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Nationalism and Economic Exchange: Evidence from Shocks to Sino-Japanese Relations

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We study the impact of nationalism and interstate frictions on international economic relations by analyzing market reaction to adverse shocks to Sino-Japanese relations in 2005 and 2010. Japanese companies with high China exposure suffer relative declines during each event window; a symmetric effect is observed for Chinese companies with high Japanese exposure. The effect on Japanese companies is more pronounced for those operating in industries dominated by Chinese state-owned enterprises, whereas firms with high Chinese employment experience lower declines. These results emphasize the role of countries' economic and political institutions in mediating the impact of interstate frictions on firm-level outcomes. (*JEL* F13, F51, G14, G15)

Beginning with Becker's (1957) seminal work on discrimination, researchers have incorporated nonpecuniary preferences into models to explain the breakdown of economic transactions across group boundaries. The economic effects of hostilities between countries or other distinct groups are potentially large and global in scale. This is indicated by, for example, Guiso, Sapienza, and Zingales (2009), who find that aspects of culture like religion and historical

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conflict are correlated with cross-border flows of trade and investment. However, most prior work has focused on cross-sectional variation in trust and cultural distances among countries, raising concerns that omitted country-level factors could account for the correlation. Partly as a result, the causal relationship between interstate frictions and economic exchange remains a much-debated question (Hegre, Onea, and Russett 2010).

In this paper, we shed light on this relationship by examining the effects of the two recent incidents that sparked nationalist sentiments—and interstate hostilities—between China and Japan. By analyzing the stock market responses to these adverse shocks to relations between the two countries, we can credibly identify the expected economic impact of a shift in international relations on individual firms.[1] Given our firm-level focus we may, in contrast to most prior studies, trace out the microeconomic impact of increased animosity between nations. Crucially, our firm-level approach also allows us to provide insights on the mechanism through which nationalist sentiments and interstate frictions impact firm value: is it the collective effect of individual investor and/or consumer animosity, or is it largely the result of diplomatic frictions between opposing governments? Our firm-level data, combined with our event study method, allow us to mitigate omitted variable concerns, as we also investigate the channels through which interstate conflicts affect abnormal event returns.

The events we consider are as follows. First, on April 5, 2005, the Japanese government reauthorized the use of a history textbook that, according to critics, whitewashed Japanese war crimes of World War II (see, for example, Weiss 2008). Hints of protest had taken place in earlier weeks, but the official announcement was followed by mass anti-Japan rallies across China, possibly coordinated by the Chinese government. We refer to this as the "textbook event" throughout the rest of this paper. The second episode we consider occurred on September 7, 2010, when a Chinese trawler collided with two Japanese coast guard vessels in disputed waters just off the Senkaku Islands, leading to the detention of the Chinese trawler captain by Japanese authorities. The "Senkaku event" was followed by diplomatic posturing on both sides and large-scale public protests in China and in Japan. In China, both events triggered nationwide demonstrations against Japan on a scale that had not been seen since those at Tian'An Men Square in 1989.

Investors responded sharply in the wake of the textbook event: in April of 2005, the Nikkei 225 Index fell by about 6.1%, whereas the Shanghai Composite

[1] The effect of such shocks to sentiment is ambiguous ex ante, as evidenced by media reports on the topic. For example, whereas a *Wall Street Journal* article reported that Japanese automakers' sales in China plummeted in the wake of anti-Japanese protests (*Wall Street Journal*: "Japanese Car Sales Plunge amid China Rage," October 9, 2012, by Chester Dawson and Yoshio Takahashi), another *Wall Street Journal* story just a few months later described the double-digit gains of major Japanese car makers in China as a result of "a boost from a calendar shift as well as the waning impact of a territorial dispute between Beijing and Tokyo." Rose Yu, "Lunar Holiday Shift Lifts Japanese Car Sales in China." *Wall Street Journal*, February 4, 2013.

declined by nearly 5.3%. By comparison, the S&P 500 lost 1.4% of its value over the same period. More interestingly, in our main analysis we find that the market reactions for Japanese companies were highly sensitive to China exposure; for each percentage point increase in sales to China, cumulative abnormal returns (estimated using a standard Fama and French [1993] three-factor model) from April 5–28, 2005, fell by an additional 0.08%. That is, firms more dependent on economic relations with China were more adversely affected by an increase in Sino-Japan hostilities. We find a symmetric impact on Chinese firms.

Following the Senkaku collision, which was accompanied by more overt economic threats from China, neither the Nikkei nor the Shanghai Composite declined overall. We nonetheless find a large and significant impact of China exposure on event returns during the Senkaku event window of September 7–October 29, 2010, for Japanese firms and also a negative effect of Japanese exports on Chinese firms' cumulative abnormal event returns (though the latter effect is not statistically significant).

We provide evidence that helps to adjudicate among explanations for the impact of China exposure on Japanese firms, using cross-sectional variation in company and industry attributes. We find that the vulnerability of Japanese firms with high sales to China is mediated by factors that, we argue, would make them susceptible to Chinese government intervention in a company's main line of business. Companies operating in industries dominated by state-owned enterprises (SOEs) are more sensitive to Sino-Japanese tensions, whereas those with high employment in China are relatively insulated from the effects of these interstate hostilities.

We argue that this is likely due to the fact that in SOE-dominated sectors, the government has greater incentive to intervene to benefit its own companies: as *The Economist* noted in 2011, the Chinese government "has been widely accused of twisting rules in favour of its state-owned or, sometimes, private-sector favourites."[2] The government also may have a greater ability to intervene because of its direct role in the supply chain. We document that this SOE effect operates in part through the import choices of Chinese firms: there is a decline in Japanese imports by Chinese SOEs (relative to U.S. imports) following the textbook event (firm-level import statistics are unavailable following the Senkaku event).

The insulating effect of high employment of Chinese workers may reflect beliefs that the Chinese government would be averse to harming companies that generate local jobs. The Chinese government has been particularly sensitive to this concern in its economic liberalizations and has specifically emphasized employment creation as an objective for foreign investment.[3]

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[2] "The Long Arm of the State." *The Economist*, July 23, 2011.

[3] See, for example, the State Council's 1995 "Provisions on Guiding Foreign Investment Direction," and the follow-up directives issued by the State Council in 2010, "Further Guidance from the State Council on Improving Our Work on Utilizing Foreign Direct Investment."

We provide suggestive evidence on the role of consumer response in the two countries. For Japanese firms, we find no evidence that returns are affected by whether a company is focused on consumer (B2C) or business (B2B) customers, where the B2C versus B2B assignment is made using descriptions from the Japanese equivalent of 10-K filings, as would be the case if companies feared a long-term consumer backlash.[4]

We find that sensitivity of market reaction to China sales share is also affected by the fraction of shares held by individual investors and that the effect persists at least a month past each event's resolution. To the extent that individuals—as opposed to institutional investors—are more prone to trade based on emotion or sentiment, these findings suggest that the decline in China-focused firms was partly the result of selling by individual investors divesting their portfolios of (distasteful) China-focused companies.[5]

We find suggestive evidence that the decline in Chinese firms' value is driven by a contrasting set of factors—in both episodes firms with high rates of Japanese exports are not more adversely affected in industries vulnerable to government intervention (drugs, agriculture, and foods). We find weak evidence that consumer-focused firms' returns suffer more than firms producing primarily for business customers (this difference is not statistically significant), suggesting that expectations of a Japanese consumer backlash could have played a greater role in explaining the decline of Japan-focused firms in China.

In our final section of analysis, we examine the longer-run consequences of the two episodes for firm performance. We do not observe complete reversion in share prices, as would be the case if the patterns we describe were only an indication of short-run investor overreaction. Returns on assets decline for Japanese firms with high China exposure (and for Chinese firms with high Japan exposure), consistent with investors' reactions correctly anticipating future profitability.

Overall, we conclude that companies' fortunes are very sensitive to relations between the two countries. We provide an array of evidence in support of the view that Chinese government intervention is an important contributor to Japanese companies' decline, along with tentative evidence that the decline in Chinese firms' values is driven more by consumer response. This does not imply that citizen sentiment is irrelevant for Japanese firms, but rather that it may find expression more through its impact on government policy than through

[4] We assume that consumers rather than intermediate goods producers are more prone to have purchasing decisions influenced by nonpecuniary concerns. This assumption is implicit in the literature that examines the determinants and consequences of corporate social responsibility. See, for example, Besley and Ghatak (2007) for one prominent example.

[5] See, for example, De Long et al. (1990), Lee, Shleifer, and Thaler (1991), Baker and Wurgler (2006), and Stambaugh, Yu, and Yuan (2012) on individual investors and the role of sentiment, Daniel, Hirshleifer, and Subrahmanyam (1998), Hirshleifer (2001), and Daniel, Hirshleifer, and Teoh (2002) on individual investors and overreaction, and Bikhchandani, Hirshleifer, and Welch (1992) for a discussion of how small shocks can often lead to large shifts in behavior.

individual consumer choice. Overall, our results on the contrasting determinants of firm-level responses to the two events highlight the importance of considering the different channels through which nationalism and other interstate frictions impact economic activity.[6]

Our work contributes most directly to a recent literature relating hostilities among countries to cross-border economic activity. Contributions include studies on the impact of diplomatic frictions, such as that by Gupta and Yu (2009), which examines whether bilateral political relations can explain investment and trade flows between the United States and other countries. Others study the effects of military hostility (e.g., Glick and Taylor 2010; Martin, Mayer, and Thoenig 2008), the impact of cultural aversion and mistrust on trade and investment (Guiso, Sapienza, and Zingales 2009; Michaels and Zhi 2010), the effect of country-specific sentiment on security prices (Hwang 2011), the role of cultural value in mergers (Ahern, Daminelli, and Fracassi 2012), the impact of patriotism on the home bias in asset allocation (Morse and Shive 2010), and the role of ethnic differences in exacerbating trade frictions (Aker et al. 2010). When compared to many of these studies, our event study provides a credible causal estimate of the firm-level impact of interstate frictions on valuations. Relatedly, because we employ firm-level data we are better able to identify the channels underlying such an effect. Equally important, given the slow-moving nature of interstate animosity, our setting provides a unique opportunity to assess the impact of *changes* in interstate frictions on firm value.

Our study also relates to work examining the impact of boycotts on firm value. These include several event studies that find mixed results (see, for example, Epstein and Schnietz 2002 for the effect of consumer boycotts; Teohm, Welch, and Wazzan 1999 on the impact of South African boycott announcements). Also related is a pair of recent studies on the effect of consumer backlash on French wine purchases in the United States following France's protests against the Iraq War (Ashenfelter, Ciccarella, and Shatz 2007; Chavis and Leslie 2009). These papers provide a much coarser inference on the effects of consumer sentiment, possibly accounting for the disagreement between them (e.g., calendar effects in wine sales may account for the impact on sales attributed to consumer boycott in one paper). By contrast, our detailed data on companies' foreign exposure facilitates a better identification of the impact of interstate frictions on firm value.

Finally, several very recent papers in political science have examined the 2005 protests we consider here and also other smaller-scale shocks to Sino-Japanese relations. Davis and Meunier (2011) study the impact of increased Sino-Japanese (and U.S.-French) frictions on trade and investment flows, and in contrast to our findings here, they report no effect. This nonresult may stem

[6] It is of course possible to speculate on why we observe these differences – the Chinese government might be seen as still playing a more dominant role in economic activity than in Japan – but given that we effectively only have two data points, we leave such questions about underlying economic systems for future research.

from the relatively coarse, low-frequency nature of trade and FDI flows as measures of changed economic relations. Weiss (2008) also examines the 2005 protests, focusing on political relations between the two countries, with less of a quantitative focus relative to our study. Finally, concurrent with our own work, Govella and Newland (2011) also take an event study approach, looking at the effect of the 2005 protests on the value of Japanese companies. Our data allow for a more fine-grained analysis of equity market responses, owing to more detailed data on companies' foreign exposure. We further provide results based on industry variation that are critical to understanding the underlying mechanism—populist sentiment versus government intervention—behind the negative market response.

