

Commercial Casualties: Political Boycotts and International Disputes

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Abstract

We explore whether international disputes harm commerce by galvanizing consumer boycotts of foreign products. Boycotts increase the social penalty of owning goods associated with a foreign adversary, offsetting individual incentives to free ride or discount the utility of participation. By harming international commerce, boycotts reveal information about resolve and help avoid more costly forms of conflict. We demonstrate that the consumer boycott that arose amid tensions between China and Japan over a territorial dispute in 2012 had significant and persistent effects, especially in cities that witnessed anti-Japanese street demonstrations. Using administrative data on the universe of passenger vehicle registration records in China from 2009 to 2015, we find that the market share of Japanese automobile brands dropped substantially while Chinese and American brands benefitted, with long lasting effects. Our analysis provides concrete evidence of the short- and long-term impacts of international tensions on economic activities.

Keywords: Boycott, Commerce, Trade, International Conflict

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I. Introduction

Do international disputes harm economic relations? And, if so, do such tensions have lasting effects? Controversy over the relationship between international politics and commerce has been an important topic among political scientists and economists alike. Many studies have found that international conflict harms trade, even short of military hostilities (Glick & Taylor 2010; Long 2008, Anderton & Carter 2001; Keshk et al. 2004; Kim & Rousseau 2005; Pollins 1989a,b). Yet other studies have not found a significant impact of militarized disputes on international trade (e.g. Barbieri & Levy 1999; Morrow et al 1998). At lower levels of political tensions, Davis and Meunier (2011) find that “aggregate economic flows and high salience sectors like wine and autos are unaffected by the deterioration of political relations,” and that “sunk costs reduce incentives for state and private actors to link political and economic relations” in the globalized era.²

An important component of this debate turns on whether international disputes harm commerce by galvanizing consumer boycotts of foreign products, or whether “consumers remain stuck in their habitual buying patterns” (Davis and Meunier 2011: 643). In theory, consumer boycotts represent a “commercial weapon” (Pollins 1989b) that could substitute for military coercion. If consumers shun foreign products, affected business groups and tradable industries may lobby for peace and persuade foreign leaders to compromise or defer action in international disputes (Papayoanou 1997; Kastner 2007). Buttressing the classical liberal argument that trade reduces war, lost economic exchange could reveal information about a state’s resolve or deter military escalation. Yet consumers may not be willing to switch away from their preferred brands or products, given brand loyalty, differences in product quality, and incentives to free ride on boycott activities (Friedman 1999; Klein et al 2004; Sen et al 2001). As Davis and Meunier (2011: 632) note, “consumers may reject a national boycott, even if they agree with the political message, because of collective action problems.”

We argue that despite sunk costs and brand attachments, politically motivated boycotts can still change consumer behavior when international tensions arise. Whether or not individual consumers agree with the political message, boycott activity shapes the social desirability of owning certain goods. By raising the social and material costs and risks of owning certain types

² To measure political tensions, Davis and Meunier (2011) utilize the King-Lowe dataset, a computer-assisted coding of Reuters news reports.

of goods, boycott activities counteract individual incentives to free ride or discount the utility of participation, particularly in the case of highly visible and expensive products such as personal automobiles. The costs imposed by consumer boycotts suggest that economic ties may serve less as a “shock absorber” (Davis and Meunier 2011: 632) than a conduit for signals of resolve (Gartzke et al 2001), supporting informational arguments for economic interdependence as a source of interstate peace.

To date, empirical studies have found mixed or ephemeral effects of consumer boycotts. In the case of US calls to boycott French wine in early 2003, for instance, Ashenfelter et al. (2007) find no effect, while Bentzen and Smith (2007) and Chavis and Leslie (2009) find a temporary effect. Looking at tensions between China and Japan between 1990 and 2006, Davis & Meunier (2011) find no effect on imports of Japanese products,³ while Heilmann (2015) finds a sharp one-year decrease in Chinese imports of Japanese cars after the 2012 boycott. During the Iraq war, Pandya and Venkatesen (2016: 47-9) find little impact of a US boycott on French-trademarked supermarket brands. Brand market share did not change much between 2002 and 2003, even though purchases of French-sounding brands briefly tracked anti-French mentions on Fox News. Hong et al. (2011) also show short-term dips in the market share of French automobiles in China amid calls to boycott French products after the 2008 Olympic torch relay was disrupted in Paris and French president Nicolas Sarkozy met with the Dalai Lama. Fouka and Voth (n.d.) find that Greek consumers dramatically reduced purchases of cars manufactured in Germany during the sovereign debt crisis of 2010-14, especially in areas severely harmed in World War II. Other measures of boycott impacts are more indirect, such as firms’ stock market performance (e.g. Fisman et al 2014; Govella and Newland 2010; Heilmann 2015).

We demonstrate that consumer boycotts can have a significant and persistent effect, drawing upon a more spatially disaggregated dataset of boycott activity and the universe of individual vehicle registration records of new passenger vehicles in China during the escalation of tensions between China and Japan in 2012. Three differences distinguish our analysis from prior studies. First, we employ city-level as well as national measures of anti-Japanese protest to capture the strength of boycott activity. Spatial variation in the location of anti-Japanese protests

³ “[H]igh-salience Japanese exports such as cars, beer, and cameras did not suffer negative impact from the Koizumi administration....Where Chinese consumers could most readily target Japanese goods, we cannot detect any boycott effect.” (Davis and Meunier 2011: 640)

captures community-level differences in the social stigma associated with owning a Japanese-branded automobile. Protests themselves reflect a higher intensity of sentiment or concentration of individuals willing to act expressively based on their political views. In communities where citizens are able to overcome collective action barriers to participate in a street protest, individuals are more likely to be persuaded or pressured into joining a consumer boycott.

Second, we look at consumer purchases of locally produced foreign-branded goods, not only imports. An important shortcoming of past studies is that they have largely overlooked the localization of production. In the era of globalization, “foreign” goods are often not imported but domestically assembled or produced, including through joint ventures. In China, less than 5 percent of cars sold in China are imported (Barwick et al 2017), so trade data offer a limited window into the performance of foreign automobile brands in China.

Finally, we examine monthly data over several years to uncover possible short-term effects that the annual or quarterly statistics used in previous research might mask as well as extending the analysis well after the events to assess potential long-term impacts.

The consumer boycott that arose during heightened tensions between China and Japan over disputed islands in 2012 had significant and persistent effects on consumer purchases. Japanese-branded automobiles lost significant market share in the immediate aftermath of the boycott, and the loss of market share was larger in cities that witnessed anti-Japanese protests. Far from a flash in the pan, these losses persisted for multiple years, through the end of our sample period in 2015. Overall, these losses were substantial: sales of Japanese brands fell by 1.1 million from August 2012 to the end of 2013, with an estimated value of nearly 200 billion *yuan* during this period.

These findings provide important evidence that commercial relations are still vulnerable to political tensions in an era of globalization. Below, the next section lays out existing perspectives on the linkage between political tensions, international commerce, and consumer behavior, and sets forth our argument about the local and national effects of political boycotts. The third section presents our findings from the Chinese automobile market and the spread of anti-Japanese boycott activity across mainland Chinese cities during the 2012 crisis between China and Japan. Last, we return to the theoretical debate over economic interdependence and conflict and conclude that consumer boycotts can be a potent channel for political tensions to harm international commerce.

II. Political tensions and commerce: the role of consumer boycotts

The relationship between international conflict and commerce has long been debated. Liberal theorists from Montesquieu to Kant have argued along with numerous international relations scholars that international commerce fosters cooperation and deters conflict (e.g. Polachek 1980; Oneal et al 1996; Oneal and Russett 1997). Realists have countered that commerce can aggravate interstate relations (Waltz 1970; Hirschman 1980; Gilpin 1977) and that trade “follows the flag” rather than inhibiting conflict (Pollins 1989a; Keshk et al 2004).

Both schools of thought may also be true: commerce may heighten tensions but restrain outright conflict between states (Pevehouse 2004). Even if the opportunity costs of lost commerce are insufficient to deter international disputes, states linked by trade and investment have more avenues to communicate their resolve and manage disputes short of military conflict (Gartzke et al 2001; Morrow 1999). Rooted in the bargaining approach to war (Fearon 1995), this argument supposes that states want to avoid costly conflict but face informational challenges to reaching a peaceful settlement. Here, threats to economic assets and the disruption of commercial exchange enable states to “demonstrate resolve short of military force, jeopardizing valuable economic linkages but averting the need for costlier actions,” as Gartzke et al (2001) put it. They find that higher levels of cross-border investment and openness to capital flows diminish the likelihood of a Militarized Interstate Dispute (MID).

Such arguments have been tested in the aggregate, looking at the effect of different levels of economic exchange on the likelihood of conflict rather than state efforts to disrupt the flow of goods and capital for bargaining purposes. Moreover, fundamental changes in the globalized economy and the diminished frequency of international war in the post-Cold War era necessitate updated empirical studies of conflict and trade (Davis & Meunier 2011: 629). Yet such research has also reached mixed conclusions. Davis and Meunier (2011) find no significant effect of negative diplomatic events, including protest demonstrations, on US-French and China-Japan trade and investment. In contrast, Michaels & Zhi (2010) find that a sharp deterioration in American attitudes toward France in 2002-2003 was associated with a decline in bilateral trade. Fuchs & Klann (2013: 175) show that countries whose heads of state host the Dalai Lama suffer a yearlong decrease in exports to China, particularly machinery and transport equipment.

