# The impact of interstate tensions on economic exchange: Evidence from shocks to Sino-Japanese relations*

This version: May 2013

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**Abstract**

We study the impact of interstate tensions 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 less pronounced for labor-intensive firms and more pronounced for those operating in industries dominated by Chinese state-owned enterprises; the impact on Chinese firms is primarily for consumer-focused companies. These results highlight the role of institutional context in mediating the impact of interstate frictions on economic outcomes.

* We would like to thank seminar participants at the 2012 NBER Chinese Economy Working Group conference, the 2012 Conference on Financial Economics and Accounting, the 2012 California Corporate Finance Conference, University of Southern California, as well as William Christie, Christina Davis, Harry DeAngelo, David Hirshleifer, Yasheng Huang, Yi Jiang, John Matsusaka, Hugh Patrick, Bernard Yeung, and Xiaoyun Yu, for helpful comments. Fisman would like to thank Chazen Institute of International Business at Columbia Business School for support. Hamao would like to thank CIBER at Marshall School of Business for support. Wang would like to thank CIBER at Marshall School of Business and China Institute at USC for support. Rong Xu, Kazuo Yamada, and Jane Zhao provided outstanding research assistance.

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## Abstract

We study the impact of interstate tensions 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 less pronounced for labor-intensive firms and more pronounced for those operating in industries dominated by Chinese state-owned enterprises; the impact on Chinese firms is primarily for consumer-focused companies. These results highlight the role of institutional context in mediating the impact of interstate frictions on economic outcomes.



Keywords: interstate tensions; China-Japan relations; consumer sentiment; event study
JEL Classification: F13, F51, G14, G15

Beginning with Becker's (1957) seminal work on discrimination, researchers have incorporated non-pecuniary 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), which finds that aspects of culture like religion and historic 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 between countries, raising concerns that omitted country-level factors could account for the correlation. Partly as a result, the causal relationship between interstate tension 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 most significant episodes of hostility between China and Japan in recent history. 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 shed insights on the mechanism

[1] The effect of such shocks to sentiment is ambiguous *ex ante*, as evidenced by media reports on the topic. For example, while a *Wall Street Journal* article reported that Japanese auto makers' sales in China plummeted in the wake of anti-Japanese protests (*The 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." (*The Wall Street Journal*: "Lunar Holiday Shift Lifts Japanese Car Sales in China," February 04, 2013, by Rose Yu).

through which interstate tensions impacts 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. These protests also incorporated Chinese dismay over the G4 proposal to give Japan a permanent seat on the UN Security Council. 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 as well as 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 percent while the Shanghai Composite declined by nearly 5.3 percent. By comparison, the S&P 500 lost 1.4 percent 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-French (1993) three-factor model) during April 5 – 28, 2005 fell by an additional 0.08 percent. 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.

Interestingly, 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 amongst 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, while those with high employment are relatively insensitive. We argue that this is because in SOE-dominated sectors, the government has greater incentive to intervene to benefit its own companies, and may also have a greater ability to intervene because of its direct role in

the supply chain. 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 low sensitivity for labor-intensive firms may reflect beliefs that the Chinese government would be averse to harming companies that generate high local employment. The Chinese government has been particularly sensitive to this concern in its economic liberalizations and has emphasized employment creation as an objective for foreign investment specifically.[3]

In contrast, 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. This pattern runs counter to the view that companies feared a long-term consumer backlash.

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.[4]

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[2] "The Long Arm of the State," *The Economist*, July 23, 2011 (http://www.economist.com/node/18832034)

[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."

[4] See, for example, Lee, Shleifer, and Thaler (1991), De Long, Shleifer, Summers, and Waldmann (1990), Baker and Wurgler (2006), and Stambaugh, Yu and Yuan (2012) on individual investors and the role of sentiment; Daniel, Hirshleifer, and Subrahmanyam (1998), Daniel, Hirshleifer, and Teoh (2002), and Hirshleifer (2001) 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.

We find contrasting results for Chinese firms – in neither episode are firms with high rates of Japanese exports more adversely affected in industries vulnerable to government intervention (drugs, agriculture, and foods). However, we do find that consumer-focused firms' returns suffer more than firms producing primarily for business customers (though this difference is not statistically significant), suggesting that expectation of a Japanese consumer backlash may have played a greater role in explaining the decline of Japan-focused firms in China.

In our final section of analysis, we further conduct several placebo tests to rule out some alternative hypotheses that might otherwise account for our results. We find no evidence of comparable patterns in equity prices in response to country-level shocks that are unrelated to Sino-Japanese relations. We also do not observe reversion in share prices, as would be the case if the patterns we describe were simply an indication of short-run investor overreaction.

Overall, we conclude that companies' fortunes are very sensitive to relations between the two countries. Despite sharp animosity amongst Chinese consumers towards Japan, however, we find no evidence that negative public sentiment manifests itself through consumer backlash. This does not imply that citizen sentiment is irrelevant, but rather that it finds expression more through its impact on government policy than individual consumer choice. Our contrasting results on the channel of impact for Chinese firms that export to Japan, where consumer concerns seem to play a larger role, highlights the importance of

considering the different channels through which cultural and political frictions impact economic activity.[5]

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 Gupta and Yu (2009), which examines whether bilateral political relations can explain investment and trade flows between the United States and other countries, 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 et al. 2009), 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, Klein, O'Connell, and Yang 2010). When compared to many of these studies, our event study provides a credible causal estimate of the firm-level impact of interstate tensions on valuations. Relatedly, since 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 tensions on firm value.

Our study also relates to work examining the impact of boycotts on firm value. These include several event studies, which find mixed results (see, for example, Epstein

[5] 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.

and Schnietz 2002 for the effect of consumer boycotts; Teoh, 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, which may account 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 tensions 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) tensions on trade and investment flows, and in contrast to our findings here, report no effect. This non-result may stem 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, with a focus on political relations between the two countries, with less of a quantitative focus relative to our study. Finally, in work concurrent with our own, 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.

Although we focus on Sino-Japanese relations in this paper, our core idea can easily be applied to other settings, including other globally significant economic partners like the United States and China or the United States and Russia. In the former case, there have been several disputes that have triggered widespread demonstrations against the United States (for example, nationwide protests in 1999 as a result of three Chinese journalists' deaths in Belgrade following an American military strike).

The rest of this paper is structured as followed: In Section 1, we provide more detailed background on the two events we study here, and a description of the data. Section 2 presents our results. Section 3 presents a number of robustness checks of our main findings, and section 4 concludes.

## 1. Background and data

### 1.1 Sino-Japanese economic and political relations

Before proceeding to an overview of the two events that served as shocks to China-Japan sentiments, it is useful to provide a brief history of Sino-Japanese relations, which highlights the closeness of their cultural and economic connections, as well as the depths of animosity between them.

China and Japan have had a unique relationship spanning over a thousand years. Japan imported Chinese characters along with other advanced skills as early as 60 A.D., 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 it 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 percent of Japan's trade volume (import + export); by comparison the U.S. accounted for 20 percent of Japanese trade. In the 1990s, China's share of Japanese trade grew rapidly as economic reforms took hold.; It surpassed the U.S. as Japan's largest trade partner in 2006 and by 2009 accounted for 25 percent of Japanese trade volume, compared to 14 percent for the U.S.[6] For China, Japan is its second-largest

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

trade partner ($298 billion in 2009) after the U.S. ($385 billion).[7] Economic ties have also 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.[8]

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 percent of respondents answered "friendly". This period is often described as an era of "Ping-Pong Diplomacy" or "Panda Diplomacy" – 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 event, followed by a further deterioration in 2004 – 2005 and 2010, coincident with the two cases we describe in further detail below: In 2005, only 32 percent of respondents described China as friendly, and by 2010, the figure had dropped to 20 percent.