1. Background and Data

1.1 Sino-Japanese economic and political relations

We provide a brief overview of the textbook and Senkaku events, which took place against a historical background of generally tense relations between China and Japan. For the interested reader, we provide, in Appendix A, a short description of the history of Sino-Japanese relations and national sentiment in China and Japan in recent years.

Before describing the two events, it is worth noting that the relationship between the two nations has been an ambivalent one for decades. There is a high degree of animosity; most notably, the two countries fought two wars: one at the end of the nineteenth century and a second in the first half of the twentieth century. Relations to this day are affected by the notorious Nanjing Massacre perpetrated by the Japanese military in 1937. At the same time, the two countries are highly dependent on one another economically: China is Japan's largest trading partner, and Japan is China's second largest trading partner, after the United States.

It was against the backdrop of this tense—yet ambivalent—relationship that anti-Japanese demonstrations in China were set off in the spring of 2005. The primary cause of the protests was Japanese government approval of "*Atarashî Rekishi Kyôkasho*," or the *New History Textbook*, written by the Japanese Society for History Textbook Reform, which Chinese critics claimed whitewashed Japanese war crimes committed during World War II.[7]

Large-scale protests began on April 5 and lasted for several weeks, with the final protest occurring on April 27. We use a window of April 5–28 for our analyses.[8] Right-wing nationalist demonstrations against China also occurred in Japan during this period, but on a much smaller scale.

[7] Anti-Japanese sentiment had already been building as a result of the G4 proposal that Japan be granted a permanent seat on the United Nations Security Council.

[8] The impact of China exposure on Japanese firms is even larger if we extend the window to the earliest Security Council protests in March 2005.

The second event we consider, the 2010 Senkaku Boat Collision incident, occurred on the morning of September 7, 2010, when a Chinese trawler collided with Japanese Coast Guard patrol boats in disputed waters near the natural gas-rich Senkaku (Diaoyu in Chinese) Islands.[9] The collision and Japan's subsequent detention of the captain triggered a major diplomatic dispute between China and Japan and inflamed nationalist sentiments in both nations. When China's repeated demands for the captain's release were refused and his detention extended for a further ten days, the Chinese government cancelled all ministerial-level meetings between the two countries. On September 24, Japan released the captain, citing in part the effect on Sino-Japanese relations. The Senkaku event again brought about a series of demonstrations against Japan and Japanese products across China, beginning in Beijing on September 8 and then spreading to many other cities. Protests continued to the end of October, with the final demonstrations reported on October 28. We take September 7–October 29 as our event window.

In contrast to the sharp reaction from the Chinese, Japan's government and media were reserved in their handling of the Senkaku event. Facing decisive protest from China, the Japanese central government interceded to push the judicial branch to release the captain without prosecution. Likewise, the Japanese media underplayed Japanese protests against China. While protests took place, they were limited in number and scale: about 20 occurred in total, with only a few generating crowds exceeding a thousand, from September 7 to October 29, 2010.

1.2 Data

For Japanese listed firms, we calculate their Chinese exposure using business segment data from annual filings with the Ministry of Finance (*Yûka Shôken Hôkokusho*), which is the 10-K equivalent in Japan. There are three dimensions along which company accounts are disaggregated: (1) by types of business or products, (2) by locations of sales offices (including domestic regions), and (3) by overseas sales, if sales in foreign markets exceed 10% of consolidated total sales. For each segment, firms are required to report sales (to other segments as well as to external customers), operating expenses, profit or loss from operations, and assets. We utilize the overseas sales information to construct variables that indicate each firm's exposure to the Chinese economy. Firms differ in their geographical classifications for sales: some use broad regional categories (e.g., Japan, North America, Europe, Asia, and other), whereas others provide some country-level disaggregation. In some cases, broad categorizations are supplemented by country sales in footnotes. We use both the explicit categorization of "China (or People's Republic of China)" and footnoted supplements to estimate the percentage of sales in China out of firm's

[9] Japan controls the islands, but both China and Taiwan claim them.

total sales. We also compute the fraction of assets in China. These measures are used to identify firms with high exposure to China.

For the 2005 textbook event, we have 846 Japanese nonfinancial firms with information on sales and assets in China, and for the 2010 Senkaku event, we have 920 nonfinancial firms in our sample. Other publicly listed firms were excluded because of nondisclosure of regional sales information, which could be either the result of a deliberate decision to avoid disclosing detailed segment data or because the company had negligible foreign sales more broadly. Using this information, we construct our key dependent variable *Fraction_China_Sales*, the ratio of sales in China to total sales. Some firms may have Chinese plants that do not directly sell products in China. To capture this operating exposure, we also calculate *Fraction_China_Assets*, the ratio of total assets in China to total assets of the listed firm. For Japanese firms, we further calculate *Fraction_Others_Sales* as the ratio of sales in all foreign countries other than China to total sales.

For the 1,058 Chinese listed firms in our sample, we calculate Japanese exposure based on the ratio of exports to Japan to total sales, defined as *Fraction_Japan_Exports*, using a match between the listed firms in our sample and transaction-level trade data from China Customs, also employed by Ahn, Khandelwal, and Wei (2011). The trade data are publicly available only through 2005; hence, we use 2004 data to construct our Japan export measure for both events. We also calculate *Fraction_Others_Exports* as the ratio of exports to all foreign countries other than Japan to total sales, for the sample of Chinese firms.

To investigate the channels through which adverse shocks to Sino-Japanese relations affect stock returns, we generate proxies for government and consumer vulnerability. First, we calculate a proxy for the extent of Chinese government intervention based on the prevalence of state-owned enterprises across industries. China's economic reforms have not been accompanied by the same degree of political liberalization (Calomiris, Fisman, and Wang 2010). State companies continue to play a significant role in achieving political ends (in addition to economic targets), as documented in a report by the U.S.-China Economic and Security Review Commission (2011) and also emphasized by Bräutigam (2011) and Yu (2011), among many others. We proxy for the potential for government intervention using industry-level SOE intensity. Our reasoning is that the sectors in which SOEs dominate economic activity are those in which the government is most inclined and best positioned to intervene via, for example, direct competition, trade policies, and purchasing embargoes by SOEs against Japanese goods.[10] We use the 2004 and 2008 Economic Census of China conducted by the National Bureau of Statistics of China (NBSC), which include firm-level information on the sales and primary ownership of the

[10] In a similar spirit, Bertrand et al. (2008) also illustrate the impact of politics on firms' hiring decisions in France.

universe of firms operating in China.[11] Using the 2-digit industry classifications of the NBSC we generate the industry-level variable *SOE_Intensity*, the ratio of total sales by state-controlled firms to total sales of all domestic Chinese firms in each industry. We match the NBSC 2-digit industry classifications to their Japanese equivalent (Nikkei industry code, medium level[12]) to match this measure to our sample of Japanese listed firms.

The number of employees for Japanese businesses in China is obtained from a database maintained by Tokyo Keizai. Each year, the company surveys Japanese firms to obtain information on their overseas joint ventures, foreign branches, and representative offices. The information in their database includes location, number of employees, amount invested, equity shares of partners (in case of joint ventures), and so forth. The data we use are for employment in joint ventures, branches, and representative offices in China for March 2005 and March 2010. These employment figures distinguish between expatriate and Chinese workers. We define *Fraction_China_Empl* as the number of Chinese employees in China for each Japanese firm as a fraction of total firm employment worldwide, which comes from *Yûka Shôken Hôkokusho*.

We also construct a proxy for Japanese government involvement in business with China. *Drugs_and_Food* is an indicator variable for Chinese firms whose primary operating industry is food, agricultural products, or medicine. The Japanese government itself is less deeply involved in the business operations of Japanese firms than is the Chinese government in Chinese business and thus has fewer levers to impact foreign firms. The selection of these three industries is a matter of subjective judgment, reflecting the following considerations: first, farmers in Japan have been influential constituents and the Japanese government has a history of protecting domestic agriculture (Honma 1993; OECD 2009); second, Chinese exporters have had numerous problems over the years with food and drug safety, resulting in recalls and import bans in Japan and elsewhere (see, for example, Qian 2011). Hence, it would be relatively easy for the Japanese government to find a premise for restricting or even banning Chinese imports in these industries.

To examine the potential effects of consumer sentiment, we generate a company-level proxy for consumer vulnerability (*Consumer_Intensity*) using business segment descriptions to classify companies as primarily business-to-business (B2B) or business-to-consumer (B2C).

For Japanese firms, we use information from *Yûka Shôken Hôkokusho* to classify firms as B2B or B2C based on the segment that has the highest fraction of sales. This source provides business segment classifications that are similar to the most detailed level of the Japan Standard Industry Classification,

[11] Ideally, we would use the 2009 data for the 2010 event study. Unfortunately, there was no industry census in China in 2009.

[12] The Nikkei industry code closely follows the Japan Standard Industry Classification.

making it relatively straightforward to identify a firm's consumer orientation. For example, Omron in 2005 lists five segments: "industrial automation," "electronics components," "social systems business," "healthcare business," and "others," with "industrial automation" as the top-selling segment. It is thus classified as B2B. Hitachi reports their best-selling segment as "power generation and industrial systems," whereas their "digital media and consumer goods" segment has sales of less than half of the former. Thus, Hitachi is also classified as B2B.

Where companies do not report segments clearly enough to make an assignment of B2B or B2C (135 firms), we consult company Web sites directly for more detailed descriptions of company activities. In the vast majority of cases, the assignment was clear. For example, Sony's largest selling segment in 2005 is "electronics," whereas other segments are listed as "games," "movies," "financial," and "others." Inspection of their Web site confirms that the majority of their products are for consumers, despite also having manufacturing video cameras for professional broadcasting and filming (which are included in "electronics"). Thus, Sony is classified as B2C. Although this method admittedly has a subjective component, it allows for a more fine-grained—and accurate—assignment compared with other industry-level aggregates. (We also produced industry-level proxies for consumer-intensity based on U.S. input-output tables that provide some indication of whether industries produce primarily intermediate or end-use products. But this fails to distinguish, for example, between home and business applications in the electronics industry.)

Consumer_Intensity for Chinese firms is constructed using descriptions from the Chinese equivalent of 10-K filings (*Nianbao*, or annual report). It is equal to one if the firm mainly produces products that are sold to consumers directly. We construct our consumer-intensity variable in much the same manner as with Japanese firms, which was straightforward in the majority of cases (e.g., Shangdong Haihua, whose main products include "polyvinyl chloride, sodium nitrate, and nitrobenzene, etc." is classified as B2B). Some cases highlight the problematic nature of making industry-level classifications, which reinforces the benefits of the firm-level approach we take here. For example, included in the Utility category are both Guiguang Electricity and Datong Gas. Guiguang Electricity mainly generates electricity for utility suppliers (B2B), whereas Datong Gas directly provides gas to households (B2C).

In the 79 cases that were indeterminate based on product categories, Original Chinese company reports were examined to make a subjective determination. For example, Jiangsu Yangguang reports its main business segments as "wool fabric, wool yarn, textile, and apparel." Wool fabric is sold to firms as intermediary goods, whereas apparel is usually sold directly to consumers. A more detailed reading of its report indicated that its main line of business was high-quality wool fabric for apparel manufacturing firms, and it was thus coded as B2B.

