Firm Expectations and Investment: Evidence from the China-Japan Island Dispute*

Cheng Chen Tatsuro Senga Chang Sun Hongyong Zhang†

Feb, 2022

Abstract

How do firm expectations affect their economic decisions? We provide evidence using a novel dataset on Japanese multinational firms' sales forecasts and exploring an unexpected escalation of a territorial dispute between China and Japan in 2012. The empirical analysis shows that after the escalation of the dispute, affiliates of Japanese multinational firms in China experienced a protracted decline in sales and investment, which had not recovered until the end of this study (2015Q1). We further document a similar drop in firms' sales forecasts and that firms under-predicted sales in 2013 and 2014. Finally, we estimate the effect of firm expectations on investment, and a back-of-envelope calculation shows that the under-forecasting of sales can explain 20 to 60 percent of the decline in investment.

JEL: E22, E32, D84, F51.

Keywords: investment; expectations; forecasts; geopolitical events.

*This research was conducted as a part of the Project "Data Management" at the Research Institute of Economy, Trade and Industry (RIETI). We thank the Ministry of Economy, Trade and Industry (METI) for providing the micro-data of the Basic Survey on Overseas Business Activities. We are grateful to Pol Antràs, Christoph Boehm, Nick Bloom, Steven Davis, Taiji Furusawa, Tomohiko Inui, Jota Ishikawa, Arata Ito, Keiko Ito, Zhiyuan Li, Changyuan Luo, Yulei Luo, Masayuki Morikawa, Liugang Sheng, Zhigang Tao, Yasuyuki Todo, Makoto Yano, Zhihong Yu, Lianming Zhu and seminar participants at APTS, CUHK, Fudan, RIETI, SED, Stanford, Purdue (Midwest trade conference) and Waseda for their helpful comments. Financial support from the University of Hong Kong, Hong Kong General Research Fund (project code: 17507916), JSPS Grants-in-Aid (17H02531) and RIETI is greatly appreciated.

†Chen: University of Hong Kong, ccfour@hku.hk. Senga: Queen Mary University of London, ESCoE, and RIETI, t.senga@qmul.ac.uk. Sun: University of Hong Kong, sunc@hku.hk. Zhang: RIETI, zhang-hong-yong@rieti.go.jp.

1 Introduction

Firms make dynamic decisions based on their expectations about future demand and supply conditions. Unexpected shocks not only affects firms' performance but also expectations. A burgeoning literature investigates how economic agents form expectations and how these expectations evolve over the business cycle.[1] However, there is little evidence on how these expectations affect firms' economic decisions, such as investment, hiring and price setting. In this paper, we study the impact of expectation on investment using a novel dataset of Japanese multinational firms' sales forecasts in the context of an unexpected shock caused by a territorial dispute between China and Japan.

There are two main challenges to identifying the impact of expectations on investment. First, such an analysis requires panel data on firms' expectations as well as investment. Second, simply regressing investment on expectations is subject to the omitted-variable bias – unobserved factors that affect investment, such as investment prices and efficiency, may be correlated with expectations. We address both challenges by using a unique panel dataset on Japanese multinational firms' sales forecasts and investment and exploiting an unexpected escalation of a territorial dispute between China and Japan in 2012.

China and Japan experienced an escalation of a serious territorial dispute in the third quarter of 2012. The two countries have been disputing over the sovereignty of the uninhabited Senkaku/Diaoyu Islands for years. In August 2012, the Japanese government announced its consideration of purchasing the islands from the private owner in Japan, which triggered anger in China and led to a first wave of anti-Japanese protests in August and a second wave of protests in more than 180 Chinese cities in September. It was reported that the sudden escalation (henceforth, "Island Crisis") negatively impacted Japanese multinational firms' operation in China as well as their expectations about future sales (Teikoku Data Bank (2012)). Using affiliates in other countries as a control group, we estimate the causal impact of the Island Crisis on firms' expectations and investment.

We document two main facts regarding the impact of the Island Crisis using difference-in-differences (DID) strategies. First, sales and investment of Japanese affiliates in China dropped in the fiscal year of 2012, but the declines were even larger

[1] See Coibion and Gorodnichenko (2012), Coibion and Gorodnichenko (2015), Bachmann et al. (2013), Bachmann and Elstner (2015), Bachmann et al. (2017).

in 2013 and 2014, two and a half years after the Island Crisis.[2] Second, we find that this shock not only induced firms to make lower sales forecasts, it also leads them to under-forecast their sales in 2013 and 2014.

Finally, we estimate the impact of expectation on investment and conduct a back-of-envelope calculation: how much more would firms have invested had they not under-forecasted their sales? Given we have estimated the total impact of the Island Crisis on investment and forecast errors, the only extra ingredient we need is the elasticity of investment with respect to expectations. To deal with unobserved factors that affect investment and are correlated with expectations, we use the Island Crisis as an instrumental variable (IV) to estimate this elasticity. The identification assumption is that the Island Crisis affects firms' investment only through changes in expectations, i.e., the shock does not affect other factors such as investment prices and efficiency. We obtained an elasticity close to one, which implies that around 30 to 60 percent of the total decline in investment in 2012 and 2013 can be attributed to under-forecasting. We also present results with the smaller and more conservative OLS elasticity, which suggests under-forecasting explains about 20 - 27% of the decline.

Our paper contributes to a recent literature that uses survey data on expectations. Since datasets that contain forecasts and actions by economic agents are rare, there is a lack of empirical evidence on how expectations are formed and how they affect behavior of agents, as pointed out by Bachmann and Elstner (2015) and Coibion et al. (2017). In a recent study, Tanaka et al. (2018) combine a survey of Japanese firms' GDP forecasts with accounting data to evaluate firms' forecasting ability and its impact on firm performance. We are among the first to use a large firm-level panel dataset that contains realized and forecasted firm sales across periods to show that expectations affect firms' economic decisions such as investment.

