *Auto-Parts* cartel, in *Wire Harness*, in January 2012.

<sup>&</sup>lt;sup>39</sup> The DOJ's Amnesty-Plus offers immunity to company under investigation for price fixing if it is the first to supply information about a second cartel about which the DOJ has no information

<sup>&</sup>lt;sup>40</sup> This cartel was apparently discovered by U.S. private plaintiffs, and the role of government investigations, if any, is unclear.

*Lights*<sup>41</sup>, and *Small Electric Motor Components* in July 2011; *New Auto Lights* in March 2012; *Thermal Systems* in July 2012; and *Auto Marine Shipping* in September 2012. Eventually, up to 80 auto-parts and related cartels were detected (see list in Table 1).<sup>42</sup>

The Canadian Competition Bureau was likely involved in the *Auto-Parts* investigations from about 2009. By about 2012, Canada was joined by the Australian, Mexican and South Korean antitrust authorities, and all seven were cooperating with each other. Later, the German Federal Cartel Office, China, South Africa, South Korea, Singapore, and Brazil detected the global *Auto-Parts* cartels and some unique domestic cartels operating in their own territories. That makes 12 jurisdictions representing 40 nations, which I believe is the second-largest number of cartel-prosecuting antitrust authorities.<sup>43</sup>

Press reports and some cartel-fine decisions have identified several amnesty recipients. Furukawa Electric Co. was granted immunity in the *Wiring Harnesses* cartel by the JFTC; Denso Corp. was granted immunity in the *Thermal Systems* cartel by the JFTC; JTECK Corp. was granted immunity in the *Auto Bearings* cartel by the JFTC; DENSO got a free pass in the EC's *Thermal Systems, Alternators,* and *Spark Plugs* prosecutions; Sumitomo Electric was awarded amnesty by the U.S. and EC authorities; VW's MAN Group was immunized in *Trucks* ;Mitsui's MOL was the EC's (and probably the DOJ's) immunity recipient in *Auto Shipping.* These companies saved billions of dollars in fines. Doubtless a few more leniency and "leniency-plus" recipients will be revealed in a few years.<sup>44</sup>

Clearly, close cooperation and coordination among these far-flung antitrust authorities has greatly aided in the rapid dissemination of information needed to begin the multiple investigations.

Consider this statement by experienced antitrust experts on investigations in Canada:

"Massive enforcement resources appear to be at play in the ongoing auto parts inquiry which, from early estimations, appears poised to become the biggest cartel case in history. From documents filed with the Ontario courts, we know that the Bureau's investigation began with the wire harness raids in February 2010 and has grown exponentially since then. The size of the Canadian inquiry is remarkable — as of October 2011, the Bureau claims to have:

- 10 co-operating parties in the inquiry;
- issued at least 15 "target" letters and numerous subpoenas ("Section 11 orders"); and
- granted 164 markers to its co-operating parties across a broad range of products" (Low and Halladay 2012: 4).

The last figure is particularly impressive and would, under normal circumstances, reflect *years* of enforcement efforts. Clearly it encapsulates the enormous scope of the automobile manufacturing supply chain, and the effects of "amnesty plus" applications". However, the 164-product claim may

<sup>&</sup>lt;sup>41</sup> This cartel was apparently discovered by U.S. private plaintiffs, and the role of government investigations, if any, is unclear.

<sup>&</sup>lt;sup>42</sup> The vast majority of the 80 *Auto-Parts* cartels are parts/components manufacturers with overlapping membership in schemes that rigged bids against OEMs. However, a few fail to meet the previous definition. For example, auto-parts distribution in India and auto importers in Indonesia were not organized by manufacturers; leasing autos in Switzerland was comprised of subsidiaries of OEMs, not suppliers. Finally, a few cartels (in Spain, Korea, Turkey, and Pakistan) comprised of OEMs colluded on the selling or rental prices of cars, not parts.

<sup>&</sup>lt;sup>43</sup> The largest is the global cartels *Air Cargo* (13 authorities) (Connor 2019).

<sup>&</sup>lt;sup>44</sup> A complete list awaits several probable EC decisions and developments in private U.S. suits.

be exaggerated by failing to group many of the items into the integrated systems that OEMs used to issue tenders.<sup>45</sup> The number of well-defined *Auto-Parts* markets is in the 70 to 80 range.

#### C. The Belated German Diesel Emissions Scandal

The most recent, and still largely unresolved, *Auto-Parts* investigation was initially known as the *German Diesel-Engine Emissions* case (a/k/a "Dieselgate" and "BlueTEC"). Initially focused on fraudulent statements to environmental regulators in Europe, the scandal has moved beyond German-based auto and parts makers, beyond conduct just the EU, and by touching upon allegations of collusion has moved beyond simply fraudulent misrepresentation of the extent of pollution created by diesel engines.

The scandal was unveiled in May 2014 as investigations of the California and U.S. environmental protection agencies were launched into illegal claims (and mislabeling of) nitrous oxide emissions from certain VW diesel motors (Connor 2017).<sup>46</sup> These agencies found evidence that as early as 2008 VW had inserted software into electronic control devices that intentionally "defeated" accurate measurement of NO<sub>2</sub> emissions; that is, intentional distortion of pollution testing had gone on for at least ten years and perhaps longer.<sup>47</sup> By the summer of 2015, federal U.S. environmental regulators were threatening to withhold permission for VW to sell 2016 diesel-engine cars until discrepancies over emissions levels were resolved (DOJ 2018). As late as July 2015, internal communications show that senior VW executives agreed to continue trying to deceive those regulators. Finally, on September 3, 2015, VW officially admitted that it had installed defeat devices on its diesel cars.

The legal repercussions for VW have been severe (*ibid.*).<sup>48</sup> In March 2017, VW AG pled guilty to defrauding U.S. and California environmental agencies and violating the Clean Air Act. It paid a U.S. civil fine of \$2.8 billion. Other U.S.-imposed mandatory cash restitution of \$5,000 to \$10,000 per vehicle cost VW an additional \$17.5 billion. Since then nine VW executives have been charged criminally. For example, Oliver Schmidt and James Liang were sentenced to prison and in 2019 were serving sentences of 84 and 40 months, respectively. On May 3, 2018, an indictment of former VW CEO Martin Winterkorn was unsealed charging him and the entire Management Board of VW with criminal conspiracy to defraud the United States (*ibid.*). Several of those charged are fugitives. As of May 2019, VW has paid \$33 billion in fines and compensation to buyers of affected vehicles, including fines by German State Prosecutors and the Dutch and Italian antitrust agencies. While representative actions have been filed, most EU buyers remain uncompensated.<sup>49</sup> Suits by diesel car owners in the EU are demanding \$11 billion. Besides fraud indictments, Fiat Chrysler and Renault

<sup>&</sup>lt;sup>45</sup> Many of these parts may be available separately for used auto repairs, but the multi-part *systems* contained in Requests for Proposals are the appropriate product markets for bid rigging against OEMs.

<sup>&</sup>lt;sup>46</sup> Initial emissions discrepancies on VW cars were discovered in 2013 tests by the U.S.-based International Council on Clean Transportation, which informed the California and U.S. environmental authorities of the results. In September and October 2015, a German auto club found excessive emissions from diesel motors on certain models of new cars sold by VW, Renault, Volvo, Jeep, Fiat, Hyundai, GM-Opel, Mazda, Ford, Mercedes, and Citroen (*The Guardian* 30 Sept. 2015).

<sup>&</sup>lt;sup>47</sup> An unconfirmed report says that one former employee told French prosecutors that cheating by Renault on emissions tests had been in place since 1990 (*TheLocal.fr* 16 March 2017).

<sup>&</sup>lt;sup>48</sup> For VW's managerial response to Dieselgate, see Jung and Sharon (2019).

<sup>&</sup>lt;sup>49</sup> "In Europe, VW refused to settle with governments or consumers in Germany, Ireland, Italy, the Netherlands, Spain, Switzerland, and the United Kingdom, and treated court cases that arose there as a nuisance and waste of time" (Jung and Sharon 2019: 8).

have had large "voluntary" recalls of their diesel cars, and Porsche executives are under investigation for bribery and tax evasion (*France 24* May 28, 2019). In 2019, authorities in 21 jurisdictions are investigating violations of environmental laws.

The status of *antitrust* investigations into diesel emissions is more difficult to gauge. Three antitrust authorities criminally fined VW or its managers (the DOJ, Netherlands, and Italy) about \$6 million (EU 2019). The German Federal Cartel Office and the EC competition-law directorate are investigating whether scores of "technical committees" were in fact platforms for quantity-reducing collusion. One set of allegations concerns limiting the sizes of tanks that contain emissions-cleansing chemicals for diesel motors. After Daimler applied for leniency, the EC issued a Statement of Objections to three auto manufacturers (Daimler, BMW, and VW) in April 2019; severe fines on two or three of the auto makers are expected in 2020.<sup>50</sup> The antitrust authorities of Australia and the Netherlands are investigating.

In this report, because it is unclear whether fraudulent conduct by auto makers and parts manufacturers (notably Robert Bosch GmbH) arose from or is linked to collusive conduct, monetary fines and cash compensation related to diesel emissions will be shown and discussed separately from other antitrust penalties (see Table 7).<sup>51</sup> In any case, Dieselgate has ensnared seven of the world's leading automobile manufacturers and two of their suppliers; monetary penalties (almost all non-antitrust) to date amount to an extraordinary \$31.8 billion, with VW bearing the brunt.

#### IV. Industry Structure and Conduct

#### A. The Auto-Parts Cartels Are Historically Unusual

If one goes back 30 years, the number of auto-supply industries convicted of illegal cartel behavior is rather small, given the large size of the automotive sector. I have scoured a large scale data set of international cartels<sup>52</sup> and found ten<sup>53</sup> that for various reasons do not, in my judgment, qualify for membership in the Supercartel (see Table 1 for reasons). Some of the related cartels do not compare to the mostly mechanical-electrical manufactured parts in the current wave. Perhaps the most comparable predecessor is *Auto Glass (a/k/a Carglass)*, a 2004-2005 cartel that resulted in record EU fines of \$1.76 billion.<sup>54</sup> The current 2000-2014 wave of 80 *Auto-Parts* cartels is listed in Table 2.<sup>55</sup>

<sup>&</sup>lt;sup>50</sup> A popular investigative magazine revealed that EC fines of up to €3 billion (approximately \$3.5 billion) are being considered (*Der Spiegel* April 7, 2019).

<sup>&</sup>lt;sup>51</sup> Much of the costs of resolving consumer complaints involves repairs for recalled cars and extended repair warranties. These are not cash compensation, but some OEMs are valuing them at almost equal to cash payments.

<sup>&</sup>lt;sup>52</sup> The *Private International Cartels (PIC)* data set has unrivaled legal-economic information on more than 900 cartels and 7000 cartelists.

<sup>&</sup>lt;sup>53</sup> Two more were investigated but dropped or cleared by the authorities. In one unique case (*Aftermarket Auto Air Filters*), the DOJ was misled by a putative whistle-blower later indicted for lying to investigators. A third alleged cartel (Automobiles, Canadian imports to US) was dismissed after one company settled.

<sup>&</sup>lt;sup>54</sup> Other possible predecessors are the *Indian Tires, Canadian Auto Imports, Auto Manufacturing in Turkey,* and FEFC Shipping cartels are cases in point. Even *Automotive Refinishing Paint* is not comparable because customers were auto body shops, not auto OEMs. I hesitantly include the *Truck Manufacturing in EU* cartel in the *Auto-Parts* supercartel.

<sup>&</sup>lt;sup>55</sup> Several began before 2000 and a few continued slighted beyond 2012, but all seem to overlap at least in part with the 2000-2012 period.

The 80 auto-industry cartels that have formally investigated beginning in 2010 (including the 70 found guilty of cartel conduct) comprise about 6% of the total number of international cartels detected in the past 30 years (Connor 2019). One possible reason that few auto-parts cartels were observed in the past is because of the large resources expended on procurement by a relatively small number of presumably "sophisticated" buyers. Auto manufacturers tend to have procurement specialists who develop expertise in the supply conditions in the industries from which inputs are purchased. That is, knowledge about cost conditions was symmetrical. Why that symmetry in bargaining over prices broke down is yet to be revealed.

Another factor that frequently provokes the formation of cartels is financial stress in the industry. Of the 70 Auto-Parts cartels with information on their first year of operation, 57 (81%) were launched during 1999 to 2006. Automotive production worldwide in 1999-2006 was rising from about 53 million units to 73 million in 2007 (Statistica 2018). Annual production in the United States in 1999-2007 was in the range of 16 to 18 million units – an historical high for the industry (Cutchner-Gershenfeld *et al.* 2015: Figure A).<sup>56</sup> Demand for parts would have risen proportionately. While there are no reliable, comprehensive profit data for the OEMs, net revenues and gross margins tend to rise when demand and production rise, so there is little evidence that the OEMs were financially stressed in 1999-2007. Comparable information about the OEMs' input suppliers' financial performance is unavailable, but ought to be hitched to that of their customers.