We construct firm-year variables, *Fraction_Indiv_Japan* and *Fraction_Indiv_China*, which are the ratios of individual ownership to total outstanding shares. These variables serve as proxies for the vulnerability of share price to investor sentiment (see, for example, De Long et al. 1990; Lee, Shleifer, and Thaler 1991; Baker and Wurgler 2006; Stambaugh, Yu, and Yuan 2012). For Japanese firms, information on individual versus institutional ownership is taken from *Yûka Shôken Hôkokusho*, and for Chinese firms we obtain these data from GTA, a Shenzhen-based data vendor in China, now partially available through the Wharton Research Data Service.

We obtain standard firm-level financial variables, including total leverage, total assets, and Tobin's q, as controls for Japanese firms, as well as stock price data from the Nikkei database. Chinese stock prices and financial variables (total assets, total leverage, and Tobin's q) are obtained from GTA. A standard Fama-French (1993) three-factor model is used to calculate the abnormal event returns for both samples.[13] For predicting normal returns, we use the window of [−150, −30] (in trading days), where 0 is the event date, to estimate the parameters for the Fama-French three-factor model.

We calculate the cumulative abnormal returns (henceforth CARs) over the period from April 5–April 28 inclusive for the 2005 textbook event and September 7–October 29 for the 2010 Senkaku event. For the 2005 textbook event, we also calculate the CARs over the period from March 26– April 28 and find similar results.

Finally, we will also present analyses on the imports of Chinese firms in the wake of the Textbook event. The data we collected for this purpose are distinct from those utilized in the rest of our analyses and involve firm-product level import data from Japan and the United States for all Chinese firms. The data are taken from China Customs (with anonymous firm names) and are available for the years 2004 to 2006 (hence we are unable to examine the Senkaku event). The dataset provides information on the declared value of imports, their 8-digit Harmonized System (HS) industry classification, the date of importation, and the country of origin.[14] Additionally, the data include whether the importer is a state-owned enterprise (SOE). We use these data to construct a measure of the intensity of imports from Japan for SOEs versus private firms, benchmarked against imports from the United States as a control. Specifically, we define *State* as an indicator variable denoting whether an importer is an SOE, and at

[13] Fama-French-type (1993) effects are first documented in Japan by Chan, Hamao, and Lakonishok (1991), and three factors for Japan are computed as Kubota and Takehara (2007). For China, the Fama-French three-factor model is examined by Wang and Xu (2005), and the factors for China are computed and provided by RESSET, a Beijing-based data vendor. We also use a simple market model (MacKinlay 1997) to calculate the abnormal event returns and obtain near-identical results.

[14] The HS classification is the standard system for international trade. Eight-digit categories involve a very high degree of disaggregation, for example, "diesel-powered trucks with a GVW exceeding twenty tons" and "tobacco, partly or wholly stemmed (stripped), threshed or similarly processed, from cigar leaf."

the HS-*State*-month level, we define *JPN_Import_Rate* as the ratio of Japanese imports to the sum of Japanese and U.S. imports.

1.3 Summary statistics

Table 1, panels A and B, present the summary statistics for Japanese- and Chinese listed firms, respectively. As indicated in panel A, the market value of our sample of Japanese firms fell by 5.8% (adjusted Fama-French three-factor model) on average during the 2005 Textbook event, with a standard deviation of 5.8%; the Wilcoxon signed-rank test rejects the null hypothesis that the cumulative abnormal return is zero at the 1% level. Chinese listed firms dropped by about 3.8% during the same period, with a standard deviation of 12.2%; the Wilcoxon signed-rank test rejects the null hypothesis at the 1% level. During the 2010 Senkaku event, Japanese firms experienced a cumulative abnormal return of -3.7% with a standard deviation of 11.2% (the Wilcoxon signed-rank test rejects the null hypothesis at the 1% level), whereas Chinese

Table 1
Summary statistics

Panel A: Japanese firms

Variable	Mean	Median	SD	Obs.
Event year: 2005, Japanese listed firms				
TotalAssets (million Japanese ¥)	361,570	60,615	1,288,634	838
(million U.S. $)	3,435	576	12,243	
TotalSales (million Japanese ¥)	464,116	72,621	1,666,269	846
(million U.S. $)	4,409	690	15,831	
Fraction_China_Sales	0.064	0.024	0.096	846
Fraction_China_Assets	0.055	0.020	0.090	838
Fraction_Others_Sales	0.153	0.121	0.142	846
Fraction_China_Empl	0.155	0.081	0.193	489
Log(1+Tobin's q)	0.940	0.873	0.411	807
Leverage	0.472	0.469	0.207	834
CAR_Textbook (%)	−5.816	−6.356	5.813	810
Fraction_Indiv_Japan	0.010	0.000	0.050	846
Fraction_China_Empl	0.155	0.081	0.193	489
Consumer_Intensity	0.188	0.000	0.391	846
Event year: 2010, Japanese listed firms				
TotalAssets (million Japanese ¥)	382,867	60,872	1,466,688	896
(million U.S. $)	4,685	745	17,946	
TotalSales (million Japanese ¥)	400,108	58,493	1,424,914	920
(million U.S. $)	4,896	716	17,435	
Fraction_China_Sales	0.081	0.048	0.105	920
Fraction_China_Assets	0.074	0.040	0.135	896
Fraction_Others_Sales	0.145	0.106	0.147	920
Fraction_China_Empl	0.165	0.107	0.184	566
Log(1+Tobin's q)	0.700	0.647	0.324	886
Leverage	0.459	0.452	0.239	894
CAR_Senkaku (%)	−3.689	−3.622	11.169	905
Fraction_Indiv_Japan	0.012	0.000	0.051	895
Fraction_China_Empl	0.165	0.107	0.184	566
Consumer_Intensity	0.179	0.000	0.384	920

(*continued*)

Table 1
Contniued

Panel B: Chinese firms

Variable	Mean	Median	SD	Obs.
Event year: 2005, Chinese listed firms				
Total Assets (million RMB ¥)	5,080	1,430	32,800	1,058
(million U.S. $)	762	214	4,919	
Fraction_Japan_Exports	0.003	0.000	0.033	1,058
Fraction_Others_Exports	0.0268	0.000	0.099	1,058
Drugs_and_Food	0.134	0.000	0.341	1,058
Log(1+Tobin's q)	0.942	0.882	0.238	1,037
Leverage	0.540	0.503	0.606	1,058
CAR_Textbook (%)	−3.833	−3.941	12.188	1,058
Fraction_Indiv_China	0.925	0.987	0.139	1,058
Consumer_Intensity	0.388	0.000	0.488	1,058
Event year: 2010, Chinese listed firms				
Total Assets (million RMB ¥)	14,000	2,490	104,000	1,025
(million U.S. $)	1,692	301	12,566	
Fraction_Japan_Exports	0.003	0.000	0.033	1,025
Fraction_Others_Exports	0.027	0.000	0.100	1,025
Drugs_and_Food	0.134	0.000	0.340	1,024
Log(1+Tobin's q)	1.327	1.207	0.572	1,024
Leverage	0.815	0.546	4.752	1,024
CAR_Senkaku (%)	1.485	−0.098	13.710	1,024
Fraction_Indiv_China	0.683	0.705	0.213	1,025
Consumer_Intensity	0.392	0.000	0.488	1,024

Total Assets is total assets of the listed firm; *Total Sales* is total sales; *Fraction_China_Sales* is the ratio of sales in China to total sales for the sample of Japanese firms; *Fraction_China_Assets* is the ratio of total assets in China to total assets for the sample of Japanese firms; *Fraction_Others_Sales* is the ratio of sales in all the foreign countries other than China to total sales, for Japanese firms in our sample; *Fraction_China_Empl* is the ratio of Chinese employees in China to total employees of Japanese firms; *Fraction_Japan_Exports* is the ratio of total exports to Japan to total sales for the sample of Chinese firms; *Fraction_Others_Exports* is the ratio of exports to all foreign countries other than Japan to total sales, for the sample of Chinese firms; *Drugs_and_Food* is a dummy variable that is equal to one for Chinese firms in Foods, Drugs, or Agriculture; *Leverage* is the ratio of total liabilities to total assets; *Log(1+Tobin's q)* is the log value of one plus Tobin'sq; *CAR_Textbook* is the cumulative abnormal return during the Textbook Event (April 5, 2005 to April 28, 2005); *CAR_Senkaku* is the cumulative abnormal return during the Senkaku Event (September 7, 2010 to October 29, 2010); *Fraction_Indiv* is the ratio of individual ownership to total outstanding shares; and *Consumer_Intensity* is a dummy variable denoting firms mainly producing consumer-oriented products. In all cases, abnormal return is estimated using a standard Fama-French three-factor model using [-150, -30] trading days as the estimation window. All cumulative abnormal returns are winsorized at 1%. Exchange rates are as of March 1, 2005 and October 1, 2010.

firms increased by 1.5% with a standard deviation of 13.7%.[15] Among Japanese listed firms, about 18% of our sample firms mainly sell products to consumers, whereas for Chinese listed firms, the figure is 38.8%.

In Tables 2A and 2B, we present industry-level characteristics for Japanese and Chinese firms, respectively. Consumer-intensity measures reveal a few surprises: in the Japan sample, petroleum has a consumer-intensity of zero, and for machinery it is 0.027, whereas foods and drugs have consumer intensities of 0.75 and 0.57, respectively. We note that the difference in consumer-intensity of Japanese versus Chinese firms is accounted for in large part by a differential

[15] The discrepancy with the market returns reported previously stems from two differences. First, the Japanese firms in our sample are only those that report country-specific sales data; second, we employ a market-adjustment in returns for the data reported in Table 1, whereas our figures cited previously are based on raw market index returns.

Table 2A
SOE concentration and consumer intensity

Nikkei industry code	Nikkei industry name	*SOE_Intensity* (Chinese firms)	China NBS industry code	*Consumer_Intensity* (Japanese firms)	Percentage (Japanese firms)
1	Foods	0.0537	1400	0.7508	2.04
3	Textile products	0.0488	1700	0.1250	2.38
5	Pulp and paper	0.0731	2200	0.0000	0.62
7	Chemicals	0.1106	2600	0.0802	9.17
9	Drugs	0.0602	2700	0.5686	1.47
11	Petroleum	0.1534	2500	0.0000	0.57
13	Rubber products	0.0557	2900	0.1213	1.87
15	Stone, clay, and glass products	0.0895	3100	0.0500	2.27
17	Iron and steel	0.1413	3200	0.0000	1.42
19	Nonferrous metal and metal products	0.1200	3300	0.0398	4.25
21	Machinery	0.0815	3500	0.0265	12.80
23	Electric and electronic equipment	0.0813	3900	0.1432	21.35
25	Shipbuilding and repairing	0.0918	3700	0.0000	0.23
27	Motor vehicles and auto parts	0.0918	3700	0.1653	7.19
29	Transportation equipment	0.0918	3700	0.0625	0.85
31	Precision equipment	0.0466	4100	0.1806	4.08
33	Other manufacturing	0.1365	2300	0.4980	4.42
37	Mining	0.2638	1100	0.0000	0.34
41	Construction	0.2616	E	0.0729	1.59
43	Wholesale trade	0.2038	6300	0.1567	8.27
45	Retail trade	0.1115	6500	1.0000	1.43
52	Credit and leasing	0.2434	L	0.2833	0.60
53	Real estate	0.0982	7200	0.0000	0.12
55	Railroad transportation	0.3218	5300	0.5000	0.06
57	Trucking	0.2041	5200	0.3429	0.68
59	Sea transportation	0.4619	5400	0.0000	0.91
63	Warehousing and harbor transportation	0.5097	5800	0.0000	0.96
65	Communication services	0.1260	G	1.0000	0.24
71	Services	0.3871	8900	0.5122	5.72