A 2005 survey on attitudes in both countries, conducted by Genron (a Japanese NPO), 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 "Rape of Nanjing" and 60 percent of respondents listed Militarism as the

[7] The U.S. – China Business Council data, http://www.uschina.org/statistics/tradetable.html
[8] The same almanac for unlisted Japanese firms (2007 – 2008 edition) shows 4,700 Japanese unlisted firms have over 8,400 Chinese subsidiaries.

dominant political ideology of Japan (Kudô 2005). Yet the survey also highlighted the strength of economic ties between the two countries – after "Rape of Nanjing," the second most common association with "Japan" amongst surveyed Chinese was "Electronics" and the second most common characteristic used to describe Japanese character was "diligence" (ranked just behind "cruel and likes to go to war").

Against this backdrop, we present brief descriptions of the Textbook and Senkaku Events of 2005 and 2010 that served to aggravate these sentiments.

The anti-Japanese demonstrations of 2005 – some peaceful, some violent – were held across China in the spring of 2005. They were set off primarily by Japanese government approval of "*Atarashii Rekishi no Kyôkasho*," or the *New History Textbook*, written by the Japanese Society for History Textbook Reform. 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. Chinese critics claimed that the textbook whitewashed Japanese war crimes committed during World War II. For example, the Nanjing Massacre is described as follows: "... many Chinese soldiers and civilians were killed or wounded by Japanese troops (the Nanjing Incident). Documentary evidence has raised doubts about the actual number of victims claimed by the incident. The debate continues even today." (p. 49).

On March 28, the Chinese *International Herald Leader* reported the case – inaccurately, as it turned out – in terms that directly implicated Japanese companies: "The right wing editors of the Japanese textbook receive funds from large companies such as Asahi Beer, Mitsubishi Heavy Industry, Isuzu Motor, Ajinomoto, Bank of Tokyo

Mitsubishi, Shimizu Construction, Chugai Pharmaceutical, Taisei Construction, and many others. The [retired CEO and advisor] to Asahi Beer, Takanori Nakajo, stated in a newsletter of the Society that if a politician does not visit the Yasukushi Shrine [commemorating Japanese WWII dead, including class A war criminals], he has no qualification to participate in national politics."[9] Following this report, on April 2 there was a demonstration in Chengdu, where some participants later vandalized Japanese supermarkets (Japanese National Diet Library 2005).[10] Large-scale demonstrations began on April 9 when thousands of college students gathered to protest in Beijing, the largest such assembly in that city since the Tian'An Men Square demonstrations. The demonstrations soon spread to many other Chinese cities. Across China, supermarkets started to pull Japanese products off the shelves; Japanese-owned supermarkets and restaurants were vandalized by protesters, as were billboards advertising Japanese goods and stores stocking Japanese-made products.[11]

On April 10, 2005, the Chinese government endorsed the Beijing demonstration as justified and legal. On the night of April 21, 2005, in an attempt to calm angry citizens, the government reversed course, emphasizing that unapproved demonstrations were illegal. Demonstrations diminished thereafter, with the final protests occurring on April 27. We use

[9] Although some former officials of these firms were listed as individual members of the Society, their former employers attested that the firms never financially supported the Society. See for example, *Nihon Keizai Shinbun*, April 9, 2005.

[10] From March 26 to April 4, there were other small-scale demonstrations in Guangzhou, Shenzhen, Zhengzhou, Shenyang, Ningbo, Ha'erbin, Chengdu, Qingdao, Changsha, Hefei, and other small cities, mainly in reaction to the UN Security Council issue.

[11] See *Wenhui Bao*, April 1, 2005 for a Chinese news report, "All the Chinese boycott Japanese products." *Nihon Keizai Shinbun* for Japanese reports, e.g., April 2, 2005, "Chinese stores remove Japanese products – Supermarkets: After reports on a Textbook," April 4, 2005 "Against inclusion in the UN Security Council – Anti-Japan demonstrations in several Chinese cities."

the window of *April 5 – 28* for our analysis, though we note that the impact of China exposure on Japanese firms is even larger if we extend the window back to the earliest Security Council protests in March 2005. It is crucial to include all trading days between April 5 and April 28 for two primary reasons. First, as long as demonstrations continued, we argue that there may have been an increasing sense among Japanese investors of long-term economic consequences of the conflict; second, we wish to avoid giving ourselves any discretion in picking a start or end date for the conflict. Right-wing demonstrations against China were also seen in Japan, but on a much smaller scale.

The second event we consider, the 2010 Senkaku Boat Collision incident, occurred on the morning of September 7, 2010 when a Chinese trawler, Minjinyu 5179, collided with Japanese Coast Guard patrol boats in disputed waters near the natural gas-rich Senkaku (Diaoyu in Chinese) Islands. The collision and Japan's subsequent detention of the captain triggered a major diplomatic dispute between China and Japan. 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 20, China detained four Japanese employees of the Fujita Corporation for allegedly filming military targets, and on September 22, Chinese premier Wen Jiabao threatened further action if the trawler captain was not released. Though denied by the Chinese government, it was reported that rare earth minerals exports to Japan were

halted.[12] 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, then spreading to many other cities. Protests continued through 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. Japan's government claimed that the fishing boat was intruding in Japanese waters and that the captain obstructed government officials' performance of public duty. 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 in total, with 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

[12] See, for example, "Amid Tension, China Blocks Crucial Exports to Japan," September 23, 2010, *The New York Times*.

offices (including domestic regions), and (3) by overseas sales, if sales in foreign markets exceed 10 percent 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 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 non-financial firms with information on sales and assets in China, and for the 2010 Senkaku Event, we have 920 non-financial firms in our sample. Other publicly listed firms were excluded because of non-disclosure of regional sales information, which could be either the result of a deliberate decision to avoid disclosing these 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 (2010). We only have trade data for the period of 2001 to 2004 (and indeed they are publicly available only until 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 potential for government intervention using industry-level SOE intensity. Our reasoning is that the sectors where SOEs dominate economic activity are those where 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.[13] 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 universe of firms operating in China.[14] 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[15]) to match this measure to our sample of Japanese listed firms.

In some specifications, we will assess whether the valuation of labor- or capital-intensive firms are more sensitive to China-Japan exposure. We obtain firm-level employment figures from *Yûka Shôken Hôkokusho* for Japanese companies; for Chinese firms, employment data come from RESSET, a Beijing-based data vendor in China.

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

[13] In a similar spirit, Bertrand, Kramarz, Schoar, and Thesmar (2008) also illustrate the impact of politics on firms' hiring decisions in France.
[14] Ideally we would use the 2009 data for the 2010 event study. Unfortunately, there was no industry census in China in 2009.
[15] Nikkei Industry Code closely follows the Japan Standard Industry Classification.

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.