#### B. Industry Structure Facilitates Bid-Rigging

At least three-quarters of the *Auto-Parts* cartels involved rigging the bids of the OEMs (Connor 2019). Except for small numbers of buyers and the vaunted sophistication of their procurement managers, industry structure and customary practices make many auto-supply industries fertile ground for overt price fixing. For the products alleged to have been price-rigged, there are few suppliers in a given geographical production region. For example, the four Japanese suppliers of *Auto Lighting Products* control well over 90% of U.S. national supply. Similarly, the top four wiring-harness suppliers control 77% of the global market (Sedgwick 2013). For 14 cartels, sources indicate that their median share was 95% (Connor 2019). To some extent, automakers' policies of running qualification programs for suppliers created barriers to entry and ultimately contributed to a high degree of supplier concentration for assembly plants in most markets.

Moreover, "Competitors regularly meet at a variety of events, such as trade fairs or workshops organized by OEMs, which creates opportunities for illegal discussions" (Bird & Bird 2012). The auto industry's labor market has a reputation for being segmented from that of other industries. Managers and executives of auto suppliers and their clients tend to move jobs by circulating to other companies in the auto subsector. Legal sharing of technical information between rival suppliers may morph into sharing of sales transactions, prices, or information on future plans.

However, countervailing these oligopolistic conditions is the fact that automakers are also few in number and have a reputation for being tough, well informed buyers. Indeed, in the language of business management, the OEMs are the captains of a complex vertical distribution channel.<sup>57</sup> Auto

<sup>&</sup>lt;sup>56</sup> During the Great Recession, global production fell from the 2007 peak by 15%. During late 2007 to 2010, annual U.S. production fell to 9.5 to 12.5 million.

<sup>&</sup>lt;sup>57</sup> Far upstream in this subsector are makers of raw materials (iron and bauxite mines, rubber plantations, petroleum extraction, and the like), commodity materials manufacturers (raw steel and aluminum, rubber, plastic, etc.), and further

parts suppliers tend to work closely with the assemblers on product designs because of frequent model changes. Unlike collusive bid rigging of government tenders, there is nothing in the public record suggesting ethical lapses by OEM procurement managers. The presumed "sophistication" of the buyers (the OEMs) should have made collusion unlikely. Moreover, some suppliers – especially those supplying Japanese brands -- were financially controlled by their buyers.

The auto-assembly industry is the prototypical "global industry." That is, input-sourcing depends on distant imports in all markets with significant auto assembly: North America, the EU, Japan, China, Brazil, South Africa, and others. This commonality in input-supply structures is reinforced by the tendency of parts suppliers to follow their customers with investments after new assembly facilities are established. Indeed, there is some anecdotal evidence that Japanese auto companies in the United States favored their home-country suppliers over even lower-cost U.S.-based suppliers (Gearino 2015). If true, this conduct raised supplier concentration and contributed to conditions that facilitated collusion.

The auto parts that were subject to collusion are typically bought through Requests for Proposals (i.e., "tenders") issued by the automakers for designs tailored to production of a particular redesigned vehicle model to begin two to four years hence.<sup>58</sup> These RFPs contain tight quality and design specifications: size, materials, connections, engineering performance. Buyers provide expected production numbers for up to six years. The OEMs were satisfied if their auction attracted two or three bidders, including the incumbent supplier of the component in the vehicle model being phased out. Buyers convey their expectation that either the component's quality will be superior to the current part or that price will be lower (or both). When proposals (a bid) are submitted, designs and performance standards are highly specified, so virtually the only consideration in choosing the winner was price. Because the RFPs imposed product homogeneity, this eliminates one potential factor that tends to frustrate the formation and smooth operation of cartels. In short, colluding over which bidder would win was made easier. Once a bid was accepted, buyers agreed to stick with the winner for several years (until a car model was totally redesigned), which prevents entry.

A Surcharge Order of the Japan FTC outlines how two suppliers of windshield wipers organized one cartel. Mitsuba and Denso agreed to let one of them win an RFP from Fuji Heavy Industries in June 2000; in September 2002 this *pas de deux* was repeated for Suzuki; and Nissan was the victim of a third rigged bid in March 2003 (JFTC 2012: 2).<sup>59</sup> One of the more bizarre episodes was described by the Japan FTC's report on the *Small Electric Motor Auto Systems* cartel. One of the cartelists was Calsonic Kansei, which is largely owned and controlled Nissan Motors. Calsonic/Nissan rigged high prices on starters and generators sold only to Fuji Heavy Industries, maker of Subaru cars, and one

manufacturing of materials (sheet steel, aluminum rolls, vulcanized rubber, and plastics with various textures). The autoparts cartelists shape and combine these materials into finished components for sale to the OEMs. The channel ends with final consuming households or businesses.

<sup>&</sup>lt;sup>58</sup> "Bids usually came in for U.S. manufacturers three years before the first model year of a proposed part's typical fourto six-year production life. The bidding company executives allegedly aligned prices on a model-by-model basis, and sometimes resorted to code words, meetings at home or remote locations to help keep the conspiracy secret, according to court records" (*BearingCode* 8 March 2013) [http://bearingcode.com/newupdates2013.html].

<sup>&</sup>lt;sup>59</sup> This Surcharge Order demonstrates the difficulty of precisely demarcating cartels. The Order identifies cartelization by seven companies of four non-substitutable parts (generators, starters, wiper systems, and radiator/fan assemblies). The unifying factor is small electric motors and the presence of Denso Corp. in all four sub-markets. Never did more than four companies rig bids for a specific part; often it was only two.

of the smaller Japanese automakers. Thus, Nissan benefitted strategically in the auto market because it was able to impose through collusion extra manufacturing costs on a rival's brand.

It is noteworthy that there is a large array of inputs accounting for the major share of OEM materials costs that was not subject to collusion. In general, these parts and components are manufactured through vertical integration by the OEMs themselves: frames, chassis, engine motors and manifolds, transmissions, and axels are the main examples. These parts were not procured from independent suppliers by RFPs. A second category of parts are tires, batteries, electronic software, inputs that can be purchased "off the shelf" when a car is launched and do not require advanced customization.

#### C. A Huge Array of Products

Even at this stage, it is hard to know precisely how many markets were affected, their geographic scope, and whether they were interrelated. This uncertainty arises in part because not all the antitrust authorities agree on the market definitions involved. The US Government has convicted the largest number of cartels (48), the EC only 13, and Canada 12. However, after studying the available information, 70 to 80 markets seem to have been affected in one or more jurisdiction (Table 2).<sup>60</sup> An illustration from EC prosecutions of a limited list of affected automotive parts is sketched below (Europost 2019).



<sup>&</sup>lt;sup>60</sup> The list may not be exhaustive. Catalytic converters and electronic navigation & entertainment systems have been suggested as affected auto-parts products. One source says that the DOJ is investigating 60 cartels. As of June 2019, 48 cartels had been fined by the DOJ, and 22 were penalized by other authorities (including four by U.S. courts).

Within some of these cartels, many products are encompassed by integrated parts systems. For example, such a seemingly well defined product as *Wiring Harnesses* encompasses many related products: automotive electrical wiring, lead wire assemblies, cable bond, automotive wiring connectors, automotive wiring terminals, high voltage wiring, electronic control units, fuse boxes, relay boxes, and junction blocks. *Occupant Safety* and *Thermal Systems* are similar product assemblies.

It is informative to note that no auto inputs that are typically made by the OEMs through direct backward vertical integration were cartelized. I refer to motors, transmissions, chassis, and steel or aluminum exterior panels; these are made "in-house" by the leading OEMs, not by independent suppliers. There are two lessons that can be drawn this pattern. First, when inputs account for a substantial share of material input costs (say, 5% or so), there is no scope for collusion. Vertical divestment changes things. Perhaps it is no coincidence that collusion against GM began soon after it sold its Delco-Remy division in 1994, against Toyota after DENSO no longer supplied a majority of output to Toyota, etc. Any financial cost savings resulting from divestment may have backfired. Second, by delegating manufacturing of minor inputs (say, 2% or 3% of total material inputs) to ostensibly unaffiliated suppliers, the OEMs suffer a substantial loss of information about manufacturing costs and a consequent loss of bargaining power over price.<sup>61</sup> It is not rational for buyers to invest large resources in the technologies of procurement when an input – like nuts, bolts, rivets, and airbags -- is a minor one.

#### D. Targets of Bid-Rigging

About 17 of the world's largest, non-Chinese automotive manufacturers (OEMs) were targets of the input-makers cartel schemes. Typically, two or three suppliers were invited through Requests for Proposals to submit price quotes for an auto part meant to be compatible with the design for a new car model that would be produced for three to five years in the future.

The direct auto-parts customers included GM, Ford, and Chrysler/Fiat; Audi/VW, BMW, Mercedes/Daimler, PSA Peugeot, Renault/Nissan; and Hyundai, Kia, Subaru, Suzuki, Isuzu, Mazda, Mitsubishi, Toyota, and Honda. In these cartels, pass-on damages were incurred by retailers and consuming households.<sup>62</sup> In a few cases, a cartel colluded against OEMs after manufacturing was complete; the *Auto Ro-Ro Shipping* cartel is one such case; oceanic shipping is an essential service for large OEMs, because they all export finished vehicles to buyers across the seas. The *Ro-Ro Auto Shipping* cartel raised the prices of destination charges on many specific routes with few rivals, such as Korea-Israel<sup>63</sup> and Europe-Baltimore<sup>64</sup>.

<sup>&</sup>lt;sup>61</sup> I have previously emphasized the increased likelihood of input collusion when the input share is very small. See similar comments on the *Lysine, Citric Acid,* and *Bulk Vitamins* cartels in Connor (2008).

<sup>&</sup>lt;sup>62</sup> In the small number of distributors' cartels, auto retailers or consumers were directly injured.

<sup>&</sup>lt;sup>63</sup> The origin of *Auto Shipping* collusion from Korea is a "summit meeting" of nine ro-ro shipping firms in August 26, 2002 in which they agreed to "respect" historical market shares. A separate two-firm cartel began as early as March 2008 on the Israel-Japan route, which was a duopoly from 1993 to 2011 because of the Arab League Boycott of Israel. See the KFTC Press Release "KFTC imposes sanctions on 10 international cartels of car shipping" dated August 21, 2017 [kftc.go.kr].

<sup>&</sup>lt;sup>64</sup> See *Indictment*: U.S. v. Anders Boman et al. [https://www.justice.gov/atr/case-document/file/985521/download], detailing collusion by three employees of Wallensius Wilhelmsen Logistics in the Port of Baltimore 2004-2012.

#### V. Geographic Location Follows Location of Auto Assembly

Price fixing by the *Auto Parts* cartels occurred in roughly the 50 most industrialized economy of the world but was concentrated in those nations with important clusters of automotive assembly plants (i.e., plants operated by the automotive OEMs) (Wikipedia 2019). Collusive meetings among suppliers generally occurred in the countries where the assembly plants were located, though the agreements were generally approved by division directors or vice presidents at company headquarters. If assembly was too small to support in-country or nearby parts manufacturing, agreements were forged in Japan or other export locations. In the year 2010, based on vehicles produced in nations that initiated antitrust investigations, shares of world production units were: North America 13%, Latin America 7.4%, the EU 20.3%, South Africa 1%, and Asia 49%. (Based on value of sales, the No. American and EU figures might be about 15% and 23%).

The number of *Auto-Parts* cartels in major regions detected (investigated) by antitrust authorities is shown in Figure 1.

The single largest regional location of cartel operations is North America, i.e., Canada and the United States.<sup>65</sup> North America is closely followed by 26 EU-wide cartels detected by the EC<sup>66</sup> and nine more localized cases being prosecuted by Member States of the EU. Few, if any, more *Auto-Parts* antitrust penalties are likely to emanate from the U.S. DOJ, and Canada's investigations are closed. However, the EC may have a couple more future decisions, possibly large-fine automotive cartels in the pipeline (Niemeyer et al. 2018).<sup>67</sup>

<sup>&</sup>lt;sup>65</sup> Canada fined at least one participant in 12 cartels, and the US DOJ fined 48 global cartels; six more cartels are awaiting penalties from the DOJ or private suits. Both jurisdictions have one large investigation ongoing in early 2019, the *Diesel Motor Emissions* case, which is mainly a fraud allegation but may also include price and non-price collusion violations. See Connor (2017). No investigations have been revealed by Mexican authorities, but the Mexican auto-parts industry has doubtless been affected by the cartels, because it is closely integrated with U.S. and Canadian production as a consequence of the NAFTA Agreement.

<sup>&</sup>lt;sup>66</sup> The EC has taken the position that when two or three parts manufacturers colluded on the same parts against two buyers, then two cartels existed. The DOJ and all other authorities treated this situation as one market and cartel, which is the definition followed in this paper. The EC has fined only ten cartels as of March 2019, but as many as 23 more may still be under investigation.

<sup>&</sup>lt;sup>67</sup> These close observers of the EU cartel scene suggest that other "car-related" cartel infringements to be announced include automotive insurance.