We move this debate forward by substantiating the theoretical and empirical foundations of the argument that that consumer boycotts—that is, calls to abstain from purchasing particular goods—offer states a potent “commercial weapon” in international disputes. For consumer boycotts to credibly signal resolve and avoid more severe conflict, they must have measurable effects. Yet existing studies of boycotts point in competing directions. On the one hand, scholars have argued that international tensions can activate “consumer ethnocentrism” and beliefs or social judgments about what purchases are patriotic and which are treasonous (Shimp and Sharma 1987). Consumers may participate in a boycott with the aim of self-fulfillment and self-expression (Friedman 1999), avoiding goods associated with a particular country of origin as a “vote pro or contra the policies and practices” of the country or as an “expressive act to signal anger”.⁴ As Pollins (1989b: 740) notes, “consumers may wish to express goodwill or solidarity toward those whom they identify as friends, while shunning or punishing those they perceive as foes.” Klein et al (1998) find that Chinese respondents who harbored more animosity toward Japan over its invasion and occupation during World War II were less likely to own a variety of Japanese goods, particularly electronics, independent of their assessment of product quality.⁵ Sun et al (n.d.) find a dramatic dip in purchases of Japanese automobiles in four Chinese cities for at least a year after the 2012 boycott.

On the other hand, consumers face a collective action problem in contemplating a boycott (John and Klein 2003). The individual cost of boycott participation reflects the lost utility from switching to other substitutes or delaying a purchase (Friedman 1999). The utility loss from substitution in turn hinges on the similarity of other products, while the horizon of purchase delay depends on the intensity and duration of the boycott. Consumers may be particularly reluctant to switch away from a particular country-of-origin if it is associated with superior product quality. Due to the simultaneous localization and globalization of production, consumers may also doubt whether a proposed boycott will have the desired expressive or substantive effect. These factors suggest that individuals remain stuck in habitual buying patterns, akin to a business’s sunk costs (Davis and Meunier 2011, 643).

Yet both perspectives on individual participation in politically motivated boycotts have given insufficient weight to social factors. Numerous studies have shown that sociotropic factors

⁴ Pandya & Venkatesan 2015, p. 42, citing Sen, Gürhan-Canli, & Morwitz, 2001; Verlegh et al 1999, p. 537.

⁵ Klein et al 1998, p. 96.

often dominate individual perceptions of costs and benefits. Mansfield & Mutz (2009) show that individual preferences over free trade are driven more by perceptions of how the overall economy is performing than an individual's own skill or industry. Similarly, the social prestige or stigma associated with a particular set of brands or products affects consumer choices (Veblen 1965; Charles et al 2009) alongside material and expressive considerations. In the automobile market, for example, "community environmentalism" shapes individual decisions to own hybrid vehicles (Kahn 2007).

We argue that political boycotts alter the social penalty of owning goods associated with the targeted entity. During an international dispute, such "surrogate boycotts" (Friedman 1999) aim to change the policies of the foreign government by targeting the brands associated with the foreign country. In turn, political boycotts seek to influence the choices of individual consumers by increasing the social censure and material risk associated with consuming the targeted goods. Individuals who defy a political boycott of foreign goods risk being criticized as unpatriotic or even stigmatized (Goffman 1963; Jones et al 1984) as a traitor. Goods associated with the foreign adversary also risk defacement and devaluation on the secondary market.

This social penalty varies over time as well as space. We expect political boycotts to decrease the market share of brands associated with the foreign adversary, relative to brands that are domestic or associated with other foreign countries, until the international dispute is resolved or calls to target the boycotted goods fade from public view. Subnationally, local communities also vary in how strongly they support a political boycott, reflecting differences in factors that affect community mobilization and nationalist protest (Wallace and Weiss 2015) as well as historic patterns of foreign occupation and trauma (Fouka and Voth n.d.). In some locales, calls for boycotts are accompanied by street-level action, with protest placards, physical obstruction of the targeted businesses, and even property destruction, such overturned cars and smashed windows. We anticipate that political boycotts will have a stronger effect on consumer behavior in communities where street-level action makes visible and hence more credible the community-level censure associated with targeted entity.

III. Boycotts, Protests, and the 2012 China-Japan Island Dispute

We test these arguments in the context of a sovereignty dispute and crisis between China and Japan, which escalated in August and September of 2012. The boycott arose following

Japan's purchase of three of the contested Senkaku/Diaoyu islands in the East China Sea, against the backdrop of Japan's invasion and occupation of China during World War II. In April 2012, Tokyo governor Shintaro Ishihara stated his intent to purchase the islands from their private Japanese owner and develop facilities on them. In July, Japan's central government announced that it would buy the islands to preempt Ishihara's bid. To dissuade Japan from proceeding with the sale, the Chinese government began a tacit campaign to use grassroots pressure to signal Chinese resolve (Weiss 2014). On the anniversary of Japan's surrender in World War II, the Chinese government allowed nationalist activists to land and plant flags on the islands for the first time in over fifteen years, covered live on Chinese state television and in banner headlines on Chinese websites and newspapers. Chinese internet censors uncharacteristically allowed calls to protest to remain online.⁶ Street demonstrations outside Japan's embassy in Beijing began with the landing and continued the next day. When a rival group of Japanese activists landed on the islands on 19 August 2012, calls for anti-Japanese actions in China—including boycotts and demonstrations—proliferated. Over the next five weeks, over 377 street demonstrations took place in 208 of 287 Chinese prefectural-level cities.⁷

Anti-Japan demonstrations were accompanied by calls to boycott Japanese brands and merchants, seeking to compel the Japanese government to relinquish its claim to the islands. During the protests, many Japanese-branded cars, automobile dealerships, retailers, and restaurants were vandalized (Johnson 2012). Even where demonstrators did not damage property, many protest placards and banners called for a boycott of Japanese goods (“*dizhi rihuo*”). Some protesters handed out flyers listing Japanese brands to boycott; one local newspaper published a similar list.⁸ Although the Chinese government did not explicitly endorse the boycott, state-controlled media gave prominent coverage to the anti-Japanese protests and consumer boycott. Weibo, China's version of Twitter, featured a front-page poll asking users if

⁶ Cairns and Carlson 2016.

⁷ Weiss 2013, 2014; Wallace and Weiss 2015; and Foley, Wallace, and Weiss 2018.

⁸ “China aims at Japan's economy in island protests,” Associated Press, September 16, 2012, <https://www.yahoo.com/news/china-aims-japans-economy-island-protests-123409211--finance.html>; “Anti-Japan protests spread across China,” *FT.com*, September 18, 2012, <https://www.ft.com/content/85f4f7a2-0138-11e2-99d3-00144feabdc0>.

they would participate in a boycott of Japanese goods, which became the hottest topic on the social media forum.⁹

We focus on the effect of the anti-Japanese boycott on the automobile industry. In some ways, the automobile sector represents a most-likely case for a consumer boycott to have measurable effects. First, the national identification of automobile brands is relatively strong compared with other consumer goods, such as clothing and household appliances. Second, cars are expensive and highly visible durable goods compared to home appliances, wines or other consumer goods studied in the literature. Cars are also used more often to signal social preference and status (Kahn 2007; Brown et al. 2011; Heffetz 2011). Third, the automobile market is one with many competitors and potential substitutes for those inclined to boycott. Fourth, automobiles face the possibility of vandalism or defacement, being both highly visible and often readily accessed in public. They are also easy to deface in costly ways; destruction or damage to vehicles is a regular practice in street demonstrations, including in anti-Japanese demonstrations in 2010 and 2005 in China.

Thus, compared with other cases of political tensions, such as US-French tensions over the Iraq war, the 2012 China-Japan crisis is a relatively likely context to observe the effects of a consumer boycott, at least at the national level. Finally, tensions between China and Japan were quite high in 2012, even higher than the 2010 flare-up in tensions over a collision between a Chinese fishing trawler and Japanese coast guard vessels near the islands. As one of the most likely settings for conflict escalation (Copeland 1996: 39), if political tensions do not harm commerce in this context, they are unlikely to do so in others, as in the case of democratic allies like the US and France.

At the same time, the particularities of the Chinese automobile market do not all suggest a bias towards finding a boycott effect. First, automobile purchase decisions are considered ones. Outside of a residence, a vehicle is often the largest purchase that an individual or household will make. If consumers have brand preferences, one might expect those preferences to outweigh the politically induced sentiments of a boycott when deciding on such a durable and expensive good. Second, the Chinese automobile sector is characterized by overwhelmingly domesticated

⁹ “Chinese debate boycotting Japanese products over islands dispute,” <http://observers.france24.com/en/20120821-online-chinese-debate-boycotting-japanese-products-over-islands-dispute-protest-weibo-poll-censorship>, August 21, 2012.

production. While automobile brands are linked with their home countries, the vast majority of autos available for sale in China are produced in country by joint ventures with Chinese firms, as required by the Chinese government.¹⁰ A consumer contemplating changing purchasing choices and boycotting Japanese products may recognize that the reduced demands for those goods will likely harm the Chinese labor that makes them. Third, the Chinese automobile market is fiercely contested and growing. Numerous entrants are locked in serious battle for a market that is already the world's largest, in the hundreds of billions.¹¹ Unlike a disturbance in a less consequential market, the dynamics of the Chinese automobile market are closely monitored by the huge firms competing in it. The size of the stakes mean that foreign invested-firms often undertake efforts to preempt and remedy the potential effects of a political boycott, particularly if they have been targeted by protesters (Vekasi 2017). In the wake of the 2012 demonstrations, Japanese automakers unveiled new financial incentives and marketing campaigns in more than a hundred Chinese cities, including programs to compensate consumers whose cars were damaged in anti-Japanese boycotts.¹²

Industry Background and Data

Our analysis focuses on passenger cars (sedans, SUVs, minivans and pickup trucks). The automobile industry in China is considered a strategic or pillar industry by central and local Chinese governments for its large spillover effects to both upstream (e.g., iron and steel) and downstream (e.g., sales and service) sectors and in overall economic growth (Barwick et al. 2017). Before the turn of the century, the automobile manufacturing sector in China was relatively limited in terms of product range and focused exclusively on commercial vehicles such as buses and heavy-duty trucks. As household income rose, sales of new passenger cars increased from 0.85 million in 2001 to nearly 24 million in 2016, with total sales of all automobiles topping 28 million. Surpassing the U.S. in 2009, China is now by far the largest automobile market in the world.