For each industry in the Nikkei industrial code (at the 2-digit level), we find the corresponding Chinese industry code adopted by National Bureau of Statistics in China. *SOE_Intensity* is the average value of the ratio of total sales by state-owned firms to total sales in each industry in China in 2004. Sales data by ownership in each industry come from China Economic Census 2004, which covers all firms in China. *Consumer_Intensity* is a dummy variable that is equal to one if the firm mainly produces consumer-oriented products, and we use its average value in 2004. Figures for 2008 (data unreported) are similar.

distribution across industries. For example, in China 4.8% of publicly traded firms are in the "retail trade" industry, whereas 1.4% of Japanese companies are in this consumer-focused segment. By contrast, 8.3% of Japanese firms are in "wholesale trade"—a B2B segment—as compared with 1.1% in China. Some industries do differ in their consumer intensity between the two samples. Most striking is "real estate development," where nearly all (95.2%) Chinese firms are consumer focused as compared with 0% in the Japanese sample. This is a reflection of the different roles of real estate firms in each country. In China they market apartments and homes directly to consumers, whereas listed Japanese real estate firms are more focused on commercial properties. Table 2A also shows an industry-by-industry breakdown of *SOE_Intensity* for 2004 (these figures are very similar for 2008). Recall that whereas this is a variable we use in our analysis of Japanese firms, the industry-level figures reflect SOE intensity for Chinese industries. Infrastructure industries like warehousing and sea and

Table 2B
Consumer intensity: Chinese listed firms

CSRC industry code	Industry name	*Consumer_Intensity* (Chinese firms)	Percentage (Chinese firms)
A0	Agriculture	0.2830	2.54
B0	Mining	0.0571	1.68
C0	Foods and drinks	0.8333	4.03
C1	Textile, apparel, and fur	0.6170	4.51
C2	Lumber and furniture	0.5000	0.19
C3	Paper and printing	0.2609	1.10
C4	Oil, chemicals, and plastics	0.1084	9.75
C5	Electronics	0.1786	2.69
C6	Metal and nonmetal	0.0983	8.31
C7	Machinery, apparatus, and devices	0.1636	13.20
C8	Medical products and biologicals	0.7547	7.63
C9	Other manufacturing	0.1111	0.86
D0	Gas, water, and electricity production and supply	0.3636	5.28
E0	Construction	0.0816	2.35
F0	Transportation	0.3235	1.63
F1	Transportation: Complementary	0.4667	2.88
F2	Warehousing	0.0000	0.10
G8	Information technology	0.2846	5.90
H0	Wholesale trade	0.3636	1.06
H1	Retail trade	0.7400	4.80
H2	Business agencies	0.3000	1.92
I0	Banks	1.0000	0.48
I2	Securities and futures	1.0000	0.67
I3	Trust	1.0000	0.10
J0	Real estate developing	0.9520	6.00
K0	Public facilities	0.5385	1.25
K3	Catering industry	0.8333	1.73
K9	Other services	1.0000	0.10
L0	Publishing	0.5000	0.29
L1	Broadcasting and television	0.7500	0.38
L2	Information service	0.0000	0.19
L9	Other culture-related industries	0.0000	0.10
M	Miscellaneous/unclassified	0.2366	6.29

This table reports the average of *Consumer_Intensity* for each Chinese industry (used by the SEC in China) in 2004. *Consumer_Intensity* is a dummy variable that is equal to one if the firm is mainly producing consumer-oriented products, and we use its average value in 2004. Figures for 2008 (data unreported) are similar.

railroad transportation are characterized by very high levels of government ownership.

2. Empirical Framework and Results

We combine an event study on the market returns of Chinese and Japanese firms with a regression framework for examining whether returns are correlated with exposure to Sino-Japanese trade. Specifically, we use the cumulative abnormal event returns of publicly traded firms in Japan and China over the textbook and Senkaku event windows and then correlate these returns with exposure to Sino-Japanese relations, as proxied by sales in (or exports to) the partner country. Effectively, we employ those with zero partner-country sales as a control group to benchmark the firm-level impact of companies with positive sales. We present our results in a regression framework, where we control for firm size, performance, industry, and other relevant attributes. Thus, for example, for

Japanese firms during the textbook event, we perform the following analysis, which looks at the correlation between China sales exposure and returns over the event window from April 5–28, 2005:

$$CAR\_Textbook_i = \alpha + \beta_1\ Fraction\_China\_Sales_i + \beta_2\ \text{Controls}_i + \varepsilon_i \quad (1)$$

for firm i, where *CAR_Textbook* is cumulative abnormal returns over the event window [April 5, April 28]. Controls include the logarithm of total assets, Tobin's q, leverage in 2004, and industry dummy variables for Nikkei industry codes (U.S. SIC 2-digit equivalent).

2.1 Main results

Table 3, Column (1), presents the basic specification with log(*TotalAssets*) as the only control. The coefficient on *Fraction_China_Sales* is negative and significant at the 1% level. The coefficient of -7.49 implies that a one-standard-deviation increase in the China sales ratio—about 0.1 in the sample—corresponds to a change in cumulative abnormal returns during the incident of –0.749%. In Columns (2) and (3) we observe that the relationship between China exposure and returns during the textbook event is insensitive to the addition of controls, including industry dummies. It is noteworthy, in particular, that the coefficient on *Fraction_Others_Sales* is positive, though not significant, implying that vulnerability to China trade is not simply proxying for international exposure more broadly.[16] Using assets as a measure of China exposure in Column (4) implies essentially the same level of impact (whereas the coefficient on our asset-based measure of China exposure is marginally smaller, the asset-based measure has a higher standard deviation).

Columns (5)–(8) repeat the analysis from specification (1) using *CAR_Senkaku* (cumulative abnormal returns during September 7–October 29, 2010) as the outcome variable and covariates calculated using firm-level data from 2009. The coefficient on *Fraction_China_Sales* is three times greater in this set of regressions, reflecting in part several extreme values despite winsorizing.[17] Finally, we pool the two events using *Fraction_China_Sales* and *Fraction_China_Assets* as measures of China exposure in Columns (9) and (10), respectively, allowing for the effect to vary across the two events through an interaction term, and clustering standard errors at the firm-level. In this, as with all other specifications that pool data from both years, we include Industry × Year fixed effects. The results reflect the patterns observed in the earlier columns: a strong negative effect of China exposure on returns, with a much larger effect from the 2010 Senkaku event.

In Table 4, we present analogous results for the effect of the two events on Chinese firms, using *Fraction_Japan_Exports* as our measure of exposure of

[16] In unreported results, we also include the fraction of sales to the United States as a control; its coefficient is not significant and it similarly has no effect on our estimates of the coefficients of interest.

[17] Without winsorizing, the effect is twice as large.

Table 3
Regressions of abnormal event returns on China sales ratio/China assets ratio: Japanese firms

Dependent variable	(1) CAR_ Textbook	(2) CAR_ Textbook	(3) CAR_ Textbook	(4) CAR_ Textbook	(5) CAR_ Senkaku	(6) CAR_ Senkaku	(7) CAR_ Senkaku	(8) CAR_ Senkaku	(9) CAR_ Pooled	(10) CAR_ Pooled
Fraction_China_Sales	−7.487***	−8.063***	−7.379***		−18.191***	−18.136***	−21.645***		−6.698***	
	(1.899)	(1.961)	(2.257)		(4.354)	(4.501)	(4.847)		(2.305)	
Fraction_China_Assets				−6.544***				−24.459***		−4.908*
				(2.435)				(4.912)		(2.508)
Fraction_Others_Sales		0.694	1.815			−0.718	−0.432		0.496	
		(1.497)	(1.680)			(2.835)	(2.993)		(1.814)	
Log(TotalAssets)	−0.687***	−0.638***	−0.616***		0.296	0.367	0.282	−0.125	−0.129	−0.159
	(0.138)	(0.139)	(0.133)		(0.278)	(0.300)	(0.293)	(0.170)	(0.169)	(0.162)
Log(1+Tobin's q)		−1.922***	−1.832***			−4.082**	−3.630**	−2.549***	−2.621***	−2.419***
		(0.676)	(0.682)			(1.783)	(1.734)	(0.801)	(0.810)	(0.794)
Leverage		−2.575**	−2.619**			−0.702	−0.270	−1.401	−1.543	−1.303
		(1.184)	(1.153)			(2.102)	(2.040)	(1.339)	(1.343)	(1.307)
Fraction_China_Sales × Y2010									−15.689***	
									(5.069)	
Fraction_China_Assets × Y2010										−20.688***
										(5.171)
Constant	−5.347***	2.337	4.538***	4.409***	−2.225***	−5.424*	−2.767	−2.396	0.674	0.741
	(0.244)	(1.605)	(1.583)	(1.579)	(0.486)	(3.231)	(3.290)	(3.246)	(1.947)	(1.922)
Sample	2005 textbook event				2010 Senkaku event				pooled	pooled
Industry fixed effects			included	included			included	included		
Industry × year fixed effects									included	included
Number of observations	810	804	800	800	905	882	878	878	1,678	1,678
R^2	0.012	0.044	0.085	0.079	0.027	0.027	0.048	0.058	0.062	0.070

CAR_Textbook is the cumulative abnormal return of Japanese listed firms during the textbook event (April 5, 2005 to April 28, 2005); *CAR_Senkaku* is the cumulative abnormal return of Japanese listed firms during the Senkaku event (September 7, 2010 to October 29, 2010); and *CAR_Pooled* is equal to *CAR_Textbook* if year = 2005, and *CAR_Senkaku* if year = 2010. *Fraction_China_Sales* is the ratio of sales in China to total sales for the sample of Japanese firms; *Fraction_China_Assets* is the ratio of total assets in China to total assets; *Fraction_Others_Sales* is the ratio of sales in all the foreign countries other than China to total sales, for Japanese firms in the sample; *Log(TotalAssets)* is the log of total assets of the firm; *Log(1+Tobin's q)* is the log value of one plus Tobin's q; *Leverage* is the ratio of total liabilities to total assets; and Fixed effects are at the Nikkei industry code level (2-digit SIC equivalent). In all cases, abnormal return is estimated using a standard Fama-French three-factor model using [-150, -30] trading days as the estimation window. Robust standard errors are in parentheses. Standard errors are clustered at the firm level in pooled regressions. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 4
Regressions of abnormal event returns on export to Japan: Chinese firms