# 1. *Auto Parts*: Geographic Location of Collusion, Numbers of Cartels

The Rest of the World (ROW) accounts for an additional 34 cartels that did not operate in North America or in the EU. The Japan and Korea FTCs have brought quite a few *Auto-Parts* collusion cases, 21 and 14, respectively. Brazil's CADE has also been active in cartel enforcement, with 16 cases known to be open and perhaps a few more yet to be announced. Mexico, China, Chile, and South Africa prosecuted 17 cartel cases.

Finally, the largest category are the 51 *global* cartels, each of which rigged bids in two or more continents. Nearly all the global *Auto-Parts* cartels colluded in at least three continents (North America, Western Europe, and East Asia), and more than half of the global cartels affected markets in five or six continents. *All* of the Auto-Parts of the cartels penalized in the United States are global cartels. If one were to distribute the affected markets of global cartels to single jurisdictions, except for North America the number of cartels per region would roughly double in each regional grouping.

The numbers of detected cartels reflect to some extent the assertiveness of local antitrust authorities. Bids were rigged for parts sold to OEMs (or their subsidiaries) that have headquarters in the United States, the EU, Japan, and South Korea. Yet, countries with significant auto assembly activity, such as South Africa and Australia, have brought relatively few *Auto-Parts* collusion cases (three and five, respectively). China has joint ventures involving nearly all of the known targeted OEMs, yet it has so far indicted only four *Auto-Parts* cartels.<sup>68</sup>

#### VI. Duration of Collusion

Longer cartel duration generally implies that, *ceteris paribus*, the amounts of cartel injuries will be higher. The *Auto-Parts* cartels endured for above-average lives. The typical international cartel lasts

<sup>&</sup>lt;sup>68</sup> It is likely that the mostly Japanese-owned auto-parts cartelists faced higher levels of competition from Chinese-owned fringe producers in China than they did in other markets.

for a median age of six or seven years. For the 70 Auto-Parts cartels with data, the mean and median average duration is 109 months (nine years) -- whereas the median average of all other cartels is 60 months (five years) (Figure 2).<sup>69</sup>

The reasons for the relative durability of the Auto-Parts cartels can only be a matter of speculation. Being in the manufacturing sector is one likely explanation. The curious reluctance of most OEMs to complain to antitrust authorities about bid rigging is another; notably only one OEM (Ford) is suing for antitrust damages.



# 2. Median Duration of Auto-Parts vs. **Other** International Cartels

#### VII. **Antitrust Prosecutions**

Nearly all of the Auto-Parts cartels were investigated after leniency applications submitted to U.S. EU, Canadian, and Japanese antitrust authorities. Today, dozens of antitrust authorities regularly offer leniency to cartelists.<sup>70</sup> The leniency applicants submit detailed renditions of how a cartel was organized: the names of corporate and individual participants, their agreements, locations and dates of meetings, other means of communication, and other direct evidence of the conspiracy that can be used to prove the guilt of all involved. These proffers were shared with other antitrust authorities to the extent allowed under cooperation protocols. Evidence of close cooperation is seen in about 20 simultaneous joint raids of suspect cartelists' headquarters during 2010-2013 by various

<sup>&</sup>lt;sup>69</sup> In the peak discovery period for 60 of the 70 Auto-Parts cartels - 2006 to 2015 - their duration was practically double the duration of cartels in all other industries, though for eight Auto-Parts cartels discovered after 2015 the two subgroups did move slightly together. The dip in Auto-Parts duration in the 2001-2005 semi-decade is the result of only two very early discoveries of atypical automotive cartels.

<sup>&</sup>lt;sup>70</sup> "Part of the investigations seems to be related to what is sometimes referred to as the 'snowball effect' of leniency programs. Companies that are caught in an investigation often carry out a detailed internal audit to determine whether other business divisions are involved in illegal conduct as well. If this is the case, they typically will file a leniency application, i.e. they will disclose this conduct voluntarily to the authorities in order to be exempt from fines for infringements in these other business areas. Under the US 'Amnesty Plus' program, there is even a double incentive for companies to make such a voluntary self-disclosure" (Bird & Bird 2012).

combinations of three to seven of the antitrust authorities in the United States, Canada, the EC, Japan, Korea, Mexico, and Australia.<sup>71</sup> All told, 18 government antitrust authorities indicted cartels in the *Auto-Parts Supercartel*.

As a rule, the first leniency applicant to fully cooperate with prosecutors is awarded full immunity from government penalties, no matter the degree of culpability of the applicant; in other words, the first to arrive receives amnesty. The PIC data set on *Auto-Parts* has identified at least 27 amnestied cartelists, some of them awarded amnesty by multiple jurisdictions (Connor 2019).<sup>72</sup> The most effective cartel leniency programs are in jurisdictions like the USA and EU that have high fines or lengthy prison terms. While prosecutors typically extol their effectiveness in uncovering hidden collusion, leniency programs are sometimes viewed with suspicion in countries where business cultures and popular sentiment are at odds with competition laws. In Japan, an interview with a high official of the Ministry of Economy, Industry, and Trade (MEIT, f/k/a MITI) indicated skepticism of the *Auto-Parts* antitrust prosecutions and hostility to leniency programs (Greimel 2014). He objected to the lack of transparency of a process that – contrary to Japanese business culture -- "pits one company unfairly against another" (*ibid.*). Furthermore, many authorities then file "copycat charges" with little additional investigation and "pile on" penalties issued by the first jurisdictions.<sup>73</sup> Of course, Japanese officials committed to inculcating competitive practices hold contrary views.<sup>74</sup>

There is a logical problem facing antitrust authorities in applying leniency programs in the Age of Supercartels. If a group of cartels qualifies as. Genuine supercartel, then under the most such program rules, only one corporate cartelist can qualify for full amnesty (though many can qualify for more modest cooperation discounts. But the practical result of such a rigid policy would by far fewer cartel detections. Moreover, it may take antitrust authorities a year or more to firmly identify the emergence of a supercartel. Similarly, if in fact a supercartel is a single beast in the shape of many-headed Hydra, then cartel-based penalties are like lopping off a few heads rather than killing the body: penalties formulated under a single-cartel concept will be too low because prosecutors use far too modest estimates of affected commerce.

The first *Auto-Parts* conviction was announced on January 30, 2012 when Yazaki agreed to plead guilty to three counts of criminal bid rigging, pay a \$470-million fine, and cooperate with the U.S. DOJ in convicting other cartelists.<sup>75</sup> The Yazaki confession was the first of hundreds of such admissions This section lays out the outcomes of the global assault of auto-parts bid rigging.

<sup>&</sup>lt;sup>71</sup> To name some: Bearings, Air Flow Meters, Anti-Vibration Devices, ATF Warmers, Fan Motors, Fuel Injection Systems, Fuel Senders, Instrument Panel Clusters, Inverters, Motor Generators, Radiators, Starter Motors, Power Steering Assemblies, Variable Valve Timing Controls, Power Window Motors, Windshield Washer Systems, Windshield Wiper Systems, Wire Harnesses, and Ro-Ro Auto Shipping.

<sup>&</sup>lt;sup>72</sup> Of which 13 were identified by the EC, four by EU NCAs, and 13 by Japan, Brazil, and China. Ten probable amnesties emanated from the U.S. DOJ, and there are likely ten more Amnesty-Plus awards.

<sup>&</sup>lt;sup>73</sup> "Piling on" is what lawyers call double jeopardy. However, nearly all antitrust authorities compute fines on the basis of affected commerce *in their jurisdictions*, so multiple fines for the same crime are not double jeopardy.

<sup>&</sup>lt;sup>74</sup> Kaori Ito in MEIT's Competition Enhancement Office noted that headquarters of Japanese companies are committed to instilling antitrust compliance, but subsidiaries may not have gotten the message (Greimel 2014).

<sup>&</sup>lt;sup>75</sup> The guilty conduct was rigging multiple bids for *Wire Harnesses* from as early as January 2000 to Feb. 2010 (affected commerce totaled about \$2 billion), for *Instrument Panel Clusters* from as early as Dec. 2002 to Feb. 2010 (\$73 million), and *Fuel Senders* from as early as March 2004 to Feb. 2010 (\$1.6 million) (DOJ 2012).

#### A. Cartel Penalties

Monetary penalties imposed on companies in each of the 80 *Auto-Parts* cartels are shown in Table 3. The total monetary fines and settlements is \$20.8 billion (almost \$300 million per cartel on average), which is on its way to equal to *Banking* (30.4 billion) as a world record amount (Connor 2014). Of the 80 instances, ten cases have not yet been decided and two involved non-monetary consent decrees.

As the summary in Figure 3 demonstrates, penalties were mostly announced during the years 2008-2016. Two-thirds of the known penalties were imposed on cartels that were cracked in 2011-2013 and most of the rest appeared in 2014-2016. Fines in North America and the EU account for 17% and 58% of total penalties, respectively; fines in the ROW amount to 11%; and private damages paid account for 14%.



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As of early 2019, U.S. and Canadian fining is believed to be complete, but Brazil and some other ROW agencies will be adding fines for a few years hence. One EC case was decided in early 2019; it is possible that a small number may yet be announced in 2019-2020.<sup>76</sup> Additionally, several U.S. and Canadian private damages suits, which often require five or six years to wrap up, are mostly settled.<sup>77</sup> Finally, a small number of European damages actions are in their early stages in 2019. Given these future decisions, *Auto-Parts* penalties may approach \$25 to \$30 billion in a few years. Even if penalties do rise to \$30 billion, *Auto-Parts* will not surpass the *Banking* supercartel.

<sup>&</sup>lt;sup>76</sup> EC decision-making is relatively slow. The 132 EC cartel decisions with fines during 1990-2018 took an average of 3.6 years to investigate from the date raids or other press reports reported an investigation underway, and nearly one-fourth required more than five years. Decisions that ended with cease-and-desist orders only lasted twice as Individual penalties. <sup>77</sup> Based on 243 international cartels, the average time from the date of discovery to the date the *first* member of a cartel agreed to settle in a U.S. damages case was 4.0 years.

#### **B.** Corporate Penalties

At least 473 corporate investigations have been launched worldwide in the *Auto-Parts* cases as of early 2019. (The final number discovered is unlikely to exceed 500). Of these, at least 316 corporate monetary penalties were obtained (plus at least a dozen amnesty awards) by the world's antitrust authorities (Table 4). The range in corporate penalties is wide: specifically, 45 penalties (or 14%) were below \$1 million; another 38% of the penalties were "medium size," i.e., above \$1 million but below \$10 million; and one-third of the penalties (157 or 33%) exceeded \$10 million, of which 31 were above \$100 million and six above \$1 billion.

Table 4 groups by ultimate parent owner all of the largest penalties paid by the top 30 offenders. These 30 corporations and corporate groups paid or have agreed to pay a total of \$18.4 billion in criminal and civil penalties. Although the top firms account for only about 15% of the number of parent companies, they account for a striking 88% of all the penalties paid by the 300-plus violators. The greatest *Auto-Parts* offenders are a mix of famous corporations and more obscure manufacturers.<sup>78</sup> Perhaps the more unexpected corporate parents in Table 4 are OEMs like Toyota, Ford and the Renault-Nissan Alliance; they make the list because of their ownership and control of large auto-parts companies like Toyota's DENSO, Schaeffer's Continental Automotive, and Renault-Nissan's MELCO.

Some commentators have opined that the large majority of all the *Auto-Parts* violators are Japaneseowned companies.<sup>79</sup> While they are indeed by several measures the *plurality* of the lawbreakers, Japanese businesses do not form the majority. Looking at the *number of companies* convicted with monetary penalties, which total 314, a plurality of 137 (or 44%) of the penalties were placed on Japanese-owned companies or their local subsidiaries.<sup>80</sup> Four other nations had significant numbers of violators. Their nationalities are: American (9.9%), German (14.3%), French<sup>81</sup> (9.9%), and Korean (2.5%). The number of companies from each of the other nations is less than 2%.

Measured by the *dollar value* of the penalties, the ownership distribution is more diverse (Figure 4). The lead is still held by Japanese--headquartered companies (41% of dollar penalties). Japanese firms' penalties are followed by eight other nationalities: American (16.2%), German (14.7%), Swedish (4.7%), French (4.2%), Italian (3.6%), Norwegian (3.4%), Indian (1.7%), and Korean

<sup>&</sup>lt;sup>78</sup> Burtis et al. (2018) identified nine of the convicted Auto-Parts companies as unlisted or non-public: Aisan Industry Co. Ltd., Continental Automotive Electronics LLC, Corning International Kabushiki Kaisha, Hitachi Metals, Ltd., Maruyasu Industries Co., Ltd., Omron Automotive Electronics Co. Ltd., Sanden Corp., Toyoda Gosei Co. Ltd., and Yamada Manufacturing Co., Ltd.

<sup>&</sup>lt;sup>79</sup> Burtis et al. (2018) concluded in late 2018 that of the total of 46 companies that made guilty plea agreements, "-- the majority being Japanese component parts manufacturers --" (p. 380).