We also 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, 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" while their "digital media and consumer goods" segment has sales of less than half of 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 websites 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," while other segments are listed as "games," "movies," "financial," and "others." Inspection of their website confirms that the majority of their products are for consumers, despite also manufacturing video cameras for professional broadcasting and filming (which are included in "electronics"). Thus Sony is classified as B2C. While this method admittedly has a subjective component, it allows for a more fine-grained – and accurate – assignment than any based on 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 1 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 (stock ID 600236) and Datong Gas (stock ID 000593). Guiguang Electricity mainly generates electricity for utility suppliers (B2B) while Datong Gas directly provides gas to households (B2C).

In the 79 cases that were indeterminate based on product categories, Chinese-speaking research assistants read companies' reports 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, while apparel is usually sold directly to consumers directly. 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 a firm-year variable, *Fraction_Indiv*, which is the ratio of individual ownership to total outstanding shares. This serves as a proxy for a share price's vulnerability to investor sentiment (see Lee, Shleifer, and Thaler 1991; De Long, Shleifer, Summers, and Waldmann 1990; Baker and Wurgler 2006; and Stambaugh, Yu, and Yuan 2012 for examples). 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.

Finally 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 three factor

model (Fama and French 1993) is used to calculate the abnormal event returns for both samples.[16]

We calculate the cumulative abnormal returns (henceforth CARs) over the period of 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 of March 26, April 28 and find similar results.

### 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 percent (Fama-French three factor model adjusted) on average during the 2005 Textbook Event, with a standard deviation of 5.8 percent; the Wilcoxon signed-rank test rejects the null hypothesis that the cumulative abnormal return is zero at the 1 percent level. Chinese listed firms dropped by about 3.8 percent during the same period, with a standard deviation of 12.2 percent; the Wilcoxon signed-rank test rejects the null hypothesis at the 1 percent level. During the 2010 Senkaku Event, Japanese firms experienced a cumulative abnormal return of -3.7 percent with a standard deviation of 11.2 percent (the Wilcoxon signed-rank test rejects the null hypothesis at the 1 percent level), while Chinese firms increased by 1.5 percent with a standard deviation of 13.7 percent.[17]

[16] We also use a simple market model (MacKinlay 1997) to calculate the abnormal event returns and obtain near-identical results.

[17] The discrepancy with the market returns reported in the introduction stem 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, while the figures in the introduction are based on raw market index returns.

Among Japanese listed firms, about 18 percent of our sample firms mainly sell products to consumers, while for Chinese listed firms, the figure is 38.8 percent.

In Tables 2A and 2B, we present industry-level characteristics for Japanese and Chinese firms respectively. Consumer-intensity measures reveal few surprises – in the Japan sample, Petroleum has a consumer-intensity of zero and Machinery is 0.027, while Foods and Drugs have consumer intensities of 0.76 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 distribution across industries. For example, in China 4.8 percent of publicly traded firms are in the "retail trade" industry, while 1.4 percent of Japanese companies are in this consumer-focused segment. By contrast, 8.3 percent of Japanese firms are in Wholesale Trade – a B2B segment – as compared with 1.1 percent in China. Some industries do differ in their consumer-intensity between the two samples. Most striking is real estate, where nearly all (95.2 percent) Chinese firms are consumer-focused as compared to 0 percent 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, while 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 while 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, sea and 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, 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 allow for industry fixed effects and control for firm size, performance, 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 window April 5 – 28, 2005:

$$CAR_Textbook_i = \alpha + \beta_1 \times Fraction_China_Sales_i + Controls_i + INDUSTRY_i + \varepsilon_i \qquad (1)$$

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, and leverage in 2004, and *INDUSTRY* is a set of dummy variables for Nikkei Industry Code (U.S. SIC 2-digit equivalent).

Table 3, column (1) presents the basic specification with log(*Total Assets*) as the only control. The coefficient on *Fraction_China_Sales* is negative and significant at the 1

percent 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 percent. 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.[18] Using assets as a measure of China exposure in column (4) implies essentially the same level of impact (while 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.[19] 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

[18] In unreported results, we also included the fraction of sales to the United States as a control; its coefficient was not significant and it similarly had no effect on our estimates of the coefficients of interests

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

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 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 – the 75$^{th}$ percentile of *Fraction_Japan_Exports* is zero, as compared to 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 percent 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, clustering standard errors at the firm-level and including 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 non-zero exports. In column (8) we limit the sample only to observations where *Fraction_Japan_Exports* > 0. The coefficient on *Fraction_Japan_Exports* is somewhat larger than in the full sample case and significant at the 10 percent level. (In results not shown, we find that an indicator variable for non-zero 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 tensions. We would not, therefore, expect a significant pre-event relationship, nor would we expect any trend following each window. To examine graphically the pre- and post-event patterns in the data, we present in Figures 1 (a) – (b) 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 where 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 (a), reflecting that tensions that were already on the rise as a result of the announced proposal that Japan be given a permanent seat at U.N. 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 Event, the decline continues beyond the event period, while we see no such pattern for the Senkaku Event.

Turning to Chinese firms, we repeat the graphing exercise in Figures 1 (c) – (d), showing the coefficients on *Fraction_Japan_Exports* in regressions on cumulative abnormal returns. As in Figure 1(a), 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.

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 U.N. Security Council announcement that was also the source of tensions between the two countries.

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 tensions 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 hold-up. While our data do not allow us to provide dispositive proof on the underlying mechanisms, our analysis provides suggestive evidence that firms in China and Japan are affected by interstate tensions for very different reasons.

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 able – to impact the profits of Japanese companies selling in China via competition, product embargoes, and trade policies. Finally, we include the interaction of *Fraction_China_Sales* with log(*Assets*) and log(*Employment*) to capture the distinction between labor- and capital-intensive production. We present all results for both events pooled together, and as before include Industry × Year fixed effects as well as *Fraction_China_Sales* × *Year2010* as a control.[20]

In columns (1) and (2), we include the interaction terms *SOE_Intensity* and *Consumer_Intensity* separately, while in column (3) we include interactions for log(*Assets*) and log(*Employment*), and we include all interaction terms simultaneously in column (4). The coefficient on *Fraction_China_Sales* × *SOE_Intensity* is negative and significant at the 1 percent level. To provide a sense of its magnitude, consider two industries where a reasonably high fraction of Japanese companies have non-zero 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 percent for Drug companies (0.1 × 0.06 × 109.8), versus 2.85 percent 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 percent

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

confidence level that the coefficient is less than 12.3 (i.e., 2.87 + 7.75 × 1.96). In column (3), we observe a positive and significant (at the 10 percent level) coefficient on *Fraction_China_Sales* × log(*Employment*), indicating a muted market responsiveness for high-employment firms. The interaction term for log(*Assets*) is very close to zero, with a standard error comparable to that of the log(*Employment*) interaction. In the final column we include all interaction terms simultaneously. The *SOE_Intensity* interaction term is still significant at the 5 percent level, while that on log(*Employment*) is no longer significant at conventional levels (*p*-value = 0.13).

We present a comparable set of specifications for Chinese firms in Table 6. (Chinese firms engage in virtually no offshoring to Japan, so we do not consider the effects of labor- versus capital-intensity of production.[21]) The broad patterns are the opposite of those we observe for Japanese companies. 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.[22] In column (2), we find that 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).

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

[22] We also used a proxy for government intervention based on trade barriers, which similarly yielded no significant results.