¹⁰ Chinese government uses the “Quid Pro Quo” or “market for technology” strategy in many sectors such as the automobile manufacturing sector whereby foreign firms are required to set up joint ventures with domestic firms in order to have production facilities in China. Foreign parties cannot claim more than 50 percent ownership.

¹¹ \$503bn in 2018.

¹² Colum Murphy, “Territorial Dispute Continues to Affect Japanese Car Sales in China,” *Wall Street Journal*, September 13, 2013, available at <https://www.wsj.com/articles/territorial-dispute-continues-to-affect-japanese-car-sales-in-china-1378870221>.

The Chinese automobile market is highly competitive, with nearly 70 producers offering more than 300 models each year. All major international automakers have a presence through joint ventures (JVs) with Chinese domestic producers. At the same time, many domestic automakers also produce indigenous models under own brand. Our analysis is at the brand level. We define a brand as a collection of vehicle models from a joint venture (e.g., GM-FAW, the joint venture between GM and the First Auto Works), the imported models of an automaker (e.g., Toyota), or the set of indigenous models of a domestic firm (e.g., FAW). Automobile brands from JVs account for about two-thirds of the market while domestic brands account for about 30 percent of the market, with the rest coming from imports. The high-end of the market is dominated by JVs and imports, while domestic firms concentrate on the low-end.

Our data contain the universe of individual vehicle registration records from 2009 to 2015 for new passenger cars (sedans, SUVs, minivans and pickup trucks), which are compiled by the State Administration of Industry and Commerce.¹³ There are a total of 100 million records with information on the location of registration (county), registration month, vehicle model, some vehicle attributes (vehicle size and type), and owner demographics (age, gender). We aggregate the data to the brand and city level, leading to 1,207,909 city-month-brand observations.

Table 1 presents summary statistics of vehicle attributes by country-of-origin (COO), with the top panel showing the simple average and the bottom panel showing the sales-weighted average. We separate vehicle brands into six groups based on COO: domestic, German, Korean, Japanese, U.S., and other European brands (such as French, Swedish, and British brands). JV Brands are categorized by the country of foreign partner. This is because models produced by JV inherit the same brand and model names as their international counterparts. Thus JV brands are essentially perceived as foreign brands (e.g. BMW as German). Panel A suggests that German brands (e.g., Mercedes-Benz, BMW, Audi, Volkswagen) are the most expensive, while domestic indigenous brands are the least expensive. Japanese brands are most similar to U.S. brands in

¹³ We exclude institutional registration records (by government and commercial entities) from our empirical analysis, which account for about 10% of all registration records. The imported vehicles were also excluded and they account for about 5% of the sales during our data period.

price and other vehicle attributes, suggesting that the cross-brand substitution is likely to be the strongest between this pair.¹⁴

Figure 1 plots the total sales (in logarithm) by country-of-origin, while Figure 2 depicts market shares. In the beginning of the sample period in 2009, Japanese brands and domestic brands have similar market shares, with a healthy lead over other brands in the order of German, US, Korean, and other European (non-German) brands. By 2015, the end of the sample period, domestic brands had the largest market share by a considerable margin while Japanese and German brands competed closely for the second spot. U.S. brands have gained a significant market share over time. The market share of Korean brands dropped slightly and that of other European brands remained largely stable.

During this seven-year period, the most salient pattern in the data is the rise of domestic brands and the decline of Japanese brands. The clear switch of market leadership between these two groups happened distinctively in September of 2012, at the height of the anti-Japanese demonstrations and boycott. Relative to the pattern pre-August 2012, we observe a dramatic drop in the market share of Japanese brands and visible increases in which of other brands. The discrepancy remains evident several months later. Japanese brands never recovered after the boycott, and domestic brands collectively dominated the market, especially toward the end of the data period. The market position of German brands increased relative to Japanese brands: from being clearly subordinate to Japanese brands in 2009 to closely competing for the second spot after 2012.

To examine if the decline of Japanese automobile brands observed in the Chinese market was caused by reasons other than the boycott event, we investigate U.S. market share dynamics during the same period. Appendix Table 1 presents the summary statistics of vehicles sold in the U.S. by country of origin based on data from IHS Automotive. In stark contrast to the Chinese market, the sales and market share of Japanese brands in the U.S. market were stable around August-September of 2012, as shown in the monthly vehicle sales and market share plots by country of origin from 2009 to 2015 in Appendix Figures 1 and 2. The pattern suggests that the decline of Japanese brands was confined within China and was not a worldwide phenomenon. It

¹⁴ There is important heterogeneity under the broad categorization by COO. For example, Volkswagen is a strong competitor with Toyota and GM with similar product lineups, competing for the top spot in China as well as in the world automobile market.

is worth noticing that March-May 2011 shows a sharp drop in the market share of Japanese brands in the U.S., due to the disruption of automobile and more importantly, auto parts production in Japan due to earthquake and tsunami damage. All three major automakers, Toyota, Honda and Nissan and their parts suppliers were affected. As a result, exports from Japan to the U.S. market were low for several months. As the vast majority of Japanese brands sold in China were produced by JVs in China, and the parts suppliers are located within China as well, the tsunami did not have much impact on the Chinese market.¹⁵

The graphical evidence from the raw data demonstrates two important findings: (1) the anti-Japanese boycott in August-September 2012 is associated with a dramatic negative impact on vehicle sales of Japanese brands in China and the impact persists through the end of 2015; and (2) the large loss in market share by Japanese brands in China is accompanied by gains for other brands, altering the market position of different brands.

IV. Empirical Framework

Figures 1 and 2 provide consistent evidence that the boycott was associated with a large and persistent negative impact on new vehicle sales of Japanese brands at the national level. In this section, we employ detailed vehicle sales data to examine variation over space and time using a regression framework that can better control for unobserved demand shocks such as seasonality or economic conditions. In particular, we leverage city-level anti-Japanese protest data to assess community-level heterogeneity in the intensity of perceived changes in social penalty for possessing a Japanese car across the country.

The baseline regression equation specifies vehicle sales as the dependent variable and the boycott event as the key explanatory variable. Denote c as a city, b as a brand (e.g., Ford), and t as a month, the baseline regression equation is defined as:

$$\ln(S_{cbt}) = O_c * D_t * \beta + \eta_{cb} + \gamma_t + O_c * t * \alpha + \varepsilon_{cbt},$$

where S_{cbt} is the market share of brand b in city c and month t . O_c is a vector of dummy variables representing the country of origin (e.g., Japan, U.S., and Korea) for brand c . D_t is a dummy variable indicating the boycott event, being 1 for all months after August 2012. The

¹⁵ Japan exported 2.38 million units of passenger vehicles to the U.S. in 2011, accounting for nearly 19% of U.S. passenger vehicle sales.

coefficient vector β on the interaction of these two variables captures the impact of boycott on sales for different brands by country of origin.

We include a rich set of fixed effects to control for unobserved demand shocks that could confound the boycott event. η_{cb} is a set of city-brand fixed effects, controlling for the baseline sales of different brands across cities. This allows different cities to have different baseline market shares for a given brand. For example, a brand might have a larger market share in the city where it is manufactured or where vehicle attributes better match consumer demographics (e.g., income). γ_t is a set of year-month fixed effects to control for the impact of macroeconomic conditions on vehicle sales.

As we are particularly interested in the possibility that communities might have different levels of social penalty associated with the boycott and wave of demonstrations as well as the duration of such possible impacts, we examine the heterogeneous impact across cities by allowing the coefficient β to vary across cities based on city characteristics. We focus particularly on whether a city witnessed anti-Japanese street demonstrations in August or September 2012. To examine the long-term impact of the boycott on sales, we analyze models allowing the coefficient β to vary over time.

Finally, a remaining concern is that the observed reduction in vehicle sales of Japanese brands after the boycott might be due to other (unobserved) reasons, such as increased competition from local brands and European brands that induced consumers to switch their purchasing decisions. We use two strategies to address this concern. First, we include $O_c * t$ in regressions to control for different time trends across brands, for example, allowing for brands to have different growth rates over time. Second, we examine sales trends for Japanese brands relative to other brands prior to the start of the boycott in August 2012. If pre-boycott sales trends are similar, then post-boycott changes are likely driven by political tensions, rather than by unobserved confounding factors.

Results

Table 2 presents results for four regressions, in which the first three sequentially add more control variables. The third specification includes the full set of fixed effects and is our preferred specification. The coefficient estimate on the interaction between the Japan dummy and the boycott event dummy suggests that the market share of Japanese brands dropped on

average by nearly a quarter, a substantial impact, after the protest and boycott wave in August and September 2012. The fourth specification uses data from 2012 to 2013 instead of the full data set from 2009 to 2015 to address the concern the ever-changing dynamic in automobile market in China, which could potentially be affected by many different market and non-market forces. Focusing on a shorter time window may better isolate the boycott event from other contemporaneous shocks. Nevertheless, the last regression based on data from 2012 to 2013 provides very similar coefficient estimates, suggesting that our findings are not driven by other shocks. The coefficient estimates from model 2.4 suggest that the boycott and protest wave reduced sales of Japanese brands by 1.1 million from August 2012 to the end of 2013.