<sup>&</sup>lt;sup>80</sup> These counts include some double counting of companies, if multiple subsidiaries incurred penalties. Besides the 314 corporate convictions, there are 158 additional companies that are alleged violators. Of the latter, ten were guilty and accepted non-monetary consent decrees, 14 are known or believed to be amnesty recipients, and 136 are still under investigation.

<sup>&</sup>lt;sup>81</sup> Including 24 convictions (7.6%) of the Renault-Nissan-Mitsubishi Alliance, which seems to be mostly Frenchmanaged, but also substantially Japanese-controlled By Nissan and Mitsubishi.

(0.7%).<sup>82</sup> In the case of the smaller nationalities just listed, the great bulk of the penalties are amassed by only one or two companies.<sup>83</sup> All other nationalities account for 9.6% of total penalties.



The figures just quoted above count *penalty decisions* on companies, which is greater than the *number of companies* penalized. That is because the *Auto-Parts* cartels involved a high degree of serial collusion.<sup>84</sup> Serial collusion is frequent and high among the top 30 (Table 4). On average, the top 30 parent groups participated in nearly seven *Auto-Parts* cartels. In fact, only three of the top 30 *did not* engage in multiple market collusions. The outstanding example of serial collusion is Toyota Motor Co. and its subsidiary DENSO, which participated in at least 34 parts cartels. Ironically, Toyota applied for and was awarded immunity in several *Auto-Parts* cartels.

Along with the United States, Canada was another early mover. Beginning its investigations in 2009 and ending in 2018, the Competition Bureau has imposed 16 corporate fines totaling US\$128 million – a Canadian record (Connor 2016a: Table 2).<sup>85</sup> Although the Bureau has done so in the past, it indicted no individuals for price fixing in *Auto-Parts*.

The U.S. fine on Yazaki in January 2012 was followed quickly by the Japan FTC.<sup>86</sup> It fined seven auto-parts firms a total of \$215 million in late 2012. Yazaki Corp.'s fine of \$127 million set a new Japanese antitrust record. Moreover, the JFTC has referred four firms and nine executives for criminal prosecution in *Auto Bearings*, the first criminal antitrust prosecution in four years. By mid

<sup>&</sup>lt;sup>82</sup> Companies headquartered in Western Europe account for 38.5% of total penalties, which is merely 2.5 percentage points lower than the Japanese companies' penalties.

<sup>&</sup>lt;sup>83</sup> For example, Norway's penalties were incurred almost entirely by two shipping firms (Wilhemsen and MøllerGruppen) and Korea's by Hyundai Group.

<sup>&</sup>lt;sup>84</sup> Serial collusion is simply a count of the number of proven instances of price fixing by a single company during a given time span. Usually the nature of the markets involved is irrelevant, but in this paper *Auto-Parts* is the focus. Some instances of serial collusion qualify as legal recidivism, and all examples of recidivism are serial collusion, but the definitions of recidivism vary by jurisdiction.

<sup>&</sup>lt;sup>85</sup> The Auto-Parts total is nearly half of the 1990-2015 total Canadian fines on 77 cartels.

<sup>&</sup>lt;sup>86</sup> Indeed, Japan began investigating bid rigging of government tenders by tire manufacturers in 2004. The South African Competition Commission also found evidence of tire-manufacturer collusion; it fined a company in 2011 after a 2008 investigation.

2019, Japan had indicted large numbers of cartelists for price fixing: 115 companies and 43 individuals; however, only 30 companies were fined.

Japan's example was amplified in Asia by the antitrust authorities of South Korea, China, Singapore, Pakistan, Turkey, Indonesia, and India. In 2011, the Indian Competition Commission began an investigation into whether 17 auto manufacturers were colluding on the sales of car parts to independent dealers (Vyas and Thakkar 2013). Fifteen of them from all over the world were fined a record \$485 million in August 2014 (Connor 2019). This is the only Indian conviction in *Auto-Parts*. Singapore made history in December 2013 by imposing significant fines (\$7.4 million) on three manufacturers of *Auto Bearings*; this was Singapore's first international cartel conviction.

The EU, with the world's second-largest auto industry and a large source of *Auto-Parts* fines, has been relatively slow to impose them or other financial penalties (Table 3). For the 12 decisions announced so far, EC fines amount to \$7.188 billion (or 44% of total fines, excluding *Diesel Emissions*).<sup>87</sup> The EC is already 113% higher than the U.S. total. Speculation in the trade press suggests that 15 to 20 *Auto-Parts* cartels are under investigation by the EC.<sup>88</sup> A few of the markets are small, but eight of them exceed estimated EU affected sales of \$1 billion (Table 2).<sup>89</sup> Besides the EC, eight cases have been prosecuted by EU NCAs, four of them by Germany; excluding *Diesel Emissions*, fines total \$550 million. Together, the two mature antitrust regions (North America and the EU) account for \$11.2 billion in *Auto-Parts* fines (or 68% of the world's non-*Diesel-Emissions* cartel fines).

It appears that the *Wire Harness* cartel provided the entrée for the largest number of antitrust authorities to co-investigate, nine, starting with Canada in 2009. The following jurisdictions joined Canada's investigations: USA (2010), Korea (2010), Japan (2010), EC (2010), Australia (2013), Singapore (2013), Brazil (2015), and most surprising China (2014), which was new and unused to dealing with global cartels.<sup>90</sup> By mid 2019, *Wire Harness* fines totaled \$1.137 billion, now the fourth largest in penalties (Table 4A). Generally speaking, global cartels with very large affected sales are the ones with the greatest number of co-investigators: *Roll-on Roll-off Auto Shipping* (14 antitrust authorities), *Windshield Wiper Systems* (eight), and *Power Steering Assemblies* (eight).

Outside of Asia, Brazil has initiated a very large number of *Auto-Parts* investigations, 21 by mid 2019. Several are geographically unique to Brazil. Chile and Mexico have initiated a small number of auto-parts cases, as has South Africa. All told, national antitrust authorities outside of the two North Atlantic jurisdictions account for \$2.3 billion in fines, about 13% of total fines (or 17% excluding *Diesel Emissions*).

<sup>&</sup>lt;sup>87</sup> Reliable reports in 2019 say that the EC will fine three German auto makers \$3.77 billion by 2020; if correct, the EC fines will total \$11.0 billion (or 53% of world fines).

<sup>&</sup>lt;sup>88</sup> The EU auto-assembly industry is slightly larger than that of the United States. However, if one compares the 11 cartels that were fined by *both jurisdictions*, the EC's fines are 77% higher. If one adds *Diesel Emissions* to the list, the EC's fines will be about 300% higher.

<sup>&</sup>lt;sup>89</sup> They are, from largest to smallest: Valve Timing Controls, Fuel Injection Systems, Motor Generators, Power Steering Assemblies, Windshield Wiper Systems, HID Ballasts, Speed Sensors Assemblies, and Steering Angle Sensors. I suspect that only half or less of these eight will be decided.

<sup>&</sup>lt;sup>90</sup> Beginning in 2013 peculation began to mount that the new China antitrust authority was soon going to investigate price fixing in the automobile industry (Telegraph 2013).

To summarize, U.S. fines total \$3.4 billion and estimated sales total \$463 billion, so fines severity is less than 0.7% (1.4% including private settlements); for the EC, severity is about 0.5%; and the ROW has roughly 0.3% severity. All are low, but the U.S. ratio is the highest. (Severity ratios are further discussed below.)

#### C. Private Damages Paid

Damages awards made to private plaintiffs by courts – usually resulting from settlements in North America – are the second-largest type of penalty for cartel cases generally and the *Auto-Parts* cartels as well. Private enforcement plays a critical role in preventing or ameliorating collusion (AAI 2019). There are four sets of purchasers that were injured by collusion of this supercartel. First and foremost are GM, Toyota, and about 15 other OEMs (the brand manufacturers that assemble vehicles), which were directly affected by having offers from suppliers to fulfill their Requests for Proposals bid rigged. The OEMs comprise by far the largest segment of direct purchases, but the auto parts were also sold directly to distributors for *aftermarket* sales of parts.<sup>91</sup> Indirect purchasers include buyers of finished vehicles that contained one or more cartelized component: franchised dealers and end-users.<sup>92</sup>

According the PIC data set, at least 104 class-action, private damages suits were filed and have been mostly settled (of which 42 were U.S. direct-purchaser, 37 U.S. indirect-purchaser, and 25 Canadian<sup>93</sup> private class actions). Because of overlapping cases, 49 of the 80 cartels (61%) were sued by one or more injured parties in North America. The only truly direct purchaser of the parts and components is one OEM (Ford). Class actions were formed by auto-parts distributors and other "direct" buyers and by two groups of indirect purchasers buyers of completely assembled cars and trucks (retail dealerships and end-users).

For many of the auto-parts cartels, each of the defendants sells parts to a very few large automakers. Because the necessary requirement of "numerosity" is absent, class actions by the auto makers are unlikely. Rather, as suggested by antitrust lawyer Andrew Lee, "A lot of automakers want to preserve their relationships with some of these suppliers" (Baumann 2012). Indeed, in late 2013 Ford Motor Co. seems to have developed a legal strategy that other direct purchasers are likely to follow (Sedgwick 2013). On July 16, 2013, Ford became the first of two OEMs to file a suit in *Auto Parts.* It sued Fujikura Ltd. for treble damages for wiring harnesses supplied for its Ford Fusion sedan, even though Fujikura lost the bid. However, Ford and Fiat Chrysler appear to be unique in openly suing for antitrust damages. Rather, legal commentators surmise that most auto manufacturers will privately negotiate cash compensation from non-winners in the bidding rings, but will demand extra units, future discounts, better warranties, or other qualitative concessions from their suppliers that colluded against them. A small number of damages suits have been filed by buyers of *Trucks* in the EU, but decisions are mostly a few years in the future. No information on *Auto-Parts* legal actions has surfaced outside of North America and the EU. Some of the Japanese OEMs with long historical ties to their suppliers may do nothing.

<sup>&</sup>lt;sup>91</sup> Aftermarket sales are for repairs or upgrades of vehicles. Direct buyers include wholesale distributors to auto-repair shops and to auto-supply retailers for end users who do their own repairs.

<sup>92</sup> End users include fleet rental agencies, households, businesses, and governments.

<sup>93</sup> In Canada, direct and indirect cases are joined.

From the three groups of North American class-action suits, settlements totaled \$2.893 billion.<sup>94</sup> The severity of the *Auto-Parts* settlements is on par with historical standards, and may be above average given that the largest volume direct purchasers (the OEMs) opted out of the class and did not sue in court for compensation.<sup>95</sup> The only minor exception is Ford Motor Co. Rumors in the trade press suggest that the OEMs are negotiating in-kind compensation (free parts deliveries) in lieu of cash. It is unlikely that the market value of such in-kind compensation will ever be revealed.<sup>96</sup>

The majority of injured parties reside outside North America, but the legal systems for obtaining compensation there are underdeveloped. Moreover, because the press is unfamiliar with such suits, news of private damages cases filed there are typically underreported. Private damages actions are few in number because typically only single damages are permitted, class actions are relatively difficult to organize, and contingency fees are generally not permitted to fund legal and consultancy costs of litigation in other jurisdictions.<sup>97</sup> Nevertheless, for at least one market, these cases are growing quickly in the EU and other parts of Western Europe.<sup>98</sup> The outlier is the 170 private damages cases have been filed in Europe seeking compensation for overcharges in the massive *Trucks* cartel case.<sup>99</sup> As of March 2019, there are no reports of private plaintiffs obtaining significant damages awards in any *Auto-Parts* cases outside of North America.

#### D. Individual Penalties

As of early 2019, 192 executives have been indicted for price fixing in the *Auto-Parts* cartels, nearly all of them by U.S. courts. Of the 190 indicted, 145 have been punished with court sentences: 68 have been punished with fines, 142 with prison, and 65 with *both* fines and imprisonment.<sup>100</sup> Nearly all of the convicted cartel managers are Japanese nationals (Figure 5). Of the convicted executives, 68 were fined small amounts in the range of \$5,000 to \$400,000; the mean average fine imposed is \$79,000, but the median fine is only \$20,000.

<sup>&</sup>lt;sup>94</sup> Using a narrower definition of *Automotive Parts* employed by the U.S. District Court of the Eastern District of Michigan (Detroit), Davis and Kohles (2018) find that the end-payors' suit settled for \$1,036.9 million, the dealerships' actions for \$298.9 million, and the direct purchasers for \$422.4 million – a total of \$1,758.2 million for all three subsets of buyers.

<sup>&</sup>lt;sup>95</sup> Cash settlements in North America (including direct purchasers that opted out of the class, when reported in the press) usually are about 75% of U.S. and Canadian fines (see Connor 2012: Figure 14). However, in *Auto-Parts* class reported class settlements totaled about 90% of North American fines of about \$3.2 billion.

<sup>&</sup>lt;sup>96</sup> Because most OEMs are publicly traded and follow Generally Accepted Accounting Principles, significant compensation ought to be revealed to stockholders. The compensation may be below some "material" effect on total profits.