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 where 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, we provide suggestive evidence consistent with the view that government intervention is the main mechanism through which Japanese companies are affected, while consumer response plays 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.[23]

We have assumed thus far that investors' responses reflect beliefs about firms' future profitability. But our main findings could also be the result of investor sentiment in the form of either overreaction (Daniel, Hirshleifer, and Subrahmanyam 1998; Daniel, Hirshleifer, and Teoh 2002; Hirshleifer 2001) or shifts in preferences over asset allocation (Bikhchandani, Hirshleifer, and Welch 1992). We follow the behavioral finance literature (Lee, Shleifer, and Thaler 1991; De Long, Shleifer, Summers, and Waldmann 1990; 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

[23] One further concern is that our findings may reflect anticipation of embargos in industries engaged in military-related production. However, we discovered – in hindsight 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.

sentiment-based trading than institutional investors.[24] We thus augment Equation (1) with the term *Fraction_Indiv* × *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 7, 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* is only about 0.01 for Japanese firms – and indeed the 90$^{th}$ 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 percent in columns (2) – (5) which replace *Fraction_Indiv* with indicator variables denoting that a firm has individual ownership greater than *p* percent, I(*Fraction_Indiv* ≥ *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* × *Fraction_China_Sales* is included as a control in those specifications, our earlier results are virtually unchanged.

[24] 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, Shleifer, Summers, and Waldmann, 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.

We report analogous results for Chinese firms in Appendix Table 1. In contrast to Japanese firms, individual share ownership is ubiquitous in China, so *Fraction_Indiv* 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, while our findings on sentiment emphasize the role of individual investors.

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 tensions with China. In the next section, we take up the concerns of whether our results more generally reflect investor overreaction to the fraying of Sino-Japanese relations.

## 3. Robustness checks

### 3.1 Short-term overreaction?

If investors overreact in the short run, we would expect that stock prices would gradually revert for affected firms following our event windows. The graphs in Figure 1 indicate that, overall, this is unlikely to be the case, but 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 end date is the last date we included in our CARs calculations above. The overreaction hypothesis would predict that the China sales ratio (and Japanese export ratio) should *positively* affect

these post-event CARs. We do not observe any such pattern in the data (all results for extended windows available on request). Second, we extend our event window to incorporate an extra 30 or 60 trading days after the day we identified as the end date. The overreaction hypothesis would predict that the China sales ratio (and Japanese export ratio) 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* × *Fraction_China_Sales* (and *Fraction_Indiv* × *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* × *Fraction_China_Sales* falls by about half and is no longer significant. We view this as likely the result of increased noise from using the longer window.

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 effects 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:

$$ROA_{iy+1} = \beta_1 \times Fraction_China_Sales_{iy} + \beta_2 \times Fraction_China_Sales_{iy} \times I(y \geq 2005) + Controls_{iy} + \delta_i + \eta_y + \varepsilon_{iy} \quad (2)$$

where ROA is defined as (net income)/(total assets), I($y \geq 2005$) is an indicator variable that is equal to 1 for years after 2005, and $\delta_i$ and $\eta_y$ are firm and year fixed effect. 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 8A, we show the results for Japanese firms. Return on assets decline significantly following the Textbook Event, a result that persists when we allow for the interaction term log(*Assets*) × I($y \geq 2005$), to account for the possibility that the size-profit relationship is changing over time. In Table 8B, 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 8b).We should note that this test provides complementary evidence to our event study: Such a test cannot cleanly identify the effect of interstate tensions on firm value given the many shocks that took place during this period, which may also affect firms' profits.

### 3.3 A China (Japan) effect?

Throughout, we employ abnormal returns as our dependent variable, which helps 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, 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. In Table 9, Panels A and B, we present results for other shocks to equity values as placebo tests to further explore whether this might account for the patterns we observe. For both countries, we show the relationship between exposure to Sino-Japanese relations and returns on September 11, 2001, and also during the earthquakes that struck Niigata, Japan in 2007 and Sichuan, China in 2008. In none of these cases are returns correlated with Sino-Japanese exposure as proxied by *Fraction_China_Sales* and *Fraction_Japan_Exports.*[25]

## 4. Conclusion

In this paper we study the impact of interstate tensions on economic exchange, by examining the impact of two major negative shocks to Sino-Japanese 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 tensions on economic relations, and also the first to attempt to examine the channels through which firms are affected.

[25] If the exchange rate between China and Japan were to change unexpectedly during our sample period, this may also affect firms in both countries. However, this represents an asymmetric shock to firms in the two countries, and hence cannot account for the negative response in both countries. That is, if the Japanese yen appreciated unexpectedly against Chinese yuan, it would imply a negative shock to Japanese exporters and a positive shock to Chinese ones. The converse would be true if the Yuan experienced a sudden appreciation.

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 the primary mechanism underlying this adverse reaction is different for the two countries – government intervention for Japanese firms vulnerable to China trade, and consumer response 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 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 tensions on firm value, since 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 while 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 tensions.

While we focus in this paper on China and Japan, our approach may clearly be 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 Table 1: Investor sentiment and stock returns: Chinese firms

| | (1) | (2) |
|---|---|---|
| | 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 | -50.369 | -77.079 |
| | (226.746) | (246.043) |
| Fraction_Indiv | 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) |
| Number of Observations | 2,059 | 2,059 |
| Adjusted R-squared | 0.175 | 0.176 |

Notes: 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 (Sept 7, 2010 to Oct 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* is the ratio of individual ownership to total outstanding shares; *Consumer_Intensity* is a dummy variable denoting firms mainly producing consumer-oriented products; *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. Robust standard errors are in parentheses, clustered at the firm level. Disturbance terms are clustered by firm. *, **, and *** indicate significance at the 10%; 5%; and 1% level, respectively.