Dependent variable:	(1) CAR_Textbook	(2) CAR_Textbook	(3) CAR_Textbook	(4) CAR_Senkaku	(5) CAR_Senkaku	(6) CAR_Senkaku	(7) CAR_Pooled	(8) CAR_Pooled
Fraction_Japan_Exports	−8.745**	−17.079**	−42.747**	−11.454*	−13.279	−13.980	−32.155*	−48.937*
	(3.791)	(7.784)	(20.582)	(6.805)	(8.779)	(8.734)	(17.445)	(28.881)
Fraction_Others_Exports		13.331***	13.571***		0.361	0.354	6.858**	1.447
		(4.884)	(4.784)		(3.965)	(3.969)	(3.043)	(5.407)
Log(TotalAssets)		2.410***	2.878***		0.291	−0.067	1.170***	−0.341
		(0.416)	(0.498)		(0.314)	(0.430)	(0.320)	(1.315)
Log(1+Tobin's q)			3.997*			−1.051	0.932	−2.332
			(2.323)			(1.261)	(1.084)	(3.223)
Leverage			−1.770			−0.039	−0.104	−0.312
			(1.236)			(0.100)	(0.095)	(0.302)
Fraction_Japan_Exports × Y2010							18.604	32.996
							(17.468)	(27.539)
Constant	−3.804***	−55.164***	−67.812***	1.524***	−4.789	4.414	−27.365***	10.598
	(0.377)	(8.837)	(11.741)	(0.431)	(6.842)	(10.483)	(7.620)	(31.229)
Sample	2005 textbook event			2010 Senkaku event			pooled	pooled
Fixed effects	year	year	industry and year	year	year	industry and year	Industry × year	
Number of observations	1,058	1,058	1,036	1,024	1,023	1,023	2,059	254
R^2	–0.000	0.133	0.141	-0.000	0.162	0.162	0.095	0.034

CAR_Textbook is the cumulative abnormal return of Chinese listed firm during the textbook event (April 5, 2005 to April 28, 2005); *CAR_Senkaku* is the cumulative abnormal return of Chinese listed firms during the Senkaku event (September 7, 2010 to October 29, 2010); and *CAR_Pooled* is equal to *CAR_Textbook* if year = 2005, and *CAR_Senkaku* if year = 2010. *Fraction_Japan_Exports* is the ratio of total exports to Japan to total sales for the sample of Chinese firms; *Fraction_Others_Exports* is the ratio of exports to all foreign countries other than Japan to total sales, for the sample of Chinese firms; *Log(TotalAssets)* is the log of total assets of the firm; *Log(1+Tobin's q)* is the log value of one plus Tobin's q; and *Leverage* is the ratio of total liabilities to total assets. In Column (8), we restrict our sample to firms that have nonzero export to Japan. In all cases, abnormal return is estimated using a standard Fama-French three-factor model using [-150, -30] trading days as the estimation window. Robust standard errors are in parentheses. Standard errors are clustered at the firm level in pooled regressions. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Chinese companies to the Japanese economy. It is worth noting that Chinese firms are much less exposed to the Japanese economy than Japanese firms are to China's—the 75th percentile of *Fraction_Japan_Exports* is zero, as compared with 0.10 for *Fraction_China_Sales*. That said, the correlation between export exposure to Japan and returns during the textbook incident—as indicated by the results in Table 4, Column (1)—is negative and significant at the 5% level. The coefficient, −8.745, is of a similar size as we obtained for our analysis of Japanese firms. Adding controls increases the implied effect of Japan exposure on abnormal returns (Columns (2) and (3)), implying a somewhat larger sensitivity for Chinese firms (relative to Japanese ones) for a given percentage point increase in exposure to Sino-Japanese trade. We note as well that exports to other countries are positively correlated with returns, once again highlighting that our main findings are unlikely to be the result of international exposure more broadly.

The relationship between *Fraction_Japan_Exports* and returns is of a similar magnitude for the 2010 Senkaku event (Columns (4)–(6)). In Column (7) we pool the two events, allowing Japan exposure to vary by event through an interaction term, and we cluster standard errors at the firm-level and include Industry × Year fixed effects. The results reflect the patterns reported in earlier columns, with a significant effect of *Fraction_Japan_Exports* and a similar impact for each event.

In interpreting the results in Table 4, we note that the effect derives entirely from the minority of firms with nonzero exports. In Column (8) we limit the sample only to observations for which *Fraction_Japan_Exports* > 0. The coefficient on *Fraction_Japan_Exports* is somewhat larger than in the full sample case and significant at the 10% level. (In results not shown, we find that an indicator variable for nonzero exports to Japan is actually positive, though the coefficient does not approach significance.)

Our methodology ascribes the negative relationship between corporate exposure to Japan/China and cumulative abnormal returns over the event windows to the effects of Sino-Japanese frictions. Therefore, we neither expect a significant pre-event relationship nor any trend following each window. To examine graphically the pre- and postevent patterns in the data, we present in Figures 1a and 1b the coefficient on *Fraction_China_Sales* from Equation (1), utilizing event windows that begin a week prior to the date we have set as the start of each event and continuing to two months following each event. That is, each point represents a regression coefficient for which the outcome variable is cumulative abnormal returns over the window [–7, date]; we include a [0.05, 0.95] confidence interval around the coefficient estimates. We do observe a pre-event negative return for the textbook event in Figure 1a, reflecting that tensions that were already on the rise as a result of the announced proposal that Japan be given a permanent seat at the UN Security Council. There is no such pattern for the Senkaku event. In both cases, there is a steady decline in the *Fraction_China_Sales* coefficient over the event window. For the Textbook

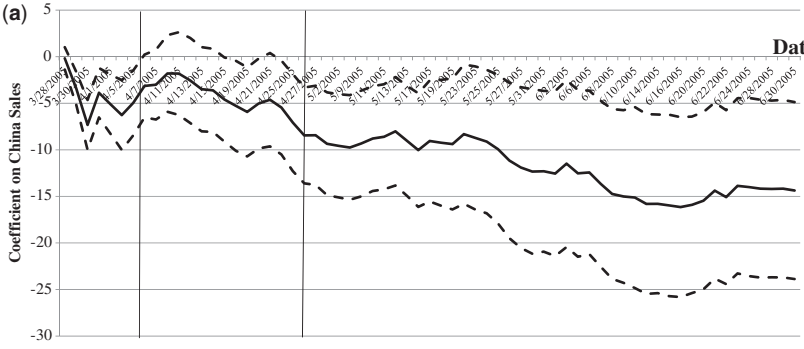

Figure 1a
Coefficient on *Fraction_China_Sales* for Japanese firms in CARs regressions around textbook event (April 5, 2005 to April 28, 2005)
The solid line shows the coefficients on *Fraction_China_Sales* from the equation $CAR\_Textbook_i = \alpha + \beta_1 Fraction\_China\_Sales_i + \beta_2 Controls_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event and continuing for two months following each event. That is, each point represents a regression coefficient, where the outcome variable is cumulative abnormal returns over the window [–7, date]. Dashed lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

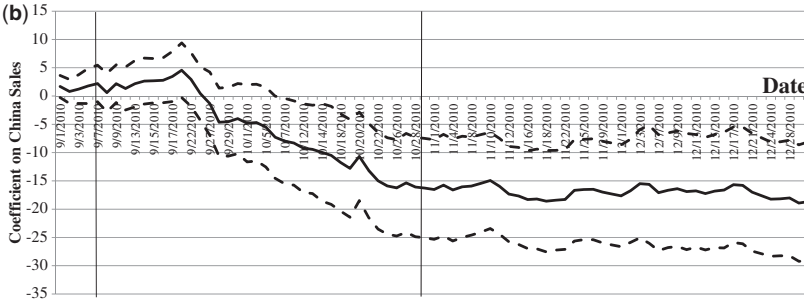

Figure 1b
Coefficient on *Fraction_China_Sales* for Japanese firms in CARs regressions around Senkaku event (September 7, 2010 to October 29, 2010)
The solid line shows the coefficients on *Fraction_China_Sales* from the equation $CAR\_Senkaku_i = \alpha + \beta_1 Fraction\_China\_Sales_i + \beta_2 Controls_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event and continuing for two months following each event. That is, each point represents a regression coefficient, where the outcome variable is cumulative abnormal returns over the window [–7, date]. Dashed lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

Event, the decline continues beyond the event period, whereas we see no such pattern for the Senkaku event.

Turning to Chinese firms, we repeat the graphing exercise in Figures 1c and 1d, showing the coefficients on *Fraction_Japan_Exports* in regressions on cumulative abnormal returns. As in Figure 1a, we observe some evidence of pre-event declines prior to the textbook event for Chinese firms. We also, in this instance, observe complete reversion following the end of the event window. We observe neither pre-event decline nor reversion for the 2010 Senkaku event.

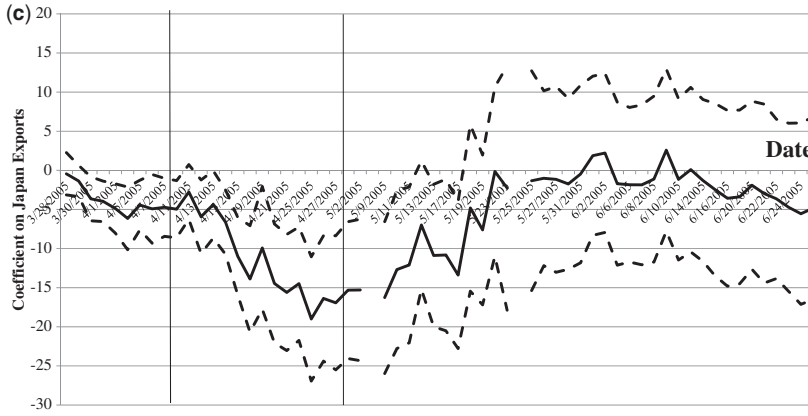

Figure 1c
Coefficient on *Fraction_Japan_Exports* for Chinese firms in CARs regressions around textbook event (April 5, 2005 to April 28, 2005)
The solid line shows the coefficients on *Fraction_Japan_Exports* from the equation $CAR\_Textbook_i = \alpha + \beta_1 Fraction\_Japan\_Exports_i + \beta_2 Controls_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event and continuing for two months following each event. That is, each point represents a regression coefficient, where the outcome variable is cumulative abnormal returns over the window [–7, date]. Dashed lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

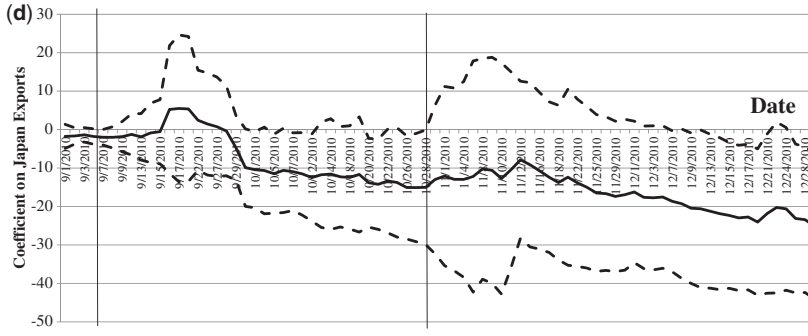

Figure 1d
Coefficient on *Fraction_Japan_Exports* for Chinese firms in CARs regressions around Senkaku event (September 7, 2010 to October 29, 2010)
The solid line shows the coefficients on *Fraction_Japan_Exports* from the equation $CAR\_Senkaku_i = \alpha + \beta_1 Fraction\_Japan\_Exports_i + \beta_2 Controls_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event and continuing for two months following each event. That is, each point represents a regression coefficient, where the outcome variable is cumulative abnormal returns over the window [–7, date]. Dashed lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

Overall, the graphical representations of our findings over longer windows suggest that we would generate larger estimates of the effect of China-Japan exposure on returns if we extended our event window to incorporate the UN Security Council announcement that was also the source of frictions between the two countries. As a separate validation exercise, to alleviate concerns

that vulnerability to Sino-Japanese relations is simply proxying for a broader sensitivity to market-wide shocks, we provide a placebo test to formally reject the possibility that the effect we observe in the data is purely due to a China (Japan) effect for Japanese (Chinese) firms. That is, we assess the possibility that *whenever* there is a negative economic shock to China, Japanese firms suffer (and vice versa), whether or not the shock impacts sentiment between the two countries. We find no evidence of a link between exposure to Sino-Japanese relations and returns on September 11, 2001, or returns during the earthquakes that struck Niigata, Japan, in 2007 and Sichuan, China, in 2008.