<sup>&</sup>lt;sup>97</sup> These practices are in transition in the EU. For example, in 2017 the Spanish Supreme Court relaxed a centuries'-long prohibition of contingency fees. And for several years, ventures like CDC Cartel Damages Claims have been able to launch collective suits by purchasing the possible future antitrust awards from several plaintiffs ("claims bundling") and using these assets to obtain financial backing, in Germany, the Netherlands, and other EU Member States.

<sup>&</sup>lt;sup>98</sup> Procedures for antitrust damages suits have become more plaintiff-friendly in the UK, Netherlands, Spain, Finland, and Germany. For example, in the Netherlands ten private damages cartel cases were filed from 2010 to 2017, including *Trucks* (Cornelissen et al. 2018: 184).

<sup>&</sup>lt;sup>99</sup> ICLG, *Competition Litigation 2019* (2019: Para. 11.3) [https://iclg.com/practice-areas/competition-litigation-laws-and-regulations/to-shop-or-not-to-shop-jurisdictional-differences-following-implementation-of-the-damages-directive]. This report also mentions a well-financed *Trucks* suit by roughly 8000 members of the UK Road Haulage Association, which is demanding more than \$5 billion (*ibid*.: Para. 9.5).

<sup>&</sup>lt;sup>100</sup> Prison sentences are not synonymous with being incarcerated. Of the 142 executives given custodial sentences, 64 (45%) are either fugitives or had their sentences suspended. Three of the indicted executives had their charges dismissed.



The 68 U.S. prison sentences ranged from six to 84 months. Of the 68 U.S.-incarcerated *Auto-Parts* executives, the mean custodial sentence imposed by U.S. courts is 17.3 months, and the median is 15 months. About 41 individuals are still awaiting to be sentenced or dismissed.<sup>101</sup> Japan is the only jurisdiction that has imposed prison sentences for Auto-Parts individuals.<sup>102</sup> At the request of Japanese prosecutors, *nine* prison sentences were imposed by Japanese courts in the *Auto Bearings* cartel case; although the Japanese prison sentences were long (12 to 18 months), after being sentenced to prison, all of the punishments were converted to probation by judges.

Unlike typical international cartel prosecutions in the past, few of the individuals held accountable by antitrust authorities in *Auto Parts* have been CEOs, COOs, or CFOs of their parent companies or even their subsidiaries (Halcom 2013b).<sup>103</sup> Rather, they have held titles like sales manager, director, marketing manager, or department head of units below the corporate VP level. A fascinating interview of "Mr. X", a formerly imprisoned Japanese middle manager in *Auto-Parts* seems to explain the thinking of many cartel managers (see Mr. X Box).

<sup>&</sup>lt;sup>101</sup> Dismissal usually upon the recommendation of prosecutors for guilty but exceptionally cooperative witnesses.

<sup>&</sup>lt;sup>102</sup> Despite having the power to do so, neither Canada nor South Korea indicted any individuals for price fixing.

<sup>&</sup>lt;sup>103</sup> However, in a tradition in antitrust that goes back at least 20 years, the corporate directors of the Takata, Denso, and Yazaki companies *voluntarily* apologized to their stakeholders by returning significant portions of their salaries -- up to 50% for three months (Halcom 2013b).

Mr. X
"The onetime high-flying executive from Japan, who lived a comfortable expat life in the Midwest, was one of dozens of white- collar criminals nailed by [the] U.S. Department of Justice Today, Mr. X has done his time and is back at work with his company [in Japan].
"For Mr. X and other Japanese sales managers stationed in America, it was second nature for them to divvy up vehicle components. It was the way business was always done, he said; don't mess with your rivals' turf, and they won't mess with yours a Tokyo antitrust lawyer [says] 'Japanese may feel that the conduct is not illegal in a subjective sense.'
"[But after the DOJ raid] [his] company began to play hardball. It pressured Mr. X to plead guilty, he says In exchange, the company would take care of his family while he was in jail and find a position for him after he was freed In Mr. X's case, he says, his company footed his \$20,000 criminal fine and supported his wife while he was locked up 'It's like the Mafia,' complained one Japan-based executive at an international parts supplier" (Greimel 2015).

A large number (at least 64) of indicted executives that are not accounted for: they are known or suspected *fugitives* from U.S. courts.<sup>104</sup> One Japanese antitrust expert suggests that collusion may have been fostered because many of the Japanese executives were unaware of the prison sentences habitually laid down in the United States (Gearino 2015). Alleged Japanese cartel managers are protected from prosecution by a widespread corporate culture that typically views price-fixing offenses as at most misdemeanors; by a local court system comprised of judges that habitually refuse to impose incarceration for criminal antitrust convictions, even when Japanese Government prosecutors demand it; and by a fugitive status that cannot be ended by extradition to the United States. Such extradition is permitted by treaty, but it is unprecedented.<sup>105</sup>

#### E. The Adequacy of Agency Resources

The twilight of U.S. enforcement may reflect a diminished number of eyes in the Antitrust Division. Observers opine that the Antitrust Division has inadequate personnel to deal with the large number of *Auto-Parts* cartels (Lindell 2012).<sup>106</sup> The Antitrust Division secured the \$744 million in fines at the

<sup>&</sup>lt;sup>104</sup> Rather than travel to face courts in the United States, foreign-resident executives simply avoid entering U.S. territory. Should they fly to Guam or Hawaii, they will definitely be arrested. Flying to Australia, Canada, Germany, or the UK may also lead to an arrest and extradition.

<sup>&</sup>lt;sup>105</sup> Both Japan and Taiwan have criminal antitrust laws, but despite close enforcement cooperation between Japan and the USA, no cartel extraditions have yet occurred. Statements by Taiwanese antitrust officials indicate a public antipathy toward the U.S. incarceration of their nationals for price-fixing crimes.

<sup>&</sup>lt;sup>106</sup> The author cites former DOJ attorneys as stating that because of the closure of several of its regional offices, the Division lost one-half of its professional staff dedicated to antitrust enforcement. Lawyers representing potential

very end of FY2013, but fell thereafter.<sup>107</sup> As of February 2015, the U.S. statute of limitations began to take hold; for *Wiring Harnesses* at least, no further criminal charges can be brought; and many other *Auto-Parts* cartels are fast approaching this limit (Knox 2015). An investigation by a leading antitrust newsletter found that staff numbers available in Washington for cartel investigations were down 27% in the first two years of the Trump administration (CPI 2019). By several measures, U.S. cartel enforcement was in decline towards the end of the *Auto-Parts* convictions after 2016 (Connor 2019a).

#### VIII. Effectiveness of Penalties: Severity and Recovery

Severity and recovery ratios are simple but revealing indicators of the potential effectiveness of punishing cartels. A *Severity Ratio* is the monetary penalty(ies) paid by a cartel divided by the affected sales of the cartel or a cartel member. Although of limited forensic value, these ratios are easy to understand<sup>108</sup> and useful for comparing the severity of fines across jurisdictions, across members of the same cartel, and for a given jurisdiction through time. There is no absolute standard of excellence for a Severity Ratio, only relative standards.

Recovery Ratios are more revealing about the deterrence value of punishments, but more difficult to obtain because the denominator is the cartel (or cartelist's) overcharge. If a Recovery Ratio is less than one, compensation of injured is inadequate; if greater than one, then part of the penalty paid is punitive (i.e., in excess of full compensation). If hypothetically the chances of being caught for a crime are 100%, then a Recovery Ratio of 100% is ideal; if the probability of being arrested and convicted is 20%, then a Recovery Ratio of 500% is optimal.

Reliable overcharges for *Auto-Parts* are few, in part because the *Auto-Parts* cartels are so recent that economists have not had access to relevant data for computation of overcharges.<sup>109</sup> The four (disinterested-party) overcharge rates I have found average 21% (Connor 2019).<sup>110</sup> This number suggests aggregate overcharges of \$700 million to \$1 billion.

Table 6 collects as many Severity and Recovery ratios as can be developed from the *Auto-Parts* cartels data. Severity ratios are very low in all jurisdictions. Using public affected sales data, the median ratios of the EC and Canada are highest at 2.7% and 1.0%, respectively; U.S. severity is lower, even adding settlements to the numerator; and the ROW is virtually zero. These are very cow compared to international cartels penalized in the past 25 years (from Connor 2016b). When one substitutes the inevitably lower affected-commerce data posted in the decisions of antitrust authorities, median severity ratios for fines are much higher -- in the 10% to 40% ranges for the more mature antitrust jurisdictions; however, private damages are *very lenient* by historical standards.

amnesty applicants complain that they are unable to schedule meetings with prosecutors. A recently resigned director of criminal enforcement in the Division, John Tezaken, echoed these sentiments (Koons 2013).

<sup>&</sup>lt;sup>107</sup> By rushing the pleas to just before September 30<sup>th</sup> expired, the Division will be able to announce \$1 billion in cartel fines for the 2013 Fiscal Year (Koons 2013). Without these *Auto Parts* fines, announced to the press by the Attorney General himself, 2013 would have tracked far below par.

<sup>&</sup>lt;sup>108</sup> Severity ratios are cited frequently by attorneys and judges as a benchmark.

<sup>&</sup>lt;sup>109</sup> From what I know about the private damages cases, very little transactional pricing is available and yardsticks are very difficult to envision.

<sup>&</sup>lt;sup>110</sup> Bid-rigging cartels typically historically as a group exhibit slightly lower overcharge rates (about 20%) versus classic price-fixing cartels (about 27%) (Connor 2014: Table 6).

The number of recovery ratios available are too few to discuss, but the low severity suggests they are also very low.

#### IX. Summary

Experienced antitrust officials – referring to the 70 to 80 interconnected, international, auto-partsmanufacturing, bid-rigging schemes discovered during 2008 to 2017 -- have asserted that they are the "largest" cartels ever tackled by the world's major antitrust authorities. The truth is that "it depends." The size dimensions chosen as a benchmark is critical. Six have been suggested (see second section above):

- In terms of numbers of cartels, Auto-Parts is second<sup>111</sup>
- In its global geographic reach, several previous cartels are equal
- Its affected commerce is huge, but *may* be second to the *Banking* supercartel
- Its total fine amount is second, but quite close
- The number of firms indicted is a world record
- The number of individuals indicted is also a world record.

Thus, ranking *Auto-Parts* by size is complicated. It is indeed the "largest" supercartel by two measures, tied using a third dimension, second by two other criteria, and an ambiguous rank according to a sixth measure.

The origin of these cartels is mysterious. Most cartels are formed after a sustained period on falling prices and profits, but the automotive industries were enjoying rapid growth, peak sales, and high profitability during the period when nearly all the *Auto-Parts* cartels were formed. Auto manufacturers in Europe and North America long placed strong pressures on their suppliers to reduce prices of their inputs, and in Japan competitive bidding was introduced by Renault-Nissan around 1999. Did the assemblers push too hard on price reductions before collusion began and thereby trigger collusion to cope with an existential threat? Did the Japanese automakers become victims of the demise of a supply system that was of their own making?

Antitrust enforcement aimed at this supercartel is nearly complete as of early 2019. Canada has definitely closed all *Auto-Parts* cases. In the United States, because of the five-year statute of limitations, the DOJ's investigations of auto-parts cartels began winding down in late 2015 (Greimel 2016). After a decade, corporate indictments appear to be over. Although it is possible that the DOJ may nab a couple of the 60 fugitives and seek his extradition, further convictions of individuals in the United States are unlikely. The status of several mature EC investigations suggest that most have been closed.<sup>112</sup> Brazil and Mexico still have more than 20 open investigations open in 2019. Finally,

<sup>&</sup>lt;sup>111</sup> Information about the precise market definitions for the cartelized markets is now fairly settled, but counting cartel markets affected requires judgment. The verbal and diagrammatic descriptions of product characteristics have largely harmonized across jurisdictions and public and private prosecutors. However, definitional differences remain with regard to the degree of inter-buyer substitutability and geographic market scope. Some antitrust authorities suggest that a given supplier-buyer channel is a single market, whereas other prosecutors aver that a high degree of supplier substitutability (products that can be easily modified and plants that can be quickly re-geared for similar parts) means that all potential OEMs belong in the same market.

<sup>&</sup>lt;sup>112</sup> A dozen EC auto-parts investigations were believed to be opened in 2010 to 2013, but inaction on sending a Statement of Facts after five or six years is quite unusual.

class-action damages suits in North America are also nearly completed, but the amount of compensation for the most direct buyers, the OEMs, is publicly unavailable and is most likely untraceable, because it is in-kind rather than in cash.

Estimates for affected commerce of the *Auto-Parts* supercartel range from \$3.2 to \$5.0 trillion. There are few reliable estimates of the size of overcharges for these cartels, and more are desperately needed, but averaging the few preliminary estimates suggests that injuries are in the range of \$0.6 to \$1 trillion. Even if monetary penalties rise to double the current \$20 billion, cartel deterrence or cartel dissuasion is highly unlikely.