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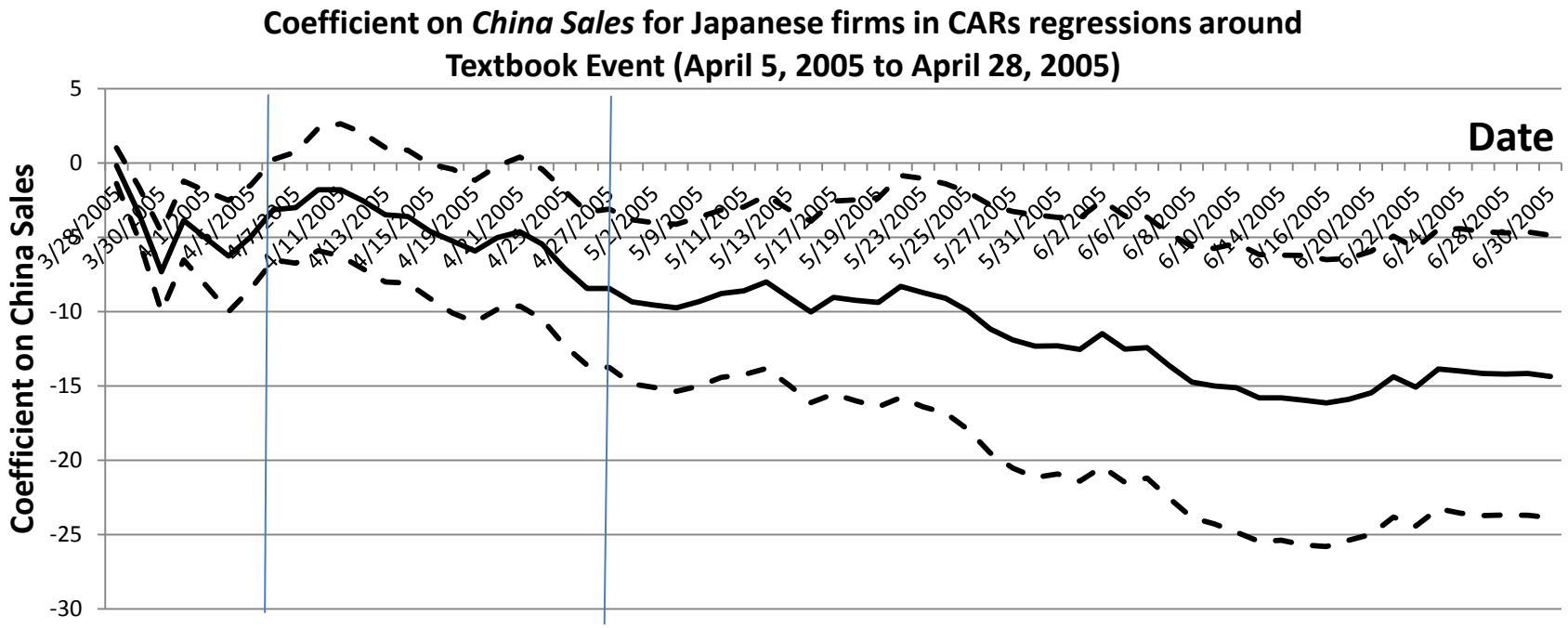
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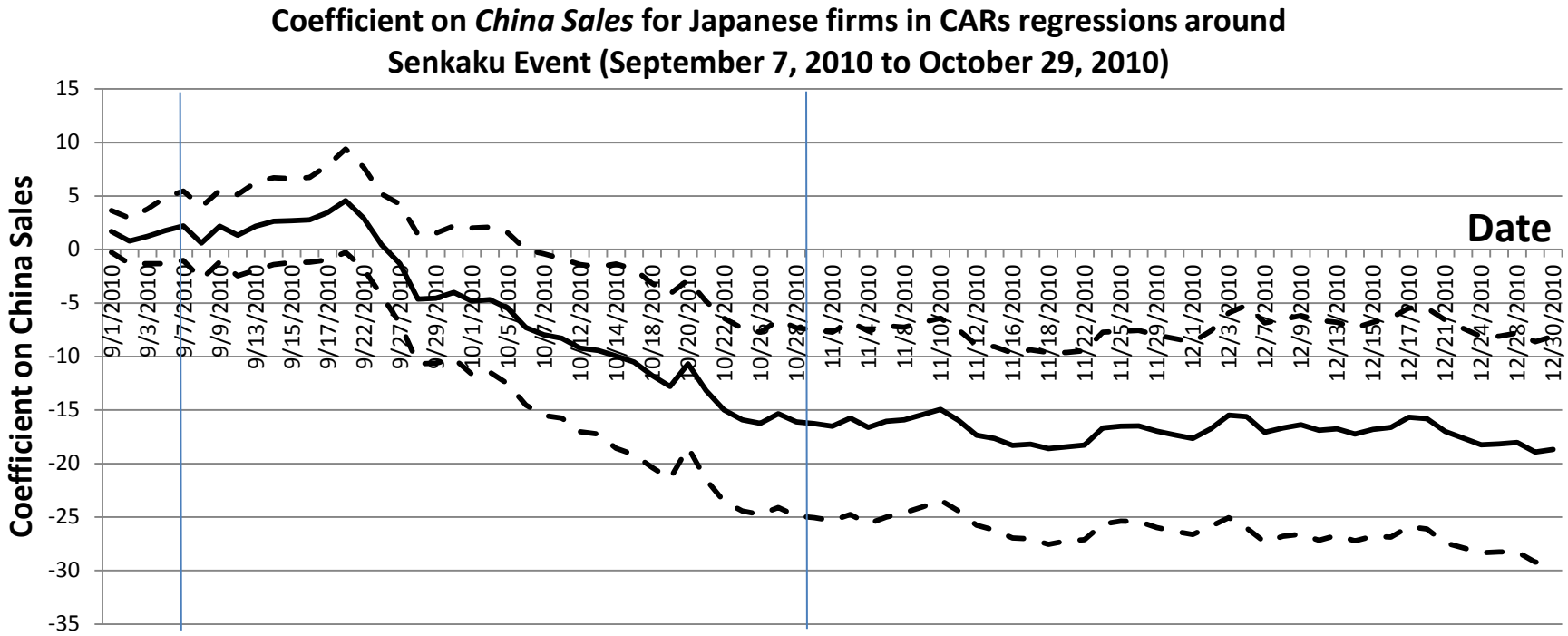
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**Figure 1-a: Japanese firms in 2005**