Our paper is also related to a large literature on determinants of investment.[3] A key issue in the empirical literature is the treatment of expectations about the return to capital (e.g. Tobin's q). Since researchers usually do not observe such expectations, the literature uses stock prices to proxy them. While a theory suggests strong explanatory power, however, stock market proxies of Tobin's q do not explain investment well. Instead of using noisy stock price data, we use firms' expectation data directly to

[2]The fiscal year in Japan starts on April 1st and ends on March 31st of the next calendar year.

[3]See Hayashi (1982), Fazzari et al. (1988), Barro (1990), **?**, Abel and Eberly (1996), and Cummins et al. (2006), among many others. See Chirinko (1993) and Caballero (1999) for a comprehemsive review.

estimate the effect of expectations on investment. This is similar to Gennaioli et al. (2015) who use expectations of earnings growth by CFOs and show their explanatory power of investment plans and actual investment. A distinct feature of our study is that we combine an exogenous shock with firms' expectation data. We explore the Island Crisis as an exogenous shock to study how changes in expectations affect firms' investment, which helps to address the omitted variable bias in OLS regressions.

This paper also contributes to the literature on the effect of geopolitical shocks on firms' international activities. In this literature, there is no consensus whether geopolitical shocks generate short-run or long-run impact on trade and foreign direct investment. For example, Che et al. (2015) find that Japanese multinationals are less likely to invest in Chinese regions that suffered greater civilian casualties during the Sino-Japanese war six decades ago. In contrast, using monthly trade data, Du et al. (2017) find that shocks in political relations not as extreme as wars only have a temporary effect that lasts less than two months. Even within the same context of the Island Crisis, Yang and Tang (2014) and Heilmann (2016) find that the impact on Japanese exports is short-lived. We contribute to this literature by showing that a temporary geopolitical shock can cause a protracted effect on multinational activities, and part of the effects are due to firms' pessimistic beliefs.

The rest of the paper is organized as follows. Section 2 describes the escalation of the Island Crisis. We examine the impact of the crisis on various outcomes using a difference-in-differences strategy in Section 3. In Section 4, we further estimate the elasticity of investment with respect to expectations and perform the back-of-envelope calculation. Section 5 concludes.

2 The Island Crisis

China and Japan have been debating over the sovereignty of the Senkaku/Diaoyu Islands for years, and the most serious conflict over the islands between the two countries happened in the third quarter of 2012. On July 7, Japanese Prime Minister Yoshihiko Noda expressed his consideration for the Japanese government to buy the disputed islands, which triggered a wave of anti-Japanese protests in several Chinese cities on August 19th. On September 10th, the Japanese government announced that it had decided to purchase the disputed islands from a private Japanese owner in an effort, Tokyo claimed, aimed at diffusing territorial tensions. However, anti-Japanese demonstrations

subsequently occurred at a much larger scale. During the weekend of September 15-16, citizens in mainland China participated in protest marches and called for a boycott of Japanese products in as many as 85 Chinese cities. Moreover, on September 18th, people in over 180 Chinese cities attended protests against Japan on the 81st anniversary of the Mukden Incident, which was seen as the start of the Japanese invasion of Manchuria in Northeast China.

The severity of this territorial dispute was unprecedented, and it was unexpected by Japanese firms in China. The anti-Japanese movements between August and September of 2012 had generated significant impact on Sino-Japan economic relations. As Figure 1 shows, the share of manufacturing foreign direct investment (FDI) flows from Japan in China's total manufacturing FDI inflows plummeted from 22% (the third quarter of 2012) to 9% (the third quarter of 2014) in two years. One survey done by Teikoku Data Bank in October 2012 showed that the sudden escalation of the island dispute was unexpected by Japanese firms, and one third of firms surveyed thought that the anti-Japanese demonstrations would negatively affect their sales in China. Moreover, one sixth of them planned to withdraw or reduce their investment in China (Teikoku Data Bank (2012)).

The Island Crisis could have affected both demand- and supply-side factors among Japanese affiliates in China. On the one hand, Chinese consumers boycotted Japanese goods during the crisis. Even consumers who like Japanese products might be afraid of being seen as unpatriotic or having their possessions being destroyed.[4] On the other hand, angry protesters ransacked Japanese stores and plants, which we see as negative supply shocks to Japanese affiliates. We do not try to distinguish between demand- and supply-side shocks in this paper. Our estimated impact of the Island Crisis on sales, investment and sales forecasts could operate through both firms' demand and supply conditions.

[4] Bradsher (2012) reported that in Xi'an, China, a man who was driving a Toyota Corolla was severely beaten by the anti-Japanese protestors while the car was destroyed.

3 Empirical Findings: Differences-in-Differences Estimation

3.1 Data Description

We use the parent-affiliate-level data of the Basic Survey on Overseas Business Activities (BSOBA, Kaigai Jigyo Katsudo Kihon Chosa) prepared by the Ministry of Economy, Trade and Industry (METI). This survey covers two types of overseas subsidiaries of Japanese MNCs: (1) direct subsidiaries with share of equity by Japanese enterprises' being 10% or higher as of the end of the fiscal year, (2) second-generation subsidiaries with the share of equity by Japanese subsidiaries of 50% or higher as of the end of the fiscal year. This survey is conducted annually via a questionnaire based on self-declaration survey forms (one for the parent firm and another one for each foreign affiliate) sent to the parent firm at the beginning of a fiscal year. The survey form for parent firms includes variables concerning the parents' sales, equity, industry classification, etc. The survey for the foreign affiliates collects information on their equity, sales, investment[5], profit, country and industry information, etc.