Did the boycott affect sales equally across China, or did some cities observe a stronger rejection of Japanese cars? Figure 3 presents a choropleth map of the estimated loss in Japanese market share across Chinese cities. These estimates come from a modified Model 2.4, with triple interactions of the boycott dummy, Japan dummy, and 266 city dummies based on the full sample. The coefficient estimates on these 266 triple interactions (multiplied by -1) are shown in the map and point to significant heterogeneity across cities. While nearly all cities observed a negative impact for Japanese brand sales consistent with a strong national-level change in social penalty, there is a considerable range around the mean market share loss of 28% with some cities seeing Japanese brands lose over 65% of their market share.

Table 3 explores whether the presence of anti-Japanese protests helps account for spatial heterogeneity in sales impact. The first variable is the triple interaction of the boycott event dummy (post-August 2012), the protest dummy, and the dummy for Japanese COO. The protest dummy takes a value of one if the city had an anti-Japanese protest during August or September 2012. Two key results emerge. First, as in Table 2, there is a strong, statistically significant national-level effect on Japanese sales associated with boycott in all model specifications. However, the magnitude of the national-level effect is smaller in these models that include city-level protest data than is seen in the results from Table 2. Second, cities that witnessed anti-Japanese protests observed statistically significant additional negative effects on Japanese sales when contrasted with cities where no protests took place. That is, while there is a substantial negative effect at the national-level on Japanese auto sales following the initiation of the boycott event, cities that experienced protests saw even deeper losses for Japanese automakers than did those cities without protests.

To explore these cross-city patterns further, we take the 266 coefficient estimates displayed on the map in Figure 3 as the dependent variable in an additional set of models. We examine their correlation with city demographics, historical factors, and the presence of automobile manufacturing plants in Table 4. Across different specifications, the results show that the impact on sales was larger in cities with a larger population and in cities that experienced anti-Japanese protests. Historical factors do not seem to affect the extent of the sales impact, results that are consistent with the additional estimates produced in Appendix Table X. The lack of a finding on historical factors is likely due to the inclusion of city-brand fixed effects and substantial migration, both rural-to-urban migration and across regions, have altered population composition dramatically during the past several decades. In addition, Japanese occupation was essentially a national event and its impact on contemporary China is unlikely to be confined to specific regions in China. The presence of an auto plant in the region and the COO associated with the plant do not systematically explain the heterogeneity in sales impact. The city-brand fixed effects capture differential purchasing patterns, with the non-findings here indicative of cities with automobile plants not having stronger changes in sales post-boycott (c.f. Kim 2018) and that the boycott was not primarily driven by government efforts to support national or local industries.¹⁶

Have examined heterogeneity across space, we now turn to heterogeneity in impacts over time by examining the duration of the boycott effect. We re-estimate specifications in columns (3) and (4) of Table 2 but allow month-specific time trends for Japanese brands by interacting month dummies with the Japan dummy. The coefficient estimates, capturing the time trend in the market share of Japanese brands relative to other brands, are plotted in Figures 4 and 5. Figure 4 is based on the full sample while Figure 5 is based on data in 2012 and 2013.

There are two important findings from these figures. First, both figures show a small and statistically insignificant time effect before the boycott event in August 2012. This supports the common trend assumption in our empirical strategy: the dramatic sales changes post-boycott are caused by the boycott event itself rather than other unobserved factors. Second, the boycott had a large and persistent impact on the market share of Japanese brands. Immediately after the boycott event, there was a nearly 50% reduction in market shares for Japanese branded automobiles. Although the impact decayed over time, it never fully disappeared even three years

¹⁶ Kim (2018) shows that such protectionism helps explain biased media coverage of foreign auto recalls in China.

after the boycott event. This result is consistent with the raw market share data depicted in Figure 2, which suggests that the boycott was a watershed moment for German and especially Chinese brands to surpass Japanese brands and become market leaders. Overall, our analysis shows that this international crisis significantly altered the dynamics of the automobile market, an important sector for high-value and high-visibility consumer goods.

V. Discussion

Our findings contrast sharply with prior studies on the impact of political tensions and consumer boycotts on commerce. We first consider the difference in magnitude and then consider reasons for a persistent rather than ephemeral boycott effect. Several factors may account for the large magnitude of the boycott effect we have documented, compared with studies that have found negligible (Ashenfelter et al. 2007; Davis & Meunier 2011; Pandya and Venkatesen 2016) or modest (Fouka and Voth n.d.) effects. First, compared with other studies, relations between China and Japan are more fraught with potential for armed conflict. No preferential trading agreement or shared democratic institutions or values mitigate the likelihood of war (Mansfield and Pevehouse 2000), which would be unthinkable between fractious allies like the U.S. and France or Germany and Greece. Moreover, Chinese views of Japan are marked by not only historical acrimony (Fouka and Voth n.d.) but also an unresolved contemporary territorial dispute and rivalry for regional influence.

Second, compared with other periods of tension in China-Japan relations, the precipitating event for the 2012 boycott posed a greater challenge to China's territorial claims in the East China Sea and led to a much tougher Chinese government stance against Japan. Japanese prime ministerial visits to the Yasukuni war shrine, which had previously sparked anti-Japanese protests and calls for consumer boycotts in China, produced a far less militarized response from the Chinese government and even public admonishments by then-Commerce Minister Bo Xilai *against* a boycott of Japanese goods in 2005.¹⁷ As such, tensions between China and Japan in 2012 were far more likely to harm commercial relations than the 1990-2006 period studied by Davis and Meunier (2011).

¹⁷ Vivian Wu, "Don't boycott Japanese goods, says minister," *South China Morning Post*, April 23, 2005. Accessed via Lexis Nexis.

Third, our study takes into account the localization of production of many foreign-identified goods. Trade flows miss much of the action when it comes to consumer behavior in an increasingly globalized supply chain. Fourth, automobiles are much more publicly visible, expensive, and difficult to shield from community stigma and defacement than other consumer goods like wine, supermarket brands, or household electronics. Though those products are also common targets of political boycotts, our theory expects individuals to be more willing to defy a boycott when their consumption can be kept private and represents only a small share of household expenditures. These four factors appear to have overcome sources of bias against a boycott effect, including consumer habit, preference, and localized production via joint ventures.

We also find a long-lived boycott effect, one that persisted at least three years after the boycott began in August 2012. Prior studies have found that the boycott effect dissipates within 12 months (Heilmann 2015; Fouka and Voth n.d.) or as little as a week (Pandya and Venkatesen 2016). The persistent effects in our study likely owe to a couple of factors. First, when goods are durable and brand appeal is socially constructed, brand choice can become path dependent. Second, the unresolved territorial dispute between China and Japan remained a source of heightened tensions through the end of 2014. Although the government censored calls for anti-Japanese boycotts and cracked down on anti-Japan protests after September 2012, consumers may have remained reluctant to buy an expensive, durable Japanese good, especially in communities that experienced protests during this crisis. Even though Chinese officials cautioned the public that going to war with Japan over the islands would derail China's economic development,¹⁸ such messages may have reinforced fears that war, along with renewed protests and boycotts, could be on the horizon. Political and military relations remained heated, including a January 2013 incident in which a Chinese naval frigate locked weapons radar on a Japanese helicopter, and the November 2013 announcement of a Chinese Air Defense Identification Zone over the disputed islands. It was not until November 2014 that the two governments agreed to set

¹⁸ According to General Liu Yuan, Political Commissar of the PLA's General Logistics Department: "China must avoid being drawn into an 'inadvertent' war... The United States and Japan are afraid of us catching up and will use all means to check China's development, but we absolutely must not take their bait." *Global Times*, February 4, 2013 (Chinese), http://opinion.huangqi.com/opinion_world/2013-02/3614115.html

aside their “different positions” on the islands and gradually resume diplomatic and security exchanges.¹⁹

VI. Conclusion

We began by asking whether international relations can harm commerce by driving consumers to boycott foreign goods. Our analyses show significant alterations in the behavior of Chinese consumers in the automobile market precisely when Sino-Japanese tensions escalated. Based on patterns in 100 million registrations, we estimate nearly 200 billion RMB in lost sales by Japanese auto firms in the eighteen months following the escalation in tensions.

We theorized that consumer boycotts and their attendant costs can play an informational role in revealing a state’s resolve. Boycotts that succeed in imposing commercial “casualties”, i.e. lost consumer purchases, may help states avoid more costly forms of conflict. As economist Charles Frederick Remer wrote in his 1933 *A Study of Chinese Boycotts*, “if, as we hope, the accepted form of coercion is no longer to be war, the boycott in some form will, no doubt, find an important place”.²⁰ Remer notes that the desired effect is a “psychological” blow to the target nation, even if the boycott incurred some cost to China as well. Ironically, the local partners of the Japanese joint ventures suffered collateral damage as a result of the boycott, with gains for indigenous brands only partially offsetting these domestic losses.

To be credible instruments of diplomacy, boycotts must actually change consumer behavior, a proposition that has drawn both theoretical and empirical skepticism. We have shown that politically motivated boycotts can have large and persistent effects, particularly in cities where anti-foreign sentiment materialized in street demonstrations. This heterogeneity supports our argument that boycotts reflect not only individual preferences but also the heightened social penalty of goods associated with a foreign adversary. Most studies have focused on how political tensions alter the behavior of individual consumers and firms, without parsing effects at the community level. National shocks to commercial ties are often experienced unevenly, especially in a country with as many subnational communities as China.