2.2 Channels of impact

We now turn to probe the channels that account for the sharp negative reaction to deteriorations in Sino-Japanese relations. The two main mechanisms through which interstate frictions may affect firm value are government intervention and consumer backlash. To the extent that government intervention is of primary concern, we may distinguish between differing governmental motives, in particular the protection of local jobs versus vulnerability to holdup. Although our data do not allow us to provide dispositive proof on the underlying mechanisms, the results in this section provide suggestive evidence on the different channels through which firms were adversely affected in the two countries.

We focus first on Japanese firms in Table 5. We include interactions of *Fraction_China_Sales* with *Consumer_Intensity*, a firm-level indicator variable denoting whether the company's main business segment focuses mainly on consumers, and *SOE_Intensity*, an industry-level measure of the presence of government-owned firms in China. We see this latter measure as an indication of the extent to which the Chinese government may be motivated—and be able—to impact the profits of Japanese companies selling in China via competition, product embargoes, and trade policies. Finally, we include *Fraction_China_Empl* to capture the potential effects of a firm employing a high rate of Chinese workers. We present all results for both events pooled together, and as before, we include Industry × Year fixed effects, as well as *Fraction_China_Sales* × *Year2010* as a control.[18]

In Columns (1) and (2), we include the interaction terms *SOE_Intensity* and *Consumer_Intensity* separately. The coefficient on *Fraction_China_Sales* × *SOE_Intensity* is negative and significant at the 1% level. To provide a sense of its magnitude, consider two industries in which a reasonably high fraction of Japanese companies have nonzero sales in China but very different levels of SOE intensity: drugs (*SOE_Intensity* = 0.06) and construction (*SOE_Intensity* = 0.26). The estimates imply that a one-standard-deviation increase in *Fraction_China_Sales* reduces returns by about 0.66% for drug companies

[18] Results disaggregated by year are available from the authors. All coefficients are directionally the same as those reported here.

Table 5
Identifying the mechanisms (Japanese firms): Government intervention or consumer sentiment

	(1)	(2)	(3)	(4)
	Dependent variable: CAR_Pooled?			
Fraction_China_Sales	7.742	−6.862***	−5.165*	2.833
	(5.462)	(2.355)	(3.099)	(6.258)
Fraction_China_Sales × SOE_Intensity	−109.841***			−62.369
	(37.692)			(40.788)
SOE_Intensity	−3.953			1.952
	(14.287)			(12.583)
Fraction_China_Sales × Consumer_Intensity		2.873		2.153
		(7.747)		(9.000)
Consumer_Intensity		0.313		−0.926
		(0.907)		(1.111)
Fraction_China_Empl			5.594*	2.690
			(3.018)	(1.726)
Fraction_Others_Sales	0.990	0.444	2.915*	0.337
	(1.858)	(1.835)	(1.763)	(2.201)
Log(TotalAssets)	−0.132	−0.150	−0.304	0.225
	(0.169)	(0.174)	(2.106)	(0.221)
Log(1+Tobin's q)	−2.560***	−2.629***	0.195	−3.296***
	(0.803)	(0.813)	(0.217)	(1.017)
Leverage	−1.596	−1.546	−3.425***	−1.702
	(1.346)	(1.340)	(1.025)	(1.743)
Fraction_China_Sales × Y2010	−19.922***	−15.726***	−12.140*	−14.310**
	(5.020)	(5.061)	(6.215)	(6.074)
Constant	1.002	0.856	−3.178	−3.710
	(2.499)	(2.011)	(2.432)	(2.912)
Fixed effects	Industry × year			
Number of observations	1,670	1,678	1,030	1,025
R^2	0.066	0.061	0.048	0.049

No Dependent variable in all columns is *CAR_Pooled*, for the sample of Japanese listed firms, which is equal to *CAR_Textbook* for year = 2005, and *CAR_Senkaku* for year = 2010, and *CAR_Textbook* is the cumulative abnormal return during the textbook event (April 5, 2005 to April 28, 2005), and *CAR_Senkaku* is the cumulative abnormal return during the Senkaku event (September 7, 2010 to October 29, 2010); *Fraction_China_Sales* is the ratio of sales in China to total sales for the sample of Japanese firms; *SOE_Intensity* is average value of the ratio of total sales by state-owned firms to total sales in each industry in China; *Consumer_Intensity* is a dummy variable that is equal to one if the firm is mainly producing consumer-oriented products; *Fraction_China_Empl* is the ratio of Chinese employees in China to total employees of Japanese firms; *Fraction_Others_Sales* is the ratio of sales in all the foreign countries other than China to total sales, for Japanese firms; *Log(TotalAssets)* is the log of total assets of the firm; *Log(1+Tobin's q)* is the log value of one plus Tobin's q; *Fraction_China_Sales* is the ratio of sales in China to total sales for each Japanese firm in the sample; and *Leverage* is the ratio of total liabilities to total assets. Fixed effects are at the Nikkei industry code level (2-digit SIC equivalent). In all cases, abnormal return is estimated using a standard Fama-French three-factor model using [–150, –30] trading days as the estimation window. Robust standard errors, clustered at the firm level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

(0.1 × 0.06 × 109.8) versus 2.85% for construction (0.1 × 0.26 × 109.8). The coefficient on *Fraction_China_Sales* × *Consumer_Intensity* is positive, though it is very small in magnitude, and quite precisely estimated as close to zero—we can reject at a 95% confidence level that the coefficient is less than 12.3 (i.e., 2.87 + 7.75 × 1.96). In Column (3), we include *Fraction_China_Empl* as a covariate. Its coefficient is positive and significant at the 10% level (we obtain similar results if we further control for *Fraction_China_Assets*). In the final column we include all interaction terms simultaneously. Note that the sample size decreases by half, owing to the limited availability of Chinese

employee information. As a result, the *SOE_Intensity* interaction term is no longer significant (p-value = 0.12); *Fraction_China_Empl* is also no longer significant at conventional levels ($p-$value = 0.12).

We next examine one channel through which Japanese firms—particularly those with the Chinese state as a customer—may have been adversely affected following the textbook event.

We use the following specification to examine whether, following the 2005 textbook event, Chinese SOEs decreased their imports of Japanese relative to U.S. goods, relative to private firms:

$$JPN\_Import\_Rate_{hsm} = \alpha + \beta_1\, After_m + \beta_2\, State_s + \beta_3\, After_m \times State_s + \beta_4\, Month_m \times State_s + H_h + M_m + \varepsilon_{hsm}. \quad (2)$$

The data employed in these analyses are entirely distinct from those employed elsewhere in the paper, as noted in the Data section. All analyses are done at the HS8-ownership type-month level, where *JPN_Import_Rate* is fraction of imports by firms in 8-digit HS industry h of ownership type s in month m that are from Japan (relative to imports from Japan and the United States combined); *State* is an indicator variable for state ownership; and *After* indicates that month m comes after the textbook event (i.e., May, 2005 or later). All specifications include 8-digit HS and month fixed effects, as well as firm-type time trends to account for differential import rates of SOE versus private firms over time (our point estimates are much larger if we do not include these terms). These results are reported in Table 6. The coefficient on $After_m \times State_s$ in Column (1) is negative, though not statistically significant at conventional levels (p-value = 0.126). Its magnitude of -0.007 is relatively modest, implying a 0.7 percentage point decline in imports from Japan relative to the United States (as compared with the sample mean of 0.65 for *JPN_Import_Rate* overall). In Column (2) we limit the sample to those industries with "thick" trade such that in each month-industry in our sample there is nonzero importation for both private and SOE importers from either Japan or the United States. The point estimate increases slightly and is significant at the 10% level. In Columns (3) and (4) we repeat our analyses and include *State*-by-HS fixed effects to allow for a differential level of imports by industry for state versus private firms. The magnitudes of our coefficients estimates are virtually unchanged, though they are estimated with slightly greater precision.

We now turn to examine the channels through which Chinese firms may have been adversely affected by the two events, using specifications that parallel those presented in Table 5. (Chinese firms engage in virtually no offshoring to Japan, so we do not consider the effects of labor- versus capital-intensity of production.[19]) The broad patterns, shown in Table 7, contrast

[19] In practice, we find that interactions of *Fraction_Japan_Exports* with the logarithm of labor and assets are very small in magnitude and significance.

Table 6
The long-term effect on imports by Chinese state firms versus private firms

	(1)	(2)	(3)	(4)
	Dependent variable: JPN_Import_Rate			
State	−0.051***	−0.058***	0.000	0.000
	(0.004)	(0.006)	(0.000)	(0.000)
State × after	−0.007	−0.009*	−0.007*	−0.009*
	(0.004)	(0.005)	(0.004)	(0.005)
Constant	0.675***	0.692***	0.651***	0.664***
	(0.004)	(0.005)	(0.003)	(0.004)
Fixed effects	hs and month	hs and month	hs × month	hs × month
Sample	full	thick-trade products	full	thick-trade products
Observations	310,041	117,000	310,041	117,000
Adjusted R^2	0.500	0.606	0.574	0.688

The dataset we use here is a monthly firm-HS level import by all Chinese firms from Japan and the United States for the period from 2004–2006. *JPN_Import_Rate* is the ratio of Japanese imports to the sum of Japanese and U.S. imports at the HS-State-month level. *State* is a dummy variable that is equal to one if the importer is a state-owned firm; *After* is a dummy variable that is equal to one if the import date is after March 2005 (i.e., the history textbook event). In Columns (2) and (4), we limit the sample just to those industries with "thick" trade such that in each month-industry in the sample there is nonzero importation for both private and SOE importers from either Japan or from the United States. In all regressions, we control for firm-type time trends. Robust standard errors, clustered at the HS 8-digit level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

with those we observe for Japanese companies, with negative and statistically significant coefficients on *Fraction_Japan_Exports* in all specifications. The interaction term *Fraction_Japan_Exports* × *Drugs_and_Food* does not approach significance, and its sign is positive. The lack of any measurable effect may result from the modest involvement, relatively speaking, of the Japanese government in commerce; alternatively, it may simply be because of the coarseness of our proxy for vulnerability to government intervention.[20] In Column (2) the sign on *Fraction_Japan_Exports* × *Consumer_Intensity* is negative, though not statistically significant (p-value = 0.20); we observe similar patterns when both interaction terms are included in Column (3).

To summarize the results thus far, both Japanese and Chinese firms with substantial Sino-Japanese economic ties suffer relative declines in value as a result of negative shocks to relations between the two countries. This effect is more pronounced for Japanese firms operating in industries in which the Chinese economy is dominated by state-owned enterprises; further, the effect is less pronounced for labor-intensive firms. By contrast, the effect for Chinese companies is more pronounced for consumer-oriented firms (though this result is not statistically significant).

Overall, our evidence indicates that Chinese government intervention was likely an important mechanism through which Japanese companies were affected; we provide weaker, suggestive evidence that consumer response

[20] We also used a proxy for government intervention based on tariff and nontariff trade barriers from UNCTAD's TRAIN database, which similarly yielded no significant results.

Table 7
Identifying the mechanisms (Chinese firms): Government intervention or consumer sentiment?