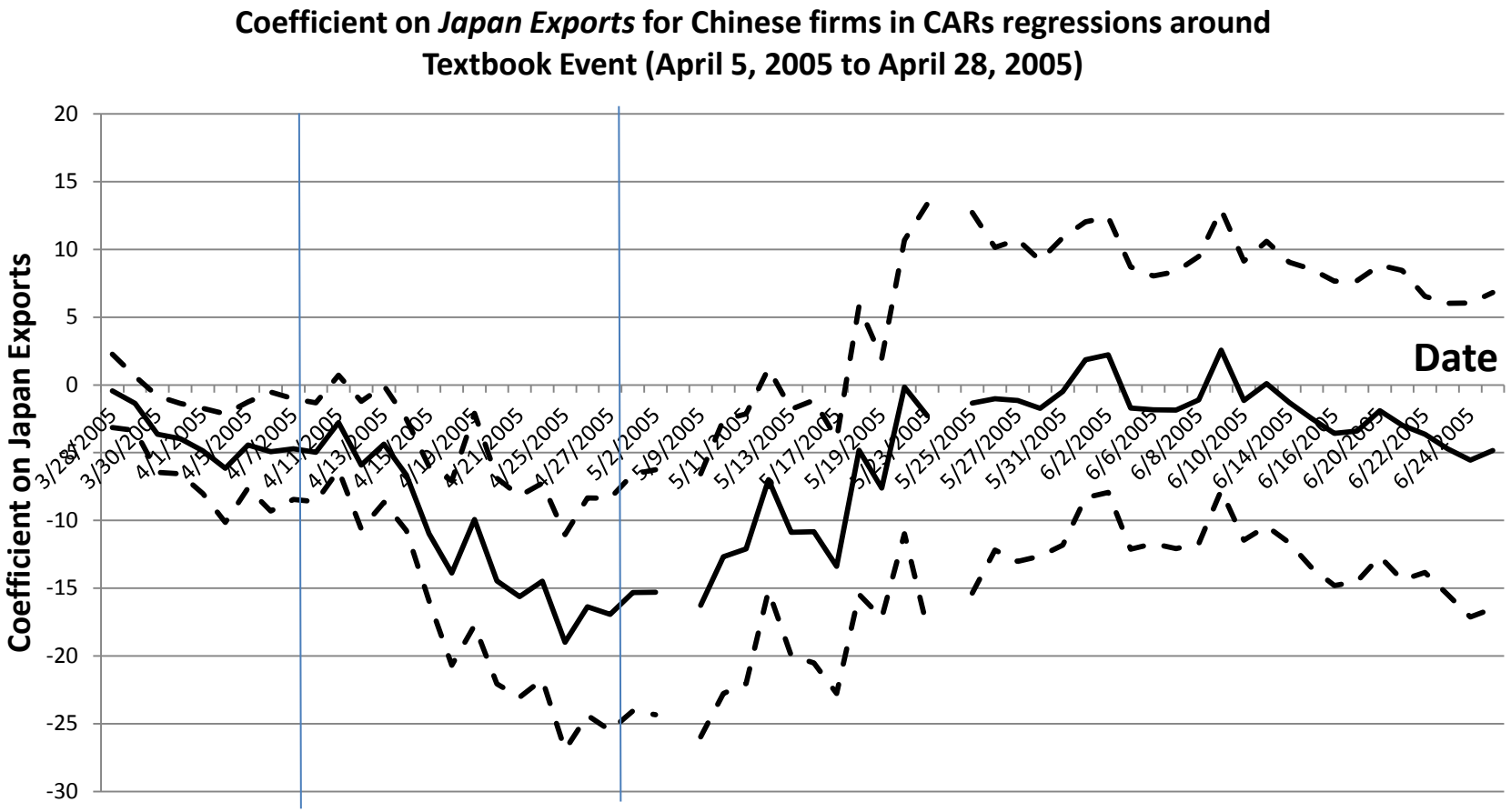

Notes: Solid line shows the coefficients on *Fraction_China_Sales* from Equation $CAR_Textbook_i = \alpha + \beta_1 \times Fraction_China_Sales_i + Controls_i + INDUSTRY_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event, and continuing to 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]. Broken lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

**Figure 1-b: Japanese firms in 2010**



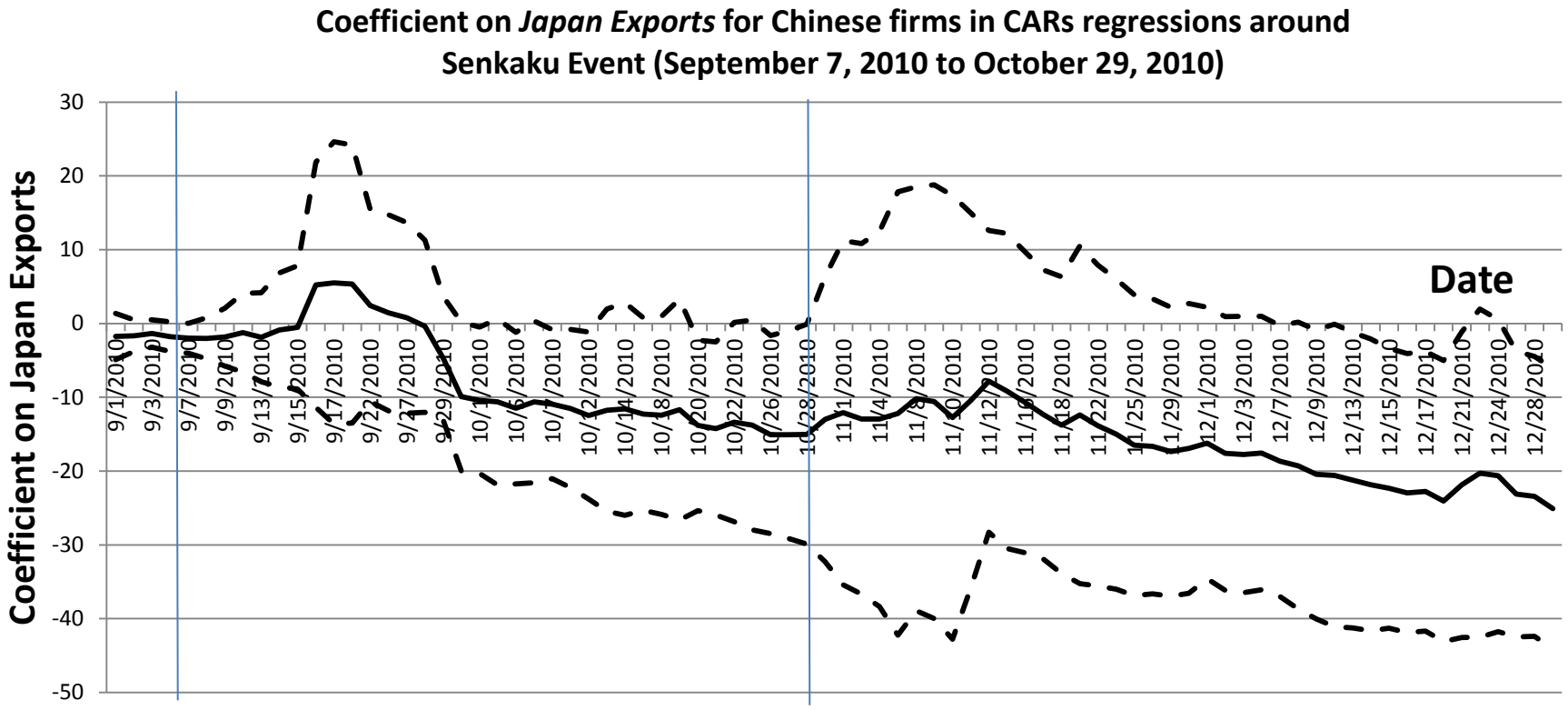

Notes: Solid line shows the coefficients on *Fraction_China_Sales* from Equation $CAR_Senkaku_i = \alpha + \beta_1 \times Fraction_China_Sales_i + Controls_i + INDUSTRY_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event, and continuing to 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]. Broken lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

**Figure 1-c: Chinese firms in 2005**




Notes: Solid line shows the coefficients on *Fraction_Japan_Exports* from Equation $CAR_Textbook_i = \alpha + \beta_1 \times Fraction_Japan_Exports_i + Controls_i + INDUSTRY_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event, and continuing to 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]. Broken lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

**Figure 1-d: Chinese firms in 2010**




Notes: Solid line shows the coefficients on *Fraction_Japan_Exports* from Equation $CAR_Senkaku_i = \alpha + \beta_1 \times Fraction_Japan_Exports_i + Controls_i + INDUSTRY_i + \varepsilon_i$, utilizing event windows that begin a week prior to the date we have set as the start of each event, and continuing to 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]. Broken lines show [0.05, 0.95] confidence intervals around the coefficient estimates.