¹⁹ “China and Japan, in Sign of a Thaw, Agree to Disagree on a Disputed Island Group,” *New York Times*, November 7, 2014, available at <https://www.nytimes.com/2014/11/08/world/asia/china-japan-reach-accord-on-disputed-islands-senkaku-diaoyu.html>.

²⁰ Remer 1933: 251.

Ultimately, the 2012 crisis was informally resolved on terms more favorable to China than the status quo ante. Japan did not prevent Chinese ships from establishing a *de facto* presence in the territorial waters surrounding the islands and agreed to mend ties by acknowledging the two sides' different views on the islands, a softening of Japan's prior insistence that no territorial dispute exists.²¹ To be sure, other factors also shaped both states' calculations in the dispute, including the U.S. treaty commitment to aid Japan in the event of foreign attack. The opportunity costs of conflict escalation may have also weighed on one or both disputants. Intra-industry trade between China and Japan may have played a pacifying role (Peterson & Thies 2012), although China is authoritarian and less likely to be dissuaded from initiating conflict by trade dependence than democratic Japan (Gelpi and Grieco 2003, 2008).

Supporting the consumer boycott was one of several ways the Chinese government signaled resolve. Permitting street protests and the entry of Chinese patrol vessels to the territorial waters surrounding the islands also demonstrated how strenuously China was prepared to defend its sovereignty claims. The Chinese boycott also helped persuade affected Japanese firms to lobby their own government to ease tensions. After the 2012 boycott, the Japanese Keidanren business lobby group called for the Japanese government to mend relations with China and set aside its insistence that no territorial dispute with China exists.²² Our study suggests that consumer boycotts can play an informational as well as persuasive role in mitigating conflict.

To evaluate the generalizability of this conclusion, more research is needed on boycotts from a more diverse set of states. Many studies have examined the effect of political tensions on commerce between states that are democracies, allies, or both. Whether boycotts have an impact in such pairs of states is an important question, but not as a mechanism that could avert military conflict. Political boycotts where conflict is more likely could include Ukrainian calls to boycott

²¹ Shannon Tiezzi, "A China-Japan Breakthrough: A Primer on Their 4 Point Consensus," *The Diplomat*, November 7, 2014, accessed at <https://thediplomat.com/2014/11/a-china-japan-breakthrough-a-primer-on-their-4-point-consensus/>.

²² Mure Dickie, "Asia: Sparring Partners," *Financial Times*, December 12, 2012, accessed at <https://www.ft.com/content/0b7353e4-43a4-11e2-a48c-00144feabdc0>.

Russian goods,²³ Pakistani calls to boycott Indian goods,²⁴ and Indian calls to boycott Chinese goods.²⁵

Within this broader set of cases, it may be that authoritarian states are more effective than democracies at wielding this “commercial weapon”. State involvement in shaping the information environment as well as political and economic behavior in the marketplace may send clearer signals of resolve. Boycotts that arise without state support signal public support for getting tough on the adversary but reveal less about the government’s own intentions. Government endorsements send signals of state resolve, while public appetite for boycotts without or against state approval reveals popular pressures on the government to act.

Authoritarian governments have been more central in directing commercial boycotts and stoppages, although the US Congress did change its cafeteria menu to list “freedom fries” to register displeasure with “our so-called ally, France.”²⁶ After Turkey shot down a Russian fighter jet in 2015, Russian prime minister Dmitry Medvedev threatened retaliation against “foodstuffs, labor, and services from Turkish companies.”²⁷ In response to U.S. sanctions, Turkish president Tayyip Erdogan called for a boycott of U.S. electronics, including Apple iPhones.²⁸

Future studies may wish to look at the effect of elite endorsement or caution as well as other state efforts to hold up commerce to gain leverage in political disputes. Although the 2012 boycott against Japan was state-supported, the Chinese government has not always endorsed consumer boycotts. Amid tensions with Japan in 2005, Chinese officials specifically warned against a boycott’s effects on the Chinese economy. After an international tribunal ruled against China’s claims in the South China Sea in 2016, Chinese officials and state-affiliated media quashed the idea of a consumer boycott. Other Chinese efforts include alleged stoppages of rare earth exports to Japan in 2010 during the trawler crisis, restrictions on Philippine imports in 2012

²³ “Ukraine: App helps people boycott Russian goods,” BBC, April 2, 2014, accessed at <https://www.bbc.com/news/blogs-news-from-elsewhere-26853689>.

²⁴ <https://timesofislamabad.com/25-Sep-2018/pakistan-vow-to-boycott-indian-products>.

²⁵ <https://economictimes.indiatimes.com/news/politics-and-nation/boycott-of-chinese-goods-how-it-wont-help-india-but-can-harm-china/articleshow/59541915.cms>.

²⁶ Sean Loughlin, “House cafeterias change names for ‘french’ fries and ‘french’ toast,” March 12, 2003, accessed at <http://www.cnn.com/2003/ALLPOLITICS/03/11/sprj.irq.fries/>.

²⁷ Natasha Bertrand, “Russia is already exacting its revenge on Turkey for downing a Russian warplane,” Business Insider, November 26, 2015, accessed at <https://www.businessinsider.com/russia-turkey-downed-jet-2015-11>.

²⁸ “Erdogan says Turkey will boycott US electronic products,” *The Guardian*, August 14, 2018, accessed at <https://www.theguardian.com/world/2018/aug/14/erdogan-turkey-boycott-us-lira-trump-pastor-brunson>.

during a standoff over territory in the South China Sea, and boycotts of Korean brands and cancellation of tourist visits in 2017, after South Korea agreed to deploy the U.S.-supplied Terminal High Altitude Area Defense missile defense system.²⁹

²⁹ <https://www.ft.com/content/c7a2f668-2f4b-11e7-9555-23ef563ecf9a>

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Table 1: Summary Statistics of Vehicle Registration Data

Panel A: Vehicle Attributes by COO

	Domestic	Japan	Korea	US	German	Non-German	Total
Price ('000 yuan)	94.55	181.65	147.01	189.8	272.66	154.23	153.7
Engine (liter)	1.71	1.99	1.82	1.94	1.94	1.77	1.84
Size (m ²)	7.69	7.85	7.94	8.32	8.22	7.91	7.89
Weight (ton)	1.76	1.85	1.78	1.9	1.94	1.76	1.81
Total Sales (mil.)	21.97	19.06	8.66	12.22	17.74	4.77	84.43

Panel B: Sales-Weighted Vehicle Attributes by COO

	Domestic	Japan	Korea	US	German	Non-German	Total
Price ('000 yuan)	86.28	173.79	134.77	154.39	227.28	136.5	155.9
Engine (liter)	1.62	1.93	1.73	1.77	1.84	1.71	1.78
Size (m ²)	7.66	7.92	7.91	8.12	8.11	7.92	7.93
Weight (ton)	1.69	1.81	1.71	1.8	1.87	1.73	1.78

Notes: Summary statistics are based on the universe of new passenger car registrations from 2009 to 2015 in China. Vehicle size is defined as vehicle length by width.

Table 2: Boycott Impact on Japanese Brand Sales

Variables	(2.1)	(2.2)	(2.3)	(2.4)
Boycott x Japan	-0.391*** (0.008)	-0.319*** (0.011)	-0.246*** (0.008)	-0.284*** (0.007)
Constant	-4.953*** (0.001)	-4.808*** (0.008)	-4.810*** (0.009)	-5.432*** (0.046)
City-Brand fixed effects	Y	Y	Y	Y
Year-Month fixed effects	N	Y	Y	Y
COO x Time Trend	N	N	Y	Y
Data Period	2009-2015	2009-2015	2009-2015	2012-2013
Number of obs.	1192506	1192506	1192506	354535
R ²	0.863	0.864	0.867	0.932

Notes: The dependent variable is log(market shares). The unit of observation is city-month-model. Standard errors in parentheses are clustered at the city level:

* p<0.05 ** p<0.01 *** p<0.001

Table 3: Cities with Protests See Additional Losses for Japanese Brands

Variables	(4.1)	(4.2)	(4.3)	(4.4)
Boycott x Protest x Japan	-0.103*** (0.017)	-0.103*** (0.017)	-0.102*** (0.017)	-0.074*** (0.013)
Boycott x Japan	-0.315*** (0.015)	-0.244*** (0.017)	-0.171*** (0.015)	-0.230*** (0.011)
Constant	-4.953*** (0.001)	-4.808*** (0.008)	-4.810*** (0.009)	-5.432*** (0.046)
City-Brand fixed effects	Y	Y	Y	Y
Year-Month fixed effects	N	Y	Y	Y
COO x Time Trend	N	N	Y	Y
Data period	2009 -2015	2009 -2015	2009 -2015	2012-2013
Number of obs.	1192506	1192506	1192506	354535
R ²	0.863	0.864	0.867	0.932