Based on the annual survey, we constructed a panel dataset of foreign affiliates from 2007 to 2014 that includes both manufacturing and non-manufacturing firms. Each parent-affiliate pair is traced throughout the period using an identification code. To obtain real sales and investment, we deflate parents' and affiliates' sales and investment using the GDP deflator for Japan and that of each country in which an affiliate is located, respectively. Summary statistics of this dataset are reported in Table 1. The total number of observations across 8 years is roughly 170,000.

Important for our study, Japanese foreign affiliates report both the realized and the projected value of total sales. These variables allow us to calculate forecast errors (FEs) for each affiliate in each year. Specifically, sales FEs are defined as the percentage deviation of realized sales from the projected sales made one year earlier:

$$FE_{t-1,t} = \frac{Sales_t}{E_{t-1}(Sales_t)} - 1.$$

Therefore, the forecast error is positive if the firm under-predicts its sales, and negative vice versa. To exclude extreme values, we trimmed observations that are among the

[5]In our data, investment always refers to investment in equipment. Therefore, this excludes investment in assets such as plants and properties.

top or bottom one percent of $FE_{t-1,t}$.

In Table 1, we present summary statistics for these FEs along with other variables. The average FE is 0.4%, a number very close to zero. This variable varies from a minimum of -85% to a maximum of 207%, with a standard deviation of 29%. We further plot the distribution of $FE_{t-1,t}$ in Figure 2. The graph confirms that FEs are centered around zero. Therefore, firms sometimes over-predict and sometimes under-predict their sales. On average, however, they are able to predict their sales next year. We later show that this is not the case for the affiliates in China after the Island Crisis: they systematically under-predict their sales in 2013 and 2014, compared to affiliates in other countries.

3.2 Empirical Specification and Results

We want to understand the impact of the Island Crisis on the outcomes of Japanese affiliates in China, such as their sales, investment, sales forecasts and forecast errors. We want to examine not only the average effect of all years after the shock, but also the persistence of the effect. Therefore, we adopt the following estimation equation

$$y_{ict} = \sum_{s=2012}^{2014} \beta_s \mathbb{1}(\text{c=China}) \times \mathbb{1}(t = s) + \gamma X_{ict} + \delta_i + \delta_t + \delta_c \times t + \epsilon_{it}, \tag{1}$$

where i denotes an affiliate, c denotes the host country and t denotes the fiscal year. We are interested in the treatment effect in every year after the Island Crisis, i.e., $\beta_s, s = 2012, 2013, 2014$. We control for affiliate fixed effects δ_i, year fixed effects δ_t and country-specific trends $\delta_c \times t$, so that our treatment effects can be interpreted as difference-in-difference estimators. In most of our specifications, we control for time-varying country characteristics (log of nominal GDP and GDP per capita, exchange rates and investment prices), as well as parent firm characteristics (log of parent firms' sales and equity).[6]

[6]Parent firm sales refer to the sum of parent firm's sales in the Japanese market and its exports to foreign countries.

3.3 Finding One: Persistent and Negative Impact on Japanese Firms' Sales and Investment in China

In this subsection, we present evidence that sales and investment of Japanese affiliates in China fell after the Island Crisis, and they have not recovered until the end of the 2014 fiscal year, the latest year for which we have data.

Table 2 presents the estimation results on affiliates' sales. In Columns 1-3, we focus on the total sales made by affiliates, which are the sum of their local sales, exports back to Japan and exports to third countries. From Column 1 to 3, we gradually add time-varying country characteristics and parent-level controls. The results are similar across different specifications. The Island Crisis reduced sales by around 11 to 13 log points in 2012, but the impact increased to 19 to 25 log points in 2014. In Columns 4-6, we repeat the same estimation for local sales. Though both supply and demand conditions were likely to have worsened in China, worse demand conditions imply that the shock has a stronger impact on local sales than on total sales. We indeed observe that the magnitude of the coefficients in Columns 4-6 are larger than that of the coefficients in Columns 1-3.

Next, we examine the impact of the Island Crisis on affiliates' investment in Table 3. The first three columns document the impact on log of investment. The shock reduced the investment by 11 to 16 log points in the first year, and it had a protracted effect on the investment in later years as well. The magnitude of the effects in later years is similar to that in the first year.

It is well-known that investment is lumpy, and we also find that many affiliates have zero investment in our data. To take the extensive margin into account, we consider two approaches. First, we add one to investment before we take log and use the adjusted log of investment as the dependent variable (Columns 4-6). The negative impact in 2014 becomes larger compared to the first three columns. This suggests that the extensive margin contributes strongly to the protracted decline in investment. We confirm this using our second approach – directly looking at whether the affiliates make positive investment or not (Columns 7-9). The Island Crisis lowers the probability of making positive investment, and the effect is strongest in 2014 (-2.2 to -3.5%).[7]

[7]It is also intuitive that the impact on the extensive margin is the smallest in 2012, since the Island Crisis hits the firms during the second quarter of the fiscal year, and some firms might have already made investment by that time.

3.4 Finding Two: Persistent Effect on Forecasts and Forecast Errors

In Table 4, we present the results on sales forecasts and forecast errors using the same econometric specification. In Columns 1-3, we show that sales forecasts of affiliates in China declined by 10 to 14 log points in 2012, but this drop rose to 17 to 28 log points in 2014, depending on what controls we add to the regressions.