#### **REFERENCES**<sup>113</sup>

AAI. *The Vital Role of Private Antitrust Enforcement in the U.S.* Washington, DC and San Francisco: The American Antitrust Institute and the University of San Francisco School of Law (May 14, 2019). [https://www.antitrustinstitute.org/wp-content/uploads/2019/05/AAI\_USF-Commentary\_2018-Antitrust-Class-Action-Report\_Final\_5.14.19.pdf].

Baumann, David. Policy and Regulatory Report. (4/12/2012).

Bird & Bird. Cartel investigations in the automotive supply industry - Are you prepared? Bird & Bird Briefing (March 2012).

[http://www.twobirds.com/English/News/Documents/Automotive%20news%20March%202012. htm].

Burtis, Michelle et al. Bringing Light to the DOJ's Cartel Fine Methodology with the Auto Parts Plea Agreements. *Antitrust Bulletin* 63 (November 2018): 379-398.

Caves, Richard E. and Masu Uekusa. *Industrial Organization in Japan*. Washington, DC: Brookings Institution (1976).

CPI. US: Antitrust Regulator Faces Staffing Issues. *CPI Newsletter*. Competition Policy International (February 10, 2019).

Connor, John M. Global Price Fixing (2<sup>nd</sup> Edition). Springer Verlag (2008).

\_\_\_\_\_. Private Recoveries in International Cartel Cases Worldwide: What do the Data Show?: AAI Working Paper No. 12-03. Washington, DC: American Antitrust Institute (October 15, 2012).

\_\_\_\_\_. Is Auto Parts Evolving into a Supercartel?: AAI Working Paper No. 13-04 (August 28, 2013). [http://www.antitrustinstitute.org/~antitrust/sites/default/files/WorkingPaper13-04.pdf].

\_\_\_\_\_. BIG BAD BANKS: BID RIGGING AND MULTILATERAL MARKET MANIPULATION: AAI Working Paper 14-04. (posted May 6, 2014). [http://www.antitrustinstitute.org/sites/default/files/WorkingPaper14-04.pdf].

\_\_\_\_\_. Private International Cartels Worldwide: Summary Statistics. *Law360* (August 2016). [http://ssrn.com/abstract=2821254].

\_\_\_\_\_. Canada's International Cartel Enforcement: Keeping Score. *World Competition: Law and Economics Review* Vol. 39, No. 4 (October 2016a): 557-592. [http://ssrn.com/abstract=2869430].

\_\_\_\_\_. Global Enforcement Directed at International Cartels: A Concise Introduction and Summary, Presentation at Session IV of the OECD's Global Forum on Competition, "Sanctions in Antitrust Cases," Paris, France, 2 December 2016b.

<sup>&</sup>lt;sup>113</sup> Most of the information in this paper is taken from the Web pages of the antitrust agencies, trade magazines, and Internet searches and is incorporated into the *Private International Cartels* spreadsheet. These are too numerous to list. Details from the author upon request.

\_\_\_\_\_. BIG BAD BANKS: BID RIGGING AND MULTILATERAL MARKET MANIPULATION: Unpublished Working Paper. (July 2016c).

\_\_\_\_\_. The German Auto-Emissions Scandal: Likely U.S. Antitrust Response. *Wirtschaft und Wettbewerb* Issue 9 (*The Economy and Competition*) (*WuW*). (September 2017): 440-443. [https://wuw-online.owlit.de/document.aspx?docid=WUW1247072&authentication=none] and [https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3032030].

\_\_\_\_\_. The Private International Cartels (PIC) Data Set: Guide and Summary Statistics, 1990- July 2016 (Revised 2nd Edition): SSRN Working Paper. (August 8, 2016). [http://ssrn.com/abstract=2821254].

\_\_\_\_\_. The Private International Cartels (PIC) Data Set. (Spreadsheet dated April 2019).

\_\_\_\_\_. Comment on Cartel Enforcement in the Trump Administration. *Competition Policy International: CPI Antitrust Chronicle* (posted June 5, 2019a): 2-13.

Cornelissen, Rick et al. Netherlands, in *Private Competition Enforcement Review: Eleventh Edition*, I.K. Gotts (editor). (2018): 184-206.

Cutcher-Gershenfeld, Joel et al. The Decline and Resurgence of the U.S. Auto Industry: Briefing Paper #399. Economic Policy Institute (May 6, 2015).

Davis, Joshua and Rose Kohles. 2018 Antitrust Annual Report: Class Action Filings in Federal Court. San Francisco: School of Law, University of San Francisco (May 2018).

Dawson, Chester and Brent Kendall. Japan Probe Pops Car-Part Keiretsu. Wall Street Journal Asia (February 18, 2013).

DOJ. U.S. v. Yazaki Corp.: Plea Agreement (March 1, 2012). [https://www.justice.gov/atr/case-document/file/516966/download].

\_\_\_\_\_. Nine Automobile Parts Manufacturers and Two Executives Agree to Plead Guilty to Fixing Prices on Automobile Parts Sold to U.S. Car Manufacturers and Installed in U.S. Cars. Washington, DC: U.S. Department of Justice (September 26, 2013).

\_\_\_\_\_. Former CEO of Volkswagen AG Charged with Conspiracy and Wire Fraud in Diesel Emissions Scandal: Press Release. Washington, DC: U. S. Department of Justice (May 3, 2018). [https://www.justice.gov/opa/pr/former-ceo-volkswagen-ag-charged-conspiracy-and-wire-frauddiesel-emissions-scandal].

EU. The EU's Response to the "Dieselgate" Scandal: Briefing Paper. European Court of Auditors. (February 2019).

[https://www.eca.europa.eu/lists/ecadocuments/brp\_vehicle\_emissions/brp\_vehicle\_emissions\_en .pdf].

Europost. Commission Fines Auto-Parts Cartel. *Europost* (June 13, 2019). [https://europost.eu/en/a/view/commission-fines-auto-parts-cartel-24799]. Gearino, Dan. Massive Price Fixing among Auto Parts Manufacturers Hurt U.S. Car Buyers. *Columbus Dispatch* (March 21, 2015).

Greimel, Hans. Japanese Executive Tells Secrets of Price Fixing. Rubber and Plastics News (November 26, 2014).

\_\_\_\_\_. Price Fixing Probes Wane. *Automotive News*. (February 15, 2016). Halcom, Chad. New Charges, Stay Request Signal More Supplier Price-Fixing Prosecutions Ahead. *Crain's Detroit Business* (August 12, 2013a).

\_\_\_\_\_. Why No C-Level Execs Have Been Charged in Supplier Price-Fixing Cases. *Automotive News* (October 15, 2013b).

Higbee, David et al. United States: Cartels. *GCR Antitrust Review of the Americas 2019*. (Sept. 7, 2018). [https://globalcompetitionreview.com/insight/the-antitrust-review-of-the-americas-2019/1173899/united-states-cartels].

JFTC. A Leniency Program a la Japonnaise - How it is going to be enforced, speech by Akinori Uesugi, Secretary-General Fair Trade Commission of Japan [https://www.jftc.go.jp/en/policy\_enforcement/speeches/2005\_files/051116uesugi\_aba.pdf].

\_\_\_\_\_. The JFTC Issued Cease and Desist Orders and Surcharge Payment Orders to Participants in Bidrigging Conspiracies for Automotive Parts. Japan Fair Trade Commission Press Release. (November 22, 2012). [http://www.jftc.go.jp/en/pressreleases/archives/individual-000507.html].

Jie, Ma, Masatsugu Horie, and Aoife White. Japanese Auto Component Makers Bracing for EU Cartel Fines. *Bloomberg Wire* (Jan. 31, 2013-01-31, 21:00:00.1 GMT).

Johnson Winter. MEGA-CARTEL IN THE GLOBAL AUTOMOTIVE PARTS INDUSTRY. John Winter & Slattery (Australia) (2012) [http://www.jws.com.au/\_\_files/f/4968/Auto Parts Cartel March 2012.pdf].

Jung, Jae C. and Elizabeth Sharon. The Volkswagen emissions scandal and its aftermath. *Global Business and Organizational Excellence* 38 (2019): 6-15.

Koons, Jennifer. Justice Department's Antitrust Penalties Hold Steady at \$1 Billion, Firm Finds. *Main Justice*. (October 10, 2013). [http://www.mainjustice.com/2013/10/07/justice-departments-criminal-antitrust-penalties-hold-steady-at-1-billion-firm-finds].

Knox, Ron. Reduce Speed Ahead. Global Competition Review 18 (9 February 2015).

Lindell, Cecile Kohrs. Budget-Cutting Effort Leaves Anti-Cartel Efforts Shorthanded. *Financial Times.* (December 26, 2012).

Low, D. Martin & Casey W. Halladay. *Key Issues for Canadian Cartel Enforcement in 2012*. American Bar Association International Cartel Workshop (2012). [http://www.mcmillan.ca/Files/140935\_Low\_Halladay2012\_Cartel\_Workshop\_Published.PDF]. Niemeyer, Hans Joerg et al. *Getting the Deal Through: European Union.* (July 2018). [https://gettingthedealthrough.com/intelligence/172/article/6238/cartels-european-union].

Magna. Magna International Regulatory Filing (1/11/2013).

Pozen, Sharis A. Acting Assistant Attorney General Sharis A. Pozen Speaks at the Briefing on Department's Enforcement Action in Auto Parts Industry. Washington, DC. (January 30, 2012). [https://www.justice.gov/opa/speech/acting-assistant-attorney-general-sharis-pozen-speaksbriefing-department-s-enforcement].

Rowland, Christopher. Generic-drug industry is riddled with price-fixing schemes, investigators say. *The Washington Post* (December 13, 2017).

Sedgwick, David. More Pleas Are Likely in Bid-Rigging Probe. *Automotive News*. (September 30, 2013).

Statistica. *Estimated worldwide automobile production from 2000 to 2018*. [https://www.statista.com/statistics/262747/worldwide-automobile-production-since-2000/].

Telegraph. Car Makers Face Possible China Probe over Price-Fixing Fears. *The Telegraph* (August 13, 2013).

Vyas, Maulik and Ketan Thakkar. Is there an auto parts cartel at work in India? *The Economic Times (India)*. (16 March 2013).

Wikipedia. List of Countries by Motor Vehicle Production in 2010. (accessed 2019).

Table 1. Ten "Atypical" Automotive Cartels, Discovered 1990-2017 <sup>a</sup>										
Market, Geographic Location	Firms	Authority	Discovery Date	Collusion Dates	Penalties (\$ mil.)	Notes				
Auto Batteries						No membership				
manufacturing, Korea	4	KR	11/10/2004	6/03-9/04	1.6	overlap				
Tires, India	5	IN	2010	2005-2010	0	cleared				
Automotive Refinishing		US+CA+								
Paint (Global?)	5	EU+ PVT	6/4/2001	1/93-12/00	106	3 govt. probes closed				
Automotive welding						No membership				
electrodes, France	5	FR	12/16/2010	2002-2005	0.133	overlap				
Automobiles, Canadian				1/2001-		Later dismissed				
imports, US	8	US PVT	2003	3/06?	36					
Auto manufacturing &										
distribution, Turkey	19	TR	9/9/2009	2006-9/2009	148	TR Record Fines				
Aftermarket Auto Air				1/1/99-		Cleared: False				
Filters, US	11	US	8/6/2008	3/31/2008	0	Accusation				
Auto glass (Carglass), EU	4					No membership				
	т	EC	2/24/2007	2/24/2007	1757	overlap				
Shipping FEFC (autos	4					An open "shipping				
to/from Far East), Global	т	EC	3/28/2003	1995-2003	consent	conference"				

#### **TABLES**

<sup>a</sup> By atypical, I mean that these cartels may not fully qualify for membership in the *Auto-Parts* Supercartel that is the focus of this paper. Many predate the Supercartel's operations that typically began about 2000. Some of the above did not manufacture electrical or mechanical inputs for OEMs, some did not employ rigging of RFQs (e.g., *Auto Air Filters*), and some did not have overlapping membership of companies with the prototypical auto-parts-manufacturing cartels (e.g., *Welding Electrodes, Carglass*).