Standard errors in parentheses

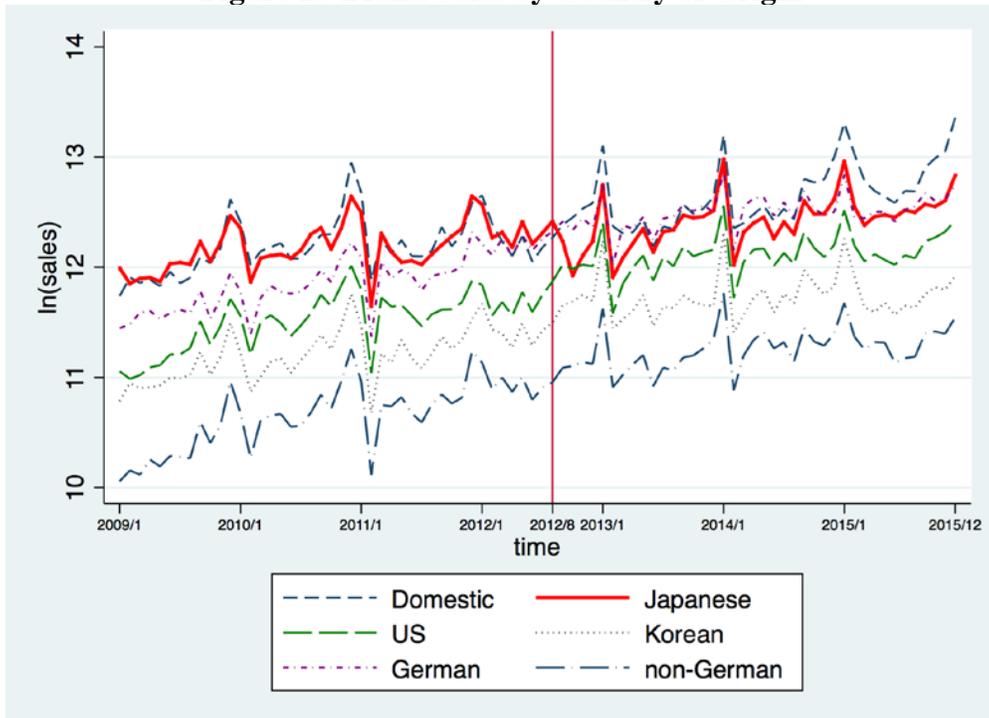
* p<0.05 ** p<0.01 *** p<0.001

Table 4: Impact Heterogeneity and City Demographics

<i>Dep. Var. (City Coefficients)</i>	2009-2015			2012-2013		
	<i>Continuous</i>	<i>Binary (linear)</i>	<i>Binary (logit)</i>	<i>Continuous</i>	<i>Binary (linear)</i>	<i>Binary (logit)</i>
Ln (income/capita)	-0.0240 (0.0487)	0.0266 (0.1556)	0.0966 (0.6925)	-0.0214 (0.0342)	-0.0690 (0.1528)	-0.3011 (0.6910)
Ln(population)	-0.0377* (0.0160)	-0.1540** (0.0512)	-0.6898** (0.2341)	-0.0292* (0.0114)	-0.1087* (0.0508)	-0.5139* (0.2347)
% of college student in pop.	-0.1875 (0.6559)	-0.6105 (2.0956)	-2.6237 (9.5717)	-0.1848 (0.4667)	-0.0829 (2.0845)	-0.3816 (9.2938)
If there was a protest	-0.0694** (0.0240)	-0.1908* (0.0766)	-0.8302* (0.3400)	-0.0451** (0.0170)	-0.2215** (0.0761)	-0.9763** (0.3442)
If there was a large protest	-0.0280 (0.0242)	-0.0742 (0.0774)	-0.3239 (0.3446)	-0.0234 (0.0173)	-0.1212 (0.0771)	-0.5456 (0.3500)
Occupied during WWII	0.0631* (0.0291)	0.2032* (0.0931)	0.9122* (0.4181)	0.0376 (0.0207)	0.0390 (0.0924)	0.1501 (0.4090)
Fully occupied during WWII	0.0011 (0.0254)	-0.0077 (0.0812)	-0.0319 (0.3534)	-0.0297 (0.0180)	-0.0240 (0.0806)	-0.1058 (0.3559)
Patriotic base	0.0352 (0.0217)	0.0771 (0.0694)	0.3433 (0.3065)	0.0362* (0.0154)	0.1667* (0.0689)	0.7637* (0.3123)
Anti-Japan patriotic base	0.0172 (0.0284)	0.0290 (0.0907)	0.1423 (0.4034)	-0.0207 (0.0201)	-0.1346 (0.0899)	-0.6002 (0.4031)
Domestic brand plant	0.0048 (0.0383)	-0.0596 (0.1223)	-0.2979 (0.5435)	0.0035 (0.0280)	-0.0565 (0.1249)	-0.2654 (0.5658)
Japanese joint venture plant	0.0166 (0.0568)	0.3013 (0.1813)	1.3357 (0.8500)	0.0076 (0.0404)	-0.0021 (0.1803)	-0.0192 (0.8369)
Other joint venture plant	-0.0245 (0.0429)	-0.0844 (0.1370)	-0.4271 (0.6355)	-0.0043 (0.0314)	0.0939 (0.1402)	0.4475 (0.6442)
Constant	0.2743 (0.4797)	1.4525 (1.5325)	4.4693 (6.8183)	0.1697 (0.3360)	2.1509 (1.5010)	7.5496 (6.7748)
Number of obs.	266	266	266	266	266	266
R ²	0.1187	0.1157		0.1321	0.1295	

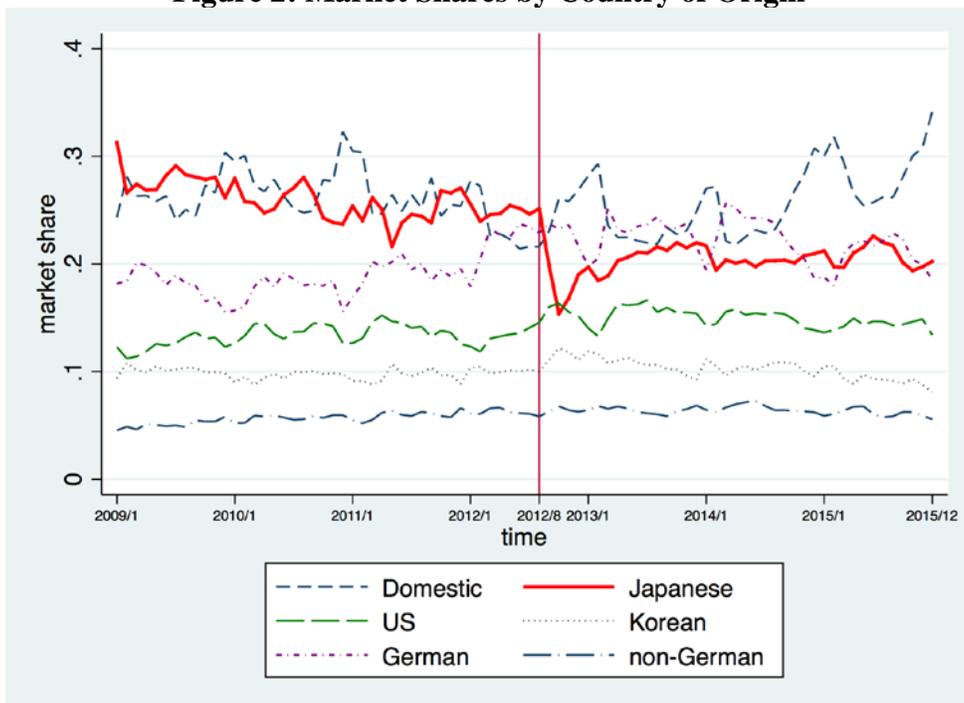
Notes: The dependent variable is based on the 266 coefficient estimates on the triple interactions of Boycott*Japan*City dummies based on the specification in the column in Table 2. City-level income/per capita, population and college student ratio are based on 2010 population Census. The dependent variable in columns (1) and (4) is the raw coefficient estimates, while the other four specifications separate cities into high-impact (above-median) and low-impact cities and define the dependent variable as a binary variable. Columns (2) and (5) use OLS while Columns (3) and (6) use logit for estimation.

Figure 1: Brand Sales by Country of Origin



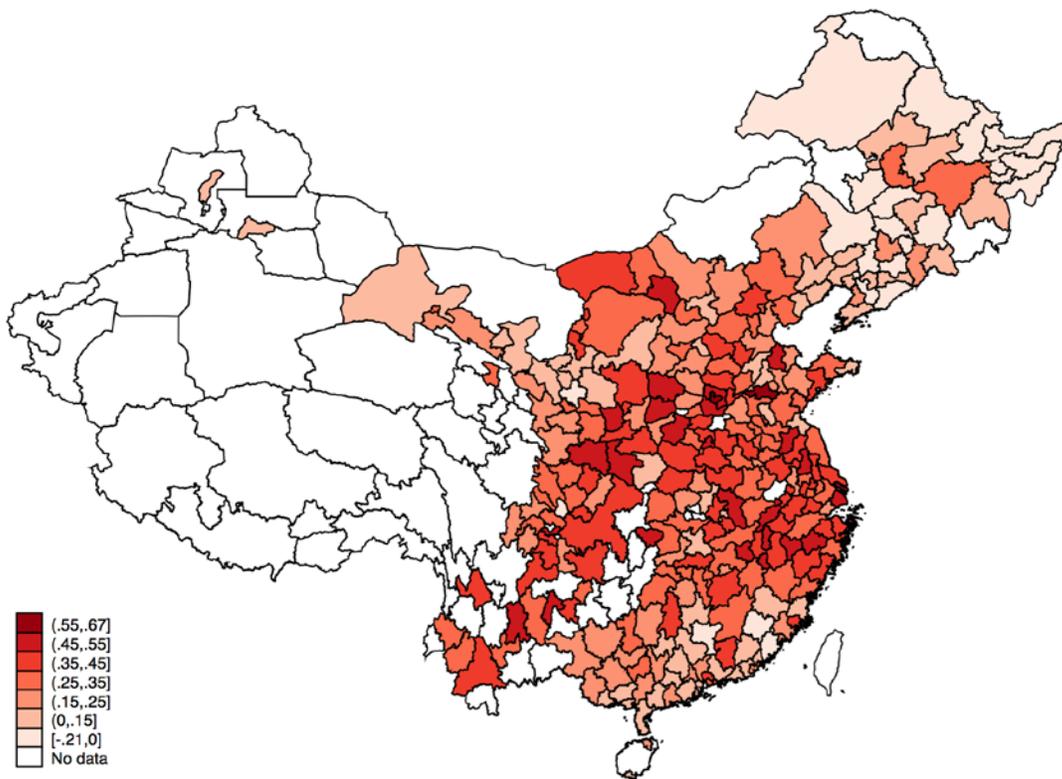
Notes: National sales in logarithm by month by country of origin. The red vertical line denotes the boycott event.