However, it may not be useful to study sales forecasts if firms are always able to predict their sales on average. We show this is not the case after the Island Crisis. In Columns 4-6, we estimate the treatment effects by year and show that (1) affiliates in China tend to over-predict their sales in 2012 by 2 to 3% and (2) they tend to under-predict their sales by 4 to 9% in 2013 and 2014. The first fact confirms that the Island Crisis was unexpected by Japanese firms before 2012. The second fact suggests that Japanese firms became too "pessimistic" and under-predicted their sales for the later years. Such "pessimism" may have contributed to the prolonged decline in investment.

It is worth discussing the theoretical mechanisms that have caused such "pessimism", which stands in sharp contrast to the pattern during normal times (firms are able to predict their sales on average). One possibility for such "pessimism" is that firms might have believed that the Island Crisis represents a long-term worsening of the Sino-Japanese relationship, while in fact, the demand and supply conditions did not decline as much as the firms expected. Another possibility is that firms have over-extrapolated their experience in China in 2012. Such "over-extrapolation" of past experience is also found among German firms, though in a very different context (Massenot and Pettinicchi (2018)). Finally, the geopolitical conflict may have induced ambiguity aversion among Japanese firms in China, so they become overly pessimistic after the Island Crisis. Though it is interesting and important to study the cause of the pessimism, it is beyond the scope of this paper. In Section 4, we do not try to distinguish between these explanations but try to ask a slightly different question: had firms not under-forecasted their sales, how much more would they have invested?

3.5 Robustness: Affiliate-level Controls and Japanese Recessions

We provide two robustness checks in this subsection. First, a vast literature has emphasized the importance of liquidity constraint for understanding firms' investment

behavior (see, for example, Blanchard et al. (1994), Almeida et al. (2004)). Our data does not contain standard balance sheet information therefore we cannot control cash or liquid assets. Instead, we control for affiliates' equity and profit-to-equity ratios as proxies for firm liquidity. These two variables are, of course, endogenous to the Island Crisis. Controlling for liquidity may capture some treatment effects that are of interest. However, it is worth checking the robustness of the results with these controls. In Table 5, we present the treatment effects on five outcome variables that we have examined before. The results are largely unchanged, with some coefficients becoming slightly smaller.

Second, Japan was hit severely by the global financial crisis in the fiscal year of 2008 (the GDP growth rates were negative from 2008Q2 to 2009Q1). To minimize the impact of the recession on our estimates, we exclude the fiscal year 2008 from our sample and rerun the same regressions. Table 6 shows the new results, and they are both qualitatively and quantitatively similar to previous estimates.

4 Isolating the Impact of Under-Forecasting

To estimate the impact of under-forecasting on investment, we proceed in two steps. First, we estimate the impact of expected sales on investment. Second, we perform a back-of-envelope calculation using this estimate as well as estimates in previous sections, such as the effect of the shock on investment and forecast errors.

In principle, we can estimate the impact of expected sales on investment using a simple OLS regression. However, if unobserved factors of investment (e.g., investment prices or investment efficiency) are correlated with expected sales, the estimates will be biased. To deal with this problem, we use the Island Crisis as an instrument. In particular, we instrument the log of expected sales with a dummy variable indicating the observation being affected by the crisis (the host country is China and the year is between 2012 and 2014). The identification assumption is that the crisis affected investment only through expectation, but not through other factors. The identification assumption may fail if investment prices or efficiency are directly affected by the crisis. We do not find this a plausible scenario, but we cannot exclude its possibility. Therefore, we present both the IV estimates as well as the smaller OLS estimates, and perform the back-of-envelope calculations using estimates from both approaches.

We presents these estimates in Table 7. As expected, the Island Crisis has a strong

negative impact on firm's expected sales (Column (1)) and investment (Column (2)). The first stage is strong with an F-statistic of 39.5. Since the coefficients obtained from the first-stage and the reduced-form regressions are similar, the IV estimate in Column (3) is close to one – a one-percent increase in expected sales raises investment by one percent. In Column (4), we use OLS regression and the elasticity of investment with respect to expected sales becomes much smaller (0.41). This suggests that there might be a negative correlation between the changes in investment efficiency and changes in expected sales in the cross section of firms. Finally, we perform a "horse race" between the effect of the crisis and expected sales in Column (5). Controlling for expectation leads to an insignificant and smaller coefficient of the crisis dummy than that in Column (2), which indicates that the crisis affects investment mostly by changing the expectation of firms.[8] All these estimates are robust, when we add parent-level and affiliate-level controls (as proxies for the availability of liquidity) and consider both extensive and intensive margins of investment using the logarithm of investment plus one (see Tables 8 and 9).

We now have all the ingredients to back out the effect of under-forecasting on investment. We have estimated the impact of the treatment on forecast errors $\Delta FE_{t,t+1}$ and the elasticity of investment with respect to expected sales $\partial \log(Inv_t)/\partial \log(E_t R_{t+1})$. Therefore, the impact of under-forecasting can be calculated approximately as

$$\frac{\partial \log(Inv_t)}{\partial \log(E_t R_{t+1})} \times \Delta FE_{t,t+1}.$$

For example, we estimate the first term to be 1.003 using the specification in Table 7, and the regression with the same set of controls yields $\Delta FE_{2012,2013} = 0.070$ (see Column 5, Table 4). The effect of under-forecasting lowers investment by $1.003 \times 0.070 = 7.0\%$. Combining with the estimate of the treatment effect on investment in 2012 (Column 2, Table 3), under-forecasting approximately explains $7.0/11.3 = 62\%$ of the decline in investment. The more conservative elasticity obtained from the OLS regression implies that under-forecasting explains 25% of the decline.