Source: Private International Cartels spreadsheet (2013)

Table 2. 80 Auto-Parts Cartels, 331 Antitrust Prosecutions & Years													
Market Name				Ve	ar Anti	ruet Au	thority	Began I	Drosecu	ting a			
Geography	US	CA	EC	јр	KR	BR	CN		MX	AU	US PVT	OTH PVT	ОТН
Filters for vehicles, aftermarket, paper, US & CA	2011										2008	2008	
Auto parts, alternators	2013	2009	2010								2011	2016	
Auto parts, wire harnesses	2011	2009	2010	2010	2010	2015	2014			2013	2011	2012	
Auto Parts, Air Fuel Ratio Sensors	2014										2011	2012	
Auto parts, fuel senders	2014		2010	2010							2012	2013	
Auto parts, Instrument panel clusters	2012	2010	2010	2010	2013	2015					2011	2012	
Auto parts, lighting products, new ("lamps")	2014		2012	2012		2014					2011	2013	
Auto Parts, oxygen Sensors	2014										2011	2015	
Auto Parts, spark plugs	2014		2018		2015	2014		2014			2011	2014	
Auto parts, aftermarket lighting, US & CA	2011	2012									2009	2011	
Auto parts, Bearings, EU, US, and JP	2013	2011	2011	2011	2011	2014	2014			2012	2012	2016, 2017	SG 2013
Auto parts, occupant safety equipment, new	2012	2011	2011			2015				2011	2011	2014	
Auto parts, tooling, BR	2013					2014							
Auto parts, anti- vibration devices	2012	2010		2013							2011	2016	
Auto parts, thermal systems (heating & AC)	2013		2012	2011	2011	2015					2011	2012	
Auto Parts, electronic control units (boxes)	2012	2013				2015			2012			2016	
Auto parts, speed sensor wire assemblies	2012										2011	2012	

Table 2. 80 Auto-Parts Cartels, 331 Antitrust Prosecutions & Years													
Shipping, ro-ro, auto	2012	2012	2012	2012	2016	2012	2015	2015	2017	2016	2013	2013	CL 2015, PE 2017, US FMC 2012
Auto parts, switches (steering, wiper, etc.)	2013	2009				2014					2011	2016	
Auto parts, air flow meters	2013	2013	2013	2013	2013				2013	2013	2011	2013	
Auto parts, ATF warmers	2013	2013	2013	2013	2013				2013	2013	2011	2014, 2016	
Auto parts, driveshaft boots, constant-velocity	2013										2011	2016	
Auto parts, electronic throttle bodies	2013						2014				2011	2014	
Auto parts, fan motors (engine- cooling)	2013	2013	2013								2011	2012	
Auto parts, fuel injection systems	2013	2013	2013	2013	2013				2013	2013	2011	2012	
Auto parts, high- intensity-discharge ballasts	2013										2011	2014	
Auto parts, ignition coils	2013	2013									2011	2016	
Auto parts, inverters	2013	2013	2013	2013	2013				2013	2013	2011	2012	
Auto parts, motor generators	2013	2013	2013	2013	2013			2014	2013	2013	2011	2012	
Auto parts, radiators & cooling fans	2013	2013	2013	2013	2013				2013	2013	2011	2013	
Auto parts, sensors, steering angle	2013										2011	2014	
Auto parts, starter motors, alternators, ignition coils	2013	2013	2013	2013	2013		2014		2013	2013	2011	2013	
Auto parts, steering assemblies, power	2013	2013	2013	2013	2013	2016		2014	2013	2013	2011	2014	
Auto parts, valve timing controls	2013	2013	2013	2013	2013				2013	2013	2011	2014	
Auto parts, window motors, power	2013	2013	2013	2013	2013				2013	2013	2011	2012	

Table 2. 80 Auto-Parts Cartels, 331 Antitrust Prosecutions & Years													
Auto parts, windshield washer systems	2013	2013	2013	2013	2013				2013	2013	2011	2014	
Auto parts, windshield wipers and components	2013	2013	2013	2013	2013	2015			2013	2013	2011	2015	
Auto parts, brake hose, non-rubber	2014										2011	2016	
Auto parts, hoses, rubber	2014											2012	
Auto parts, plastic interior trim	2015	2015									2011	2016	
Auto parts, rubber body seals	2016										2011	2016	
Auto parts, shock absorbers	2015					2015					2011	2016	
Auto parts, steering columns, manual	2015			2015								2015	
Heaters, parking & auxiliary, aftermarket	2015		2015										
Auto parts, locks, keys, handles	2016					2014					2011		
Auto parts, emission controls, ceramic substrates	2016					2015					2011	2016	
Auto parts, power window switches	2016											2015	
Auto parts, tubes, steel	2016										2011		
Diesel motor emissions, US, DE, CA, IN, and EC	2017	2017	2017								2017	2017	DE 2016, IN 2018
Auto parts, clutch facings (BR?)						2014							
Auto parts, clutches (BR?)						2014							
Auto parts, bumpers, BR						2015							
Auto parts, spare parts, distributors, BR						2016							
Auto parts, valves for engines, aftermarket, BR						2017							
Automotive filters, BR						2017							
Auto leasing, CH													CH 2014
Tire manufacturing, ID													ID 2014

Table 2. 80 Auto-Parts Cartels, 331 Antitrust Prosecutions & Years												
Auto Parts, IN												IN 2011
Tire												
manufacturing, JP				2011								
Defense Agency												
Auto parts, small												
electric motor												
systems				2014						2012	2014	
(generators,												
starters, wipers)												
Motor Vehicle												KE
Assembly, Kenya												2010
Truck & tractor					2013							
manufacturing, KR												
Automobiles, new,					2014							
KR												
Auto parts, exhaust					2015					2011		
systems												DIZ
Auto												PK 2015
manufacturing,												2015
small cars, PK												TD
Automobile												1 K 2000
distribution TR												2009
distribution, TK												TΤΔ
Trucks, postal, UA												2013
Tire								2008				
manufacturing, ZA								2000				
Automobile												BG
distribution,												2012
Hyundai, BG												
Auto parts, noise-												DE
reduction, DE												2013
Auto parts, engine												DE
heat shields,												2014
aluminum, DE												DE
Auto parts, special												DE 2017
stainless-steel												2016
Automobile			-									БС
manufacturing &											2015	2013
distribution FS											2015	2015
Auto parts molded												FS
interior ES												2016
Importing VW												LV
cars LV												2015
Truck distribution												UK
UK												2010
Truck												UK
manufacturing, EU			2011							2015		2010
Automobiles.												-
Canadian imports.										2003		
US												

Table 2. 80 Auto-Parts Cartels, 331 Antitrust Prosecutions & Years													
Auto parts,													
aftermarket sheet											2010	2014	
metal, US													
Truck													
Transmissions,											2010		
Class 8, US													
Total 80 Cartels,	52	26	26	23	21	22	5	5	14	16	50	49	22
331 Prosecutions													
<sup>a</sup> Antitrust country (Internet symbol), PVT = Private damages cases (48 US and 48 Canada), OTH = Other authority													
Note: 331 total investigations, but number of prosecutions with penalties is slightly lower.													
Source: Connor (2019).													

Table 3. Eighty Alleged Cartels, Legal Outcomes, by Date Detected, 2010-2017									
Market Name, Geography	No. of Firms/ Execs <sup>a</sup>	Lead <sup>b</sup> Author- ity	Dis- covery Year	Year Cartel Began	Dura- tion (mon.)	Penalties (\$ mil.)	Notes on Prosecution		
Automobiles, Canadian imports, US	2	US PVT	2003	2001	62.0	36.4	Not in Supercartel?		
Tire manufacturing, JP Defense Agency	10	JP	2004	2001	35.0	0	Consent decree/warning		
Filters for vehicles, aftermarket, paper, US & CA	11	US	2008	1999	111.0	18.5	Not in Supercartel?		
Tire manufacturing, ZA	1	ZA	2008	1999	96.0	5.46	Not in Supercartel?		
Automobile manufacturing & distribution, TR	15	TR	2009	2006	43.0	147.6	Not in Supercartel?		
Auto parts, wire harnesses	14/13	US/EC/ JP	2009	2000	131.0	1924	First in Supercartel		
Auto parts, alternators	5/7	US/EC	2009	2000	143.0	334.0			
Auto parts, switches (steering, wiper, etc.)	3	US/EC/ JP	2009	2003	77.0	40	1 <sup>st</sup> criminal case in 4 years in Japan		
Truck manufacturing, EU	6	EC/UK	2010	1997	168.0	4267			
Auto parts, lighting products, new ("lamps")	5	JP	2010	2002	86.0	100.6			
Auto parts, anti-vibration devices	4/7	US	2010	1996	194.0	647			
Truck Transmissions, Class 8, US	1	US PVT	2010	2002	108.0	500			
Truck distribution, UK	5	UK	2010	2008	24.0	4.27			
Auto Parts, spark plugs	3	US	2010	2000	155.0	214			
Auto Parts, oxygen Sensors	2/2	US	2010	2000	138.0	76			
Auto parts, aftermarket sheet metal, US	3/2	US PVT	2010	2003	60.0	9.85			
Auto parts, fuel senders	2/6	US/EC/ JP	2010	2004	71.0	5.90			
Auto parts, Instrument panel clusters	5/7	US/EC/ JP	2010	2002	86.0	152			
Motor Vehicle Assembly, Kenya	3?	KE	2010		?	0	Possible consent decree		
Auto Parts, Air Fuel Ratio Sensors	2/2	US	2010	2000	138.0	13.600			
Auto parts, thermal systems (heating & AC)	13/6	EC	2011	2000	131.0	341			
Auto parts, aftermarket lighting, US & CA	4/5	US	2011	2001	85.3	100.6			
Auto parts, Bearings, EU, US, and JP	8/11	JP	2011	2004	87.0	1949			
Auto parts, occupant safety equipment, new	13/7	US/EC	2011	2005	73.0	609			
Auto parts, tooling, BR	6?	BR	2011	2000	120.0		Case still under investigation		
Auto Parts, IN	15	IN	2011		?	485.3			

Table 3. Eighty Alleged Cartels, Legal Outcomes, by Date Detected, 2010-2017									
Auto parts, small electric motor systems (generators, starters, wipers)	4	US/EC/ JP	2011	2000	203.4	45.7			
Shipping, ro-ro, new automobiles	10/11	US/EC/ JP	2012	2000	153.2	1307			
Auto parts, exhaust systems	3	US	2012	2009	4.0	25.66			
Auto parts, speed sensor wire assemblies	2/1	US	2012	2003	86.0	2.77			
Auto Parts, electronic control units (boxes)	3/1	СА	2012	2001	60.0	44.22			
Automobile distribution, Hyundai, BG	6	BG	2012		0.0	10.75			
Automobile manufacturing & distribution, ES	21	ES	2013		?	189.1			
Auto parts, fuel injection systems	2/4	US	2013	2000	121.0	73.48			
Auto parts, valve timing controls	3/4	US	2013	2000	121.0	154.5			
Truck & tractor manufacturing, KR	7	KR	2013	2002	108.0	109.1			
Auto parts, motor generators	2/3	US	2013	2000	121.0	44.7			
Auto parts, radiators & cooling fans	4/2	US	2013	2002	87.0	51.94			
Auto parts, steering assemblies, power	6/13	US	2013	2005	82.0	64.1			
Auto parts, windshield wipers and components	4/2	US	2013	2000	121.0	139.7			
Auto parts, high-intensity- discharge ballasts	5/1	US/EC/ JP	2013	1998	139.0	141.15			
Auto parts, sensors, steering angle	2/2	US/EC/ JP	2013	2003	77.0	48.6			
Auto parts, air flow meters	2/4	US	2013	2000	121.0	31.6			
Auto parts, electronic throttle bodies	2	US	2013	2000	121.0	51.66			
Auto parts, window motors, power	3	US	2013	2000	121.0	56.5			
Auto parts, inverters	2	US	2013	2000	121.0	29.35			
Auto parts, ATF warmers	3	US	2013	2002	87.0	26.900			
Auto parts, windshield washer systems	5/1	US	2013	2000	121.0	131.4			
Auto parts, starter motors, alternators, ignition coils	5/8	US	2013	2000	121.0	268			
Auto parts, ignition coils	6/9	US/EC/ JP	2013	1998	139.0	169.4			
Auto parts, fan motors (engine-cooling)	2	US	2013	2000	121.0	31.8			
Auto parts, driveshaft boots, constant-velocity	2	US	2013	2006	56.0	32.3			
Auto parts, noise- reduction, DE	6	DE	2013	2005	120.0	84			
Trucks, postal, UA	2	UA	2013		?	9.4			

Table 3. Eighty Alleged Cartels, Legal Outcomes, by Date Detected, 2010-2017								
Auto parts, locks, keys, handles	3	US	2014	2002	116.0	21.600		
Auto parts, hoses, rubber	4/1	US	2014	2004	79.0	10.100		
Auto leasing, CH	9?	СН	2014		5		Information cannot be located; probably closed. Not in Supercartel?	
Auto parts, brake hose, non-rubber	1	US	2014	2005	10.0	2.750		
Auto parts, clutch facings	?	BR	2014		?		Case still under investigation	
Auto parts, clutches	?	BR	2014		?		Case still under investigation	
Automobiles, new, KR	5?	KR	2014		Ş		Information on outcome cannot be located; probably closed	
Auto parts, engine heat shields, aluminum, DE	4	DE	2014	2011	11.0	11		
Auto parts, bumpers, BR	4	BR	2015	2000	168.0		Case still under investigation	
Auto parts, shock absorbers	8	US	2015	1986	312.0	144		
Auto parts, steering columns, manual	1	US	2015	2007	60.0	2.500		
Auto parts, rubber body seals	2/5	US	2015	2000	155.0	179.6		
Auto parts, emission controls, ceramic substrates	4/19	US	2015	1985	301.0	150.0		
Tire manufacturing, ID	6	ID	2015	2009	36.0	12		
Auto parts, plastic interior trim	1/1	US	2015	2004	99.0	6.725		
Heaters, parking & auxiliary, aftermaket	3/3	US	2015	2007	63.0	92		
Importing VW cars, LV	6/2	LV	2015	2010	48.0	8.88		
Auto manufacturing, small cars, PK	2?	РК	2015	;	;		Case still under investigation	
Diesel motor emissions, US, DE, CA, IN, and EC	5/4	DE	2016	1993	273.0	4410		
Auto parts, tubes, steel	2/4	US	2016	2003	91.3	24.5		
Auto parts, spare parts, distributors, BR	29/60	BR	2016	2003	156.0	0.078		
Auto parts, power window switches	2	US	2016	2005	96.0	7.59		
Auto parts, special stainless steel, buyers' cartel, DE	7	DE	2016	2004	142.0	239.5		
Auto parts, molded interior, ES	2	ES	2016	2010	77.0		Case still under investigation	
Auto parts, valves for engines, aftermarket, BR	4?	BR	2017	2007	71.0		Case still under investigation	