Figure 2: Market Shares by Country of Origin



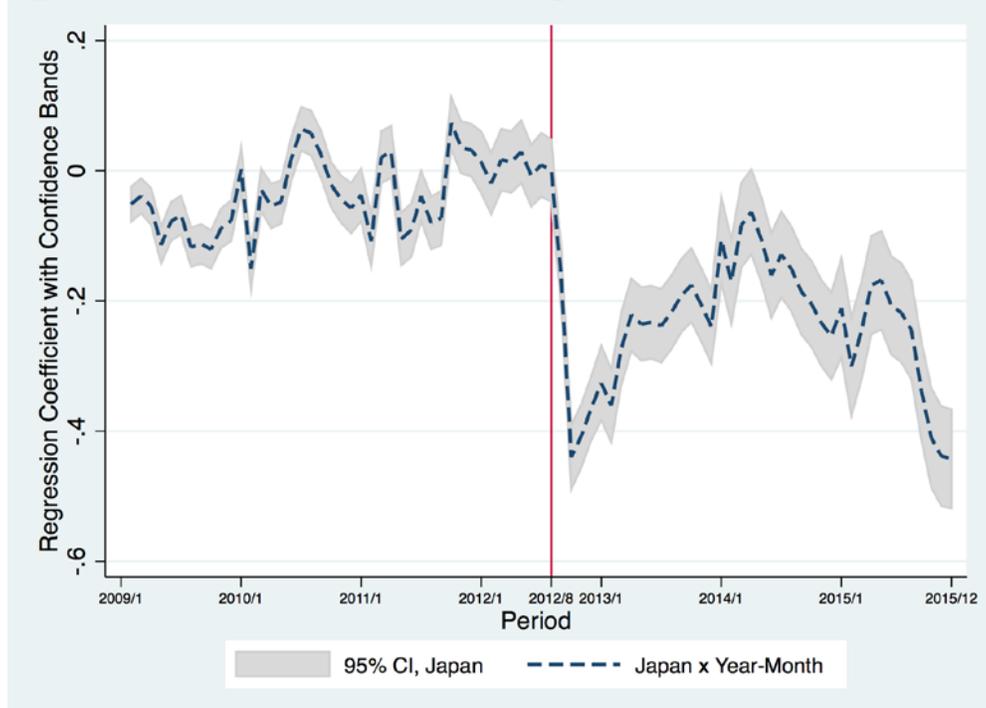
Notes: Market shares of different countries of origin by month.

Figure 3: Heterogenous Impacts by City



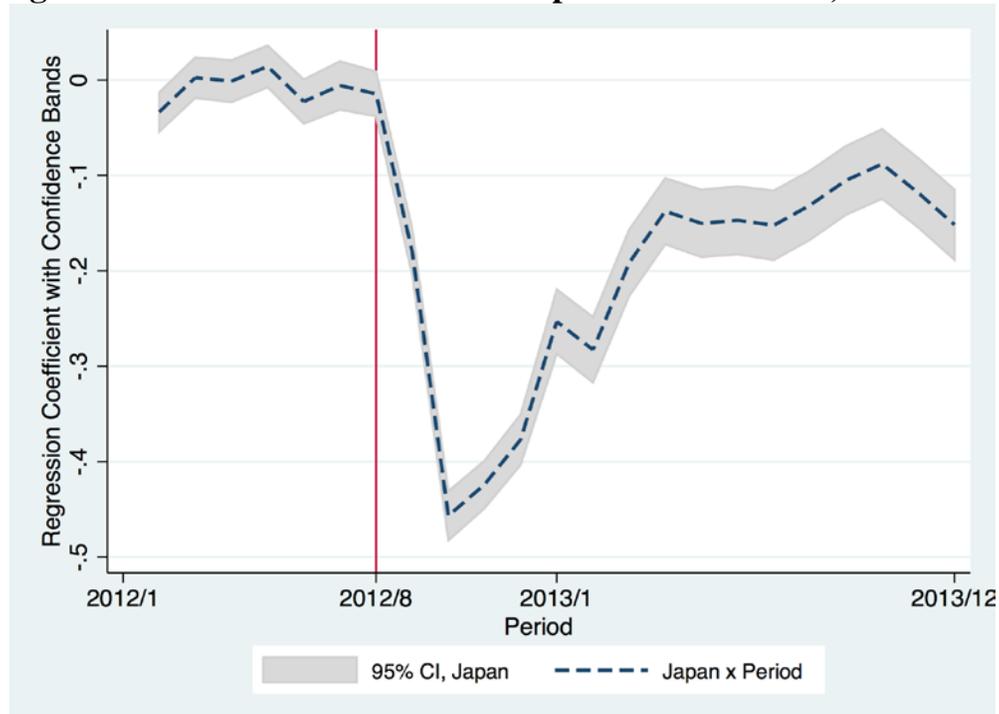
Notes: The heat map shows the reduction of the market share of Japanese brands due to the boycott event based on the specification of the last column in Table 2 by allowing the impact to be different across cities. The impacts are the coefficient estimates (multiplied by -1) on $\text{Boycott} \times \text{Japan} \times \text{City}$ dummies following the last regression in Table 2. The darker color represents a larger reduction in the market share of Japanese brands.

Figure 4: Coefficient Estimates on Japan x Year-Month, 2009-2015



Notes: Coefficients estimates are from a regression similar to the last column of Table 2 replacing $\text{Boycott} \times \text{Japan}$ with $\text{Japan dummy} \times \text{year-month dummies}$.

Figure 5: Coefficient Estimates on Japan x Year-Month, 2012-2013



Notes: Same as Figure 3 except using data from 2012 to 2013.

Appendix

Appendix Table 1: Summary Statistics of Vehicle Registration Data

Panel A: US Auto Market Average Model Attributes by COO

	Japan	Korea	US	German	Non-German	Total
Price ('000 yuan)	200.17	147.93	216.69	346.97	229.64	234.33
Engine (liter)	2.95	2.51	3.68	2.99	3.26	3.15
Size (square meter)	8.73	8.52	9.57	8.65	8.96	8.93
Weight (ton)	1.83	1.67	2.12	1.93	1.97	1.93
Total Sales (mil.)	34.85	7.52	30.51	6.73	10.58	90.19

Panel B: US Auto Market Sales Weighted Average Model Attributes by COO

	Japan	Korea	US	German	Non-German	Total
Price ('000 yuan)	152.91	124.25	166.82	241.43	163.38	162.98
Engine (liter)	2.58	2.16	3.32	2.58	3.12	2.86
Size (square meter)	8.68	8.34	9.53	8.50	9.14	8.98
Weight (ton)	1.71	1.54	2.02	1.80	1.98	1.84

Notes: Summary statistics are based on the new passenger car registrations from 2009 to 2015 in the US. Vehicle size is defined as vehicle length by width. Data source: IHS Automotive.

The regressions in Table 2 offer only a starting point for our analysis since they ignore the potential heterogeneous impacts on non-Japanese brands and over time. We try to unpack the heterogeneity in impacts subsequently. Table 3 reports four regressions that are similar to those in Table 2 except allowing the impact on non-Japanese brands to be different. We use the non-German brands as the baseline group. The coefficient estimates on the interaction between boycott dummy and other COO dummies provide the impacts relative to the baseline group.

The third specification with the full set of controls suggests that the boycott event reduced market share of Japanese brands by 15% while increasing the market share of all other brands (relative to the excluded category of non-German European brands). U.S. brands benefitted the most and on average saw an increase of nearly 37% in market share. German and Korean brands also benefitted substantially. These results suggest that many consumers who would have purchased a Japanese brand in the absence of the boycott switched to non-Japanese brands, especially U.S. brands, which are the closest to Japanese brands in price and other vehicle attributes as Table 1 shows. The fourth specification in Table 3 uses data only from 2012 and 2013 and produces qualitatively similar results.

The coefficient estimates from column (3.4) suggest that the protest and boycott event reduced sales of Japanese brands by 1.1 million from August 2012 to the end of 2013. For reference, total Japanese car sales in 2012 and 2013 were 5.2 million according to the data. The boycott benefitted brands of other COOs, with U.S. brands seeing the largest increase in sales of 0.66 million during this period.