In Table 10, we perform the back-of-envelope calculation for other years (2013) and alternative measures of investment (log of investment plus one). The fraction of

[8]This, of course, is not a test of the exclusive restriction in the IV regression. We present the horse race here just to show that, even when the coefficient of expected sales is severely underestimated, it still has strong explanatory power for the decline in investment and makes the crisis dummy smaller and insignificant.

decline in investment explained by under-forecasting varies across specifications, but typically the calculations yield a number between 30% and 60% when we estimate the expectation elasticities using the IV approach, and around 20 to 27 percent when we use OLS.

5 Conclusions

Using data of Japanese multinational affiliates' sales forecasts and the sudden escalation of a territorial dispute between China and Japan, we provide evidence on the effect of expectation on firm investment. We find the shock led to a protracted decline in sales and investment, which may be explained by the persistent decline in sales forecasts and under-forecasting. Exploiting the exogenous variation caused by the shock, we estimate the elasticity of investment with respect to expectation and use the elasticity to back out the effect of under-forecasting, which accounts for 20 to 60 percent of the decline in investment. These results point to the importance of understanding how firms form expectations after geopolitical shocks, which we leave for future research.

References

Abel, Andrew B. and Janice C. Eberly, "Optimal Investment with Costly Reversibility," *The Review of Economic Studies*, 1996, *63* (4), 581–593.

Almeida, Heitor, Murillo Campello, and Michael S. Weisbach, "The Cash Flow Sensitivity of Cash," *The Journal of Finance*, 2004, *59* (4), 1777–1804.

Bachmann, Rüdiger and Steffen Elstner, "Firm Optimism and Pessimism," *European Economic Review*, October 2015, *79*, 297–325.

_ , _ , and Atanas Hristov, "Surprise, Surprise – Measuring Firm-Level Investment Innovations," *Journal of Economic Dynamics and Control*, October 2017, *83*, 107–148.

_ , _ , and Eric R Sims, "Uncertainty and Economic Activity: Evidence from Business Survey Data," *American Economic Journal: Macroeconomics*, 2013, *5* (2), 217–249.

Barro, Robert J., "The Stock Market and Investment," *The Review of Financial Studies*, January 1990, *3* (1), 115–131.

Blanchard, Olivier Jean, Florencio Lopez de Silanes, and Andrei Shleifer, "What Do Firms Do with Cash Windfalls?," *Journal of Financial Economics*, December 1994, *36* (3), 337–360.

Bradsher, Keith, "In China Protests, Japanese Car Sales Suffer," *The New York Times*, October 2012.

Caballero, Ricardo J., "Aggregate Investment," in "Handbook of Macroeconomics," Vol. 1, Elsevier, 1999, pp. 813–862.

Che, Yi, Julan Du, Yi Lu, and Zhigang Tao, "Once an Enemy, Forever an Enemy? The Long-Run Impact of the Japanese Invasion of China from 1937 to 1945 on Trade and Investment," *Journal of International Economics*, May 2015, *96* (1), 182–198.

Chirinko, Robert S., "Business Fixed Investment Spending: Modeling Strategies, Empirical Results, and Policy Implications," *Journal of Economic Literature*, 1993, *31* (4), 1875–1911.

Coibion, Olivier and Yuriy Gorodnichenko, "What Can Survey Forecasts Tell Us About Information Rigidities?," *Journal of Political Economy*, 2012, *120* (1), 116–159.

_ **and** _ , "Information Rigidity and the Expectations Formation Process: A Simple Framework and New Facts," *American Economic Review*, 2015, *105* (8), 2644–78.

_ **,** _ **, and Rupal Kamdar**, "The Formation of Expectations, Inflation and the Phillips Curve," NBER Working Paper 2017.

Cummins, Jason G., Kevin A. Hassett, and Stephen D. Oliner, "Investment Behavior, Observable Expectations, and Internal Funds," *The American Economic Review*, 2006, *96* (3), 796–810.

Du, Yingxin, Jiandong Ju, Carlos D. Ramirez, and Xi Yao, "Bilateral Trade and Shocks in Political Relations: Evidence from China and Some of Its Major Trading Partners, 1990–2013," *Journal of International Economics*, September 2017, *108*, 211–225.

Fazzari, Steven M., R. Glenn Hubbard, and Bruce C. Petersen, "Financing Constraints and Corporate Investment," *Brookings Papers on Economic Activity*, 1988, *1988* (1), 141–206.

Gennaioli, Nicola, Yueran Ma, and Andrei Shleifer, "Expectations and Investment," NBER Working Paper 21260 June 2015.

Hayashi, Fumio, "Tobin's Marginal q and Average q: A Neoclassical Interpretation," *Econometrica*, 1982, *50* (1), 213–224.

Heilmann, Kilian, "Does Political Conflict Hurt Trade? Evidence from Consumer Boycotts," *Journal of International Economics*, March 2016, *99*, 179–191.

Massenot, Baptiste and Yuri Pettinicchi, "Can Firms See into the Future? Survey Evidence from Germany," *Journal of Economic Behavior & Organization*, January 2018, *145*, 66–79.

Tanaka, Mari, Nicholas Bloom, Joel M David, and Maiko Koga, "Firm Performance and Macro Forecast Accuracy," Working Paper 24776, National Bureau of Economic Research June 2018.

Teikoku Data Bank, "A Survey on Corporate Awareness Concerning Worsening Relation with China (in Japanese)," Technical Report 2012.

Yang, Yuan and Min Tang, "Do Political Tensions Take a Toll? The Effect of the Sino-Japan Relationship on Sales of Japanese-Brand Cars in China," *Asian Business & Management*, December 2014, *13* (5), 359–378.