## 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 |
| Log(1+Tobin's Q) | 0.940 | 0.873 | 0.411 | 807 |
| Log(Employees) | 7.577 | 7.559 | 1.531 | 814 |
| Leverage | 0.472 | 0.469 | 0.207 | 834 |
| CAR_Textbook (%) | -5.816 | -6.356 | 5.813 | 810 |
| Fraction_Indiv | 0.010 | 0.000 | 0.050 | 846 |
| 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 |
| Log(1+Tobin's Q) | 0.700 | 0.647 | 0.324 | 886 |
| Log(Employees) | 7.768 | 7.743 | 1.564 | 890 |
| Leverage | 0.459 | 0.452 | 0.239 | 894 |
| CAR_Senkaku (%) | -3.689 | -3.622 | 11.169 | 905 |
| Fraction_Indiv | 0.012 | 0.000 | 0.051 | 895 |
| Consumer_Intensity | 0.179 | 0.000 | 0.384 | 920 |

**Panel B: Chinese firms**

| Variable | Mean | Median | SD | Obs |
|---|---|---|---|---|
| **Event Year: 2005 - Chinese listed firms** | | | | |
| TotalAssets (Million RMB ¥) | 5,080 | 1,430 | 32,800 | 1058 |
| (Million U.S. $ | 762 | 214 | 4,919 | ) |
| Fraction_Japan_Exports | 0.003 | 0.000 | 0.033 | 1058 |
| Fraction_Others_Exports | 0.0268 | 0.000 | 0.099 | 1058 |
| Drugs_and_Food | 0.134 | 0.000 | 0.341 | 1058 |
| Log(1+Tobin's Q) | 0.942 | 0.882 | 0.238 | 1037 |
| Leverage | 0.540 | 0.503 | 0.606 | 1058 |
| CAR_Textbook (%) | -3.833 | -3.941 | 12.188 | 1058 |
| Consumer_Intensity | 0.388 | 0.000 | 0.488 | 1058 |
| **Event Year: 2010 - Chinese listed firms** | | | | |
| TotalAssets (Million RMB ¥) | 14,000 | 2,490 | 104,000 | 1025 |
| (Million U.S. $ | 1,692 | 301 | 12,566 | ) |
| Fraction_Japan_Exports | 0.003 | 0.000 | 0.033 | 1025 |
| Fraction_Others_Exports | 0.027 | 0.000 | 0.100 | 1025 |
| Drugs_and_Food | 0.134 | 0.000 | 0.340 | 1024 |
| Log(1+Tobin's Q) | 1.327 | 1.207 | 0.572 | 1024 |
| Leverage | 0.815 | 0.546 | 4.752 | 1024 |
| CAR_Senkaku (%) | 1.485 | -0.098 | 13.710 | 1024 |
| Consumer_Intensity | 0.392 | 0.000 | 0.488 | 1024 |

Notes*: TotalAssets* is total assets of the listed firm; *TotalSales* 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; *Export_To_JPN* 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, equal to 1 for Chinese firms in Foods, Drugs, or Agriculture; *Log(Employees)* is the log value of total employees; *Leverage* is the ratio of total liabilities to total assets; *Log(1+Tobin's Q)* is the log value of one plus Tobin's Q; *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; *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 and all cumulative abnormal returns are Winsorized at 1%. Exchange rates are as of March 1. 2005 and October 1, 2010.

**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 & 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 & Glass Products | 0.0895 | 3100 | 0.0500 | 2.27 |
| 17 | Iron& Steel | 0.1413 | 3200 | 0.0000 | 1.42 |
| 19 | Nonferrous Metal & Metal Products | 0.1200 | 3300 | 0.0398 | 4.25 |
| 21 | Machinery | 0.0815 | 3500 | 0.0265 | 12.80 |
| 23 | Electric & Electronic Equipment | 0.0813 | 3900 | 0.1432 | 21.35 |
| 25 | Shipbuilding & Repairing | 0.0918 | 3700 | 0.0000 | 0.23 |
| 27 | Motor Vehicles& AutoParts | 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 & 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 & 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 |

Notes: 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, equal to 1 if the firm mainly produces consumer-oriented products, and we use its average value in 2004. Figures for 2008 (unreported) are similar.

## 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 non-metal | 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 |

Notes: 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 equal to 1 if the firm mainly produces consumer-oriented products.

## Table 3: Regressions of abnormal event returns on China Sales Ratio/China Assets Ratio: Japanese firms

| | CAR_ Textbook (1) | CAR_ Textbook (2) | CAR_ Textbook (3) | CAR_ Textbook (4) | CAR_ Senkaku (5) | CAR_ Senkaku (6) | CAR_ Senkaku (7) | CAR_ Senkaku (8) | CAR_ Pooled (9) | CAR_ Pooled (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| 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(Total Assets) | -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 Effects | | | Yes | Yes | | | Yes | Yes | Industry × Year | |
| Number of Observations | 810 | 804 | 800 | 800 | 905 | 882 | 878 | 878 | 1,678 | 1,678 |
| R-squared | 0.012 | 0.044 | 0.085 | 0.079 | 0.027 | 0.027 | 0.048 | 0.058 | 0.062 | 0.070 |

Notes: *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 our sample; *Leverage* is the ratio of total liabilities to total assets; *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). *CAR_Pooled* is equal to *CAR_Textbook* if year = 2005, and *CAR_Senkaku* if year = 2010. 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. Robust standard errors are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Pooled regressions are clustered at the firm level.

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

| | CAR_ Textbook (1) | CAR_ Textbook (2) | CAR_ Textbook (3) | CAR_ Senkaku (4) | CAR_ Senkaku (5) | CAR_ Senkaku (6) | CAR_ Pooled (7) | CAR_ Pooled (8) |
|---|---|---|---|---|---|---|---|---|
| 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(Assets) | | 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 |
| Industry Effects | | | Yes | | | Yes | Industry × Year | |
| Number of Observations | 1,058 | 1,058 | 1,036 | 1,024 | 1,023 | 1,023 | 2,059 | 254 |
| R-squared | -0.000 | 0.133 | 0.141 | -0.000 | 0.162 | 0.162 | 0.095 | 0.034 |

Notes: *CAR_Textbook* is the cumulative abnormal return of the Chinese listed firm during the Textbook Event (April 5, 2005 to April 28, 2005) and *CAR_Senkaku* is the cumulative abnormal return of the Chinese listed firms during the Senkaku Event (September 7, 2010 to October 29, 2010). *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; *Leverage* is the ratio of total liabilities to total assets. In column (8), we restrict our sample to firms that have non-zero export to Japan. 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. Robust standard errors are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at the firm-level in the pooled regressions.

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

| | Dependent Variable: CAR_Pooled | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Fraction_China_Sales | 7.742 | -6.862*** | -54.554** | -41.953* |
| | (5.462) | (2.355) | (23.476) | (23.014) |
| Fraction_China_Sales × SOE_Intensity | -109.841*** | | | -84.661** |
| | (37.692) | | | (35.559) |
| SOE_Intensity | -3.953 | | | -7.749 |
| | (14.287) | | | (15.029) |
| Fraction_China_Sales × Consumer_Intensity | | 2.873 | | 1.189 |
| | | (7.747) | | (8.128) |
| Consumer_Intensity | | 0.313 | | 0.685 |
| | | (0.907) | | (0.977) |
| Fraction_China_Sales × Log(Total Assets) | | | 0.433 | 1.365 |
| | | | (3.330) | (3.137) |
| Fraction_China_Sales × Log(Employees) | | | 5.594* | 4.174 |
| | | | (3.018) | (2.946) |
| Log(Employees) | | | -0.828 | -0.829 |
| | | | (0.538) | (0.542) |
| Fraction_Others_Sales | 0.990 | 0.444 | -0.027 | 0.363 |
| | (1.858) | (1.835) | (1.772) | (1.833) |
| Log(Total Assets) | -0.132 | -0.150 | 0.212 | 0.194 |
| | (0.169) | (0.174) | (0.501) | (0.492) |
| Log(1+Tobin's Q) | -2.560*** | -2.629*** | -2.892*** | -2.842*** |
| | (0.803) | (0.813) | (0.815) | (0.824) |
| Leverage | -1.596 | -1.546 | -0.974 | -0.951 |
| | (1.346) | (1.340) | (1.339) | (1.347) |
| Fraction_China_Sales × Y2010 | -19.922*** | -15.726*** | -14.110*** | -17.539*** |
| | (5.020) | (5.061) | (5.019) | (4.972) |
| Constant | 1.002 | 0.856 | 3.140 | 3.925 |
| | (2.499) | (2.011) | (2.662) | (3.161) |
| Sample | Pooled | | | |
| Fixed Effects | Industry × Year | | | |
| Number of Observations | 1,670 | 1,678 | 1,621 | 1,613 |
| R-squared | 0.066 | 0.061 | 0.068 | 0.069 |