Table 3. Eighty Alleged Cartels, Legal Outcomes, by Date Detected, 2010-2017										
Asstance time filtere DD	6/41	BR	2017	2004	101.0		Case still under			
Automotive filters, BR							investigation			
	356/	17 auth-			7,620	\$20.8				
Total of 80 Cartels	279	orities			plus	billion				
Mean, Cartels with data	Mean, Cartels with data 4.9/3.5 108.9 \$297									
million										
<sup>a</sup> Number of companies that were "raided" (and still under suspicion), subpoenaed, granted amnesty,										
indicted, fined, pleaded guilty	, or paid se	ttlements in	private ant	itrust suits in	n any jurisdi	iction.				
Companies dismissed or four	nd not guilty	y are not cou	inted. Som	e double co	unting (see i	note below).				
Executives indicted, usually c	riminally.									
<sup>b</sup> First national authority to o	pen an inve	stigation; sin	nultaneous	raids by mu	iltiple autho	rities use				
slashes.	-	0			*					
<sup>c</sup> Note: Nine companies agre	ed to pay U	.S. single fine	es for mult	iple cartels.	Yazaki Cor	p. paid \$597				
million in penalties for three	separate car	tels. Toyo R	ubber paid	\$120 millio	n for 2 carte	els. Bosch for	:			
three cartels. Denso/Toyota	paid \$78 mi	llion for two	separate c	artels. Hitac	hi paid \$19	5 million for				
nine separate cartels. MELCO and Panasonic for three cartels. Mitsuba paid \$135 million for five										
separate cartels (and obstruction of justice). These fines are apportioned across cartels.										
Source: Private International Cartels spreadsheet (Feb. 2019)										

Table 4. Thirty Largest Corporate Auto-Parts Penalties									
Subsidiaries/Ultimate Parent Company	HQ	No. Cartelsª	Total Penalties <sup>b</sup> (\$ million)						
Volkswagen AG	DE	7	3,197						
Mercedes-Benz/Daimler AG	DE	9	2,237						
Yazaki Corp.	JP	4	1,322						
BMW AG	DE	4	1,112						
Hitachi/DKB Group	JP	19	962						
PACCAR Inc.	US	2	833						
Ford Motor Co. (2000-2010)	US	7	833						
ASMO North America, DENSO Corp., Toyota Motor, and	JP	34	805						
JTEKT Corp./Toyota Group									
Renault SA, Calsonic Kansei, Nissan Corp., Mitsubishi Electric. Co., and Mitsubishi Corp./Renault-Nissan-Mitsubishi Alliance	FR/JP	25	715						
Continental Automotive Electronics/Schaeffler KG	DE	6	641						
(f/k/a/Continental AG)									
Fiat SpA or FCA/Agnelli Family Holding Co. (30%)	IT	8	560						
Eaton Corp.	US	1	500						
Bridgestone Corp.	JP	5	466						
SKF (Svenska Kullagerfabriken AB)	SE	4	446						
Wilh. Wilhemsen ASA	NO	3	492						
YKK Line and MELCO/Mitsubishi Group (before joining	JP	2	426						
Renault-Nissan)	-								
NTN Corporation	JP	1	388						
Autoliv Inc.	SE	3	320						
NSK Ltd.	JP	3	316						
American Mitsuba/Mitsuba Corp.	JP	12	274						
Robert Bosch GmbH/Robert Bosch Stiftung	DE	15	248						
Tata Sons Ltd.	IN	2	225						
Toyo Tire & Rubber Co. Ltd.	JP	5	188						
Nishikawa Rubber Co. Ltd.	JP	1	180						
Sumitomo Electric, Tokai Rubber, and Sumitomo	JP	8	130						
Rubber/Sumitomo Group									
Franklin Precision Industry/Aisan Industry Co. Ltd.	JP	3	124						
Nippon Gaishi Kaisha (NGK) Spark Plug Co. Ltd.	JP	4	118						
Koito Manufacturing Co., Ltd.	JP	2	110						
Hyundai Motor/Hyundai Group	KR	5	99						
Espar Heating/Eberspächer Group	DE	2	94						
Total, Top 30		206	18,361						

<sup>a</sup> Number of penalties announced or "agreed to" by the ultimate parent firm or its subsidiaries, auto parts only. <sup>b</sup> Penalties imposed by early 2019. Does not include many \$ billions more related to the *Diesel Motor Emissions* cartel.

Source: Private International Cartels spreadsheet (2019)

Table 4A. Thirty Largest Auto-Parts' Cartels Penalties				
Cartel Market, Locale (if not Global)	Rank	Fines (\$ million)	Total Penalties <sup>a</sup> (\$ million)	
Diesel motor emissions, US, DE, CA, IN, and EC	1	4400.6	4,401	
Truck manufacturing, EU	2	4267.000	4,267	
Auto parts, Bearings, EU, US, and JP	3	1818.100	1,955	
Auto parts, wire harnesses	4	1137.000	1,924.0	
Shipping, ro-ro, auto	5	1304.600	1,307.0	
Auto parts, anti-vibration devices	6	531.360	647	
Auto parts, occupant safety equipment, new	7	431.030	609	
Truck Transmissions, Class 8, US	8	0.000	500	
Auto Parts, IN	9	485.300	485.3	
Auto parts, starter motors, alternators, ignition coils	10	325.100	417	
Auto parts, thermal systems (heating & AC)	11	274.180	341	
Auto parts, alternators	12	249.430	334	
Auto parts, special stainless steel, buyers', DE	13	239.500	239.5	
Auto Parts, spark plugs	14	151.780	214	
Automobile manufacturing & distribution, ES	15	189.100	189.1	
Auto parts, rubber body seals	16	130.095	179.6	
Auto parts, ignition coils	17	112.945	169.4	
Auto parts, valve timing controls	18	94.050	154.5	
Auto parts, Instrument panel clusters	19	115.900	152	
Auto parts, emission controls, ceramic substrates	20	131.800	150.0	
Automobile manufacturing & distribution, TR	21	147.600	147.6	
Auto parts, shock absorbers	22	117.500	144	
Auto parts, high-intensity-discharge ballasts	23	70.040	141.15	
Auto parts, windshield wipers and components	24	93.640	139.7	
Auto parts, windshield washer systems	25	127.730	131.4	
Heaters, parking & auxilliary, aftermaket	26	91.970	114.67	
Truck & tractor manufacturing, KR	27	109.100	109.1	
Auto parts, aftermarket lighting, US & CA	28	50.750	100.6	
Auto parts, lighting products, new ("lamps")	29	58.100	100.6	
Auto parts, noise-reduction, DE	30	84.000	84	
Total, Top 30		17,339.3	19,848.6	
Total, all 80		17,954.6	20,848.2	
<sup>a</sup> Penalties imposed by mid 2019. Includes private settlements (if any, mostly partial) and early fines of the Diesel				
Motor Emissions cartel.				
Source: Private International Cartels spreadsheet (2019)				

Table 5. Twenty Leading Serial-Collusion Companies, Five or More Auto-Parts				
Parent Company	No Cartelea	НО		
Affinia Group Inc. (Mann+Hummel AG and 2016)	5			
Agnolli Family/Fiot Sp A	8			
BMW AC	5	DE		
Bridgestone Com	5			
Daimler AG	10	DE		
Dalahi Coro	5			
DKB Group (Dai Johi Kangin Group, includes Hitachi and	23			
Euroleowo)	23	Jr		
Ford Motor Co	8	US		
General Motors Co	6			
Hyundai Group (Chung Ju-Yung family)	6	KR		
Mitsuba Corp	12	ID		
PSA Peugeot Citroen S A	5	FR		
Repault Nissan Mitsubishi Alliance	28	FR		
Robert Bosch CmbH	13	DE		
Schaeffler KG $(f/k/a/Continental AG)$	7	DE		
Sumitomo Group	8			
Tenneco Corp	5			
Toyo Tire & Rubber Co. I td	5	IP		
Toyota Group (Including DENSO)	34	IP		
Volkswagen AG	0	DE		
Total Number of Prosecutions Top 20	482			
<sup>a</sup> Mostly convictions, but a faw still under investigation in early 20	10 Eius or more only			
Source: Private International Cartals spreadsheet (2010)	19. Five of more only.			
Source: Private international Cartels spreadsheet (2019)				

## Table 5. Twenty Leading Serial-Collusion Companies. Five or More Auto-Parts

Table 6. Effectiveness of Penalties: Severity and Recovery Ratios						
Jurisdiction	Median	Median	Severity	Median	Recov-	Hist-
	Market	Authority	Obs.	Recovery	ery	orical
	Severity <sup>a</sup>	Severity <sup>b</sup>		Ratio	Obs.	
U.S. Govt.	0.51%	24.0%	27-32		0	16%
U.S. Govt. and Private	0.84%	40.3%	28-33	0.50%	1	32%
Damages						
_						
European Commission	2.70%	9.8%	2-10	1.87%	1	12%
Canada	1.00%	31.5%	9-10		0	15%
EU NCAs	0.04%	NA	3		0	30%
Rest of the World,	0.20%	NA	19	5.94%	2	14%
Governments						
All Private Damages	0.13%	13.6%	25-32	0.50%	1	10%
All Penalties, global	0.28%	49.1%	27-44	1.35%	4	21%
Sales						

<sup>a</sup> The ratio of dollar penalties to dollar affected commerce in the penalizing jurisdiction, expressed as a

percentage. The "All Penalties" row combines penalties (and sales) across all jurisdictions for global cartels. <sup>b</sup> Assumes umbrella pricing effects. Excludes consent decrees and zero penalties.

Same as column a), except affected commerce is a much narrower concept of "provable" sales, which is typically incomplete corporate sales reported by the prosecuting authority that ignores umbrella pricing — US, Canada, and EU only.

Sources: Private International Cartels spreadsheet (Connor 2019), Connor (2016b: Figure 9).

Table 7. Penalties Imposed and Cash Settlements Related to Fraudulent						
Diesel-Motor-Emissions Claims, 2014-2019						
	Antitrust Fines (\$ million)			Fines for	Cash	
Company	U.S.	EU	Other	Fraud	Settlements,	
	Government <sup>c</sup>		Jurisdictions	(\$ million)	Recalls, etc.	
Volkswagen AG <sup>a</sup>	6.60	1576 <sup>e</sup>	?	7906 <sup>f</sup>	18,300	
Porsche AG <sup>b</sup>				596		
BMW AG		1100e		11.6		
Mercedes Benz/Daimler AG		1100e			US suit, 760K	
					cars	
Opel (GM sold to PSA in			5		60,000 cars	
2017)/PSA Groupe						
FCA-Jeep				305	510	
Renault SA			?			
IAV GmbH (supplies VW)				35		
Bosch AG				100	458.5 <sup>d</sup>	
Ford Motor Co.	#			#		
TOTAL	6.6	3776 <sup>e</sup>	?	8648.6	19,367	

<sup>a</sup> Includes Audi, VW, and Bentley and four criminally indicted officers. Also Dutch and Italian antitrust fines (EU 2018: 29). Spain antitrust soon.

<sup>b</sup> Became owned by VW in 2015

<sup>c</sup> Includes likely fines by the 4/2019 SEC against VW and its former CEO M. Winterkorn.

<sup>d</sup> Includes \$131 million to be paid to FCA owners in the U.S., entities in 47 states, and to State Attorneys General.

• = estimated, expected, or pending (from reserves reported by targets)

<sup>f</sup> Includes Audi (\$900 million) and VW (\$1200 million) fines by German State prosecutors (Saxony and. Bavaria). Also CAD2 billion (\$1500 million) for Canadian owners. Bloomberg (9/8/2018) predicts a total of \$35 billion after German owners are compensated. VW set aside another \$6.1 billion in contingent liabilities for emissions suits in 2019, raising the likely total to \$41 billion.

Source: Private International Cartels spreadsheet (June 2019)

? = French prosecutors in DGCCRF began investigating in late 2016. Ongoing in May 2019.

# = Criminal investigation by DOJ and EPA began 4/2019