Tables and Figures

Table 1: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Affiliate-level:					
Total Sales	145,762	11,539.407	89,724.89	0.00	7,888,623.00
Local Sales	107,373	5,234.757	35,811.49	0.00	4,974,196.00
Investment	112,898	422.068	7,837.90	0.00	1,435,488.00
Sales Forecasts	98,998	9,425.168	68,815.95	0.00	7,407,548.00
Forecast Errors of Sales	80,310	0.014	0.32	-0.88	3.03
Parent-level:					
Equity	172,144	52,413.873	107,293.18	1.00	1,467,840.00
Domestic Sales	167,607	902,555.286	2,435,470.18	0.00	23,103,043.00

Number of observations: 172069. Unit for investment, sales and equity: one million JPY. Top and bottom one percent observations of forecast errors are trimmed. Source: Basic Survey on Overseas Business Activities (BSOBA), Ministry of Economy, Trade and Industry (METI).

Table 2: The Impact of the Island Dispute on Sales

Dep. Var.	Log Total Sales			Log Local Sales		
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2012)$	-0.122***	-0.106***	-0.107***	-0.186***	-0.163***	-0.161***
	(0.018)	(0.021)	(0.021)	(0.027)	(0.027)	(0.027)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2013)$	-0.175***	-0.144***	-0.141***	-0.235***	-0.189***	-0.182***
	(0.030)	(0.034)	(0.034)	(0.036)	(0.041)	(0.040)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2014)$	-0.240***	-0.187***	-0.184***	-0.300***	-0.224***	-0.218***
	(0.041)	(0.051)	(0.052)	(0.053)	(0.062)	(0.061)
Affiliate FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Country-level Controls	No	Yes	Yes	No	Yes	Yes
Parent-level Controls	No	No	Yes	No	No	Yes
N	117465	117029	115583	81648	81355	80591
adj. R^2	0.924	0.924	0.925	0.900	0.900	0.900

The dependent variable is log of affiliate total sales in columns 1-3 and log of affiliate local sales in columns 4-6. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are log of parent sales and capital.

Table 3: The Impact of the Island Dispute on Investment

Dep. Var.	Log(Investment)			Log(Investment + 1)			$\mathbb{1}$(Investment > 0)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2012)$	-0.152***	-0.108**	-0.105**	-0.049**	-0.034*	-0.034*	-0.010	-0.003	-0.004
	(0.049)	(0.046)	(0.047)	(0.022)	(0.019)	(0.019)	(0.006)	(0.007)	(0.007)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2013)$	-0.254***	-0.171***	-0.161***	-0.085**	-0.058**	-0.057**	-0.019*	-0.008	-0.009
	(0.075)	(0.056)	(0.056)	(0.036)	(0.027)	(0.027)	(0.010)	(0.011)	(0.011)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2014)$	-0.235**	-0.114	-0.101	-0.088*	-0.050	-0.049	-0.034**	-0.020	-0.021*
	(0.116)	(0.086)	(0.087)	(0.052)	(0.038)	(0.038)	(0.014)	(0.013)	(0.013)
Affiliate FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-level Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Parent-level Controls	No	No	Yes	No	No	Yes	No	No	Yes
N	62857	62655	62021	94755	94433	93499	94755	94433	93499
adj. R^2	0.747	0.747	0.748	0.750	0.750	0.750	0.611	0.611	0.611

The dependent variable is log of affiliate investment in columns 1-3, log of one plus affiliate investment in columns 4-6, and an indicator whether the affiliate makes positive investment or not in columns 7-9. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Parent-level controls are log of parent sales and capital. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0).

Table 4: The Impact of the Island Dispute on Sales Forecasts and Forecast Errors

Dep. Var.	Forecast: $\log(E_t R_{t+1})$			Forecast Error: $R_t/E_{t-1}R_t - 1$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2012)$	-0.141***	-0.107***	-0.106***	-0.052***	-0.040***	-0.038***
	(0.025)	(0.020)	(0.020)	(0.013)	(0.011)	(0.012)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2013)$	-0.185***	-0.120***	-0.118***	0.008	0.031*	0.036*
	(0.038)	(0.029)	(0.030)	(0.018)	(0.018)	(0.018)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2014)$	-0.282***	-0.183***	-0.179***	-0.001	0.034	0.036*
	(0.058)	(0.036)	(0.038)	(0.018)	(0.020)	(0.020)
Affiliate FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Country-level Controls	No	Yes	Yes	No	Yes	Yes
Parent-level Controls	No	No	Yes	No	No	Yes
N	78628	78217	77326	66624	66259	65529
adj. R^2	0.936	0.936	0.936	0.176	0.178	0.178

The dependent variable is log of affiliate sales in year $t + 1$ predicted in year t in columns 1-3 and forecast errors in sales from year $t-1$ to year t in columns 4-6. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are log of parent sales and capital.

Table 5: The Impact of the Island Dispute: Adding Affiliate Controls

Dep. Var.	$\log(R_t)$	$\log(I_t)$	$\log(I_t + 1)$	$\log(E_t R_{t+1})$	$R_t/E_{t-1}R_t - 1$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2012)$	-0.112***	-0.109**	-0.034*	-0.108***	-0.041***
	(0.020)	(0.046)	(0.019)	(0.020)	(0.012)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2013)$	-0.143***	-0.157***	-0.053*	-0.120***	0.035*
	(0.031)	(0.054)	(0.027)	(0.029)	(0.019)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t = 2014)$	-0.186***	-0.092	-0.044	-0.182***	0.037*
	(0.048)	(0.087)	(0.039)	(0.036)	(0.021)
Affiliate FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes
Country-level Controls	Yes	Yes	Yes	Yes	Yes
Parent-level Controls	Yes	Yes	Yes	Yes	Yes
N	110556	60836	91245	75365	64229
adj. R^2	0.925	0.746	0.746	0.937	0.180

The dependent variables in each columns are: log of affiliate sales, investment, investment plus one, sales forecasts and forecast errors, respectively. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are log of parent sales and capital. Affiliate-level controls are affiliates' equity and profit-to-equity ratio.