	(1)	(2)	(3)
	Dependent variable: CAR_Pooled		
Fraction_Japan_Exports	−33.968*	−26.080*	−27.765*
	(17.548)	(15.774)	(15.840)
Fraction_Japan_Exports × Drugs_and_Food	55.122		68.130
	(63.993)		(65.666)
Fraction_Japan_Exports × Consumer_Intensity		−31.015	−33.846
		(23.995)	(23.946)
Consumer_Intensity		−0.218	−0.222
		(0.740)	(0.738)
Fraction_Japan_Exports × Y2010	19.693	38.727	41.910
	(17.436)	(28.083)	(27.896)
Fraction_Other_Exports	6.750**	6.348**	6.142*
	(3.073)	(3.121)	(3.169)
Log(TotalAssets)	1.151***	1.168***	1.149***
	(0.320)	(0.321)	(0.321)
Log(1+Tobin's q)	0.776	0.955	0.806
	(1.095)	(1.085)	(1.095)
Leverage	−0.093	−0.106	−0.096
	(0.096)	(0.095)	(0.096)
Constant	−27.389***	−27.263***	−27.294***
	(7.626)	(7.631)	(7.636)
Fixed effects	Industry × year		
Number of observations	2,059	2,059	2,059
R^2	0.177	0.176	0.177

Dependent variable in all columns is *CAR_Pooled*, for the sample of Japanese listed firms, which is equal to *CAR_Textbook* for year = 2005, and *CAR_Senkak*u for year = 2010, and *CAR_Textbook* is the cumulative abnormal return during the textbook event (April 5, 2005 to April 28, 2005), and *CAR_Senkaku* is the cumulative abnormal return during the Senkaku event (September 7, 2010 to October 29, 2010); *Fraction_Japan_Exports* is the ratio of total exports to Japan to total sales of each Chinese firm; *Drugs_and_Food* is a dummy variable that is equal to one for Chinese firms in foods, drugs, or agriculture; *Drugs_and_Food* is a dummy denoting whether the Chinese firm is in the following industries: foods, drugs, and agriculture; *Consumer_Intensity* is a dummy variable that is equal to one if the firm mainly produces consumer-oriented products; *Fraction_Others_Exports* is the ratio of exports to all foreign countries other than Japan to total sales, for the sample of Chinese firms; *Log(TotalAssets)* is the log of total assets of the firm; *Log(1+Tobin's q)* is the log value of one plus Tobin's q; and *Leverage* is the ratio of total liabilities to total assets. Fixed effects are at the 2-digit SIC level. In all cases, abnormal return is estimated using a standard Fama-French three-factor model using [−150, −30] trading days as the estimation window. Robust standard errors are in parentheses. Robust standard errors, clustered at the firm level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

played a larger role for Chinese companies. These patterns highlight the importance of considering differing channels through which cultural and political frictions impact economic activity, based on the economic institutions in affected countries.[21]

2.3 The role of investor sentiment

We have assumed thus far that investors' responses reflect beliefs about firms' future profitability. But our main findings also could be the result of

[21] One further concern is that our findings may reflect anticipation of embargos in industries engaged in military-related production. However, we discovered—in hindsight this discovery is unsurprising—that no Japanese firms with sales in China are in this category to begin with, and similarly no Chinese exporter to Japan is engaged in military-related production.

investor sentiment in the form of either overreaction (Daniel, Hirshleifer, and Subrahmanyam 1998; Hirshleifer 2001; Daniel, Hirshleifer, and Teoh 2002) or shifts in preferences over asset allocation (Bikhchandani, Hirshleifer, and Welch 1992). We follow the behavioral finance literature (De Long et al. 1990; Lee, Shleifer, and Thaler 1991; Baker and Wurgler 2006; Stambaugh, Yu, and Yuan 2012) in using the prevalence of individual investors to proxy for the role of sentiment under the premise that they are more prone to sentiment-based trading than institutional investors.[22] We thus augment Equation (1) with the term *Fraction_Indiv_Japan* × *Fraction_China_Sales* to capture whether sensitivity of returns to China exposure is higher for firms with a greater portion of individual, rather than institutional, investors. The results, in Column (1) of Table 8, indicate that increasing ownership through individuals by one percentage point increases the coefficient on *Fraction_China_Sales* by 1.62. As one may observe in our summary statistics, the mean of *Fraction_Indiv_Japan* is only about 0.01 for Japanese firms—and indeed the 90th percentile is only 0.2—so in general ownership is dominated by institutions. We therefore also consider whether our results are robust to considering splits of the sample based on whether a firm has an appreciable portion of individual investors that could plausibly move asset prices. We consider thresholds of 1%, 5%, 10%, and 20% in Columns (2)–(5), which replace *Fraction_Indiv_Japan* with indicator variables denoting that a firm has individual ownership greater than p%, I(*Fraction_Indiv_Japan* $\geqslant p$). The coefficient is very stable at around −35, indicating a much higher sensitivity of returns to China exposure for firms with a high proportion of individual investors. This effect is independent of the patterns related to government intervention and consumer preferences that we document in Table 5—when *Fraction_Indiv_Japan* × *Fraction_China_Sales* is included as a control in those specifications, our earlier results are virtually unchanged.

We report analogous results for Chinese firms in Table A1. In contrast to Japanese firms, individual share ownership is ubiquitous in China, so *Fraction_Indiv_China* has a mean of 0.80. We do not find any evidence of greater sensitivity of returns to Japanese exposure for firms with high individual ownership. These findings echo our earlier results emphasizing the role of individuals in mediating the effects of Sino-Japanese tensions in the case of Japan; in our earlier results we documented tentative evidence on the role of consumers, whereas our findings on sentiment emphasize the role of individual investors.

[22] Sentiment is in general defined as the difference between the beliefs of sentiment-driven traders and correct objective beliefs conditional on available information (e.g., De Long et al. 1990). Individual investors are typically viewed as natural candidates for sentiment-driven investors. Kumar and Lee (2006) analyze 1.85 million individual-investor transactions and interpret systematic factors in the investors' trades as being consistent with the influence of sentiment.

Table 8
Investor sentiment and stock returns: Japanese firm

	(1)	(2)	(3)	(4)	(5)
	Dependent variable: CAR_Pooled				
Fraction_China_Sales	−4.531*	−4.667*	−4.619*	−4.725*	−5.224**
	(2.437)	(2.451)	(2.446)	(2.427)	(2.385)
Fraction_China_Sales × Fraction_Indiv_Japan	−162.443***				
	(32.709)				
Fraction_indiv	8.379				
	(9.894)				
Fraction_Other_Sales	0.594	0.815	0.709	0.454	0.442
	(1.782)	(1.802)	(1.812)	(1.788)	(1.788)
Log(TotalAssets)	−0.153	−0.213	−0.185	−0.144	−0.121
	(0.178)	(0.173)	(0.177)	(0.177)	(0.176)
Log(1+Tobin's q)	−2.329***	−2.138***	−2.243***	−2.379***	−2.479***
	(0.830)	(0.817)	(0.820)	(0.830)	(0.829)
Leverage	−1.642	−1.600	−1.567	−1.585	−1.577
	(1.315)	(1.310)	(1.311)	(1.314)	(1.325)
Fraction_China_Sales × Y2010	−11.521**	−11.291**	−11.407**	−11.450**	−11.564**
	(4.956)	(4.860)	(4.849)	(4.838)	(4.881)
Fraction_China_Sales × I(Fraction_Indiv_Japan > 1)		−35.265***			
		(8.160)			
I(Fraction_Indiv_Japan > 1)		0.243			
		(1.715)			
Fraction_China_Sales × I(Fraction_Indiv_Japan > 5)			−36.094***		
			(8.150)		
I(Fraction_Indiv_Japan > 5)			1.04		
			(1.806)		
Fraction_China_Sales × I(Fraction_Indiv_Japan 10)				−36.805***	
				(8.307)	
I(Fraction_Indiv_Japan > 10)				2.138	
				(2.027)	
Fraction_China_Sales × I(Fraction_Indiv_Japan > 20)					−35.090***
I(Fraction_Indiv_Japan > 20)					2.722
					(2.321)
Constant	0.464	1.004	0.731	0.401	0.222
	(2.021)	(1.984)	(2.011)	(2.011)	(2.007)
Fixed effects	Industry × Year				
Number of observations	1,678	1,678	1,678	1,678	1,678
Adjusted R-squared	0.077	0.079	0.078	0.077	0.074

Dependent variable in all columns is *CAR_Pooled*, for the sample of Japanese listed firms, which is equal to *CAR_Textbook* for year = 2005, and *CAR_Senkaku* for year = 2010, and *CAR_Textbook* is the cumulative abnormal return during the textbook event (April 5, 2005 to April 28, 2005), and *CAR_Senkaku* is the cumulative abnormal return during the Senkaku event (September 7, 2010 to October 29, 2010); *Fraction_China_Sales* is the ratio of sales in China to total sales for each Japanese firm; *Fraction_Indiv_Japan* is the ratio of individual ownership to all outstanding shares; *I(Fraction_Indiv_Japan > p)* is an indicator variable that is equal to one if individual ownership is larger than p%; *Fraction_Others_Sales* is the ratio of sales in all the foreign countries other than China to total sales, for Japanese firms in the sample; and *Leverage* is the ratio of total liabilities to total assets. Fixed effects are at the Nikkei industry code level (2-digit SIC equivalent). In all cases, abnormal return is estimated using a standard Fama-French three-factor model using [–150, –30] trading days as the estimation window. Robust standard errors, clustered at the firm level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

As already noted, the sentiment of individual investors could reflect an increased aversion to holding stocks engaged in Chinese commerce or an overreaction to news of frictions with China. In the next section, we take up the concerns of whether our results more generally reflect investor overreaction to fraying Sino-Japanese relations.

3. Longer-Run Analysis

3.1 Price reversion

If investors overreact in the short run, we would expect stock prices to gradually revert for affected firms following our event windows. The graphs in Figure 1 indicate that, overall, this is unlikely to be the case. In this section, we examine this possibility more formally.

We perform two tests to investigate possible overreaction. First, we calculate cumulative abnormal returns over the window of [end date, end date + 60], where the end date is the last date we included in our CARs calculations above. The overreaction hypothesis would predict that the *Fraction_China_Sales* (and *Fraction_Japan_Exports*) should positively affect these postevent CARs. We do not observe any such pattern in the data (all results for extended windows available upon request). Second, we extend our event window to incorporate an extra 30 or 60 trading days after the day identified as the end date. The overreaction hypothesis would predict that the *Fraction_China_Sales* (and *Fraction_Japan_Exports*) would have no effect on these extended CARs; however, we find that the negative effect still holds.

We also augment these analyses to include *Fraction_Indiv_Japan* × *Fraction_China_Sales* (or *Fraction_Indiv_China* × *Fraction_Japan_Exports*). This helps to adjudicate between sentiment-based explanations that involve individual investor overreaction versus those involving an increased aversion to ownership of companies with ties to China (or Japan). We find that extending our event window by 30 days generates very similar results to those reported in Table 7; if we extend the event window by 60 days, the interaction term *Fraction_Indiv_Japan* × *Fraction_China_Sales* falls by about half and is no longer significant, which is suggestive of the investor sentiment effect. This may result in part from foreign or institutional investors—that are less prone to sentiment—purchasing undervalued equities. The fact that we do not, more generally, observe a complete reversion (note that the effects of sentiment are almost by definition temporary) over longer windows indicates that there is a long-run real effect on firm value.

Overall, we thus find at most limited evidence of a role for overreaction in explaining the negative impact of Sino-Japanese relations on returns.