Notes: 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); *SOE_Intensity* is the ratio of total sales by state-owned firms to total sales in each industry in China; *Consumer_Intensity* is a dummy variable denoting firms mainly producing consumer-oriented products; *Log(Employees)* is the log value of total employees; *Fraction_China_Sales* is the ratio of sales in China to total sales for each Japanese firm; *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; *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. Robust standard errors are in parentheses, clustered at the firm level. Disturbance terms are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

**Table 6: Identifying the mechanisms (Chinese firms): Government Intervention or consumer sentiment?**

| | Dependent Variable: CAR_Pooled | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| 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(Total Assets) | 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) |
| Sample | Pooled | | |
| Fixed Effects | Industry × Year | | |
| Number of Observations | 2,059 | 2,059 | 2,059 |
| R-squared | 0.177 | 0.176 | 0.177 |

Notes: 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_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; *Consumer_Intensity* is a dummy variable denoting firms mainly producing consumer-oriented products; *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. Robust standard errors are in parentheses, clustered at the firm level. Disturbance terms are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

## Table 7: Investor sentiment and stock returns: Japanese firms

| | (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 | -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(Total Assets) | -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 > 1) | | -35.265*** | | | |
| | | (8.160) | | | |
| I(Fraction_indiv > 1) | | 0.243 | | | |
| | | (1.715) | | | |
| Fraction_China_Sales × I(Fraction_indiv > 5) | | | -36.094*** | | |
| | | | (8.150) | | |
| I(Fraction_indiv > 5) | | | 1.046 | | |
| | | | (1.806) | | |
| Fraction_China_Sales × I(Fraction_indiv > 10) | | | | -36.805*** | |
| | | | | (8.307) | |
| I(Fraction_indiv > 10) | | | | 2.138 | |
| | | | | (2.027) | |
| Fraction_China_Sales × I(Fraction_indiv > 20) | | | | | -35.090*** |
| | | | | | (8.617) |

## Table 7: Investor sentiment and stock returns: Japanese firms (continued)

| | | | | | |
|---|---|---|---|---|---|
| I(Fraction_indiv > 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 |

Notes: 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* is the ratio of individual ownership to all outstanding shares; *I(Fraction_indiv > p)* is an indicator variable that is equal to 1 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 our sample; *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. Robust standard errors are in parentheses, clustered at the firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

**Table 8A: The Long-term Effect on Profits: Japanese Firms**

| | (1) ROA(t+1) | (2) ROA(t+1) |
|---|---|---|
| I(year ≥ 2005) × Fraction_China_Sales | -0.048*** | -0.041** |
| | (0.018) | (0.018) |
| Log(Assets) | -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(Assets) | | 0.003*** |
| | | (0.001) |
| Constant | 0.446*** | 0.476*** |
| | (0.102) | (0.100) |
| Time Period | 2002 ─ 2008 | |
| Fixed Effects | Firm & Year | Firm & Year |
| Number of Observations | 5,584 | 5,584 |
| Adjusted R-squared | 0.489 | 0.490 |

Notes: Dependent variable is *ROA* in year t+1. *Fraction_China_Sales* is the ratio of sales in China to total sales of the Japanese firms; *I(year ≥ 2005)* is an indicator variable that is equal to 1 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.

**Table 8B: The Long-term Effect on profits: Chinese Firms**

| | (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(Assets) | | -0.008*** |
| | | (0.003) |
| Constant | 0.835*** | 0.663*** |
| | (0.133) | (0.149) |
| Time Period | 2002 ─ 2008 | |
| Fixed Effects | Firm & Year | Firm & Year |
| Number of Observations | 5,331 | 5,331 |
| Adjusted R-squared | 0.313 | 0.315 |

Notes: 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 1 for years after 2005. In all regressions, we control for firm leverage. Robust standard errors are clustered at the firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

**Table 9A: Regressions of abnormal event returns on China sales ratio: Placebo tests on Japanese firms**

| | CAR_911 (1) | CAR_SichuanEearthquake (2) |
|---|---|---|
| Fraction_China_Sales | 0.789 | -2.551 |
| | (2.188) | (1.816) |
| Fraction_Others_Sales | -0.286 | -1.192 |
| | (1.813) | (1.445) |
| Log(Total Assets) | 0.628*** | -0.141 |
| | (0.151) | (0.121) |
| Log(1+Tobin's Q) | 0.827 | 0.473 |
| | (0.516) | (0.831) |
| Leverage | -0.694 | 1.545** |
| | (0.811) | (0.762) |
| Constant | -11.234*** | 0.294 |
| | (1.613) | (1.245) |
| Industry Effect | Yes | Yes |
| Number of Observations | 678 | 943 |
| R-squared | 0.116 | 0.013 |

Notes: *Fraction_China_Sales* is the ratio of sales in China to total sales of the Japanese firm; *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; *CAR_911* is the cumulative abnormal return during the 9/11 event (September 11, 2001 to September 13, 2001); *CAR_SichuanEarthquake* is the cumulative abnormal return during the earthquake in Sichuan in China (May 9, 2008 to May 14, 2008). 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. Robust standard errors are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

**Table 9B: Regressions of abnormal event returns on export to Japan: Placebo tests on Chinese firms**

| | CAR_911 (1) | CAR_NiigataEarthquake (2) |
|---|---|---|
| Fraction_Japan_Exports | 10.522 | 5.156 |
| | (12.568) | (6.653) |
| Fraction_Others_Exports | -0.020 | 0.037 |
| | (0.214) | (0.056) |
| Log(Total Assets) | -0.075 | -0.305** |
| | (0.139) | (0.127) |
| Log(1+Tobin's Q) | -0.166 | -1.419*** |
| | (0.337) | (0.496) |
| Leverage | -2.470*** | 0.954*** |
| | (0.470) | (0.328) |
| Constant | 3.046 | 7.251** |
| | (3.341) | (2.914) |
| Industry Effect | Yes | Yes |
| Number of Observations | 919 | 1,184 |
| R-squared | 0.104 | 0.080 |

Notes: *Fraction_Japan_Exports* is the ratio of total exports to Japan to total sales of the Chinese firm; we use 2000 export data in Column (1) and 2004 export data in Columns (2) and (3); *Fraction_Others_Exports* is the ratio of exports to all foreign countries other than Japan to total sales, for the sample of Chinese firms; *CAR_911* is the cumulative abnormal return during the 9/11 event (September 11, 2001 to September 13, 2001); *CAR_NiigataEarthquake* is the cumulative abnormal return during the Niigata earthquake event (July 17, 2007 to July 19, 2007). Fixed effects are at the 2-digit SIC level. In all cases, abnormal return is estimated using a standard Fama-French three-factor model. Robust standard errors are in parentheses. *, **, and *** indicate significance at the 10%; 5%; and 1% level, respectively.