Table 6: The Impact of the Island Dispute: Robustness to Excluding the 2008 Japanese Recession

Dep. Var.	$\log(R_t)$ (1)	$\log(I_t)$ (2)	$\log(I_t+1)$ (3)	$\log(E_tR_{t+1})$ (4)	$R_t/E_{t-1}R_t-1$ (5)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t=2012)$	-0.107***	-0.102**	-0.028	-0.109***	-0.048***
	(0.019)	(0.047)	(0.019)	(0.020)	(0.012)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t=2013)$	-0.141***	-0.152***	-0.046*	-0.124***	0.021
	(0.033)	(0.053)	(0.026)	(0.028)	(0.018)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t=2014)$	-0.183***	-0.075	-0.030	-0.187***	0.016
	(0.050)	(0.081)	(0.035)	(0.036)	(0.019)
Affiliate FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes
Country-level Controls	Yes	Yes	Yes	Yes	Yes
Parent-level Controls	Yes	Yes	Yes	Yes	Yes
N	101202	53835	80636	67365	56443
adj. R^2	0.927	0.748	0.751	0.939	0.164

The dependent variables in each columns are: log of affiliate sales, investment, investment plus one, sales forecasts and forecast errors, respectively. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are log of parent sales and capital. Affiliate-level controls are not included.

Table 7: Impact of Expectation on Investment

Dep. Var.	$\log(E_t(R_{t+1}))$	Log Investment			
Specification	First-Stage	Reduced-Form	IV	OLS	Horserace
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t >= 2012)$	-0.101***	-0.090**			-0.049
	(0.016)	(0.045)			(0.042)
$\log(E_t(R_{t+1}))$			0.894**	0.408***	0.407***
			(0.406)	(0.028)	(0.028)
Affiliate FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes
Country-level Controls	Yes	Yes	Yes	Yes	Yes
N	45619	45619	45619	45619	45619
adj. R^2	0.943	0.748	-0.299	0.754	0.754
Cragg-Donald F Stat			34.657		

The dependent variable is log of sales forecast for year $t+1$ made in year t in column 1, and log of deflated investment in columns 2-5. In column 3, we use $\mathbb{1}$(in China) $\times$ $\mathbb{1}(t >= 2012)$ to instrument for the log of sales forecasts. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are not included. We have smaller samples here since we require firms to have both investment and sales forecasts in all regressions.

Table 8: Impact of Expectation on Investment: Robustness to Affiliate-Level Controls

Dep. Var.	$\log(E_t(R_{t+1}))$	Log Investment			
Specification	First-Stage	Reduced-Form	IV	OLS	Horserace
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t >= 2012)$	-0.102***	-0.088*			-0.047
	(0.016)	(0.045)			(0.044)
$\log(E_t(R_{t+1}))$			0.862**	0.395***	0.395***
			(0.425)	(0.031)	(0.031)
Affiliate FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes
Country-level Controls	Yes	Yes	Yes	Yes	Yes
Parent-level Controls	Yes	Yes	Yes	Yes	Yes
N	44733	44733	44733	44733	44733
adj. R^2	0.944	0.749	-0.292	0.754	0.754
Cragg-Donald F Stat			35.503		

The dependent variable is log of sales forecast for year $t+1$ made in year t in column 1, and log of deflated investment in columns 2-5. In column 3, we use $\mathbb{1}$(in China) $\times$ $\mathbb{1}(t >= 2012)$ to instrument for the log of sales forecasts. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita, log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are log of domestic sales and log of equity. Affiliate-level controls are affiliates' equity and profit-to-equity ratio.

Table 9: Impact of Expectation on Investment: Robustness

Dep. Var.	Log (1+Deflated Investment)					
Specification:	IV	OLS	Horserace	IV	OLS	Horserace
	(1)	(2)	(3)	(4)	(5)	(6)
$\log(E_t(R_{t+1}))$	0.212	0.103***	0.103***	0.204	0.103***	0.103***
	(0.158)	(0.012)	(0.012)	(0.165)	(0.012)	(0.012)
$\mathbb{1}$(in China) $\times$ $\mathbb{1}(t >= 2012)$			-0.012			-0.011
			(0.018)			(0.018)
Affiliate FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Country-level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Parent-level Controls	No	No	No	Yes	Yes	Yes
N	66034	66034	66034	65407	65407	65407
adj. R^2	-0.283	0.760	0.760	-0.280	0.760	0.760
Cragg-Donald F Stat	42.211			42.517		