Table 3: Boycott Impact on Sales by COO

Variables	(3.1)	(3.2)	(3.3)	(3.4)
Boycott x Japan	-0.391*** (0.008)	-0.187*** (0.022)	-0.152*** (0.018)	-0.130*** (0.013)
Boycott x Domestic	-0.188*** (0.010)	0.011 (0.022)	0.048** (0.018)	0.136*** (0.013)
Boycott x US	0.335*** (0.018)	0.540*** (0.027)	0.378*** (0.022)	0.411*** (0.015)
Boycott x German	0.445*** (0.013)	0.648*** (0.024)	0.263*** (0.019)	0.255*** (0.014)
Boycott x Korea	0.078*** (0.014)	0.282*** (0.025)	0.245*** (0.020)	0.247*** (0.014)
Constant	-4.929*** (0.003)	-4.792*** (0.008)	-4.791*** (0.010)	-5.098*** (0.044)
City-Brand fixed effects	Y	Y	Y	Y
Year-Month fixed effects	N	Y	Y	Y
COO x Time Trend	N	N	Y	Y
Number of obs.	1192506	1192506	1192506	354535
R ²	0.866	0.867	0.867	0.933

Notes: The dependent variable is log(market shares). The unit of observation is city-month-model. The baseline group is non-German European brands (e.g., brands from UK, France and Sweden). Standard errors in parentheses are clustered at the city level: * p<0.05 ** p<0.01 *** p<0.001.

Table 4: Boycott and Protest Impact on Sales by COO

Variables	(4.1)	(4.2)	(4.3)	(4.4)
Boycott x Protest x Japan	-0.103*** (0.017)	-0.103*** (0.017)	-0.103*** (0.017)	-0.074*** (0.013)
Boycott x Protest x Domestic	-0.003 (0.021)	-0.002 (0.021)	-0.002 (0.021)	-0.012 (0.013)
Boycott x Protest x US	-0.092* (0.044)	-0.092* (0.044)	-0.092* (0.044)	-0.047 (0.030)
Boycott x Protest x German	0.185*** (0.029)	0.186*** (0.029)	0.182*** (0.029)	0.013 (0.017)
Boycott x Protest x Korea	-0.018 (0.037)	-0.018 (0.037)	-0.018 (0.037)	0.005 (0.024)
Boycott x Japan	-0.315*** (0.015)	-0.112*** (0.025)	-0.077*** (0.022)	-0.076*** (0.016)
Boycott x Domestic	-0.187*** (0.018)	0.013 (0.027)	0.050* (0.023)	0.144*** (0.016)
Boycott x US	0.402*** (0.039)	0.607*** (0.044)	0.445*** (0.040)	0.445*** (0.027)
Boycott x German	0.309*** (0.024)	0.512*** (0.032)	0.130*** (0.029)	0.246*** (0.019)
Boycott x Korea	0.091** (0.034)	0.296*** (0.040)	0.258*** (0.035)	0.243*** (0.024)
constant	-4.929*** (0.003)	-4.792*** (0.008)	-4.791*** (0.010)	-5.098*** (0.044)
City-Brand fixed effects	Y	Y	Y	Y
Year-Month fixed effects	N	Y	Y	Y
COO x Time Trend	N	N	Y	Y
Data period	2009-2015	2009-2015	2009-2015	2012-2013
Number of obs.	1192506	1192506	1192506	354535
R ²	0.866	0.867	0.868	0.933

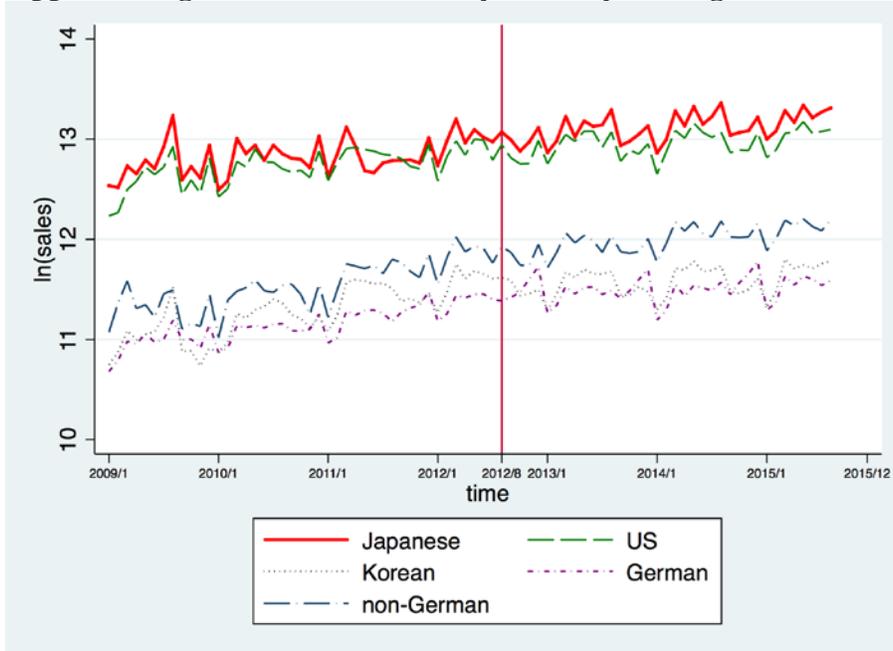
Notes: The dependent variable is log(market shares). The unit of observation is city-month-model. The baseline group is non-German European brands (e.g., brands from UK, France and Sweden). Standard errors in parentheses are clustered at the city level: * p<0.05 ** p<0.01 *** p<0.001.

We also examine whether historical factors had a heterogeneous impact on sales. Specifically, we use data on whether a Chinese city was fully occupied, partly occupied or not occupied by the Japanese military during the 1937-1945 period. We also use data on whether a city has patriotic educational landmarks (such as museums or monuments) and if such landmarks memorialize China's war against Japanese aggression during World War II. The coefficient estimates on the triple interactions suggest that in cities which were fully occupied during the eight-year period and which have anti-Japanese patriotic landmarks, the boycott appears to have stronger negative effects, but the estimates are not statistically significant.

Table 5: Historical Factors Interacting Boycott on Sales by COO

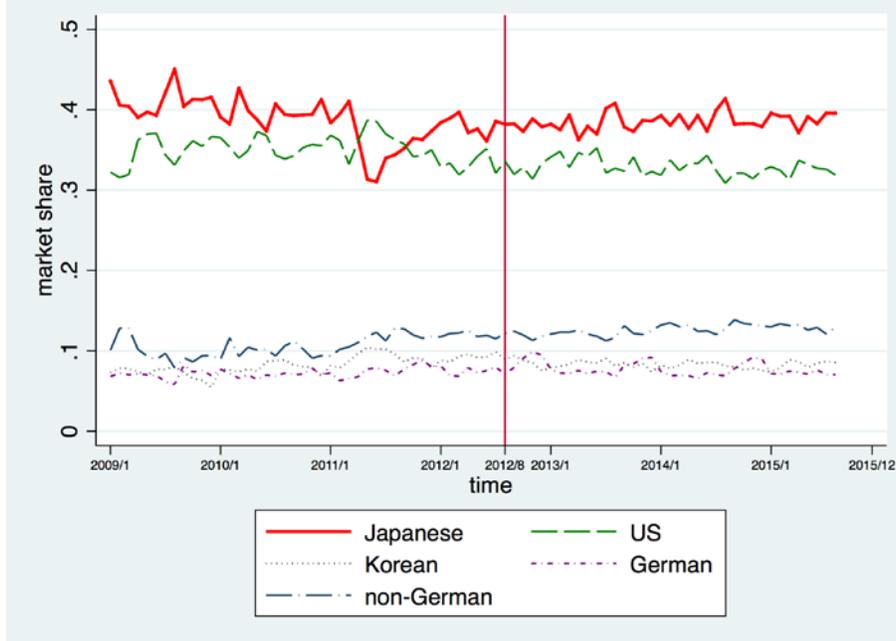
Variables	(1)	(2)	(3)	(4)
Boycott x Japan x Any Occupy	0.023 (0.024)	0.024 (0.024)	0.024 (0.024)	0.008 (0.019)
Boycott x Japan x Fully Occupy	0.025 (0.022)	0.025 (0.022)	0.025 (0.022)	-0.018 (0.017)
Boycott x Japan x Patriotic Base	0.010 (0.018)	0.010 (0.018)	0.010 (0.018)	0.016 (0.013)
Boycott x Japan x Anti-Japan Patriotic Base	0.023 (0.023)	0.024 (0.023)	0.024 (0.023)	-0.007 (0.016)
Boycott x Japan	-0.432*** (0.018)	-0.229*** (0.027)	-0.194*** (0.024)	-0.134*** (0.018)
Boycott x Domestic	-0.188*** (0.010)	0.011 (0.022)	0.048** (0.018)	0.136*** (0.013)
Boycott x US	0.335*** (0.018)	0.540*** (0.027)	0.378*** (0.022)	0.411*** (0.015)
Boycott x German	0.445*** (0.013)	0.648*** (0.024)	0.263*** (0.019)	0.255*** (0.014)
Boycott x Korea	0.078*** (0.014)	0.282*** (0.025)	0.245*** (0.020)	0.247*** (0.014)
Constant	-4.929*** (0.003)	-4.792*** (0.008)	-4.791*** (0.010)	-5.098*** (0.044)
City-Brand fixed effects	Y	Y	Y	Y
Year-Month fixed effects	N	Y	Y	Y
COO x Time Trend	N	N	Y	Y
Data period	2009-2015	2009-2015	2009-2015	2012-2013
Number of obs.	1192506	1192506	1192506	354535

Appendix Figure 1: Brand Sales by Country of Origin in the U.S.



Notes: U.S. national sales in logarithm by month by country of origin. The red vertical line denotes the boycott event in China.

Appendix Figure 2: Market Shares by Country of Origin in the U.S.



Notes: Market shares of different countries of origin by month in the U.S. The sharp drop in Japanese market share in March-May 2011 was caused by the disruption of Japanese automobile production due to earthquake and tsunami in Northeastern Japan in March 2011.