3.2 Long-term effect on profits

We examine the long-term effect of the 2005 shocks on Japanese and Chinese firms' profits by constructing a panel for 2002–2008 (i.e., three years before and after the 2005 shock). We consider specifications of the form:

$$\begin{aligned} ROA_{iy+1} = {} & \alpha + \beta_1\, Fraction\_China\_Sales_{iy} \\ & + \beta_2\, Fraction\_China\_Sales_{iy} \times I(year \geq 2005) \\ & + \beta_3 \boldsymbol{Controls}_{iy} + \delta_i + \eta_y + \varepsilon_{iy}, \end{aligned} \tag{3}$$

Table 9A
The long-term effect on profits: Japanese firms

Dependent variable	(1) ROA(t+1)	(2) ROA(t+1)
I(year ≥ 2005) × Fraction_China_Sales	−0.048***	−0.041**
	(0.018)	(0.018)
Log(TotalAssets)	−0.039***	−0.042***
	(0.009)	(0.009)
I(year ≥ 2005)	0.021***	−0.019
	(0.003)	(0.014)
Fraction_China_Sales	0.017	0.016
	(0.036)	(0.036)
I(year ≥ 2005) × Log(TotalAssets)		0.003***
		(0.001)
Constant	0.446***	0.476***
	(0.102)	(0.100)
Time period	2002–2008	
Fixed effects	firm and year	firm and year
Number of observations	5,584	5,584
Adjusted R^2	0.489	0.490

Dependent variable is *ROA* in year $t+1$. *Fraction_China_Sales* is the ratio of sales in China to total sales of the Japanese firm; *Log(TotalAssets)* is the log of total assets of the firms; and *I(year ≥ 2005)* is an indicator variable that is equal to one for years after 2005. In all regressions, we also control for firm leverage. Robust standard errors, clustered at the firm level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

where ROA is defined as (net income)/(total assets); I(*year* ≥ 2005) is an indicator variable that is equal to one for years after 2005; and δ_i and η_y are firm and year fixed effects. That is, we investigate whether there is an increase in the correlation between accounting profits and China exposure in the years following the textbook event. In the first pair of columns in Table 9A, we show the results for Japanese firms. Returns on assets decline significantly following the textbook event, a result that persists when we allow for the interaction term log(*Assets*) × I(*year* ≥ 2005), to account for the possibility that the size-profit relationship is changing over time. In Table 9B, we present the results for Chinese firms, including *Fraction_Japan_Exports* and its interactions. We similarly observe lower profitability for Japan-exposed firms in the years following the textbook event, though the effects are not statistically significant (p-value = 0.20 in both specifications in Table 9B). We should note that this test provides complementary evidence to our event study; such a test cannot cleanly identify the effect of interstate frictions on firm value given the many shocks that took place during this period, which may also affect firms' profits.

Overall, the results in this section indicate that investors' beliefs that the profits of firms exposed to China-Japan commerce would be adversely affected by increased interstate frictions.

4. Conclusion

In this paper we study the impact of interstate frictions on economic exchange, by examining the impact of two major negative shocks to Sino-Japanese

Table 9B
The long-term effect on profits: Chinese firms

Dependent variable	(1) ROA(t+1)	(2) ROA(t+1)
I(year ≥ 2005) × Fraction_Japan_Exports	−0.132	−0.131
	(0.103)	(0.104)
I(year ≥ 2005)	0.013**	0.000
	(0.006)	(0.000)
Fraction_Japan_Exports	0.000	0.000
	(0.000)	(0.000)
Log(Assets)	−0.037***	−0.029***
	(0.006)	(0.007)
I(year ≥ 2005) × Log(TotalAssets)		−0.008***
		(0.003)
Constant	0.835***	0.663***
	(0.133)	(0.149)
Time period	2002–2008	
Fixed effects	firm and year	firm and year
Number of observations	5,331	5,331
Adjusted R^2	0.313	0.315

Dependent variables is *ROA* in year t+1; *Fraction_Japan_Exports* is the ratio of total exports to Japan to total sales of the Chinese firms; *I(year ≥ 2005)* is an indicator variable that is equal to one for years after 2005; and *Log(TotalAssets)* is the log of total assets of the firm. In all regressions, we control for firm leverage. Robust standard errors, clustered at the firm level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

relations. As far as we know, this is the first paper to perform an in-depth econometric analysis of the effects of a discrete increase in Sino-Japanese frictions on economic relations and also the first to attempt to examine the channels through which firms are affected.

We observe a large and adverse market response to negative shocks to Sino-Japanese relations. This implies that economic exchange can be affected in discrete and sudden ways by increased animosity between countries. We also present evidence that a primary mechanism underlying this adverse reaction was likely government intervention in the case of Japanese firms vulnerable to trade with China. We present more tentative evidence that consumer response was a mediating factor for Chinese firms that export to Japan. (We find complementary results on the role of individual investors in affecting firm value in Japan.) This result is consistent with the very different institutions governing the two countries. Despite decades of economic liberalization, China's government remains deeply involved in the economy. This fact highlights the importance of considering the nature of economic institutions in understanding how economic actors will be affected by shifting relations between countries.

In concluding, we note that our paper plausibly provides a lower bound estimate of the impact of interstate frictions on firm value, because we only look at publicly traded firms. Unlisted firms, which are the majority in both countries, would likely be affected by the events we consider here. So although we cannot incorporate such an analysis due to data limitations, the impact on

unlisted firms is important for a full accounting of the macro implications of interstate frictions.

Although we focus on China and Japan in this paper, our approach may be clearly generalized to a broader set of country pairs to develop more deeply our understanding of how cross-country relations affect economic relationships. This would also give us a much broader set of institutional circumstances to study how economic, political, and social institutions mediate the effects of cultural animosity. We leave this for future work.

Appendix A. Sino-Japanese Economic and Political Relations

China and Japan have had a unique relationship spanning more than a thousand years. Japan imported Chinese characters along with other advanced skills as early as 60 AD, and indeed China was often the source of new technologies and ideas for Japan. The Japanese have experienced eras of deep Chinese influence—when Chinese culture became a model for the Japanese—alternating with more independent periods. In the late nineteenth century, however, after the Edo era of inward-looking Japanese culture that reduced foreign influence in general, the country turned to study advanced technologies and political structures from Western nations, further untethering itself from Chinese influence.

Concurrent with this shift away from China, a rapidly industrializing and militarized Japan confronted China in two Sino-Japan Wars (1894—1895 and 1937—1945), including the infamous Nanjing Massacre of 1937. This was part of a longer chapter of Western colonization in Chinese history that followed the Qing dynasty, tellingly referred to as the "100 years of humiliation." Following World War II, Japan became an American ally, going under the security umbrella of the United States. Relations between China and Japan were cut off until after Nixon's 1972 trip to China, which was followed seven months later by a visit from Japanese Prime Minister Kakuei Tanaka, who began the process of re-establishing diplomatic relations.

During the 1970s and 1980s, China remained relatively unimportant as a trade partner for Japan, sharing less than 4% of Japan's trade volume (import + export); by comparison, the United States accounted for 20% of Japanese trade. In the 1990s, China's share of Japanese trade grew rapidly as economic reforms took hold; China surpassed the United States as Japan's largest trade partner in 2006 and by 2009 accounted for 25% of Japanese trade volume, compared to 14% for the United States.[23] For China, Japan is its second-largest trade partner ($298 billion in 2009) after the United States ($385 billion).[24] Economic ties also have been strengthened through investment channels. According to the 2009–2010 edition of "*Chûgoku Shinshutsu Kigyô Ichiran: Jôjô Kaisha Hen* (*Almanac of Companies Doing Business in China: Listed Firms Volume*)," over 1,800 Japanese listed firms (out of about 3,000) have over 6,300 Chinese subsidiaries.[25]

On the other hand, the long history of close relations has often been characterized by hostilities. Each December, Japan's Cabinet Office conducts an opinion survey that includes the question, "Do you feel China is friendly or unfriendly?" The results indicate that in the 1970s and early 1980s, Japanese sentiment toward China was largely favorable: about 75% of respondents answered "friendly." This period is often described as an era of "Ping-Pong Diplomacy" or "Panda Diplomacy," in which China was regarded by Japanese as a benign presence. A worsening of Japanese sentiment toward China occurred only in 1989, the year of the Tian'An Men Square

[23] Japanese Customs data, http://www.customs.go.jp/toukei/suii/html/time.htm

[24] The U.S. – China Business Council data, http://www.uschina.org/statistics/tradetable.html

[25] The same almanac for unlisted Japanese firms (2007–2008 Edition) shows 4,700 Japanese unlisted firms have over 8,400 Chinese subsidiaries.

Table A1
Investor sentiment and stock returns: Chinese firms

	(1)	(2)
	Dependent variable: CAR_Pooled	
Fraction_Japan_Exports	17.231	48.642
	(217.029)	(242.387)
Fraction_Japan_Exports × Drugs_and_Food		63.193
		(68.985)
Drugs_and_Food		4.408**
		(1.854)
Fraction_Japan_Exports × Consumer_Intensity		−35.893
		(28.812)
Consumer_Intensity		−0.189
		(0.739)
Fraction_Japan_Exports × Fraction_Indiv_China	−50.369	−77.079
	(226.746)	(246.043)
Fraction_Indiv_China	1.259	1.313
	(1.923)	(1.927)
Fraction_Others_Exports	0.069**	0.061*
	(0.031)	(0.033)
Log(Total Assets)	1.247***	1.227***
	(0.340)	(0.341)
Log(1+Tobin's q)	1.018	0.890
	(1.094)	(1.104)
Leverage	−0.108	−0.099
	(0.096)	(0.096)
Y2010	0.000	0.000
	(0.000)	(0.000)
Fraction_Japan_Exports × Y2010	5.674	23.008
	(59.254)	(56.593)
Constant	−30.130***	−30.132***
	(8.707)	(8.700)
Fixed effects		
Number of observations	2,059	2,059
Adjusted R^2	0.175	0.176

The dependent variable in all columns is *CAR_Pooled*, for the sample of Chinese listed firms, which is equal to *CAR_Textbook* for year = 2005 and *CAR_Senkaku* for year = 2010.*CAR_Textbook* is the cumulative abnormal return during the Textbook Event (April 5, 2005 to April 28, 2005), and *CAR_Senkaku* is the cumulative abnormal return during the Senkaku Event (September 7, 2010 to October 29, 2010). *Fraction_Japan_Exports* is the ratio of total exports to Japan to total sales of each Chinese firm; *Fraction_Others_Exports* is the ratio of exports to all foreign countries other than Japan to total sales, for the sample of Chinese firms; *Drugs_and_Food* is a dummy denoting whether the Chinese firm is in the following industries: Foods, Drugs, and Agriculture; *Fraction_Indiv_China* is the ratio of individual ownership to total outstanding shares; *Consumer_Intensity* is a dummy variable denoting firms mainly producing consumer-oriented products; and *Leverage* is the ratio of total liabilities to total assets. Fixed effects are at the 2-digit SIC level. In all cases, abnormal returns are estimated using a standard Fama-French three-factor model using [-150, -30] trading days as the estimation window. Robust standard errors, clustered at the firm level, are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

event, followed by a further deterioration from 2004–2005 and in 2010, coincident with the two cases we describe in further detail below: in 2005, only 32% of respondents described China as friendly, and by 2010, the figure dropped to 20%.

A 2005 survey on attitudes in both countries, conducted by Genron (a Japanese not-for-profit organization), the *China Daily*, and Beijing University, provides an indication of the depths of these unfriendly sentiments. Among Chinese respondents, the most common association with "Japan" was the "Nanjing Massacre," and 60% of respondents listed "Militarism" as the dominant political ideology of Japan (2005). Yet the survey also highlighted the strength of economic ties between the two countries—after the "Nanjing Massacre," the second most common association with "Japan" among surveyed Chinese was "Electronics," and the second most commonly used characteristic to describe Japanese character was "diligence" (ranked just behind "cruel and likes to go to war").

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