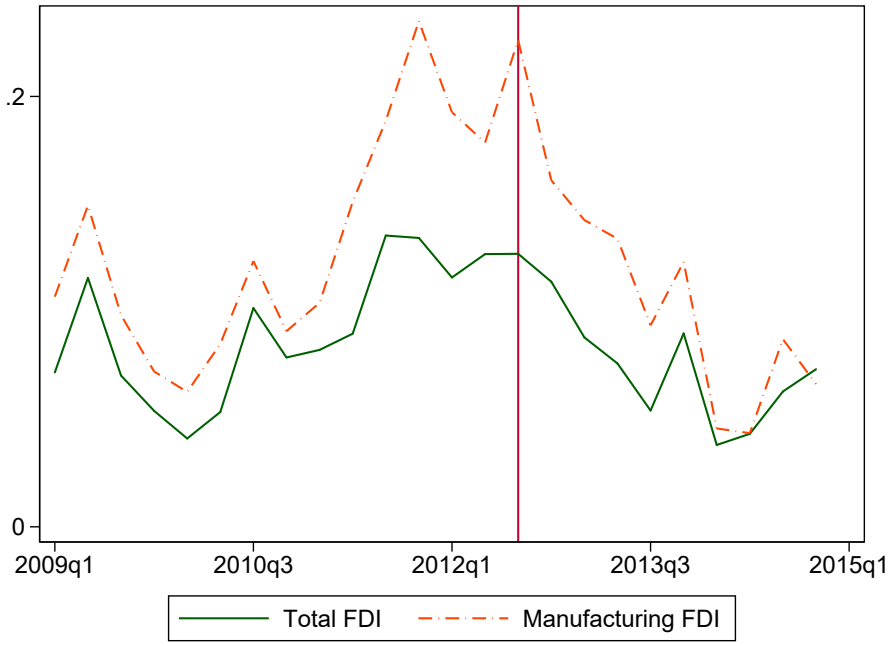
The dependent variable is log of investment plus one. Standard errors are clustered at country level, * 0.10 ** 0.05 *** 0.01. Country-level controls are log of GDP, log of GDP per capita and log of exchange rates (to USD) and log of investment prices (Penn World Table 9.0). Parent-level controls are log of parent domestic sales and equity.

Table 10: Back-of-Envelope Calculation for Estimates Obtained from Different Specification

Treatment Effect to Explain	Total Effect	$FE_{t,t+1}$	Elasticity IV (OLS)	% explained by FE IV (OLS)
$\Delta \log(Inv_{2012})$	-0.113	0.070	1.003 (0.409)	62 (25)
$\Delta \log(Inv_{2013})$	-0.172	0.091		53 (22)
$\Delta \log(Inv_{2012}+1)$	-0.093	0.070	0.544 (0.353)	41 (27)
$\Delta \log(Inv_{2013}+1)$	-0.161	0.091		31 (20)

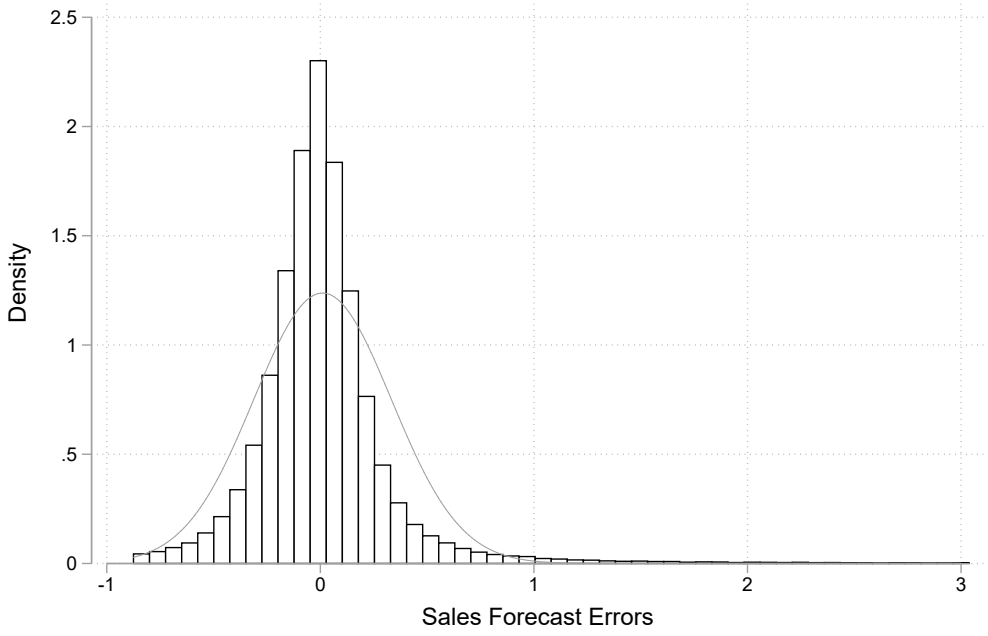
Note: The total effects are the treatment effects on $\log(Inv_t)$ or $\log(Inv_t+1)$ in 2012 or 2013, which can be found in Table 3. To calculate the share of the decline in investment explained by under-forecasting, we combine the elasticity of investment (or investment plus one) with respect to expected sales either obtained by IV or OLS regressions (OLS results in parentheses), which can be found in Tables 7,8,9 and the treatment effects on forecast errors, which can be found in Table 4. All coefficients are obtained using regressions that control for time-varying country characteristics. Similar calculations can be performed using the coefficients from regressions that control parent-level and affiliate-level variables.

Figure 1: Share of Japanese FDI in China's Total Inward FDI



Note: The vertical line indicates 2012/Q3, the quarter in which the island crisis happened. Japanese quarterly FDI data are obtained from the Bank of Japan. Quarterly total FDI inflows into China are obtained from China Data Online. We partition the quarterly total FDI inflows into manufacturing and non-manufacturing FDI using their ratios in the yearly total FDI inflows.

Figure 2: Histogram of Forecast Errors for Total Sales



Note: Histogram of $FE_{t-1,t}$ with fitted normal density. $FE_{t-1,t}$ is the forecast error of sales, defined as $Sales_t/E_{t-1}(Sales_t) - 1$.